



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J. ERIC BOYETTE
SECRETARY

December 08, 2020

Addendum No. 1

RE: Contract # C204561

WBS # 15BPR.24

STATE FUNDED

Brunswick County

BRIDGE #13 OVER THE INTRACOASTAL WATERWAY ON NC-904.

December 15, 2020 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
1	Letting Date changed to December 15, 2020
S-1	References to "Early Strength" have been changed to "Very Early Strength"
S-2A	References to "Early Strength" have been changed to "Very Early Strength"
S-4	References to "Early Strength" have been changed to "Very Early Strength"
S-9	Note 7 and Note 8 have been added
S-13	Notes referencing stainless steel have been removed

Please void the above listed Sheets in your plans and staple the revised Sheets thereto.

The following revisions have been made to the proposal:

Page No.	Revisions
Proposal Cover	Note added that reads "Includes Addendum No. 1 Dated 12-08-2020" Letting Date revised to December 15, 2020
BP-1	Revised Project Special Provision name to Latex Modified Concrete – Very Early Strength

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
CONTRACT STANDARDS AND DEVELOPMENT
1591 MAIL SERVICE CENTER
RALEIGH, NC 27699-1591

Telephone: (919) 707-6900
Fax: (919) 250-4127
Customer Service: 1-877-368-4968

Location:
1020 BIRCH RIDGE DR.
RALEIGH, NC 27610

Website: www.ncdot.gov

Page No.	Revisions
BP-32 thru BP-36	Revised Project Special Provision to reflect Latex Modified Concrete – Very Early Strength

Please void the above listed existing Pages in your proposal and staple the revised Pages thereto.

On the item sheets the following pay item revisions have been made:

<u>Item</u>	<u>Description</u>	<u>Old Quantity</u>	<u>New Quantity</u>
0024-8881000000-E-SP	LATEX MODIFIED CONCRETE OVERLAY – EARLY STRENGTH	103 CY	DELETED
0030-8893000000-E-SP	PLACING AND FINISHING LATEX MODIFIED CONC OVERLAY – EARLY STRENGTH	1,790 SY	DELETED
0036-8881000000-E-SP	LATEX MODIFIED CONCRETE OVERLAY – VERY EARLY STRENGTH	NEW ITEM	103 CY
0037-8893000000-E-SP	PLACING AND FINISHING LATEX MODIFIED CONC OVERLAY – VERY EARLY STRENGTH	NEW ITEM	1,790 SY

The Contractor's bid must include these pay item revisions.

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. D. Chad Kimes, PE
Mr. Boyd Tharrington, PE
Mr. Jon Weathersbee, PE
Mr. Ken Kennedy, PE
Project File (2)

Mr. Ray Arnold, PE
Ms. Jaci Kincaid
Ms. Lori Strickland
Mr. Mike Gwyn
Ms. Penny Higgins
Mr. Kyle Kempf

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

PROPOSAL

INCLUDES ADDENDUM No.1 DATED 12-08-2020

DATE AND TIME OF BID OPENING: **DECEMBER 15, 2020 AT 2:00 PM**

CONTRACT ID C204561
WBS 15BPR.24

FEDERAL-AID NO. STATE FUNDED
COUNTY BRUNSWICK
T.I.P. NO.
MILES 0.360
ROUTE NO. NC 904
LOCATION BRIDGE #13 OVER THE INTRACOASTAL WATERWAY ON NC-904.

TYPE OF WORK BRIDGE PRESERVATION.

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.

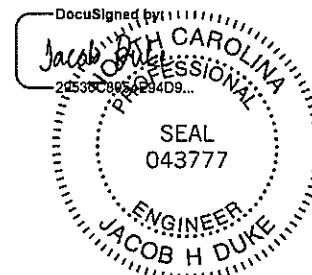
BIDS WILL BE RECEIVED AS SHOWN BELOW:

THIS IS A STRUCTURE PROPOSAL

5% BID BOND OR BID DEPOSIT REQUIRED

**PROJECT SPECIAL PROVISION
STRUCTURES
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11/16/2020

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BP-32

Brunswick County

LATEX MODIFIED CONCRETE OVERLAY – VERY EARLY STRENGTH (2-11-19)

DESCRIPTION

This special provision addresses the requirements for furnishing and placing an overlay of latex modified concrete - very early strength (LMC-VES) over existing concrete or repair concrete on bridge decks. Perform this work in accordance with this special provision and the applicable parts of the *Standard Specifications*.

QUALITY CONTROL

The Contractor is responsible for scheduling a pre-construction meeting with the Resident Engineer and the Area Bridge Construction Engineer.

Submit a Quality Control Plan to the Engineer for approval which, at a minimum, describes the methods of: storing materials, calibrating mixers, controlling moisture content in the aggregate, maintaining proper mix temperature, retarder usage, curing and curing time, controlling evaporation rate, cleaning and removing excess water.

Prior to beginning work, provide proof of experience of the person in direct responsible charge by submitting a description of jobs similar in size and character that have been completed within the last five (5) years. The name, address and telephone number of references for the submitted projects shall also be furnished. Failure to provide appropriate documentation will result in the rejection of the proposed LMC-VES overlay Contractor.

Before beginning any work, obtain approval for all equipment to be used for deck preparation, mixing, placing, finishing and curing the LMC-VES.

MATERIALS

For materials, equipment, and proportioning and mixing of modified compositions, see Article 1000-7 of the *Standard Specifications*.

Provide aggregates for use in the LMC-VES that are free from ice, frost, frozen particles or other contaminants when introduced into the mixer.

The *Standard Specifications* shall be revised as follows:

Table 1000-4 – Revise the following:

Cement Content, 658 lb/cy (min.) change to 658 lb/cy (*max.*)

7 day Compressive Strength, 3,000 psi (min.) change to 3 hr. Compressive Strength, 2,500 psi (min.)

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Brunswick County

1000-7(A), Line 15 – Replace with the following:

Measure the slump after discharge from the mixer.

1000-7(A) – Add the following paragraph to the end of the section:

Submit the LMC-VES mix design, including laboratory compressive strength data for a minimum of six (6) 4-inch by 8-inch cylinders at three (3) hours for very early strength concrete to the Engineer for review. Include test results for the slump and air content of the laboratory mix. Perform tests in accordance with AASHTO T 22, T 119 and T 152.

For projects with multiple bridges using the same mix design, or bridge decks with time constraints that require more than one night for placement, a relationship between the compressive strength and rebound hammer readings may be developed and used to estimate the three hour strength for opening to traffic in lieu of compressive strength testing.

For the correct procedure, reference Document: PL11-LMC Rapid Set Overlays. Contact your local M&T representative for a copy of this document or see the following link: <https://connect.ncdot.gov/resources/Materials/MaterialsResources/Rapid%20Set%20Overlays%20Rebound%20Procedure.pdf>. Seven (7) day concrete compressive strength sampling and testing is required in addition to the use of this method.

PREPARATION OF SURFACE

Completely clean all surfaces within 48 hours prior to placing the overlay unless otherwise approved by the Engineer.

Thoroughly soak the clean surface and maintain a wet surface for at least two (2) hours immediately prior to placing the LMC-VES. After soaking the surface for at least two (2) hours, cover it with a layer of white opaque polyethylene film that is at least 4 mils thick. Immediately prior to placing the LMC-VES, remove standing water from the surface using an approved vacuum system.

PLACING AND FINISHING

Prior to placing LMC-VES, install a bulkhead of easily compressible material at expansion joints to the required grade and profile.

Construction joints other than those shown on the plans will not be permitted unless approved by the Engineer. At construction joints, remove 4" of previously placed LMC-VES prior to placing the adjacent latex concrete. Also, for staged construction, 4" of previously poured LMC-VES shall be scarified, hydro-demolitioned and recast with the next stage.

Place and fasten screed rails in position to ensure finishing the new surface to the required profile. Do not treat screed rails with parting compound to facilitate their removal. Prior to placing the overlay attach a filler block to the bottom of the screed and pass it over the area to be repaired to check the thickness. The filler block thickness shall be equal to the design overlay thickness as shown in the plans. Remove all concrete that the block does not clear. Individual

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Brunswick County

aggregates left after hydro-demolition may be allowed to project above the base of the filler block. Remove aggregate that does not provide a 1" clear cover to the top of the overlay.

Brush a latex cement mixture onto all vertical surfaces and do not let the brushed material dry before it is covered with the additional material required for the final grade. Remove all loose aggregate from the latex cement brushed surface prior to latex concrete placement (NOTE: For surfaces not prepared with hydro-demolition brush the lean latex mixture over horizontal and vertical surfaces).

Do not place the LMC-VES until the burlap is saturated and approved by the Engineer. Drain excess water from the wet burlap before placement.

Place the LMC-VES in one operation. Provide a minimum overlay thickness as shown in the plans.

Once LMC-VES placement begins a single layer of wet burlap shall be placed five (5) feet behind the screed's burlap drag. In the event of a delay of ten (10) minutes or more, temporarily cover all exposed latex concrete with wet burlap and white opaque polyethylene.

When a tight, uniform surface is achieved and before the concrete becomes non-plastic, further finish the surface of the floor by burlap dragging or another acceptable method that produces an acceptable uniform surface texture.

Promptly cover the surface with a second layer of clean, wet burlap as soon as the surface will support it without deformation. Wet cure only the surface for a minimum of three (3) hours and until a compressive strength of 2,500 psi is reached. Curing material shall be continually saturated during the wet cure period using a fogging system approved by the Engineer. The Engineer may require an increase in the minimum cure time when the overlay thickness is greater than 1.5 inches or the ambient temperature remains below 60°F.

Screed rails or construction dams shall be separated from the newly placed concrete by passing a pointing trowel along the face of the formwork and the newly placed concrete. Carefully make this trowel cut for the entire depth and length of rails or dams after the LMC-VES has sufficiently stiffened and cannot flow back.

As soon as practical, after the concrete has hardened sufficiently, test the finished surface with an approved rolling straightedge that is designed, constructed, and adjusted so that it will accurately indicate or mark all deck areas which deviate from a plane surface by more than 1/8" in 10'. Remove all high areas in the hardened surface in excess of 1/8" in 10' with an approved grinding or cutting machine. Additionally, the final LMC-VES deck surface shall not deviate from the line and elevation indicated on the plans by more than 0.3" over any 50' length. Where variations are such that the corrections extend below the limits of the top layer of grout, seal the corrected surface with an approved sealing agent as required by the Engineer. If approved by the Engineer, correct low areas in an acceptable manner.

Unless otherwise indicated on the plans, groove the bridge floor in accordance with Subarticle 420-14(B) of the *Standard Specifications*. Vehicular traffic may travel across a deck surface that has not been grooved; however, the entire deck area shall be grooved after the LMC-VES

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Brunswick County

achieves design strength and no later than seven (7) days after completion of the overlay unless otherwise approved by the Engineer.

LIMITATIONS OF OPERATIONS

The mixer is not permitted on the bridge deck unless otherwise approved.

No traffic is permitted on the finished LMC-VES surface until the total specified curing time is completed and until the concrete reaches the minimum specified compressive strength.

Do not place LMC-VES if the temperature of the concrete surface on which the overlay is to be placed is below 50°F or above 85°F. Measure the surface temperature by placing a thermometer under the insulation against the surface.

Prior to placing LMC-VES, the air temperature, wind speed, and the evaporation rate shall be determined by the Contractor and verified by the Engineer. Do not place LMC-VES if the ambient air temperature is below 50°F or above 85°F, or if the wind velocity is greater than 10 mph.

Do not place LMC-VES when the temperature of the LMC-VES is below 45°F or above 85°F.

It is the Contractor's responsibility to ensure that the rate of evaporation of surface moisture from the LMC-VES does not exceed 0.05 pounds per square foot per hour until the overlay has achieved the specified compressive strength. The evaporation rate is calculated using the following formula:

$$E = (T_c^{2.5} - r * T_a^{2.5}) * (1 + 0.4V) * (10^{-6})$$

where,

E = Evaporation Rate,

T_c = Concrete Temp (°F),

r = Relative Humidity (%/100)

T_a = Air Temp (°F),

V = Wind Velocity (mph)

The Contractor shall determine the evaporation rate prior to placement. Additionally, the Contractor shall determine the predicted evaporation rate from the beginning of the placement until the expected time of achieving the required compressive strength. If the calculated evaporation rate during that time exceeds or is predicted to exceed 0.05 pounds per square foot per hour, the Contractor may propose engineered controls of the parameters (temperature, relative humidity, wind velocity) to reduce the evaporation rate. The evaporation rate shall be recalculated, with the appropriate parameters, after the proposed control measures are in place. The recalculated evaporation rate shall be 0.05 pounds per square foot per hour or less, prior to

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Brunswick County

placement, and must stay below 0.05 pounds per square foot per hour until the specified compressive strength is achieved.

Stop all placement operations during periods of precipitation. Take adequate precautions to protect freshly placed LMC-VES from sudden or unexpected precipitation. Keep an adequate quantity of protective coverings at the worksite to protect the freshly placed pavement from precipitation.

If working at night, provide approved lighting.

MEASUREMENT AND PAYMENT

Latex Modified Concrete Overlay-- Very Early Strength will be measured and paid for in cubic yards of LMC-VES satisfactorily placed on the completed deck.

Placing and Finishing Latex Modified Concrete Overlay – Very Early Strength will be paid for at the contract unit price bid per square yard which includes compensation for furnishing all labor, tools, equipment and incidentals necessary to complete the work in accordance with the contract documents.

Grooving Bridge Floors will be measured and paid in accordance with Article 420-21 of the *Standard Specifications*.

Payment will be made under:

Pay Item	Pay Unit
Latex Modified Concrete Overlay – Very Early Strength	Cubic Yard
Placing & Finishing of Latex Modified Concrete Overlay – Very Early Strength	Square Yard
Grooving Bridge Floors	Square Feet

County: Brunswick

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
ROADWAY ITEMS						
0001	0000100000-N	800	MOBILIZATION	Lump Sum	L.S.	
0002	1330000000-E	607	INCIDENTAL MILLING	305 SY		
0003	1523000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	26 TON		
0004	1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	2 TON		
0005	4400000000-E	1110	WORK ZONE SIGNS (STATIONARY)	48 SF		
0006	4405000000-E	1110	WORK ZONE SIGNS (PORTABLE)	176 SF		
0007	4420000000-N	1120	PORTABLE CHANGEABLE MESSAGE SIGN	2 EA		
0008	4455000000-N	1150	FLAGGER	500 DAY		
0009	4516000000-N	1180	SKINNY DRUM	60 EA		
0010	4850000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (4")	5,565 LF		
0011	4890000000-E	SP	GENERIC PAVEMENT MARKING ITEM POLYUREA PAVEMENT MARKING LINES (4", 20MILS) (STANDARD GLASS BEADS)	8,069 LF		
0012	4900000000-N	1251	PERMANENT RAISED PAVEMENT MARKERS	49 EA		
STRUCTURE ITEMS						
0013	8161000000-E	420	GROOVING BRIDGE FLOORS	14,417 SF		
0014	8559000000-E	SP	CLASS II, SURFACE PREPARATION	2 SY		
0015	8657000000-N	430	ELASTOMERIC BEARINGS	Lump Sum	L.S.	
0016	8660000000-E	SP	CONCRETE REPAIRS	20 CF		

County : Brunswick

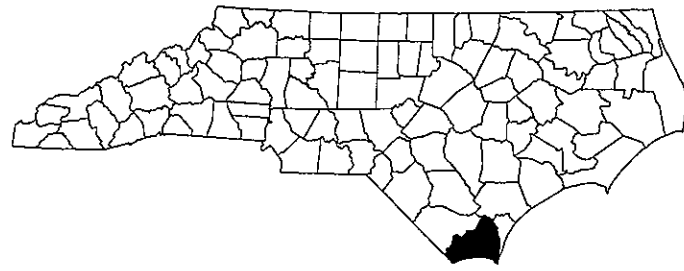
Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0017	8664000000-E	SP	SHOTCRETE REPAIRS	439 CF		
0018	8678000000-E	SP	EPOXY RESIN INJECTION	848 LF		
0019	8860000000-N	SP	GENERIC STRUCTURE ITEM VOLUMETRIC MIXER	Lump Sum	L.S.	
0020	8860000000-N	SP	GENERIC STRUCTURE ITEM WATER LINE REMOVAL	Lump Sum	L.S.	
0021	8867000000-E	SP	GENERIC STRUCTURE ITEM FOAM JOINT SEALS FOR PRESERVA- TION	720 LF		
0022	8867000000-E	SP	GENERIC STRUCTURE ITEM INTEGRAL PILE JACKETING	5 LF		
0023	8867000000-E	SP	GENERIC STRUCTURE ITEM RAIL RETROFIT	3,795 LF		
0025	8882000000-E	SP	GENERIC STRUCTURE ITEM ELASTOMERIC CONCRETE FOR PRES- ERVATION	78 CF		
0026	8882000000-E	SP	GENERIC STRUCTURE ITEM REPAIRS TO PRESTRESSED CON- CRETE GIRDERS	191 CF		
0027	8892000000-E	SP	GENERIC STRUCTURE ITEM BRIDGE JOINT DEMOLITION	244 SF		
0028	8892000000-E	SP	GENERIC STRUCTURE ITEM EPOXY COATING	6,282 SF		
0029	8893000000-E	SP	GENERIC STRUCTURE ITEM HYDRO-DEMOLITION OF BRIDGE DECK	1,790 SY		
0031	8893000000-E	SP	GENERIC STRUCTURE ITEM SCARIFYING BRIDGE DECK	1,790 SY		
0032	8893000000-E	SP	GENERIC STRUCTURE ITEM SHOTBLASTING BRIDGE DECK	4,801 SY		
0033	8893000000-E	SP	GENERIC STRUCTURE ITEM SILANE DECK TREATMENT	4,801 SY		
0034	8897000000-N	SP	GENERIC STRUCTURE ITEM CATHODIC PROTECTION SYSTEM- SUBMERGED ZINC BULK ANODE	50 EA		

County : Brunswick

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0035	8897000000-N	SP	GENERIC STRUCTURE ITEM TYPE I BRIDGE JACKING BRIDGE NO 13	6	EA.	
0036	8881000000-E	SP	GENERIC STRUCTURE ITEM LATEX MODIFIED CONCRETE OVERLAY - VERY EARLY STRENGTH	103	CY	
0037	8893000000-E	SP	GENERIC STRUCTURE ITEM PLACING AND FINISHING LATEX MODIFIED CONC OVERLAY - VERY EARLY STRENGTH	1,790	SY	
1235/Dec08/Q56978.0/D243652100000/E35			Total Amount Of Bid For Entire Project :			

PROJECT NUMBER: 15BPR.24

CONTRACT: C204561



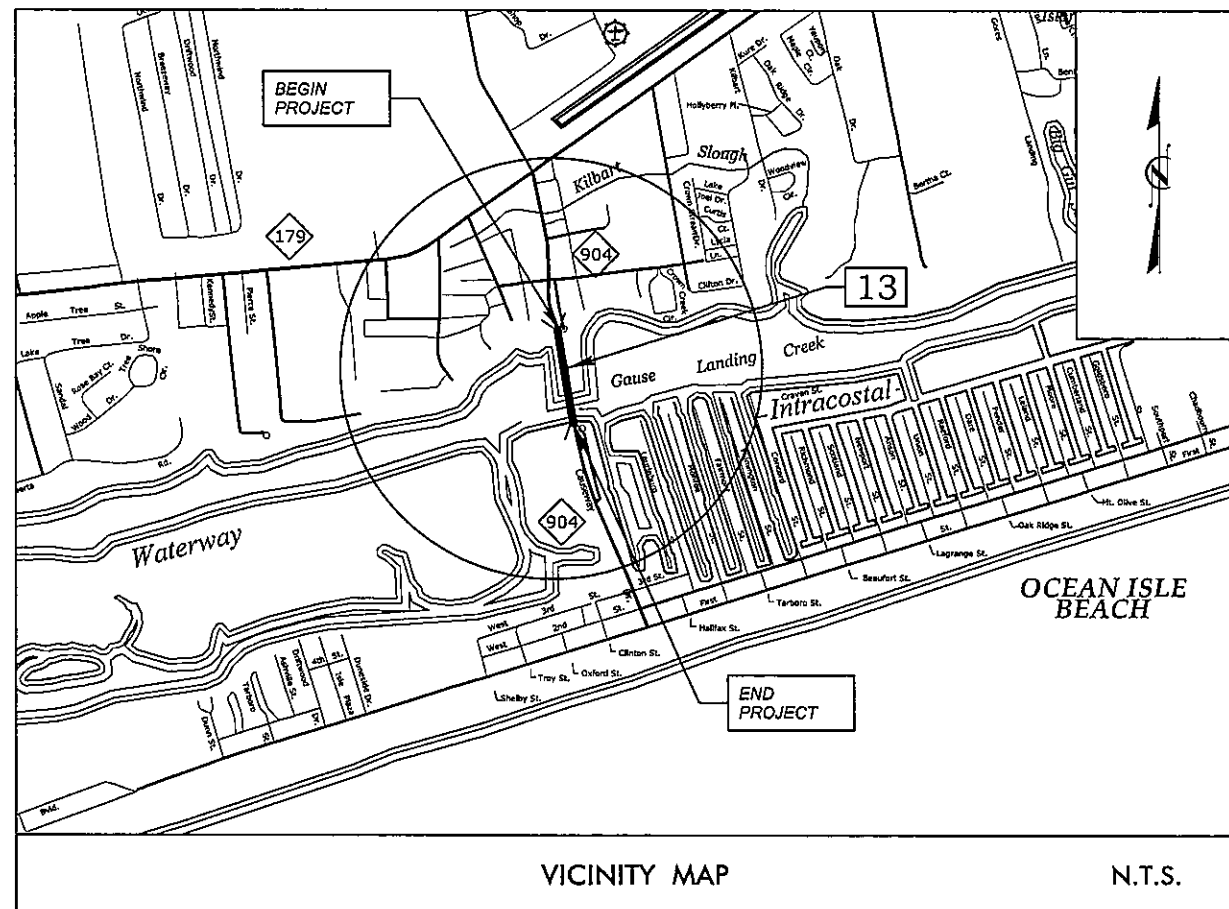
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BRUNSWICK COUNTY

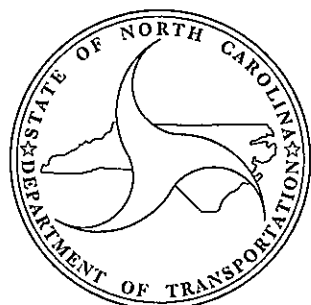
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	15BPR.24	1	45
	STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
	15BPR.24	-	P.E.
	15BPR.24	-	CONST.

LOCATION: BRUNSWICK COUNTY
BRIDGE #090013 ON NC 904 OVER THE INTRACOASTAL WATERWAY

TYPE OF WORK: BRIDGE PRESERVATION - LATEX MODIFIED CONCRETE DECK OVERLAY, SILANE DECK TREATMENT, JOINT REPAIR, SUPERSTRUCTURE REPAIR, BEARING REPLACEMENT, SUBSTRUCTURE REPAIR, CATHODIC PROTECTION, AND INTEGRAL PILE JACKETS



STRUCTURES



DESIGN DATA

BRUNSWICK COUNTY
#13 ADT 2014 = 11,000

PROJECT LENGTH

BRUNSWICK COUNTY
#13 = 0.36 MILE

2018 STANDARD SPECIFICATIONS

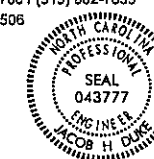
LETTING DATE :
December 15, 2020

Prepared for the Office of:
DIVISION OF HIGHWAYS
STRUCTURES MANAGEMENT UNIT
1000 BIRCH RIDGE DR.
RALEIGH, N.C. 27610

KCA 301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
LICENSE # C-1506

Designed by:
Jacob Duke

11/16/2020



JACOB H. DUKE
PROJECT ENGINEER

DIEGO A. AGUIRRE
PROJECT DESIGN ENGINEER

SUMMARY OF QUANTITIES

TOTAL BILL OF MATERIAL

	INCIDENTAL MILLING	ASPHALT CONCRETE SURFACE COURSE TYPE, S9.5C	ASPHALT BINDER FOR PLANT MIX	POLYUREA, PAVEMENT MARKING LINES (4", 20 MILS)	REMOVAL OF PAVEMENT MARKING LINES (4")	PERMANENT RAISED PAVEMENT MARKING	GROOVING BRIDGE FLOORS	CLASS II, SURFACE PREPARATION	ELASTOMERIC BEARINGS	CONCRETE REPAIRS	SHOTCRETE REPAIRS	EPOXY RESIN INJECTION	INTEGRAL PILE JACKETING	FOAM JOINT SEALS FOR PRESERVATION	WATER LINE REMOVAL	VOLUMETRIC MIXER
	SO. YD.	TON	TON	LIN. FT.	LIN. FT.	EA.	SO. FT.	SO. YD.	LUMP SUM	CU. FT.	CU. FT.	LIN. FT.	LF.	LIN. FT.	LUMP SUM	LUMP SUM
TOTAL	305	26	2	8069	5565	49	14417	2	LUMP SUM	20	439	848	5	720	LUMP SUM	LUMP SUM

	RAIL RETROFIT	LATEX MODIFIED CONCRETE OVERLAY-VERY EARLY STRENGTH	ELASTOMERIC CONCRETE FOR PRESERVATION	REPAIRS TO PRESTRESSED CONCRETE GIRDERS	BRIDGE JOINT DEMOLITION	EPOXY COATING	SCARIFYING BRIDGE DECK	SHOTBLASTING BRIDGE DECK	PLACING AND FINISHING LATEX MODIFIED CONC. OVERLAY - VERY EARLY STRENGTH	SILANE DECK TREATMENT	HYDRO-DEMOLITION OF BRIDGE DECK	TYPE I BRIDGE JACKING BRIDGE NO. 13	CATHODIC PROTECTION SYSTEM-SUBMERGED ZINC BULK ANODE
	LIN. FT.	CU. YD.	CU. FT.	CU. FT.	SO. FT.	SO. FT.	SO. YD.	SO. YD.	SO. YD.	SO. YD.	SO. YD.	EA.	EA.
TOTAL	3795	103	78	191	244	6282	1790	4801	1790	4801	1790	6	50

PROJECT NO. 15BPR.24
BRUNSWICK COUNTY
 BRIDGE NO. 090013



STATE OF NORTH CAROLINA			
DEPARTMENT OF TRANSPORTATION			
RALEIGH			
BILL OF MATERIAL			
REVISIONS			SHEET NO.
NO.	BY:	DATE:	NO.
1			3
2			4
TOTAL SHEETS			45

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

301 FAYETTEVILLE ST., SUITE 1500
 RALEIGH, NC 27601
 (919) 852-7239
 LICENSE #: C-1506

DRAWN BY : OMAR M. KHALAFALLA DATE : 10/2018
 CHECKED BY : DIEGO A. AGUIRRE DATE : 10/2018
 DESIGN ENGINEER OF RECORD : JACOB H. DUKE DATE : 10/2018

DRAWINGS AND DIMENSIONS:

- DO NOT SCALE DRAWINGS FOR DIMENSIONS NOT GIVEN.
- VERIFY ALL EXISTING FIELD CONDITIONS AND DIMENSIONS (INCLUDING MINIMUM VERTICAL CLEARANCE) PRIOR TO COMMENCING REPAIRS OR ORDERING ANY MATERIAL. NOTIFY ENGINEER OF ANY DISCREPANCIES FOUND.
- ALL DIMENSIONS ARE IN FEET AND INCHES.

DESIGN SPECIFICATIONS:

- LRFD BRIDGE DESIGN SPECIFICATIONS (8TH EDITION, 2017)
- 2018 NCDOT STANDARD SPECIFICATIONS AND PROJECT SPECIAL PROVISIONS.

PROJECT SCOPE:

- LATEX MODIFIED - VERY EARLY STRENGTH CONCRETE (LMC) OVERLAY
- SILANE DECK TREATMENT
- SUPERSTRUCTURE CONCRETE REPAIRS
- SUBSTRUCTURE CONCRETE REPAIRS
- EXPANSION JOINT REPLACEMENT/INSTALLATION
- BEARING REPLACEMENT
- INTEGRAL PILE JACKETING
- GALVANIC CATHODIC PROTECTION - BULK ANODE
- RAIL RETROFIT (TYP.)
- APPROACH ROADWAY MILLING AND RESURFACING
- EPOXY COATING BEAM ENDS.
- WATER LINE REMOVAL
- PAVEMENT MARKING

GENERAL NOTES:

- IT IS THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW ALL STATE AND FEDERAL REQUIREMENTS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR CONTROL OF TRAFFIC AND LIMITS ON PHASING CONSTRUCTION, SEE TRANSPORTATION MANAGEMENT PLAN.
- FOR LMC SURFACE PREPARATION, SEE SPECIAL PROVISIONS.
- FOR LATEX MODIFIED CONCRETE - VERY EARLY STRENGTH (LMC), SEE SPECIAL PROVISIONS.
- FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.
- FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.
- FOR CONCRETE REPAIRS, SEE PLAN DETAILS AND SPECIAL PROVISIONS.
- FOR CONCRETE FOR DECK REPAIRS, SEE SPECIAL PROVISIONS.
- FOR VOLUMETRIC MIXER, SEE SPECIAL PROVISIONS.
- FOR ADHESIVELY ANCHORED RODS AND DOWELS, SEE ARTICLE 420-13 OF THE STANDARD SPECIFICATIONS.
- ALL PROPOSED EXPANSION JOINT DIMENSIONS, OPENINGS AND BLOCKOUTS ARE SHOWN AT 65°F, CONTRACTOR SHALL FOLLOW MANUFACTURER'S INSTALLATION GUIDELINES AND MAKE ANY NECESSARY ADJUSTMENTS.
- WORK ON BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL SUBMIT PLANS FOR CONSTRUCTION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
- PRIOR TO BEGINNING WORK, THE CONTRACTOR SHALL SUBMIT FOR REVIEW AND APPROVAL, A COMPLETE SEQUENCE OF TASKS FOR EACH OPERATION AFFECTING THE BRIDGE SURFACE AND/OR VEHICLE/MARINE TRAFFIC.
- ANY DAMAGE TO EXISTING REINFORCING STEEL, DURING CONTRACTOR'S OPERATIONS, SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER AND PERFORMED AT NO ADDITIONAL COST TO THE DEPARTMENT.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR MAINTENANCE OF WATER TRAFFIC, SEE SPECIAL PROVISIONS.
- FOR WORK IN, OVER OR ADJANCE TO NAVIGABLE WATERS, SEE SPECIAL PROVISIONS.
- FOR INTEGRAL PILE JACKETING, SEE SPECIAL PROVISIONS.
- FOR SECURING OF VESSELS, SEE SPECIAL PROVISIONS.
- FOR COORDINATION WITH THE U.S. COAST GUARD, SEE SPECIAL PROVISIONS.
- EXISTING JOINTS AND DRAINS SHALL BE SEALED PRIOR TO BEGINNING REPAIRS OF BRIDGE DECK.
- FOR PAVEMENT MARKINGS AND MARKERS, SEE TRANSPORTATION MANAGEMENT PLANS.

PROJECT COORDINATES:

NC 904/OCEAN ISLE BEACH ROAD SW IS AN EAST/WEST ROUTE AND THE BRIDGE BEGINS ON THE MAINLAND SIDE AND ENDS ON THE BEACH SIDE. ALTHOUGH THE BRIDGE IS ORIENTED IN THE NORTH/SOUTH CARDINAL DIRECTION, REFERENCE IN THESE PLANS, BRIDGE INSPECTION REPORTS, AND OTHER DATA IS BASED ON END BENT 1 BEING LOCATED AT THE MAINLAND SIDE AND END BENT 2 BEING LOCATED AT THE BEACH SIDE. IN AN ATTEMPT TO BE CONSISTENT WITH THE CURRENT BRIDGE INSPECTION REPORT, END BENT 1 WILL BE LABELED THE "WEST" END, AND END BENT 2 WILL BE LABELED THE "EAST" END OF THE BRIDGE. THE ACTUAL BRIDGE COORDINATES GIVEN IN THE BRIDGE INSPECTION REPORT ARE LATITUDE: 33° 53' 45.9" AND LONGITUDE: 78° 26' 23.4"

DATUM:

ALL ELEVATIONS REFER TO NGVD '29 UNLESS NOTED OTHERWISE.

ENVIRONMENT:

SUPERSTRUCTURE: EXTREMELY AGGRESSIVE - COASTAL
SUBSTRUCTURE: EXTREMELY AGGRESSIVE - COASTAL

SITE CONDITIONS:

HABITAT BEYOND THE LIMITS OF CONSTRUCTION SHALL NOT BE DISTURBED.

CONCRETE CLASS:

SEE PROJECT SPECIAL PROVISIONS FOR CONCRETE REPAIR MATERIALS.

CONCRETE COVER:

- CONCRETE COVER SHOWN IN THE PLANS DOES NOT INCLUDE PLACEMENT OR FABRICATION TOLERANCES UNLESS SHOWN AS "MINIMUM COVER." SEE NCDOT SPECIFICATIONS FOR ALLOWABLE REINFORCEMENT PLACEMENT TOLERANCES.
- CONSTRUCTION JOINTS ARE PERMITTED ONLY AT LOCATIONS SPECIFIED IN THE PLANS. ADDITIONAL CONSTRUCTION JOINTS OR ALTERATIONS TO THOSE SHOWN REQUIRE THE ENGINEER'S APPROVAL.

CONCRETE FINISHES:

FINISH IN ACCORDANCE WITH THE LATEST NCDOT SPECIFICATIONS. MATCH EXISTING FINISH ON ALL EXPOSED EDGES UNLESS OTHERWISE NOTED. A CLASS 5 FINISH COATING SHALL BE APPLIED TO THE BEAM ENDS WHERE CONCRETE REPAIRS HAVE BEEN PERFORMED, MATCHING THE COLOR OF SURROUNDING CONCRETE.

ADJACENT EDGE CONCRETE REPAIRS:

WHEN PROPOSED CONCRETE REPAIRS (OR DETERMINED LOCATIONS) ARE ADJACENT TO A CORNER, REPAIR ON THE ADJACENT EDGE SHOULD BE ANTICIPATED IN ADDITION TO THE AREA SHOWN ON SUBSTRUCTURE CONCRETE REPAIR SHEETS. CONTRACTOR IS RESPONSIBLE FOR THIS REPAIR AT ALL LOCATIONS REGARDLESS OF CALL-OUT ON RESPECTIVE SHEET(S).

REINFORCING STEEL:

- ALL REINFORCING STEEL SHALL BE ASTM A615-96, GRADE 60.
- ALL DIMENSIONS PERTAINING TO LOCATION OF REINFORCEMENT ARE TO CENTERLINE OF BARS EXCEPT WHERE THE CLEAR DIMENSION IS SHOWN TO FACE OF CONCRETE.
- REINFORCEMENT DETAIL DIMENSIONS ARE OUT-TO-OUT OF BARS.

LIMIT OF REPAIRS:

- LIMITS OF REPAIRS PROVIDED IN THESE PLANS ARE BASED ON PREVIOUS NBIS ELEMENT INSPECTIONS AND LIMITED FIELD WORK. THE EXTENT OF THE REPAIRS IS EXPECTED TO VARY DURING CONSTRUCTION.
- DUE TO TIME SINCE INSPECTION, DEFICIENCIES MAY HAVE DETERIORATED OR INCREASED IN NUMBER. NOTIFY THE ENGINEER OF SIGNIFICANT CHANGES.

FORMS CONSTRUCTION:

FORMS MUST BE SUPPORTED BY THE EXISTING STRUCTURE. FULL DEPTH COFFERDAMS WILL NOT BE ACCEPTED. THE CONTRACTOR SHALL SUBMIT DETAILED PLANS FOR FORMS AND FALSEWORK TO BE USED FOR CONSTRUCTION OF THE PIER AND CONCRETE REPAIR.

CONSTRUCTION SURVEYING:

ALL SURVEYING AND STAKING NECESSARY TO COMPLETE THE PROPOSED WORK IS INCIDENTAL TO ALL OTHER PAY ITEMS FOR THIS PROJECT.

ENVIRONMENTAL NOTES:

STANDARD CONSTRUCTION CONDITIONS SHALL BE IMPLEMENTED FOR THE FOLLOWING PROTECTED/ENDANGERED SPECIES AS APPLICABLE AND INCLUDED IN CONTRACT DOCUMENTS.

- ATLANTIC RIDLEY SEA TURTLE
- LEATHERBACK SEA TURTLE
- RED-COCKADED WOODPECKER
- WEST INDIAN MANATEE
- COOLEY'S MEADOWRUE
- ROUGH-LEAVED LOOSESTRIFE

POLLUTION CONTROL:

- THE CONTRACTOR SHALL SUBMIT A POLLUTION CONTROL PLAN TO THE ENGINEER IN ACCORDANCE THE NCDOT STANDARD SPECIFICATIONS, PRIOR TO COMMENCING ANY CONSTRUCTION ACTIVITIES.
- THE CONTRACTOR SHALL NOT ALLOW, AT ANY TIME, ANY DISCHARGE OR MATERIALS TO FALL INTO THE WATERWAY.
- THE CONTRACTORS SHALL SUBMIT TO THE ENGINEER AN EROSION CONTROL PLAN AS REQUIRED BY THE NCDOT STANDARD SPECIFICATIONS AND BEST MANAGEMENT PRACTICES.
- NO OFFSITE IMPACTS SHALL BE PERMITTED.
- A CONTAINMENT PLAN IS REQUIRED FOR CONCRETE REPAIRS.

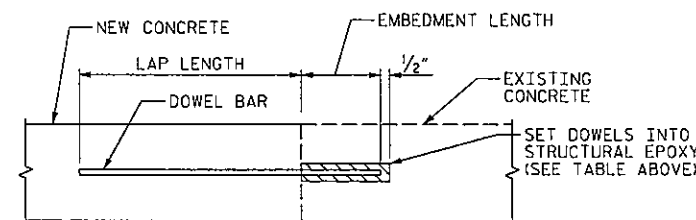
MISCELLANEOUS NOTES:

- THE CONTRACTOR IS RESPONSIBLE TO SUBMIT A JACKING PLAN FOR EACH OPERATION TO THE ENGINEER FOR APPROVAL PRIOR TO BRIDGE JACKING.
- PAYMENT FOR INCIDENTAL ITEMS NOT SPECIFICALLY COVERED IN THE INDIVIDUAL BID ITEMS SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR THE BID ITEMS CONTAINED IN THE CONTRACT.
- FOR ICT, SEE CONTRACT DOCUMENTS AND TRANSPORTATION MANAGEMENT PLANS.

DOWEL DETAIL:

- ANY REQUIRED DOWEL HOLES SHALL BE DRILLED INTO EXISTING CONCRETE ACCORDING TO THE DETAIL AND NCDOT SPECIFICATIONS.
- NOTIFY THE ENGINEER OF ANY BROKEN BARS OR BARS WHICH ARE DETERMINED TO HAVE A SECTION LOSS OF 25% OR GREATER.
- INSTALL DOWELS IN ACCORDANCE WITH NCDOT SPECIFICATIONS.

DOWEL DIMENSIONS (UNLESS OTHERWISE NOTED)			
DOWEL SIZE	HOLE DIAMETER	EMBEDMENT LENGTH	MIN LAP LENGTH
4	5/8"	8"	1'-9"
5	3/4"	9"	2'-2"
6	7/8"	11"	2'-7"
8	1 1/8"	1'-4"	4'-6"



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 BRIDGE NO. 090013
 SHEET 1 OF 2

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GENERAL NOTES

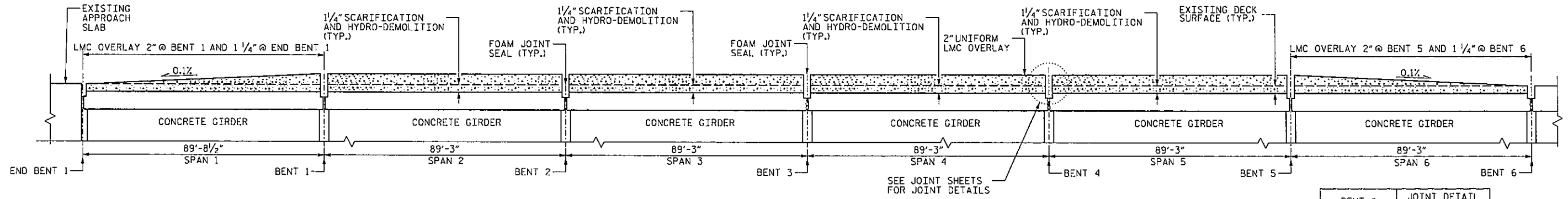
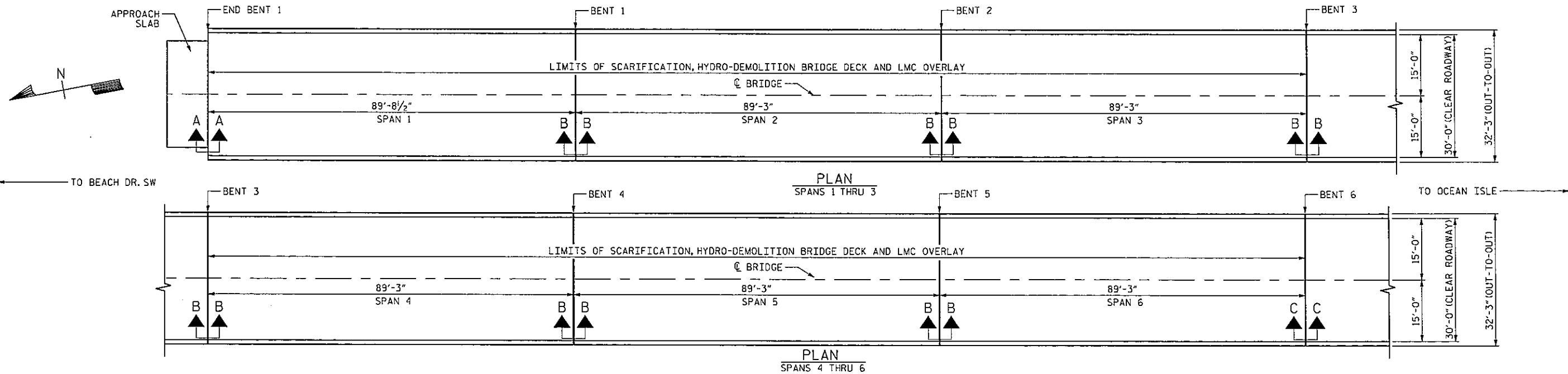
DRAWN BY : DIEGO A. AGUIRRE DATE : 10/2018
 CHECKED BY : JACOB H. DUKE DATE : 10/2018
 DESIGN ENGINEER OF RECORD : JACOB H. DUKE DATE : 10/2018

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TOTAL SHEETS: 45



NOTES:

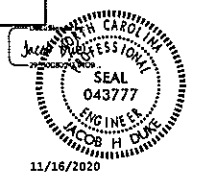
- WHERE MULTIPLE SPANS ARE LISTED, ESTIMATED QUANTITIES ARE BASED ON THE ANTICIPATED VALUES FOR A SINGLE SPAN OF THAT CONFIGURATION.
- REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE AS-BUILT REPAIR QUANTITY TABLE.
- CONCRETE COVER FOR TOP BARS IN THE DECK SLAB IS 2 1/2" PER THE EXISTING BRIDGE PLANS. ACTUAL CONCRETE COVER SHALL BE DETERMINED BY THE CONTRACTOR AND PRESENTED TO THE ENGINEER PRIOR TO BEGINNING SCARIFICATION.
- CURRENT AVERAGE COVER IS EXPECTED TO BE FROM 1 1/2" TO 2" BASED ON VISUAL INSPECTION EXCEPT FOR SPAN 3, WHERE THE CURRENT AVERAGE COVER IS EXPECTED TO BE FROM 0" TO 1 1/2".
- MINOR QUANTITIES OF CLASS II AREAS ARE ANTICIPATED, PARTICULARLY NEAR JOINTS. HOWEVER, DUE TO THEIR SMALL SIZE, THE CLASS II LOCATIONS HAVE NOT BEEN DELINEATED ON THESE PLANS. THE CLASS II QUANTITIES INDICATED ARE ANTICIPATED TO BE SUFFICIENT FOR THE ACTUAL QUANTITIES ENCOUNTERED.
- FOR CLASS II SURFACE PREPARATION LOCATIONS AT BRIDGE JOINTS, SEE "JOINT DETAILS SHEETS".
- BRIDGE DECK GROOVING QUANTITY BASED ON LIMITS REQUIRED IN SECTION 420-14(B) OF STANDARD SPECIFICATIONS.
- BRIDGE DECK SCARIFICATION LIMITS ARE THE FULL CLEAR ROADWAY WIDTH (INSIDE FACE OF EACH BRIDGE RAIL).
- FOR BRIDGE DECK RIDEABILITY AND GROOVING, SEE SPECIAL PROVISIONS.
- FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.
- FOR VOLUMETRIC MIXER, SEE SPECIAL PROVISIONS.

LMC OVERLAY THICKNESS DETAIL
SPANS 1 THRU 6 (NOT TO SCALE)

AS-BUILT REPAIR QUANTITY TABLE						
TOP OF DECK REPAIRS						
	SPAN 1		SPAN 2 THRU 5		SPAN 6	
	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	299 SY		298 SY		298 SY	
CLASS II SURFACE PREPARATION	0.2 SY		0.2 SY		0.2 SY	
CLASS III SURFACE PREPARATION	0.0 SY		0.0 SY		0.0 SY	
HYDO-DEMOLITION OF BRIDGE DECK	299 SY		298 SY		298 SY	
LATEX OVERLAY - VERY EARLY STRENGTH	14.9 CY		18.3 CY		14.9 CY	
PLACING & FINISHING LMC OVERLAY	299 SY		298 SY		298 SY	
GROOVING BRIDGE FLOORS	2413 SF		2401 SF		2401 SF	

BENT #	JOINT DETAIL DESIGNATION
END BENT 1	A - A
1	B - B
2	B - B
3	B - B
4	B - B
5	B - B
6	C - C

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**PLAN OF SPAN
 SPANS 1 THRU 6**

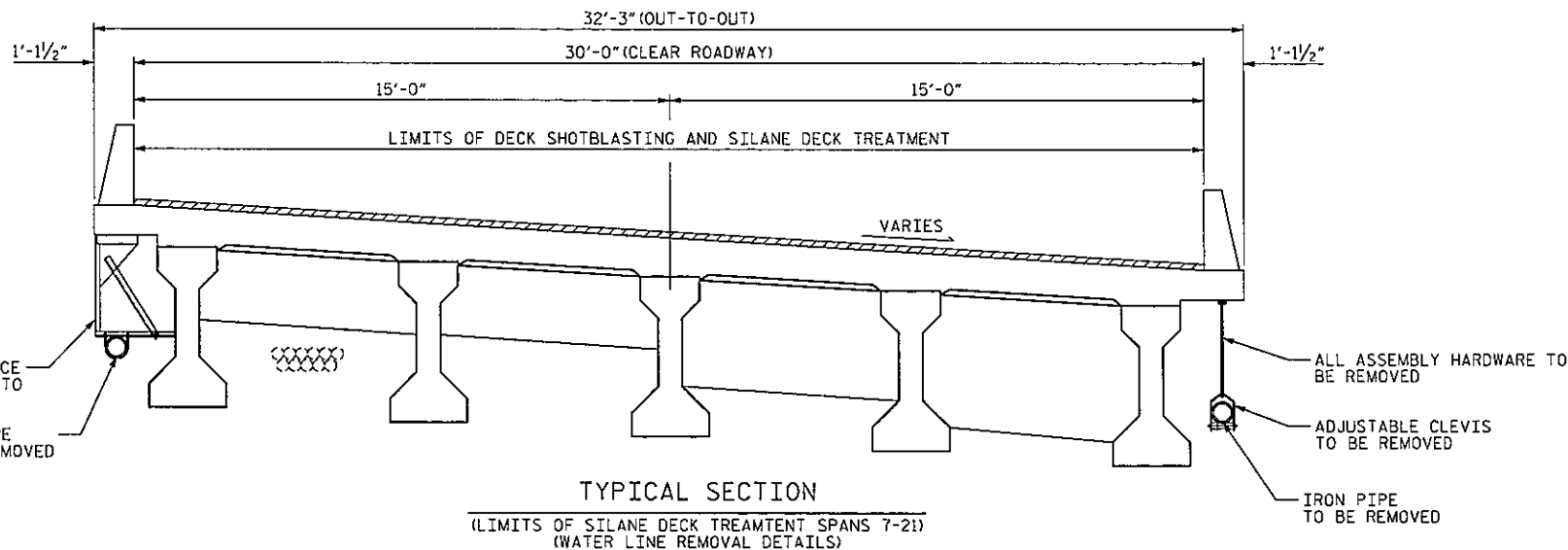
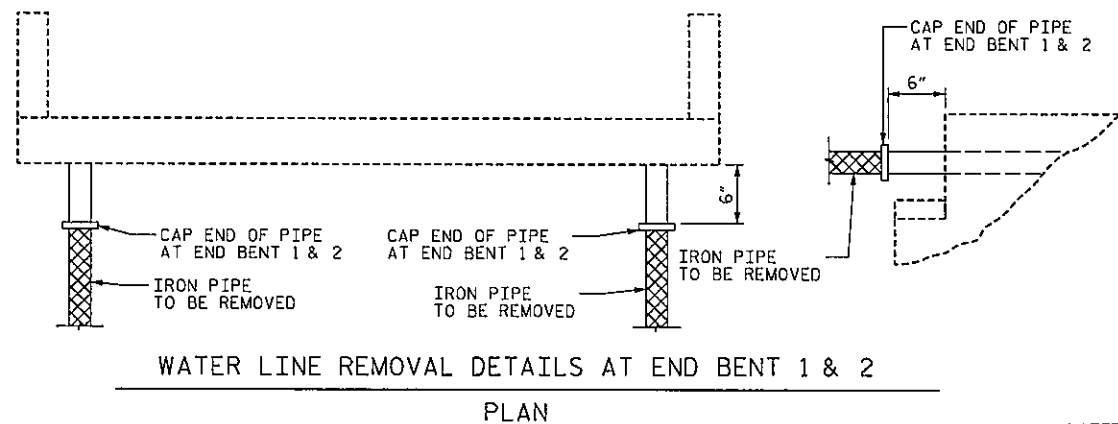
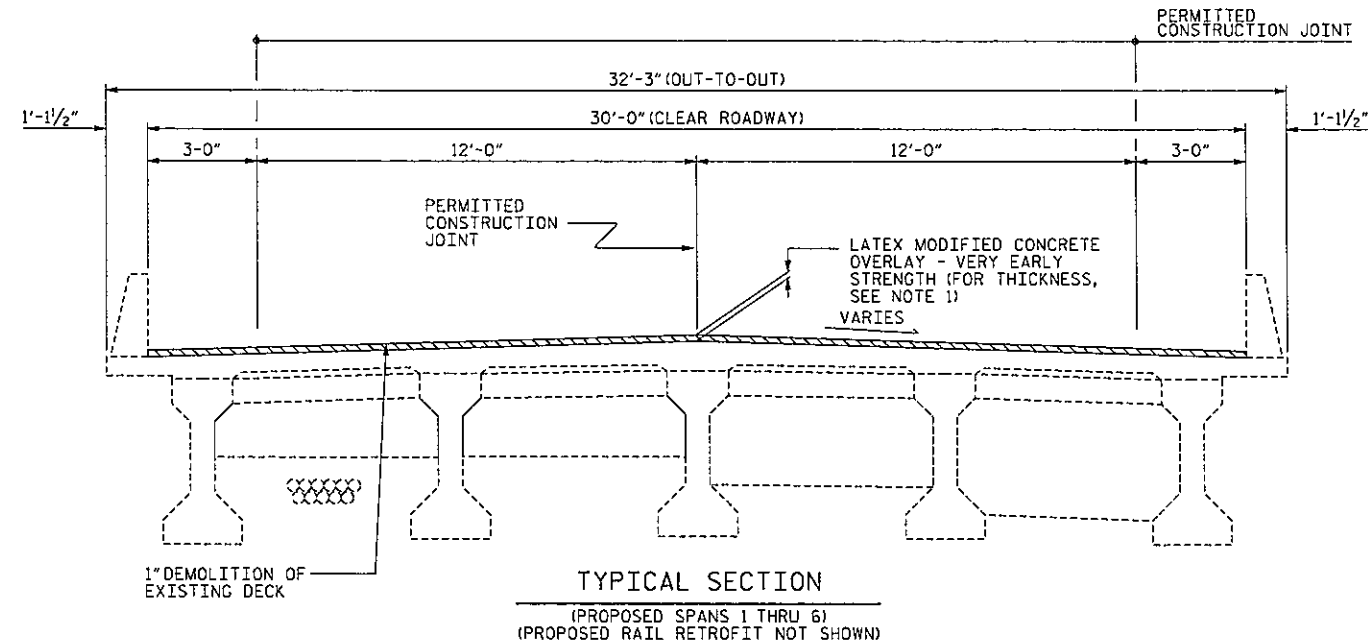
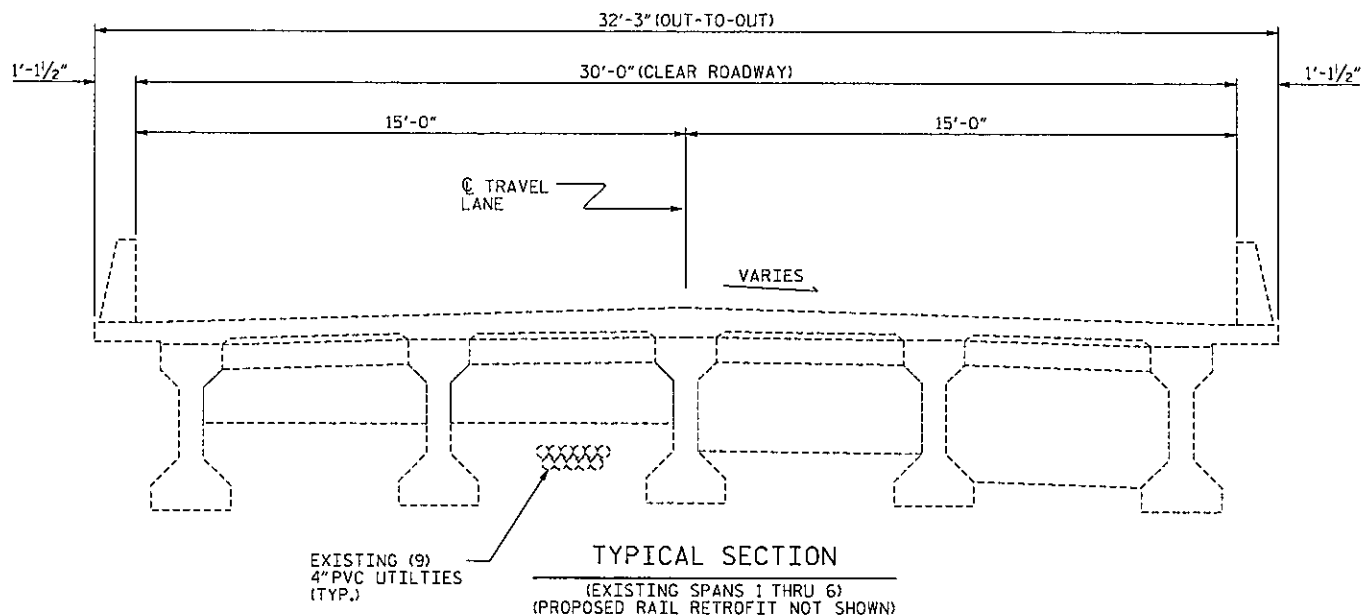
DRAWN BY : OMAR M. KHALAFALLA DATE : 10/2018
 CHECKED BY : DIEGO A. AGUIRRE DATE : 10/2018
 DESIGN ENGINEER OF RECORD : JACOB H. DUKE DATE : 10/2018

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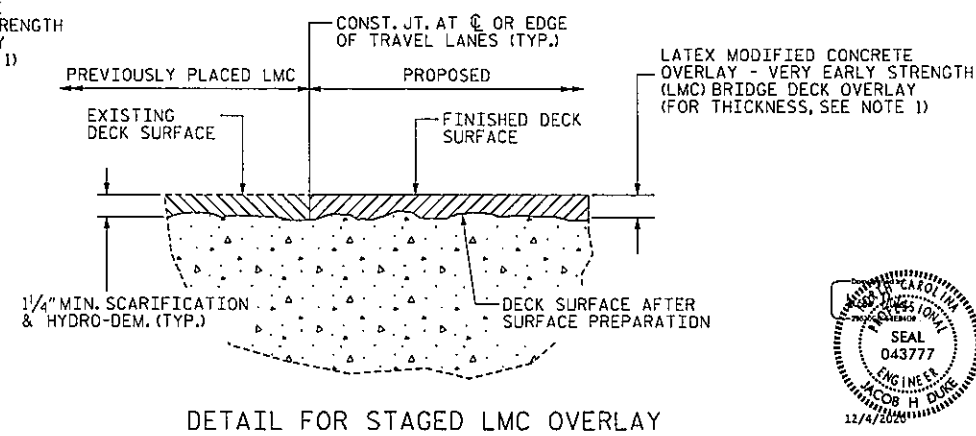
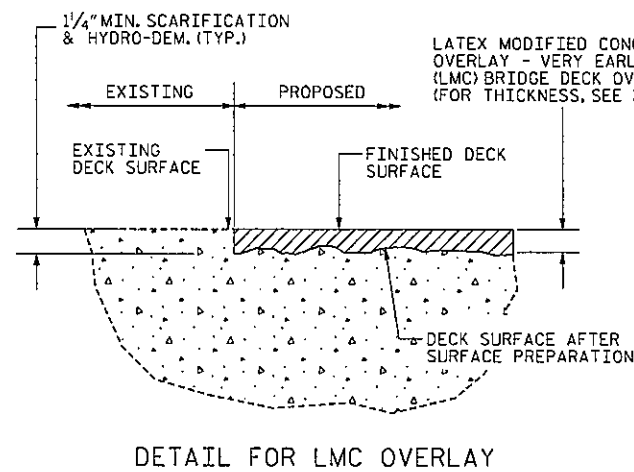
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S-4
 TOTAL SHEETS
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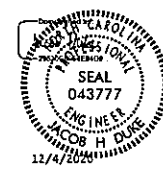


NOTES:

1. LMC BRIDGE DECK OVERLAY IS TO BE APPLIED ON SPANS 1 THRU 6 ONLY. SPAN 2 THROUGH 5 HAVE A 2" UNIFORM THICKNESS, WHILE THE THICKNESS ON SPANS 1 AND 6 TRANSITIONS FROM 1 1/4" TO 2". FOR FURTHER DETAILS SEE "PLAN OF SPAN - SPANS 1 THRU 6" SHEET.
2. LONGITUDINAL CONSTRUCTION JOINTS OF OVERLAYS SHALL BE LOCATED ALONG THE CENTERLINE OR EDGE OF TRAVEL LANES.
3. SEE TRAFFIC MANAGEMENT PLANS FOR LANE WIDTHS, SEQUENCING, AND OTHER TRAFFIC CONTROL MEASURES FOR STAGING OF LATEX MODIFIED CONCRETE OVERLAY - VERY EARLY STRENGTH (LMC) SYSTEM AND SURFACE PREPARATION.
4. FOR PROPOSED RAIL RETROFIT DETAILS, SEE "RAIL RETROFIT" SHEETS.
5. WATER LINE HANGER ASSEMBLIES VARY BY LOCATION AT BOTH BRIDGE OVERHANGS. THE ASSEMBLIES SHOWN ARE FOR REPRESENTATIVE PURPOSES. FULLY REMOVE THE WATER LINE HANGER ASSEMBLIES.
6. FOR WATER LINE REMOVAL, SEE SPECIAL PROVISIONS.
7. THE CONTRACTOR'S ATTENTION IS CALLED TO THE PRESENCE OF PVC UTILITY LINES IN BAY 2 ALONG THE LENGTH OF THE BRIDGE. THE CONTRACTOR SHALL PLAN WORK ACTIVITIES ACCORDINGLY OR WORK WITH THE UTILITY OWNERS TO MOVE LINES IF NECESSARY. COST FOR SUCH ACTIVITIES AND COORDINATION DUE TO THE PRESENCE OF THE UTILITY SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS FOR THE PROJECT.
8. PORTIONS OF WATER LINES THAT REMAIN IN PLACE AFTER REMOVAL FROM THE BRIDGE SHALL BE FILLED WITH FLOWABLE FILL PRIOR TO CAPPING. FLOWABLE FILL SHALL MEET REQUIREMENTS OF SUBARTICLE 1000-6 OF THE STANDARD SPECIFICATIONS. THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER AND THE APPROPRIATE UTILITIES TO DETERMINE THE APPROPRIATE LOCATION OF VALVES AND OTHER TRUNCATION LOCATIONS OF THE REMAINING WATER LINES TO BE FILLED. BASED ON THE BEST INFORMATION AVAILABLE, IT IS ANTICIPATED THAT THE QUANTITY OF FLOWABLE FILL NECESSARY FOR FILLING THE REMAINING WATER LINES IS APPROXIMATELY 15 CUBIC YARDS. COST FOR FILLING THE REMAINING WATER LINES SHALL BE INCIDENTAL TO THE WATER LINE REMOVAL PAY ITEM.



PROJECT NO. 15BPR.24
BRUNSWICK COUNTY
BRIDGE NO. 090013



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KISINGER CAMPO & ASSOCIATES

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
TYPICAL SECTIONS
LMC OVERLAY &
WATER LINE REMOVAL

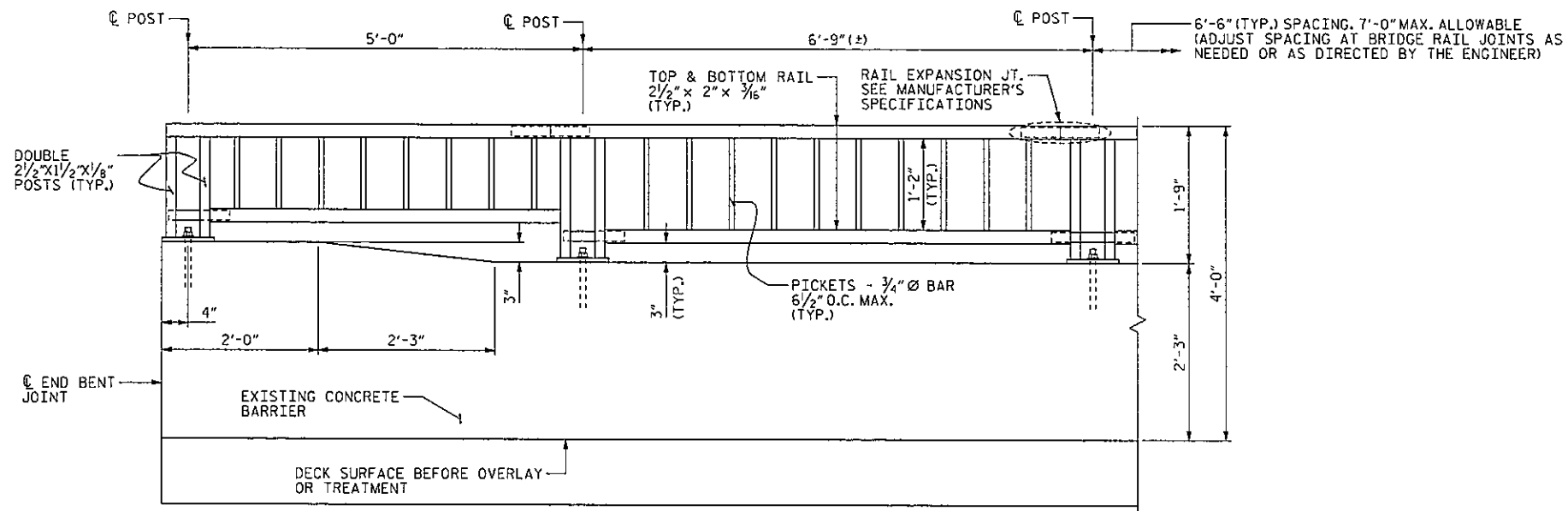
DRAWN BY : OMAR M. KHALAFALLA DATE : 10/2018
CHECKED BY : DIEGO A. AGUIRRE DATE : 10/2018
DESIGN ENGINEER OF RECORD : JACOB H. DUKE DATE : 10/2018

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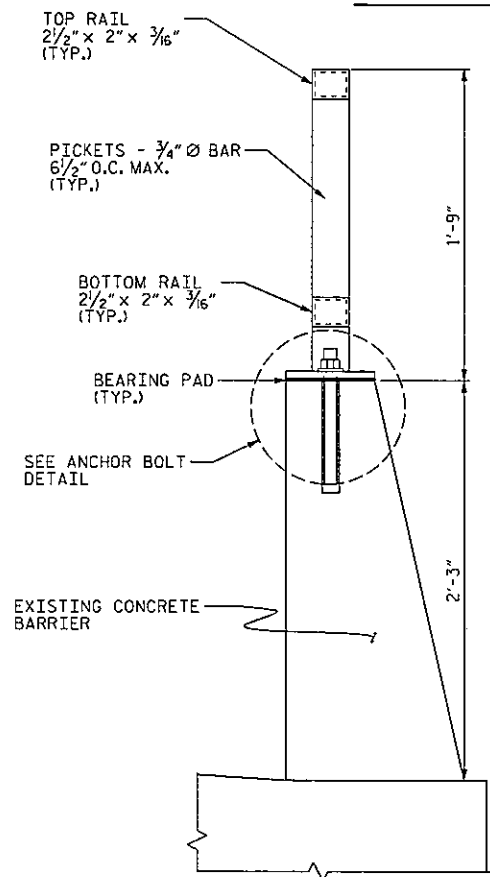
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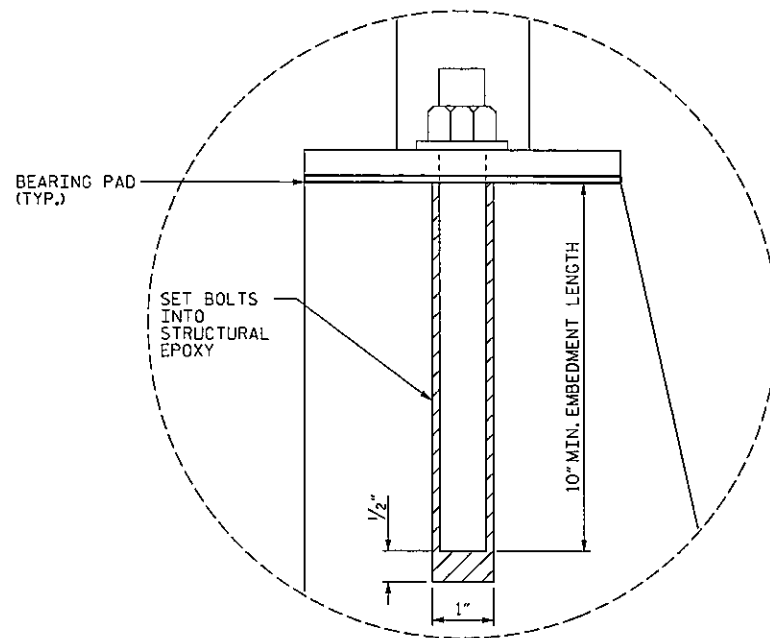
RAIL END ELEVATION

RAIL RETROFIT NOTES:

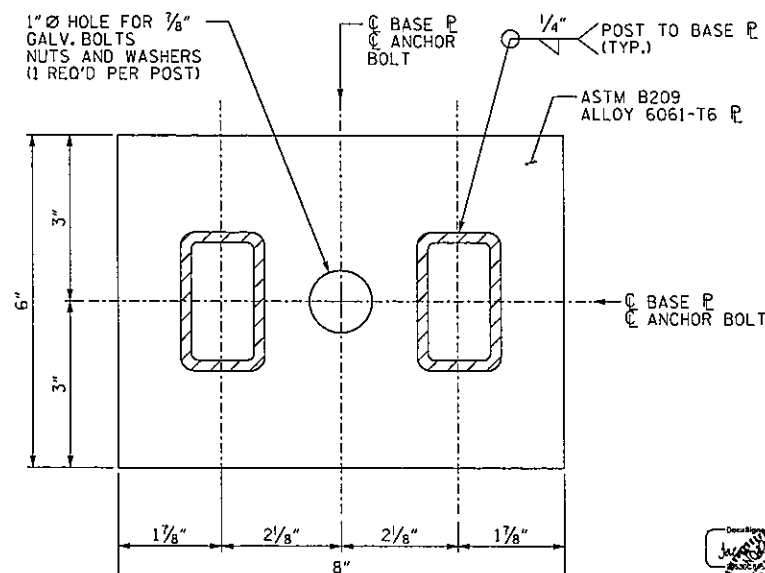
1. PROVIDE AN ALUMINUM RAIL RAIL SYSTEM IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
2. FOR RAIL RETROFIT, SEE SPECIAL PROVISIONS.
3. FOR RAIL POST LOCATIONS, SEE SHEET S-14.
4. ALL BARRIER RAIL POSTS ARE TO BE VERTICALLY PLUMB. PROVIDE SHORTER POSTS AT THE FOUR END LOCATIONS TO MAINTAIN LEVEL HORIZONTAL RAILS AS SHOWN IN THIS SHEET.
5. POSTS, BASES AND RAILS SHALL BE ASTM B-221 ALLOY-T6. THE CONTRACTOR SHALL USE SUITABLE HARDWARE. WELDING SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 1074 OF THE STANDARD SPECIFICATIONS.
6. THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE, SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY.
7. FOR ADHESIVELY ANCHORED BOLTS, SEE STANDARD SPECIFICATIONS SECTION 420-13.
8. FOR ADHESIVELY ANCHORED BOLTS, LEVEL ONE FIELD TESTING IS REQUIRED. THE REQUIRED PULLOUT STRENGTH IS 5 KIPS FOR THE SPECIFIED EMBEDMENT LENGTH.
9. BEARING PADS SHALL BE 1/8" THICK, PLAIN, FABRIC REINFORCED OR FABRIC LAMINATED BEARING PADS. FOR FURTHER DETAILS, SEE SPECIAL PROVISIONS FOR RAIL RETROFIT.



SECTION THROUGH RAIL



ANCHOR BOLT DETAIL



BASE PLATE DETAILS



PROJECT NO. 15BPR.24
BRUNSWICK COUNTY
 BRIDGE NO. 090013

SHEET 1 OF 2

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RAIL
 RETROFIT

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 CHECKED BY : SAMIJEL L. CULLUM DATE : 10/2018
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