

NORFOLK SOUTHERN RAILWAY COMPANY
FILES: BR0013844 & BR0013846

CHARLESTON, CHARLESTON COUNTY, SOUTH CAROLINA
CHARLESTON PORT ACCESS ROADWAY PROJECT

- (1) **REPLACEMENT OF EXISTING US78/52 OVERHEAD BRIDGE –**
MILEPOST SC-3.8 – DOT/AAR #721391M – FILE: BR0013846
(2) **REMOVAL OF EXISTING US78/52 OVERHEAD BRIDGE –**
MILEPOST SC-3.6 – DOT/AAR #721392U – FILE: BR0013844
(3) **CONSTRUCTION OF NEW FLYOVER OVERHEAD BRIDGES –**
MILEPOST SC-3.4 – FILE: BR0013844
SCDOT PROJECT ID: P027003

REQUEST FOR RAILROAD ENGINEERING REQUIREMENTS FOR INCLUSION INTO
DESIGN-BUILD PROJECT BID PACKAGE:

- 1) Visit project site to identify existing or potential issues or conflicts, including, but not limited to: utilities, wayside signals, etc., based on project information provided by SCDOT

A site investigation was performed on June 2, 2015 and the following comments pertain to this site.

Site – The Railroad’s SC- Line runs from Railroad East (Charleston, SC) to Railroad West (Columbia, SC). There is currently one NS main Line track at this location. There are two public roadways adjacent to Norfolk Southern’s track. Meeting Street (US52) is located on Railroad North side of the track and King Street Extension (US78) is located on Railroad South side of the track. See attached maps.

Signal Conflict – There were no way side signals observed in the proximity of the Dual Overhead Grade Separations. The proposed project should not impact the railroad’s signal facilities.

Access Roadway – There are two public roadways adjacent to Norfolk Southern’s track. Meeting Street (US52) is located on Railroad North side of the track and King Street Extension (US78) is located on Railroad South side of the track. See attached maps.

Utilities – There are numerous overhead utilities (phone, electric service, cable, etc.) within the project limits. Existing sewer manholes were observed and appeared to be running between King Street and Norfolk Southern’s track. What appeared to be a fiber optic line was also noted. The State and/or its contractor are responsible for locating utilities within the project on NS Right-of-Way. Access on NS Right-of-Way to locate utilities requires a Right-of-Entry Permit, Protective Liability Insurance, and flagging protection. Right-of-Entry application can be obtained at the Norfolk Southern website at the following URL:

<http://www.nscorp.com/content/nscorp/en/real-estate/norfolk-southern-services/access-norfolk-southern-property.html>

The location of existing utilities may require utility adjustments or a change in design in order to accommodate conflicting utilities. Utility installations and/or adjustments require a separate License Agreement from NS Property Services. License Agreement application can be obtained at the Norfolk Southern website at the following URL:

<http://www.nscorp.com/content/nscorp/en/real-estate/norfolk-southern-services/wire-pipeline-fiber-optic-projects.html>

- 2) Provide a Val Map establishing Railway ROW width

Valuation Maps V-39/11 & V-39/12 are included with this submittal. NS Right-of-Way is 46 feet wide. 25 feet from track centerline on Railroad South Side toward King Street Extension and 21 feet from track centerline on Railroad North Side toward Meeting Street.

- 3) Provide additional track and/or service road requirements, location of such, and spacing requirements

The design should accommodate one (1) future track, spaced at fourteen (14) foot track centers and an eight (8) foot maintenance roadway, located on Railroad South Side toward King Street Extension.

- 4) Provide train counts and define whether or not this is an Amtrak Line

This location handles approximately four (4) freight trains per day. This is not an Amtrak Line. Maximum authorized speed is ten (10) miles per hour for freight trains.

- 5) Provide the Right-of-Entry requirements for surveying, soil borings, etc. (Railway web-site and path is acceptable)

Right-of-Entry application(s) for soil borings, surveying and other access to property can be found at the Norfolk Southern website at the following URL: <http://www.nscorp.com/content/nscorp/en/real-estate/norfolk-southern-services/access-norfolk-southern-property.html>

- 6) Provide Railway current standards, clearances, construction criteria, insurance requirements, etc. (Railway web-site and path is acceptable)

Current Standards – Information regarding design and construction can be found in the Public Projects Manual. The Public Project Manual can be found at the Norfolk Southern website at the following URL: <http://www.nscorp.com/content/nscorp/en/transportation-terms/other-requirements/guidelines-for-design-of-grade-separation-structures.html>

Information regarding Wireline and Pipeline Licenses can be found at the Norfolk Southern website at the following URL: <http://www.nscorp.com/content/nscorp/en/real-estate/norfolk-southern-services/wire-pipeline-fiber-optic-projects.html>

Additional requirements, restrictions, and/or limitations may be imposed by NS based on PE review of the Preliminary Design Plans.

Clearances - Temporary clearances are to be maintained throughout the duration of the project. A temporary minimum vertical clearance of twenty-two (22) feet shall be maintained above the top of the highest rail to the lowest point of the superstructure. A temporary minimum horizontal clearance of thirteen (13) feet from the centerline of track shall be maintained at tangent sections of track and fourteen (14) feet from the centerline of track shall be maintained at curved sections of track.

Permanent clearances are to be achieved at the completion of the project.

A permanent minimum vertical clearance of twenty-three (23) feet shall be provided, measured from top of high rail to lowest point of superstructure, measured from a point offset 5'-6" from the centerline of track. Assume future track top of rail same as existing track top of rail. On the Railroad South side of existing track, a permanent minimum horizontal clearance of forty (40) feet as measured from face of pier to centerline of existing track twenty-six (26) feet from future track shall be maintained. All piers located less than twenty-six (26) feet from face of pier to centerline of nearest track (existing or future) shall be designed with crash wall protection. Edges of footings shall not be closer than thirteen (13) feet from centerline of track (existing or future).

For additional information please refer to the Public Projects Manual:
<http://www.nscorp.com/content/nscorp/en/transportation-terms/other-requirements/guidelines-for-design-of-grade-separation-structures.html>

Construction Criteria - Additional requirements, restrictions, and/or limitations may be imposed by NS based on PE review of the Preliminary Design Plans and review of the Construction Submittal Plans and calculations provided by the contractor. When performing calculations and designs for review, the contractor's engineer shall conform to AREMA (American Railway Engineering and Maintenance-of-Way Association) Manual for Railway Engineering.

For additional information please refer to the Public Projects Manual:
<http://www.nscorp.com/content/nscorp/en/transportation-terms/other-requirements/guidelines-for-design-of-grade-separation-structures.html>

Note Appendix E, Norfolk Southern – Special Provisions for Protection of Railway Interests – Section 7. Flagging Services – bullet point A. Requirements is revised to include item 4: “For Projects exceeding 30 days of construction, Contractor shall provide the flagmen a small work area with a desk/counter and chair within the field/site trailer, including the use of bathroom facilities, where the flagman can check in/out with the Project, as well as to the flagman's home terminal. The work area should provide access to two (2) electrical outlets for recharging radio(s), and a

laptop computer; and have the ability to print off needed documentation and orders as needed at the field/site trailer. This should aid in maximizing the flagman's time and efficiency on the Project."

Insurance Requirements – Norfolk Southern Insurance Requirements can be found in Appendix E. Norfolk Southern – Special Provisions for Protection of Railway Interests - Section 14 of the Public Projects Manual: <http://www.nscorp.com/content/nscorp/en/transportation-terms/other-requirements/guidelines-for-design-of-grade-separation-structures.html>

- 7) Provide any additional information/requirements specific to the Project site, such as MSE and/or crash walls requirements, etc.

Approval of the proposed structure will be provided once the Preliminary Engineering review has been completed. If MSE abutments are used, they must be founded on piling and if constructed on the Railroad's R/W must be protected by a crash wall. The face of the crash wall should be, at a minimum, twenty-six (26) feet from the centerline of the closest track (existing or future). If piers are to be constructed within twenty-six (26) feet, they shall be designed for crash wall protection as specified in the Public Project Manual:

<http://www.nscorp.com/content/nscorp/en/transportation-terms/other-requirements/guidelines-for-design-of-grade-separation-structures.html>

The foundation of the existing structure should be verified with the as-built drawings to determine the necessary procedures to remove the existing substructure below grade. The depth of removal of the existing substructure should be verified to determine the need for shoring and location of shoring with respect to the existing track. When determining the location of shoring, the engineer should reference Appendix I. Norfolk Southern Typical Drawings & Details – Drawing No. 4. Shoring Design Guide – Shoring Requirements and Drawing No. 5 Shoring Design Guide – Lateral Pressures from Train Loads of the Public Project Manual:

<http://www.nscorp.com/content/nscorp/en/transportation-terms/other-requirements/guidelines-for-design-of-grade-separation-structures.html>

- 8) Provide an estimated cost for the preliminary engineering review of the Project's plans

Actual expenses related to the Preliminary Engineering Review may vary from the estimate provided due to project conditions, duration of reviews, number of submittals and other variables. Based on experience, for projects requiring two (2) reviews of preliminary design plans plus a final review of the plans, the Preliminary Engineering review cost usually ranges between \$20,000 and \$30,000 per bridge. This estimated cost assumes no significant changes to the span lengths and structure type to be made after an initial review. This estimated cost does include a site visit, two (2) reviews of preliminary roadway and bridge plans and one (1) review of final roadway and bridge plans with calculations, the development of the

construction engineering cost estimate, routing of the construction agreement, ongoing project administration and coordination, and distribution of a Notice to Proceed to mobilize NS forces to assist in construction activities. This estimated cost does not include expenses related to the Construction Reviews as outlined below. Assuming the conditions aforementioned are met, the PE review for this type of construction project is estimated to cost approximately \$50,000. Additional PE reviews are required whenever project plans are revised and resubmitted. Also additional Preliminary Engineering expenses may be incurred for work performed by NS for attendance in pre-design meetings, design development coordination correspondence, documentation, reports, review of design concepts, and other work performed in support of the design-build team prior to delivery of the preliminary design plans and calculations for initial PE review.

Once the Preliminary plans are submitted, a detailed estimate of Preliminary Engineering costs will be prepared to include the cost of all services that NS will perform during the preliminary engineering review.

- 9) Provide a brief description of the typical required Railway services, with a schedule of typical project expenditures, which are required during project design and construction. This schedule is for informational purposes only to identify typical project expenditures and understood not to be all inclusive or to infer actual Preliminary and/or Construction costs

PE Review - Scope and cost estimates described in Comment 8 represent a typical PE review consisting of up to three (3) submissions of the plans and calculations, as required. Turnaround for a typical review is thirty (30) days. Additional reviews may be necessary depending on design changes made to accommodate comments and adherence to NS standards and requirements. See Public Projects Manual for Review Schedule. Estimated cost for Preliminary Engineering is approximately \$50,000.

Construction Engineering Management and Inspection - Construction Engineering Management and Inspection services will be provided on behalf of Norfolk Southern by a contract engineering firm. All applicable designs, calculations and plans submitted, as indicated in the Public Projects Manual, must be reviewed and approved by the NS representative before work related to those submissions are allowed to commence on NS Right-of-Way. Typical submissions may take up to thirty (30) days for review however every effort will be made to return sooner. Inspection services will also be provided on-site to ensure that work is being completed in accordance with the approved designs and plans. Once the preliminary design plans have been submitted a detailed CEM&I estimate will be prepared. Based on experience an order of magnitude cost estimate for this service should be approximately \$150,000 (both bridges constructed at same time). Actual expenses related to the Construction Engineering Management and Inspection may vary from the estimate value due to project conditions, construction duration, amount of submittals for review, and other variables.

NS Flagging Services - Flagging services will be required each day that the contractor is working on, over, under, or adjacent to Norfolk Southern Right-of-Way, or when such work may disturb a railroad structure or roadbed. Costs related to flagging services depend on the duration of the project. Approximate cost per day of flagging services is \$1100. It may take up to thirty (30) days to obtain flagging initially from the Railroad and due to labor agreements, it is necessary to give five (5) working days notification before flagging services may be discontinued and responsibility for payment stopped. It is anticipated that a total of 360 flagging days will be required for this project; therefore, the order of magnitude cost estimate for flagging services should be approximately \$400,000.

Signal Relocation - The proposed project should not impact the railroad's signal facilities. However, if during the PE or CEM&I phase of the project it is found that signal facilities will have to be relocated, an estimate will be provided to relocate those signals outside of the construction limits and be replaced after completion of the project. All signal work will be performed by NS forces. Appropriate coordination will be performed during the PE phase of the project to ensure that the signals are relocated prior to the contractor's scheduled start date for work within NS Right-of-Way.

- 10) Identify if a separate Easement Document will be required

Depending on the alignment of the replacement bridge located at milepost SC-3.8, and other construction elements, temporary and permanent easement may be required. The removal of the existing bridge located at milepost SC-3.6 may require temporary construction easements. The construction of the new flyover bridges located at milepost SC-3.4 will require temporary and permanent easements. All R/W plans and descriptions of easements must be submitted by SCDOT for review and approval. Review of the preliminary design plans and calculations will determine the size of temporary and permanent easements.

- 11) Engineering may also include office reviews, field reviews, attendance at meetings, and preparation of correspondence, reports, and other documentation in connection with the Project. Nothing contained in this Agreement shall oblige Railway to perform work which, in Railway's opinion, is not relevant to Railway's participation in the Project

If additional work is required by Norfolk Southern following the execution of the Preliminary Engineering Agreement or the Construction Agreement, the Department or its Contractor shall submit written or email request(s) to NS requesting or authorizing additional services. NS will provide additional field reviews, attend design and coordination meetings, prepare correspondence and reports, or generate other documentation needed to assist in facilitation of project design and/or construction schedule. If additional services will cause the approved PE and/or CEM&I authorization to be overrun, a revised cost estimate will be provided to the Department for approval of the increase in PE and/or CEM&I authorization.