Plans, Specifications, and Supporting Documents

For

Manning Avenue (S-152) Bridge Rehabilitation

Located in

Sumter County, South Carolina

Prepared For:

The City of Sumter

Prepared By:

The South Carolina Department of Transportation

PCN 40012_PE01

June 2013

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1. Project Information & Background

The City of Sumter (City) is actively improving its Main Street and downtown business district by performing various streetscape and enhancement activities. At the southern terminus of Main Street, where roadway ownership converts to the South Carolina Department of Transportation (SCDOT), the street name changes to Manning Avenue (S-152). Having completed all proposed streetscape improvements north of Manning Avenue (S-152), the City contacted SCDOT to inquire about extending the proposed improvements south of downtown along Manning Avenue.

There is a bridge located immediately south of the conversion point of these streets along Manning Avenue. The location map is included in Section 3 Proposed Plans. The bridge provides a safe route across the CSX Railroad as well as two local streets. SCDOT owns and maintains this bridge, and the City contacted SCDOT to propose a plan to continue its downtown streetscape and enhancement activities along the bridge. The City's proposal included re-painting the bridge and installing pedestrian-scale lighting on the bridge.

SCDOT built the existing Britton Bridge circa 1940, and the bridge contains steel beams (plate girders) and steel railings that are painted as well as concrete supports and decks. SCDOT inspects the bridge on a regular basis to be sure that it is safe for drivers. The bridge is structurally deficient and functionally obsolete, and today, there are many rust covered steel pieces, there are cracks in the concrete deck, and there are spalls (broken off areas) on concrete pieces. The existing paint also contains lead.

Upon receiving the proposal, SCDOT personnel informed the City that that, without necessary structural repairs, performing these enhancements along the bridge was not recommended. After SCDOT and the City met to discuss the proposed improvements as well as the status of the bridge, the City invited SCDOT to develop a plan that would achieve the City's goals for downtown re-development and would accomplish the necessary structural rehabilitation of the existing bridge. The Financial Participation Agreement (FPA 36-10), attached hereto, memorialized this relationship between the City and SCDOT.

At this time, the construction funding source is unidentified, and the bid letting method is unknown. The two options for bid letting are to 1.) use the City's procurement method or 2.) use SCDOT's method. This report includes the plans, specifications, and supporting documents for the proposed rehabilitation and enhancement of the Bridge along Manning Avenue (S-152) from Oakland Avenue to Bee Street in Sumter County.

FPA-36-10

If Applicable
CFDA No. 20.205
Highway Planning & Construction

Financial Participation Agreement & Contract
Between
South Carolina Department of Transportation
And
City of Sumter

This Agreement executed on 31st ~~18th~~ day of August, 2010, covers the financial responsibilities of the South Carolina Department of Transportation; hereinafter "SCDOT", and the City of Sumter; hereinafter "Participant" for the below described project.

PROJECT DESCRIPTION:

The Rehabilitation of Manning Avenue (S-152) Bridge over S.C.L. Railroad Project - The approximate scope and termini of the project are as follows: Phase I Design Services for the rehabilitation of the Manning Avenue Bridge, to include traffic and structural analysis of the existing bridge, preparation of bid documents for structural rehabilitation, lead paint abatement, streetside lighting, and bicycle and pedestrian facilities. The termini are from W. Bartlette Street (Road S-118) to Watkins Street (Road S-140).

SCDOT will manage all aspects of the project to ensure compliance with all FHWA regulations, either through force account or by consultant. SCDOT will perform the above tasks to the extent of available funding.

If additional funding becomes available to the Participant for the Project, this funding will be addressed in a separate financial participation agreement.

FUNDING:

a. The Participant estimates the total cost for the project to be $200,000.00.
b. The SCDOT will not contribute to this project.
c. The Participant is responsible for 100% of the cost of the project.

INVOICING/PAYMENT SCHEDULE:

The Participant's share of funding for the project is estimated at $200,000.00. SCDOT will invoice the Participant based on this Agreement and an executed Charge Memorandum Document (3025A) prepared at the direction of the SCDOT project manager. The charge memorandum will have the name and address of the party to be invoiced and the amount.

An invoice in the amount of $200,000.00 will be submitted by the SCDOT Accounting/Finance to the Participant approximately 30 days after execution of this Agreement.

FINANCIAL PARTICIPANT RESPONSIBILITES

The Participant agrees to remit to SCDOT within 30 days of receipt of the invoice the amount specified per this Agreement.

No work on the project shall begin until payment is received.

OTHER INFORMATION

In the event the total project costs are less than originally estimated, SCDOT will refund any excess amount paid by the Participant within 30 days of final completion and acceptance of the project. Any changes to this Agreement will be in writing and agreed to by all parties. If it becomes apparent that the cost of the project will exceed the funding available, the SCDOT and Participant will mutually agree on a revision to the project scope and termini that is in accordance with the available budget and maintains federal eligibility.

The project manager will periodically update the Participant of the status of the project and funds.
Overruns will be the responsibility of:

1. _____ the SCDOT
2. __X___ the Participant

Payments and/or refunds will not be unreasonably withheld, denied, or delayed.

The SCDOT accepts responsibility for normal maintenance of standard transportation materials, structures and workmanship within SCDOT rights of way according to common local practices. After the project is completed and accepted to the state system the Participant is responsible for securing an approved Encroachment Permit outlining any desired extraordinary maintenance effort on SCDOT rights of way that would include any special features or nonstandard department materials that may have been incorporated into the project.

Funding Sources	Amount	File# 43.040012	PIN # 40012_PE01	Project # 4300A0040012

DESIGN SERVICES

SCDOT Federal	-$0-			
Participant	$200,000.00			
TOTAL	**$200,000.00**			

WTLE Derek Arnold

Project Manager SCDOT

Rick Patton FOR

Deputy Secretary for Engineering/or Designee

Angela R. Teasley

Deputy Secretary for Finance & Administration/or Designee

Deon M. Gorrick

Participant

CITY OF SUMTER
CITY MANAGER

2. Conceptual Rendering

After coordinating with the City, SCDOT developed this conceptual rendering (next page) of the proposed project. The City emphasized the importance of creating a welcoming connection between downtown and neighborhoods to the south and the need to provide a safe route for pedestrians walking from the neighborhoods to downtown and back. The bridge further serves as a gateway to downtown from points south, and the proposed enhancements will improve this gateway.

In the proposed concept design, the existing bridge would be converted from four (4) travel lanes to three (3) travel lanes. The eastern-most travel lane would become a multi-use path for pedestrians and bicyclists and would be separated from vehicles by a concrete barrier wall.

4. Environmental Documentation

In order to comply with the National Environmental Policy Act (NEPA), SCDOT performed the work required for the Federal Highway Administration's (FHWA's) Programmatic Categorical Exclusion Type B (CE-B). By completing the CE-B process, SCDOT determined that the project will have no adverse impact to wetlands, endangered species, underground storage tanks (UST's), or cultural resources.

South Carolina Department of Transportation

On Behalf of the Federal Highway Administration - South Carolina Division Office

PROCESSING FORM FOR PROGRAMMATIC CATEGORICAL EXCLUSIONS
NON MAJOR FEDERAL ACTIONS

State File #	43.040012	Fed Project #	N/A	PIN	40012_PE01	Route	S-152	County	Sumter

Programmatic Type: CE-B

Project Name/Description

The Manning Avenue (S-152) bridge over the CSX Railroad in Sumter, SC will be modified from four-lanes of traffic to two, 11-foot lanes of traffic with a 10-foot center lane and 12-foot multi-use path. This reconfiguration will be accomplished via restriping, installation of a traffic barrier, and extension of existing sidewalk with concrete to form the multi-use path. Six-inch extension railing will be added on top of the existing railing which will be refurbished. Pedestrian lighting will be attached to the sides of the bridge. Rehabilitation of the bridge includes repairs to the deck and expansion joints, any substructure spall repairs that are needed, concrete sealing, and repainting the steel beams. Manning Avenue will be widened by five feet on the east side with new sidewalk, curb and gutter extending from the bridge to Watkins Avenue; reconstruction of the turning radius at Watkins Avenue; construction of new inlets to tie into existing drainage; and overlay and striping of Manning Avenue from the bridge to Bee Street. The project limits are the existing bridge deck and existing right-of-way limits along Manning Avenue from Oakland Avenue to Bee Street. There will be no adverse impact to and wetland, endangered specie, UST, or cultural resource.

Categorical Exclusion Type B (Conditional Programmatic)

Projects of the type listed below would not automatically fall under the same programmatic clearance as the CE Type A. The regulations in 23 CFR Part 771.117(d) list additional types of projects which can meet the CE criteria only after FHWA approval. Several of these projects have been approved to be processed programmatically by FHWA-SC if certain conditions are met. These types are listed below.

Check appropriate project type:

☒	Safety projects including but not limited to: placement of traffic barrier; energy attenuators; grading of slopes or gore ares to eliminate the need for guardrail, improve the clear zone, improve curves, or improve sight distance/removal of fixed objects such as boulders or trees; lighting; glare screens; delineators; and safety modification of drainage structures.
☐	Pavement resurfacing, restoration, rehabilitation, and reconstruction projects including related shoulder and ditch work.
☐	Traffic operation type projects including but not limited to: freeway surveillance and control systems; intersection channelization; turn lanes, acceleration or deceleration lanes; construction, modification or elimination of curbs, raised dividers or sidewalks; and widening less than a single lane width.
☒	Bridge and culvert rehabilitation work and bridge replacement at the same location.

CE-B Processing Form Continued:

To be processed as a Categorical Exclusion Type B (CE-B) the following conditions must be met in addition to the General Criteria (as outlined in the CE Programmatic Agreement (PA) between FHWA-SC and SCDOT). Place a "X" in the appropriate box below. If the answer is "Yes" to any of the below criteria, a Documented Categorical Exclusion (CE-C) must be prepared and forwarded to FHWA for approval.

1.	The acquisition of more than minor amounts of temporary or permanent strips of right-of-way and the acquisition will not require any residential or business relocations.	☐ Yes	☒ No
2.	Use of Section 4(f) or 6(f) properties.	☐ Yes	☒ No
3.	An adverse effect determination under Section 106 of the National Historic Preservation Act.	☐ Yes	☒ No
4.	Individual U.S. Coast Guard Permits.	☐ Yes	☒ No
5.	Individual Corps of Engineer Permits, or an impact greater than three (3) acres of wetlands. a. Wetland impacts (acres): 0	☐ Yes	☒ No
6.	Impacts to planned growth or land use, or significant impacts on travel patterns.	☐ Yes	☒ No
7.	Work encroaching in a regulatory floodway, adversely affecting the base floodplain, or potentially adversely affecting a National Wild and Scenic River.	☐ Yes	☒ No
8.	Changes in access control.	☐ Yes	☒ No
9.	Any known or potential major hazardous waste sites within the right-of-way.	☐ Yes	☒ No

The above described project has been reviewed based on the information contained in the engineer's Project Planning Report (PPR) and it has been determined that the project meets the criteria set forth in the Programmatic Categorical Exclusion Agreement signed by FHWA and SCDOT. It is understood that any additions/deletions to the project may void environmentally processing the project as presently classified; consequently, any engineering changes must be bought to the attention of the SCDOT Environmental Management Office (EMO) immediately. The project's CE classification should be shown in the remarks section on the Letter of Request for Authorization Form (PS Form 39) for right-of-way and/or construction for concurrence by FHWA. A copy of this form is included in the project file and one (1) copy has been provided to FHWA.

Prepared By: Jana Bean, CDM Smith APPROVED BY HENRY PHILLIPS 4/24/2013 Date April 24, 2013

PPMS: ☑ Yes ☐ No

Form Updated: 3-3-11

Date: April 23, 2013

MEMORANDUM

FROM Jana Bean COMPANY CDM Smith

PRIME CONSULTANT CDM Smith Contact Person David Taylor

SUB CONSULTANT _____ Contact Person _____

SCDOT PROJECT ENGINEER Tyke Redfearn

TO: Sean Connolly, Environmental Permits Manager

SUBJECT: Permit Determination

Project Description: The Manning Ave bridge over the CSX Railroad in Sumter will be modified within right-of-way from 4 lanes of traffic to two, 11ft lanes of traffic, a 10-ft center lane and 12ft multi-use path via restriping, traffic barrier, and extension of existing sidewalk. Pedestrian lighting will be installed.

Route or Road No.: S-152 County: Sumter

CONST. PIN 40012-PE01 OTHER PINS or STRUCTURE # 004370015200100

Response:

[✓] It has been determined that no permits are required because
All work is to be performed on existing bridge structure.

( ) The following permit(s) is/are necessary:
(Please check which type(s) of permit the project will need)

___ JD (Jurisdictional Determination) ___ COEGP ___ ICOE ___ NAVGP

___ NAV ___ OCRM (CZC) ___ OCRM (CAP) Other_____

Water Classification: N/A

303(d) listed ( ) no ( ) yes, for _____ TMDL developed ( ) no ( ) yes, for _____
*Please print and attach the water quality report

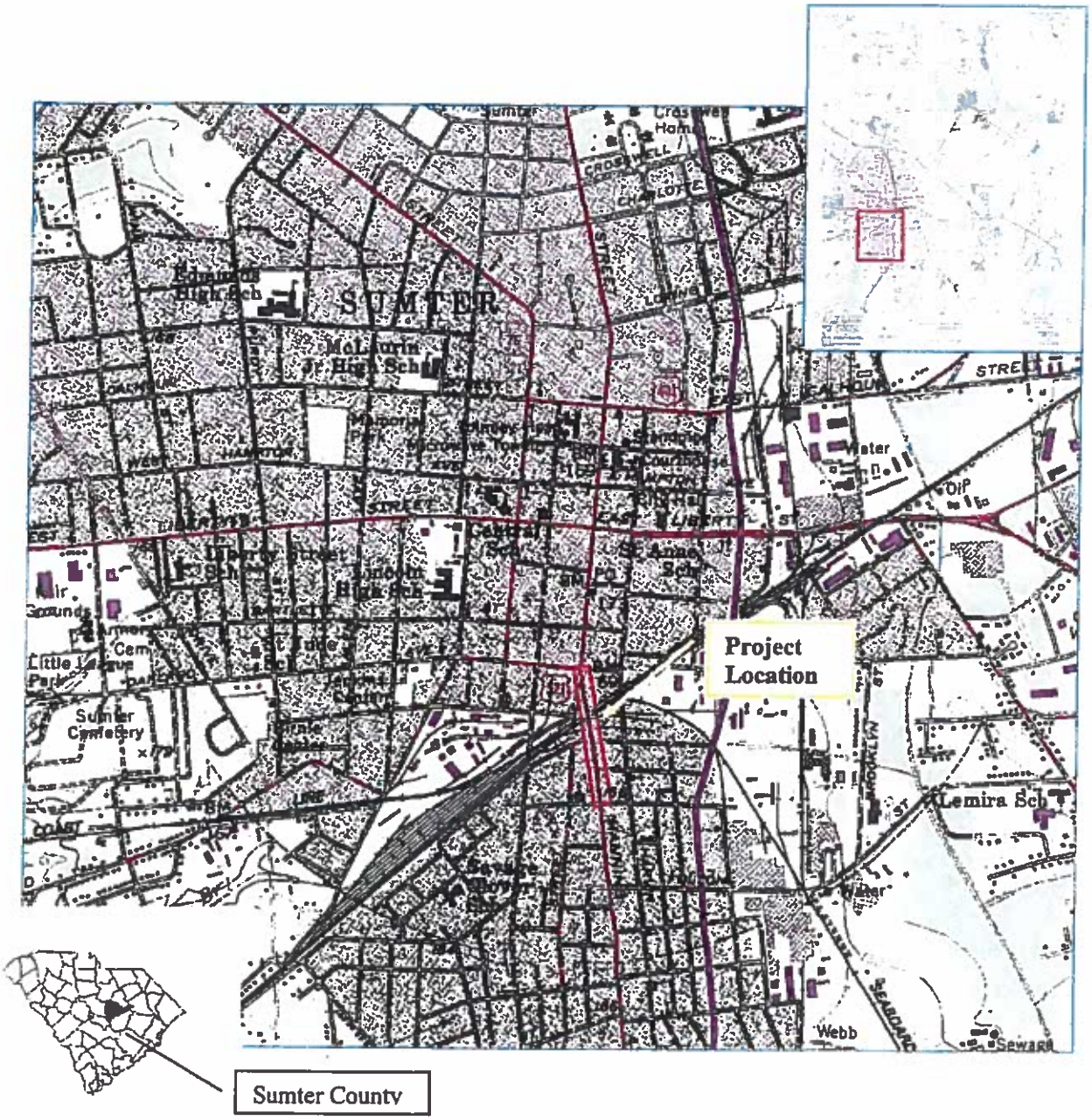
Comments: The bridge does not cross over waters of the US.

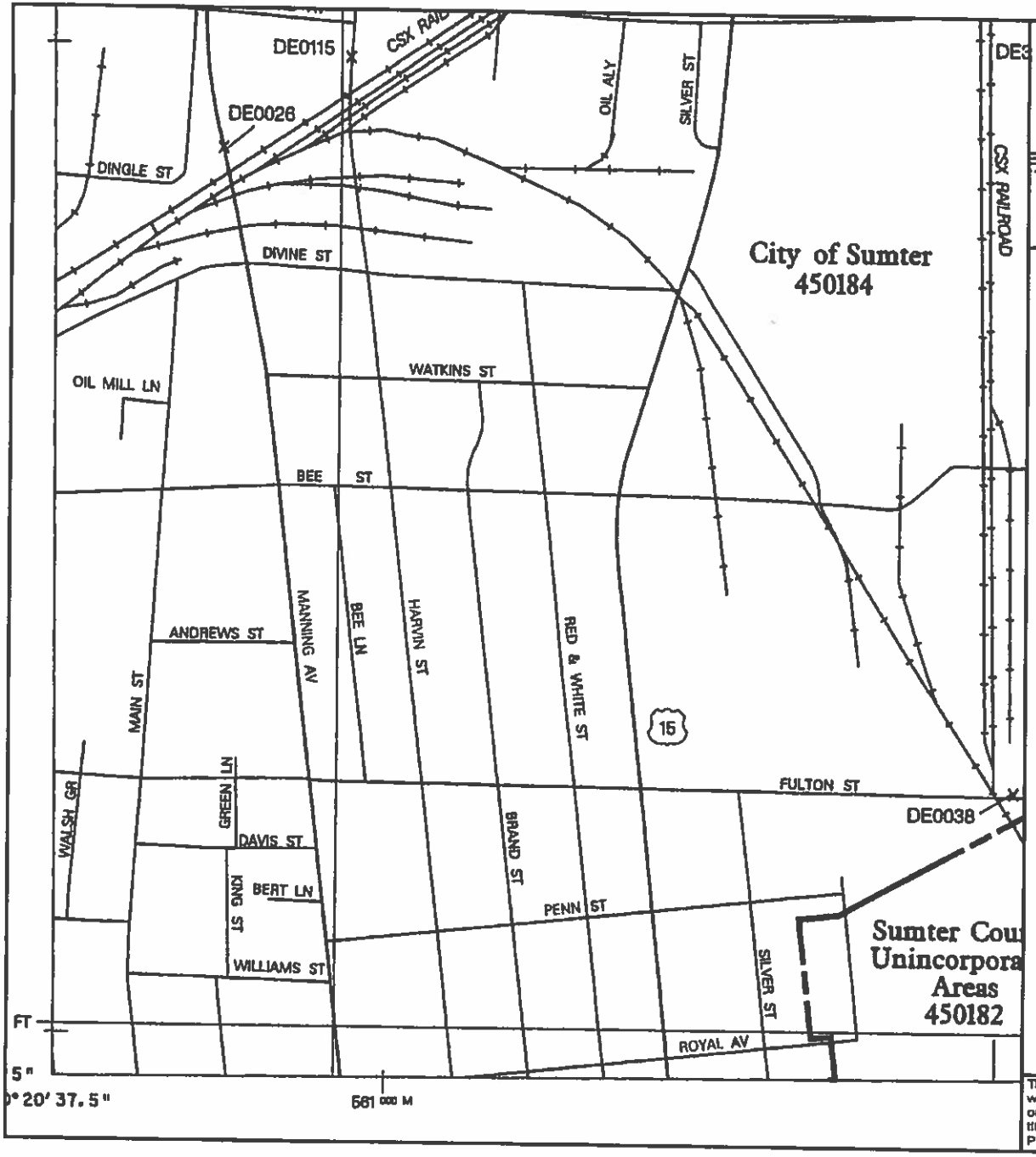
The determination above was based on the most recently available information at the time. This is a preliminary determination and is subject to change if the design of the project is modified.

Ed Faverson 4-24-13
Biologist, SCDOT/~~Consultant~~ Date

Revised 5/2011

Project Location Map
Sumter East, SC
1957 USGS Topographic Map, Photorevised 1982





MAP SCALE 1" = 500'

250 0 500 1000 FEET

METERS

PANEL 0312D

FIRM
FLOOD INSURANCE RATE MAP
SUMTER COUNTY
SOUTH CAROLINA
AND INCORPORATED AREAS

PANEL 312 OF 625

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SUMTER, CITY OF	450184	0312	D
SUMTER COUNTY	450182	0312	D

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
45085C0312D

EFFECTIVE DATE
FEBRUARY 16, 2007

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

South Carolina
Department of Transportation

January 9, 2013

RECEIVED JAN 11 2013

FEB - 1 2013

Environmental Management
SCDOT

Ms. Rebekah Dobrasko
Review and Compliance Coordinator
South Carolina Dept. of Archives & History
8301 Parklane Road
Columbia, S. C. 29223-4905

Re: ***Manning Avenue Bridge Rehabilitation in the City of Sumter, Sumter County, South Carolina.*** **SCDOT PIN # 40012_PE01**

Dear Ms. Dobrasko:

The Department has completed cultural resource investigations for the project referenced above. Background research revealed no previously identified aboveground or archaeological resources. Three aboveground resources (site #s 2414 through 2416) were documented during project cultural resource investigations. Two of these resources (2415 and 2416) are recommended not eligible for the National Register of Historic Places (NHRP). Site # 2414, the Manning Avenue Bridge over CSX Railroad, is recommended eligible for the NRHP under criterion C for design.

The proposed project involves rehabilitating the 1940 Manning Avenue Bridge as part of an effort to create a "gateway" bridge into downtown Sumter. The existing four-lane bridge will be reconfigured via the addition of a concrete barrier to a three-lane bridge with a bicycle/pedestrian facility to the eastern side and restriped accordingly. Additional enhancements include pedestrian lighting attached to the sides of the bridge and replacement or repair of the railings. Rehabilitation of the bridge includes repairs to the deck and expansion joints, any substructure spall repairs that are needed, concrete sealing, and repainting the steel beams. The project limits are the existing bridge deck and existing right-of-way limits along Manning Avenue to Bee Street.

The rehabilitation will alter the deck, lighting, and railings of the Manning Avenue Bridge (site # 2414). However, these alterations will not significantly alter the general appearance of the bridge nor will they affect the significant design aspects of the bridge which are beneath the bridge deck and are the chief reason for the bridge's NRHP eligibility. Additionally, the rehabilitation work done on the bridge will work towards the preservation of

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the resource. For these reasons, it is recommended that the proposed project will have no adverse effect to the Manning Avenue Bridge.

In accordance with the memorandum of agreement approved by the Federal Highway Administration, November 29, 2011, the Department is providing this information as agency official designee, as defined under 36 CFR 800.2, to ensure compliance with Section 106 of the National Historic Preservation Act.

It is requested that you review the enclosed material and, if appropriate, indicate your concurrence in the Department's findings, thus completing the Section 106 consultation process. Contingent upon your concurrence with our determination of no adverse effect, FHWA intends to make a de minimis finding in accordance with Section 4f of the Department of Transportation Act. Please respond within 30 days if you have any objections or if you have need of additional information.

Sincerely,

David P. Kelly
NEPA Coordinator
RPG 4

DPK:dpk

Enclosures: 2 copies of report

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

Signed: _____ Date: 1/28/2013

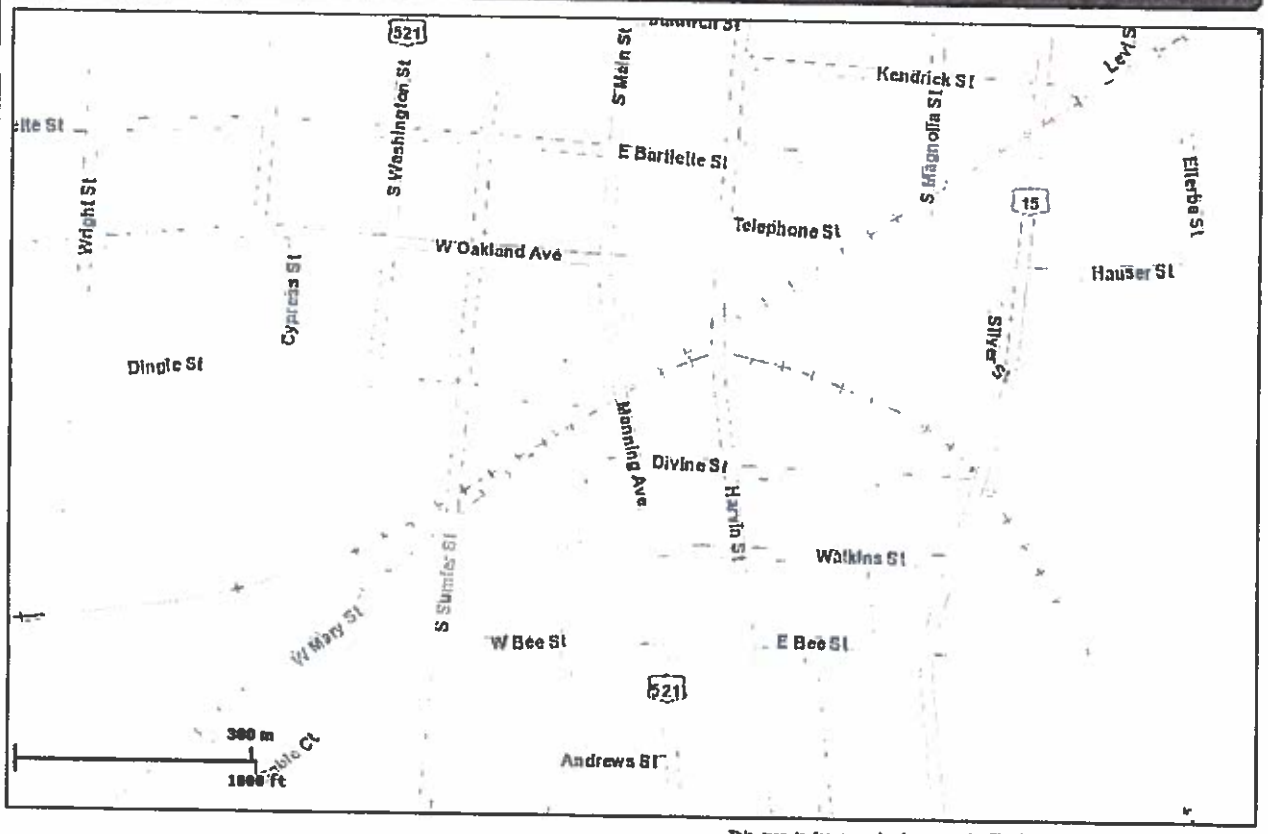
cc: Shane Belcher, FHWA
Wenonah G. Haire, Catawba Nation THPO
Keith Derting, SCIAA

U.S. Fish and Wildlife Service

National Wetlands Inventory

Manning Ave Bridge Rehab

Feb 14, 2013



Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

Riparian

- Herbaceous
- Forested/Shrub

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

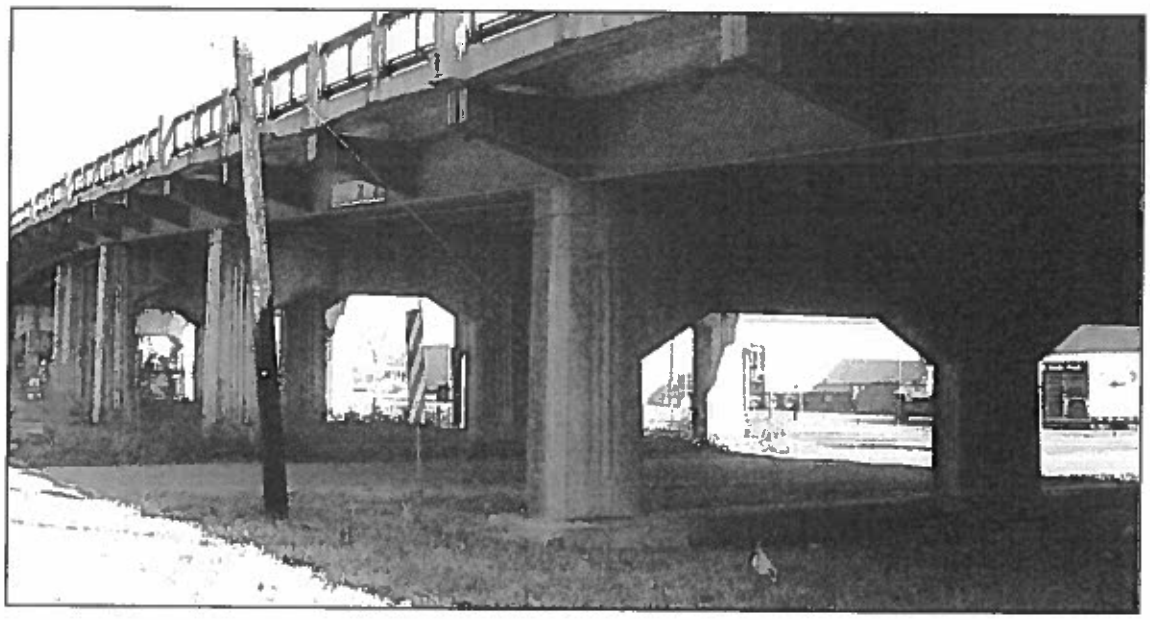
User Remarks:

4.1 Cultural Resources

The bridge is eligible for the National Register of Historic Places (NRHP) because its structural design is unique for the time period in which it was built. Since the proposed project will not alter the structural design of the bridge and since the proposed project will preserve the structural elements of the bridge, the project will have no adverse effect to the Manning Avenue Bridge.

It is important to note that SCDOT carefully considered the proposed design for the bridge railings. If bicycles are allowed to be next to the railings, the existing rails should be taller. After several options were considered, the South Carolina Historic Preservation Office (SHPO) concurred that the proposed railing extension is preferred because it does not appear to be original hardware, and any observers of the bridge's structural design will easily realize that these railing extensions are new additions. Copies of the Cultural Resource Survey as well as the agency coordination letters are attached hereto.

At this time, the concrete barrier wall separating the multi-use path from the vehicles is proposed to have a smooth concrete surface. The SHPO concurred that this would have no adverse effect to the eligibility for the NRHP. If the City choses to upgrade the concrete barrier with an aesthetic surface finish, SCDOT will coordinate with SHPO accordingly. The SCDOT architectural historian suggests that one option for this aesthetic finish would have some likeness to the design of the concrete bridge supports shown below.



Concrete Bridge Supports

South Carolina
Department of Transportation

January 9, 2013

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Environmental Management
SCDOT

Ms. Rebekah Dobrasko
Review and Compliance Coordinator
South Carolina Dept. of Archives & History
8301 Parklane Road
Columbia, S. C. 29223-4905

Re: *Manning Avenue Bridge Rehabilitation in the City of Sumter, Sumter County, South Carolina.* **SCDOT PIN # 40012_PE01**

Dear Ms. Dobrasko:

The Department has completed cultural resource investigations for the project referenced above. Background research revealed no previously identified aboveground or archaeological resources. Three aboveground resources (site #s 2414 through 2416) were documented during project cultural resource investigations. Two of these resources (2415 and 2416) are recommended not eligible for the National Register of Historic Places (NHRP). Site # 2414, the Manning Avenue Bridge over CSX Railroad, is recommended eligible for the NRHP under criterion C for design.

The proposed project involves rehabilitating the 1940 Manning Avenue Bridge as part of an effort to create a "gateway" bridge into downtown Sumter. The existing four-lane bridge will be reconfigured via the addition of a concrete barrier to a three-lane bridge with a bicycle/pedestrian facility to the eastern side and restriped accordingly. Additional enhancements include pedestrian lighting attached to the sides of the bridge and replacement or repair of the railings. Rehabilitation of the bridge includes repairs to the deck and expansion joints, any substructure spall repairs that are needed, concrete sealing, and repainting the steel beams. The project limits are the existing bridge deck and existing right-of-way limits along Manning Avenue to Bee Street.

The rehabilitation will alter the deck, lighting, and railings of the Manning Avenue Bridge (site # 2414). However, these alterations will not significantly alter the general appearance of the bridge nor will they affect the significant design aspects of the bridge which are beneath the bridge deck and are the chief reason for the bridge's NRHP eligibility. Additionally, the rehabilitation work done on the bridge will work towards the preservation of

the resource. For these reasons, it is recommended that the proposed project will have no adverse effect to the Manning Avenue Bridge.

In accordance with the memorandum of agreement approved by the Federal Highway Administration, November 29, 2011, the Department is providing this information as agency official designee, as defined under 36 CFR 800.2, to ensure compliance with Section 106 of the National Historic Preservation Act.

It is requested that you review the enclosed material and, if appropriate, indicate your concurrence in the Department's findings, thus completing the Section 106 consultation process. Contingent upon your concurrence with our determination of no adverse effect, FHWA intends to make a de minimis finding in accordance with Section 4f of the Department of Transportation Act. Please respond within 30 days if you have any objections or if you have need of additional information.

Sincerely,

David P. Kelly
NEPA Coordinator
RPG 4

DPK:dpk

Enclosures: 2 copies of report

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

Signed: _____ Date: 1/28/2013

cc: Shane Belcher, FHWA
Wenonah G. Haire, Catawba Nation THPO
Keith Derting, SCIAA

South Carolina
Department of Transportation

January 9, 2013

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Environmental Management
SCDOT

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JAN 12
2013-66-8

Ms. Rebekah Dobrasko
Review and Compliance Coordinator
South Carolina Dept. of Archives & History
8301 Parklane Road
Columbia, S. C. 29223-4905

Re: ***Manning Avenue Bridge Rehabilitation in the City of Sumter, Sumter County, South Carolina.*** **SCDOT PIN # 40012_PE01**

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The proposed project involves rehabilitating the 1940 Manning Avenue Bridge as part of an effort to create a "gateway" bridge into downtown Sumter. The existing four-lane bridge will be reconfigured via the addition of a concrete barrier to a three-lane bridge with a bicycle/pedestrian facility to the eastern side and restriped accordingly. Additional enhancements include pedestrian lighting attached to the sides of the bridge and replacement or repair of the railings. Rehabilitation of the bridge includes repairs to the deck and expansion joints, any substructure spall repairs that are needed, concrete sealing, and repainting the steel beams. The project limits are the existing bridge deck and existing right-of-way limits along Manning Avenue to Bee Street.

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Sincerely,

David P. Kelly
NEPA Coordinator
RPG 4

DPK:dpk

Enclosures: 2 copies of report

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

Signed: Wenonah G. Haire, Dr. Date: 1/22/13

cc: Shane Belcher, FHWA
Wenonah G. Haire, Catawba Nation THPO
Keith Derting, SCIAA

MEMORANDUM

TO: Rebekah Dobrasko, Review and Compliance Coordinator

FROM: David P. Kelly, NEPA Coordinator, RPG 4

RE: Manning Avenue Bridge over CSX Railroad, Bridge Rehabilitation Project, Sumter, Sumter County

DATE: January 9, 2013

The City of Sumter proposes the Rehabilitation of the Manning Avenue (S-152) Bridge over CSX Railroad and streets in Sumter County. The City of Sumter, in partnership with Sumter County, is performing a streetscape project along Manning Avenue (S-152) from the southern end of the referenced bridge to its terminus at Lafayette Avenue (US 15). This streetscape is to serve as a gateway to the City of Sumter from points south. Since the bridge is the connection between the streetscape and the downtown area, the City of Sumter approached SCDOT regarding rehabilitation of the bridge.

The existing four-lane bridge will be reconfigured via the addition of a concrete barrier to a three-lane bridge with a bicycle/pedestrian facility to the eastern side and restriped accordingly. Additional enhancements include pedestrian lighting attached to the sides of the bridge and replacement or repair of the railings (to meet safety/code requirements). Rehabilitation of the bridge includes repairs to the deck and expansion joints, any substructure spall repairs that are needed, concrete sealing, and repainting the steel beams. The project limits are the existing bridge deck and existing right-of-way limits along Manning Avenue from West Oakland Avenue to Bee Street.

Aboveground Survey

Investigation of the project area revealed three survey eligible aboveground sites. The first is site # 2414, the Manning Avenue Bridge over CSX Railroad. This 1940 bridge has been determined eligible by the South Carolina Historic Bridge Survey (Lichtenstein Consulting Engineers, 2007) due to its innovative design that employed built up, variable-depth beams. This design set a precedent for many of the longer span bridges that came following World War II.

The next resource is site # 2415, an unidentified commercial building at 241 Manning Avenue. This circa 1950 building is of a common type and lacks architectural distinction or any known association with a significant historic event or person. The final resource is site # 2416, an unidentified commercial building located at 224 Manning Avenue. This circa 1960 building is of a common type and lacks architectural distinction or any known association with a significant historic event or person.

The proposed project will alter the deck, lighting, and railings of the Manning Avenue Bridge (site # 2414). However, these alterations will not significantly alter the general appearance of the bridge nor will they affect the significant design aspects of the bridge which are beneath the bridge deck and are the chief reason for the bridge's NRHP eligibility. Additionally, the rehabilitation work done on the

bridge will work towards the preservation of the resource. For these reasons, it is recommended that the proposed project will have no adverse effect to the Manning Avenue Bridge.

Archaeological Survey

The project is within existing SCDOT right-of-way and work will not extend beyond the existing toe of fill, so all work is within previously surveyed and disturbed areas. It was therefore concluded that only GIS screening was needed for archaeological investigation of the proposed project. However, the project area was visited and observed to be in an area of dense urban development with disturbed parcels abutting the SCDOT right-of-way. Based on the GIS screening and site observations, it was concluded that the proposed project would not affect archaeological resources.

Conclusions/Recommendations

There are no previously or newly identified archaeological sites within the area of potential effect. Three aboveground resources are located within the project area. One of these, the Manning Avenue Bridge (site # 2414), will be altered as a result of the project. The alterations to this resource will not significantly diminish the qualities that contribute to the bridge's eligibility and it is therefore recommended that the project will have no adverse effect to historic resources. No additional investigations are recommended.

Prepared by: *David P. Kelly* **Date:** 1/9/2013

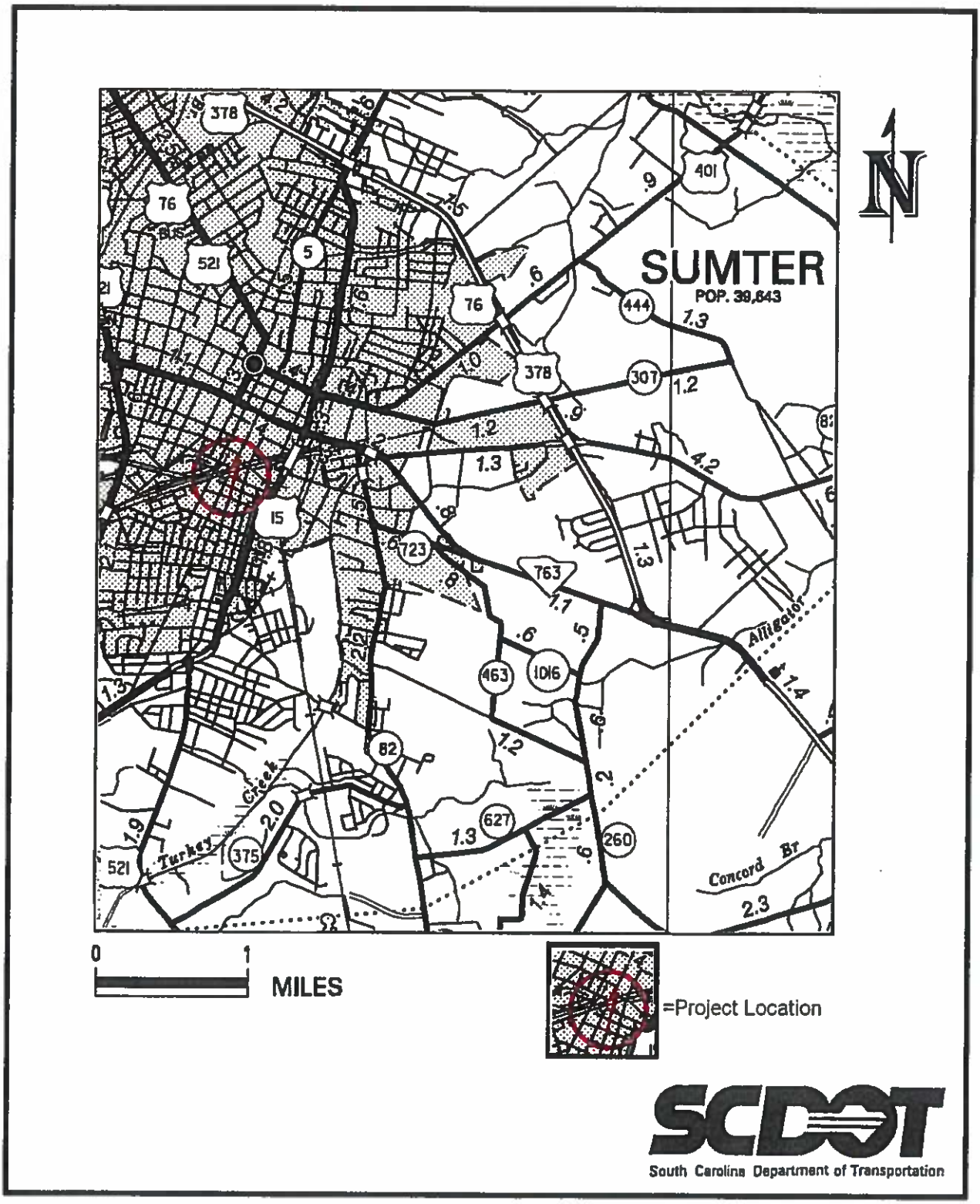


Figure 1. General Highway map showing the project location.

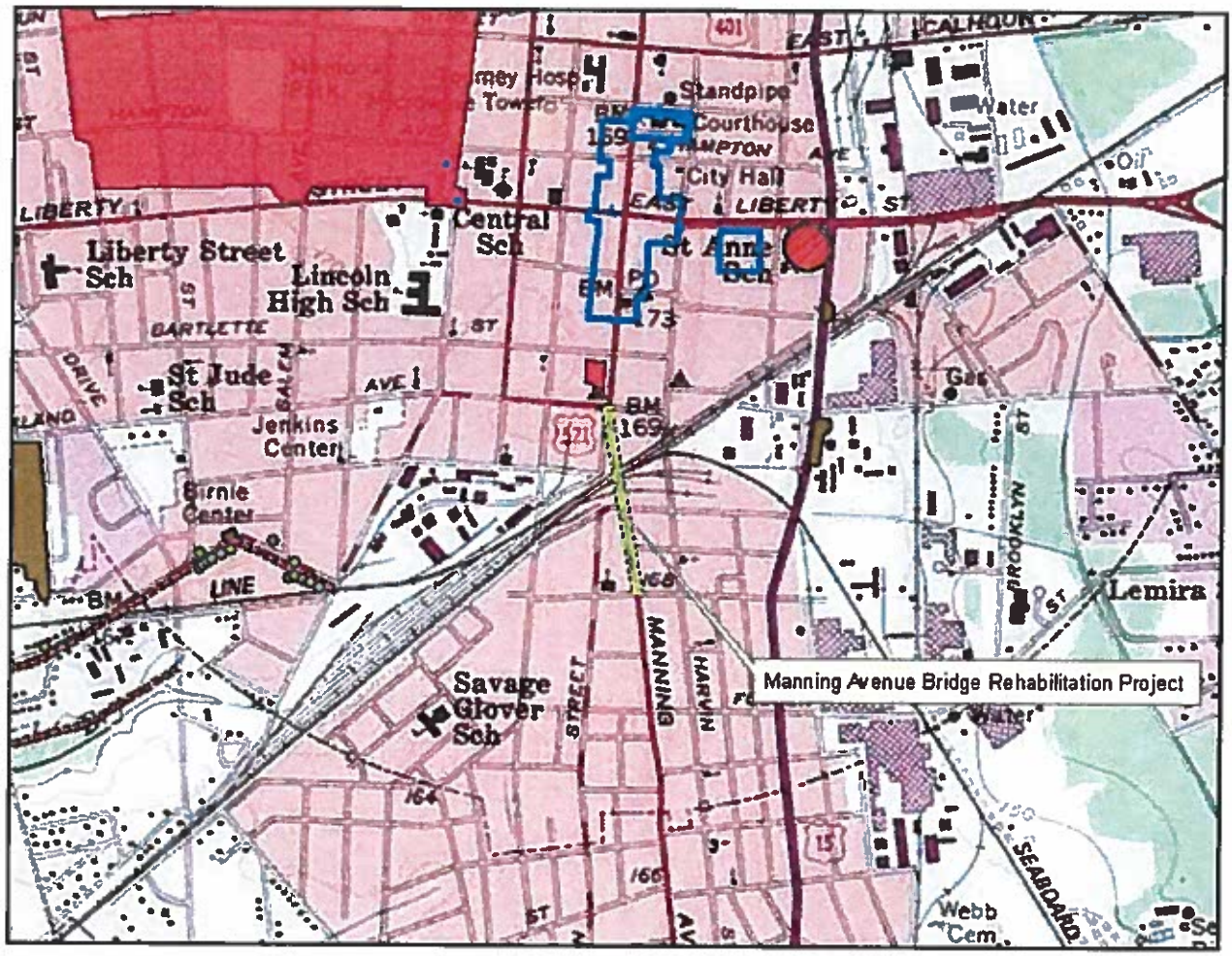


Figure 2. Section of USGS Sumter East topographic map showing the project area and adjacent resources.

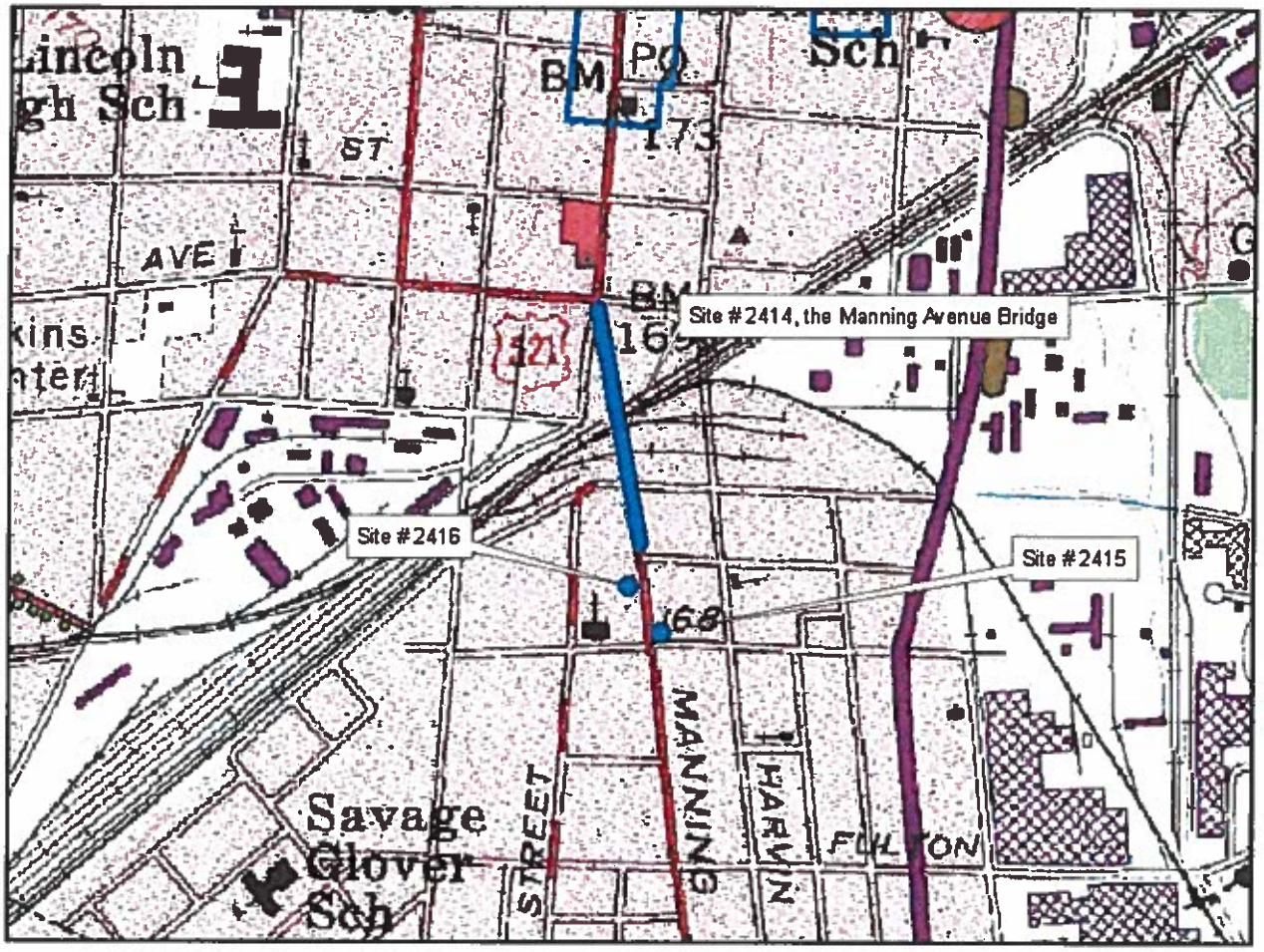


Figure 3. Section of USGS Sumter East topographic map showing the project area and newly surveyed resources.

Figure 4. Existing lane configuration, lighting, and sidewalks on the Manning Avenue Bridge (site # 2414)

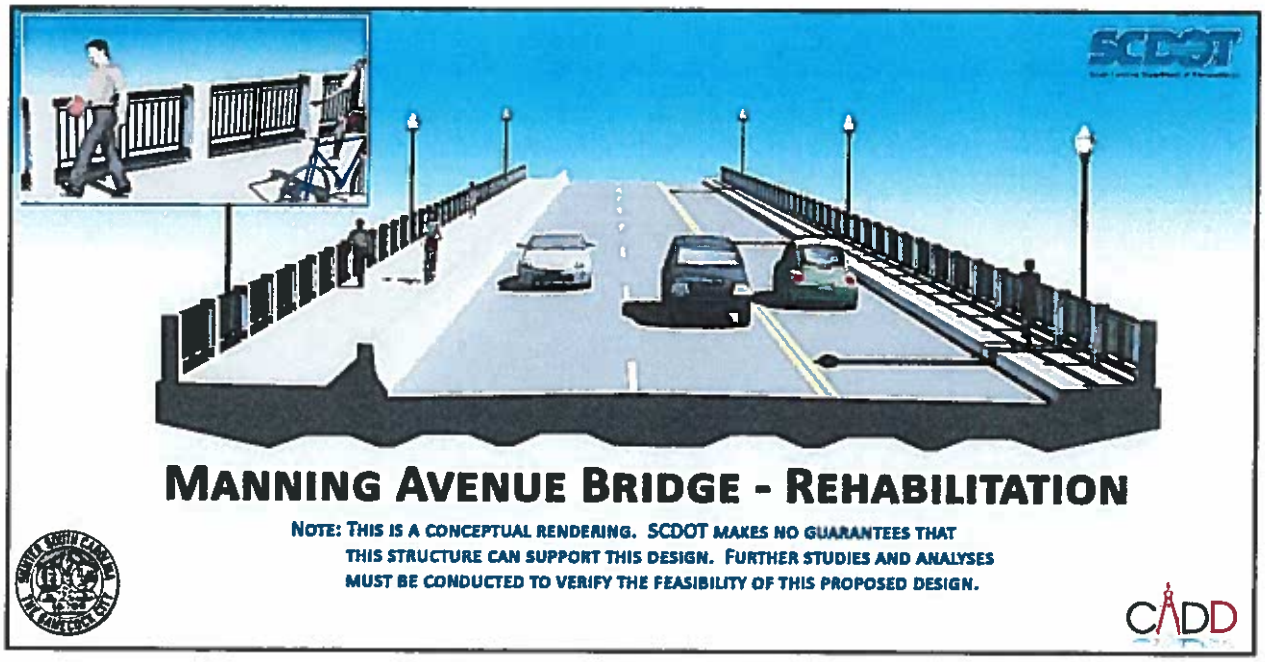


Figure 5. Proposed lane configuration, lighting, and sidewalks for the Manning Avenue Bridge (site # 2414)

Figure 6. Existing railing on the Manning Avenue Bridge (site # 2414)

4.2 Environmental Permitting

SCDOT determined that no environmental permits are needed for the proposed project. While the proposed improvements include less than one (1) acre of disturbed area, if the project is managed by SCDOT, SCDOT will comply with the National Pollutant Discharge Elimination System (NPDES) permit through SCDOT's general permit for operating a municipal storm sewer (MS4). If the City of Sumter manages the project, the City will have to determine the necessary steps for compliance with the NPDES permit. The permit determination form is attached to the CE-C document.

5. Traffic Operations Study

The northern end of the bridge terminates at the intersection of Manning Avenue (S-152), S. Main Street, and W. Oakland Avenue. Since the proposal includes reducing the number of lanes on the bridge from four (4) to three (3), SCDOT conducted a Traffic Operations Study to determine the appropriate geometry and traffic control for this intersection. According to the attached study, SCDOT concluded that the proposed project should include a dedicated northbound left turn lane at the foot of the bridge and that reducing to two (2) travel lanes along with the left turn lane will allow adequate traffic flow.

SRS ENGINEERING
Traffic, Transportation, & Parking Consultants

April 25, 2012

Mr. David Taylor, P.E.
CDM Smith
1301 Gervais Street, Suite 1600
Columbia, SC 29201

RE: Traffic Operations Study
Manning Avenue/S. Main Street at W. Oakland Avenue: Sumter, SC

Dear Mr. Taylor:

As requested SRS Engineering, LLC (SRS) has conducted a review of traffic operations for the intersection of Manning Avenue/S. Main Street at W. Oakland Avenue in downtown Sumter, SC with regards to proposed roadway modifications in the area.

The conclusions within this report will be used to determine the appropriate geometry and traffic control for the intersection assuming modifications to the Manning Avenue (US 521 Bridge) and proposed streetscape improvements for S. Main Street.

EXISTING CONDITIONS

The intersection of Manning Avenue/S. Main Street at W. Oakland Avenue is an existing unsignalized intersection where the Manning Avenue Bridge makes up the northbound approach. S. Main Street makes up the southbound approach and W. Oakland Avenue makes up the eastbound and westbound approaches. The northbound and southbound approaches (Manning Avenue & S. Main Street) each consist of two through lanes which serve left and right-turn movements from the respective inside and outside through lanes. Both W. Oakland Avenue approaches consist of one lane from which all movements are allowed. STOP sign control is currently provided for both W. Oakland Avenue approaches.

This intersection is somewhat unique in that on each side of Manning Avenue there are one-lane approaches that tie into the intersection. East of Manning Avenue a one-way northbound roadway ties in close proximity to the intersection and west of Manning Avenue a one-way southbound roadway is provided. These one-way segments are connected under the existing bridge.

Traffic Counts

Traffic volumes were collected for the intersection by Short Counts on Thursday March 15, 2012 for the AM & PM peak-hours for analysis purposes. The existing traffic volumes for the intersection are depicted in **Figure 1**, which follows this report. As shown in Figure 1, traffic inbound/northbound towards downtown Sumter is dominant during the AM peak hour and traffic is more balanced during the PM peak hour with a slight majority oriented away from downtown (southbound). Traffic volumes for the one-way segments on each side of Manning Avenue are relatively low during both peak hours.

FUTURE CONDITIONS

Roadway Improvements

There are proposed improvements for the Manning Avenue Bridge and for S. Main Street on each side of W. Oakland Avenue as discussed below:

Manning Avenue Bridge

South of W. Oakland Avenue, the Manning Avenue (US 521) Bridge is planned to be modified from its existing four-lane undivided cross-section, to a three-lane cross-section with an additional barrier-separated multi-use path. The travel lanes would consist of one lane in each direction separated by a striped center median. The barrier separated multi-use path will occur on the east side of the bridge and will be 8-ft. in width.

S. Main Street Streetscape

North of W. Oakland Avenue, a streetscape project is planned for S. Main Street that will convert the existing four-lane undivided cross-section to a two-lane cross-section with parallel parking.

A concept design for the intersection of Manning Avenue/S. Main Street at W. Oakland Avenue has been developed by SCDOT and is shown in **Figure 2**. As shown, the northbound and southbound approaches of Manning Avenue and S. Main Street both consist of a separate left-turn lane and a shared through/right lane while the W. Oakland Avenue approaches maintain one-lane approaches under STOP sign control. The one way roadways on each side of Manning are treated as they are today, but with improved/enhanced channelization, pavement markings and signage.

Additional Alternatives

As part of this study, additional alternatives have been reviewed and are listed below:

Single Lane Approaches for Manning Avenue/S. Main Street- Based on a review of existing traffic volumes it would be prudent to provide a separate left-turn lane for the northbound Manning Avenue approach exiting the bridge. While the left-turn movement is not particularly heavy (AM 18 vehicles; PM 34 vehicles), one left turn could create congestion for through movements coming off of the bridge due to proposed reduction in through capacity. Furthermore there is a noticeable downgrade coming off of the bridge that could pose a problem with rear-end accidents if a separate left-turn lane is not provided. In order to properly align with the Manning Avenue approach, the logical solution would be to provide a short left-turn lane for S. Main Street (as depicted in Figure 2). Without a left-turn lane, alignment through the intersection would be less than desirable.

No Left-Turns Southbound Main Street- Based on the collected traffic data, the southbound Main Street volume is very low; actually non-existent during the AM & PM peak hours. One option would be to provide a landscaped median separating through lanes on the southbound Main Street approach and prohibit the left-turn movement. The landscaped median would provide for proper alignment with the three lane approach coming off of the bridge.

TRAFFIC OPERATIONS

Analysis Methodology

A primary result of capacity analysis is the assignment of Level-of-Service (LOS) to traffic facilities under various traffic flow conditions. The concept of Level-of-Service is defined as a qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers. A Level-of-Service designation provides an index to the quality of traffic flow in terms of such factors as speed, travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety.

Six Levels-of-Service are defined for each type of facility (signalized and unsignalized intersections). They are given letter designations from A to F, with LOS A representing the best operating conditions and LOS F the worst.

Since the Level-of-Service of a traffic facility is a function of the traffic flows placed upon it, such a facility may operate at a wide range of Levels-of-Service depending on the time of day, day of week, or period of a year.

Analysis Results

Intersection capacity analyses have been completed for the intersection for the following scenarios:

1. Existing Traffic Volumes with Existing Geometry;
2. Existing Traffic Volumes with SCDOT Concept Design;
3. Existing Traffic Volumes with three lane approach for Manning Avenue and left-turns prohibited for S. Main Street.

The results of these analyses are provided in **Table 1**. It should be noted that to provide for a conservative analysis, the westbound approach of W. Oakland Avenue has been assumed to operate with two-way traffic as it does today. There is the potential that this approach may be changed to one-way in the eastbound direction. Intersection operations for all scenarios analyzed would be better if this were to occur as the eastbound approach would not have to conflict with opposing STOP controlled traffic.

Table 1
LEVEL-OF-SERVICE SUMMARY[1]
Manning Avenue/S. Main Street at W. Oakland Avenue: Sumter, SC

	Time	EXISTING CONDITIONS		SCDOT CONCEPT DESIGN		LEFT-TURN PROHIBITED	
Unsignalized Intersection	Period	Delay[a]	LOS[b]	Delay	LOS	Delay	LOS
Manning Avenue/S. Main Street at	AM	12.5	B	12.6	B	12.6	B
W. Oakland Avenue	PM	20.3	C	23.4	C	23.4	B

a. Delay in seconds-per-vehicle
b. LOS = Level-of-Service

GENERAL NOTES:

1. For unsignalized intersections, Delay is representative of the critical approach

As shown in Table 1, the intersection currently operates at acceptable service levels during both the AM & PM peak hours.

The analysis for the SCDOT concept design (Figure 2) generates similar results to that of Existing Conditions, with only slightly higher delays. The change in delays are due to the fact that two through lanes are no longer provided for Manning Avenue and S. Main Street; however through traffic volumes are at levels that two through lanes are not necessary.

A review of the scenario where left turns would be prohibited for the southbound Main Street approach produces identical results to that of the SCDOT concept design since the count yielded no left-turns for this movement.

Roadway Segment Capacity

A brief review of roadway segment capacity has been completed for Manning Avenue and S. Main Street due to the proposed reduction in through lanes with the proposed streetscape and restriping of the Manning Avenue Bridge. The estimated AADT (Average Annual Daily Traffic) for Main Street north of W. Oakland Avenue is approximately 7,700 vehicles-per-day (vpd) based on recently conducted peak-hour traffic counts. South of W. Oakland Avenue, the estimated AADT for the Manning Avenue Bridge is approximately 8,700 vpd. The estimated segment LOS for S. Main Street and Manning Avenue upon modifications will be LOS C based on SCDOT criteria. This indicates that the reduction in through lanes will still result in acceptable service levels on each side of W. Oakland Avenue.

CONCLUSIONS

This study has been conducted in order to review/confirm geometric needs related to proposed improvements at the intersection of Manning Avenue/S. Main Street at W. Oakland Avenue in downtown Sumter, SC. Improvements to the Manning Avenue (US 521) Bridge and streetscape improvements to S. Main Street will result in a reduction in through lanes for each segment approaching W. Oakland Avenue.

We believe that a northbound left-turn lane for movements from Manning Avenue onto W. Oakland Avenue should be provided similar to that shown on a recent SCDOT concept design. While the left-turn movement is not excessive, the reduction in through movement capacity could be compromised by left-turners queuing from a single through lane. Furthermore, the left-turn lane is needed for safety due to the downgrade for movements exiting the bridge. In the opposing direction, proper alignment of the S. Main Street approach will be needed. This can be accomplished by providing a short left-turn lane for S. Main Street, or by providing a center landscaped median and prohibiting southbound left-turn movements.

Segment analyses for Manning Avenue and S. Main Street reveal that both segments on each side of W. Oakland Avenue will operate acceptably when accounting for the cross-section reduction.

There is the possibility that the eastern leg of W. Oakland Avenue will be converted to one-way operations in the eastbound direction. The analyses within this report have assumed two-way operations in order to provide for a more conservative framework. If this segment is converted to one-way flow, operations would be better than the already acceptable operations presented in this report.

Should you have any questions, please feel free to contact me at 803-252-1799.

Regards,

SRS ENGINEERING, LLC

Mike Ridgeway, P.E.
Principal

Attachments

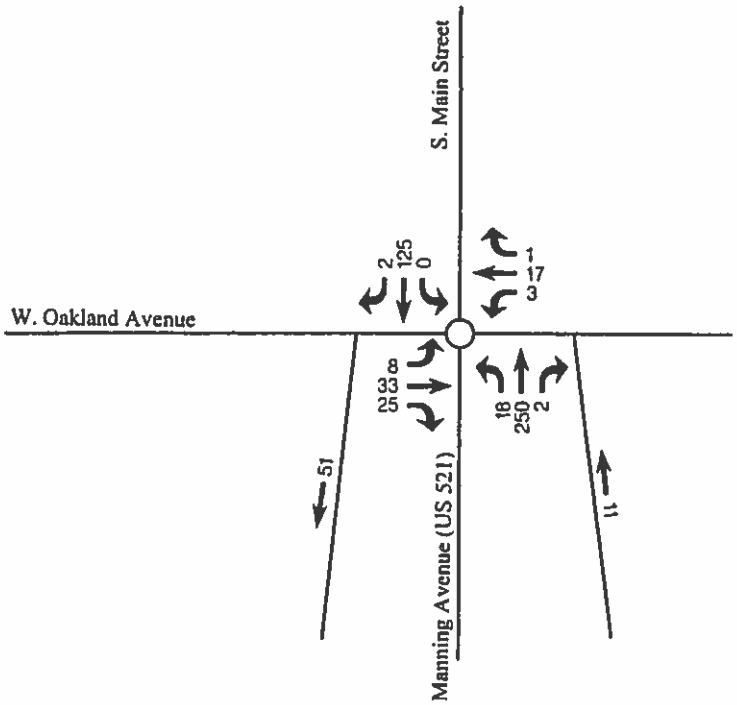
SOUTH CAROLINA
REGISTERED PROFESSIONAL ENGINEER
No. 31977
MICHAEL R. RIDGEWAY
4-25-12

APPENDIX

- Figures
- Count Data
- Capacity Analyses

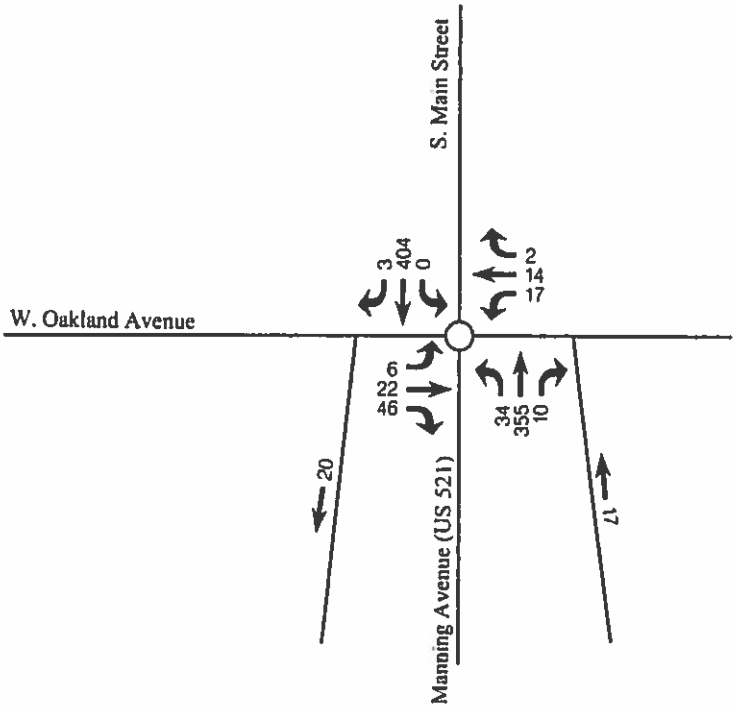
FIGURES

AM PEAK-HOUR



NOT TO SCALE

PM PEAK-HOUR



LEGEND

○ = Unsignalized Intersection

Figure 1

EXISTING 2012 TRAFFIC VOLUMES

S. Main Street/Manning Avenue at W. Oakland Avenue
Sumter, South Carolina

SRS ENGINEERING
Traffic, Transportation, & Parking Consultants

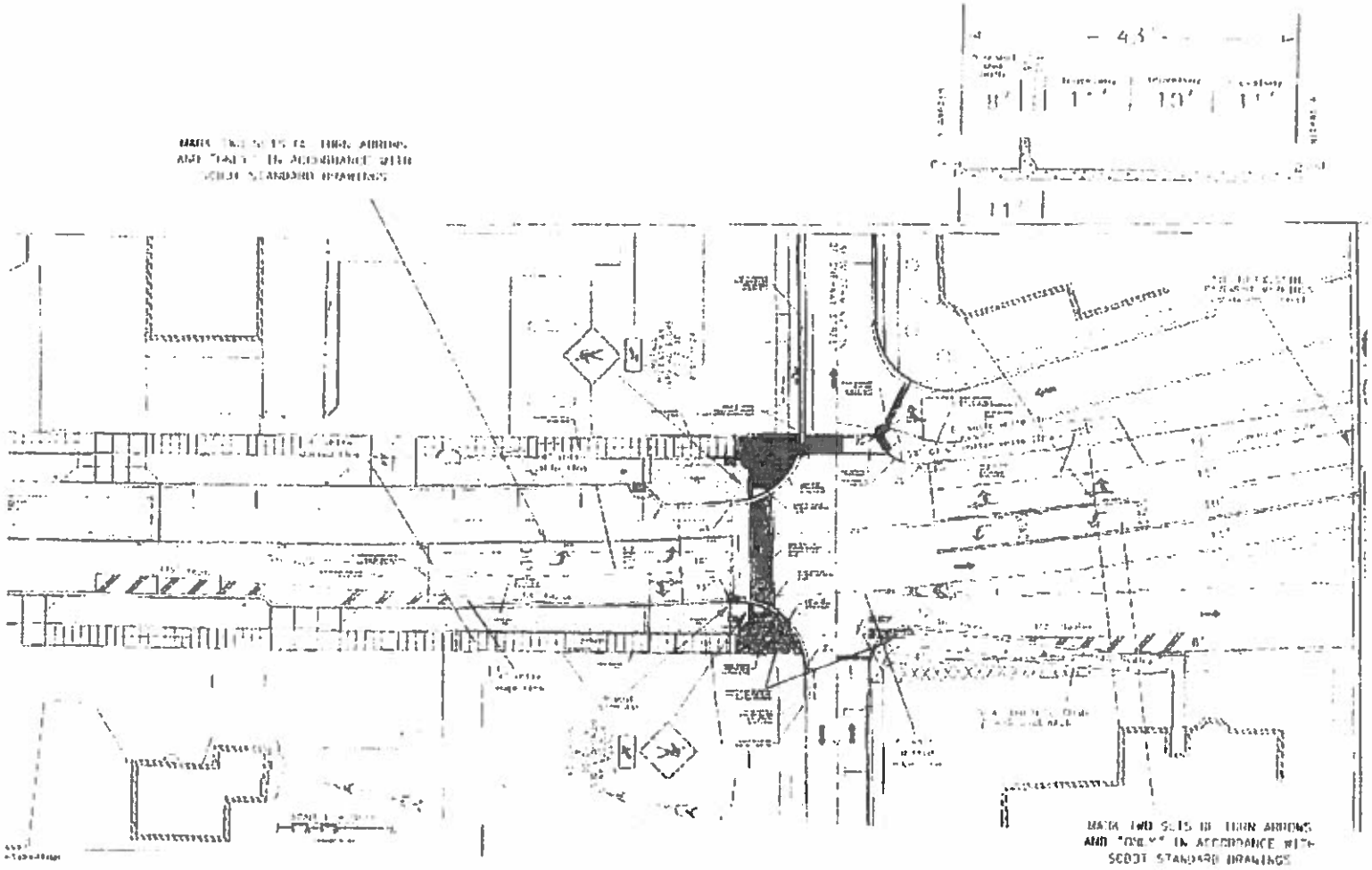


Figure 2

SCDOT CONCEPT DESIGN

Manning Ave./S. Main St. at W. Oakland Ave.

Sumter, SC

SRS ENGINEERING

Traffic, Transportation, & Parking Consultants

COUNT DATA

Short Counts

735 Maryland St.
Columbia, SC 29201
You Can Count On Us!

File Name : Main Street at Oakland Avenue
Site Code : 44444444
Start Date : 3/15/2012
Page No : 1

Groups Printed- Unshifted - Bank 1 - Bank 2

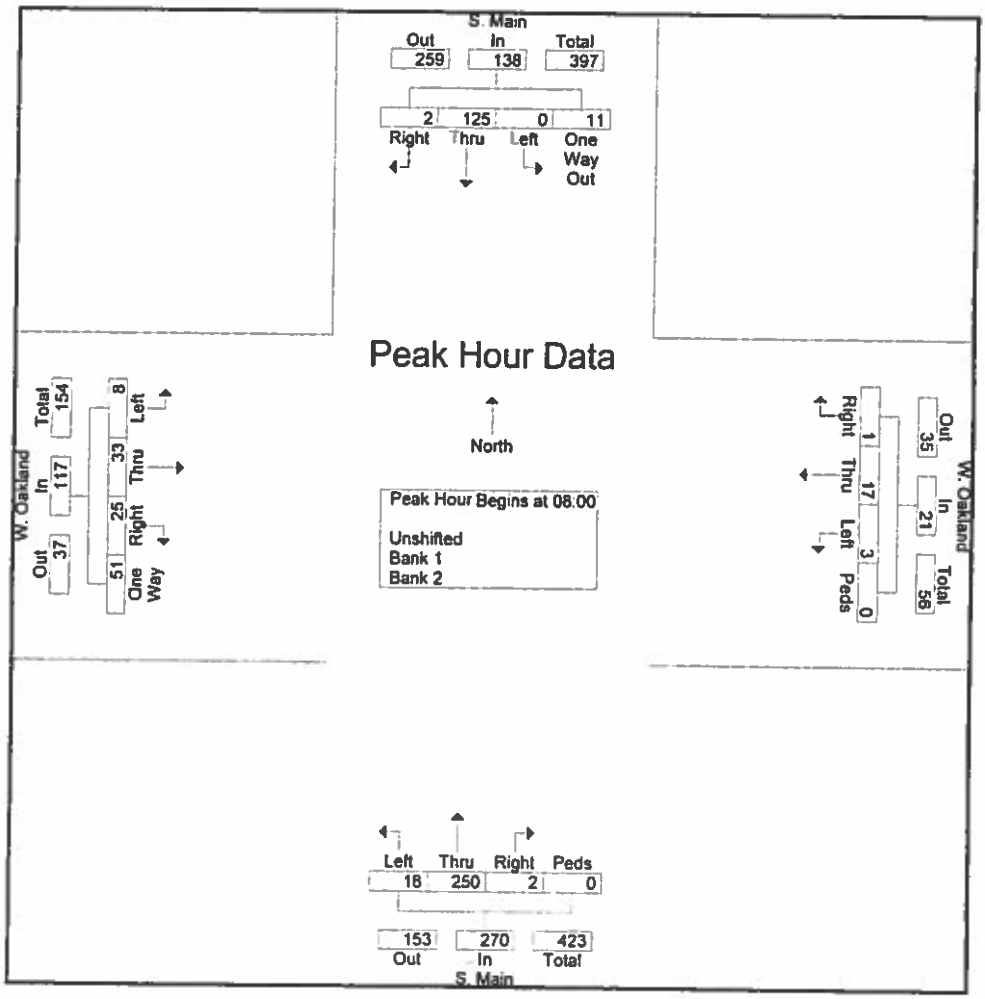
	S. Main Southbound				W. Oakland Westbound				S. Main Northbound				W. Oakland Eastbound				
Start Time	Left	Thru	Right	One Way Out	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	One Way In	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
07:00	0	16	1	7	0	2	0	0	4	39	1	0	0	6	5	7	88
07:15	1	18	0	3	1	7	0	0	5	22	1	0	0	3	6	7	74
07:30	0	24	1	2	11	2	0	0	9	72	4	0	2	8	7	5	147
07:45	0	25	0	1	0	2	0	0	0	43	1	0	0	4	3	6	85
Total	1	83	2	13	12	13	0	0	18	176	7	0	2	21	21	25	394
08:00	0	38	0	1	0	4	1	0	4	53	0	0	2	8	5	13	129
08:15	0	27	0	4	0	6	0	0	5	83	1	0	3	9	6	15	159
08:30	0	38	2	4	1	5	0	0	3	54	1	0	1	10	7	12	138
08:45	0	22	0	2	2	2	0	0	6	60	0	0	2	6	7	11	120
Total	0	125	2	11	3	17	1	0	18	250	2	0	8	33	25	51	546
16:00	0	72	1	6	0	8	0	0	13	62	2	0	4	4	5	11	188
16:15	0	85	4	3	1	7	0	0	5	64	1	0	0	4	8	10	192
16:30	1	59	1	3	3	5	1	0	11	77	1	0	2	9	15	5	193
16:45	0	109	0	3	17	1	0	0	8	137	5	0	1	5	23	9	318
Total	1	325	6	15	21	21	1	0	37	340	9	0	7	22	51	35	891
17:00	0	105	2	3	0	5	1	0	9	71	3	0	2	10	12	6	229
17:15	0	81	1	8	0	6	0	0	12	81	2	0	2	4	5	3	205
17:30	0	109	0	3	0	2	1	0	5	66	0	0	1	3	6	2	198
17:45	0	65	0	3	1	4	3	0	1	79	0	0	2	3	10	4	175
Total	0	360	3	17	1	17	5	0	27	297	5	0	7	20	33	15	807
Grand Total	2	893	13	56	37	68	7	0	100	1063	23	0	24	96	130	126	2638
Apprch %	0.2	92.6	1.3	5.8	33	60.7	6.2	0	8.4	89.6	1.9	0	6.4	25.5	34.6	33.5	
Total %	0.1	33.9	0.5	2.1	1.4	2.6	0.3	0	3.8	40.3	0.9	0	0.9	3.6	4.9	4.8	
Unshifted	2	893	13	56	37	68	7	0	100	1063	23	0	24	96	130	126	2638
% Unshifted	100	100	100	100	100	100	100	0	100	100	100	0	100	100	100	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Short Counts

735 Maryland St.
Columbia, SC 29201
You Can Count On Us!

File Name : Main Street at Oakland Avenue
Site Code : 44444444
Start Date : 3/15/2012
Page No : 2

	S. Main Southbound					W. Oakland Westbound					S. Main Northbound					W. Oakland Eastbound					
Start Time	Left	Thru	Right	One Way Out	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	One Way In	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00																					
08:00	0	38	0	1	39	0	4	1													
08:15	0	27	0	4	31	0	6	0	0	6	5	83	1	0	89	3	9	6	15	33	159
08:30	0	38	2		44	1	5	0	0	6	3	54	1	0	58	1	10	7			
08:45	0	22	0	2	24	2	2	0	0	4	6	60	0	0	66	2	6	7	11	26	120
Total Volume	0	125	2	11	138	3	17	1	0	21	18	250	2	0	270	8	33	25	51	117	546
% App. Total	0	90.6	1.4	8		14.3	81	4.8	0		6.7	92.6	0.7	0		6.8	28.2	21.4	43.6		
PHF	.000	.822	.250	.688	.784	.375	.708	.250	.000	.875	.750	.753	.500	.000	.758	.667	.825	.893	.850	.886	.858

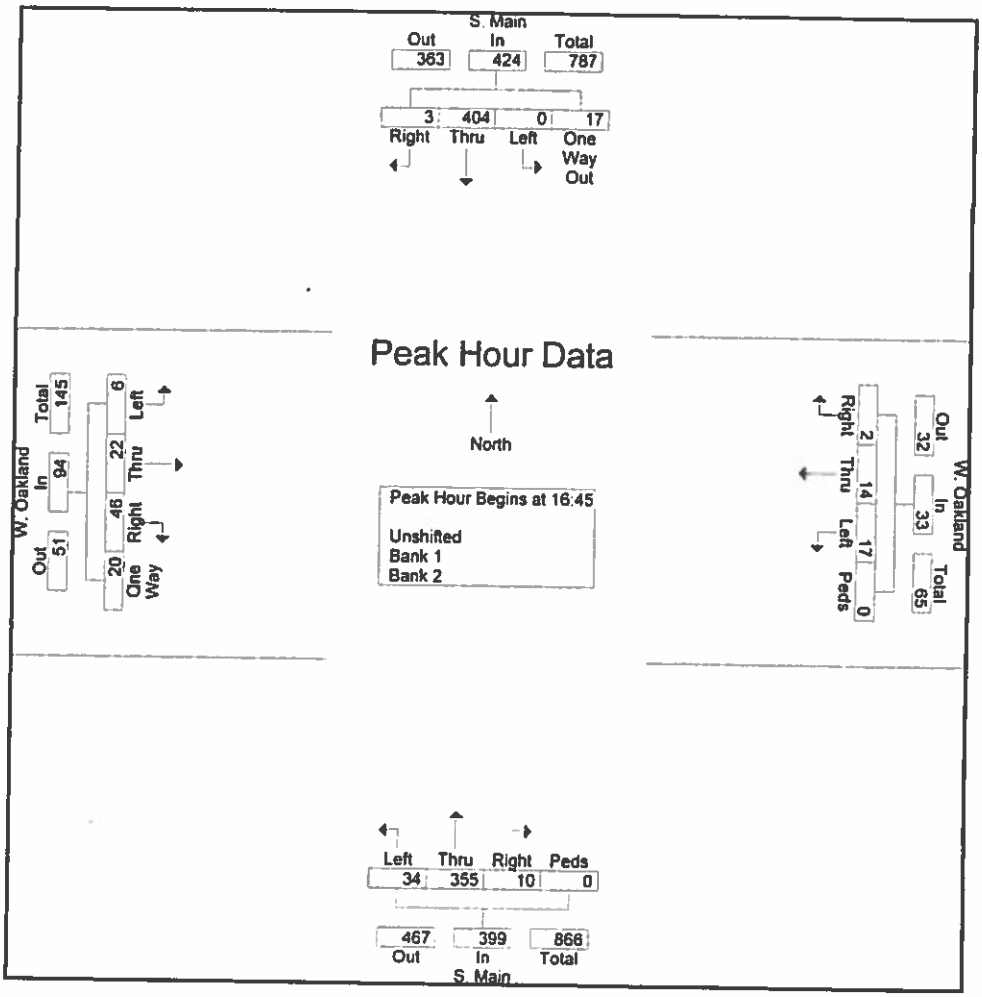


Short Counts

735 Maryland St.
Columbia, SC 29201
You Can Count On Us.

File Name : Main Street at Oakland Avenue
Site Code : 44444444
Start Date : 3/15/2012
Page No : 3

	S. Main Southbound					W. Oakland Westbound					S. Main Northbound					W. Oakland Eastbound					
Start Time	Left	Thru	Right	One Way Out	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	One Way In	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:45																					
16:45	0	109	0	3	112	17	1	0	0	18	8	137	5	0	150	1	5	23	9	38	318
17:00	0	105	2					1								2	10	12	6	30	229
17:15	0	81	1	8			6				12										
17:30	0	109	0	3	112	0	2	1	0	3	5	66	0	0	71	1	3	6	2	12	198
Total Volume	0	404	3	17	424	17	14	2	0	33	34	355	10	0	399	6	22	46	20	94	950
% App. Total	0	95.3	0.7	4		51.5	42.4	6.1	0		8.5	89	2.5	0		6.4	23.4	48.9	21.3		
PHF	.000	.927	.375	.531	.946	.250	.583	.500	.000	.458	.708	.648	.500	.000	.665	.750	.550	.500	.556	.618	.747



CAPACITY ANALYSES

Existing AM
3: Oakland Avenue & Manning Ave.

4/25/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	8	33	25	3	17	1	18	250	2	0	125	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	36	27	3	18	1	20	272	2	0	136	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	322	450	69	425	450	137	138			274		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	322	450	69	425	450	137	138			274		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	93	97	99	96	100	99			100		
cM capacity (veh/h)	583	496	980	467	496	886	1443			1286		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	72	23	155	138	68	70
Volume Left	9	3	20	0	0	0
Volume Right	27	1	0	2	0	2
cSH	624	502	1443	1700	1286	1700
Volume to Capacity	0.11	0.05	0.01	0.08	0.00	0.04
Queue Length (ft)	10	4	1	0	0	0
Control Delay (s)	11.5	12.5	1.0	0.0	0.0	0.0
Lane LOS	B	B	A			
Approach Delay (s)	11.5	12.5	0.6		0.0	
Approach LOS	B	B				

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	25.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	6	22	46	17	14	2	34	355	10	0	404	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	24	50	18	15	2	37	386	11	0	439	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	717	911	221	747	908	198	442			397		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	717	911	221	747	908	198	442			397		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	91	94	93	94	100	97			100		
cM capacity (veh/h)	294	263	783	256	265	809	1114			1158		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	80	36	230	204	220	223
Volume Left	7	18	37	0	0	0
Volume Right	50	2	0	11	0	3
cSH	455	271	1114	1700	1158	1700
Volume to Capacity	0.18	0.13	0.03	0.12	0.00	0.13
Queue Length (ft)	16	11	3	0	0	0
Control Delay (s)	14.6	20.3	1.6	0.0	0.0	0.0
Lane LOS	B	C	A			
Approach Delay (s)	14.6	20.3	0.8		0.0	
Approach LOS	B	C				

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	8	33	25	3	17	1	18	250	2	0	125	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	36	27	3	18	1	20	272	2	0	136	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	458	450	137	493	450	273	138			274		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	458	450	137	493	450	273	138			274		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	93	97	99	96	100	99			100		
cM capacity (veh/h)	493	498	912	441	498	766	1446			1289		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	72	23	20	274	0	138
Volume Left	9	3	20	0	0	0
Volume Right	27	1	0	2	0	2
cSH	600	497	1446	1700	1700	1700
Volume to Capacity	0.12	0.05	0.01	0.16	0.00	0.08
Queue Length (ft)	10	4	1	0	0	0
Control Delay (s)	11.8	12.6	7.5	0.0	0.0	0.0
Lane LOS	B	B	A			
Approach Delay (s)	11.8	12.6	0.5		0.0	
Approach LOS	B	B				

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	26.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	6	22	46	17	14	2	34	355	10	0	404	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	24	50	18	15	2	37	386	11	0	439	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	910	911	441	966	908	391	442			397		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	910	911	441	966	908	391	442			397		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	91	92	91	94	100	97			100		
cM capacity (veh/h)	237	265	616	195	266	657	1118			1162		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	80	36	37	397	0	442
Volume Left	7	18	37	0	0	0
Volume Right	50	2	0	11	0	3
cSH	404	231	1118	1700	1700	1700
Volume to Capacity	0.20	0.16	0.03	0.23	0.00	0.26
Queue Length (ft)	18	13	3	0	0	0
Control Delay (s)	16.1	23.4	8.3	0.0	0.0	0.0
Lane LOS	C	C	A			
Approach Delay (s)	16.1	23.4	0.7		0.0	
Approach LOS	C	C				

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	41.5%	ICU Level of Service	A
Analysis Period (min)	15		

NO LEFT TURN SB AM

3: Oakland Avenue & Manning Ave.

4/25/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	8	33	25	3	17	1	18	250	2	0	125	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	36	27	3	18	1	20	272	2	0	136	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	458	450	137	494	450	273	138			274		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	458	450	137	494	450	273	138			274		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	93	97	99	96	100	99			100		
cM capacity (veh/h)	493	498	912	441	498	766	1446			1289		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1							
Volume Total	72	23	20	274	138							
Volume Left	9	3	20	0	0							
Volume Right	27	1	0	2	2							
cSH	600	497	1446	1700	1700							
Volume to Capacity	0.12	0.05	0.01	0.16	0.08							
Queue Length (ft)	10	4	1	0	0							
Control Delay (s)	11.8	12.6	7.5	0.0	0.0							
Lane LOS	B	B	A									
Approach Delay (s)	11.8	12.6	0.5		0.0							
Approach LOS	B	B										

Intersection Summary				
Average Delay	2.4			
Intersection Capacity Utilization	24.8%	ICU Level of Service	A	
Analysis Period (min)	15			

NO LEFT TURN SB PM

8: Oakland Avenue & Manning Ave. 4/25/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	6	22	46	17	14	2	34	355	10	0	404	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	24	50	18	15	2	37	386	11	0	439	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	910	911	441	968	908	391	442			397		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	910	911	441	968	908	391	442			397		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	91	92	91	94	100	97			100		
cM capacity (veh/h)	237	265	616	195	266	657	1118			1162		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	80	36	37	397	442
Volume Left	7	18	37	0	0
Volume Right	50	2	0	11	3
cSH	404	231	1118	1700	1700
Volume to Capacity	0.20	0.16	0.03	0.23	0.26
Queue Length (ft)	18	14	3	0	0
Control Delay (s)	16.1	23.4	8.3	0.0	0.0
Lane LOS	C	C	A		
Approach Delay (s)	16.1	23.4	0.7		0.0
Approach LOS	C	C			

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	41.5%	ICU Level of Service	A
Analysis Period (min)	15		

6. Utility Coordination

Utility coordination is underway, and introduction letters are attached. The Final Utility Report which includes proposed plans for utility relocations will be attached at a later date.

South Carolina
Department of Transportation

April 29, 2013

Mr. Ron Atkinson, OSP Engineer
Frontier
400 S. Pike Road West
Sumter, SC 29150

RE: File 43.040012 – Project No. SUMT– PIN 40012-PE01– Manning Avenue Improvements (S-152) – Sumter County

Dear Mr. Atkinson:

The South Carolina Department of Transportation is currently under contract with CDM Smith to perform design services relating to the above-referenced project. As part of these design efforts, subsurface utility engineering and utility coordination will be performed.

The purpose of this letter is to notify you that CDM Smith may be in contact with you to gather utility data necessary for this project. We ask that you cooperate with them concerning this request such that utility conflicts and concerns can be identified early in the project schedule.

If you should have any questions concerning this, please feel free to contact me.

Sincerely,

Mark C. Attaway

Mark C. Attaway
State Utilities Engineer

MCA/krc

ec: Cedric Keitt, SCDOT Utility Engineer
Vanetta Jackson, SCDOT Utilities Coordinator, District 1
Jeffrey Wilkes, SCDOT Resident Construction Engineer
Tyke Redfearn, SCDOT Assistant Program Manager
Bener Amado, SCDOT Program Manager
File: UM/MCA

Post Office Box 191
Columbia, South Carolina 29202-0191

Phone (803) 737-2314
TTY (803) 737-3870

AN EQUAL OPPORTUNITY
AFFIRMATIVE ACTION EMPLOYER

South Carolina
Department of Transportation

April 29, 2013

Ms. Connie B. Doar
Highway Coordinator
South Carolina Electric & Gas Company
MC:J29
220 Operations Way
Cayce, South Carolina 29033

RE: File 43.040012 – Project No. SUMT– PIN 40012-PE01– Manning Avenue Improvements (S-152) – Sumter County

Dear Mrs. Doar:

The South Carolina Department of Transportation is currently under contract with CDM Smith to perform design services relating to the above-referenced project. As part of these design efforts, subsurface utility engineering and utility coordination will be performed.

The purpose of this letter is to notify you that CDM Smith may be in contact with you to gather utility data necessary for this project. We ask that you cooperate with them concerning this request such that utility conflicts and concerns can be identified early in the project schedule.

If you should have any questions concerning this, please feel free to contact me.

Sincerely,

Mark C. Attaway

Mark C. Attaway
State Utilities Engineer

MCA/krc

ec: Cedric Keitt, SCDOT Utility Engineer
Vanetta Jackson, SCDOT Utilities Coordinator, District 1
Jeffrey Wilkes, SCDOT Resident Construction Engineer
Tyke Redfearn, SCDOT Assistant Program Manager
Bener Amado, SCDOT Program Manager
File: UM/MCA

South Carolina
Department of Transportation

April 29, 2013

Mr. Barry G. Odom
City of Sumter
P.O. Box 1449
303 E. Liberty Street
Sumter, SC 29151

RE: File 43.040012 – Project No. SUMT– PIN 40012-PE01– Manning Avenue Improvements (S-152) – Sumter County

Dear Mr. Odom:

The South Carolina Department of Transportation is currently under contract with CDM Smith to perform design services relating to the above-referenced project. As part of these design efforts, subsurface utility engineering and utility coordination will be performed.

The purpose of this letter is to notify you that CDM Smith may be in contact with you to gather utility data necessary for this project. We ask that you cooperate with them concerning this request such that utility conflicts and concerns can be identified early in the project schedule.

If you should have any questions concerning this, please feel free to contact me.

Sincerely,

Mark C. Attaway

Mark C. Attaway
State Utilities Engineer

MCA/krc

ec: Cedric Keitt, SCDOT Utility Engineer
Vanetta Jackson, SCDOT Utilities Coordinator, District 1
Jeffrey Wilkes, SCDOT Resident Construction Engineer
Tyke Redfearn, SCDOT Assistant Program Manager
Bener Amado, SCDOT Program Manager
File: UM/MCA

Post Office Box 191
Columbia, South Carolina 29202-0191

Phone (803) 737-2314
FAX (803) 737-3870

AN EQUAL OPPORTUNITY
AFFIRMATIVE ACTION EMPLOYER

South Carolina
Department of Transportation

April 29, 2013

Ms. Shelia Talton
Senior Highway Coordinator
Progress Energy Carolinas, Inc.
1929 West Chatham Street
Cary, North Carolina 27511

RE: File 43.040012 – Project No. SUMT– PIN 40012-PE01– Manning Avenue Improvements (S-152) – Sumter County

Dear Ms. Talton:

The South Carolina Department of Transportation is currently under contract with CDM Smith to perform design services relating to the above-referenced project. As part of these design efforts, subsurface utility engineering and utility coordination will be performed.

The purpose of this letter is to notify you that CDM Smith may be in contact with you to gather utility data necessary for this project. We ask that you cooperate with them concerning this request such that utility conflicts and concerns can be identified early in the project schedule.

If you should have any questions concerning this, please feel free to contact me.

Sincerely,

Mark C. Attaway

Mark C. Attaway
State Utilities Engineer

MCA/krc

ec: Cedric Keitt, SCDOT Utility Engineer
Vanetta Jackson, SCDOT Utilities Coordinator, District 1
Jeffrey Wilkes, SCDOT Resident Construction Engineer
Tyke Redfearn, SCDOT Assistant Program Manager
Bener Amado, SCDOT Program Manager
File: UM/MCA

South Carolina
Department of Transportation

April 29, 2013

Mr. Micah Tyson
Verizon (MCI)
124 S. Assembly Street
Columbia, SC 29501

RE: File 43.040012 – Project No. SUMT– PIN 40012-PE01– Manning Avenue Improvements (S-152) – Sumter County

Dear Mr. Tyson:

The South Carolina Department of Transportation is currently under contract with CDM Smith to perform design services relating to the above-referenced project. As part of these design efforts, subsurface utility engineering and utility coordination will be performed.

The purpose of this letter is to notify you that CDM Smith may be in contact with you to gather utility data necessary for this project. We ask that you cooperate with them concerning this request such that utility conflicts and concerns can be identified early in the project schedule.

If you should have any questions concerning this, please feel free to contact me.

Sincerely,

Mark C. Attaway

Mark C. Attaway
State Utilities Engineer

MCA/krc

cc: Cedric Keitt, SCDOT Utility Engineer
Vanetta Jackson, SCDOT Utilities Coordinator, District 1
Jeffrey Wilkes, SCDOT Resident Construction Engineer
Tyke Redfearn, SCDOT Assistant Program Manager
Bener Amado, SCDOT Program Manager
File: UM/MCA

7. Financial Status Update & Construction Cost Opinion

The Financial Status Update provides a summary of the budget and expenditures for preliminary engineering activities completed thus far. The design engineer prepared the Construction Cost Opinion by applying the latest unit cost data to the calculated plan quantities. SCDOT applies 20% for construction contingencies and construction engineering and inspection (CEI). The Grand Total Estimate for construction is approximately **$2.1 Million**. The Financial Status Update and the Construction Cost Opinion are enclosed hereto.

Financial Report

FPA for Engineering Services
related to
Rehabilitation of **Manning Ave (S-152) Bridge**
in Sumter County

June 20, 2013

WSA-CDM Smith Task Description	Contracted Budget	Expenditures (a/o 3/16/13)	Percent Complete	Budget Remaining
Project Management	$12,364.46	$9,924.17	80.3%	$2,440.29
Preliminary Bridge Design & Plans	$18,591.37	$19,208.43	103.3%	-$617.06
Field Surveys	$14,104.46	$8,006.81	56.8%	$6,097.65
SUE Survey	$15,716.53	$11,144.88	70.9%	$4,571.65
Environmental Document (CE A)	$3,387.20	$824.93	24.4%	$2,562.27
R/W Plans & Prelim Roadway Des	$20,417.44	$45,067.47	220.7%	-$24,650.03
Drainage Design Study	$17,779.94	$6,304.44	35.5%	$11,475.50
Utility Relocation Coordination	$26,644.59	$22,659.05	85.0%	$3,985.54
Final Bridge Plans & Specs	$34,442.73	$40,474.32	117.5%	-$6,031.59
Final Roadway Plans & Specs	$15,303.06	$12,437.67	81.3%	$2,865.39
WSA Subtotal	**$178,751.78**	**$176,052.17**	**98.5%**	**$2,699.61**
SCDOT Oversight & QA/QC Review *	$21,248.22	$4,532.18	21.3%	$16,716.04
Project Totals	**$200,000.00**	**$180,584.35**	**90.3%**	**$19,415.65**

*** - SCDOT Expenditures as/of 5/1/2013**

Construction Cost Opinion
for
Rehabilitation of Manning Ave (S-152) Bridge
in Sumter County

June 20, 2013

Bridge Construction Costs:

Item Number	Description	Unit	Quantity	Price	Amount
1031000	MOBILIZATION	LS	1	$40,000.00	$40,000.00
1071401	CSX RR INSURANCE & FLAGGING CSX	LS	1	$75,000.00	$75,000.00
7011425	PARTIAL DEP.PATCH./EXIST.DECK	SY	20	$400.00	$8,000.00
7013400	SPALL REPAIR	SF	310	$175.00	$54,250.00
7013445	EPOXY CRACK INJECTION	LS	1	$25,000.00	$25,000.00
7053000	STEEL BRIDGE RAILING	LF	1450	$150.00	$217,500.00
7091100	STRUCTURAL STEEL	LS	1	$1,500.00	$1,500.00
7091395	ENVIR. AND WORKER PROTECTION	LS	1	$95,000.00	$95,000.00
7101000	CLEANING/PAINT EX.STRUC.STEEL	LS	1	$800,000.00	$800,000.00
7232310	DECK JOINT STRIP SEAL	LF	102	$300.00	$30,600.00
7261127	RESEAL DECK EXPANSION JOINT	LF	800	$35.00	$28,000.00
7011410	CONC.FOR STRC.CL=4000(LT.WT)	CY	134	$200.00	$26,800.00
7051000	CONC. BRIDGE BARRIER PARAPET	LF	725	$55.00	$39,875.00
8063300	72" CHAIN LINK FENCE	LF	1450	$20.00	$29,000.00

Bridge Items Total	$1,470,525.00
Roadway Total (from next page)	$274,160.00
Project Subtotal	$1,744,685.00
Contingency & CEI (20%)	$348,937.00
Project Grand Total	$2,093,622.00

Project: Manning Avenue (S-152) Improvements
Project No.: PCN 40012
By: J. Smith
Date: 4/10/2013

COST ESTIMATE - Manning Avenue Improvements

ROADWAY ITEMS:

ITEM NO.	BID ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1031000	MOBILIZATION	LS	$13,055	1	$13,055
1050800	CONST. STAKES, LINES & GRADES	EACH	$10,000	1	$10,000
1071000	TRAFFIC CONTROL	LS	$25,000	1	$25,000
2012001	CLEAR.& GRUB. WITHIN RDWY.	ACRE	$5,000	0.5	$2,500
2024100	REM. & DISP. OF EXISTING CURB	LF	$6	300	$1,800
2031000	UNCLASSIFIED EXCAVATION	CY	$12	250	$3,000
2033000	BORROW EXCAVATION	CY	$20	500	$10,000
2081001	FINE GRADING	SY	$5	275	$1,375
3069900	MAINTENANCE STONE	TON	$50	25	$1,250
3100320	H/M ASPH. BASE CR.-TYPE B	TON	$100	45	$4,500
4011004	LIQUID ASPHALT BINDER PG64-22	TON	$800	24	$19,200
4013150	MILL. EXIST. ASPH. PVMT. 1.5"	SY	$15	320	$4,800
4020320	H/M ASPH.INTERMEDIATE CR.TYPE B	TON	$110	35	$3,850
4030320	H/M ASPH.SURF.CR. TYPE B	TON	$120	320	$38,400
6020005	PERM.CONST.SIGNS(GRND.MNTD)	SF	$35	200	$7,000
6040010	4" WHITE SOLID LINES (PVT. EDGE LINES)-FAST DRY PAINT	LF	$0	220	$55
6040105	4" YELLOW BROKEN LINES(GAPS EXC) - FAST DRY PAINT	LF	$1	100	$75
6040110	4"YELLOW SOLID LINE(PVT.EDGE&NO PASSING ZONE)-FAST DRY PAINT	LF	$0	5200	$1,300
6051100	PERM.YEL.PAV.MARK BI-DIR 4"X4"	EACH	$18	130	$2,340
6072021	QUADGUARD(2BAY-24"WIDE)WITH TENSION STRUT BACKUP	EACH	$5,000	2	$10,000
6250005	4" WHITE BROKEN LINES -(GAPS EXCLUDED)-FAST DRY PAINT	LF	$1	300	$225
6250012	6" WHITE SOLID LINES (PVT. EDGE LINES)-FAST DRY PAINT	LF	$0	2300	$575
6250015	8"WHITE SOLID LINES(CROSSWALK&CHANNELIZATION)FAST DRY PAINT	LF	$1	200	$100
6250025	24" WHITE SOLID LINES (STOP/DIAGONAL LINES)-FAST DRY PAINT	LF	$4	200	$800
6250030	WHITE SINGLE ARROW (LEFT, STRAIGHT, RIGHT)-FAST DRY PAINT	EA	$250	4	$1,000
6250031	WHITE SINGLE BIKE LANE ARROW (LT, STRAIGHT, RT)-FAST DRY PAI	EA	$300	16	$4,800
6250035	WHITE WORD MESSAGE "ONLY"-FAST DRY PAINT	EA	$500	4	$2,000
6250040	WHITE COMBINATION ARROW(STR.& RT.OR STR.& LT.)FAST DRY PAINT	EA	$250	2	$500
6250055	BIKE LANE SYMBOL - FAST DRY PAINT	EA	$500	16	$8,000
6271005	4" WHITE BROKEN LINES(GAPS EXCL.)THERMOPLASTIC- 90 MIL.	LF	$2	300	$600
6271010	4" WHITE SOLID LINES (PVT. EDGE LINES) THERMO - 90 MIL.	LF	$2	220	$440
6271012	6" WHITE SOLID LINES (PVT. EDGE LINES) THERMO - 90 MIL.	LF	$3	2300	$6,900
6271015	8" WHITE SOLID LINES THERMOPLASTIC - 125 MIL.	LF	$4	200	$800
6271025	24" WHITE SOLID LINES (STOP/DIAG LINES)-THERMO.-125 MIL.	LF	$9	200	$1,800
6271030	WHITE SINGLE ARROWS (LT, STRGHT, RT) THERMO.-125 MIL.	EA	$1,000	4	$4,000
6271035	WHITE WORD MESSAGE "ONLY" -THERMOPLASTIC - 125 MIL.	EA	$1,000	2	$2,000
6271040	WHITE COMBINATION ARROWS(STR&RT.OR STR&LT)THERMO-125MIL	EA	$1,000	4	$4,000
6271064	4" YELLOW BROKEN LINES(GAPS EXC)THERMOPLASTIC - 90 MIL.	LF	$3	100	$300
6271074	4" YELLOW SOLID LINES(PVT.EDGE LINES) THERMO-90 MIL.	LF	$3	5200	$15,600
6280055	BIKE LANE SYMBOL -PREFORMED THERMO - 90MIL	EA	$750	16	$12,000
6280056	BIKE LANE ARROW - PREFORMED THERMO - 90MIL	EA	$750	16	$12,000
6280057	SHARROW W/ARROW - PREFORMED THERMO - 90MIL	EA	$750	10	$7,500
7143612	12" SMOOTH WALL PIPE	LF	$35	24	$840
7143615	15" SMOOTH WALL PIPE	LF	$55	6	$330
7191605	CATCH BASIN -TYPE 16	EACH	$2,500	2	$5,000
7196110	CATCH BASIN TYPE 1 (TOP ONLY)	EACH	$1,000	1	$1,000
7198430	MANHOLE-CONV. CB T-1	EACH	$1,500	1	$1,500
7203110	CONC.CURB & GUTTER(1'-6")VERT.	LF	$18	350	$6,300
7204100	CONCRETE SIDEWALK(4" UNIFORM)	SY	$40	200	$8,000
7204900	DETECTABLE WARNING SURFACE	SF	$20	50	$1,000
8100001	PERMANENT VEGETATION	MSY	$3,000	0.5	$1,500
8103100	TEMPORARY VEGETATION	MSY	$1,500	0.3	$450
8153000	SILT FENCE	LF	$7	400	$2,800
				Roadway Total	$274,160

8. Construction Specifications

The construction contract will adhere to the latest edition of the SCDOT Standard Specifications for Highway Construction as well as the appropriate supplemental specifications and the attached Special Provisions.

Special Provisions
For
Manning Ave (S-152)
Rehabilitate Bridge over CSX RR & Streets
Sumter County, South Carolina

File Number 43.040012

June 2013 [DRAFT]

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(2) SEALING JOINTS IN PORTLAND CEMENT CONCRETE BRIDGE DECKS

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(6) COORDINATION WITH CSX RAILWAY

SPECIAL PROVISIONS

S. C. FILE NUMBER	PROJECT NUMBER	COUNTY
43.040012	40012_PE01	SUMTER

FIELD PAINTING OF STRUCTURAL STEEL (ALUMINUM EPOXY MASTIC PAINT SYSTEM):

A. GENERAL:

Reference is made in these Special Provisions to the latest Edition, Regulations and Requirements of the following:

1. SCDOT Standard Specifications for Highway Construction (Edition of 2007 w/ Addendums).
2. South Carolina Department of Health and Environmental Control – Hereinafter denoted as DHEC.
3. Environmental Protection Agency – Hereinafter denoted as EPA.
4. South Carolina Occupational Safety and Health Administration – Hereinafter denoted as OSHA.
5. Steel Structures Painting Council – Hereinafter denoted as SSPC.

The work to be performed shall consist of the cleaning and painting of all structural steel of this bridge, except structural steel which is specifically excluded in these Special Provisions. All work shall be performed as outlined in these Special Provisions and Project Plans.

The Contractor shall proceed in an orderly manner with his cleaning and painting operation. Therefore, once the Contractor starts work in a particular span, he shall complete all work (cleaning and painting) in the span before moving to another span area. The Contractor is not prevented from having crews working in several different areas at the same time. However, the crews shall finish all work in their respective areas before moving to another location.

All existing roadway clearance and/or highway route number signs shall be removed prior to beginning the cleaning and painting operation. The Contractor will be required to install new bridge signs furnished by the Department at no cost to the Contractor. The Contractor shall notify the Engineer in the field fifteen (15) working days prior to requiring the bridge signs for installation. The Contractor and The Engineer in the field shall jointly inventory any bridge signs necessary for removal and replacement on this project prior to beginning work.

NOTE TO CONTRACTOR: The Contractor shall comply with all applicable EPA, SCDHEC and OSHA regulations and guidelines. Any and all fines occurred by the SCDOT due to failure of the Contractor to follow the required regulations and/or guidelines either by negligence or other causes shall become the responsibility of the Contractor and said fines shall be withheld from any payments due the Contractor for performance of this work. **Contractor must be SSPC QP2 Certified prior to bid submission.**

B. PAINTING OF STRUCTURAL STEEL:

A. Description of Paint System:

The Structural Steel of this bridge shall be painted with the paint system as follows:

Coat	Paint	Color
Primer	Aluminum Epoxy Mastic	Tinted
Intermediate	Aluminum Epoxy Mastic	Tinted
Finish	High Build Aliphatic Polyurethane	Match Existing Federal Color

B. Approved Sources and Certifications:

Only material from sources appearing on the Department's approved list entitled "Approved Bridge Paints for Structural Steel" available from the Research and Materials Laboratory shall be used in the work. A manufacturer may request to be included on the list by successfully demonstrating that his material meets the specification above and performs in applications in this state or other states. Further, he shall furnish technical data sheets describing the material and its application. For each shipment, he shall furnish a certification stating that the material furnished meets the South Carolina Department of Transportation specifications. The shipped containers shall be plainly marked with the manufacturer's name or trademark, the lot number, component type, and a clear date indicating shelf life expiration date.

Note: For list entitled "Approved Bridge Paints for Structural Steel" the Contractor shall contact SCDOT Research and Materials Laboratory, P. O. Box 191, Columbia, S.C. 29202.

C. Paint Coat Thickness Requirements:

Note: The dry film thickness of each shall be checked after application and any areas deficient shall be corrected in accordance with Paint Manufacturer's recommendations prior to the application of subsequent coats unless specifically approved by the Engineer.

D. Conditions for Painting:

All containers of paint shall remain unopened until required for use. Containers which have been recently opened and not premixed or blended together shall be used first. Paint which has livered, gelled, or otherwise deteriorated during storage or, is beyond the stated shelf life, shall not be used. Wet paint shall be protected against damage from dust, sand or other detrimental foreign matter to the extent practicable. During the painting operation, precautionary measures shall be taken to protect any surfaces not to be painted or which have already been painted.

E. Surface Preparation:

Note: The latest SSPC pictorials of surface preparation methods will be used to determine the acceptability of the Contractor's cleaning operations.

All structural steel shall be cleaned to the requirements of Steel Structures Painting Council - Surface Preparation SP 6 (Commercial Blast Clean) dated June 1, 1991 revision. The anchor profile shall be in the range specified by the paint manufacturer for the Aluminum Epoxy Mastic Paint.

The steel surface shall meet the requirements of SSPC SP 6 just prior to the application of the

Aluminum Epoxy Mastic Primer Coat. All steel surfaces shall be dust free and the primer coat applied within twelve (12) hours after blast cleaning and before any rusting occurs.

Abrasive blasting shall be performed with recyclable steel grip abrasive or other approved recyclable material. The use of silica sand as an abrasive blasting material is expressly prohibited on this project. The use of abrasive blasting materials intended for pretreatment of the lead base debris may be approved by the Engineer prior to use. However, the intent for use as a pretreatment material is expressly prohibited. All debris contained and collected on this project shall be deemed hazardous regardless of test results and therefore must be handled in accordance with the special provision entitled "Environmental and Worker Protection". All waste debris shall be shipped by a SCDHEC licensed transporter to a SCDHEC approved treatment and disposal and/or recycling facility.

Prior to the application of the Aluminum Epoxy Mastic Finish Coat, all steel surfaces shall be cleaned of all dust and contaminates present on the primer coat using a low pressure hydra wash (1500 psi max.) or in accordance with the paint manufacturer's instructions as approved by the Engineer.

Note to Contractor: Containment system shall be Class 1, 2 or 3 as specified in the special provisions entitled "Environmental and Worker Protection".

The use of high pressure Hydro Blast Cleaning may be approved by the Engineer at the request of the Contractor, provided the following:

A. The Contractor demonstrates the ability to contain all water and debris.
B. A suitable rust retardant as recommended by the paint manufacturer is added during the blasting operation.
C. Immediately after the steel area has been hydro blasted, the Contractor must follow with a low pressure water wash containing a percent Chlor-Id Solution as recommended by the Chlor-Id manufacturer.
D. All cleaned steel surfaces shall be coated with the primer coat prior to flash rust occurring.
E. Should rusting occur, the Contractor will be required to dry blast the steel surfaces to SSPC SP 6 prior to placing the primer coat.
F. The Engineer reserves the right to disallow or to change as necessary should the Contractor not be able to achieve the desire surface cleanliness as specified in SSPC SP 6 just prior to the application to the paint.

F. Application of Paint (Aluminum Epoxy Mastic):

1. Any required touch-up of thin areas of the applied coat shall be made within 72 hours after application of paint.

2. Spray Application.

   Note: Spray application of paint will only be allowed within a Class 1, 2, or 3 containment system as specified in "Special Provisions for Environmental and Worker Protection", dated September 24, 1998.

G. Field Inspection:

The Contractor shall furnish a satisfactory means for allowing the Department's inspectors and/or representative to quickly, easily, and safely inspect any non-accessible areas. This shall be approved prior to the Contractor commencing work.

The Department's inspector shall submit oral and written daily reports of the Contractor's cleaning

and painting operations to the Contractor's representative. Those deficiencies noted in the daily report shall be corrected within seventy-two (72) hours by the Contractor and all remedial work shall be in accordance with the applicable sections of these Special Provisions. The seventy-two (72) hour correction time may be extended due to special conditions upon approval of the Resident Construction Engineer. If not corrected within this specified time period, or the approved extension period the Engineer may delay payment for work performed in these effected areas. The daily reports shall also list the areas of steelwork that have been cleaned and/or painted in accordance with these Special Provisions. The Department" inspectors shall approve all areas that have been cleaned prior to the application of any paint. Any area painted prior to such approval shall be recleaned and painted as specified. In addition to the Special Provisions entitled, "Contractor Activity Work Schedule", the Contractor shall submit his paint progress work schedule fourteen (14) days prior to beginning this phase of work. The Contractor shall coordinate all phases of this work schedule with the Department's inspectors in order to insure that all work is performed in accordance with these Special Provisions.

H. Paint on Vehicles:

The Contractor shall maintain a field office on this project so as resolve any problems or process any claims involving third parties. This office shall be staffed so as to promptly receive all claims arising from third parties. Furthermore, the office shall be maintained for a period of two (2) weeks after final acceptance of this portion of the project.

I. Basis of Payment:

All cost of equipment, materials and labor necessary to clean and paint the structural steel in accordance with these Special Provisions shall be included in the Lump Sum Price bid for "Cleaning and Painting Structural Steel". Payment shall be made on a pro-rated monthly basis of the amount of work completed under this pay item as estimated by the Engineer in the field.

Payment will be made under:

Item No.	Pay Item	Pay Unit
7101000	Cleaning and Painting of Existing Structural Steel	LS

SEALING JOINTS IN PORTLAND CEMENT CONCRETE BRIDGE DECKS:

Control of Work:

All work shall be done in accordance with the attached Plans, the Special Provisions listed below and the Department's Standard Specifications for Highway Construction (Edition of 2007).

General:

The work under this item consists of sealing new joints and resealing of existing transverse expansion joints in Portland Cement Concrete Bridge Decks.

It will be the responsibility of the contractor to determine the condition of existing joints and bid accordingly.

In the event that the engineer determines that the contractor has insufficient equipment and/or insufficient and/or unskilled labor and supervisions to accomplish the desired workmanship, the work will be stopped until the matter is resolved.

Application:

Silicones shall be used in applications as follows, unless otherwise denoted in these special provisions or the plans.

Existing Concrete Bridge Decks:

For existing concrete decks, the transverse expansion joints that are prepared to a uniform width shall be sealed with silicone sealant (non-sag or self-level).

When non-uniform width joints are dominant, only non-sag silicone sealant shall be used in the concrete joints (transverse and/or longitudinal).

The vertical face of the curb and/or parapet wall shall be sealed for a height not less than 6" from the top of the bridge deck using an approved non-sag sealant compatible with the bridge deck joint sealant being used and installed as per the manufacturer's recommendations.

Materials:

1. Silicone Joint Sealant: The Silicone Joint Sealant shall be Dow Corning 902RCS Sealant or an approved equal (See Silicone Source Approval Below).

2. Silicone Bond Breakers (Backer Rods): Silicone sealants must be installed over a bond breaker (backer rod) in accordance with the manufacturer's installation instructions to prevent the sealant from bonding to the bottom of the joint. Backer rods shall be chemically inert and resistant to oil, gasoline and solvents. The bond breaker must not stain or adhere to the sealant. Bond breakers shall be a backer rod and used in accordance with the plans and the manufacturer's instructions.

   The backer rod shall be of circular cross-section and consist of closed cell polyethylene foam.

   A certification shall be furnished by the manufacturer or backer rod stating that it complies with the South Carolina Department of Transportation specifications for closed cell polyethylene foam and that the tape is the polyethylene type.

3. Rapid Patch Material for Concrete Pavement: A copy of SCDOT Approved Rapid Patch Materials for Concrete Pavement may be obtained from SCDOT Research and Materials Laboratory, P. O. Box 191, Columbia, South Carolina 29202.

Silicone Source Approval:

Alternate silicone sealants may be used. The contractor shall submit the alternate material name specifications and physical properties to the SCDOT Research and Materials Laboratory, P. O. Box 191, Columbia, South Carolina 29202 for approval thirty (30) days prior to use.

The submission shall be organized and clear as to addressing each of the physical properties of this specification. The test results presented shall show the lot number of material tested and shall not be older than three (3) years. The test results furnished shall be substantially descriptive of materials to be furnished in the work.

The manufacturer shall furnish a certification with the submission stating that materials to be furnished will be equivalent to those tested and will not change without notification to the Department's Research and Materials Engineer.

The manufacturer will furnish complete instructions as to installation along with technical data sheets and materials safety data sheets with the submission.

Silicone Shipment Approval:

After source approval, the manufacturer shall furnish, with each shipment of materials, a certification showing brand name, South Carolina File Number for the project, the shipping date and to whom it is shipped, and the quantity represented in the shipment. The certificate shall contain a statement that the material meets the South Carolina Department of Transportation's specifications and is essentially the same as that approved by the Department. The shipped containers shall be plainly marked with the manufacturer's name, lot number, trademark, type of silicone and end of shelf lie date. A materials safety data sheet and installation instructions shall be furnished with each shipment.

Construction:

All joints to be sealed must be sound, clean, dry and frost free. The joint sealing operation shall proceed in an orderly manner, one lane at a time. The following guidelines must be followed unless otherwise provided in writing by the engineer.

1. Freshly sawed joints shall be washed with water immediately after sawing to remove any loose material from the joint faces. Joint washing shall be in one direction to prevent recontamination.
2. Any spalled or cracked areas of the joint deemed necessary for repairs by the engineer must be repaired using a rapid patch material for concrete pavement or other suitable material to the satisfaction of the engineer in the field. Should it be determined that the extent of spalled areas, necessary for repair, are so extensive as to require significant additional work then the joint sealing work at this location may be deleted or a suitable price for the additional work may be agreed upon by the Contractor and Engineer. Once the joint is clean any damaged areas along the edges of the joint must be repaired. The material for the joint repair must be applied to clean, dry and sound surfaces for an effective bond. All unsound material must be removed from structurally sound areas of the joint by jack hammering (30# Hammer max), sand blasting or similar mechanical methods. All loose material must be removed by breaking, vacuuming or blowing. Old paint, rust if metal joints, or other coatings must be removed by the proper methods.
3. Once the joint is dry and before final cleaning begins, it shall be sand blasted to remove contaminants. Sand-blasting shall be done in two (2) passes, one for each face, with the nozzle held at an angle to the joint face and within 1 to 2 inches of the pavement. Sandblasting shall be done the same day as the sealing operation and repeated if rain showers occur between initial sandblasting and sealing.
4. The blast material as well as dust and dirt deposited by wind and traffic, must be blown out of the joint and away from the area around it using a high-pressure air blast. As with the water, the air blast shall be in only one direction to prevent recontamination of the joint.
5. Solvents shall not be used to remove oils, because they generally carry the materials further into the porous concrete or spread them on the surface. Just before placing of the backer rod, rub a finger across the dry joint face to determine that residual cement and/or asphalt dust has been removed. Joints that still contain dust or have become dirty or contaminated must be recleaned.
6. Final cleaning, placing of the backer rod sealing of the joints shall, in general, be one operation when sealing is being done. This will assure clean faces, properly placed backer rod, and proper joint configuration. Just prior to placing the backer rod, the joint faces shall be thoroughly clean and dry. Final cleaning shall be by means of compressed air at least 90 PSI with compressors equipped to remove moisture and oil from the air.
7. A roller with a flange slightly narrower than the narrowest joint width and a depth a little deeper than the recess depth desired at the top of the backer rod shall be used to install the backer rod. The backer rod shall then be made leak proof where required by caulking with a silicone product compatible with the sealer to be used. This may be applied from tubes with a caulking gun device.

The sealant shall then be placed in the joint in accordance with the plan configuration by means of an appropriate pump equipped with a nozzle that is narrow enough to place the material from the bottom up in the joint. The material shall then be properly placed to establish a surface profile the desired depth below the surface of the pavement. All equipment for placing the seal and methods of placement shall be in accordance with the sealant manufacturer's recommendations. The sealed joints may not be opened to traffic for two (2) hours or within the manufacturer's instructions.

Joints shall be inspected for proper width, depth, alignment, and preparation, and shall be approved by the Engineer prior to installation of sealant.

Prior to work of any kind pertaining to the Joint Sealing Operation, the contractor, in combination with the engineer and sealant manufacturer/representative, shall meet and discuss the method of installation. The contractor and manufacturer of the sealant must assure the engineer that the applicator persons are properly trained to install the selected sealant prior to beginning work.

Method of Measurement

The Linear Feet quantities shown on the plans may be adjusted as necessary by the engineer in the field.

Basis of Payment

The unit price bid per linear foot for Joint Sealing shall include all labor, material, equipment, etc. necessary for the completion of this portion of work and no separate payment shall be made for any items. All cost for traffic control necessary for the performance of this work and Spalled Joint Repair work shall be included in this bid item. The sealing of the vertical surfaces of the curb or barrier wall are considered incidental. No measurement will be made of this item. Pay amount shall be for the actual linear footage of Joint Sealing performed and accepted in place.

Payment will be made under:

Item No.	Pay Item	Pay Unit
7261127	Reseal Deck Expansion Joint	LF

Note: Partial payments shall be made to the contractor during the performance of work on this project. Payment shall be made for work completed and accepted in place by the engineer. The contractor shall invoice the Department on a monthly basis for completed work that is already accepted

HAZARDOUS AND/OR TOXIC WASTE:

The Contractor is advised that hazardous materials are present in lead containing paints on the existing bridge steel. Lead paint is present in the existing structural steel paint and handrailing paint.

The Contractor is advised that it will be his responsibility to secure any necessary permits or make notifications in accordance with the South Carolina Department of Health and Environmental Control (SCDHEC) requirements. Disposition of the hazardous and/or toxic waste shall be made in accordance with the requirements and regulations of the SCDHEC, and in accordance with the Special Provisions for Lead Abatement and the special provision entitled "Environmental and Worker Protection". Any questions about required permits or notifications

should be directed to the South Carolina Department of Health and Environmental Control's Bureau of Air Quality at (803) 734-4547 and/or Bureau of Solid and Hazardous Waste (803) 734-5200.

The Contractor shall also cooperate with the Resident Engineer in jointly completing DHEC form entitled "Notification of Demolition and Renovation" and such form shall be submitted to the name and address below at least ten (10) working days before demolition begins:

Manager, Asbestos Section
Department of Health and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

If the Contractor should encounter or expose during construction any other abnormal condition which may indicate the presence of a hazardous and/or toxic waste not identified herein, work in this area shall be immediately discontinued and the engineer shall be notified. Abnormal conditions shall include but shall not be limited to the following: presence of barrels, discolored earth, metal, wood, etc., obnoxious or unusual odors, visible fumes, excessively hot earth, smoke or any other condition which appears abnormal that could be a possible indication of hazardous and/or toxic waste. The conditions shall be treated with extraordinary caution. The Contractor's operations shall not resume until so directed by the engineer.

Where the Contractor performs necessary work required to dispose of the materials described in Section 1.0, or incurs cost related to their disposal, payment will be made at the contract unit price for items applicable to such work. See related Special Provision.

Where the Contractor performs necessary work required to dispose of the materials described in Section 2.0, or incurs cost related to their disposal, payment shall be made in accordance with Subsection 104.5 of the Standard Specifications.

ENVIRONMENTAL AND WORKER PROTECTION:

1. **Description:**

This work covers the requirements for containment during surface preparation, waste handling and disposal, environmental protection, and covers requirements for worker health and safety for lead. The Contractor is advised that hazardous materials are present in lead containing paints on the existing bridge steel.

Reference is made in these Special Provisions to the latest Edition, Regulations and Requirements of the following:

A. SCDOT Standard Specifications for Highway Construction (Edition of 2007).

B. South Carolina Department of Health and Environmental Control – Hereinafter denoted as DHEC.

C. Environmental Protection Agency – Hereinafter denoted as EPA.

D. South Carolina Occupational Safety and Health Administration – Hereinafter denoted as OSHA.

E. Steel Structures Painting Council – Hereinafter denoted as SSPC.

NOTE TO CONTRACTOR: The Contractor shall comply with all applicable EPA, SCDHEC and OSHA regulations and guidelines. Any and all fines occurred by the SCDOT due to failure of the Contractor to follow the required regulations and/or guidelines either by negligence or other causes shall become the responsibility of the Contractor and said fines shall be withheld from any payments due the Contractor for performance of this work.

2. Containment and Ventilation System:

A. Containment System:

The containment system shall meet the requirements of Class 1, 2 or 3 of Steel Structures Painting Council Guide 61 (CON), "Guide for Containing Debris Generated During Paint Removal Operations". Only impermeable containment materials shall be used. Only impermeable containment materials shall be used.

Containment shall be designed so that the floor of the containment and the walls of the containment extending at least half the height of the main girders shall be constructed of rigid materials as defined in Guide 61 (CON). The containment shall not extend more than four (4) feet below the bottom flange of the main girders.

Heavy tarps or fiber-reinforced sheeting shall be used for containment or areas of containment where flexible materials are allowed. If an overlapping door tarp entryway is used, it shall be designed with multiple tarps (more than two).

There shall be no welding allowed on any member of the bridge without prior approval of the engineer.

Any holes that develop in containment materials shall be repaired prior to the start of the next blasting shift. However, if holes are greater than 25 square inches, they shall be repaired immediately. Blasting operations shall not proceed unless all holes greater than 25 square inches are sealed, containment materials are completely sealed against all surfaces of all members and between containment material panels, and a tight seal is established around any duct entering or existing containment.

Auxiliary lighting shall be used within the containment where necessary to illuminate the active work surface to a minimum of 50 foot-candles. This is required for clear viewing of all blast cleaning, painting, and inspection operations.

When, in the opinion of the Department's authorized inspector, environmental protection is not being achieved the effected operation shall be immediately altered or stopped.

B. Ventilation System:

The ventilation system shall include a dust collector. Only self-cleaning, cartridge-type dust collectors shall be used. Dust bags are not allowed. The dust collector and filters shall be cleaned before arrival to the project site and shall be cleaned prior to removal from the project site.

The dust collection equipment shall be equipped with an easily accessible pressure gage which measures the pressure differential across the filters. Pressure differentials outside the range of ± 10 percent of the stable pressure differential obtained once the filters are seasoned shall be corrected before the next blasting shift commences.

Air flow through containment shall be calculated by measuring the volume of air passing

through the ducts leading to the dust collector and dividing by the cross-sectional area of containment perpendicular to the air flow. Measurement of the air velocity in the ducts needed to calculate the volume of air passing through the ducts shall be measured in accordance with the procedure in American Conference of Governmental Industrial Hygienists Publication, "Industrial Ventilation – A Manual of Recommended Practice".

Dust collection equipment shall be in continuous operation during blasting and debris recovery operations. Work shall cease if the dust collector is not operational for any reason.

Ventilation during painting operations shall be such that flammable solvent concentrations are below the lower explosive limit. It is the Contractor's responsibility to measure and maintain acceptable concentrations of solvents and other hazardous materials during painting operations.

C. Submittals:

The Contractor shall submit a written plan for the method employed for surface preparation, containment and ventilation no later than 30 days prior to beginning work. The submittal shall include drawings, load-bearing capacity calculations, and wind load calculations. The drawing sand calculations shall be stamped by a Registered Structural Engineer.

3. Waste:

A. Storage:

All spent materials shall be cleaned up within containment regularly, and in no case less frequently than the end of each workday. Spent materials released outside the enclosure shall be cleaned up immediately.

All storage of waste and spend materials at the bridge site shall be performed in a manner that is secure and not subject to accidental spills or vandalism. Wastes shall not be stored near traffic, water courses or drainage ditches. The engineer shall approve the location for waste storage.

Wastes shall be stored in containers such as drums, roll-off boxes, or gondolas. Waste containers shall be closed and properly covered at all times except during the actual addition or removal of spent materials. Wastes shall not be co-mixed. Surface preparation debris shall be stored in containers separate from containers used to store dust collector debris. Waste containers shall be labeled with a description of the contents and date of first accumulation. Wastes classified as hazardous waste shall be stored, labeled and handled in strict accordance with South Carolina Hazardous Waste Management Regulations.

All waste containers shall be stored in a secure locked fenced area. The area shall be labeled as a hazardous waste storage area in accordance with any applicable SCDHEC regulations. The fence material shall be chainlinked in type and be no less than six (6) feet in height. The fence post shall be securely anchored to ground or pavement or be of such construction, if portable, so as to preclude entry. The engineer prior to use shall approve the fenced area for waste storage.

B. Testing:

All spent material and dust collected shall be sampled and tested by the Contractor in accordance with EPA Method 1311, "Toxicity Characteristics Leaching Procedure (TCLP)". Initial samples shall be taken within thirty (30) days of initial waste generation. The sampling shall be performed in the presence of the engineer. The samples shall be sent to a qualified laboratory accompanied by a Chain of Custody form. A copy of the laboratory results shall be submitted to the engineer within five (5) working days of their receipt.

The Contractor shall notify the engineer, in writing, of any wastes classified as hazardous waste. The Department has applied for and will furnish the contractor with the required EPA Identification Number. All correspondence, shipping invoices, disposal affidavits or forms, etc. shall contain this EPA Identification Number.

C. Disposal:

The Contractor shall be responsible for the transportation and disposal of all debris generated during the project. A transporter licensed in the State of South Carolina shall be used when shipping hazardous material to the treatment and disposal facility. Transport and disposal shall be in accordance with all federal, state, and local regulations.

The surface preparation debris and dust shall be disposed at a hazardous waste landfill, irrespective of the results of the TCLP test. The Contractor shall inform the disposal facility to dispose of the waste in the same manner as if it were lead-containing hazardous waste (EPA Designation D008). Alternate methods which reclaim the lead will be allowed subject to the approval of the engineer.

All wastes shall be removed from the bridge site and disposed within 90 days of the date of accumulation. No waste shall be handled or shipped without the engineer or the Department's authorized environmental representative present. The Department shall be notified in advance of all operations and contractor must comply with the submittals data below.

D. Submittals:

The Contractor shall submit a written plan that addresses the handling and site-storage of lead-containing 265.

The Contractor shall also submit a copy of a certificate for every employee on the project which indicates that he/she has been trained in compliance with 40 CFR Part 265.16.

The Contractor shall furnish the engineer or the Department's authorized representative the following information ten (10) working days prior to the shipping and/or treatment or disposal of the waste material.

Waste Material	**Lead Contaminated Blast Debris**
Disposal Facility Include: EPA ID Number, Address, Phone Number and Contact Person	
Transporter Include: EPA ID Number, Address, Phone Number and Contact Person	

Note: Preparation of all documentation necessary for the transportation and disposal of

hazardous wastes, included as part of this project will be the responsibility of the contractor. However, the engineer or the Department's authorized environmental representative shall have the only signature authority as generator on the Uniformed Hazardous Waste Manifest document.

4. **Environmental Quality:**

A. Air Quality:

The Contractor shall abide by all federal, state and local regulations pertaining to air quality. No air quality monitoring is required under this Special Provision. Any air monitoring which needs to be performed as the result of the Contractor's operations shall be performed by the Contractor at no cost to the Department.

B. Water Quality:

The Contractor shall not discharge or allow discharge of any materials into the waterway. The Contractor shall not allow any scum to accumulate on the surface of the water. If scum does accumulate on the water, the Contractor shall contain the scum with a floating boom downstream and upstream (if necessary) at the worksite. The boom shall be placed in such a manner as to comply with U.S. Coast Guard requirements and limitations. During all periods of work, the boom shall be clearly and visibly marked as a hazard to navigation. At the end of each working day, the Contractor shall collect all the surface scum remaining on the water surface.

C. Reporting of Releases:

The Contractor shall report all releases of lead into the environment which exceed regulator limits to the appropriate authorities.

D. Base-Line Monitoring:

The Contractor shall obtain sufficient soil samples and water samples to adequately characterize the environment prior to any lead-removal activities. These samples shall be analyzed for total lead content, and a copy of the results submitted to the engineer. Upon completion of this project, the contractor shall again take soil and water samples. The contractor shall be responsible for any clean-up deemed necessary by the Department or SCDHEC should additional contamination in excess of the initial base line results be found.

5. **Worker Health and Safety for Lead:**

A. Requirements:

Occupational Safety and Health Administration (OSHA) requirements for protection of workers from lead shall be in accordance with the Interim Final Rule on Lead Exposure in Construction (29CFR 1926.62).

The Contractor shall submit the name of the competent person and a letter of authority to the engineer. This person shall be on-site whenever lead-containing materials are disturbed.

Only laboratories that are proficient in the American Industrial Hygiene Association (AIHA) Lead Proficiency Aptitude Testing Program for personal monitor filter analysis shall be used for testing filters from personal monitors.

A barrier shall be placed around the project to demarcate the regulated work area. The barrier shall consist of warning tape or other material as approved by the engineer. The barrier shall be placed at a location where the lead concentration is below $0.03 g/m^3$ as a time-weighted average for an 8-hour day when measured in accordance with NIOSH Method 7082. Results from air monitoring tests to determine this requirement shall be submitted to the engineer.

The Contractor shall develop and follow a site-specific Worker Protection Program a Lead. It shall include:

Exposure Assessment – including method, worker classifications to be tested, protection of workers prior to receiving the results, and worker notification procedure.

Lead Compliance Program – as required in 29 CFR 1926.62(e).

Respiratory Protection Program – as required in 29 CFR 1926.62(f).

Medical Surveillance Program – including testing frequency, company policy at various action levels, and the company policy regarding employee removal and medical exams.

The Contractor shall supply a clean set of outer protective clothing on a daily basis to the South Carolina Department of Transportation employees and representatives who will be in areas with airborne lead concentrations above the Permissible Exposure Limit. The Contractor shall be responsible for cleaning or disposing of the clothing. The Contractor shall also provide South Carolina Department of Transportation employees or representatives with access to other personal hygiene facilities, including hand and face washing facilities, shower facilities, change areas, and eating areas.

B. Submittals:

A copy of the site-specific Worker Protection Program for Lead shall be submitted no later than two (2) weeks prior to beginning of work and within five (5) days of any modification.

For each employee on the project site, the Contractor shall submit records indicating that he worker has received training as required in lead (29 CFR 1926.62 (1) (2) and respiratory protection (29 CFR 1910.134). Results of medical surveillance tests taken no later than thirty (30) calendar days prior to beginning work at the site and within two (2) weeks of that employee permanently leaving the site shall be submitted within five (5) calendar days of receipt of the results.

6. Contractor Certification:

Contractors performing coating removal on structures containing lead-based paints shall be certified to Steel Structures Painting Council QP2, "Removal of Hazardous Paint". A list of currently QP2 qualified contractors or verification of a contractor's QP2 certification status may be obtained by contacting SSPC at (412) 687-1113 or by Fax (412) 687-1153.

7. Method of Operations:

The Contractor is to comply with all federal, state and local regulations when completing the work required by this Special Provision. This Special Provision is intended to set forth-minimum steps to avoid violating environmental laws. It remains the responsibility of the Contractor to determine whether more than these minimum steps may be required and then, at the sole expense of the Contractor, to perform all the work required by this

Special Provision in whatever manner may be required to comply with all applicable laws. The Contractor is liable to the Department for any fines, costs, or remediation costs incurred by the Department as a result of the Contractor's failure to be in compliance with this Special Provision and/or all federal, state, and local laws.

8. Basis of Payment:

All cost of equipment, materials, labor, and associated costs necessary to protect the environment, public and workers, including disposal of waste, in accordance with the Special Provisions shall be included in the Lump Sum Price bid for "Environmental and Worker Protection". Payment shall be made on a pro-rated monthly basis of the amount of work completed under this pay item as estimated by the engineer in the field.

Payment will be made under:

Item No.	Pay Item	Pay Unit
7091395	Environmental and Worker Protection	LS

ADHESIVELY BONDED ANCHORS AND DOWELS:

See attached Supplemental Specification dated September 1, 2008 when Adhesively Bonded Anchors or Dowels are called for in the plans.

COORDINATION WITH CSX RAILWAY:

The Contractor's attention is directed to page 16 for the instructions and the application to seek CSX's approval for resurfacing projects involving pavements on CSX's property. Once the project is awarded the completed application should be emailed to: Devereausl@SCDOT.org and include the subject line: Application for SCDOT Roadway Resurfacing. All communication regarding application process shall be directed to Ms. Sherri Devereaux of the Department.

The following information is required to complete the application:

1. The Contractor shall be considered the Project Owner.
2. The Engineer/Consultant information is not required for resurfacing projects.
3. A separate application is required for each at-grade crossing.
4. The railway reference data is as follows:

ROAD: S-152
RR Milepost: A 334.04
DOT XING #: 633140B

5. Latitude and Longitude is not required for resurfacing projects.
6. The property has been verified to be CSX's by SCDOT records.
7. CSX is currently waiving the $750 application fee for resurfacing projects.

Before any work is performed on CSX property the application must be approved and an agreement signed by CSX and the Contractor. Insurance documents must also be submitted and approved by CSX.

No work shall be performed within 50 feet of a CSX rail crossing without CSX flaggers on site, unless written consent is otherwise provided by CSX. CSX will inform the Contractor if flaggers are required.

The Contractor will be required to purchase Railroad Protective Liability Insurance, meet CSX's General Commercial Liability requirements, and pay for required railroad flagging services as instructed by CSX.

Measurement and Payment

The item **CSX RR Insurance and Flagging** is paid on a lump sum (LS) basis per crossing

Payment will be made in two installments. Each payment will be 1/2 of the lump sum price for CSX RR Insurance & Flagging (Schedule No.). The first installment will be paid on the first construction estimate that includes installed work items from the road(s) on which the CSX RR Insurance & Flagging is required. The second installment will not be paid until resurfacing begins on the road(s) in question.

The payment for **CSX RR Insurance and Flagging** is for all cost associated with obtaining insurance and for flagging services. No additional payments will be made.

The pay item for Insurance and Flagging is as follows:

Item No.	Pay Item	Pay Unit
1071401	CSX RR Insurance & Flagging (Schedule No.)	LS

CSX APPLICATION FOR RESURFACING PROJECTS

Subject: Application and instructions to request CSX Transportation, Inc. approval to resurface SCDOT roadways on CSX Property

Attached is the necessary form and instructions for preparing your application to obtain permission to access Property of CSX Transportation, Inc. (CSXT) for Public Improvement projects. Entry for environmental, large equipment movement, surveys, inspections, non-construction investigations or wireline/pipeline access should be redirected to http://www.csx.com/?fuseaction=about.property.

In order to expedite the timely processing and ultimate execution of your request, please provide the following via email:

1. One completed and signed original application form.

All right-of-entry applications for SCDOT resurfacing projects should be emailed to:

Mrs. Sherri Devereaux
DevereauSL@scdot.org
Subject: SCDOT Resurfacing over CSX
Mrs. Devereaux will confirm receipt of email. If you do not receive receipt within 24 hours, call to confirm @ 803-737-2026.

When the completed application is received, it will be reviewed and forwarded to CSX for the preparation of an agreement. The agreement will be sent back to the SCDOT in approximately 14 days (provided the application is approved. Incomplete applications will be returned to the applicant and not handled until the correct information is received.) Upon CSX's approval of the project, they will email an agreement to SCDOT to submit to the contractor for their review. The contractor will be required to make two copies of the agreement and sign both agreements. This will allow CSX and the contractor to have a copy of the agreement with original signatures. The agreement will instruct the contractor how to mail the two copies directly to CSX. Upon execution of the agreement by CSX, an original copy of the document will be mailed back to the address provided by the contractor. Mrs. Devereaux should be emailed when correspondence is submitted so that she can track progress of the approval. CSX's insurance requirements must be met before CSX will grant final approval. Required flagging services, as described in the agreement language, may take 30 days to secure and will be paid, along with any associated administrative cost, by the contractor.

NO VERBAL AUTHORIZATION IS VALID TO WORK ON CSXT PROPERTY. FULLY EXECUTED AGREEMENTS AND ROADMASTER NOTIFICATION ARE REQUIRED PRIOR TO ANY ENTRY ON CSXT PROPERTY OR WORK BEING PERFORMED. If the work involves excavation, soil borings, or other similar work requiring penetration below land surface, notification must be made to the state's or locality's one-call system and to CSXT's signal supervisor.

Instructions for Preparing Application Form

Write the SCDOT's File Number on the top of the application.

- "Project Owner Information" and "Project Information" sections must be filled out completely.
- The agreement will be prepared in the name of the Contractor. It is important to provide the complete Legal Name of the entity as well as its state of incorporation.
- Check the appropriate space to designate where the agreement should be mailed. If none or both are checked, the agreement will be mailed only to the Project Owner.
- **REQUIRED:** Provide the estimated distance to/from the nearest road crossing or milepost. Identify the road crossing by its CSXT Railroad Milepost number (including prefix, i.e. QC 292.83) and/or DOT/AAR number. The DOT/AAR number is a specific number assigned to each road crossing CSXT tracks and should be posted at or near the crossing (usually on a pole or signal mast). It is usually a rectangular white sign with black numbers/letters and will consist of 6 numbers followed by one letter (Example: 630 543 P). In lieu of the DOT number, an exact Latitude and Longitude may be provided to aid in finding the project location in the railroad's maps and files. Mrs. Devereaux can assist with this information.
- In addition to providing the beginning and end date on line 20, you should also write in the estimated number of days that you will be working within 50' of CSX's tracks. This information will be used by CSX to estimate the cost of railroad flagging. This is an estimate. The Contractor will be billed actual cost.
- Please remember to date and sign the application form.
- Unless otherwise agreed to by CSX, the signed agreement is valid for 90 days.

Instructions for Preparing Proposed Work Description

Prepare a brief description of the proposed work providing sufficient information to justify the need to access CSXT property. The information shall include:

- the proposed start date and expected duration of the project;
- a description of the proposed work identifying the nature and location of any item or structure to be installed on CSXT property (e.g., resurfacing);
- types of equipment to be used onsite (drill rigs, backhoe, excavator, etc.).
- methods of restoring right-of-way if disturbed by work.

Please be aware that the Agreement will be strictly limited to the scope of services as defined in your work description. If, at any time, it becomes necessary to modify the scope of service, you must request a modification in writing and obtain a supplemental Agreement prior to performing the work.

Flagging Requirements

If required for your work, a CSXT flagman will be provided at the entire cost and expense of the work's owner and/or the applicant for the duration of the project. This protection cannot be provided by any personnel other than an authorized CSXT employee. CSXT will make the sole determination as to whether flagging protection is required based on the work to be performed.

Insurance Requirements

The following list represents the insurance that will be required in the right-of-entry agreement. Proof of insurance must be submitted along with the application or the executed agreement.

- Licensee must purchase and maintain a policy of Commercial General Liability (CGL) insurance, naming Licensee (and its agent or contractor as the case may be) as insured and Railroad as additional insured, covering Licensee's direct and assumed contractual (i.e., indemnification)

liability under this Right-of-Entry, with coverage of not less than FIVE MILLION DOLLARS ($5,000,000) Combined Single Limit per occurrence for bodily injury and property damage. If said policy does not automatically cover Licensee's contractual liability under the Right-of-Entry, a specific endorsement adding such coverage shall be purchased or caused to be purchased by Licensee, and indicated on the Certificate of Insurance.

- In addition to the above-described CGL insurance, if (with the separate written consent of Railroad) Licensee will undertake, or cause to be undertaken, any activity within fifty (50) feet of any Railroad track or any Railroad bridge, trestle or tunnel, then Licensee shall also purchase, or cause to be purchased, a policy of Railroad Protective Liability (RPL) insurance, naming Railroad as the insured, with coverage of not less than FIVE MILLION DOLLARS ($5,000,000) Combined Single Limit per occurrence, with an aggregate of TEN MILLION DOLLARS ($10,000,000). Such policy must be written on ISO/RIMA form of Railroad Protective Insurance - Insurance Services Offices Form No. CG 00 35, including Pollution Exclusion Amendment CG 28 31.
- Licensee shall also carry, for the benefit of Licensee and its employees, Worker's Compensation Insurance as required by the state in which the Work is to be performed, naming Licensee as insured. This policy shall include Employers' Liability Insurance with a limit of not less than ONE MILLION DOLLARS ($1,000,000) per occurrence. Unless prohibited by law, such insurance shall waive subrogation against Railroad.
- Licensee shall also maintain Automobile Liability Insurance in an amount not less than ONE MILLION DOLLARS ($1,000,000) covering all owned, non-owned and hired vehicles.
- **Please contact Mr. Jonathan MacArthur at (904) 359-3394 with any questions pertaining to insurance.**

CSX TRANSPORTATION, INC

Form PI-001 07-09-03

Application for Public Improvements Right-of-Entry

Project Owner Information: ____ Check here if agreement should be mailed to this address

1. Complete Legal Name of Applicant:_____
2. Company Contact Name:_____ Title:_____
3. Telephone: (_____)_____ Fax: (_____)_____
4. Address: _____
5. City: _____ State: _____ Zip Code: _____-_____
6. Type of Business: ☐ Corporation (State of Incorporation: _____) ☐ Individual ☐ Developer
   ☐ Partnership (Type & State _____) ☐ Municipality/Government

Engineer/Consultant Information: ____Check here if agreement should be mailed to this address

7. Company Name:_____
8. Company Contact Name:_____ Title:_____
9. Telephone: (_____)_____ Fax: (_____)_____
10. Address: _____
11. City: _____ State: _____ Zip Code: _____-_____

Project Information: Date of Application _____ Applicants Reference # _____

12. Description of Location:_____
13. City:_____ County: _____ State:_____
14. Est. Distance _____ feet _____(direction) from Road Xing_____ DOT#_____
15. Project Description:_____
16. Latitude:_____ Longtitude_____ (WGS84)
17. How close will project be to nearest track? _____ft
18. Does the work on CSXT R/W include: ☐ Soil Boring ☐ Excavation ☐ Construction/Demolition
19. How did applicant verify that property and/or track is owned by CSXT?_____
20. Expected beginning date of occupancy_____ Completion Date:_____
21. Requested contract expiration date:_____
22. Signature of Applicant:_____ Date_____

For Railroad Use Only: Agreement Number: _____
Region:_____ Division_____ Subdivision_____
Milepost: _____ Val Section_____ Val Map #_____
File review date: _____ Fees Attached Y N
Comments:_____
Distribution:_____
Approved: ☐ Yes ☐ No By:_____ Date_____

ADHESIVELY BONDED ANCHORS AND DOWELS

1.0 Adhesively Bonded Anchors and Dowels

1.1 Scope

Furnish all required labor, equipment, and materials and perform all operations necessary for installing anchors and dowels in concrete using an adhesive bonding system in accordance with the details shown on the Plans and with the requirements of this Specification. Provide a material system specifically intended for use in structural applications for bonding anchors and dowels to hardened concrete. Limit applications to anchors and dowels installed in horizontal, vertical, and downwardly inclined positions. Do not use adhesive anchors in overhead or upwardly inclined installations. See Figure 1.1.

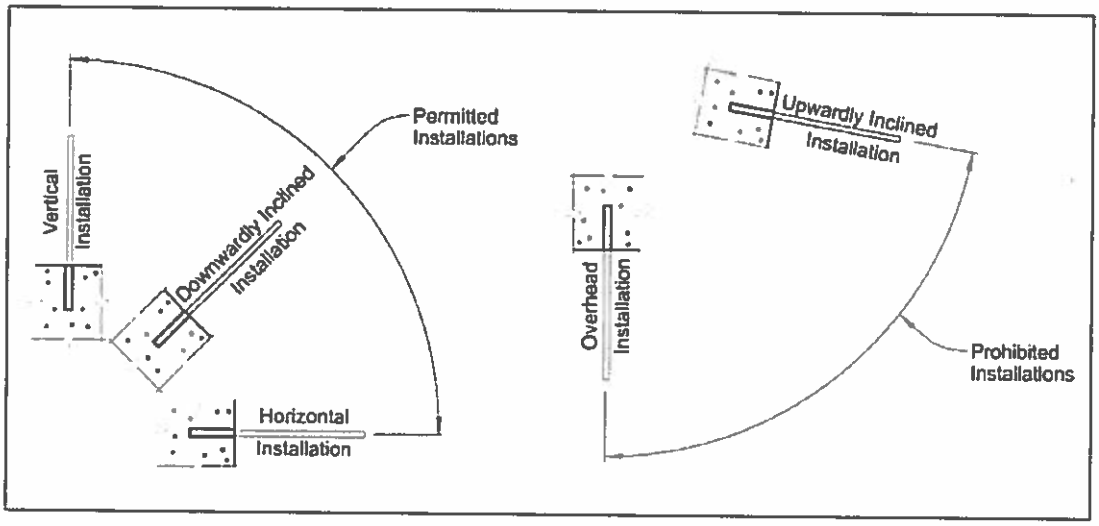


Figure 1.1

Submit a description of the proposed adhesive bonding system to the RCE for review, comments, and acceptance. Include in the description the anchor type, equipment, Manufacturer's recommended hole diameter, material specifications, and any other material, equipment or procedure not covered by the contract documents. List the properties of the adhesive, including density, minimum and maximum temperature application, setting time, shelf life, pot life, shear strength, bond strength, and compressive strength. If anchors or dowels containing a corrosion protective coating are required, provide an adhesive that does not contain any chemical elements that are detrimental to the coating and include a statement to this effect in the submittal concerning the contents as required by State or Federal Laws and Regulations.

Submit to the RCE Manufacturer's certification that the adhesive bonding system, when tested for tension pull-out according to ASTM E 488 utilizing identical anchorages, embedment depths, and concrete strengths as those specified on the Plans, does not fail by any mode listed in Section 12 of ASTM E 488 when loaded to the lesser of 85 percent of the specified bond strength (based on the nominal anchorage diameter and embedment depth) or 90 percent of the yield strength of the anchor. Also, submit to the RCE long term load (creep) test results performed in accordance with ASTM E 1512, ICC–ES AC 58, or ICC–ES AC 308. When specified on the Plans, field testing will also be required for adhesive anchorages.

1.2 Materials

Provide adhesive bonding material systems for structural applications that meet the requirements of ASTM C 881, Type IV, Grade 3, Class B or C (depending on site conditions). Do not use "Fast Set epoxy." Package components of the adhesive in containers of such size that one whole container of each component is used in mixing one batch of adhesive. Use containers of such design that all of the contents may be readily removed, and are well sealed to prevent leakage. Do not use material from containers which are damaged or have been previously opened. Use only full packages of components. Furnish adhesive material that requires hand mixing in two separate containers designated as Component A and Component B or in a self contained cartridge or capsule that consists of two components which will be automatically mixed as they are dispensed, as in the case of a cartridge, or drilled into, as in the case of a capsule.

Provide packages clearly marked by the Manufacturer with the following information:

- Manufacturer's name and address
- Product Name
- Date of Manufacture
- Expiration Date
- LOT Identification Number
- Storage and Handling Requirements

With each package include the Manufacturer's instructions for anchor and dowel installation. Include the following information with the instructions:

- Diameters of drilled holes for applicable anchor and dowel sizes.
- Cleaning procedure for drilled holes, including a description of permitted and prohibited equipment and techniques.
- Allowable temperature ranges for storage, installation and curing.
- Identification of acceptable mixing/dispensing nozzles.
- Fabrication requirements for anchors and dowels.
- Description of tools permitted or required for installation.
- Method of identifying properly proportioned and mixed adhesive materials.
- Time and temperature schedule for initial set ('gel time') and full-strength cure.
- Requirements for special installation conditions such as horizontal or near horizontal orientation of the anchor or dowel.

1.3 Construction Requirements

1.3.1 Storage

Deliver the adhesive bonding material system to the job-site in original unopened containers with the Manufacturer's label identifying the product. Store materials delivered to the job-site in the original unopened containers within an appropriate facility capable of maintaining storage conditions consistent with the Manufacturer's recommendations.

1.3.2 Installation

Install the adhesive anchors and dowels perpendicular to the plane surface of the structural member, in accordance with Manufacturer's recommendations, and when the concrete is above 40 degrees Fahrenheit and has reached its 28 day strength. Install the anchorages before the adhesive's initial set ('gel time').

1.3.2.1 Drilling of Holes into Concrete

Ensure that concrete members receiving adhesive-bonded anchors or dowels are structurally sound and free of cracks in the vicinity of the anchor or dowel to be installed. When directed by the RCE, use a jig or fixture to ensure the holes are positioned and aligned correctly during the drilling process.

Use a metal detector specifically designed for locating steel in concrete to avoid conflicts with existing steel reinforcement whenever placement tolerances and edge clearances permit. Unless other equipment is recommended by the Manufacturer, drill holes to the diameter required by the Manufacturer using a rotary hammer drill and bit. Perform core drilling to clear existing steel reinforcement only when approved by the RCE. Dry the drilled holes completely prior to cleaning and installing the anchors or dowels. Clean and prepare drilled holes in accordance with the Manufacturer's recommendations, but as a minimum, use oil-free compressed air to remove loose particles from drilling, brush inside surface to free loose particles trapped in pores, then use compressed air again to remove the remaining loose particles. Use a non-metallic bristle brush and avoid over-brushing to prevent polishing the inside surface of the drilled hole. Check each hole with a depth gauge to ensure proper embedment depth. Repair spalled or otherwise damaged concrete using methods approved by the RCE.

1.3.2.2 Inspection of Holes

Inspect each hole immediately prior to placing the adhesive and the anchors/dowels. Ensure all holes are dry and free of dust, dirt, oil, and grease.

1.3.2.3 Mixing of Adhesive

Mix the adhesive in strict conformance with the Manufacturer's instructions.

1.3.2.4 Embedment of Anchors and Dowels

Remove all debris, oils, and any other deleterious material from the anchors and dowels to avoid contamination of the adhesive bonding material. Insert the anchor or dowel the specified depth into the hole and slightly agitate it to ensure wetting and complete encapsulation. After insertion of the anchor or dowel, strike off any excessive adhesive flush with the concrete face. Should the adhesive fail to fill the hole, add additional adhesive to the hole to allow a flush strike-off. Do not disturb the anchors and dowels while adhesive is hardening. For horizontal and inclined installations, provide temporary supports to maintain the alignment of the anchors or dowels until the adhesive bonding material has cured.

1.3.3 Field Testing

When specified on the Plans, field test the installed anchors and dowels. Perform field testing of the installed anchors and dowels in accordance with the applicable sections of ASTM E 488. Inform the RCE and the Manufacturer when the tests will be performed at least 2 days prior to testing. For testing, use a calibrated hydraulic centerhole jack system that will not damage the anchor or dowel. Place the jack on a plate washer that has a hole at least 1/4" larger than the hole drilled into the concrete. Position the plate washer on center to allow an unobstructed pull. Position the anchors/dowels and the jack on the same axis. Have an approved testing agency calibrate the jack within 6 months prior to testing. Supply the RCE with a certificate of calibration.

Divide the anchors and dowels into LOTs for field testing and acceptance. A LOT consists of anchors or dowels of the same type, diameter, strength, embedment length, and adhesive bonding system. Prior to performing field tests, submit proposed testing locations to the RCE for review, comments, and acceptance. In the presence of the RCE, field test the anchors or dowels for each LOT in accordance with the following:

Test a minimum of 1 anchorage but not less than 10% of all anchors in the LOT to the test load shown on the Plans.

If less than 60 anchorages are to be installed: Install and test the minimum required number of anchorages prior to installing the remaining anchorages. After installing the remaining anchorages, test a minimum of 2 of these anchorages at random locations selected by the RCE.

If more than 60 anchorages are to be installed: Test the first 6 anchorages prior to installing the remaining anchorages. Then test, at random locations selected by the RCE, 10% of the number in excess of 60 anchorages.

For every failed field test, perform two additional field tests on adjacent untested anchors or dowels within the LOT. Continue additional field tests until no more test failures occur, or until all anchors and dowels within the LOT are tested.

Begin testing after the Manufacturer's recommended cure time has been reached. For testing, apply and hold the test load for three minutes. If the jack experiences any drop in gage reading, restart the test. For the anchorage to be deemed satisfactory, hold the test load for three minutes with no movement or drop in gage reading.

Remove all anchors and dowels that fail the field test, without damage to the surrounding concrete. Re-drill holes to remove adhesive bonding material residue and clean the hole in accordance with Subsection 1.3.2.1. For reinstalling replacement anchors or dowels, follow the same procedures as new installations. Do not reuse failed anchors or dowels unless approved by the RCE.

Determine failure of the field test in accordance with ASTM E 488. Submit certified test reports to the RCE. Final acceptance of the adhesively anchored system is based on the conformance of the pull test to the requirements of this Specification. Failure to meet the criteria of this Specification is grounds for rejection.

1.4 Measurement

No separate measurement for payment will be made for furnishing, installing, and testing of adhesively bonded anchors and dowels.

1.5 Payment

Include all costs of adhesively bonded anchors and dowels in the contract unit price bid for the items to be anchored.

9. Bicycle Planning/Design Reference

The proposed project includes accommodations for bicycles and pedestrians, and the City may be interested in taking the necessary steps to create a system of bike routes throughout Sumter. The American Association of State Highway Transportation Officials (AASHTO) recently updated its *Guide for the Development of Bicycle Facilities*, and the Pedestrian and Bicycle Information Center at the University of North Carolina recently hosted webinars that discussed the guide. These webinars serve as a summary of the AASHTO Guide, and the following webpage contains the links to these webinars.

http://www.walkinginfo.org/training/pbic/AASHTO_webinars.cfm?/aashto

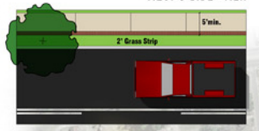
There are current plans for the bridge to add bicycle lanes, new paint, new striping, and sidewalks. The bridge is currently four lanes and would be reduced to two to accommodate pedestrian traffic. The existing light poles could be mounted with a city banner system, and over time could be replaced entirely with ornamental lighting consistent with downtown.

PROPOSED BRIDGE UPDATES

PROPOSED SCHOOL CROSSING
WITH ADDED MEDIAN

Improvements should remain consistent with the design intent of current downtown streetscape initiatives. While the scale of Manning Ave is different to that of Main St., certain details, used appropriately, can create a seamless transition from streetscape improvements between these two streets. A brick border along the front edge of new sidewalk should match the brick used along Main St. A single border will create visual continuity along the sidewalk and tie the corridor together as a whole. With the addition of new sidewalk, curb, street trees, lighting, and asphalt pavement, the visual and functional enhancement of the corridor will improve safety for pedestrians and pride in the community.

PROPOSED BRICK ROW
ALONG SIDEWALK



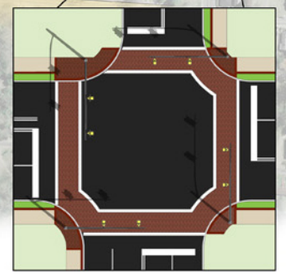
MANNING AVE. BEFORE

MANNING AVE. AFTER

KIMLEY HORN INTERSECTION STUDY

Once over the bridge traveling South on Manning Ave., it is imperative that a statement of arrival be made. The open space on the corner of Watkins and Manning should be enhanced as a greenspace, with landscaping and gateway signage. Texturized pavement or asphalt stamping could be used at the intersection to further announce arrival.

CORNER PARK
WITH GATEWAY SIGNAGE



TYPICAL INTERSECTION
WITH CROSSWALKS AND MAST ARMS

PROPOSED MAST ARMS
TO MATCH EXISTING

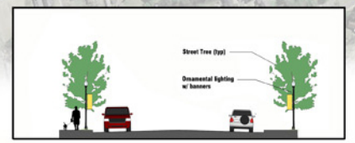
Improvements to Manning Ave should follow the existing framework of two travel lanes, a single turning lane and a grass strip behind the curb. Sidewalk directly behind the curb should remain in places where specified and where already in place. In specific areas, namely in front of the school where there is a mid-block crosswalk, a median may be added. New travel lanes should be eleven feet in width to reduce traffic speed. Large canopy street trees should be planted intermittently, overhead power lines should be buried, and ornamental lighting incorporated. While burying overhead utilities is ideal, it may take time to accomplish. Therefore, until this becomes a possibility, the improvements aforementioned should be focused on whichever side of the street does not contain overhead lines. Street trees should not be planted under utility lines. Banners should be placed on utility poles and ornamental lighting incorporated where possible on one side of the street.

RECEPTACLE

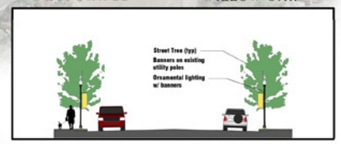
BENCH

RED MAPLE

WILLOW OAK



TYPICAL STREET SECTION
SIDEWALK BEHIND CURB ONE SIDE



TYPICAL STREET SECTION
2' GRASS STRIP BOTH SIDES

SUMTER | MANNING AVE. CORRIDOR PLAN

THE LANDPLAN GROUP SOUTH
Landscape Architecture | Engineering | Planning

By Others
11' Lane
10' Lane
11' Lane
480' R
480' R
200' Turn Lane
END Bridge
Existing Sidewalk
11' Lane
10' Lane
11' Lane
Manning Ave.
Painted Median
10'
480' R
480' R
10'
11'
11'
Retain existing sidewalk and curb
100' Turn Lane
3' Painted Median
Present R/W
Present R/W
Present R/W
Bldg.
Crosswalk
Crosswalk
Worths Street
Stop Bar
Present R/W
Present R/W
Retain existing sidewalk
Retain existing curb
150' Turn Lane
Bldg.
Present R/W
Present R/W
1900' R
13'
13'
11'
11'
Retain existing sidewalk and curb
Bldg.
Bldg.
Church
Manning Ave.
E. Bee Street
W. Bee Street
Present R/W
Present R/W
Present R/W
Present R/W
PROPERTY LINES AS SHOWN ARE ESTIMATED ONLY. ORIENTATION MATCHES ALIGNMENT OF NEAREST SURVEYED BUILDING.

There are current plans for the bridge to add bicycle lanes, new paint, new striping, and sidewalks. The bridge is currently four lanes and would be reduced to two to accommodate pedestrian traffic. The existing light poles could be mounted with a city banner system, and over time could be replaced entirely with ornamental lighting consistent with downtown.

PROPOSED BRIDGE UPDATES