



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

ROY COOPER  
GOVERNOR

JAMES H. TROGDON, III  
SECRETARY

June 04, 2019

**Addendum No. 1**

RE: Contract # C204330

WBS # 48037.3.3

F. A. # BRNHS-0023(28)

**Jackson County (B-5905)**

BRIDGE #27 OVER SCOTT CREEK AND SOUTHERN RAILROAD ON  
US-23 BUS

**June 18, 2019 Letting**

To Whom It May Concern:

Reference is made to the plans and proposal form furnished to you on this project.

The following revisions have been made to the Structure plans:

Sheet No.	Revision
All Sheets	Temporary structure added, necessitating additional sheets and the moving, renumbering and revising of other plan sheets. Notes revised and moved. New Note added referencing the temporary structure.

Please void your entire Structure plan set. A new Structure plan set will be sent to you.

The following revisions have been made to the proposal:

Page No.	Revisions
Proposal Cover	Note added that reads "Includes Addendum No. 1 Dated 06-04-2019" Bid Opening Date revised to <b>JUNE 18, 2019</b>

<b>Page No.</b>	<b>Revisions</b>
G-1	Revised date of availability and completion date in the project special provision entitled <b>CONTRACT TIME AND LIQUIDATED DAMAGES.</b> Revised date of availability and completion date in the project special provision entitled <b>INTERMEDIATE CONTRACT TIME NUMBER 1 AND LIQUIDATED DAMAGES.</b>
G-9	Revised the project special provision entitled <b>SCHEDULE OF ESTIMATED COMPLETION PROGRESS</b>
ST-1, ST-5 thru ST-35 and New Sheets ST-36 thru ST-38	Added special provision entitled <b>CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE AT STATION 13+30.84 -Y3DET</b>
RR-14	The paragraph under 7. <u>PAYMENT OF RAILROAD EXPENSES</u> has been revised.

Please void the above listed existing Pages in your proposal and staple the revised Pages thereto. Staple new Pages ST-36 thru ST-38 after revised Page ST-35 in your proposal.

On the item sheets the following pay items have been revised:

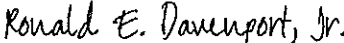
<u>Item</u>	<u>Description</u>	<u>Old Quantity</u>	<u>New Quantity</u>
10-0199000000-E-SP	Temporary Shoring	1,730 SF	1,890 SF
205-8007000000-N-400	Construction, Maintenance and Removal of Temporary Structure at Sta 13+30.84 - Y3DET	New Item	Lump Sum

The Contractor's bid must be based on these revised pay item quantities.

The electronic bidding file has been updated to reflect these revisions. Please download the Addendum File and follow the instructions for applying the addendum. Bid Express will not accept your bid unless the addendum has been applied.

The contract will be prepared accordingly.

Sincerely,

DocuSigned by:  
  
 F81B6038A47A442...

Ronald E. Davenport, Jr., PE  
 State Contract Officer

RED/jjr

Attachments

cc: Mr. Lamar Sylvester, PE  
Mr. Brian Burch, PE  
Mr. Ron Hancock, PE  
Mr. Chris Peoples, PE  
Mr. Jon Weathersbee, PE  
Mr. Ken Kennedy, PE  
Project File (2)

Mr. Ray Arnold, PE  
Ms. Jaci Kincaid  
Mr. Mike Gwyn  
Ms. Lori Strickland  
Ms. Penny Higgins  
Mr. Mitchell Dixon

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH, N.C.

PROPOSAL

**INCLUDES ADDENDUM No.1 DATED 06-04-2019**

DATE AND TIME OF BID OPENING: **JUNE 18, 2019 AT 2:00 PM**

CONTRACT ID C204330  
WBS 48037.3.3

FEDERAL-AID NO. BRNHS-0023(28)  
COUNTY JACKSON  
T.I.P. NO. B-5905  
MILES 0.235  
ROUTE NO. US 23  
LOCATION BRIDGE #27 OVER SCOTT CREEK AND SOUTHERN RAILROAD ON  
US-23 BUS.

TYPE OF WORK GRADING, DRAINAGE, PAVING, SIGNALS, AND STRUCTURE.

**NOTICE:**

ALL BIDDERS SHALL COMPLY WITH ALL APPLICABLE LAWS REGULATING THE PRACTICE OF GENERAL CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA WHICH REQUIRES THE BIDDER TO BE LICENSED BY THE N.C. LICENSING BOARD FOR CONTRACTORS WHEN BIDDING ON ANY NON-FEDERAL AID PROJECT WHERE THE BID IS \$30,000 OR MORE, EXCEPT FOR CERTAIN SPECIALTY WORK AS DETERMINED BY THE LICENSING BOARD. BIDDERS SHALL ALSO COMPLY WITH ALL OTHER APPLICABLE LAWS REGULATING THE PRACTICES OF ELECTRICAL, PLUMBING, HEATING AND AIR CONDITIONING AND REFRIGERATION CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA. NOTWITHSTANDING THESE LIMITATIONS ON BIDDING, THE BIDDER WHO IS AWARDED ANY FEDERAL - AID FUNDED PROJECT SHALL COMPLY WITH CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA FOR LICENSING REQUIREMENTS WITHIN 60 CALENDAR DAYS OF BID OPENING.

**BIDS WILL BE RECEIVED AS SHOWN BELOW:**

**THIS IS A ROADWAY & STRUCTURE PROPOSAL**

**5% BID BOND OR BID DEPOSIT REQUIRED**

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PROJECT SPECIAL PROVISIONSGENERALCONTRACT TIME AND LIQUIDATED DAMAGES:

(8-15-00) (Rev. 12-18-07)

108

SP1 G07 A

The date of availability for this contract is **July 29, 2019**, except that work in jurisdictional waters and wetlands shall not begin until a meeting between the DOT, Regulatory Agencies, and the Contractor is held as stipulated in the permits contained elsewhere in this proposal. This delay in availability has been considered in determining the contract time for this project.

The completion date for this contract is **February 28, 2023**.

Except where otherwise provided by the contract, observation periods required by the contract will not be a part of the work to be completed by the completion date and/or intermediate contract times stated in the contract. The acceptable completion of the observation periods that extend beyond the final completion date shall be a part of the work covered by the performance and payment bonds.

The liquidated damages for this contract are **Two Hundred Dollars (\$ 200.00)** per calendar day. These liquidated damages will not be cumulative with any liquidated damages which may become chargeable under Intermediate Contract Time Number 1.

INTERMEDIATE CONTRACT TIME NUMBER 1 AND LIQUIDATED DAMAGES:

(7-1-95) (Rev. 2-21-12)

108

SP1 G13 A

Except for that work required under the Project Special Provisions entitled *Planting, Reforestation* and/or *Permanent Vegetation Establishment*, included elsewhere in this proposal, the Contractor will be required to complete all work included in this contract and shall place and maintain traffic on same.

The date of availability for this intermediate contract time is **July 29, 2019**.

The completion date for this intermediate contract time is **September 1, 2022**.

The liquidated damages for this intermediate contract time are **Two Thousand Dollars (\$ 2,000.00)** per calendar day.

Upon apparent completion of all the work required to be completed by this intermediate date, a final inspection will be held in accordance with Article 105-17 and upon acceptance, the Department will assume responsibility for the maintenance of all work except *Planting, Reforestation* and/or *Permanent Vegetation Establishment*. The Contractor will be responsible for and shall make corrections of all damages to the completed roadway caused by his planting operations, whether occurring prior to or after placing traffic through the project.

Aggregate Base Course	Gal/Ton	0.55
Sub-Ballast	Gal/Ton	0.55
Asphalt Concrete Base Course, Type _____	Gal/Ton	2.90
Asphalt Concrete Intermediate Course, Type _____	Gal/Ton	2.90
Asphalt Concrete Surface Course, Type _____	Gal/Ton	2.90
Open-Graded Asphalt Friction Course	Gal/Ton	2.90
Permeable Asphalt Drainage Course, Type _____	Gal/Ton	2.90
Sand Asphalt Surface Course, Type _____	Gal/Ton	2.90
Aggregate for Cement Treated Base Course	Gal/Ton	0.55
Portland Cement for Cement Treated Base Course	Gal/Ton	0.55
___" Portland Cement Concrete Pavement	Gal/SY	0.245
Concrete Shoulders Adjacent to ___" Pavement	Gal/SY	0.245

**SCHEDULE OF ESTIMATED COMPLETION PROGRESS:**

(7-15-08) (Rev. 6-19-18)

108-2

SPI G58

The Contractor's attention is directed to the Standard Special Provision entitled *Availability of Funds Termination of Contracts* included elsewhere in this proposal. The Department of Transportation's schedule of estimated completion progress for this project as required by that Standard Special Provision is as follows:

	<u>Fiscal Year</u>	<u>Progress (% of Dollar Value)</u>
2020	(7/01/19 - 6/30/20)	42% of Total Amount Bid
2021	(7/01/20 - 6/30/21)	34% of Total Amount Bid
2022	(7/01/21 - 6/30/22)	22% of Total Amount Bid
2023	(7-1/22 - 6/30/23)	2% of Total Amount Bid

The Contractor shall also furnish his own progress schedule in accordance with Article 108-2 of the *2018 Standard Specifications*. Any acceleration of the progress as shown by the Contractor's progress schedule over the progress as shown above shall be subject to the approval of the Engineer.

**DISADVANTAGED BUSINESS ENTERPRISE:**

(10-16-07)(Rev. 2-19-19)

102-15(J)

SPI G61

**Description**

The purpose of this Special Provision is to carry out the U.S. Department of Transportation's policy of ensuring nondiscrimination in the award and administration of contracts financed in whole or in part with Federal funds. This provision is guided by 49 CFR Part 26.

**Definitions**

*Additional DBE Subcontractors* - Any DBE submitted at the time of bid that will not be used to meet the DBE goal. No submittal of a Letter of Intent is required.

*Committed DBE Subcontractor* - Any DBE submitted at the time of bid that is being used to meet the DBE goal by submission of a Letter of Intent. Or any DBE used as a replacement for a previously committed DBE firm.

# ST-1

Project B-5905

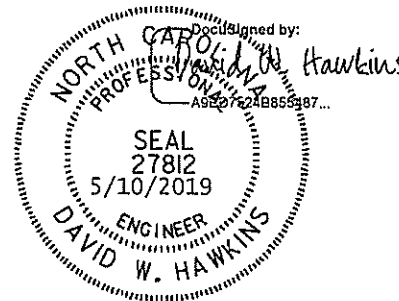
Jackson County

## Project Special Provisions Structure

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HNTB North Carolina, PC.  
 343 E. Six Forks Rd  
 Raleigh, NC 27609



# ST-5

## CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE AT STATION 13+30.84 -Y3DET-

(9-27-12)

Construct, maintain and afterwards remove a temporary structure in accordance with the applicable parts of the Standard Specifications and this Special Provision (structure only; the approaches are not a part of this pay item). Provide a temporary structure with a minimum overall length of 95 feet. Center the length of the structure about Station 13+30.84 -Y3DET- with the alignment, grade, and skew as indicated on the Roadway plans. If the skew is not 90°, lengthening the structure to accommodate a 90° skew is permitted. Provide a temporary structure with a minimum clear roadway width of 24 feet and an underclearance of no less than 21'-2" to the top of rail. Temporary structures over railroads shall maintain a minimum horizontal clearance of 25' from center of track to any temporary bent.

Design the temporary structure for HL-93 live load in accordance with the current edition of the AASHTO LRFD Bridge Design Specifications. The design of temporary structures need not satisfy the Extreme Event I Load Combination of the AASHTO LRFD Bridge Design Specifications. As a minimum, design the bridge rails for the AASHTO LRFD Test Level 2 (TL-2) crash test criteria, except when the plans state that a Test Level 3 (TL-3) bridge rail is required. The bridge rail design criteria are defined in the current edition of the AASHTO LRFD Bridge Design Specifications. In addition, design structural elements to which the bridge rail is attached, or elements which may receive loads transmitted through the rail, to distribute and/or withstand these loads.

Attach the bridge rails in a way that permits the bridge approach railing system to transition from the guardrail system and attach to the rigid railing system on the temporary bridge.

Submit detailed sketches of the joint assembly for review and approval. The sketches shall provide an installation procedure and dimensions depicting adequate access to install welded or bolted connections. The maximum joint opening shall be limited to 3 inches.

Provide a timber floor of laminated construction on the temporary structure. Place a sufficiently thick bottom layer of lumber normal to the centerline of roadway and a top layer of 2" x 8" lumber on a 45° skew with the centerline of roadway. Lumber wider than 8" is permitted if approved. For the bottom layer, use lumber that is dressed on all four sides to ensure a uniform width and thickness. For the top layer, use lumber dressed only on one side to ensure a uniform thickness. Place the lumber so that the crown of the lumber is the rough side and is "facing up" in order to receive a tack coat. Apply sand seal to the timber floor after the top layer of lumber is completed. When preservative treatment is specified, follow AWPA Standards for the applicable use.

For Sand Seal, apply a liquid asphalt material and one or more applications of fine aggregate on the surface of wooden deck detour bridges. Use materials meeting the requirements of Division 10 of the Standard Specifications shown below:

- Asphalt, Grade CRS-2 or CRS-1 ..... Article 1020-3
- Aggregate, #1S..... Article 1005-3

Clean and dry the surface of the bridges before applying treatment. Apply asphalt emulsion at a rate of 0.15 - 0.20 gal/yd<sup>2</sup> followed by a uniform coverage of sand at a rate of 10 – 15 lbs/yd<sup>2</sup>.



## ST-6

Roll the seal with a pneumatic-tired roller. Allow the seal to cure for a minimum of 24 hours before opening to traffic. Maintain the sand seal in an acceptable condition during the life of the detour, making additional applications as necessary.

If the timbers in the bottom layer of lumber are at least 8 inches thick, an asphalt wearing surface of at least 3 inches in thickness is permitted in lieu of the sand seal and top layer of lumber. Bolt the timbers together horizontally in minimum 4 foot mats. Prior to the assembly of the mats, have all four sides of the individual timbers inspected in accordance with Article 1082-1 of the Standard Specifications. Place the face of timbers in contact with girder flanges so that they are even and positively bear on all girder flanges. If necessary, provide shimming to ensure positive bearing. Minor variations are permissible in the evenness of the top surface of timbers that is in contact with the asphalt. Secure the timber floor to the girder flanges at regular intervals.

Other floor systems are permitted if approved.

If timber piles are used, use piles that are new and conform to ASTM D25. Rough-peeled or clean-peeled untreated timber piles are permitted.

All wood and timber products shall be inspected in accordance with Article 1082-1 of the Standard Specifications. The use of ungraded timber and lumber is not permitted. Use material conforming to grading rules of SPIB, NELMA or other nationally recognized specification.

Submit design calculations to the Engineer for review and approval that, as a minimum, include stress calculations for the following structural components: railings, rail post, rail post connections, flooring, main girders or floor beam system, bent cap, pile bearing, pile as a structural member and longitudinal and lateral stability of pile bents if necessary. Indicate the condition of any used materials in the design calculations. Detailed drawings and design calculations of the structural components shall be signed and sealed by a North Carolina Registered Professional Engineer. For stream crossings, determine the pile stability assuming a scour depth equal to 250% of the pile diameter or width below the existing bed elevation. The Engineer may require a more detailed analysis of scour depth for pile bents containing more than a single row of piles.

Include material specifications for all new and used materials, including commercial grades and species of timber and lumber, in the detail drawings of the structure. In addition, show the location and a detailed sketch of the used materials indicating condition of the material, the location and geometry of existing but unused holes, attachments left over from previous use and any other irregularities in the material.

New and used material for temporary structures constructed by the Contractor, including systems intended for multiple usages, shall be inspected and approved prior to assembly.

Fabricators of temporary structures utilizing modular panels shall be AISC certified or equivalent. Submit proof of certification in accordance with Section 1072 of the Standard Specifications.

All critical bolted connections in the temporary structure require new high strength bolts. Indicate the location of the critical connections and recommended bolt size with tightening procedures in the detail drawings of the structure. The use of used high strength bolts is limited to non-critical connections and is subject to approval. For new high strength bolts, furnish the Engineer a copy of the manufacturer's test report for each component. Have the report indicate the testing date, the

## ST-7

location where the components were manufactured, the lot number of the material represented, the rotational capacity tests lot number and the source identification marking used by the manufacturer of each component.

Before the temporary structure is loaded, the contractor shall inspect the structure and submit a written statement certifying that the erected structure complies with the approved detailed drawings. Temporary structures utilizing modular panels shall be inspected and certified by a manufacturer's representative. Any condition that does not comply with the accepted drawings, or any other condition deemed unsatisfactory by the Engineer, is cause for rejection until corrections are made.

Once vehicular traffic is allowed on a structure utilizing modular panels, routine inspection by the manufacturer will be required. The first inspection of the structure will be one month after opening the structure to vehicular traffic. Subsequent inspections shall be performed every six months. An inspection report provided by the Department must be completed by the manufacturer and submitted to the Engineer within 3 days of each inspection. Any items documented in the report indicating safety or stability issues with the structure must be reported immediately. All safety and stability repairs will be performed promptly by the Contractor and approved by the Engineer.

The lump sum price bid for "Construction, Maintenance and Removal of Temporary Structure at Station 13+30.84 -Y3DET-" will be full compensation for the above work including all materials, equipment, tools, labor and incidentals necessary to complete and monitor the work.

## ST-8

**CONSTRUCTION, MAINTENANCE AND REMOVAL  
OF TEMPORARY ACCESS AT STATION 19+41.94 -L-**

(SPECIAL)

**1.0 GENERAL**

Construct, maintain, and remove the temporary access required to provide the working area necessary for construction of the new bridge, construction of the temporary detour structure, or for the removal of an existing bridge, as applicable. Temporary access may involve the use of a rock causeway [workpad], a work bridge, or other methods; however, all types of temporary access are required to meet the requirements of all permits, the Standard Specifications, and this Special Provision.

**2.0 TEMPORARY ROCK CAUSEWAY [WORKPAD]**

At the contractor's option, construction of a temporary rock causeway [workpad] within the limits shown on the plans is permitted. Build the causeway [workpad] with Class II riprap topped by a layer of Class B riprap or as otherwise designated on the plans or approved by the Engineer. If desired, recycle the Class II riprap used in the causeway [workpad] for placement in the final riprap slope protection as directed by the Engineer. No payment will be made for recycled riprap as this material is considered incidental to the causeway [workpad] placement and removal. If this option is exercised, no adjustment in contract bid price will be allowed due to an underrun in the quantity of "Rip Rap Class II (2'-0" Thick)".

Completely remove all causeway [workpad] material including pipes and return the entire causeway [workpad] footprint to the original contours and elevations within 90 days of the completion of the deck slab or as otherwise required by permits.

For sites affected by moratoriums or restrictions on in-stream work: Do not construct or remove causeway [workpad] during the moratorium period shown on the permit. If the completion of the deck slab falls within the prohibitive dates for causeway [workpad] construction or removal, begin causeway [workpad] removal immediately following the prohibitive dates.

At the contractor's option, construction of a temporary work bridge in lieu of the causeway(s) [workpad] is acceptable, provided the temporary work bridge satisfies all permits. Submit details of the temporary work bridge to the Engineer prior to constructing the work bridge to ensure conformance with the plans and all permits. Completely remove the temporary bridge prior to final acceptance or as otherwise required by the permits.

**3.0 TEMPORARY WORK BRIDGE**

At the contractor's option, construction of a temporary work bridge within the limits shown on the plans is permitted. The temporary work bridge shall have a minimum span length of 20 feet. Submit details of the temporary work bridge to the Engineer prior to constructing the work bridge to ensure conformance with the plans and all permits. Completely remove the temporary bridge prior to final acceptance or as otherwise required by the permits.

## ST-9

### 4.0 BASIS OF PAYMENT

The lump sum price bid for “Construction, Maintenance and Removal of Temporary Access at Station 19+41.94 -L-” will be full compensation for the above work, or other methods of access, including all material, pipes, work bridge components, equipment, tools, labor, disposal, and incidentals necessary to complete the work.

## ST-10

### TEMPORARY BENTS

(9-30-11)

When girder erection requires the use of temporary bents, design, construct, maintain and afterwards remove the temporary bents in accordance with the Standard Specifications and this Special Provision. For the purpose of this Special Provision, the term "temporary bents" includes girder erection temporary bents, vertical shoring and proprietary shoring systems.

Design temporary bents in accordance with the 1995 AASHTO Guide Design Specification for Bridge Temporary Works (including the 2008 Interim Revisions) and the Project Special Provision entitled "Falsework and Formwork". The design calculations and detailed drawings of the structural components shall be signed and sealed by a North Carolina Registered Professional Engineer.

Submit design calculations and detailed drawings of temporary bents to the Engineer for review and approval. The detailed drawings shall show the position of the temporary bents in relationship to the existing travel way, the location of the temporary bents with respect to the ends of the girders, the top of support elevations for setting girders in the cambered position, and a girder erection procedure. For stream crossings, determine the bent stability assuming a scour depth equal to 250% of the pile diameter or width below the existing bed elevation. The Engineer may require a more detailed analysis of scour depth for temporary bents containing more than a single row of piles.

Include all material specifications for new and used materials in the detail drawings. In addition, show the location of the used materials indicating condition of the material, the location and geometry of existing but unused holes, attachments left over from previous use and any other irregularities in the material. Account for the condition of all used materials in the design calculations.

For all manufactured components, provide engineering data supplied by the manufacturer. For proprietary shoring systems, evaluate differential leg loading.

Provide access to all new and used materials for inspection prior to assembly.

Before the temporary bent is loaded, the contractor shall inspect the bent in the presence of the Engineer, and submit a written statement certifying that the erected bent complies with the approved detailed drawings. Any condition or material that does not comply with the accepted drawings, or any other condition deemed unsatisfactory by the Engineer, is cause for rejection until corrections are made.

Remove temporary bents in such a manner as to permit the structure to uniformly and gradually take the stresses due to its own weight. During removal do not disturb or otherwise damage the finished work.

Unless otherwise specified, temporary bents will not be directly measured. Payment will be full compensation at the contract unit prices for the various pay items requiring temporary bents.

# ST-11

## DISC BEARINGS

(2-3-14)

### 1.0 GENERAL

This item consists of furnishing, fabrication and installation of disc bearings in accordance with AASHTO LRFD Bridge Design Specifications, the Standard Specifications, the recommendations of the manufacturer, the details shown on the plans and as specified herein. Disc Bearings consist of a polyether urethane structural element (elastomeric disc) confined by upper and lower steel bearing plates. Equip disc bearings with a shear restriction mechanism (shear pin) to prevent movement of the disc. Supply disc bearings as fixed bearings and guided expansion bearings as designated by the Contract Documents.

Fixed disc bearings allow rotation but no longitudinal or transverse movement in the bearing plane. Fixed bearings consist of a steel sole plate, an elastomeric disc, a shear pin, a steel upper bearing plate, a steel lower bearing plate, a steel masonry plate, a preformed bearing pad, anchor bolts, nuts and washers.

Guided expansion disc bearings allow rotation and only longitudinal movement in the bearing plane. Guided expansion disc bearings consist of a steel sole plate, a polished stainless steel sheet welded to the bottom of the sole plate within the sliding region, a steel upper bearing plate, a layer of virgin polytetrafluoroethylene (PTFE) material bonded to the top and sides of the upper plate within the sliding regions, guide bars welded to the bottom of the sole plate surrounding the sliding region to restrict transverse movement, polished stainless steel sheets welded to the sides of the guide bars within the sliding regions, an elastomeric disc, a shear pin, a steel lower bearing plate, a steel masonry plate, a preformed bearing pad, anchor bolts, nuts, washers, pipe sleeves, a closure plate, grout and various sizes of standard pipe, and any other necessary material as detailed on the plans. Align the stainless steel sheet on the bottom of the sole plate with the PTFE material on the top of the upper bearing plate. Align the PTFE material on the sides of the upper bearing plate with the stainless steel sheets on the sides of the guide bars.

### 2.0 MATERIALS

Use disc bearings produced by the same manufacturer.

Use AASHTO M270 Grade 50W (345W) or Grade 50 (345) for all steel plates except the stainless steel sheets in the disc bearings. Clean, coat, and seal the plates in the disc bearing assemblies except for the areas with special facings and the areas that come in contact with the elastomer disc, in accordance with the Special Provision for "Thermal Sprayed Coatings (Metallization)". The surfaces shall be coated to a thickness of 8 mils minimum on all external parts. Repair surfaces that are abraded or damaged after the application of metallizing in accordance with the Special Provision for "Thermal Sprayed Coatings (Metallization)".

Provide anchor bolts and nuts in accordance with the Standard Specifications.

When the maximum plan dimension of the sheet is 12" or less, provide a stainless steel sheet in expansion disc bearings that is at least 16 gage or 1/16". When the maximum plan dimension is greater than 12", provide a stainless steel sheet that is at least 11 gage or 1/8".

## ST-12

Ensure that all stainless steel sheets are in conformance with ASTM A240/A167 Type 304 and polished to a minimum #8 mirror surface finish.

Blast clean the surfaces of the steel sole plate and the steel guide bars that will be attached to the stainless steel sheets to a near white condition in accordance with the Standard Specifications. Position and clamp the back of the stainless steel sheets in contact with the steel sole plate and the steel guide bars. Apply the stainless steel sheets to the blast cleaned surfaces of the steel sole plate and the steel guide bars as soon as possible after blasting and before any visible oxidation of the blast cleaned surfaces occurs. Weld the stainless steel sheets continuously around the perimeter using a tungsten inert gas, wire-fed welder.

For the PTFE sheets bonded to the top and side sliding surfaces of the steel upper bearing plate, used as mating surfaces for the stainless steel sheets attached to the steel sole plate and the guide bars, provide an unfilled virgin PTFE sheet (recessed) or a glass-fiber filled PTFE sheet, resulting from skiving billets formed under hydraulic pressure and heat. Provide resin that conforms to the requirements of ASTM D4894 or D4895.

To bond the PTFE sheets and the steel upper bearing plate, use heat cured high temperature epoxy capable of withstanding temperature of  $-320^{\circ}\text{F}$  to  $500^{\circ}\text{F}$ .

Weld the guide bars in expansion bearings to the bottom of the sole plate. Alternatively, integrate the guide bars and sole plate from the same piece of steel, ensuring that the required dimensions are provided. Provide 1/16" clearances between the stainless steel sheets attached to the side sliding surfaces of the guide bars and the PTFE sheet attached to the side sliding surface of the steel upper bearing plate.

Mold the polyether urethane structural element (elastomeric disc) from a polyether urethane compound. The top and bottom surfaces of the disc shall be roughened. Ensure that the physical properties of the polyether urethane conform to the following requirements:

Physical Property	ASTM Test Method	Requirements	
		Min.	Max.
Hardness, Type D Durometer	D2240	60	64
Tensile Stress psi At 100% elongation At 200% elongation	D412	2000 3700	-----
Tensile Strength psi	D412	5000	-----
Ultimate Elongation %	D412	220	-----
Compression Set % 22 hrs. at 158°F	D395	-----	40

## ST-13

### 3.0 DESIGN

Design the disc bearings for the loads and movements shown on the contract plans. However, use the anchor bolt size, length, spacing and masonry plate thickness as shown on the contract plans and provide an overall bearing height within ½ inch of the bearing assembly height shown on the contract plans. Either combine and cast the sole plate and upper bearing plate (for fixed bearings), the sole plate and guide bars (for expansion bearings), and the lower bearing plate and masonry plate (for fixed and expansion bearings) as a single unit or weld together prior to the installation of the disc.

Ensure access and removal of anchor bolt nut is not in conflict with the upper bearing plate, guide bars or sole plate.

When designing the bearings, use the following allowable bearing stresses:

- On polyether urethane structural element: 5000 psi
- On PTFE Sliding Surface, filled or unfilled PTFE (recessed): 3500 psi

Submit eight sets of shop drawings and one set of design calculations for review, comments and acceptance. Have a North Carolina Registered Professional Engineer check and seal the shop drawings and design calculations.

After the Engineer reviews the drawings and, if necessary, corrections are made, submit one 22" x 34" reproducible set of the working drawings.

### 4.0 SAMPLING AND TESTING

#### A. Sampling

The manufacturer is responsible for randomly selecting and testing sample bearings from completed lots of bearings. The manufacturer is also responsible for certifying that the completed bearings and their components have been tested and are in compliance with the requirements of this Special Provision. The manufacturer shall furnish the results of the tests to the Materials and Tests Engineer.

#### B. Testing

##### 1. Proof Load Test

Load a test bearing to 150% of the bearing's rated design capacity and simultaneously subject it to a rotational range of 0.02 radians (1.146°) for a period of 1 hour.

Have the bearing visually examined both during the test and upon disassembly after the test. Any resultant visual defects, such as extruded or deformed elastomer or PTFE, damaged seals or rings, or cracked steel is cause for rejection.

Keep continuous and uniform contact between the polyether urethane element and the bearing plates and between the stainless steel sheets and the PTFE sheets (for



## ST-14

expansion bearings) for the duration of the test. Any observed lift-off or separation is cause for rejection.

### 2. Sliding Coefficient of Friction

For all guided expansion bearings, measure the sliding coefficient of friction at the bearing's design capacity in accordance with the test method described below, and on the fifth and fiftieth cycles, at a sliding speed of 1 in/min.

Calculate the sliding coefficient of friction as the horizontal load required to maintain continuous sliding of one bearing, divided by the bearing's vertical design capacity.

The test results are evaluated as follows:

- A maximum measured sliding coefficient of friction of 3%.
- A visual examination both during and after the test. Any resultant visual defects, such as bond failure, physical destruction, cold flow of PTFE to the point of debonding, or damaged components is cause for rejection of the lot.

Using undamaged test bearings in the work is permitted.

### 3. Test Method

The test method and equipment shall meet the following requirements:

- a. Arrange the test to determine the coefficient of friction on the first movement of the manufactured bearing.
- b. Clean the bearing surface prior to testing.
- c. Conduct the test at maximum working stress for the PTFE surface with the test load applied continuously for 12 hours prior to measuring friction.
- d. Determine the first movement static and dynamic coefficient of friction of the test bearing at a sliding speed of less than 1 in/min, not to exceed:

0.04 unfilled PTFE

0.08 filled PTFE

- e. Subject the bearing specimen to 100 movements of at least 1 inch of relative movement and, if the test facility permits, the full design movement at a speed of less than 1 ft/min. Following this test determine the static and kinetic coefficient of friction again. The specimen is considered a failure if it exceeds the values measured in (d) above or if it shows any signs of bond failure or other defects.

Bearings represented by test specimens passing the above requirements are approved for use in the structure subject to on-site inspection for visible defects.

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### 5.0 INSTALLATION

Store disc bearings delivered to the bridge site upright and under cover on a platform above the ground surface. Protect the bearings from injury at all times and, before placing the bearings, dry and clean all dirt, oil, grease or other foreign substances from the bearing. Do not disassemble the bearings during installation, except at the manufacturer's direction. Lift bearing assemblies by their bottom surfaces only, unless lifting brackets that have been designed and approved by the manufacturer are used. Ensure that the polyether urethane disc is not exposed to direct flame or sparks. Place the bearings in accordance with the recommendations of the manufacturer, Contract Drawings, and as directed by the Engineer. If there is any discrepancy between the recommendations of the manufacturer, Special Provisions, and Contract Drawings, the Engineer is the sole judge in reconciling any such discrepancy.

Provide preformed bearing pads under the masonry plates in accordance with Article 1079-1 of the Standard Specifications.

Do not install any bearing before the Engineer approves it.

### 6.0 BASIS OF PAYMENT

Payment for all disc bearings will be at the lump sum contract price bid for "Disc Bearings" which includes full compensation for furnishing all disc bearings, labor, materials, tools, equipment, testing and incidentals required to complete the work in accordance with the Standard Specifications, this Special Provision, the manufacturer's requirements and as directed by the Engineer.

## ST-16

### THERMAL SPRAYED COATINGS (METALLIZATION)

(12-1-2017)

#### 1.0 DESCRIPTION

Apply a thermal sprayed coating (TSC) and sealer to metal surfaces in accordance with the Thermal Sprayed Coatings (Metallization) Program and as specified herein when called for on the plans or by other Special Provisions. Use only Arc Sprayed application methods to apply TSC. The Engineer must approve other methods of application.

The Thermal Sprayed Coatings (Metallization) Program is available on the Materials and Tests Unit website.

#### 2.0 QUALIFICATIONS

Only use NCDOT approved TSC Contractors meeting the requirements outlined in the Thermal Sprayed Coatings (Metallization) Program.

#### 3.0 MATERIALS

Use only materials meeting the requirements of Section 7 of the Thermal Sprayed Coatings (Metallization) Program.

#### 4.0 SURFACE PREPARATION AND TSC APPLICATION

Surface preparation of TSC surfaces shall meet the requirements of Section 8 of the Thermal Sprayed Coatings (Metallization) Program. Apply TSC with the alloy to the thickness specified on the plans or as required by Thermal Sprayed Coatings (Metallization) Program.

#### 5.0 INSPECTION AND TESTING

The TSC Contractor must conduct inspections and tests listed in the Thermal Sprayed Coatings (Metallization) Program.

#### 6.0 REPAIRS

Perform all shop repairs in accordance with the procedures outlined in the Thermal Sprayed Coatings (Metallization) Program.

Repairs associated with field welding shall be made by removing the existing metallizing by blast or power tool cleaning. Affected areas shall be addressed as follows:

- For Marine Environments, incorporate a minimum surface preparation in accordance with SSPC SP-11 (Power Tool Cleaning to Bare Metal) and require an approved epoxy mastic coating applied in accordance with the manufacturer's recommendation. Apply a minimum of two (2) coats at a rate of 5-7 (WFT) per coat to the affected area.
- For Non-Marine Environments, incorporate a minimum surface preparation in accordance with SSPC SP-11 (Power Tool Cleaning to Bare Metal) and require an approved organic

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zinc-rich coating applied in accordance with the manufacturer's recommendation. Apply a minimum of two (2) coats at a rate of 5-7 (WFT) per coat to the affected area.

1. Minor localized areas less than or equal to 0.1 ft<sup>2</sup> with exposed substrate shall be repaired as outlined above for marine and non-marine environments.
  2. Large localized areas greater than 0.1 ft<sup>2</sup> with exposed substrate shall require the Contractor to submit a detailed repair procedure to the Engineer for review and approval.
- Repair methods for areas where the substrate has not been exposed shall be mutually agreed upon between the Contractor and TSC Contractor as approved by the Engineer.

### **7.0 TWELVE MONTH OBSERVATION PERIOD**

All TSC materials applied under the Thermal Sprayed Coatings (Metallization) Program shall be evaluated twelve (12) months after project acceptance for defective materials and workmanship.

### **8.0 BASIS OF PAYMENT**

The contract price bid for the metal component to which the TSC is applied will be full compensation for the thermal sprayed coating.

## ST-18

**EXPANSION JOINT SEALS**

(9-30-11)

**1.0 GENERAL**

The work covered by this Special Provision consists of furnishing and installing the expansion joint seals as shown on the contract drawings. All materials, labor, equipment and incidentals necessary for the proper installation of the expansion joint seals are included.

**2.0 MATERIAL**

Provide expansion joint seals capable of accommodating a total movement measured parallel to the centerline of the roadway as shown on plans.

Provide an elastomeric component for each expansion joint seal that is a continuous unit for the entire length of the joint. Do not field splice the elastomeric component. Only vulcanized shop splicing of the elastomeric component is permitted. The minimum length of an elastomeric component before shop splicing is 20 feet. However, one piece shorter than 20 feet is permitted. Provide an elastomeric component that is clearly shop marked to indicate the top side and joint location of the elastomeric component. On skewed bridges, or under unsymmetrical conditions, clearly mark the left side of the elastomeric component. Left is defined as being on the left when facing in the direction of increasing station. Inspect the seals upon receipt to ensure that the marks are clearly visible upon installation.

Make sure the convolution of the gland does not project above the top of the hold-down plates when the joint opening is in the most compressed condition. Use either elastic polychloroprene (neoprene) or ethyl propylene diene monomer (EPDM) for the elastomer that meets the following minimum properties:

	ASTM TEST METHOD	REQUIREMENTS
Hardness, Durometer - Shore A	D2240	60 ± 5, Neoprene (upward corrugated shape - fabric reinforced) 75 ± 5, EPDM and Neoprene (upward non-corrugated shape) 80 ± 5, EPDM (upward corrugated shape-fabric reinforced)
Tensile Strength	D412	2000 psi (min.)
Elongation at Break	D412	250% (min.)
Width of Gland in Relaxed Condition	N/A	10" ± 0.25"

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Thickness of Upturned portion of gland	N/A	0.25" non-corrugated shape, -0.032" to +0.032"
Thickness of Upturned portion of gland	N/A	0.1875" corrugated shape, -0.032" to +0.032"
Thickness of Flat portion of gland	N/A	0.1563", -0.032" to +0.032"

For fabric reinforced glands, submit one unreinforced sample per lot number, up to 500 feet of Expansion Joint Seal, to the Engineer for testing.

Only field splice hold-down plates at crown points, at abrupt changes in the deck slab cross slope, and on lane lines. Splicing within travel lanes is not permitted and splicing on edge lines is not required. Field splice hold-down plates between the edge line and gutter upturn and where necessary for proper installation and alignment is permitted. Show all splice locations on the working drawings for approval. For the location of lane markings at the expansion joint seal, see the Structure plans. At the splice locations, locate the hold-down bolts 3 inches from the end of the hold-down plate. At splice locations where changes in deck slab cross slope occur, cut the ends of hold-down plates parallel to the bridge centerline for skewers less than 80° and greater than 100°.

Do not use welded shop splices in hold-down plates.

### 3.0 SHOP DRAWINGS

Submit nine sets of working drawings to the Engineer for review, comments and acceptance. Show complete details drawn to scale and include:

- The proposed template details including the makeup of the template
- The proposed method of holding the base angle assembly in place while concrete is cast around it
- The proposed procedure to correct for the effects of beam movement and rotation when setting width of joint opening
- The proposed chronology of installation including the sequence and direction of the concrete casting
- The details of cross connectors between base angles, such as steel bars with slots bolted to angles, to maintain evenness between the adjacent base angles while accommodating movement that occurs when concrete is cast. Indicate when bolts are loosened to allow movement.
- The proposed method for removing the hold-down plate
- A section detail through the joint showing horizontal offset dimensions of the base angles from the centerline joint. This detail is required when the vertical face of the joint opening is not perpendicular to the roadway surface (e.g. when the roadway grade is significant).

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Have someone other than the one who prepares the drawing check all detailed drawings and include the signatures of both the drafter and checker on each sheet of the drawings. The Engineer returns unchecked drawings to the Contractor. Provide all completed drawings well in advance of the scheduled installation time for the expansion joint seal.

### 4.0 INSTALLATION

Provide supports for the base angle assembly at a maximum spacing of 9 feet. Place supports near field splices of base angles to ensure that field splices are straight and even. Provide base angles with ½" diameter weep holes at 12 inch centers to allow bleeding of trapped air and/or water. Do not obstruct the weep holes with falsework. Make the bottom of the trough parallel to grade and the sides parallel to the sides of the expansion joint seal.

For damaged areas, depressions, spalls, cracks, or irregularities of curbs or decks adjacent to the expansion joint, submit a proposed method of repair and repair material specifications for approval.

If the Engineer deems any aspects of the expansion joint seals unacceptable, make necessary corrections.

### 5.0 INSPECTION

When concrete is cast, use a non-aluminum, 10 foot, true to line straight edge to check and grade the top of the slab on each side of the joint to ensure smooth transition between spans.

#### Watertight Integrity Test

- Upon completion of an expansion joint seal, perform a water test on the top surface to detect any leakage. Cover the roadway section of the joint from curb to curb, or barrier rail to barrier rail, with water, either ponded or flowing, not less than 1 inch above the roadway surface at all points. Block sidewalk sections and secure an unnozzled water hose delivering approximately 1 gallon of water per minute to the inside face of the bridge railing, trained in a downward position about 6 inches above the sidewalks, such that there is continuous flow of water across the sidewalk and down the curb face of the joint.
- Maintain the ponding or flowing of water on the roadway and continuous flow across sidewalks and curbs for a period of 5 hours. At the conclusion of the test, the underside of the joint is closely examined for leakage. The expansion joint seal is considered watertight if no obvious wetness is visible on the Engineer's finger after touching a number of underdeck areas. Damp concrete that does not impart wetness to the finger is not a sign of leakage.
- If the joint system leaks, locate the place(s) of leakage and take any repair measures necessary to stop the leakage at no additional cost to the Department. Use repair measures recommended by the manufacturer and approved by the Engineer prior to beginning corrective work.
- If measures to eliminate leakage are taken, perform a subsequent water integrity test subject to the same conditions as the original test. Subsequent tests carry the same

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responsibility as the original test and are performed at no extra cost to the Department.

### **6.0 BASIS OF PAYMENT**

Basis of payment for all expansion joint seals will be at the lump sum contract price for "Expansion Joint Seals" which price and payment will be full compensation for furnishing all material, including any steel accessory plates for sidewalks, medians and rails, labor, tools, and incidentals necessary for installing the expansion joint seal in place and including all materials, labor, tools and incidentals for performing the original watertight integrity test.



## ST-22

### **FALSEWORK AND FORMWORK**

(4-5-12)

#### **1.0 DESCRIPTION**

Use this Special Provision as a guide to develop temporary works submittals required by the Standard Specifications or other provisions; no additional submittals are required herein. Such temporary works include, but are not limited to, falsework and formwork.

Falsework is any temporary construction used to support the permanent structure until it becomes self-supporting. Formwork is the temporary structure or mold used to retain plastic or fluid concrete in its designated shape until it hardens. Access scaffolding is a temporary structure that functions as a work platform that supports construction personnel, materials, and tools, but is not intended to support the structure. Scaffolding systems that are used to temporarily support permanent structures (as opposed to functioning as work platforms) are considered to be falsework under the definitions given. Shoring is a component of falsework such as horizontal, vertical, or inclined support members. Where the term “temporary works” is used, it includes all of the temporary facilities used in bridge construction that do not become part of the permanent structure.

Design and construct safe and adequate temporary works that will support all loads imposed and provide the necessary rigidity to achieve the lines and grades shown on the plans in the final structure.

#### **2.0 MATERIALS**

Select materials suitable for temporary works; however, select materials that also ensure the safety and quality required by the design assumptions. The Engineer has authority to reject material on the basis of its condition, inappropriate use, safety, or nonconformance with the plans. Clearly identify allowable loads or stresses for all materials or manufactured devices on the plans. Revise the plan and notify the Engineer if any change to materials or material strengths is required.

#### **3.0 DESIGN REQUIREMENTS**

##### **A. Working Drawings**

Provide working drawings for items as specified in the contract, or as required by the Engineer, with design calculations and supporting data in sufficient detail to permit a structural and safety review of the proposed design of the temporary work.

On the drawings, show all information necessary to allow the design of any component to be checked independently as determined by the Engineer.

When concrete placement is involved, include data such as the drawings of proposed sequence, rate of placement, direction of placement, and location of all construction joints. Submit the number of copies as called for by the contract.

When required, have the drawings and calculations prepared under the guidance of, and sealed by, a North Carolina Registered Professional Engineer who is knowledgeable in temporary works design.

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If requested by the Engineer, submit with the working drawings manufacturer's catalog data listing the weight of all construction equipment that will be supported on the temporary work. Show anticipated total settlements and/or deflections of falsework and forms on the working drawings. Include falsework footing settlements, joint take-up, and deflection of beams or girders.

As an option for the Contractor, overhang falsework hangers may be uniformly spaced, at a maximum of 36 inches, provided the following conditions are met:

Member Type (PCG)	Member Depth, (inches)	Max. Overhang Width, (inches)	Max. Slab Edge Thickness, (inches)	Max. Screed Wheel Weight, (lbs.)	Bracket Min. Vertical Leg Extension, (inches)
II	36	39	14	2000	26
III	45	42	14	2000	35
IV	54	45	14	2000	44
MBT	63	51	12	2000	50
MBT	72	55	12	1700	48

Overhang width is measured from the centerline of the girder to the edge of the deck slab.

For Type II, III & IV prestressed concrete girders (PCG), 45-degree cast-in-place half hangers and rods must have a minimum safe working load of 6,000 lbs.

For MBT prestressed concrete girders, 45-degree angle holes for falsework hanger rods shall be cast through the girder top flange and located, measuring along the top of the member, 1'-2 1/2" from the edge of the top flange. Hanger hardware and rods must have a minimum safe working load of 6,000 lbs.

The overhang bracket provided for the diagonal leg shall have a minimum safe working load of 3,750 lbs. The vertical leg of the bracket shall extend to the point that the heel bears on the girder bottom flange, no closer than 4 inches from the bottom of the member. However, for 72-inch members, the heel of the bracket shall bear on the web, near the bottom flange transition.

Provide adequate overhang falsework and determine the appropriate adjustments for deck geometry, equipment, casting procedures and casting conditions.

If the optional overhang falsework spacing is used, indicate this on the falsework submittal and advise the girder producer of the proposed details. Failure to notify the Engineer of hanger type and hanger spacing on prestressed concrete girder casting drawings may delay the approval of those drawings.

Falsework hangers that support concentrated loads and are installed at the edge of thin top flange concrete girders (such as bulb tee girders) shall be spaced so as not to exceed 75% of the manufacturer's stated safe working load. Use of dual leg hangers (such as Meadow Burke HF-42 and HF-43) are not allowed on concrete girders with thin top flanges. Design the falsework and forms supporting deck slabs and overhangs on girder

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bridges so that there will be no differential settlement between the girders and the deck forms during placement of deck concrete.

When staged construction of the bridge deck is required, detail falsework and forms for screed and fluid concrete loads to be independent of any previous deck pour components when the mid-span girder deflection due to deck weight is greater than  $\frac{3}{4}$ ".

Note on the working drawings any anchorages, connectors, inserts, steel sleeves or other such devices used as part of the falsework or formwork that remains in the permanent structure. If the plan notes indicate that the structure contains the necessary corrosion protection required for a Corrosive Site, epoxy coat, galvanize or metalize these devices. Electroplating will not be allowed. Any coating required by the Engineer will be considered incidental to the various pay items requiring temporary works.

Design falsework and formwork requiring submittals in accordance with the 1995 AASHTO *Guide Design Specifications for Bridge Temporary Works* except as noted herein.

### 1. Wind Loads

Table 2.2 of Article 2.2.5.1 is modified to include wind velocities up to 110 mph. In addition, Table 2.2A is included to provide the maximum wind speeds by county in North Carolina.

**Table 2.2 - Wind Pressure Values**

Height Zone feet above ground	Pressure, lb/ft <sup>2</sup> for Indicated Wind Velocity, mph				
	70	80	90	100	110
0 to 30	15	20	25	30	35
30 to 50	20	25	30	35	40
50 to 100	25	30	35	40	45
over 100	30	35	40	45	50

### 2. Time of Removal

The following requirements replace those of Article 3.4.8.2.

Do not remove forms until the concrete has attained strengths required in Article 420-16 of the Standard Specifications and these Special Provisions.

Do not remove forms until the concrete has sufficient strength to prevent damage to the surface.

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Table 2.2A - Steady State Maximum Wind Speeds by Counties in North Carolina

COUNTY	25 YR (mph)	COUNTY	25 YR (mph)	COUNTY	25 YR (mph)
Alamance	70	Franklin	70	Pamlico	100
Alexander	70	Gaston	70	Pasquotank	100
Alleghany	70	Gates	90	Pender	100
Anson	70	Graham	80	Perquimans	100
Ashe	70	Granville	70	Person	70
Avery	70	Greene	80	Pitt	90
Beaufort	100	Guilford	70	Polk	80
Bertie	90	Halifax	80	Randolph	70
Bladen	90	Harnett	70	Richmond	70
Brunswick	100	Haywood	80	Robeson	80
Buncombe	80	Henderson	80	Rockingham	70
Burke	70	Hertford	90	Rowan	70
Cabarrus	70	Hoke	70	Rutherford	70
Caldwell	70	Hyde	110	Sampson	90
Camden	100	Iredell	70	Scotland	70
Carteret	110	Jackson	80	Stanley	70
Caswell	70	Johnston	80	Stokes	70
Catawba	70	Jones	100	Surry	70
Cherokee	80	Lee	70	Swain	80
Chatham	70	Lenoir	90	Transylvania	80
Chowan	90	Lincoln	70	Tyrell	100
Clay	80	Macon	80	Union	70
Cleveland	70	Madison	80	Vance	70
Columbus	90	Martin	90	Wake	70
Craven	100	McDowell	70	Warren	70
Cumberland	80	Mecklenburg	70	Washington	100
Currituck	100	Mitchell	70	Watauga	70
Dare	110	Montgomery	70	Wayne	80
Davidson	70	Moore	70	Wilkes	70
Davie	70	Nash	80	Wilson	80
Duplin	90	New Hanover	100	Yadkin	70
Durham	70	Northampton	80	Yancey	70
Edgecombe	80	Onslow	100		
Forsyth	70	Orange	70		

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### B. Review and Approval

The Engineer is responsible for the review and approval of temporary works' drawings.

Submit the working drawings sufficiently in advance of proposed use to allow for their review, revision (if needed), and approval without delay to the work.

The time period for review of the working drawings does not begin until complete drawings and design calculations, when required, are received by the Engineer.

Do not start construction of any temporary work for which working drawings are required until the drawings have been approved. Such approval does not relieve the Contractor of the responsibility for the accuracy and adequacy of the working drawings.

## 4.0 CONSTRUCTION REQUIREMENTS

All requirements of Section 420 of the Standard Specifications apply.

Construct temporary works in conformance with the approved working drawings. Ensure that the quality of materials and workmanship employed is consistent with that assumed in the design of the temporary works. Do not weld falsework members to any portion of the permanent structure unless approved. Show any welding to the permanent structure on the approved construction drawings.

Provide tell-tales attached to the forms and extending to the ground, or other means, for accurate measurement of falsework settlement. Make sure that the anticipated compressive settlement and/or deflection of falsework does not exceed 1 inch. For cast-in-place concrete structures, make sure that the calculated deflection of falsework flexural members does not exceed 1/240 of their span regardless of whether or not the deflection is compensated by camber strips.

### A. Maintenance and Inspection

Inspect and maintain the temporary work in an acceptable condition throughout the period of its use. Certify that the manufactured devices have been maintained in a condition to allow them to safely carry their rated loads. Clearly mark each piece so that its capacity can be readily determined at the job site.

Perform an in-depth inspection of an applicable portion(s) of the temporary works, in the presence of the Engineer, not more than 24 hours prior to the beginning of each concrete placement. Inspect other temporary works at least once a month to ensure that they are functioning properly. Have a North Carolina Registered Professional Engineer inspect the cofferdams, shoring, sheathing, support of excavation structures, and support systems for load tests prior to loading.

### B. Foundations

Determine the safe bearing capacity of the foundation material on which the supports for temporary works rest. If required by the Engineer, conduct load tests to verify proposed bearing capacity values that are marginal or in other high-risk situations.

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The use of the foundation support values shown on the contract plans of the permanent structure is permitted if the foundations are on the same level and on the same soil as those of the permanent structure.

Allow for adequate site drainage or soil protection to prevent soil saturation and washout of the soil supporting the temporary works supports.

If piles are used, the estimation of capacities and later confirmation during construction using standard procedures based on the driving characteristics of the pile is permitted. If preferred, use load tests to confirm the estimated capacities; or, if required by the Engineer conduct load tests to verify bearing capacity values that are marginal or in other high risk situations.

The Engineer reviews and approves the proposed pile and soil bearing capacities.

### **5.0 REMOVAL**

Unless otherwise permitted, remove and keep all temporary works upon completion of the work. Do not disturb or otherwise damage the finished work.

Remove temporary works in conformance with the contract documents. Remove them in such a manner as to permit the structure to uniformly and gradually take the stresses due to its own weight.

### **6.0 METHOD OF MEASUREMENT**

Unless otherwise specified, temporary works will not be directly measured.

### **7.0 BASIS OF PAYMENT**

Payment at the contract unit prices for the various pay items requiring temporary works will be full compensation for the above falsework and formwork.

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### SUBMITTAL OF WORKING DRAWINGS

(6-28-17)

#### 1.0 GENERAL

Submit working drawings in accordance with Article 105-2 of the *Standard Specifications* and this provision. For this provision, "submittals" refers to only those listed in this provision. The list of submittals contained herein does not represent a list of required submittals for the project. Submittals are only necessary for those items as required by the contract. Make submittals that are not specifically noted in this provision directly to the Engineer. Either the Structures Management Unit or the Geotechnical Engineering Unit or both units will jointly review submittals.

If a submittal contains variations from plan details or specifications or significantly affects project cost, field construction or operations, discuss the submittal with and submit all copies to the Engineer. State the reason for the proposed variation in the submittal. To minimize review time, make sure all submittals are complete when initially submitted. Provide a contact name and information with each submittal. Direct any questions regarding submittal requirements to the Engineer, Structures Management Unit contacts or the Geotechnical Engineering Unit contacts noted below.

In order to facilitate in-plant inspection by NCDOT and approval of working drawings, provide the name, address and telephone number of the facility where fabrication will actually be done if different than shown on the title block of the submitted working drawings. This includes, but is not limited to, precast concrete items, prestressed concrete items and fabricated steel or aluminum items.

#### 2.0 ADDRESSES AND CONTACTS

For submittals to the Structures Management Unit, use the following addresses:

Via US mail:

Mr. B. C. Hanks, P. E.  
State Structures Engineer  
North Carolina Department  
of Transportation  
Structures Management Unit  
1581 Mail Service Center  
Raleigh, NC 27699-1581

Attention: Mr. J. L. Bolden, P. E.

Via other delivery service:

Mr. B. C. Hanks, P. E.  
State Structures Engineer  
North Carolina Department  
of Transportation  
Structures Management Unit  
1000 Birch Ridge Drive  
Raleigh, NC 27610

Attention: Mr. J. L. Bolden, P. E.

Submittals may also be made via email.

Send submittals to:

[jlbolden@ncdot.gov](mailto:jlbolden@ncdot.gov) (James Bolden)

Send an additional e-copy of the submittal to the following address:

[comile@ncdot.gov](mailto:comile@ncdot.gov) (Emmanuel Omile)

[mrorie@ncdot.gov](mailto:mrorie@ncdot.gov) (Madonna Rorie)

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For submittals to the Geotechnical Engineering Unit, use the following addresses:

For projects in Divisions 1-7, use the following Eastern Regional Office address:

Via US mail:

Mr. Chris Kreider, P. E.  
Eastern Regional Geotechnical  
Manager  
North Carolina Department  
of Transportation  
Geotechnical Engineering Unit  
Eastern Regional Office  
1570 Mail Service Center  
Raleigh, NC 27699-1570

Via other delivery service:

Mr. Chris Kreider, P. E.  
Eastern Regional Geotechnical  
Manager  
North Carolina Department  
of Transportation  
Geotechnical Engineering Unit  
Eastern Regional Office  
3301 Jones Sausage Road, Suite 100  
Garner, NC 27529

Via Email: [EastGeotechnicalSubmittal@ncdot.gov](mailto:EastGeotechnicalSubmittal@ncdot.gov)

For projects in Divisions 8-14, use the following Western Regional Office address:

Via US mail or other delivery service:

Mr. Eric Williams, P. E.  
Western Regional Geotechnical  
Manager  
North Carolina Department  
of Transportation  
Geotechnical Engineering Unit  
Western Regional Office  
5253 Z Max Boulevard  
Harrisburg, NC 28075

Via Email: [WestGeotechnicalSubmittal@ncdot.gov](mailto:WestGeotechnicalSubmittal@ncdot.gov)

The status of the review of structure-related submittals sent to the Structures Management Unit can be viewed from the Unit's website, via the "Drawing Submittal Status" link.

The status of the review of geotechnical-related submittals sent to the Geotechnical Engineering Unit can be viewed from the Unit's website, via the "Geotechnical Construction Submittals" link.

Direct any questions concerning submittal review status, review comments or drawing markups to the following contacts:

Primary Structures Contact: James Bolden (919) 707 – 6408  
(919) 250 – 4082 facsimile  
[jlbolden@ncdot.gov](mailto:jlbolden@ncdot.gov)

Secondary Structures Contacts: Emmanuel Omile (919) 707 – 6451  
Madonna Rorie (919) 707 – 6508



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Eastern Regional Geotechnical Contact (Divisions 1-7):

Chris Kreider (919) 662 – 4710  
[ckreider@ncdot.gov](mailto:ckreider@ncdot.gov)

Western Regional Geotechnical Contact (Divisions 8-14):

Eric Williams (704) 455 – 8902  
[ewilliams3@ncdot.gov](mailto:ewilliams3@ncdot.gov)

### 3.0 SUBMITTAL COPIES

Furnish one complete copy of each submittal, including all attachments, to the Engineer. At the same time, submit the number of hard copies shown below of the same complete submittal directly to the Structures Management Unit and/or the Geotechnical Engineering Unit.

The first table below covers “Structure Submittals”. The Engineer will receive review comments and drawing markups for these submittals from the Structures Management Unit. The second table in this section covers “Geotechnical Submittals”. The Engineer will receive review comments and drawing markups for these submittals from the Geotechnical Engineering Unit.

Unless otherwise required, submit one set of supporting calculations to either the Structures Management Unit or the Geotechnical Engineering Unit unless both units require submittal copies in which case submit a set of supporting calculations to each unit. Provide additional copies of any submittal as directed.

#### STRUCTURE SUBMITTALS

Submittal	Copies Required by Structures Management Unit	Copies Required by Geotechnical Engineering Unit	Contract Reference Requiring Submittal <sup>1</sup>
Arch Culvert Falsework	5	0	Plan Note, SN Sheet & “Falsework and Formwork”
Box Culvert Falsework <sup>7</sup>	5	0	Plan Note, SN Sheet & “Falsework and Formwork”
Cofferdams	6	2	Article 410-4
Foam Joint Seals <sup>6</sup>	9	0	“Foam Joint Seals”
Expansion Joint Seals (hold down plate type with base angle)	9	0	“Expansion Joint Seals”

## ST-31

Expansion Joint Seals (modular)	2, then 9	0	“Modular Expansion Joint Seals”
Expansion Joint Seals (strip seals)	9	0	“Strip Seals”
Falsework & Forms <sup>2</sup> (substructure)	8	0	Article 420-3 & “Falsework and Formwork”
Falsework & Forms (superstructure)	8	0	Article 420-3 & “Falsework and Formwork”
Girder Erection over Railroad	5	0	Railroad Provisions
Maintenance and Protection of Traffic Beneath Proposed Structure	8	0	“Maintenance and Protection of Traffic Beneath Proposed Structure at Station ____”
Metal Bridge Railing	8	0	Plan Note
Metal Stay-in-Place Forms	8	0	Article 420-3
Metalwork for Elastomeric Bearings <sup>4,5</sup>	7	0	Article 1072-8
Miscellaneous Metalwork <sup>4,5</sup>	7	0	Article 1072-8
Disc Bearings <sup>4</sup>	8	0	“Disc Bearings”
Overhead and Digital Message Signs (DMS) (metalwork and foundations)	13	0	Applicable Provisions
Placement of Equipment on Structures (cranes, etc.)	7	0	Article 420-20
Precast Concrete Box Culverts	2, then 1 reproducible	0	“Optional Precast Reinforced Concrete Box Culvert at Station ____”
Prestressed Concrete Cored Slab (detensioning sequences) <sup>3</sup>	6	0	Article 1078-11
Prestressed Concrete Deck Panels	6 and 1 reproducible	0	Article 420-3
Prestressed Concrete Girder (strand elongation and detensioning sequences)	6	0	Articles 1078-8 and 1078-11
Removal of Existing Structure over Railroad	5	0	Railroad Provisions

## ST-32

Revised Bridge Deck Plans (adaptation to prestressed deck panels)	2, then 1 reproducible	0	Article 420-3
Revised Bridge Deck Plans (adaptation to modular expansion joint seals)	2, then 1 reproducible	0	“Modular Expansion Joint Seals”
Sound Barrier Wall (precast items)	10	0	Article 1077-2 & “Sound Barrier Wall”
Sound Barrier Wall Steel Fabrication Plans <sup>5</sup>	7	0	Article 1072-8 & “Sound Barrier Wall”
Structural Steel <sup>4</sup>	2, then 7	0	Article 1072-8
Temporary Detour Structures	10	2	Article 400-3 & “Construction, Maintenance and Removal of Temporary Structure at Station ____”
TFE Expansion Bearings <sup>4</sup>	8	0	Article 1072-8

## FOOTNOTES

1. References are provided to help locate the part of the contract where the submittals are required. References in quotes refer to the provision by that name. Articles refer to the *Standard Specifications*.
2. Submittals for these items are necessary only when required by a note on plans.
3. Submittals for these items may not be required. A list of pre-approved sequences is available from the producer or the Materials & Tests Unit.
4. The fabricator may submit these items directly to the Structures Management Unit.
5. The two sets of preliminary submittals required by Article 1072-8 of the *Standard Specifications* are not required for these items.
6. Submittals for Fabrication Drawings are not required. Submittals for Catalogue Cuts of Proposed Material are required. See Section 5.A of the referenced provision.
7. Submittals are necessary only when the top slab thickness is 18” or greater.

## ST-33

GEOTECHNICAL SUBMITTALS

Submittal	Copies Required by Geotechnical Engineering Unit	Copies Required by Structures Management Unit	Contract Reference Requiring Submittal <sup>1</sup>
Drilled Pier Construction Plans <sup>2</sup>	1	0	Subarticle 411-3(A)
Crosshole Sonic Logging (CSL) Reports <sup>2</sup>	1	0	Subarticle 411-5(A)(2)
Pile Driving Equipment Data Forms <sup>2,3</sup>	1	0	Subarticle 450-3(D)(2)
Pile Driving Analyzer (PDA) Reports <sup>2</sup>	1	0	Subarticle 450-3(F)(3)
Retaining Walls <sup>4</sup>	1 drawings, 1 calculations	2 drawings	Applicable Provisions
Temporary Shoring <sup>4</sup>	1 drawings, 1 calculations	2 drawings	“Temporary Shoring” & “Temporary Soil Nail Walls”

## FOOTNOTES

- References are provided to help locate the part of the contract where the submittals are required. References in quotes refer to the provision by that name. Subarticles refer to the *Standard Specifications*.
- Submit one hard copy of submittal to the Engineer. Submit a second copy of submittal electronically (PDF via email), US mail or other delivery service to the appropriate Geotechnical Engineering Unit regional office. Electronic submission is preferred.
- The Pile Driving Equipment Data Form is available from:  
[https://connect.ncdot.gov/resources/Geological/Pages/Geotech\\_Forms\\_Details.aspx](https://connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx)  
See second page of form for submittal instructions.
- Electronic copy of submittal is required. See referenced provision.

## ST-34

### CRANE SAFETY

(8-15-05)

Comply with the manufacturer specifications and limitations applicable to the operation of any and all cranes and derricks. Prime contractors, sub-contractors, and fully operated rental companies shall comply with the current Occupational Safety and Health Administration regulations (OSHA).

Submit all items listed below to the Engineer prior to beginning crane operations involving critical lifts. A critical lift is defined as any lift that exceeds 75 percent of the manufacturer's crane chart capacity for the radius at which the load will be lifted or requires the use of more than one crane. Changes in personnel or equipment must be reported to the Engineer and all applicable items listed below must be updated and submitted prior to continuing with crane operations.

#### **Crane Safety Submittal List**

- A. **Competent Person:** Provide the name and qualifications of the "Competent Person" responsible for crane safety and lifting operations. The named competent person will have the responsibility and authority to stop any work activity due to safety concerns.
- B. **Riggers:** Provide the qualifications and experience of the persons responsible for rigging operations. Qualifications and experience should include, but not be limited to, weight calculations, center of gravity determinations, selection and inspection of sling and rigging equipment, and safe rigging practices.
- C. **Crane Inspections:** Inspection records for all cranes shall be current and readily accessible for review upon request.
- D. **Certifications:** By July 1, 2006, crane operators performing critical lifts shall be certified by NC CCO (National Commission for the Certification of Crane Operators), or satisfactorily complete the Carolinas AGC's Professional Crane Operator's Proficiency Program. Other approved nationally accredited programs will be considered upon request. All crane operators shall also have a current CDL medical card. Submit a list of anticipated critical lifts and corresponding crane operator(s). Include current certification for the type of crane operated (small hydraulic, large hydraulic, small lattice, large lattice) and medical evaluations for each operator.

## ST-35

### **GROUT FOR STRUCTURES**

(12-1-17)

#### **1.0 DESCRIPTION**

This special provision addresses grout for use in pile blockouts, grout pockets, shear keys, dowel holes and recesses for structures. This provision does not apply to grout placed in post-tensioning ducts for bridge beams, girders, decks, end bent caps, or bent caps. Mix and place grout in accordance with the manufacturer's recommendations, the applicable sections of the Standard Specifications and this provision.

#### **2.0 MATERIAL REQUIREMENTS**

Unless otherwise noted on the plans, use a Type 3 Grout in accordance with Section 1003 of the Standard Specifications.

Initial setting time shall not be less than 10 minutes when tested in accordance with ASTM C266.

Construction loading and traffic loading shall not be allowed until the 3 day compressive strength is achieved.

#### **3.0 SAMPLING AND PLACEMENT**

Place and maintain components in final position until grout placement is complete and accepted. Concrete surfaces to receive grout shall be free of defective concrete, laitance, oil, grease and other foreign matter. Saturate concrete surfaces with clean water and remove excess water prior to placing grout.

#### **4.0 BASIS OF PAYMENT**

No separate payment will be made for "Grout for Structures". The cost of the material, equipment, labor, placement, and any incidentals necessary to complete the work shall be considered incidental to the structure item requiring grout.

## ST-36

**ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND  
RENOVATION ACTIVITIES**

(12-30-15)

**1.0 INSPECTION FOR ASBESTOS CONTAINING MATERIAL**

Prior to conducting bridge demolition or renovation activities, the Contractor shall thoroughly inspect the bridge or affected components for the presence of asbestos containing material (ACM) using a firm prequalified by NCDOT to perform asbestos surveys. The inspection must be performed by a N.C. accredited asbestos inspector with experience inspecting bridges or other industrial structures. The N.C. accredited asbestos inspector must conduct a thorough inspection, identifying all asbestos-containing material as required by the Environmental Protection Agency National Emission Standards for Hazardous Air Pollutants (NESHAP) Code of Federal Regulations (CFR) 40 CFR, Part 61, Subpart M.

The Contractor shall submit an inspection report to the Engineer, which at a minimum must include information required in 40 CFR 763.85 (a)(4) vi)(A)-(E), as well as a project location map, photos of existing structure, the date of inspection and the name, N.C. accreditation number, and signature of the N.C. accredited asbestos inspector who performed the inspection and completed the report. The cover sheet of the report shall include project identification information. Place the following notes on the cover sheet of the report and check the appropriate box:

ACM was found  
 ACM was not found

**2.0 REMOVAL AND DISPOSAL OF ASBESTOS CONTAINING MATERIAL**

If ACM is found, notify the Engineer. Compensation for removal and disposal of ACM is considered extra work in accordance with Article 104-7 of the Standard Specifications.

An Asbestos Removal Permit must be obtained from the Health Hazards Control Unit (HHCU) of the N.C. Department of Health & Human Services, Division of Public Health, if more than 35 cubic feet, 160 square feet, or 260 linear feet of regulated ACM (RACM) is to be removed from a structure and this work must be completed by a contractor prequalified by NCDOT to perform asbestos abatement. RACM is defined in 40 CFR, Part 61, Subpart M. Note: 40 CFR 763.85 (a)(4) vi)(D) defines ACM as surfacing, TSI and Miscellaneous which does not meet the NESHAP RACM.

**3.0 DEMOLITION NOTIFICATION**

Even if no ACM is found (or if quantities are less than those required for a permit), a Demolition Notification (DHHS-3768) must be submitted to the HHCU. Notifications and Asbestos Permit applications require an original signature and must be submitted to the HHCU 10 working days prior to beginning demolition activities. The 10 working day period starts based on the post-marked date or date of hand delivery. Demolition that does not begin as originally notified requires submission of a separate revision form HHCU 3768-R to HHCU. Reference the North Carolina Administrative Code, Chapter 10A, Subchapter 41C, Article .0605 for directives on revision submissions.

## ST-37

### Contact Information

Health Hazards Control Unit (HHCU)  
N.C. Department of Health and Human Services  
1912 Mail Service Center  
Raleigh, NC 27699-1912  
Telephone: (919) 707-5950  
Fax: (919) 870-4808

#### **4.0 SPECIAL CONSIDERATIONS**

Buncombe, Forsyth, and Mecklenburg counties also have asbestos permitting and NESHAP requirements must be followed. For projects involving permitted RACM removals, both the applicable county and the state (HHCU) must be notified.

For demolitions with no RACM, only the local environmental agencies must be notified. Contact information is as follows:

#### Buncombe County

WNC Regional Air Pollution Control Agency  
49 Mt. Carmel Road  
Asheville, NC 28806  
(828) 250-6777

#### Forsyth County

Environmental Affairs Department  
537 N. Spruce Street  
Winston-Salem, NC 27101  
(336) 703-2440

#### Mecklenburg County

Land Use and Environmental Services Agency  
Mecklenburg Air Quality  
700 N. Tryon Street  
Charlotte, NC 28202  
(704) 336-5430

#### **5.0 ADDITIONAL INFORMATION**

Additional information may be found on N.C. asbestos rules, regulations, procedures and N.C. accredited inspectors, as well as associated forms for demolition notifications and asbestos permit applications at the N.C. Asbestos Hazard Management Program website:

[www.epi.state.nc.us/epi/asbestos/ahmp.html](http://www.epi.state.nc.us/epi/asbestos/ahmp.html)

#### **6.0 BASIS OF PAYMENT**

Payment for the work required in this provision will be at the lump sum contract unit price for "Asbestos Assessment". Such payment will be full compensation for all asbestos inspections, reports, permitting and notifications.



## ST-38

### MOMENT SLAB WITH SIDEWALK

(SPECIAL)

#### 1.0 GENERAL

Construct sidewalk with moment slab in accordance with the plans and accepted submittals. Construct moment slab with sidewalk in accordance with Section 420 of the Standard Specifications. Do not remove slab falsework until concrete achieves a minimum compressive strength of 2400psi.

Moment slab with sidewalk shall accommodate the "1'-2" x 3'-2 3/4" Concrete Parapet" with Two Bar Metal Rail. Cost of the parapet and metal rail has been included in those pay items and shall not be considered in the cost of the Moment Slab with Sidewalk except for required reinforcing dowels. The cost of the sidewalk shall be included in the cost for "Moment Slab with Sidewalk" and shall not be paid separately.

#### 2.0 BASIS OF PAYMENT

Moment Slab with Sidewalk will be measured and paid for in linear feet. Moment slab with sidewalk will be measured as the length of parapet above retaining wall. The contract unit price for Moment Slab with Sidewalk will be full compensation for earthwork, materials, hauling and any incidental labor for providing sidewalks with moment slab in accordance with the contract.

**7. PAYMENT OF RAILROAD EXPENSES**

The Department shall be responsible for paying the Railroad directly for the cost of any labor, materials, and other expenses associated with the Construction. Such labor, materials, expenses included, but are not limited to, the rate of pay for the flagman, watchman, and the Authorized Representative of the Railroad, travel, lodging, and meal expenses, and all those costs and expenses referenced in the Right of Way Agreement. The Railroad shall invoice the Department for such labor, materials, and other expenses on a regular basis, and the Department shall pay the amount invoiced within thirty days.

**8. INSURANCE**

The Contractor shall procure a commercial general liability insurance policy and a railroad protective liability policy under such terms, limits, and conditions acceptable to the Railroad. Proof of such insurance shall be provided to the Railroad prior to the beginning of the Construction or at any time during the Construction. This insurance shall be carried until the final inspection and acceptance of the Project by the Department and Railroad.

- A. In addition to any other forms of insurance or bonds required under the terms of the contract and specifications, the Contractor will be required to carry insurance of the following kinds and amounts:
  - i. A Commercial General Liability Insurance having a combined single limit of not less than \$2,000,000 per occurrence for all loss, damage, cost and expense, including attorneys' fees, arising out of bodily injury liability and property damage liability during the policy period. Said policy shall include explosion, collapse, and underground hazard (XCU) coverage, shall be endorsed to name Railroad as the certificate holders and as an additional insured on a primary and noncontributory basis, and shall include a severability of interests provision.
  - ii. An original Railroad Protective Liability Insurance naming the Railroad as a named insured and having a combined single limit of not less than \$5,000,000 each occurrence and \$10,000,000 in the aggregate applying separately to each annual period.
- B. All insurance required under the preceding subsection A shall be underwritten by insurers and be of such form and content, as may be acceptable to the Railroad. Prior to the Construction, the Contractor shall furnish to the Railroad, for approval, the original policy described in subsection (a)(ii) and a certificate of insurance evidencing the existence of a policy with the coverage described in subsection (a)(i).
- C. The Contractor also explicitly waives any and all possible rights to subrogation, and the Contractor's general liability policy shall include a waiver of subrogation in favor of the Railroad.

County : Jackson

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
ROADWAY ITEMS						
0001	0000100000-N	800	MOBILIZATION	Lump Sum	L.S.	
0002	0000400000-N	801	CONSTRUCTION SURVEYING	Lump Sum	L.S.	
0003	0022000000-E	225	UNCLASSIFIED EXCAVATION	26,590 CY		
0004	0028000000-N	SP	TYPE I STANDARD APPROACH FILL STATION ***** (19+41.94 -L-)	Lump Sum	L.S.	
0005	0050000000-E	226	SUPPLEMENTARY CLEARING & GRUB- BING	1 ACR		
0006	0057000000-E	226	UNDERCUT EXCAVATION	450 CY		
0007	0063000000-N	SP	GRADING	Lump Sum	L.S.	
0008	0195000000-E	265	SELECT GRANULAR MATERIAL	400 CY		
0009	0196000000-E	270	GEOTEXTILE FOR SOIL STABILIZA- TION	600 SY		
0010	0199000000-E	SP	TEMPORARY SHORING	1,890 SF		
0011	0318000000-E	300	FOUNDATION CONDITIONING MATE- RIAL, MINOR STRUCTURES	200 TON		
0012	0320000000-E	300	FOUNDATION CONDITIONING GEO- TEXTILE	600 SY		
0013	0343000000-E	310	15" SIDE DRAIN PIPE	272 LF		
0014	0344000000-E	310	18" SIDE DRAIN PIPE	132 LF		
0015	0345000000-E	310	24" SIDE DRAIN PIPE	76 LF		
0016	0348000000-E	310	*** SIDE DRAIN PIPE ELBOWS (15")	8 EA		
0017	0348000000-E	310	*** SIDE DRAIN PIPE ELBOWS (18")	2 EA		
0018	0348000000-E	310	*** SIDE DRAIN PIPE ELBOWS (24")	2 EA		

County : Jackson

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0019	0448200000-E	310	15" RC PIPE CULVERTS, CLASS IV	952		LF
0020	0448300000-E	310	18" RC PIPE CULVERTS, CLASS IV	224		LF
0021	0448400000-E	310	24" RC PIPE CULVERTS, CLASS IV	140		LF
0022	0974000000-E	SP	*** WELDED STEEL PIPE, ***** THICK, GRADE B, (UNDER RR) (24", 0.5")	72		LF
0023	0995000000-E	340	PIPE REMOVAL	422		LF
0024	1099500000-E	505	SHALLOW UNDERCUT	100		CY
0025	1099700000-E	505	CLASS IV SUBGRADE STABILIZA- TION	200		TON
0026	1121000000-E	520	AGGREGATE BASE COURSE	2,211		TON
0027	1220000000-E	545	INCIDENTAL STONE BASE	300		TON
0028	1275000000-E	600	PRIME COAT	1,637		GAL
0029	1297000000-E	607	MILLING ASPHALT PAVEMENT, ***** DEPTH (1-1/2")	1,090		SY
0030	1491000000-E	610	ASPHALT CONC BASE COURSE, TYPE B25.0C	500		TON
0031	1503000000-E	610	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C	430		TON
0032	1519000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	1,025		TON
0033	1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	115		TON
0034	1693000000-E	654	ASPHALT PLANT MIX, PAVEMENT REPAIR	30		TON
0035	2000000000-N	806	RIGHT-OF-WAY MARKERS	25		EA
0036	2022000000-E	815	SUBDRAIN EXCAVATION	224		CY

County : Jackson

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0037	2026000000-E	815	GEOTEXTILE FOR SUBSURFACE DRAINS	1,000 SY		
0038	2036000000-E	815	SUBDRAIN COARSE AGGREGATE	168 CY		
0039	2044000000-E	815	6" PERFORATED SUBDRAIN PIPE	1,000 LF		
0040	2070000000-N	815	SUBDRAIN PIPE OUTLET	2 EA		
0041	2077000000-E	815	6" OUTLET PIPE	12 LF		
0042	2253000000-E	840	PIPE COLLARS	0.553 CY		
0043	2275000000-E	SP	FLOWABLE FILL	5 CY		
0044	2286000000-N	840	MASONRY DRAINAGE STRUCTURES	22 EA		
0045	2364000000-N	840	FRAME WITH TWO GRATES, STD 840.16	2 EA		
0046	2366000000-N	840	FRAME WITH TWO GRATES, STD 840.24	1 EA		
0047	2367000000-N	840	FRAME WITH TWO GRATES, STD 840.29	6 EA		
0048	2374000000-N	840	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E)	2 EA		
0049	2374000000-N	840	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)	4 EA		
0050	2374000000-N	840	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)	7 EA		
0051	2549000000-E	846	2'-6" CONCRETE CURB & GUTTER	1,830 LF		
0052	2556000000-E	846	SHOULDER BERM GUTTER	36 LF		
0053	2591000000-E	848	4" CONCRETE SIDEWALK	800 SY		
0054	2605000000-N	848	CONCRETE CURB RAMPS	2 EA		

County : Jackson

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0055	2612000000-E	848	6" CONCRETE DRIVEWAY	20 SY		
0056	2619000000-E	850	4" CONCRETE PAVED DITCH	270 SY		
0057	2647000000-E	852	5" MONOLITHIC CONCRETE ISLANDS (SURFACE MOUNTED)	40 SY		
0058	2724000000-E	857	PRECAST REINFORCED CONCRETE BARRIER, SINGLE FACED	90 LF		
0059	3030000000-E	862	STEEL BEAM GUARDRAIL	1,462.5 LF		
0060	3045000000-E	862	STEEL BEAM GUARDRAIL, SHOP CURVED	100 LF		
0061	3150000000-N	862	ADDITIONAL GUARDRAIL POSTS	5 EA		
0062	3195000000-N	862	GUARDRAIL END UNITS, TYPE AT-1	1 EA		
0063	3210000000-N	862	GUARDRAIL END UNITS, TYPE CAT-1	1 EA		
0064	3215000000-N	SP	GUARDRAIL ANCHOR UNITS, TYPE III	4 EA		
0065	3287000000-N	SP	GUARDRAIL END UNITS, TYPE TL-3	2 EA		
0066	3360000000-E	863	REMOVE EXISTING GUARDRAIL	309 LF		
0067	3380000000-E	862	TEMPORARY STEEL BEAM GUARDRAIL	712.5 LF		
0068	3382000000-E	862	TEMPORARY STEEL BEAM GUARDRAIL (SHOP CURVED)	62.5 LF		
0069	3387000000-N	SP	TEMPORARY GUARDRAIL ANCHOR UNITS, TYPE ***** (B-77)	1 EA		
0070	3387000000-N	SP	TEMPORARY GUARDRAIL ANCHOR UNITS, TYPE ***** (III)	6 EA		
0071	3389150000-N	SP	TEMPORARY GUARDRAIL END UNITS, TYPE ***** (TL3)	6 EA		

County : Jackson

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0072	3436000000-N	862	GENERIC GUARDRAIL ITEM TEMPORARY GUARDRAIL END UNITS, TYPE AT-1	1 EA		
0073	3575000000-E	SP	GENERIC FENCING ITEM BLACK VINYL COATED CHAIN LINK FENCE, 60" FABRIC	928 LF		
0074	3578000000-N	SP	GENERIC FENCING ITEM BLACK METAL LINE POSTS, 60" CHAIN LINK FENCE, VINYL COATED	79 EA		
0075	3578000000-N	SP	GENERIC FENCING ITEM BLACK METAL TERMINAL POSTS, 60" CHAIN LINK FENCE, VINYL CO ATED	24 EA		
0076	3628000000-E	876	RIP RAP, CLASS I	4 TON		
0077	3649000000-E	876	RIP RAP, CLASS B	35 TON		
0078	3656000000-E	876	GEOTEXTILE FOR DRAINAGE	1,045 SY		
0079	4072000000-E	903	SUPPORTS, 3-LB STEEL U-CHANNEL	334 LF		
0080	4096000000-N	904	SIGN ERECTION, TYPE D	2 EA		
0081	4102000000-N	904	SIGN ERECTION, TYPE E	10 EA		
0082	4116100000-N	904	SIGN ERECTION, RELOCATE TYPE **** (GROUND MOUNTED) (D)	3 EA		
0083	4116100000-N	904	SIGN ERECTION, RELOCATE TYPE **** (GROUND MOUNTED) (E)	1 EA		
0084	4155000000-N	907	DISPOSAL OF SIGN SYSTEM, U- CHANNEL	12 EA		
0085	4192000000-N	907	DISPOSAL OF SUPPORT, U-CHANNEL	4 EA		
0086	4400000000-E	1110	WORK ZONE SIGNS (STATIONARY)	440 SF		
0087	4405000000-E	1110	WORK ZONE SIGNS (PORTABLE)	208 SF		
0088	4410000000-E	1110	WORK ZONE SIGNS (BARRICADE MOUNTED)	88 SF		

County : Jackson

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0089	4420000000-N	1120	PORTABLE CHANGEABLE MESSAGE SIGN	2 EA		
0090	4430000000-N	1130	DRUMS	46 EA		
0091	4435000000-N	1135	CONES	30 EA		
0092	4445000000-E	1145	BARRICADES (TYPE III)	64 LF		
0093	4455000000-N	1150	FLAGGER	50 DAY		
0094	4465000000-N	1160	TEMPORARY CRASH CUSHIONS	2 EA		
0095	4485000000-E	1170	PORTABLE CONCRETE BARRIER	392 LF		
0096	4510000000-N	1190	LAW ENFORCEMENT	40 HR		
0097	4516000000-N	1180	SKINNY DRUM	30 EA		
0098	4650000000-N	1251	TEMPORARY RAISED PAVEMENT MARKERS	31 EA		
0099	4685000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)	2,740 LF		
0100	4686000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)	2,535 LF		
0101	4710000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS)	140 LF		
0102	4725000000-E	1205	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)	6 EA		
0103	4770000000-E	1205	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (IV)	1,554 LF		
0104	4810000000-E	1205	PAINT PAVEMENT MARKING LINES (4")	12,808 LF		
0105	4835000000-E	1205	PAINT PAVEMENT MARKING LINES (24")	45 LF		
0106	4850000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (4")	1,750 LF		



County : Jackson

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0107	4905000000-N	1253	SNOWPLOWABLE PAVEMENT MARKERS	31 EA		
0108	5325800000-E	1510	8" WATER LINE	480 LF		
0109	5329000000-E	1510	DUCTILE IRON WATER PIPE FITTINGS	875 LB		
0110	5540000000-E	1515	6" VALVE	1 EA		
0111	5546000000-E	1515	8" VALVE	2 EA		
0112	5666000000-N	1515	FIRE HYDRANT	1 EA		
0113	5673000000-E	1515	FIRE HYDRANT LEG	5 LF		
0114	5691300000-E	1520	8" SANITARY GRAVITY SEWER	300 LF		
0115	5709300000-E	1520	6" FORCE MAIN SEWER	236 LF		
0116	5769000000-E	1520	DUCTILE IRON SEWER PIPE FITTINGS	200 LB		
0117	5800000000-E	1530	ABANDON 6" UTILITY PIPE	255 LF		
0118	5801000000-E	1530	ABANDON 8" UTILITY PIPE	485 LF		
0119	5835700000-E	1540	16" ENCASEMENT PIPE	46 LF		
0120	5882000000-N	SP	GENERIC UTILITY ITEM AIR RELEASE & VACUUM VALVE MANHOLE COMPLETE	1 EA		
0121	5882000000-N	SP	GENERIC UTILITY ITEM AIR RELEASE MANHOLE COMPLETE	1 EA		
0122	6000000000-E	1605	TEMPORARY SILT FENCE	8,585 LF		
0123	6006000000-E	1610	STONE FOR EROSION CONTROL, CLASS A	280 TON		
0124	6009000000-E	1610	STONE FOR EROSION CONTROL, CLASS B	695 TON		
0125	6012000000-E	1610	SEDIMENT CONTROL STONE	840 TON		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0126	6015000000-E	1615	TEMPORARY MULCHING	6.5	ACR	
0127	6018000000-E	1620	SEED FOR TEMPORARY SEEDING	300	LB	
0128	6021000000-E	1620	FERTILIZER FOR TEMPORARY SEEDING	1.5	TON	
0129	6024000000-E	1622	TEMPORARY SLOPE DRAINS	460	LF	
0130	6029000000-E	SP	SAFETY FENCE	1,000	LF	
0131	6030000000-E	1630	SILT EXCAVATION	660	CY	
0132	6036000000-E	1631	MATTING FOR EROSION CONTROL	15,400	SY	
0133	6037000000-E	SP	COIR FIBER MAT	3,900	SY	
0134	6042000000-E	1632	1/4" HARDWARE CLOTH	2,140	LF	
0135	6070000000-N	1639	SPECIAL STILLING BASINS	4	EA	
0136	6071012000-E	SP	COIR FIBER WATTLE	100	LF	
0137	6071020000-E	SP	POLYACRYLAMIDE (PAM)	90	LB	
0138	6071030000-E	1640	COIR FIBER BAFFLE	165	LF	
0139	6084000000-E	1660	SEEDING & MULCHING	5	ACR	
0140	6087000000-E	1660	MOWING	5	ACR	
0141	6090000000-E	1661	SEED FOR REPAIR SEEDING	100	LB	
0142	6093000000-E	1661	FERTILIZER FOR REPAIR SEEDING	0.25	TON	
0143	6096000000-E	1662	SEED FOR SUPPLEMENTAL SEEDING	150	LB	
0144	6108000000-E	1665	FERTILIZER TOPDRESSING	4	TON	
0145	6114500000-N	1667	SPECIALIZED HAND MOWING	10	MHR	
0146	6117000000-N	SP	RESPONSE FOR EROSION CONTROL	100	EA	

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0147	6117500000-N	SP	CONCRETE WASHOUT STRUCTURE	4 EA		
0148	6123000000-E	1670	REFORESTATION	0.1 ACR		
0149	7048500000-E	1705	PEDESTRIAN SIGNAL HEAD (16", 1 SECTION W/COUNTDOWN)	2 EA		
0150	7060000000-E	1705	SIGNAL CABLE	1,250 LF		
0151	7120000000-E	1705	VEHICLE SIGNAL HEAD (12", 3 SECTION)	12 EA		
0152	7264000000-E	1710	MESSENGER CABLE (3/8")	220 LF		
0153	7300000000-E	1715	UNPAVED TRENCHING (***** (1, 2")	410 LF		
0154	7324000000-N	1716	JUNCTION BOX (STANDARD SIZE)	6 EA		
0155	7360000000-N	1720	WOOD POLE	4 EA		
0156	7372000000-N	1721	GUY ASSEMBLY	6 EA		
0157	7420000000-E	1722	2" RISER WITH WEATHERHEAD	1 EA		
0158	7444000000-E	1725	INDUCTIVE LOOP SAWCUT	430 LF		
0159	7456000000-E	1726	LEAD-IN CABLE (***** (14-2)	590 LF		
0160	7481240000-N	SP	CAMERA WITHOUT INTERNAL LOOP EMULATOR PROCESSING UNIT	2 EA		
0161	7481260000-N	SP	EXTERNAL LOOP EMULATOR PROCESSING UNIT	2 EA		
0162	7588000000-N	SP	METAL POLE WITH SINGLE MAST ARM	1 EA		
0163	7613000000-N	SP	SOIL TEST	1 EA		
0164	7614100000-E	SP	DRILLED PIER FOUNDATION	8 CY		
0165	7631000000-N	SP	MAST ARM WITH METAL POLE DESIGN	1 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0166	7636000000-N	1745	SIGN FOR SIGNALS	5 EA		
0167	7642200000-N	1743	TYPE II PEDESTAL WITH FOUNDATION	2 EA		
0168	7684000000-N	1750	SIGNAL CABINET FOUNDATION	1 EA		
0169	7756000000-N	1751	CONTROLLER WITH CABINET (TYPE 2070L, BASE MOUNTED)	1 EA		
0170	7780000000-N	1751	DETECTOR CARD (TYPE 2070L)	12 EA		
0171	7901000000-N	1753	CABINET BASE EXTENDER	1 EA		
0172	7948000000-N	1757	TRAFFIC SIGNAL REMOVAL	2 EA		

WALL ITEMS

0173	8801000000-E	SP	MSE RETAINING WALL NO **** (2)	2,165 SF		
0174	8802010000-E	SP	SOIL NAIL RETAINING WALLS	11,635 SF		
0175	8802015100-N	SP	SOIL NAIL VERIFICATION TESTS	8 EA		
0176	8802015110-N	SP	SOIL NAIL PROOF TESTS	30 EA		
0177	8847000000-E	SP	GENERIC RETAINING WALL ITEM CIP MSE RETAINING WALL NO 1A	225 SF		

STRUCTURE ITEMS

0178	8007000000-N	400	CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMP STRUCTURE AT STA ***** (16+15.80 -L- DET)	Lump Sum	L.S.	
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County : Jackson

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0179	8017000000-N	SP	CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMP ACCESS AT STA ***** (19+41.94 -L-)	Lump Sum	L.S.	
0180	8035000000-N	402	REMOVAL OF EXISTING STRUCTURE AT STATION ***** (19+41.94 -L-)	Lump Sum	L.S.	
0181	8065000000-N	SP	ASBESTOS ASSESSMENT	Lump Sum	L.S.	
0182	8105500000-E	411	***L*** DIA DRILLED PIERS IN SOIL (5'-6")	28.1 LF		
0183	8105540000-E	411	3'-6" DIA DRILLED PIERS IN SOIL	129.8 LF		
0184	8105600000-E	411	***L*** DIA DRILLED PIERS NOT IN SOIL (5'-6")	128 LF		
0185	8105640000-E	411	3'-6" DIA DRILLED PIERS NOT IN SOIL	128 LF		
0186	8111000000-E	411	PERMANENT STEEL CASING FOR ***L*** DIA DRILLED PIER (5'-6")	33.6 LF		
0187	8115000000-N	411	CSL TESTING	1 EA		
0188	8121000000-N	412	UNCLASSIFIED STRUCTURE EXCAVA- TION AT STATION ***** (19+41.94 -L-)	Lump Sum	L.S.	
0189	8147000000-E	420	REINFORCED CONCRETE DECK SLAB	16,962 SF		
0190	8161000000-E	420	GROOVING BRIDGE FLOORS	14,162 SF		
0191	8182000000-E	420	CLASS A CONCRETE (BRIDGE)	453.7 CY		
0192	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ***** (19+41.94 -L-)	Lump Sum	L.S.	
0193	8217000000-E	425	REINFORCING STEEL (BRIDGE)	123,931 LB		
0194	8238000000-E	425	SPIRAL COLUMN REINFORCING STEEL (BRIDGE)	20,957 LB		

County : Jackson

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0195	8280000000-E	440	APPROX ..... LBS STRUCTURAL STEEL	550,300	LS	
0196	8475000000-E	460	TWO BAR METAL RAIL	844.18	LF	
0197	8517000000-E	460	1'-**"X ***** CONCRETE PARA-PET (1'-2" X 2'-6")	393.71	LF	
0198	8517000000-E	460	1'-**"X ***** CONCRETE PARA-PET (1'-2" X 3'-2 3/4")	505.38	LF	
0199	8531000000-E	462	4" SLOPE PROTECTION	57	SY	
0200	8608000000-E	876	RIP RAP CLASS II (2'-0" THICK)	67.3	TON	
0201	8622000000-E	876	GEOTEXTILE FOR DRAINAGE	74.8	SY	
0202	8654000000-N	SP	DISC BEARINGS	Lump Sum	L.S.	
0203	8706000000-N	SP	EXPANSION JOINT SEALS	Lump Sum	L.S.	
0204	8867000000-E	SP	GENERIC STRUCTURE ITEM MOMENT SLAB WITH SIDEWALK	102.75	LF	
0205	8007000000-N	400	CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMP STRUCTURE AT STA ***** (13+30.84 -Y3- DET)	Lump Sum	L.S.	

1043/Jun03/Q858624.723/D974163732210/E205

Total Amount Of Bid For Entire Project :