



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

JOSH STEIN
GOVERNOR

DANIEL H. JOHNSON
SECRETARY

November 6, 2025

ADDENDUM # 1

Contract No. DN01124
TIP No.: N/A
Federal Aid No.: Helene
WBS Element: DF18314.2044194
County: Haywood
Description: Grading, Drainage, Paving, And Structure: Replace Bridge 430041
On SR 1357 (Crabtree Church Rd) Over Crabtree Creek In Haywood
County

Letting Date: November 12, 2025

Plan Holders

Content Summary: Structures plan sheets revisions, structures special provision revision, and addition of pay item.

The above contract has experienced the following revisions:

1. On structures plan sheet S-1, work pad to access the interior bents has been added to the plan view. Replace the existing plan sheet with the attached revised plan sheet **S-1**.
2. On structures plan sheet S-5, the pay item for the construction of temp access pay item has been added to the bill of Materials. Replace the existing plan sheet with the attached revised plan sheet **S-5**.
3. The Structures special provisions have been updated to include language regarding the construction, maintenance, and removal of temp access. Replace the existing **Structures Special Provisions**, pages **ST-1 – ST-28**, with the attached revised special provision.
4. Pay item **8017000000-N SP LS, Construction, Maintenance, and Removal of Temp Access at Sta (-L- 12+13.00)** has been added. Replace the existing bid items sheets with the attached.

Please access ebsx addenda files, DN01124.001x. on Bid Express®.

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS - DIVISION 14
253 WEBSTER ROAD
SYLVA, NC 28779

Telephone: (828) 331-5200
Fax: (828) 331-5201
Customer Service: 1-877-368-4968

Location:
253 WEBSTER ROAD
SYLVA, NC 28779

Website: www.ncdot.gov

Thank you for your attention to this matter.

If you have any questions, please contact the Division Proposal Engineer at (828) 331-5200.

Sincerely,

Signed by:



29BD93927CF24F6...

Jeanette L. White, P.E.

Highway Division 14,

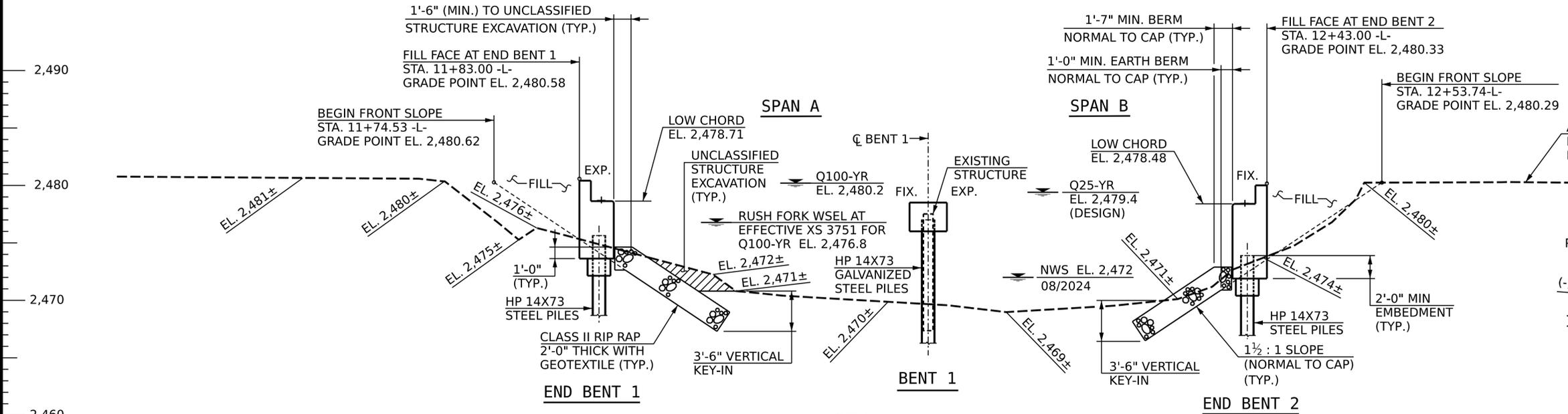
Project Development - Team Lead

11+50

12+00

12+50

13+00



HORIZONTAL CURVE DATA -L-

P.I. STA. 11+95.46 -L-
 $\Delta = 21^\circ 51' 16.6''$ (LT.)
 D = 15°16'43.9"
 L = 143.04'
 T = 72.40'
 R = 375.00'

-L- GRADE DATA

P.V.I. STA. = 11+01.00 -L-
 EL. = 2,480.92
 V.C. = 110 FT.
 (-)3.5515 % Δ (-)0.4143 %

P.V.I. STA. = 12+61.00 -L-
 EL. = 2,480.26
 V.C. = 20 FT.
 (-)0.4143 % Δ (+)1.0357 %

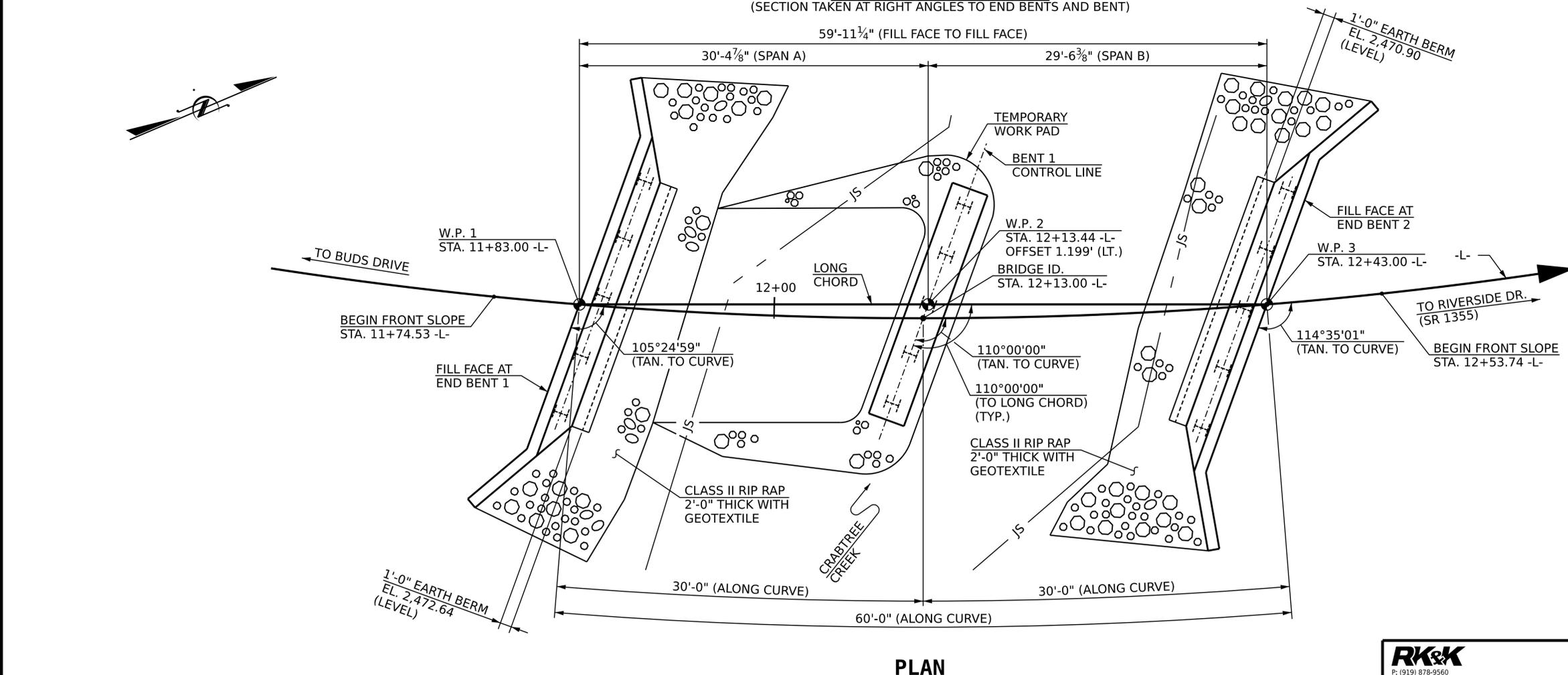
HYDRAULIC DATA

DESIGN DISCHARGE----- 2,900 C.F.S.
 FREQUENCY OF DESIGN FLOOD----- 25 YR.
 DESIGN HIGH WATER ELEVATION----- 2,479.4
 DRAINAGE AREA----- 19.5 SQ. MI.
 BASE DISCHARGE (Q100)----- 4,300 C.F.S.
 BASE HIGH WATER ELEVATION----- 2,480.2

OVERTOPPING FLOOD DATA

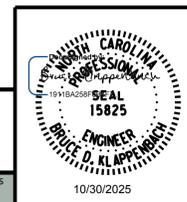
OVERTOPPING DISCHARGE----- 5,500 C.F.S.
 FREQUENCY OF OVERTOPPING FLOOD----- 100+ YRS.
 OVERTOPPING FLOOD ELEVATION----- 2,480.2*

* OVERTOPPING LOCATION AT \bar{C} -L- STA. 12+56
 WS EL. TAKEN @ RIVER STATION 316.8



PROJECT NO.: DF18314.2044194
HAYWOOD COUNTY
 STATION: 12+13.00 -L-
 SHEET 1 OF 5 REPLACES BRIDGE NO. 430041

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE OVER CRABTREE
 CREEK ON CRABTREE CHURCH
 ROAD (SR 1357) BETWEEN
 BUDS DRIVE AND RIVERSIDE
 DRIVE (SR 1355)



DRAWN BY : B. H. GONFA DATE : JUL 2025
 CHECKED BY : B. D. KLAPPENBACH DATE : JUL 2025
 DESIGN ENGINEER OF RECORD: B. D. KLAPPENBACH DATE : JUL 2025

REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	
1			3	S-1 TOTAL SHEETS 21
2			4	

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NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THE EXISTING STRUCTURE CONSISTS OF 2 SPANS AT 30 FT. ON A TIMBER FLOOR ON STEEL I-BEAMS WITH AN ASPHALT WEARING SURFACE AND A CLEAR ROADWAY OF 17'-8". THE SUBSTRUCTURE CONSISTS OF TIMBER CAPS ON TIMBER POST & SILLS AT THE BENT AND END BENTS. THE EXISTING BRIDGE WAS LOCATED AS THE PROPOSED STRUCTURE AND WAS WASHED AWAY DURING A 2024 STORM EVENT. ANY REMAINING SUBSTRUCTURE ELEMENTS SHALL BE REMOVED.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, "EVALUATING SCOUR AT BRIDGES".

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50 AND PAINTED WITH SYSTEM 1 OR HOT DIPPED GALVANIZED IN ACCORDANCE WITH THE STRUCTURAL STEEL COATINGS PROGRAM AND SECTION 442-8 OF THE STANDARD SPECIFICATIONS, UNLESS OTHERWISE NOTED ON THE PLANS.

COATING APPLICATION FOR ALL STRUCTURAL STEEL SHALL NOT BE PERFORMED UNTIL SHOP FABRICATION INCLUDING CUTTING, DRILLING AND WELDING HAS BEEN COMPLETED.

ALL TIMBER AND LUMBER MEMBERS SHALL BE TREATED SOUTHERN PINE AND CONFORM TO SECTION 1082 OF THE STANDARD SPECIFICATIONS.

ALL TIMBER DIMENSIONS SHOWN ON THE PLANS ARE NOMINAL DIMENSIONS.

WHEN FIELD CUTTING TIMBER MEMBERS, TREAT NEWLY EXPOSED SURFACES WITH EITHER A BITUMINOUS ASPHALT-BASED ROOFING CEMENT, COPPER NAPHTHENATE PASTE, OR APPROVED PRESERVATIVE SYSTEM BEFORE INSTALLING.

TREAT ALL DRILLED OR NEWLY EXPOSED HOLES IN TIMBER MEMBERS BY PUMPING WITH BITUMINOUS ASPHALT-BASED ROOFING CEMENT, OR APPROVED PRESERVATIVE SYSTEM BEFORE INSTALLING HARDWARE.

PRE-DRILL HOLES IN TIMBER AND LUMBER MEMBERS ACCEPTING BOLTS TO ELIMINATE SPLITTING.

ALL HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATION, UNLESS OTHERWISE NOTED ON THE PLANS.

DO NOT DRIVE LAG/STRUCTURAL SCREWS WITH A HAMMER, SCREW OR TORQUE LAG/STRUCTURAL SCREWS.

SCREWS SHALL PROVIDE SUFFICIENT LENGTH SO THAT SCREW SHANK WILL PENETRATE RECEIVING MEMBERS.

FOR TIMBER BRIDGE RAIL SYSTEM, INCLUDING LUMBER, DELINEATORS, HARDWARE FOR BOLT CONNECTIONS, HARDWARE FOR SCREW CONNECTIONS AND ALUMINUM DRIP EDGE, SEE TIMBER BRIDGE SUPERSTRUCTURE ON STEEL BEAMS SPECIAL PROVISION.

FOR TIMBER BRIDGE DECK SYSTEM, INCLUDING HARDWARE FOR BOLT CONNECTIONS AND HARDWARE FOR SCREW CONNECTIONS, SEE TIMBER BRIDGE SUPERSTRUCTURE ON STEEL BEAM SPECIAL PROVISION.

ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.

FOR TIMBER BRIDGE FLASHING MEMBRANE, SEE SPECIAL PROVISIONS.

FOR TIMBER BRIDGE DECK WATERPROOFING MEMBRANE, SEE SPECIAL PROVISIONS.

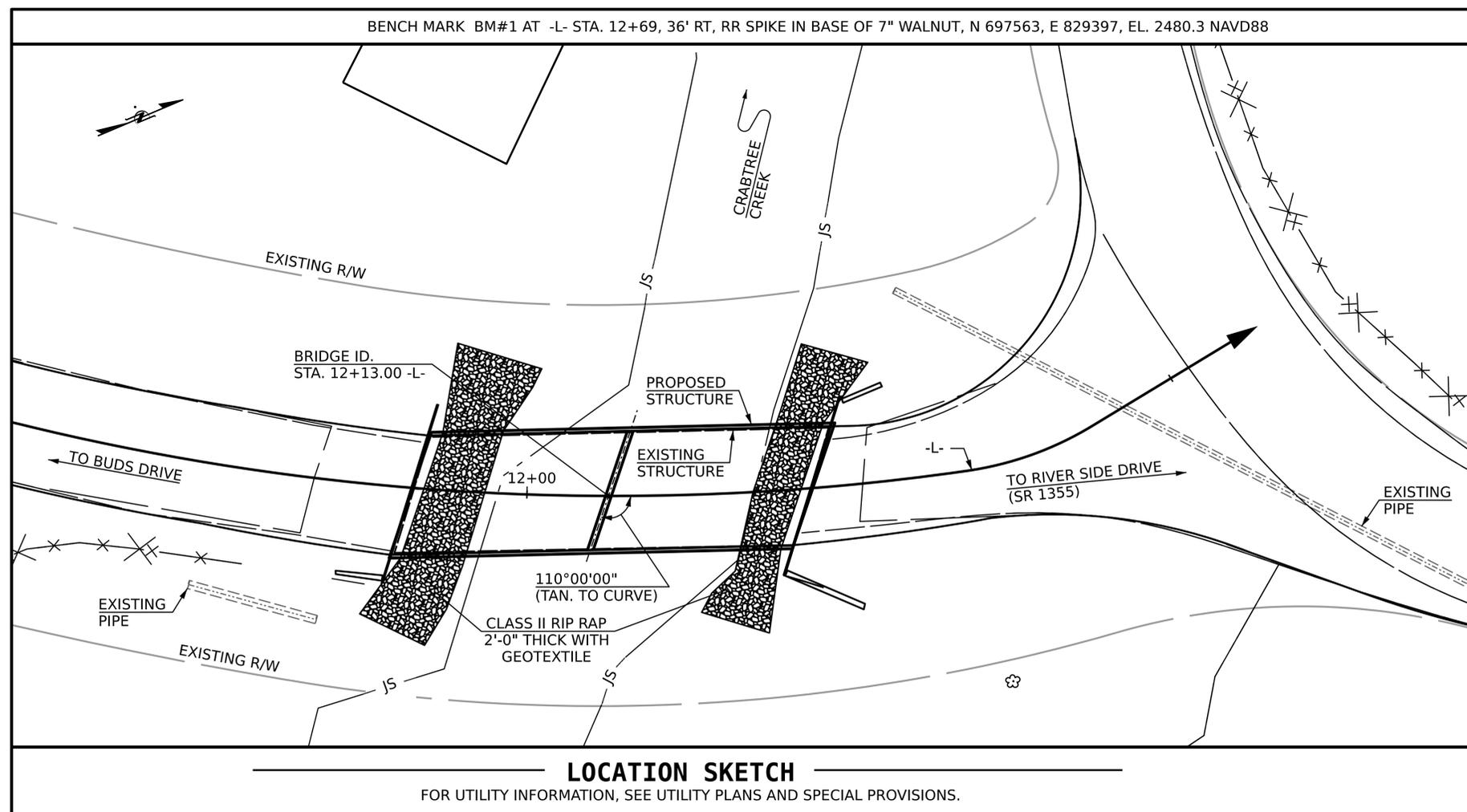
THE MATERIAL IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 18.0 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE SCOUR CRITICAL EXCAVATION FOR BENT 1 IS ELEVATION 2461.0. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE WORK PAD, THE CLASS II RIP RAP USED FOR THE WORK PAD MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 12+13.00 -L-.

TOTAL BILL OF MATERIAL

	CONSTRUCTION MAINTENANCE & REMOVAL OF TEMP. ACCESS	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	REINFORCING STEEL	APPROX. 32,400 LBS. STRUCTURAL STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 14x73 STEEL PILES	PILE DRIVING EQUIPMENT SETUP FOR HP 14x73 GALVANIZED STEEL PILES	HP 14x73 STEEL PILES	HP 14x73 GALVANIZED STEEL PILES	STEEL PILE POINTS	RIP RAP CALSS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	TIMBER BRIDGE DECK SYSTEM	TIMBER BRIDGE RAIL SYSTEM
	LUMP SUM	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LUMP SUM	CU. YDS.	LBS.	LUMP SUM	EA.	EA.	LIN. FT.	LIN. FT.	EA.	TON	SQ. YDS.	LUMP SUM	LUMP SUM	LIN. FT.
SUPERSTRUCTURE									LUMP SUM								LUMP SUM	LUMP SUM	115.26
END BENT 1				50.0	22.0	LUMP SUM	21.4	2,646		5		145		5	90	100			
BENT 1				131.0	21.0		6.4	1,212			5		180	5					
END BENT 2				29.8	20.0		26.7	2,998		5		155		5	60	65			
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	210.8	63.0	LUMP SUM	54.5	6,856	LUMP SUM	10	5	300	180	15	150	165	LUMP SUM	LUMP SUM	115.26



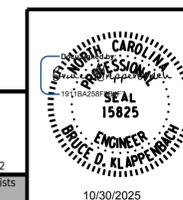
LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

PROJECT NO.: DF18314.2044194
HAYWOOD COUNTY
 STATION: 12+13.00 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 LOCATION SKETCH,
 NOTES, AND TOTAL
 BILL OF MATERIAL



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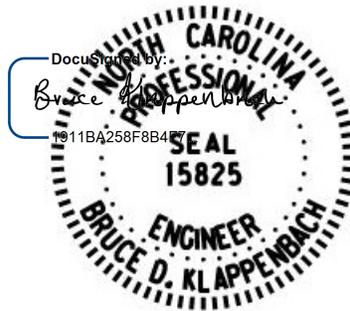
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DRAWN BY :	B. H. GONFA	DATE :	JUL 2025
CHECKED BY :	B. D. KLAPPENBACH	DATE :	JUL 2025
DESIGN ENGINEER OF RECORD:	B. D. KLAPPENBACH	DATE :	JUL 2025

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TOTAL SHEETS 21

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10/29/2025

PROJECT SPECIAL PROVISIONS**STRUCTURES AND CULVERT****FALSEWORK AND FORMWORK****(11-30-23)****GENERAL**

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.

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.

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.

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.

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. Screenshot 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.

For link slabs, the top of girders directly beneath the link slab shall be free of overhang falsework attachments or other hardware. Submit calculations and working drawings for overhang falsework in the link slab region.

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 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 current edition of *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 ² 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 surface damage.

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		

(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.

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.

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.

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.

MEASUREMENT AND PAYMENT

Unless otherwise specified, *Falsework and Formwork* will not be directly measured.

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

SUBMITTAL OF WORKING DRAWINGS**(1-31-25)****GENERAL**

Submit working drawings in accordance with Article 105-2 of the *Standard Specifications* and this Special Provision. For this Special Provision, “submittals” refers to only those listed in this Special 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.

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.

ADDRESSES AND CONTACTS

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

Via Email: SMU-wdr@ncdot.gov (do not cc SMU Working Drawings staff)

Via US mail:

Mr. D. N. Snoke, 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. D. N. Snoke, 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.

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

For projects in Divisions 1-7 (Eastern Regional Office):

Via Email: EastGeotechnicalSubmittal@ncdot.gov

Via US mail:

Mr. Thomas Santee, P. E.
Assistant State Geotechnical
Engineer – Eastern Region
North Carolina Department
of Transportation
Geotechnical Engineering Unit
Eastern Regional Office
1570 Mail Service Center
Raleigh, NC 27699-1570

Via other delivery service:

Mr. Thomas Santee, P. E.
Assistant State Geotechnical
Engineer – Eastern Region
North Carolina Department
of Transportation
Geotechnical Engineering Unit
Eastern Regional Office
3301 Jones Sausage Road, Suite 100
Garner, NC 27529

For projects in Divisions 8-14 (Western Regional Office):

Via Email: WestGeotechnicalSubmittal@ncdot.gov

Via US mail or other delivery service:

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

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
jlbolden@ncdot.gov

Secondary Structures Contacts: Madonna Rorie (919) 707 – 6508
mlrorie@ncdot.gov

Eastern Regional Geotechnical Contact (Divisions 1-7):
 Thomas Santee (984) 920-8901
EastGeotechnicalSubmittal@ncdot.gov

Western Regional Geotechnical Contact (Divisions 8-14):
 Eric Williams (980)258-6400
WestGeotechnicalSubmittal@ncdot.gov

SUBMITTAL COPIES

Furnish one complete copy of each submittal, including all attachments, to the Engineer. At the same time, submit a copy of the same complete submittal directly to the Structures Management Unit and/or the Geotechnical Engineering Unit as specified in the tables below.

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	Submittal Required by Structures Management Unit?	Submittal Required by Geotechnical Engineering Unit?	Contract Reference Requiring Submittal ¹
Arch Culvert Falsework	Y	N	Plan Note, SN Sheet & “Falsework and Formwork”
Box Culvert Falsework ⁷	Y	N	Plan Note, SN Sheet & “Falsework and Formwork”
Cofferdams	Y	Y	Article 410-4

Foam Joint Seals ⁶	Y	N	“Foam Joint Seals”
Expansion Joint Seals (hold down plate type with base angle)	Y	N	“Expansion Joint Seals”
Expansion Joint Seals (modular)	Y	N	“Modular Expansion Joint Seals”
Expansion Joint Seals (strip seals)	Y	N	“Strip Seal Expansion Joints”
Falsework & Forms ² (substructure)	Y	N	Article 420-3 & “Falsework and Formwork”
Falsework & Forms (superstructure)	Y	N	Article 420-3 & “Falsework and Formwork”
Girder Erection over Railroad	Y	N	Railroad Provisions
Maintenance and Protection of Traffic Beneath Proposed Structure	Y	N	“Maintenance and Protection of Traffic Beneath Proposed Structure at Station ____”
Metal Bridge Railing	Y	N	Plan Note
Metal Stay-in-Place Forms	Y	N	Article 420-3
Metalwork for Elastomeric Bearings ^{4,5}	Y	N	Article 1072-8
Miscellaneous Metalwork ^{4,5}	Y	N	Article 1072-8
Disc Bearings ⁴	Y	N	“Disc Bearings”
Overhead and Digital Message Signs (DMS) (metalwork and foundations)	Y	N	Applicable Provisions
Placement of Equipment on Structures (cranes, etc.)	Y	N	Article 420-20
Prestressed Concrete Box Beam (detensioning sequences) ³	Y	N	Article 1078-11
Precast Concrete Box Culverts	Y	N	“Optional Precast Reinforced Concrete Box Culvert at Station ____”
Prestressed Concrete Cored Slab (detensioning sequences) ³	Y	N	Article 1078-11
Prestressed Concrete Deck Panels	Y	N	Article 420-3

Prestressed Concrete Girder (strand elongation and detensioning sequences)	Y	N	Articles 1078-8 and 1078- 11
Removal of Existing Structure over Railroad	Y	N	Railroad Provisions
Revised Bridge Deck Plans (adaptation to prestressed deck panels)	Y	N	Article 420-3
Revised Bridge Deck Plans (adaptation to modular expansion joint seals)	Y	N	“Modular Expansion Joint Seals”
Sound Barrier Wall (precast items)	Y	N	Article 1077-2 & “Sound Barrier Wall”
Sound Barrier Wall Steel Fabrication Plans ⁵	Y	N	Article 1072-8 & “Sound Barrier Wall”
Structural Steel ⁴	Y	N	Article 1072-8
Temporary Detour Structures	Y	Y	Article 400-3 & “Construction, Maintenance and Removal of Temporary Structure at Station ____”
TFE Expansion Bearings ⁴	Y	N	Article 1072-8

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

GEOTECHNICAL SUBMITTALS

Submittal	Submittals Required by Geotechnical Engineering Unit	Submittals Required by Structures Management Unit	Contract Reference Requiring Submittal ¹
Drilled Pier Construction Plans ²	Y	N	Subarticle 411-3(A)
Crosshole Sonic Logging (CSL) Reports ²	Y	N	Subarticle 411-5(A)(2)
Pile Driving Equipment Data Forms ^{2,3}	Y	N	Subarticle 450-3(D)(2)
Pile Driving Analyzer (PDA) Reports ²	Y	N	Subarticle 450-3(F)(3)
Retaining Walls ⁴	Y; drawings and calculations	Y; drawings	Applicable Provisions
Temporary Shoring ⁴	Y; drawings and calculations	Y; 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/projects/construction/ConstManRefDocs/PILE%20DRIVING%20EQUIPMENT%20DATA%20FORM.pdf>
See second page of form for submittal instructions.
- Electronic copy of submittal is required. See referenced provision.

CRANE SAFETY**(6-20-19)****GENERAL**

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 (OSHA) regulations.

Submit all items listed below to the Engineer prior to beginning crane operations. 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:** Crane operators shall be certified by the National Commission for the Certification of Crane Operators (NCCCO) or the National Center for Construction Education and Research (NCCER). Other approved nationally accredited programs will be considered upon request. In addition, crane operators shall have a current CDL medical card. Submit a list of crane operator(s) and include current certification for each type of crane operated (small hydraulic, large hydraulic, small lattice, large lattice) and medical evaluations for each operator.

MEASUREMENT AND PAYMENT

No direct payment will be made for *Crane Safety*. All costs shall be considered incidental to items for which direct payment is made.

GROUT FOR STRUCTURES**(12-1-17)****GENERAL**

This Special Provision addresses grout for use in pile blockouts, grout pockets, shear keys, dowel holes and recesses for structures. This Special 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 Special Provision.

MATERIAL REQUIREMENT

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.

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.

MEASUREMENT AND 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.

**CONSTRUCTION, MAINTENANCE AND REMOVAL
OF TEMPORARY ACCESS AT STATION 12+13.00 -L-****(02-21-23)****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 plans, the *Standard Specifications*, and this Special Provision.

TEMPORARY ROCK CAUSEWAY [WORKPAD]

At the contractor's option, construction of a temporary rock causeway [workpad] within the limits shown on the plans is acceptable, provided the causeway [workpad] impacts are in compliance with all permits. 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.

TEMPORARY WORK BRIDGE

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.

MEASUREMENT AND PAYMENT

Construction, Maintenance and Removal of Temporary Access at Station 12+13.00 -L- will be paid under the lump sum price bid 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.

Payment will be made under:

Pay Item

Construction, Maintenance and Removal of Temporary Access
at Sta. 12+13.00 -

Pay Unit

Lump Sum

ASBESTOS ASSESSMENT**(11-30-23)****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

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.

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.

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

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

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:

<https://epi.dph.ncdhhs.gov/asbestos/ahmp.html>

MEASUREMENT AND PAYMENT

Asbestos Assessment Payment will be paid at the lump sum contract unit price and will be full compensation for all asbestos inspections, reports, permitting and notifications.

Payment will be made under:

Pay Item	Pay Unit
Asbestos Assessment	Lump Sum

TIMBER BRIDGE SUPERSTRUCTURE ON STEEL BEAMS**(SPECIAL)****DESCRIPTION**

Work consists of furnishing and installing a timber deck system and timber bridge rail system on steel I-beams, with the required hardware and in accordance with the plans and special provisions.

The timber deck system consists of deck boards, beam nailers, edge nailers, moisture control flashing membranes, deck waterproofing membrane, drip edges, and connection hardware and fasteners.

The timber bridge rail system consists of retaining strips, waterproofing membrane under retaining strips, rails, posts, wheel curbs and blocks, and beam post blocks.

The Contractor shall provide all tools and equipment, materials, and any incidentals necessary to complete the timber bridge superstructure on steel beams.

The contractor shall be responsible for fulfilling all applicable requirements of the NCDOT *Standard Specifications* dated January 2024, except as otherwise specified herein.

MATERIALS**Timber**

Use No. 1 Dense Southern Pine treated timber and lumber meeting the requirements of Section 1082 of the *Standard Specifications*.

Hardware

All timber bolt connection hardware shall meet the requirements of Section 1074 of the *Standard Specifications* and the grades and descriptions shown below. All bolting hardware including bolts, washers, nuts, etc. shall be hot dipped galvanized.

Heavy hex bolts: ASTM A307B

Heavy hex nuts: ASTM A563A or A1942H

Washers: Round plate, 1/4" thickness

Carriage bolts: ASTM A307A Timber dome head

Ogee Washers: ASTM A48 cast iron

All screw connection hardware shall be strength hardened, flat head structural screws with a minimum shank diameter of 0.275". The screws shall be coated with an ICC-ES AC257 code approved coating rated for use in treated lumber.

Flashing/Waterproofing

Moisture control flashing membrane placed on tops of beam flanges, edge nailers, and beam nailers shall be self-adhering high-density polyethylene (HDPE). For material and installation requirements see the *Timber Bridge Flashing Membrane Special Provision*.

Metal drip edge shall be 22 gauge (minimum) aluminum, flat surface and fastened with a compatible metal nails to prevent corrosion.

For bridge deck waterproofing membrane see the *Timber Bridge Deck Waterproofing Membrane Special Provision*.

Field applied preservative treatment for cut and drilled faces of lumber shall be bituminous asphalt-based roofing cement, copper naphthenate paste or approved equal.

Accessories

Linear delineators for the timber bridge rail system shall be rectangular, aluminum backed, high-intensity fluorescent yellow reflective sheeting. Size and color: 4" height (min.) x 34" width (max.).

Structural Steel

Structural steel for rolled steel I-beams, diaphragms, and connector plates shall be AASHTO M270 Grade 50 and painted with System 1 or galvanized in accordance with the *Structural Steel Shop Coatings Program* and Section 442-8 of the *Standard Specifications*.

Confirm availability of steel shape I-beam prior to construction. Contact Structures Management Unit if steel shape I-beams stated on construction plans are not available.

Bearings

Structural steel for bearing sole plates shall be AASHTO M270 Grade 50 and hot dipped galvanized in accordance with the *Structural Steel Shop Coatings Program* and Section 442-8 of the *Standard Specifications*.

Coating application for all structural steel shall not be performed until all shop fabrication including cutting, drilling, and welding has been completed.

Elastomeric bearings shall be Grade 50 durometer and in accordance with Section 1079-2 of the *Standard Specifications*.

METHOD OF CONSTRUCTION

Erect I-beams on elastomeric bearings and the sole plates shall have natural mill camber up.

Install flashing membrane on the top flange of steel I-beams before bolting beam and edge nailers to the top flange. The flashing membrane width shall be the same width as the top flange plus two (2) inches, to overhang and wrap down the sides of the flange by one (1) inch and placed for the full length of the beam.

Bolt beam and edge nailers to top flange and apply flashing membrane on the top of the beam and edge nailers prior to placing the timber deck. The flashing membrane width shall be the same width as the nailer plus two (2) inches to overhang and wrap down the sides of the nailer one (1) inch each side.

With structural screws, fasten timber bridge deck boards to beam and edge nailers as shown in the plans.

Cut, bevel, drill and countersink, and otherwise fabricate lumber in accordance with the plans. Set all materials accurately to required elevation and lines, with members plumb, true and accurately cut and fitted. Perform cutting and drilling in a manner that allows for the collection of all debris and proper disposal.

Treat surfaces of lumber that have been exposed from cutting or drilling with an approved field applied preservative. For drilled holes apply the preservative prior to bolt installation.

Final in-service deck boards shall be full length lumber with no splices permitted unless otherwise shown in the plans.

Attach metal drip edge along sides of timber bridge deck, locating rail post locations to be notched as necessary.

Apply the timber deck waterproofing membrane over the complete deck surface prior to installing the timber bridge rail system.

Attach retaining strip, wheel blocks, wheel guards and railing posts as shown in the plans, then attach timber rails to rail posts.

Timber bridge rails shall be installed with delineators attached to the bridge end rail posts and horizontal rails as detailed in the plans. For installation of permanent timber rails well in advance of placement of asphalt wearing surface, install bridge deck waterproofing membrane under the retaining strip with a minimum 6" projection for membrane lapping.

MEASUREMENT AND PAYMENT

No measurement and payment for the following items in this Special Provision: elastomeric bearings; structural steel for I-beams, connector plates, diaphragms, and sole plates. Such items shall be measured and paid for elsewhere in the contract and in accordance with any applicable Special Provisions and the *Standard Specifications*.

Timber Bridge Deck System will be paid for by the lump sum price bid and will be full compensation for furnishing and installing the timber bridge deck system including all labor, tools, equipment, lumber, hardware, flashing membranes, metal drip edge, timber deck waterproofing membranes; and all drilling, cutting, bolting and screw fastening; furnishing and field applying wood preservatives; and all other incidentals required in the completed and accepted work.

Timber Bridge Rail System will be paid for by the linear feet bid price and will be full compensation for furnishing and installing the timber bridge rail system including all labor, tools, equipment, lumber, hardware; and all drilling, cutting, bolting and screw fastening; furnishing and field applying wood preservatives; furnishing and installing delineators; and all other incidentals required in the completed and accepted work.

Payment will be made under:

Pay Item	Pay Unit
Timber Bridge Deck System	Lump Sum
Timber Bridge Rail System	Linear Feet

TIMBER BRIDGE DECK WATERPROOFING MEMBRANE (SPECIAL)

DESCRIPTION

The Contractor shall furnish and apply a self-adhered rubberized asphalt waterproof membrane system and all timber surface preparation work necessary to install the membrane system. The deck waterproofing membrane shall be installed prior to placement of the asphalt wearing surface. Membrane waterproofing application shall be in accordance with the manufacturer's instructions. The handling, storing, and addition of primer coating membrane components shall be performed in a safe manner to achieve the desired results in accordance with the Manufacturer's recommendations.

Product approval shall require, by the Manufacturer, that the membrane system meets the material specifications, and that the entire membrane system is designed and tested as waterproofing for use on timber bridge deck applications.

SUBMITTALS

The Contractor shall submit to the Engineer for approval the following documents:

1. Initial submission:
 - a. The membrane system material specifications including product performance data.
 - b. Certified independent test reports demonstrating conformance to Table 1.
 - i. The independent lab shall be recognized by the National Cooperation for Laboratory Accreditation (NACLA) in Construction Materials Engineering

- and Testing (CMET) or an equal program approved by the Engineer.
- All testing shall be performed by one independent lab unless approved by the Engineer.
- ii. Independent testing reports must be dated within two (2) years from the anticipated start of membrane installation.
- Samples for all required testing shall be fabricated at the same time. Test reports shall denote the lot of material as well as the sample fabrication and testing dates.
- c. Safety data sheets (SDS) for all components.

MATERIALS

The membrane waterproofing system shall be:

- Self-adhering to applied surfaces
- Usable on irregular surfaces
- Accept asphalt overlays 24 hours, but in no case exceed the manufacturer's recommendations.

The total minimum base thickness for the membrane shall be 65 mils. The membrane shall be able to meet the criteria specified in Table 1.

The membrane waterproofing system shall be asbestos-free. Any required primer shall promote adhesion of the membrane to the timber surface. The chemical composition of the primer, and membrane that make up the membrane waterproofing system shall conform to the Manufacturer's specifications for the material. All components shall be approved by the Manufacturer as being compatible for use with the specified membrane. Cleaning solvents shall also be approved by the Manufacturer for use with the membrane.

MATERIAL DELIVERY AND STORAGE

All components of the membrane system shall be delivered to the site in the Manufacturer's original packaging, clearly identified with the products type and batch number. The Contractor shall provide the Applicator with a storage area for all components. The area shall be cool, dry, out of direct sunlight, and comply with relevant health and safety regulations. Copies of material safety data sheets for all components shall be kept on site by the Contractor.

Table 1: Waterproofing Membrane Material Properties

PROPERTY	TEST	REQUIREMENTS
Thickness	ASTM D1777	65mils
Strip Tensile Strength	ASTM D882	50 lbs./in width
Grab Tensile Strength	ASTM D4632	160lbs.
Puncture Resistance	ASTM E154	200lbs.

Permeance-Perms	ASTM E96 (Method B)	0.05max
Elongation at break of fabric	ASTM D4632	60%
Pliability at low temperatures (-15°F)	ASTM D146	No Cracks

APPLICATION PROCEDURE

The installation procedure shall consist of preparation of the timber surface and application of primer and membrane. Special attention shall be paid to the bridge deck surface preparation prior to the membrane waterproofing system application.

The membrane waterproofing system shall not be applied in either wet, damp or foggy weather, or when the ambient temperature is 45°F or below or is forecast to fall below 45°F during the application period. The temperature of the timber deck surface shall also exceed the dew point by at least 5°F.

The membrane waterproofing on bridge decks shall not be placed until the Contractor is ready to follow within 24 hours with the first layer of hot mix asphalt (HMA) pavement; a longer period of time will be allowed only with prior written approval from the Engineer.

Where the areas to be waterproofed are bound by a vertical surface including, but not limited to, a curb or a wall, the membrane waterproofing system shall be continued up the vertical as necessary. A neat finish with well-defined boundaries and straight edges shall be provided.

1. TIMBER SURFACE PREPARATION

Follow the manufacturer's recommendations for timber bridge deck surface preparation before application of the membrane waterproofing system. Drive screws flush with the top of the timber bridge deck board surfaces. All surfaces shall be trimmed free of rough spots, projections, or other defects which might cause puncture of the membrane so that the surface profile of the prepared timber surface shall not exceed a ¼ inch amplitude, peak to valley. Areas that do not meet this criteria shall be repaired prior to the application of any primer. Depressions outside the manufacturer's tolerances shall be filled to a smooth flush surface with an approved rapid setting patching material that is compatible with the membrane waterproofing system.

2. APPLYING PRIMER

For systems requiring a primer, primers shall only be applied when the temperature of the timber deck surface exceeds the dew point by at least 5°F and when the timber deck surface has a moisture content of 15% or less as confirmed by a portable electronic surface moisture meter supplied by the Contractor.

The primer shall be applied in a manner to ensure full coverage. The primer shall consist of one coat with an overall coverage rate of 125-175 ft²/gal unless otherwise recommended in the

Manufacturer's written instructions. All components shall be measured and mixed in accordance with the Manufacturer's recommendations. The primer shall be allowed to cure tack-free for a minimum of 30 minutes or as required by the Manufacturer's instructions, whichever time is greater, prior to application of the waterproofing membrane.

A second coat of primer shall be required if the first coat is absorbed by the timber. The membrane shall be applied within the primer re-coat drying time allowed by the Manufacturer but in no case shall it exceed 24 hours. Beyond this period, the surface shall be prepared again and re-primed following the Manufacturer's recommendations prior to membrane application.

3. APPLYING MEMBRANE

The waterproofing membrane shall be applied in a methodical manner. The Applicator shall follow the approved application procedure. Provide minimum overlapping seams as specified by the Manufacturer. Unless approved by the Engineer, the membrane shall be applied to the deck in accordance with the Manufacturer's instructions.

Following the application of the membrane waterproofing system, the cured surface shall be visually inspected. If any defects or pinholes are found, an appropriate quantity of membrane material shall be repaired in accordance with Section 5, Repairs, below.

4. PAVING OVER MEMBRANE

Placement of the HMA surface shall be in conformance with Division 6 of the *Standard Specifications* and the contract specifications. During paving, a light soap spray should be applied to the paving equipment wheels to prevent removal of the tack coat. Paving operation shall occur no later than 24 hours of applying the membrane, but in no case exceed the manufacturer's recommendations.

5. REPAIRS

If an area of membrane requires repair or if the membrane becomes damaged, a patch repair shall be carried out to restore the integrity of the membrane waterproofing system. The damaged area shall be cut back to sound materials and wiped with a solvent up to a width of at least 6 inches beyond the periphery of the damaged area, removing contaminants. The timber shall be primed as necessary, followed by the application of the membrane. A continuous layer shall be obtained over the timber with a 6-inch overlap onto the existing membrane. The solvent shall be approved by the membrane waterproofing manufacturer. Repairs shall comply with the Manufacturer's guidelines.

The existing membrane/day joint shall be cleaned of all contamination including tack coat material or dirt to an edge distance of at least 6 inches and wiped with a solvent as approved by the membrane waterproofing manufacturer.

PROTECTION OF EXPOSED SURFACES

The Contractor shall exercise care in the application of the waterproofing materials to prevent surfaces not receiving treatment from being spattered or marred. Particular reference is made to the face of curbs, copings, finished surfaces, substructure exposed surfaces, and outside faces of

the bridge. Any material that spatters on these surfaces shall be removed and the surfaces cleaned to the satisfaction of the Engineer.

ACCEPTANCE

Acceptance of the membrane waterproofing system shall only take place once it is determined by the Engineer that the membrane has been installed in accordance with the Special Provisions and plans and that all necessary documentation has been submitted.

NCDOT shall perform visual inspection of the application during the installation of the membrane system.

BASIS OF PAYMENT

No separate payment will be made for *Timber Bridge Deck Waterproofing Membrane*. Furnishing and applying the bridge deck waterproofing membrane shall be incidental to the *Timber Bridge Deck System* pay item.

Payment will be made under:

Pay Item

Timber Bridge Deck System

Pay Unit

Lump Sum

TIMBER BRIDGE FLASHING MEMBRANE

(SPECIAL)

DESCRIPTION

The Contractor shall furnish and apply a self-adhered high density polyethylene (HDPE) rubberized flashing membrane system and all timber or steel surface preparation work necessary to install the flashing membrane.

Membrane application shall be in accordance with the manufacturer's instructions. The handling, storing, and addition of primer coating membrane components shall be performed in a safe manner to achieve the desired results in accordance with the Manufacturer's recommendations.

Product approval shall require that the membrane system meets the material specifications.

SUBMITTALS

The Contractor shall submit to the Engineer for approval the following documents:

2. Initial submission:

- a. The membrane system material specifications including product performance data.
- b. Certified independent test reports demonstrating conformance to Table 1.
 - i. The independent lab shall be recognized by the National Cooperation for Laboratory Accreditation (NACLA) in Construction Materials Engineering and Testing (CMET) or an equal program approved by the Engineer.
 - All testing shall be performed by one independent lab unless approved by the Engineer.

- ii. Independent testing reports must be dated within two (2) years from the anticipated start of membrane installation.
 - Samples for all required testing shall be fabricated at the same time. Test reports shall denote the lot of material as well as the sample fabrication and testing dates.
- c. Safety data sheets (SDS) for all components.

MATERIALS

The membrane waterproofing system shall be:

- Self-adhering to applied surfaces.
- Usable on irregular surfaces

The total minimum base thickness for the membrane shall be 25 mils measured. The membrane shall be able to meet the criteria specified in Table 1.

The membrane waterproofing system shall be asbestos-free. Any required primer shall promote adhesion of the membrane to the timber or steel surface. The chemical composition of the primer, and membrane that make up the membrane waterproofing system shall conform to the Manufacturer's specifications for the material. All components shall be approved by the Manufacturer as being compatible for use with the specified membrane. Cleaning solvents shall also be approved by the Manufacturer for use with the membrane.

MATERIAL DELIVERY AND STORAGE

All components of the membrane system shall be delivered to the site in the Manufacturer's original packaging, clearly identified with the products type and batch number. The Contractor shall provide the Applicator with a storage area for all components. The area shall be cool, dry, out of direct sunlight, and comply with relevant health and safety regulations. Copies of material safety data sheets for all components shall be kept on site by the Contractor.

Table 1: Waterproofing Membrane Material Properties

PROPERTY	TEST	REQUIREMENTS
Thickness	ASTM 3652	25mils
Tensile Strength	ASTM D412 Die C Modified	143psi

APPLICATION PROCEDURE

The installation procedure shall be per the manufacturer's recommendations.

The membrane waterproofing system shall not be applied in either wet, damp or foggy weather, or when the ambient temperature is 45°F or below or is forecast to fall below 45°F during the application period. The temperature of the surface shall also not exceed the dew point by at least 5°F.

6. SURFACE PREPARATION

Follow the manufacturer's recommendations for surface preparation before application of the membrane waterproofing system. Drive screws flush with the top of the timber surfaces prior to placing membrane.

7. APPLYING PRIMER

For systems requiring a primer for different material surfaces, follow the procedures recommended in the Manufacturer's written instructions. All components shall be measured and mixed in accordance with the Manufacturer's recommendations. The primer shall be allowed to cure tack-free for a minimum of 30 minutes or as required by the Manufacturer's instructions, whichever time is greater, prior to application of the flashing membrane.

8. APPLYING MEMBRANE

Unless approved by the Engineer, the membrane shall be applied in accordance with the Manufacturer's instructions.

Following the application of the flashing membrane, the finished surface shall be visually inspected. If any defects or pinholes are found, an appropriate quantity of membrane material shall be repaired in accordance with Section 4, Repairs, below.

9. REPAIRS

If an area of membrane requires repair or if the membrane becomes damaged, a patch repair shall be carried out to restore the integrity of the membrane waterproofing system. The damaged area shall be cut back to sound materials and cleaned up to a width of at least 6 inches beyond the periphery of the damaged area, removing contaminants. The surface shall be primed as necessary, followed by the application of the membrane. A continuous layer shall be obtained over the timber with a 6 inch overlap onto the existing membrane. Any cleaning solvents used shall be approved by the membrane manufacturer. Repairs shall comply with the Manufacturer's guidelines.

PROTECTION OF EXPOSED SURFACES

The Contractor shall exercise care in the application of the flashing materials to prevent surfaces not receiving treatment from being spattered or marred. Particular reference is made to the face of curbs, copings, finished surfaces, substructure exposed surfaces, and outside faces of the bridge. Any material that spatters on these surfaces shall be removed and the surfaces cleaned to the satisfaction of the Engineer.

ACCEPTANCE

Acceptance of the membrane shall only take place once it is determined by the Engineer that the membrane has been installed in accordance with the Special Provisions and plans and that all necessary documentation has been submitted.

NCDOT shall perform visual inspection of the application during the installation of the membrane system.

BASIS OF PAYMENT

No separate payment will be made for *Timber Bridge Flashing Membrane*. Furnishing and applying the timber bridge flashing membrane shall be incidental to the *Timber Bridge Deck System* pay item.

Payment will be made under:

Pay Item

Timber Bridge Deck System

Pay Unit

Lump Sum

County: HAYWOOD

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	0043000000-N	226	GRADING	Lump Sum	L.S.	
0004	1330000000-E	607	INCIDENTAL MILLING	255 SY		
0005	1491000000-E	610	ASPHALT CONC BASE COURSE, TYPE B25.0C	60 TON		
0006	1519000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	120 TON		
0007	1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	10 TON		
0008	3656000000-E	876	GEOTEXTILE FOR DRAINAGE	495 SY		
0009	4400000000-E	1110	WORK ZONE SIGNS (STATIONARY)	234 SF		
0010	4405000000-E	1110	WORK ZONE SIGNS (PORTABLE)	96 SF		
0011	4410000000-E	1110	WORK ZONE SIGNS (BARRICADE MOUNTED)	69 SF		
0012	4435000000-N	1135	CONES	21 EA		
0013	4445000000-E	1145	BARRICADES (TYPE III)	56 LF		
0014	4455000000-N	1150	FLAGGER	15 DAY		
0015	4685000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)	760 LF		
0016	4709000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (24", 90 MILS)	24 LF		
0017	6000000000-E	1605	TEMPORARY SILT FENCE	660 LF		

County: HAYWOOD

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0018	6006000000-E	1610	STONE FOR EROSION CONTROL, CLASS A	75 TON		
0019	6009000000-E	1610	STONE FOR EROSION CONTROL, CLASS B	15 TON		
0020	6012000000-E	1610	SEDIMENT CONTROL STONE	120 TON		
0021	6015000000-E	1615	TEMPORARY MULCHING	0.5 ACR		
0022	6018000000-E	1620	SEED FOR TEMPORARY SEEDING	100 LB		
0023	6021000000-E	1620	FERTILIZER FOR TEMPORARY SEEDING	0.5 TON		
0024	6024000000-E	1622	TEMPORARY SLOPE DRAINS	200 LF		
0025	6029000000-E	SP	SAFETY FENCE	260 LF		
0026	6030000000-E	1630	SILT EXCAVATION	20 CY		
0027	6036000000-E	1631	MATTING FOR EROSION CONTROL	5,000 SY		
0028	6037000000-E	1629	COIR FIBER MAT	100 SY		
0029	6042000000-E	1632	1/4" HARDWARE CLOTH	115 LF		
0030	6070000000-N	1639	SPECIAL STILLING BASINS	4 EA		
0031	6071012000-E	1642	COIR FIBER WATTLE	30 LF		
0032	6084000000-E	1660	SEEDING & MULCHING	0.5 ACR		
0033	6087000000-E	1660	MOWING	0.5 ACR		
0034	6090000000-E	1661	SEED FOR REPAIR SEEDING	50 LB		

County: HAYWOOD

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0035	6093000000-E	1661	FERTILIZER FOR REPAIR SEEDING	0.25 TON		
0036	6096000000-E	1662	SEED FOR SUPPLEMENTAL SEEDING	50 LB		
0037	6108000000-E	1665	FERTILIZER TOPDRESSING	0.25 TON		
0038	6111000000-E	SP	IMPERVIOUS DIKE	105 LF		
0039	6114500000-N	1667	SPECIALIZED HAND MOWING	10 MHR		
0040	6117000000-N	1675	RESPONSE FOR EROSION CONTROL	25 EA		
0041	6117500000-N	SP	CONCRETE WASHOUT STRUCTURE	1 EA		
0042	6132000000-N	SP	GENERIC EROSION CONTROL ITEM PREFABRICATED CONCRETE WASHOUT	1 EA		
STRUCTURES ITEMS						
0043	8035000000-N	402	REMOVAL OF EXISTING STRUCTURE AT STATION ***** (-L- 12+13.00)	Lump Sum	L.S.	
0044	8065000000-N	SP	ASBESTOS ASSESSMENT	Lump Sum	L.S.	
0045	8096000000-E	450	PILE EXCAVATION IN SOIL	210.8 LF		
0046	8097000000-E	450	PILE EXCAVATION NOT IN SOIL	63 LF		
0047	8121000000-N	412	UNCLASSIFIED STRUCTURE EXCAVATION AT STATION ***** (-L- 12+13.00)	Lump Sum	L.S.	
0048	8182000000-E	420	CLASS A CONCRETE (BRIDGE)	54.5 CY		
0049	8217000000-E	425	REINFORCING STEEL (BRIDGE)	6,856 LB		
0050	8280000000-E	440	APPROX LBS STRUCTURAL STEEL	32,400 LS		

County: HAYWOOD

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0051	8328200000-E	450	PILE DRIVING EQUIPMENT SETUP FOR *** STEEL PILES (HP 14X73)	10 EA		
0052	8328400000-E	450	PILE DRIVING EQUIPMENT SETUP FOR *** GALVANIZED STEEL PILES (HP 14X73)	5 EA		
0053	8384000000-E	450	HP 14 X 73 STEEL PILES	300 LF		
0054	8384200000-E	450	HP 14 X 73 GALVANIZED STEEL PILES	180 LF		
0055	8391000000-N	450	STEEL PILE POINTS	15 EA		
0056	8608000000-E	876	RIP RAP CLASS II (2'-0" THICK)	300 TON		
0057	8622000000-E	876	GEOTEXTILE FOR DRAINAGE	165 SY		
0058	8657000000-N	430	ELASTOMERIC BEARINGS	Lump Sum	L.S.	
0059	8860000000-N	SP	GENERIC STRUCTURE ITEM TIMBER BRIDGE DECK SYSTEM	Lump Sum	L.S.	
0060	8867000000-E	SP	GENERIC STRUCTURE ITEM TIMBER BRIDGE RAIL SYSTEM	115.26 LF		
0061	8017000000-N	SP	CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMP ACCESS AT STA ***** (-L- 12+13.00)	Lump Sum	L.S.	

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Total Amount Of Bid For Entire Project :