STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J. ERIC BOYETTE
SECRETARY

May 24, 2021

ADDENDUM # 1

To: Plan Holders

From: Joshua B. Deyton, P.E.
Division 14 Project Team Lead

RE: **Bidder Concerns and Associated Responses, Revisions to: Availability Completion Dates, Pay Items, Special Provisions, and Plans**
Contract ID: DN00600
County: Macon
Letting Date: May 25, 2021

A bidder has posed the following concerns. Those concerns and the corresponding responses are shown below:

Concern #1 - The actual permits do not appear to be in the proposal and it is noted that they will be included upon receipt from the particular agencies… There is a major concern on our part of the start date and completion date for the Bridge #550079. It is our understanding, we cannot start the project until the permit have been issued. If the permits are not available at the date of availability this could create a major problem with the Jan. 1 moratorium date in the ICT's for this project.

Response #1 – The permitting agencies promised to have the permits by the availability date.

Concern # 2 - Bridge #550079 is a steel beam – cast-in-place deck phased bridge. This particular bridge will take the longest to build (of the three) and has the least amount of time. Granting additional time doesn't always work when the project has that moratorium date of Jan. 1 – April 15. This will basically delay the starting of the next bridge and getting it completed with the same Jan. 1 moratorium date.

Response # 2 – Availability and Completion dates and Intermediate Contract Times have been revised. (See attached revised pages G-5, G-6, and G7).

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

Telephone: (828) 586-2141
Fax: (828) 586-4043
Customer Service: 1-877-368-4968

Location:
253 WEBSTER ROAD
SYLVA, NC 28779

Website: www.ncdot.gov

Concern # 3 - The delivery of the structural steel could be a factor due to the current state of affairs with several material shortages and deliveries. With the beam bridge being first up and being a single span, the contractor will need phase one of the structural steel beams within the first month of the project, which basically cannot happen due to time required for drawing submittals/approvals, acquisition of steel and fabrication for this initial delivery.

Response # 3 – See Response # 2 above.

The above noted contract has experienced the following revisions:

1. The following plan sheets have been revised for **bridge 180**, **2A-1, 3B-1, S-4, S-7, S-16**. (see attached plans)

2. The following plan sheets have been revised for **bridge 181**, **2A-1, 3B-1, S-4, S-7, S-16**. (see attached plans)

3. The **Structures Special Provisions** for **Bridges 180 and 181** have been revised. (see attached provisions)

4. On page **G-43**, insert the **Roadway Special Provision SPI 8-40 (Rev.)** for **Powder Coated Galvanized Steel Beam Guardrail,** above SP8 R64. (see attached provision)

5. For **Bridges 180 and 181**, the following pay items have been **removed** (see attached revised bid item sheets):

    a. Steel Beam Guardrail

    b. Steel Beam Guardrail, Shop Curved

    c. Additional Guardrail Posts

    d. Guardrail Anchor Units, Type**********(B-83, Shop Curved)

    e. Guardrail Anchor Units, Type **********(III, Shop Curved)

    f. Guardrail End Units, Type AT-1

    g. Guardrail Anchor Units, Type III

    h. Guardrail End Units, Type TL-2

    i. Two Bar Metal Rail

6. For **Bridges 180 and 181**, the following pay items have been **added** (see attached revised bid item sheets):

    a. **Generic Guardrail Item (Powder Coated Galvanized Steel Beam Guardrail)**

    b. **Generic Guardrail Item (Powder Coated Steel Beam Guardrail, Shop Curved)**

    c. **Generic Guardrail Item (Powder Coated Galvanized Additional Guardrail Posts)**

    d. **Generic Guardrail Item (Powder Coated Galvanized Guardrail Anchor Units, Type III Shop Curved)**

    e. **Generic Guardrail Item (Powder Coated Galvanized Guardrail Anchor Units, Type B-83 Shop Curved)**

    f. **Generic Guardrail Item (Powder Coated Galvanized Guardrail End Units, Type AT-1)**

    g. **Generic Guardrail Item (Powder Coated Galvanized Guardrail Anchor Units, Type III)**

    h. **Generic Guardrail Item (Powder Coated Galvanized Guardrail End Units, Type TL-2)**

    i. **Generic Structure Item (Anodized Two Bar Metal Rail)**

Please access ebsx addenda files on Bid Express®.

Thank you for your attention to this matter.

PROJECT SPECIAL PROVISIONS

GENERAL

DIVISION LET CONTRACT PREQUALIFICATION:

(07-01-14)(12-1-16) SPD 01-410

Any firm that wishes to bid as a prime contractor shall be prequalified as a Bidder or PO Prime Contractor prior to submitting a bid. Information regarding prequalification can be found at: https://connect.ncdot.gov/business/Prequal/Pages/default.aspx.

Prior to performing the work, the prime contractor and/or subcontractor(s) shall be prequalified in the work code(s) which are identified as work items in the prime contractor's construction progress schedule that they will complete themselves. Any contractor identified as working outside their expertise may be considered in default of contract.

BOND REQUIREMENTS:

(06-01-16) 102-8, 102-10 SPD 01-420A

A Bid Bond is required in accordance with Article 102-10 of the *2018 Standard Specifications for Roads and Structures.*

Contract Payment and Performance Bonds are required in accordance with Article 103-7 of the *2018 Standard Specifications for Roads and Structures*.

CONTRACT TIME AND LIQUIDATED DAMAGES:

(8-15-00) (Rev. 12-18-07) 108 SP1 G07 A

The date of availability for this contract is **March 7, 2022**, except that work in jurisdictional waters and wetlands shall not begin until a meeting between the DOT, Regulatory Agencies, and the Contractor is held as stipulated in the permits contained elsewhere in this proposal. This delay in availability has been considered in determining the contract time for this project.

The completion date for this contract is **November 14, 2025**.

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

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

INTERMEDIATE CONTRACT TIME NUMBER 1 AND LIQUIDATED DAMAGES – BRIDGE 79:

(7-1-95) (Rev. 2-21-12) 108 SP1 G13 A

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

The date of availability for this intermediate contract time is **March 7, 2022**.

The completion date for this intermediate contract time is **December 16, 2022**.

The liquidated damages for this intermediate contract time are **One Thousand One Hundred Dollars ($ 1,100.00)** per calendar day.

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

INTERMEDIATE CONTRACT TIME NUMBER 2 AND LIQUIDATED DAMAGES – BRIDGE 180:

(7-1-95) (Rev. 2-21-12) 108 SP1 G13 A

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

The date of availability for this intermediate contract time is **April 17, 2023**.

The completion date for this intermediate contract time is **December 16, 2023**.

The liquidated damages for this intermediate contract time are **One Thousand One Hundred Dollars ($ 1,100.00)** per calendar day.

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

INTERMEDIATE CONTRACT TIME NUMBER 3 AND LIQUIDATED DAMAGES – BRIDGE 181:

(7-1-95) (Rev. 2-21-12) 108 SP1 G13 A

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

The date of availability for this intermediate contract time is **April 15, 2024**.

The completion date for this intermediate contract time is **December 16, 2024**.

The liquidated damages for this intermediate contract time are **One Thousand One Hundred Dollars ($ 1,100.00)** per calendar day.

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

INTERMEDIATE CONTRACT TIME NUMBER 4 AND LIQUIDATED DAMAGES:

(6-18-13)(Rev. 05-25-21) 108 SP1 G14 K

The Contractor shall complete the work required of **Tree Cutting Operations** for **Bridges 180**.

The date of availability for this intermediate contract time is **October 15, 2021.**

The completion date for this intermediate contract time is **April 14, 2022**.

The liquidated damages are **One Thousand Five Hundred Dollars ($ 1,500.00)** per calendar day.

INTERMEDIATE CONTRACT TIME NUMBER 5 AND LIQUIDATED DAMAGES:

(6-18-13)(Rev. 05-25-21) 108 SP1 G14 K

The Contractor shall complete the work required of **Tree Cutting Operations** for **Bridge 181**.

The date of availability for this intermediate contract time is **October 15, 2022.**

The completion date for this intermediate contract time is **April 14, 2023**.

The liquidated damages are **One Thousand Five Hundred Dollars ($ 1,500.00)** per calendar day.

6/2/99

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1 ½" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. APPROX. 8" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL

PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE SHOWN.

NOTE: ALL GUARDRAIL SHALL BE POWDER COATED DARK BROWN IN COLOR TO MATCH ANODIZED 2-BAR METAL RAIL

MACON COUNTY
BRIDGE #550180

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.208	2A-1

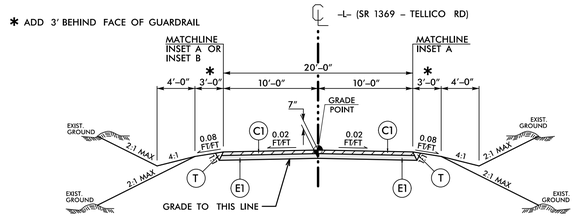
ROADWAY DESIGN ENGINEER

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 35018 JIMMY L. TERRY
5/21/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
804-C N LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275



TYPICAL SECTION NO. 1

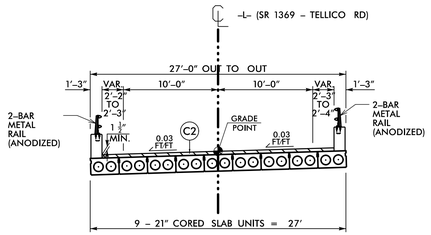
USE TYPICAL SECTION NO. 1

-L- STA. 12+30.00 TO -L- STA. 12+93.70 (BEGIN BRIDGE)
-L- STA. 13+46.30 (END BRIDGE) TO 14+40.00

NOTE: TRANSITION BETWEEN EXISTING AND TYP. SECT. NO.1 AS FOLLOWS:

-L- STA. 11+80.00 TO -L- STA. 12+30.00
-L- STA. 14+07.01 TO -L- STA. 14+90.00, LT
-L- STA. 14+40.00 TO -L- STA. 14+90.00, RT

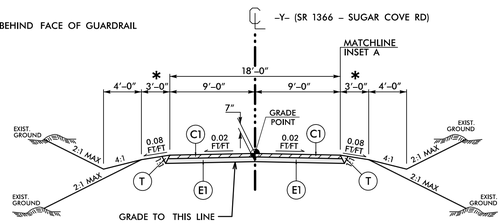
NOTE:
AN ADDITIONAL LAYER OF 4" B25.0C SHALL BE PLACED UNDER TYPICAL SECTION NO.1 MATCHING THE STATIONS ON INSET B



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2

-L- STA. 12+93.70 TO -L- STA. 13+46.30



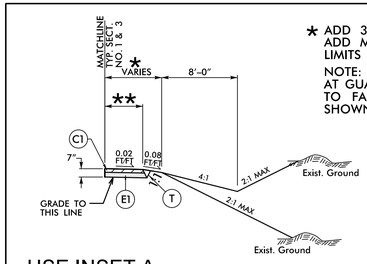
TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3

-Y- STA. 10+11.59 TO -Y- STA. 10+70.00

NOTE: TRANSITION BETWEEN TYP. SECT. NO.3 AND EXISTING AS FOLLOWS:

-Y- STA. 10+70.00 TO -Y- STA. 11+20.00



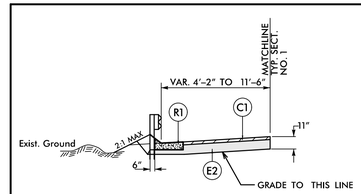
* ADD 3' FOR GUARDRAIL LOCATIONS ADD MINIMUM 2' PAST PAVED SHOULDER LIMITS FOR ALL OTHER LOCATIONS

NOTE:
AT GUARDRAIL LOCATIONS PAVE TO FACE OF GUARDRAIL UNLESS SHOWN OTHERWISE ON PLANS.

INSET A

USE INSET A

** FDPS WIDTH	STA. TO STA.
0'-0" TO 2'-10"	-L- STA. 12+22.22 TO -L- STA. 12+89.77 (BEGIN APPROACH SLAB) LT
	-L- STA. 12+08.88 TO -L- STA. 12+75.95 (BEGIN APPROACH SLAB) RT
0'-0" TO 3'-1"	-Y- STA. 10+31.53 (END APPROACH SLAB) TO -Y- STA. 10+62.86 RT



INSET B

USE INSET B

-L- STA. 13+69.56 (END APPROACH SLAB) TO -L- STA. 13+83.82 LT

COMPUTED BY: SGM DATE:5/13/2019
CHECKED BY: JLT DATE: 5/17/2019

PROJECT NO.	SHEET NO.
17BP.14.R.208	3B-1

STATE OF NORTH CAROLINA

SUMMARY OF EARTHWORK

IN CUBIC YARDS

Station	Station	Uncl. Excav.	Embank. +%	Borrow	Waste
-L- 11+80.00	-L- 12+93.70	83	22		61
BRIDGE					
-L- 13+46.30	-L-14+90.00	166	6		160
-Y- 10+11.59	-Y- 11+20.00	115	9		106
TOTALS:		364	37		327
GRAND TOTALS:		364	37		
SAY:		400			

Note: Approximate quantities only. Unclassified Excavation, Fine Grading, and Clearing and Grubbing will be paid for at the contract lump sum price for grading.

Note: Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

EST. SHALLOW UNDERCUT = 100 CY

SELECT GRANULAR MATERIAL = 400 CY

GEOTEXTILE FOR SOIL STABILIZATION = 600 SY

CLASS IV SUBGRADE STABILIZATION = 200 TON

PER GEOTECH RECOMMENDATION, ESTIMATED 450 CUBIC YARDS OF UNDERCUT TO BE USED IN THE DISCRETION OF THE RESIDENT ENGINEER.

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

IN FEET

LINE	BEG. STA.	END STA.	LOC.	LENGTH: STRAIGHT	LENGTH: SHOP CURVED	LENGTH: DOUBLE FACED	WARRANT POINT: APPR. END	WARRANT POINT: TRAIL. END	"N" DIST. FROM E.O.L.	TOTAL SHLDR WIDTH	FLAIR LENGTH: APPR. END	FLAIR LENGTH: TRAIL. END	W: APPR. END	W: TRAIL. END	ANCHORS: III	ANCHORS: GREU TL-2	ANCHORS: AT-1	ANCHORS: III SC	ANCHORS: B-83 SC	IMP. ATTEN. TYPE 350: EA	IMP. ATTEN. TYPE 350: G	IMP. ATTEN. TYPE 350: NG	REMOVE EXISTING GUARDRAIL	REMOVE & RESET EXISTING GUARDRAIL	REMARKS
-L-	12+50.77	13+00.77	LT	50.00				13+00.77	2.25'	5.25'		25'		0.5'	1	1									
-L-	12+36.63	12+86.63	RT	50.00			12+86.63		2.25'	5.25'	25'		0.5'		1	1									
-L-	13+53.96	13+91.55	LT		37.5		13+53.96		2.25'	5.25'							1	1							R=25'
-L-	13+39.23	10+50 -Y	RT		31.25			13+39.23	2.25'	5.25'							1		1						R=10'
SUB-TOTALS				100.00	68.75										2	2	2	1	1						
LESS ANCHOR DEDUCTIONS																									
	GREU TL-2	2@25.00 ft		50.00																					
	TYPE III	2@18.75 ft		37.50																					
	TYPE III SC	1@18.75 ft			18.75																				
	B-83 SC	1@25.00 ft			25.00																				
	AT-1	2@6.25 ft			12.50																				
ANCHOR TOTALS				87.50	56.25																				
GRAND-TOTALS				12.50	12.50										2	2	2	1	1						Powder Coated
SAY				18.75	18.75										2	2	2	1	1						Powder Coated
ADDITIONAL GUARDRAIL POSTS = 5 EA (Powder Coated)																									
TEMPORARY GUARDRAIL																									
-L-	12+65+/-	13+72+/-	RT	100.00												2									Temporary Guardrail and Anchors
-L-	12+73+/-	13+50+/-	RT	68.75	25.00											1	1								Temporary Guardrail and Anchors
SUB-TOTALS				187.50	25.00											3	1								
LESS ANCHOR DEDUCTIONS																									
	TEMP. GREU TL-2	3@25.00 ft		75.00																					
	AT-1	1@6.25 ft			6.25																				
GRAND-TOTALS (TEMP)				112.50	18.75											3	1								
SAY				118.75	18.75											3	1								

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

COMPUTED BY: Zachary J. Richard, PE DATE: 7/16/2018
CHECKED BY: David B. Petty, PE DATE: 8/9/2018

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

STATION	LOCATION (LT, RT, OR CL)*	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC): 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE: 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS III: 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV: 12"	15"	18"	24"	30"	36"	42"	48"
SIZE																																								
THICKNESS OR GAUGE																				.064	.064	.064	.064	.079	.079	.109	.109														
-L- 13+80	LT	0401		2295.8																																				
		0401	0402		2293.0	2292.8		24																																
-L- 11+29	CL																																							
TOTALS								24																																

ENDWALLS: STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS: R.C.P.	ENDWALLS: C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES: PER EACH (0' THRU 5.0')	TOTAL L.F. FENCE X QUANTITY SHALL BE (A + B) X "A" (1.3 X COL.'B') LIN. FT.: A: 5.0' THRU 10.0'	B: 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE: E	F	G	CONCRETE TRANSITIONAL SECTION: DROP INLET	CATCH BASIN	T.B.D.) STD. 840.35	FRAME AND NARROW FLAT GRATE STD. 840.29	PIPE CLEAN OUT (EA)	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.
*** R.C. PIPE (CLASS V)																										
** RC PIPE CULVERTS, CONTRACTOR DESIGN																										
* RC PIPE CULVERTS, CONTRACTOR DESIGN																										
15" SIDE DRAIN PIPE																										
18" SIDE DRAIN PIPE																										
1		1																								
1																						1	1	1		

ABBREVIATIONS	
C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I.(N.S.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

REMARKS

TOTAL BILL OF MATERIAL

ITEM	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS "A" CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12 x 53 STEEL PILES	HP 12x53 STEEL PILES		1'-2" x 2'-9⅜" CONCRETE PARAPET	RIP RAP, CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" x 1'-9" PRESTRESSED CONCRETE CORED SLABS		ANODIZED TWO BAR METAL RAIL
	LUMP SUM	LUMP SUM	LUMP SUM	C.Y.	LUMP SUM	LBS.	EA.	NO.	LIN. FT.	LIN. FT.	TONS	S.Y.	LUMP SUM	NO.	LIN. FT.	LIN. FT.
SUPERSTRUCTURE										100.00				9	450.00	83.66
END BENT 1				27.2		3,202	5	5	200		135	150				
END BENT 2				27.5		3,167	5	5	300		145	160				
TOTALS	LUMP SUM	LUMP SUM	LUMP SUM	54.7	LUMP SUM	6,369	10	10	500	100.00	280	310	LUMP SUM	9	450.00	83.66

(145 CY)

PROJECT NO. 17BP.14.R.208

MACON COUNTY

STATION: 13+20.00-L-

SHEET 4 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 20125 ENGINEER MARSHALL G. CHEEK, JR.

Marshall G. Cheek, Jr. 5FBCC2F3A4DC413...

5/21/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
804-C N. LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

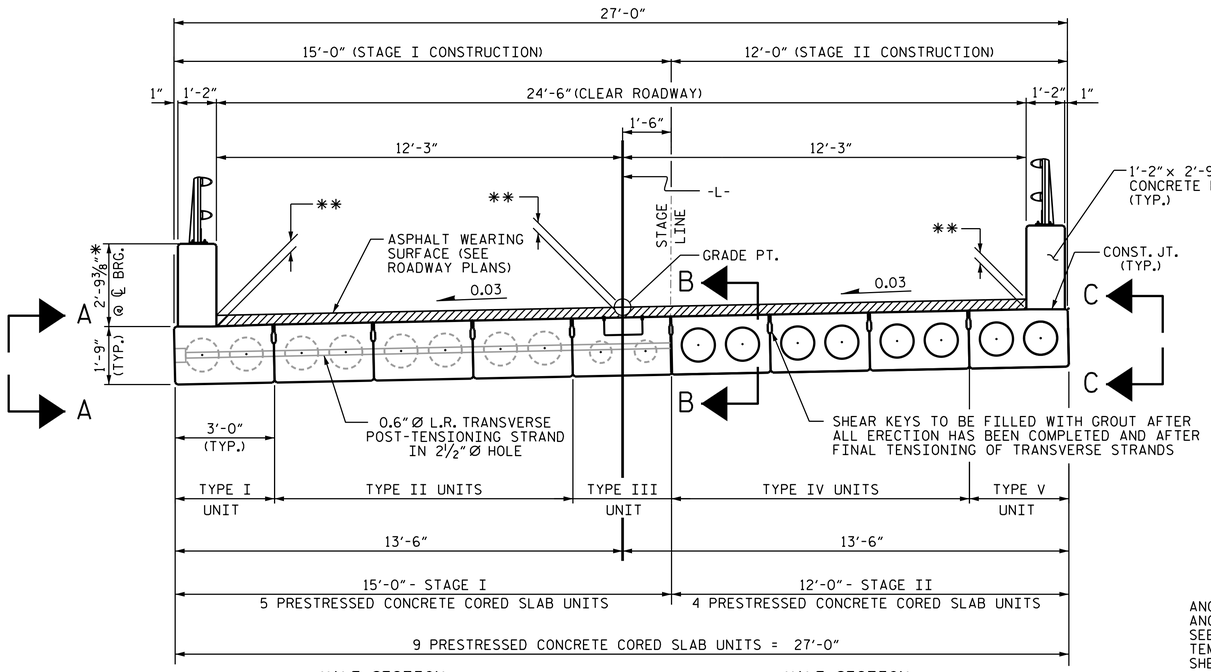
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1369
OVER SUGAR COVE CREEK
BETWEEN SR 1310 AND NC 28

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			32

DRAWN BY :	NMW	DATE :	10/18
CHECKED BY :	MGC	DATE :	3/19
DESIGN ENGINEER OF RECORD :	MGC	DATE :	3/19



TYPICAL SECTION

* - THE MAXIMUM PARAPET HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE PARAPET AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE PARAPET FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR PARAPET HEIGHT DETAILS SEE THE "PARAPET SECTION FOR TWO BAR METAL RAIL" DETAIL.

ASPHALT WEARING SURFACE THICKNESS TABLE
BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS

	* * @ ℄ BEARINGS			* * @ MIDSPAN		
SPAN A	LT. GUTTER	GRADE PT.	RT. GUTTER	LT. GUTTER	GRADE PT.	RT. GUTTER
END BENT 1	3⅜"	3"	2⅝"			
MID SPAN				2⅜"	2"	1 11/16"
END BENT 2	2⅜"	3"	3"			

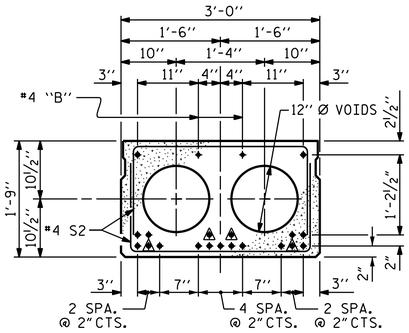
SECTION AT END BENT

END ELEVATION

SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.

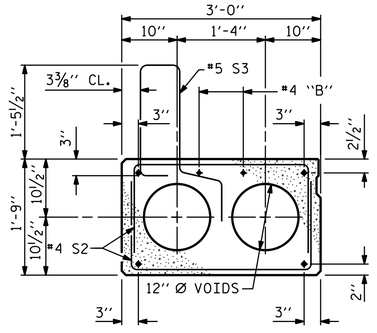
SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.



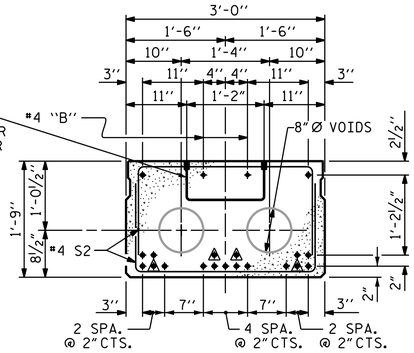
INTERIOR SLAB SECTION (50' UNIT) (TYPE II & IV)

(19 STRANDS REQUIRED)



EXTERIOR SLAB SECTION (50' UNIT) (TYPE I & V)

(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION- TYPE II & IV)



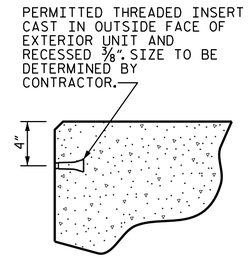
INTERIOR SLAB SECTION (50' UNIT) (TYPE III)

(19 STRANDS REQUIRED)

0.6" Ø LOW RELAXATION STRAND LAYOUT

▲ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND



THREADED INSERT DETAIL

DRAWN BY :	NMW	DATE : 11/18
CHECKED BY :	MGC	DATE : 3/19
DESIGN ENGINEER OF RECORD :	MGC	DATE : 3/19

PROJECT NO. 17BP.14.R.208
MACON COUNTY
STATION: 13+20.00-L-

SHEET 1 OF 8

NORTH CAROLINA PROFESSIONAL SEAL 20125 ENGINEER Marshall G. Check, Jr.
Digitally signed by M. G. CHECK, JR.
5FBCC2F3A4DC413...
5/21/2021

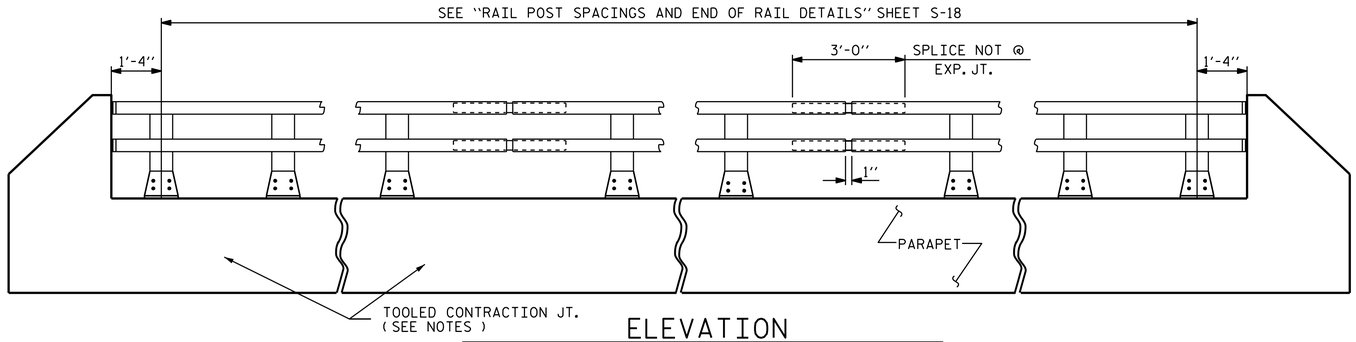
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
804-C N. LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

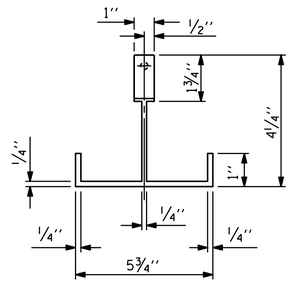
SUPERSTRUCTURE
3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT 120° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			32

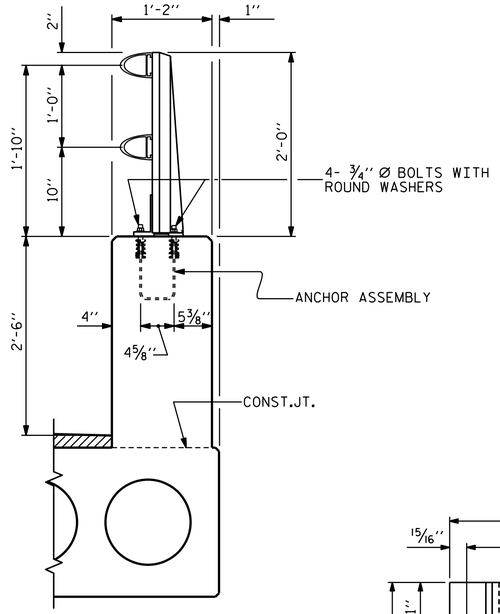


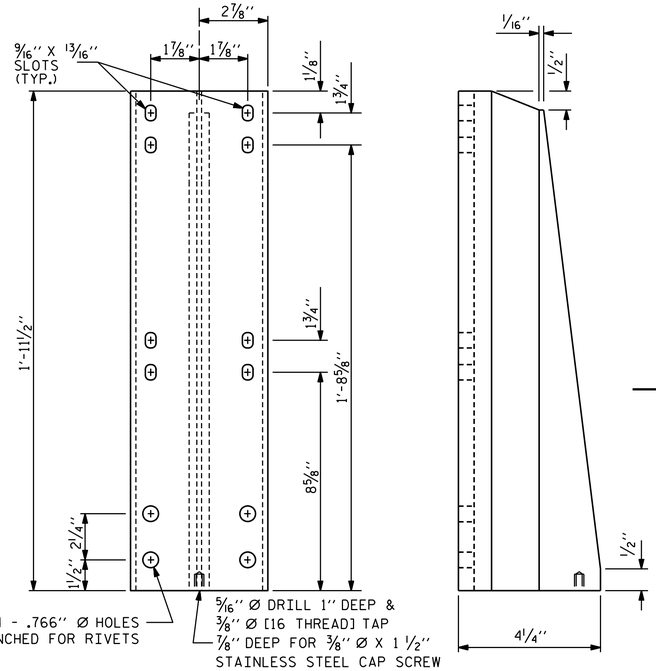
ELEVATION

NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE SHEET S-18



PLAN



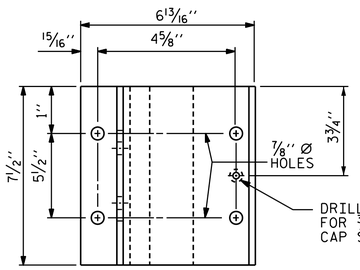


FRONT ELEVATION

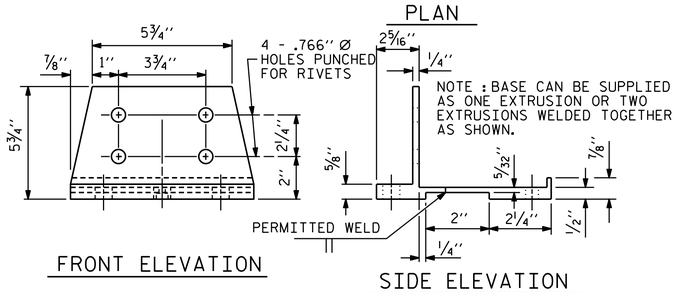
SIDE ELEVATION

DETAILS OF POST

SECTION THRU PARAPET AND RAIL



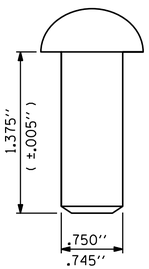
PLAN



FRONT ELEVATION

SIDE ELEVATION

POST BASE DETAILS



RIVET DETAIL

NOTES

UNLESS OTHERWISE REQUIRED IN THE CONTRACT DOCUMENTS, THE CONTRACTOR HAS THE OPTION TO USE AN ALTERNATE TO THE 2 BAR METAL RAIL. THE ALTERNATE RAIL SHALL MEET THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST (APL) UNDER "2 BAR METAL RAIL ALTERNATE". ADJUSTMENTS TO THE CONCRETE PARAPET WILL NOT BE ALLOWED.

THE METAL RAIL SHALL BE ALUMINUM AND IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS.

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B-221 ALLOY 6061-T6.

MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

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.

MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

ANODIZING

ALUMINUM FOR POSTS, BASES, RAILS, EXPANSION BARS, CLAMP BARS, RIVETS, AND SHIMS SHALL BE ANODIZED DARK BROWN. FOR ANODIZED 2 BAR METAL RAIL, SEE SPECIAL PROVISIONS.

ANY DAMAGE TO THE ANODIZED SURFACE OF THE RAIL OR COMPONENTS DURING THE CONSTRUCTION SHALL BE REPAIRED ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS AT THE DIRECTION OF THE ENGINEER AND AT THE CONTRACTOR'S EXPENSE.

AFTER A SHADE OF BROWN HAS BEEN SELECTED FOR THE RAILING, THE CONTRACTOR SHALL SUBMIT A SAMPLE OF COMPATIBLE EXTERIOR ACRYLIC HOUSE PAINT TO THE ENGINEER. THIS PAINT SHALL MATCH THE ANODIZED RAIL COLOR AS CLOSELY AS POSSIBLE. AFTER ERECTION OF THE ANODIZED ALUMINUM RAILING, ALL EXPOSED ANCHOR BOLTS, NUTS, WASHERS, MACHINE SCREWS ,CAP SCREWS, BOLTS, ATTACHMENT BRACKETS, HOLD DOWN PLATES, RAIL CAPS AND BUILT UP ANGLES SHALL BE COATED WITH TWO COATS OF THIS PAINT.

GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR2.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF PARAPET SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

RAIL CAPS: RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

PAY LENGTH = 83.66 LIN. FT.

PROJECT NO. 17BP.14.R.208

MACON COUNTY

STATION: 13+20.00-L-

SHEET 1 OF 2

ASSEMBLED BY : NMW	DATE : 11/18
CHECKED BY : MGC	DATE : 3/19
DRAWN BY : EEM 6/94	REV. 10/1/11 MAA/GM
CHECKED BY : RGW 6/94	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC

NORTH CAROLINA PROFESSIONAL SEAL 20125 ENGINEER MARSHALL G. CHEEK, JR.
Docusigned by: Marshall G. Cheek, Jr.
5FBCC2F3A4DC413...
5/21/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
804-C N. LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

2 BAR METAL RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			32

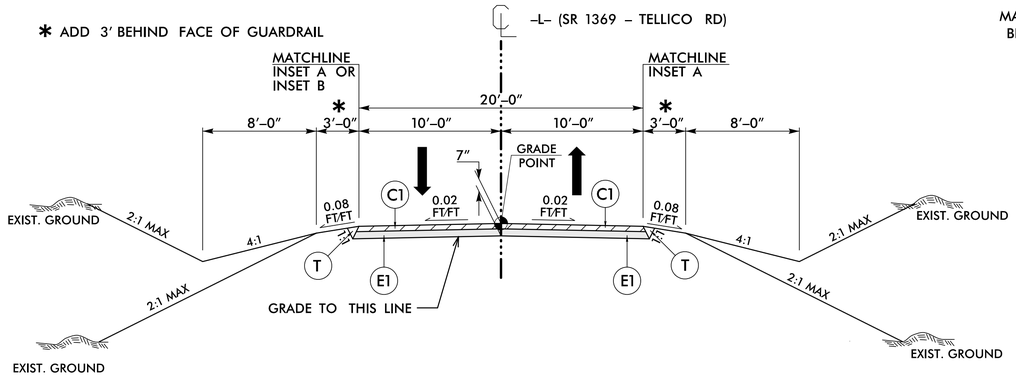
STD. NO. BMR3

6/2/99

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1 ½″ IN DEPTH.
E1	PROP. APPROX. 4″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
R1	8″ X 18″ CONCRETE CURB
T	EARTH MATERIAL

PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE SHOWN.

NOTE: ALL GUARDRAIL SHALL BE POWDER COATED DARK BROWN IN COLOR TO MATCH ANODIZED 2-BAR METAL RAIL



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

-L- STA. 12+00.00 TO -L- STA. 12+71.20 (BEGIN BRIDGE)
-L- STA. 13+28.80 (END BRIDGE) TO 14+60.00

NOTE: TRANSITION BETWEEN EXISTING AND TYP. SECT. NO.1 AS FOLLOWS:

-L- STA. 11+50.00 TO -L- STA. 12+00.00
-L- STA. 14+60.00 TO -L- STA. 15+10.00

MACON COUNTY
BRIDGE #550181

PROJECT REFERENCE NO.	SHEET NO.
17BPJ4.R.207	2A-1

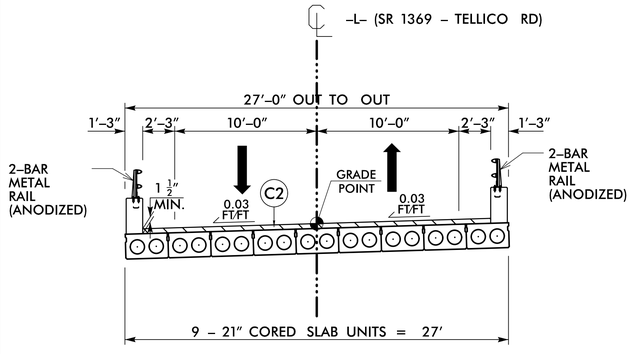
ROADWAY DESIGN ENGINEER

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 35018 ENGINEER JIMMY L. TERRY
5/21/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

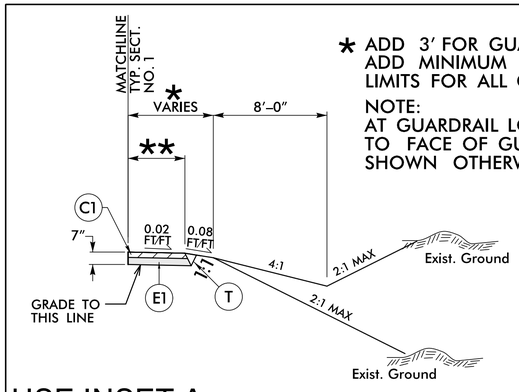
TGS ENGINEERS
804-C N. LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2

-L- STA. 12+71.20 TO -L- STA. 13+28.80



* ADD 3′ FOR GUARDRAIL LOCATIONS ADD MINIMUM 2′ PAST PAVED SHOULDER LIMITS FOR ALL OTHER LOCATIONS

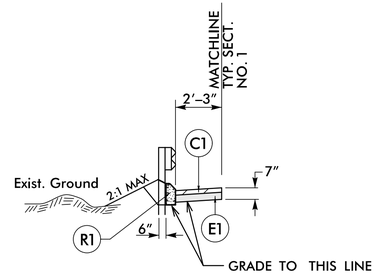
NOTE:
AT GUARDRAIL LOCATIONS PAVE TO FACE OF GUARDRAIL UNLESS SHOWN OTHERWISE ON PLANS.

INSET A

USE INSET A

** FDPS WIDTH	STA. TO STA.
0′–0″ TO 3′–4″	–L– STA. 11+98.52 TO –L– STA. 12+05.28 LT
3′–4″	–L– STA. 12+05.28 TO –L– STA. 12+27.98 LT
2′–5″ TO 3′–4″	–L– STA. 12+27.98 TO –L– STA. 12+67.73 (BEGIN APPROACH SLAB) LT
0′–0″ TO 3′–7″	–L– STA. 11+58.25 TO –L– STA. 12+50.41 (BEGIN APPROACH SLAB) RT
0′–0″ TO 2′–10″	–L– STA. 13+68.29 (END 8X18 CURB) TO –L– STA. 14+21.38 RT
0′–0″ TO 2′–6″	–L– STA. 13+30.11 (END APPROACH SLAB) TO –L– STA. 13+35.24 RT

INSET B



USE INSET B

-L- STA. 13+47.23 (END APPROACH SLAB) TO -L- STA. 13+68.29 LT

COMPUTED BY: SGM DATE:5/15/2019
CHECKED BY: JLT DATE: 5/16/2019

PROJECT NO.	SHEET NO.
17BP.14.R.207	3B-1

STATE OF NORTH CAROLINA

SUMMARY OF EARTHWORK

IN CUBIC YARDS

Station	Station	Uncl. Excav.	Embank. +%	Borrow	Waste
-L- 11+50.00	-L- 12+71.20	66	33		33
BRIDGE					
-L- 13+28.80	-L-15+10.00	64	86	22	
TOTALS:		130	119	22	33
WASTE IN LIEU OF BORROW				-22	-22
GRAND TOTALS:		130	119		11
SAY:		150			

Note: Approximate quantities only. Unclassified Excavation, Fine Grading, and Clearing and Grubbing will be paid for at the contract lump sum price for grading.

Note: Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

EST. DDE = 30 CY
EST. SHALLOW UNDERCUT = 100 CY
SELECT GRANULAR MATERIAL = 400 CY
GEOTEXTILE FOR SOIL STABILIZATION = 600 SY
CLASS IV SUBGRADE STABILIZATION = 200 TON
PER GEOTECH RECOMMENDATION, ESTIMATED 450 CUBIC YARDS OF UNDERCUT TO BE USED IN THE DISCRETION OF THE RESIDENT ENGINEER.

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

IN FEET

LINE	BEG. STA.	END STA.	LOC.	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPR. END	WARRANT POINT TRAIL. END	"N" DIST. FROM E.O.L.	TOTAL SHLDR WIDTH	FLAIR LENGTH APPR. END	FLAIR LENGTH TRAIL. END	W APPR. END	W TRAIL. END	ANCHORS III	ANCHORS GREU TL-2	ANCHORS AT-1	ANCHORS III SC	ANCHORS B-83 SC	IMP. ATTEN. TYPE 350 EA	G	NG	REMOVE EXISTING GUARDRAIL	REMOVE & RESET EXISTING GUARDRAIL	REMARKS
-L-	12+28.27	12+78.27	LT	50.00				12+78.27	2.25'	5.25'		25'		0.5'	1	1									
-L-	12+04.50	12+63.35	RT	25.00	25.00		12+63.35		2.25'	5.25'	25'		0.5'			1		1							R=100'
-L-	13+35.87	13+92.12	LT	56.25			13+35.87		2.25'	5.25'	25'		0.5'		1	1									
-L-	13+21.73	13+23.52	RT		31.25			13+21.73	2.25	5.25'							1		1						R=10'
		SUB-TOTALS		131.25	56.25										2	3	1	1	1						
	LESS ANCHOR DEDUCTIONS																								
	GREU TL-2	3@25.00 ft		75.00																					
	TYPE III	2@18.75 ft		37.50																					
	TYPE III SC	1@18.75 ft			18.75																				
	B-83 SC	1@25.00 ft			25.00																				
	AT-1	1@6.25 ft			6.25																				
	ANCHOR TOTALS			112.50	50.00																				
		GRAND-TOTALS		18.75	6.25										2	3	1	1	1						Powder Coated
		SAY		25.00	12.50										2	3	1	1	1						Powder Coated
			ADDITIONAL GUARDRAIL POSTS = 5 EA (Powder Coated)																						
	TEMPORARY GUARDRAIL																								
-L-	12+62+/-	13+31+/-	RT	56.25	18.75											1	1								Temporary Guardrail and Anchors
-L-	12+56+/-	13+57+/-	RT	100.00												2									Temporary Guardrail and Anchors
		SUB-TOTALS		156.25	18.75											3	1								
	LESS ANCHOR DEDUCTIONS																								
	TEMP. GREU TL-2	3@25.00 ft		75.00																					
	TEMP. AT-1	1@6.25 ft			6.25																				
		GRAND-TOTALS (TEMP)		81.25	12.50											3	1								
		SAY		87.50	12.50											3	1								

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

COMPUTED BY: Zachary J. Richard, PE DATE: 7/31/2018
CHECKED BY: David B. Petty, PE DATE: 1/28/2019

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	** " R.C. PIPE (CLASS V)	****" RC PIPE CULVERTS, CONTRACTOR DESIGN	****" RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	(blank)	(blank)	T.B.D.I STD. 840.35	FRAME AND NARROW FLAT GRATE STD. 840.29	(blank)	(blank)	(blank)	(blank)	(blank)	(blank)	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-L- 13+50	LT	0401		2338.6																																															1												1	1										
		0401	0402		2336.7	2336.6			12																																																																
-L- 12+09	CL	0403			2341.2	2340.8																																		52																																		21	
TOTALS									12																													52												1												1	1									21	

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I.(N.S.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

TOTAL BILL OF MATERIAL

ITEM	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS "A" CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12 x 53 STEEL PILES	HP12x53 STEEL PILES		STEEL PILE POINTS	1'-2" x 2'-8¾" CONCRETE PARAPET	RIP RAP, CLASS II (2'-0" THICK)	ELASTOMERIC BEARINGS	3'-0" x 1'-9" PRESTRESSED CONCRETE CORED SLABS		STEEL SHEET PILES	ANODIZED TWO BAR METAL RAIL
	LUMP SUM	LUMP SUM	LUMP SUM	C.Y.	LUMP SUM	LBS.	EA.	NO.	LIN. FT.	EA.	LIN. FT.	TONS	LUMP SUM	NO.	LIN. FT.	SQ. FT.	LIN. FT.
SUPERSTRUCTURE											110.00			9	495.00		93.66
END BENT 1				18.3		2,588	5	5	75			40				770	
END BENT 2				18.3		2,624	5	5	105	5		40				800	
TOTALS	LUMP SUM	LUMP SUM	LUMP SUM (150 C.Y.)	36.6	LUMP SUM	5,212	10	10	180	5	110.00	80	LUMP SUM	9	495.00	1,570	93.66

PROJECT NO. 17BP.14.R.207

MACON COUNTY

STATION: 13+00.00-L-

SHEET 4 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 20125 ENGINEER MARSHALL G. CLARK, JR.

Marshall G. Clark, Jr.

5/21/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

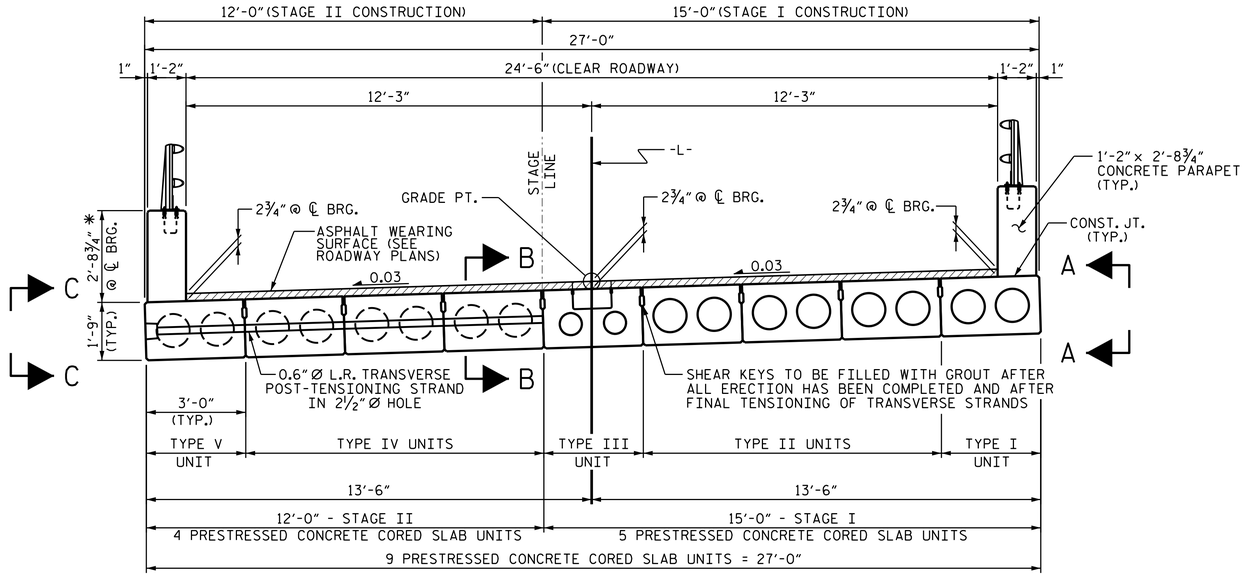
TGS ENGINEERS
804-C N. LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE OVER TELLICO CREEK ON SR 1369 BETWEEN SR 1408 AND SR 1366

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			38

DRAWN BY :	JLA	DATE : 3/19
CHECKED BY :	MGC	DATE : 5/19
DESIGN ENGINEER OF RECORD :	MGC	DATE : 5/19

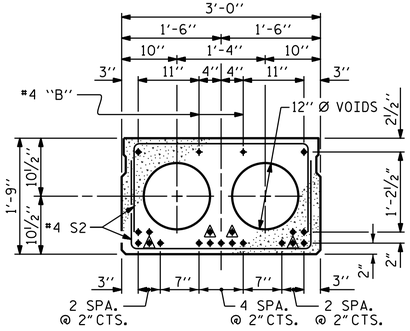


HALF SECTION AT INTERMEDIATE DIAPHRAGMS

HALF SECTION THROUGH VOIDS

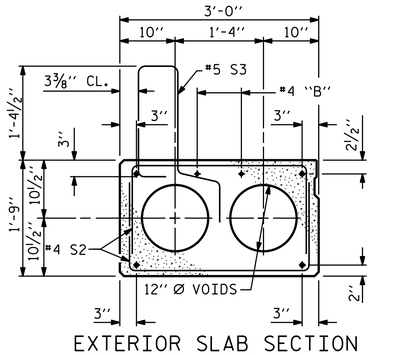
TYPICAL SECTION

* - THE MAXIMUM PARAPET HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE PARAPET AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE PARAPET FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR PARAPET HEIGHT DETAILS SEE THE "PARAPET SECTION FOR TWO BAR METAL RAIL" DETAIL.



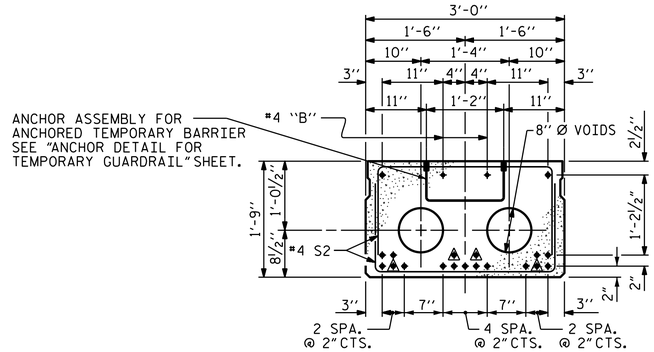
INTERIOR SLAB SECTION (55' UNIT)(TYPE II & IV)

(19 STRANDS REQUIRED)



EXTERIOR SLAB SECTION (55' UNIT)(TYPE I & V)

(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION - TYPE II & IV)



INTERIOR SLAB SECTION (55' UNIT)(TYPE III)

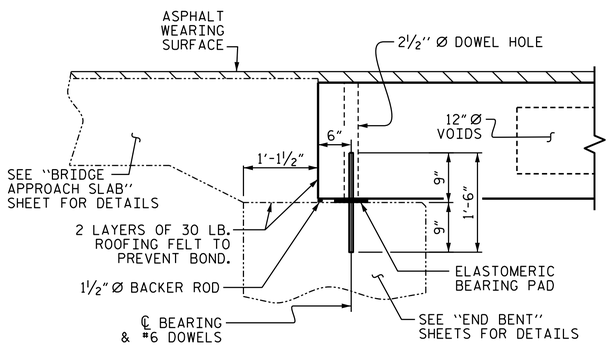
(19 STRANDS REQUIRED)

0.6" Ø LOW RELAXATION STRAND LAYOUT

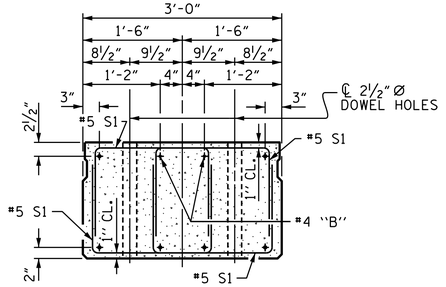
▲ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND

FIXED END

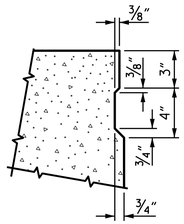


SECTION AT END BENT



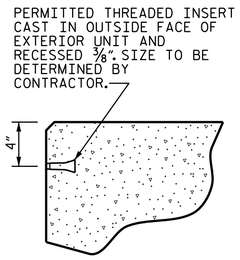
END ELEVATION

SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.



SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.



THREADED INSERT DETAIL

PROJECT NO. 17BP.14.R.207

MACON COUNTY

STATION: 13+00.00-L-

SHEET 1 OF 8

DRAWN BY : JLA DATE : 4/19
CHECKED BY : MGC DATE : 5/19
DESIGN ENGINEER OF RECORD : MGC DATE : 5/19

NORTH CAROLINA PROFESSIONAL SEAL 20125 ENGINEER MARSHALL G. CLARK, JR.

Marshall G. Clark, Jr.

5/21/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

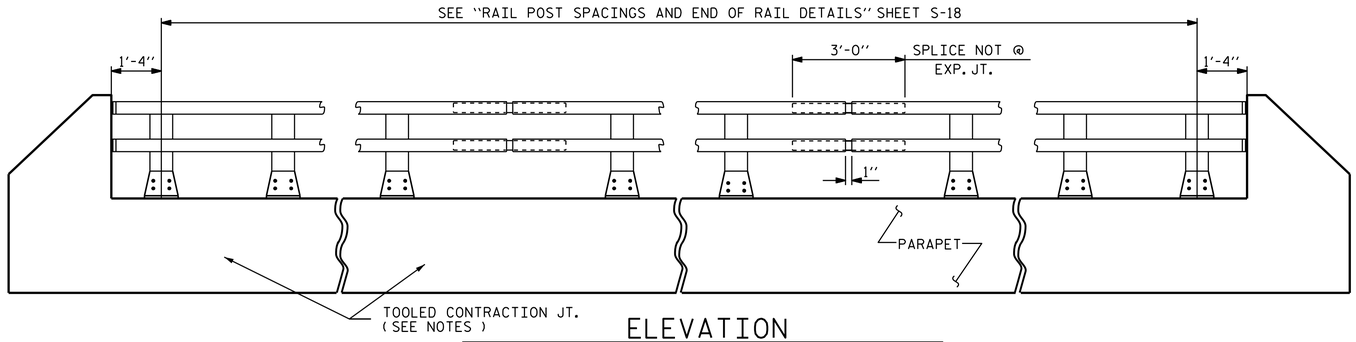
TGS ENGINEERS
804-C N. LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

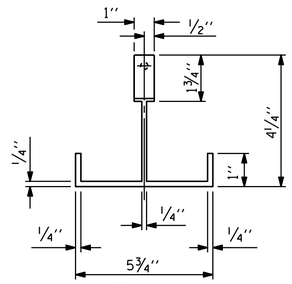
3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT 120° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			38

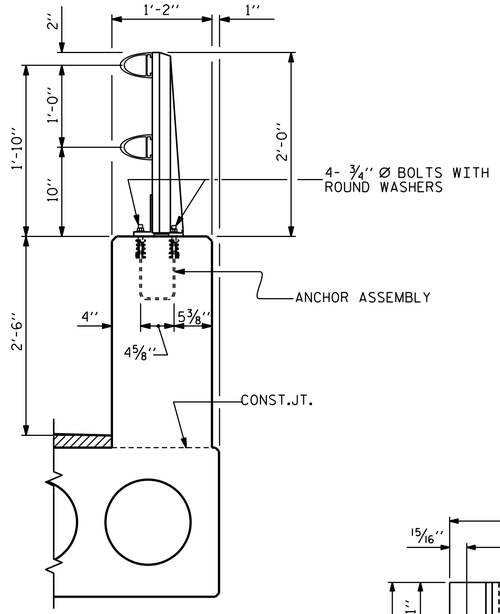


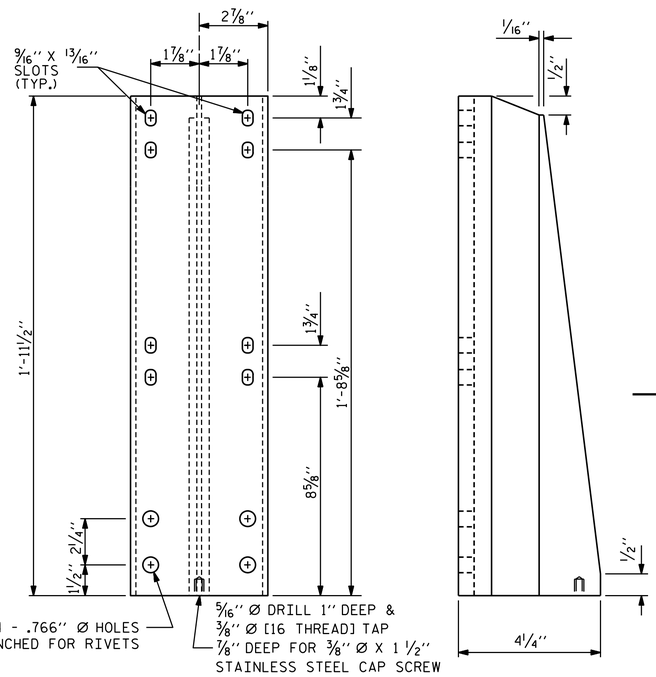
ELEVATION

NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE SHEET S-18



PLAN



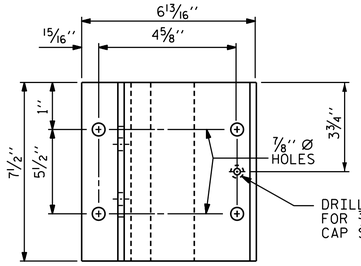


FRONT ELEVATION

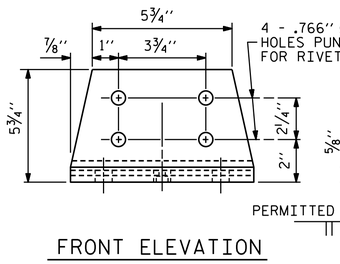
SIDE ELEVATION

DETAILS OF POST

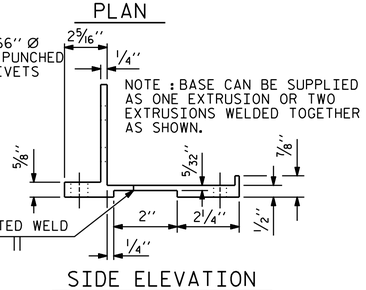
SECTION THRU PARAPET AND RAIL



PLAN

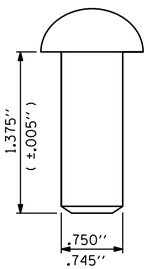


FRONT ELEVATION



SIDE ELEVATION

POST BASE DETAILS



RIVET DETAIL

NOTES

UNLESS OTHERWISE REQUIRED IN THE CONTRACT DOCUMENTS, THE CONTRACTOR HAS THE OPTION TO USE AN ALTERNATE TO THE 2 BAR METAL RAIL. THE ALTERNATE RAIL SHALL MEET THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST (APL) UNDER "2 BAR METAL RAIL ALTERNATE". ADJUSTMENTS TO THE CONCRETE PARAPET WILL NOT BE ALLOWED.

THE METAL RAIL SHALL BE ALUMINUM AND IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS.

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B-221 ALLOY 6061-T6.

MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

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.

MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

ANODIZING

ALUMINUM FOR POSTS, BASES, RAILS, EXPANSION BARS, CLAMP BARS, RIVETS, AND SHIMS SHALL BE ANODIZED DARK BROWN. FOR ANODIZED 2 BAR METAL RAIL, SEE SPECIAL PROVISIONS.

ANY DAMAGE TO THE ANODIZED SURFACE OF THE RAIL OR COMPONENTS DURING THE CONSTRUCTION SHALL BE REPAIRED ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS AT THE DIRECTION OF THE ENGINEER AND AT THE CONTRACTOR'S EXPENSE.

AFTER A SHADE OF BROWN HAS BEEN SELECTED FOR THE RAILING, THE CONTRACTOR SHALL SUBMIT A SAMPLE OF COMPATIBLE EXTERIOR ACRYLIC HOUSE PAINT TO THE ENGINEER. THIS PAINT SHALL MATCH THE ANODIZED RAIL COLOR AS CLOSELY AS POSSIBLE. AFTER ERECTION OF THE ANODIZED ALUMINUM RAILING, ALL EXPOSED ANCHOR BOLTS, NUTS, WASHERS, MACHINE SCREWS ,CAP SCREWS, BOLTS, ATTACHMENT BRACKETS, HOLD DOWN PLATES, RAIL CAPS AND BUILT UP ANGLES SHALL BE COATED WITH TWO COATS OF THIS PAINT.

GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR2.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF PARAPET SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

RAIL CAPS: RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

PAY LENGTH = 93.66 LIN. FT.

PROJECT NO. 17BP.14.R.207

MACON COUNTY

STATION: 13+00.00-L-

SHEET 1 OF 2

ASSEMBLED BY : JLA	DATE : 4/19		
CHECKED BY : MGC	DATE : 5/19		
DRAWN BY : EEM 6/94	REV. 10/1/11	MAA/GM	
CHECKED BY : RGW 6/94	REV. 6/13	MAA/GM	
	REV. 12/17	MAA/THC	

NORTH CAROLINA PROFESSIONAL SEAL 20125 ENGINEER MARSHALL G. CLECK, JR.

Marshall G. Cleck, Jr.

5/21/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
804-C N. LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

2 BAR METAL RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			38

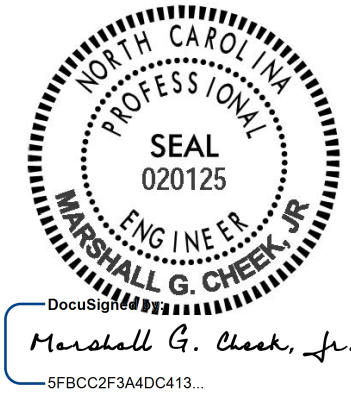
STD. NO. BMR3

ST-1

Project 17BP.14.R.208 **Macon County**

Project Special Provisions
Structure

Table of Contents



5/20/2021

ST-2

PROJECT SPECIAL PROVISIONS STRUCTURE

FALSEWORK AND FORMWORK (4-5-12)

1.0 DESCRIPTION

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

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

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

2.0 MATERIALS

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

3.0 DESIGN REQUIREMENTS

A. Working Drawings

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

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

ST-3

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

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

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

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

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

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

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

For MBT prestressed concrete girders, 45-degree angle holes for falsework hanger rods shall be cast through the girder top flange and located, measuring along the top of the

member, 1'-2 ½" from the edge of the top flange. Hanger hardware and rods must have a minimum safe working load of 6,000 lbs.

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

ST-4

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 ¾".

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

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

1. Wind Loads

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

Table 2.2 - Wind Pressure Values

Height Zone feet above ground	Pressure, lb/ft^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 damage to the surface.

ST-6

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.

4.0 CONSTRUCTION REQUIREMENTS

All requirements of Section 420 of the Standard Specifications apply.

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

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

A. Maintenance and Inspection

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

Perform an in-depth inspection of an applicable portion(s) of the temporary works, in the presence of the Engineer, not more than 24 hours prior to the beginning of each concrete placement. Inspect other temporary works at least once a month to ensure that they are

functioning properly. Have a North Carolina Registered Professional Engineer inspect the cofferdams, shoring, sheathing, support of excavation structures, and support systems for load tests prior to loading.

B. Foundations

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

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

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

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

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

5.0 REMOVAL

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

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

6.0 METHOD OF MEASUREMENT

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

7.0 BASIS OF PAYMENT

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

SUBMITTAL OF WORKING DRAWINGS (1-29-21)

1.0 GENERAL

Submit working drawings in accordance with Article 105-2 of the *Standard Specifications* and this provision. For this provision, "submittals" refers to only those listed in this provision. The list of submittals contained herein does not represent a list of required

submittals for the project. Submittals are only necessary for those items as required by the contract. Make submittals that are not specifically noted in this provision directly to the Engineer. Either the Structures Management Unit or the Geotechnical Engineering Unit or both units will jointly review submittals.

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

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

2.0 ADDRESSES AND CONTACTS

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

Via US mail:

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

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

Via other delivery service:

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

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

Submittals may also be made via email.

Send submittals to:

jlbolden@ncdot.gov (James Bolden)

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

eomile@ncdot.gov (Emmanuel Omile)

mrorie@ncdot.gov (Madonna Rorie)

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

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

Via US mail:

Via other delivery service:

ST-10

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

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

Via Email: EastGeotechnicalSubmittal@ncdot.gov

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

Via US mail or other delivery service:

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

Via Email: WestGeotechnicalSubmittal@ncdot.gov

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) 250 – 4082 facsimile jlbolden@ncdot.gov	(919) 707 – 6408
Secondary Structures Contacts:	Emmanuel Omile Madonna Rorie	(919) 707 – 6451 (919) 707 – 6508

Eastern Regional Geotechnical Contact (Divisions 1-7):

David Hering (919) 662 – 4710
dthering@ncdot.gov

Western Regional Geotechnical Contact (Divisions 8-14):

Eric Williams (704) 455 – 8902
ewilliams3@ncdot.gov

3.0 SUBMITTAL COPIES

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

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

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

STRUCTURE SUBMITTALS

Submittal	Copies Required by Structures Management Unit	Copies Required by Geotechnical Engineering Unit	Contract Reference Requiring Submittal [1]
Arch Culvert Falsework	5	0	Plan Note, SN Sheet & "Falsework and Formwork"
Box Culvert Falsework [7]	5	0	Plan Note, SN Sheet & "Falsework and Formwork"
Cofferdams	6	2	Article 410-4
Foam Joint Seals [6]	9	0	"Foam Joint Seals"

ST-12

Expansion Joint Seals (hold down plate type with base angle)	9	0	"Expansion Joint Seals"
Expansion Joint Seals (modular)	2, then 9	0	"Modular Expansion Joint Seals"
Expansion Joint Seals (strip seals)	9	0	"Strip Seals"
Falsework & Forms [2] (substructure)	8	0	Article 420-3 & "Falsework and Formwork"
Falsework & Forms (superstructure)	8	0	Article 420-3 & "Falsework and Formwork"
Girder Erection over Railroad	5	0	Railroad Provisions
Maintenance and Protection of Traffic Beneath Proposed Structure	8	0	"Maintenance and Protection of Traffic Beneath Proposed Structure at Station ___"
Metal Bridge Railing	8	0	Plan Note
Metal Stay-in-Place Forms	8	0	Article 420-3
Metalwork for Elastomeric Bearings [4,5]	7	0	Article 1072-8
Miscellaneous Metalwork [4,5]	7	0	Article 1072-8
Disc Bearings [4]	8	0	"Disc Bearings"
Overhead and Digital Message Signs (DMS) (metalwork and foundations)	13	0	Applicable Provisions
Placement of Equipment on Structures (cranes, etc.)	7	0	Article 420-20
Precast Concrete Box Culverts	2, then 1 reproducible	0	"Optional Precast Reinforced Concrete Box Culvert at Station ___"
Prestressed Concrete Cored Slab (detensioning sequences) [3]	6	0	Article 1078-11

ST-13

Prestressed Concrete Deck Panels	6 and 1 reproducible	0	Article 420-3
Prestressed Concrete Girder (strand elongation and detensioning sequences)	6	0	Articles 1078-8 and 1078-11
Removal of Existing Structure over Railroad	5	0	Railroad Provisions
Revised Bridge Deck Plans (adaptation to prestressed deck panels)	2, then 1 reproducible	0	Article 420-3
Revised Bridge Deck Plans (adaptation to modular expansion joint seals)	2, then 1 reproducible	0	"Modular Expansion Joint Seals"
Sound Barrier Wall (precast items)	10	0	Article 1077-2 & "Sound Barrier Wall"
Sound Barrier Wall Steel Fabrication Plans [5]	7	0	Article 1072-8 & "Sound Barrier Wall"
Structural Steel [4]	2, then 7	0	Article 1072-8
Temporary Detour Structures	10	2	Article 400-3 & "Construction, Maintenance and Removal of Temporary Structure at Station ____"
TFE Expansion Bearings [4]	8	0	Article 1072-8

FOOTNOTES

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

6. Submittals for Fabrication Drawings are not required. Submittals for Catalogue Cuts of Proposed Material are required. See Section 5.A of the referenced provision.
7. Submittals are necessary only when the top slab thickness is 18" or greater.

GEOTECHNICAL SUBMITTALS

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

FOOTNOTES

1. References are provided to help locate the part of the contract where the submittals are required. References in quotes refer to the provision by that name. Subarticles refer to the *Standard Specifications*.

2. 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.

3. The Pile Driving Equipment Data Form is available from:
https://connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
See second page of form for submittal instructions.

4. Electronic copy of submittal is required. See referenced provision.

ST-15

CRANE SAFETY (6-20-19)

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.

GROUT FOR STRUCTURES (12-1-17)

1.0 DESCRIPTION

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

2.0 MATERIAL REQUIREMENTS

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

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

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

3.0 SAMPLING AND PLACEMENT

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

4.0 BASIS OF PAYMENT

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

ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES (12-30-15)

1.0 INSPECTION FOR ASBESTOS CONTAINING MATERIAL

Prior to conducting bridge demolition or renovation activities, the Contractor shall thoroughly inspect the bridge or affected components for the presence of asbestos containing material (ACM) using a firm prequalified by NCDOT to perform asbestos surveys. The inspection must be performed by a N.C. accredited asbestos inspector with experience inspecting bridges or other industrial structures. The N.C. accredited

asbestos inspector must conduct a thorough inspection, identifying all asbestos-containing material as required by the Environmental Protection Agency National Emission Standards for Hazardous Air Pollutants (NESHAP) Code of Federal Regulations (CFR) 40 CFR, Part 61, Subpart M.

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

identification information. Place the following notes on the cover sheet of the report and check the appropriate box:

___ ACM was found

___ ACM was not found

2.0 REMOVAL AND DISPOSAL OF ASBESTOS CONTAINING MATERIAL

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

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

3.0 DEMOLITION NOTIFICATION

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

Contact Information

Health Hazards Control Unit (HHCU)

N.C. Department of Health and Human Services

1912 Mail Service Center

Raleigh, NC 27699-1912

Telephone: (919) 707-5950

Fax: (919) 870-4808

4.0 SPECIAL CONSIDERATIONS

Buncombe, Forsyth, and Mecklenburg counties also have asbestos permitting and

NESHAP requirements must be followed. For projects involving permitted RACM removals, both the applicable county and the state (HHCU) must be notified.

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

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

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

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

5.0 ADDITIONAL INFORMATION

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

www.epi.state.nc.us/epi/asbestos/ahmp.html

6.0 BASIS OF PAYMENT

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

ST-19

ANODIZED TWO BAR METAL BAR **(SPECIAL)**

1.0 GENERAL

Provide anodized two bar metal rails, dark brown in color, in accordance with the Standard Specifications, the details shown in the contract plans, and this special provision.

2.0 MEASUREMENT

Quantity paid for is the actual linear feet of anodized rails, complete in place and accepted, measured along the rails.

3.0 BASIS OF PAYMENT

This quantity for which payment is made is shown in linear feet on the plans for "Anodized Two Bar Metal Rail". The unit bid per linear feet is full compensation for all materials, painting, tools, labor, equipment, and incidentals necessary to complete this item.

ST-1

Project 17BP.14.R.207 **Macon County**

Project Special Provisions
Structure

Table of Contents

5/24/2021

ST-2

PROJECT SPECIAL PROVISIONS STRUCTURE

FALSEWORK AND FORMWORK (4-5-12)

1.0 DESCRIPTION

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

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

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

2.0 MATERIALS

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

3.0 DESIGN REQUIREMENTS

A. Working Drawings

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

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

ST-3

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

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

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

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

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

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

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

For MBT prestressed concrete girders, 45-degree angle holes for falsework hanger rods shall be cast through the girder top flange and located, measuring along the top of the

member, 1'-2 ½" from the edge of the top flange. Hanger hardware and rods must have a minimum safe working load of 6,000 lbs.

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

ST-4

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 ¾".

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

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

1. Wind Loads

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

Table 2.2 - Wind Pressure Values

Height Zone feet above ground	Pressure, lb/ft^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 damage to the surface.

ST-6

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.

4.0 CONSTRUCTION REQUIREMENTS

All requirements of Section 420 of the Standard Specifications apply.

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

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

A. Maintenance and Inspection

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

Perform an in-depth inspection of an applicable portion(s) of the temporary works, in the presence of the Engineer, not more than 24 hours prior to the beginning of each concrete placement. Inspect other temporary works at least once a month to ensure that they are

functioning properly. Have a North Carolina Registered Professional Engineer inspect the cofferdams, shoring, sheathing, support of excavation structures, and support systems for load tests prior to loading.

B. Foundations

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

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

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

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

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

5.0 REMOVAL

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

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

6.0 METHOD OF MEASUREMENT

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

7.0 BASIS OF PAYMENT

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

SUBMITTAL OF WORKING DRAWINGS (1-29-21)

1.0 GENERAL

Submit working drawings in accordance with Article 105-2 of the *Standard Specifications* and this provision. For this provision, "submittals" refers to only those listed in this provision. The list of submittals contained herein does not represent a list of required

submittals for the project. Submittals are only necessary for those items as required by the contract. Make submittals that are not specifically noted in this provision directly to the Engineer. Either the Structures Management Unit or the Geotechnical Engineering Unit or both units will jointly review submittals.

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

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

2.0 ADDRESSES AND CONTACTS

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

Via US mail:

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

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

Via other delivery service:

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

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

Submittals may also be made via email.

Send submittals to:

jlbolden@ncdot.gov (James Bolden)

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

eomile@ncdot.gov (Emmanuel Omile)

mrorie@ncdot.gov (Madonna Rorie)

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

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

Via US mail:

Via other delivery service:

ST-10

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

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

Via Email: EastGeotechnicalSubmittal@ncdot.gov

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

Via US mail or other delivery service:

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

Via Email: WestGeotechnicalSubmittal@ncdot.gov

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) 250 – 4082 facsimile jlbolden@ncdot.gov	(919) 707 – 6408
Secondary Structures Contacts:	Emmanuel Omile Madonna Rorie	(919) 707 – 6451 (919) 707 – 6508

Eastern Regional Geotechnical Contact (Divisions 1-7):

David Hering (919) 662 – 4710
dthering@ncdot.gov

Western Regional Geotechnical Contact (Divisions 8-14):

Eric Williams (704) 455 – 8902
ewilliams3@ncdot.gov

3.0 SUBMITTAL COPIES

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

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

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

STRUCTURE SUBMITTALS

Submittal	Copies Required by Structures Management Unit	Copies Required by Geotechnical Engineering Unit	Contract Reference Requiring Submittal [1]
Arch Culvert Falsework	5	0	Plan Note, SN Sheet & "Falsework and Formwork"
Box Culvert Falsework [7]	5	0	Plan Note, SN Sheet & "Falsework and Formwork"
Cofferdams	6	2	Article 410-4
Foam Joint Seals [6]	9	0	"Foam Joint Seals"

ST-12

Expansion Joint Seals (hold down plate type with base angle)	9	0	"Expansion Joint Seals"
Expansion Joint Seals (modular)	2, then 9	0	"Modular Expansion Joint Seals"
Expansion Joint Seals (strip seals)	9	0	"Strip Seals"
Falsework & Forms [2] (substructure)	8	0	Article 420-3 & "Falsework and Formwork"
Falsework & Forms (superstructure)	8	0	Article 420-3 & "Falsework and Formwork"
Girder Erection over Railroad	5	0	Railroad Provisions
Maintenance and Protection of Traffic Beneath Proposed Structure	8	0	"Maintenance and Protection of Traffic Beneath Proposed Structure at Station ___"
Metal Bridge Railing	8	0	Plan Note
Metal Stay-in-Place Forms	8	0	Article 420-3
Metalwork for Elastomeric Bearings [4,5]	7	0	Article 1072-8
Miscellaneous Metalwork [4,5]	7	0	Article 1072-8
Disc Bearings [4]	8	0	"Disc Bearings"
Overhead and Digital Message Signs (DMS) (metalwork and foundations)	13	0	Applicable Provisions
Placement of Equipment on Structures (cranes, etc.)	7	0	Article 420-20
Precast Concrete Box Culverts	2, then 1 reproducible	0	"Optional Precast Reinforced Concrete Box Culvert at Station ___"
Prestressed Concrete Cored Slab (detensioning sequences) [3]	6	0	Article 1078-11

ST-13

Prestressed Concrete Deck Panels	6 and 1 reproducible	0	Article 420-3
Prestressed Concrete Girder (strand elongation and detensioning sequences)	6	0	Articles 1078-8 and 1078-11
Removal of Existing Structure over Railroad	5	0	Railroad Provisions
Revised Bridge Deck Plans (adaptation to prestressed deck panels)	2, then 1 reproducible	0	Article 420-3
Revised Bridge Deck Plans (adaptation to modular expansion joint seals)	2, then 1 reproducible	0	"Modular Expansion Joint Seals"
Sound Barrier Wall (precast items)	10	0	Article 1077-2 & "Sound Barrier Wall"
Sound Barrier Wall Steel Fabrication Plans [5]	7	0	Article 1072-8 & "Sound Barrier Wall"
Structural Steel [4]	2, then 7	0	Article 1072-8
Temporary Detour Structures	10	2	Article 400-3 & "Construction, Maintenance and Removal of Temporary Structure at Station ____"
TFE Expansion Bearings [4]	8	0	Article 1072-8

FOOTNOTES

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

6. Submittals for Fabrication Drawings are not required. Submittals for Catalogue Cuts of Proposed Material are required. See Section 5.A of the referenced provision.
7. Submittals are necessary only when the top slab thickness is 18" or greater.

GEOTECHNICAL SUBMITTALS

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

FOOTNOTES

1. References are provided to help locate the part of the contract where the submittals are required. References in quotes refer to the provision by that name. Subarticles refer to the *Standard Specifications*.

2. 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.

3. The Pile Driving Equipment Data Form is available from:
https://connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
See second page of form for submittal instructions.

4. Electronic copy of submittal is required. See referenced provision.

ST-15

CRANE SAFETY (6-20-19)

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.

GROUT FOR STRUCTURES (12-1-17)

1.0 DESCRIPTION

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

2.0 MATERIAL REQUIREMENTS

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

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

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

3.0 SAMPLING AND PLACEMENT

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

4.0 BASIS OF PAYMENT

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

ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES (12-30-15)

1.0 INSPECTION FOR ASBESTOS CONTAINING MATERIAL

Prior to conducting bridge demolition or renovation activities, the Contractor shall thoroughly inspect the bridge or affected components for the presence of asbestos containing material (ACM) using a firm prequalified by NCDOT to perform asbestos surveys. The inspection must be performed by a N.C. accredited asbestos inspector with experience inspecting bridges or other industrial structures. The N.C. accredited

asbestos inspector must conduct a thorough inspection, identifying all asbestos-containing material as required by the Environmental Protection Agency National Emission Standards for Hazardous Air Pollutants (NESHAP) Code of Federal Regulations (CFR) 40 CFR, Part 61, Subpart M.

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

identification information. Place the following notes on the cover sheet of the report and check the appropriate box:

___ ACM was found

___ ACM was not found

2.0 REMOVAL AND DISPOSAL OF ASBESTOS CONTAINING MATERIAL

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

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

3.0 DEMOLITION NOTIFICATION

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

Contact Information

Health Hazards Control Unit (HHCU)

N.C. Department of Health and Human Services

1912 Mail Service Center

Raleigh, NC 27699-1912

Telephone: (919) 707-5950

Fax: (919) 870-4808

4.0 SPECIAL CONSIDERATIONS

Buncombe, Forsyth, and Mecklenburg counties also have asbestos permitting and

NESHAP requirements must be followed. For projects involving permitted RACM removals, both the applicable county and the state (HHCU) must be notified.

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

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

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

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

5.0 ADDITIONAL INFORMATION

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

www.epi.state.nc.us/epi/asbestos/ahmp.html

6.0 BASIS OF PAYMENT

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

ST-19

ANODIZED TWO BAR METAL BAR (SPECIAL)

1.0 GENERAL

Provide anodized two bar metal rails, dark brown in color, in accordance with the Standard Specifications, the details shown in the contract plans, and this special provision.

2.0 MEASUREMENT

Quantity paid for is the actual linear feet of anodized rails, complete in place and accepted, measured along the rails.

3.0 BASIS OF PAYMENT

This quantity for which payment is made is shown in linear feet on the plans for "Anodized Two Bar Metal Rail". The unit bid per linear feet is full compensation for all materials, painting, tools, labor, equipment, and incidentals necessary to complete this item.

STEEL SHEET PILES (SPECIAL)

Steel sheet piles shall be in accordance with the Standard Specifications.

Steel sheet piles be installed in accordance with the contract plans and Section 452 of the Standard Specifications with the exception that measurement and payment shall be for the actual number of square feet of sheet piles installed.

Payment will be made under:

Steel Sheet Piles ……..…….…… Square Feet

POWDER COATED GALVANIZED STEEL BEAM GUARDRAIL:

Description

Furnish and install powder coated galvanized steel beam guardrail and anchor units in accordance with the Plans and the applicable requirements of Section 862 of the *2018 Standard Specifications*.

Materials

Refer to Division 10 of the *2018 Standard Specifications*.

Item	Section
Galvanizing	1076
Reflective sheeting	1088-3

Pre-Qualification

The powder coating facilities shall be approved prior to the application of any powder coating process. A complete listing of approved facilities can be found on the Departments Producer/Supplier webpage: https://apps.ncdot.gov/vendor/approvedproducts/Producer.aspx

To request approval of a new facility, contact the Materials and Tests Unit, Manufactured Products Engineer listed below:

Mr. Cabell Garbee, P.E.
cgarbee@ncdot.gov

Once the request is made, a summary of required submittals, test panels and materials will be sent to the perspective producer/supplier to provide to the Department. Upon receiving all required items allow for twenty (20) business days for review.

Revocation of Qualified Status

Qualification of a Powder coating shop facility may be revoked for a time as determined by the Engineer. The Engineer is defined in Article 101-3 or the *Standard Specifications* for Roads and Structures. Criteria for removal are as follows:

Critical and major deficiencies as defined by the Engineer
Failure to respond to the Engineer's request for information
Failure to correct continued non-conforming quality. A repetitive non-conforming item requires a corrective action plant to be submitted and approved by the Engineer.
Failure to repair coating layers that have been applied and approved by the Powder Coating Facility that exhibit any visible rust that cannot be removed by pressure washing.

Notification of Work

Give the Materials and Tests Unit 72 hours' notice for in-state producers and 192 hours 'notice for producers out-of-state before beginning work in the shop. The "hours' notice "is defined as working hours' Monday thru Friday, 8 AM to 5 PM. A copy of the Notification of Beginning Of Work Form can be found on the Departments Materials and Tests webpage: https://connect.ncdot.gov/resources/Materials/MaterialsResources/MT%20Form%20M4000%20Notification%20of%20Beginning%20Work.pdf

Powder Coat Color

FED-STD-595C, dated 16 January 2008, and all associated slash sheets, are hereby canceled. SAE AMS-STD-595, "Colors Used in Government Procurement," supersedes FED-STD-595C. This document, and all new SAE-AMS-STD-595 color standard products such as fan decks and color chipsets, may be obtained from www.sae.org, or SAE International Customer Service, 400 Commonwealth Drive, Warrendale PA 15096.

Guardrail

Guardrail materials shall meet Section 1046 of the *Standard Specifications.* Galvanizing of steel products shall be performed in accordance with section 1076 of the *Standard Specifications*. The fabricator or designated representative(s) supplying the components to be galvanized shall communicate with the galvanizer to indicate that the galvanized pieces will be powder coated and therefore shall not be water quenched or treated with chromate conversion coatings.

For Powder Coated Galvanized End Units furnish guardrail end units listed on the NCDOT Approved Products List at https://apps.dot.state.nc.us/vendor/approvedproducts/ or approved equal.
Prior to installation, submit the following to the Engineer:

(A) FHWA acceptance letter for each guardrail end unit certifying it meets the requirements of the AASHTO Manual for Assessing Safety Hardware, Test Level 2 or Test Level 3 in accordance with Article 106-2 of the *2018 Standard Specifications*.

(B) Certified working drawings and assembling instructions from the manufacturer for each guardrail end unit in accordance with Article 105-2 of the *2018 Standard Specifications*.

No modifications shall be made to the guardrail end unit without the express written permission from the manufacturer. Perform installation in accordance with the details in the plans, and details and assembling instructions furnished by the manufacturer.

Construction Methods

(A) Preparation of Galvanized Beams and Hardware for Powder Coating

In no case shall the surface preparation be less than specified by the powder manufacturer's recommendations or produce a powder applied film that does not demonstrate the minimum adhesion required herein.

All components to be coated shall be prepared in accordance with Section 442-13 of the *Standard Specifications.* All drainage spikes, high spots, protrusions, or other surface defects shall be removed using hand or power tools. Do not remove the galvanization below the limits set forth in AASHTO M 111.

Remove grease, oils, moisture, scale, rust or any other foreign matter prior to powder coating to ensure ideal adhesion and coating performance. Prepare and coat the galvanized surface as soon as possible after the galvanization process.

(B) Powder Coating Application and Curing

Prior to application, the coating facilities shall take representative dry film thickness readings for each batch and type of product being powder coated.

Follow the powder manufacturer's recommendations regarding steel temperature, application, and curing.

Apply the coating so the final product has a uniform and smooth surface which adheres well to the galvanized surface.

The final product shall be free of over spray, mud cracking, runs, sags, cracks, holidays, pinholes, or any other defects.

(C) Quality Control

Provide all test reports and documentation and inspect all coated material as outlined in Sections 442, 1072, 1076, and 1080 of the *Standard Specifications*. Ensure that the quality control inspector is separate from production functions.

(D) Storage, Shipping and Handling

All powder coated material shall be stored inside unless there is no facility present or at the Engineers approval.

All shipping and handling either from powder facility to project site and or storage site to area(s) to construction location shall be protected from incurring damage to the product. In no case shall the product be stored directly on the ground, in areas where pooling water may occur; the Engineer determines the effectiveness of all storage, shipping and handling methods.

(E) Repair of Powder Coated Material

It is the Department's resolve that both the shop and Contractor providing these products use the utmost of care in handling, packaging, shipping, and installing these products. The process in which this coating was applied cannot be duplicated in a field environment, thus any repairs are considered detrimental to the longevity of the coating system. The Department has specified the following for repairing powder coating.

All damage to the coating which occurs or is discovered in the shop shall be repaired by the original method of application as outlined in the coating facilities repair procedure. All repair areas shall meet the original requirements for adhesion as stated herein.

All damaged discovered upon delivery to the project site prior to unloading shall be recorded by pictures and documentation by the Engineer or their authorized representative and shall be reported to the applicator. The Engineer has the authority to accept or reject the material as outlined in the Article 105-3 of the *Standard Specifications*.

For damaged coatings which occur during storage, transporting, handling or installation, submit a repair procedure to the Engineer. The contractor shall use a liquid paint approved by the Department and compatible with the powder applied product. All repair areas shall meet an adhesion rating of 400 psi in accordance with ASTM D-4541. Acceptance on the final finish shall be determined by the Engineer.

(F) Guardrail Installation

Install guardrail in accordance with Section 862 of the *Standard Specifications*, the plans, and details and assembling instructions furnished by the manufacturer. Guardrail end delineation shall be applied to the entire end section of all approach and trailing end sections.

Guardrail end delineation is required on all approach and trailing end sections for both temporary and permanent installations. Guardrail end delineation consists of yellow reflective sheeting applied to the entire end section of the guardrail in accordance with Article 1088-3 of the *Standard Specifications* and is incidental to the cost of the guardrail anchor unit.

Measurement and Payment

Powder Coated Galvanized Steel Beam Guardrail and *Powder Coated Galvanized Steel Beam Guardrail, Shop Curved* will be measured and paid in linear feet of guardrail that has been satisfactorily completed and accepted exclusive of that length of guardrail that is within the pay limits of guardrail anchors. Measurement will be made from center to center of the outermost post in the length of guardrail being measured.

Powder Coated Galvanized Guardrail Anchor Units, Type ____ will be measured and paid as units of each completed and accepted. No separate measurement will be made of any rail, terminal sections, posts, offset blocks, concrete, hardware or any other components of the completed unit that are within the pay limits shown in the plans for the unit as all such components will be considered to be part of the unit.

Powder Coated Galvanized Guardrail End Units, Type ____ will be measured and paid as units of each completed and accepted. No separate measurement will be made of any rail, terminal sections, posts, offset blocks, concrete, hardware or any other components of the completed unit that are within the pay limits shown in the plans for the unit as all such components will be considered to be part of the unit.

Powder Coated Galvanized 25' Clear Span Guardrail Sections will be measured and paid in units of each completed and accepted.

Powder Coated Additional Guardrail Posts will be measured and paid in units of each for completed and accepted additional posts required but not shown in the plans.

There will be no measurement or payment made for guardrail delineators or guardrail end delineation as they are incidental to the other pay items herein.

Such price and payment include, but is not limited to, furnishing and erecting posts, offset blocks, rail, terminal sections, miscellaneous hardware, and all other materials, field curving and shop curving of the rail; excavation; furnishing and installing additional guardrail posts and additional offset blocks; backfilling; fabrication; welding; powder coating; galvanizing; furnishing and installing guardrail delineators and end delineation.

Payment will be made under:

Pay Item	Pay Unit
Powder Coated Galvanized Steel Beam Guardrail	Linear Foot
Powder Coated Galvanized Steel Beam Guardrail, Shop Curved	Linear Foot
Powder Coated Galvanized 25' Clear Span Guardrail Sections	Each
Powder Coated Galvanized Guardrail Anchor Units, Type ____	Each
Powder Coated Galvanized Guardrail End Units, Type ____	Each
Powder Coated Galvanized Additional Guardrail Posts	Each

County : Macon

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	0030000000-N	SP	TYPE II MODIFIED APPROACH FILL, STATION ******* (-L- STA. 13+00.00)	Lump Sum	L.S.	
0004	0030000000-N	SP	TYPE II MODIFIED APPROACH FILL, STATION ******* (-L- STA. 13+20.00)	Lump Sum	L.S.	
0005	0030000000-N	SP	TYPE II MODIFIED APPROACH FILL, STATION ******* (-L- STA. 16+13.00)	Lump Sum	L.S.	
0006	0036000000-E	225	UNDERCUT EXCAVATION	1,350 CY		
0007	0043000000-N	226	GRADING	Lump Sum	L.S.	
0008	0050000000-E	226	SUPPLEMENTARY CLEARING & GRUBBING	3 ACR		
0009	0134000000-E	240	DRAINAGE DITCH EXCAVATION	30 CY		
0010	0195000000-E	265	SELECT GRANULAR MATERIAL	1,200 CY		
0011	0196000000-E	270	GEOTEXTILE FOR SOIL STABILIZATION	1,900 SY		
0012	0199000000-E	SP	TEMPORARY SHORING	575 SF		
0013	0318000000-E	300	FOUNDATION CONDITIONING MATERIAL, MINOR STRUCTURES	45 TON		
0014	0320000000-E	300	FOUNDATION CONDITIONING GEOTEXTILE	120 SY		
0015	0335200000-E	305	15" DRAINAGE PIPE	36 LF		
0016	0366000000-E	310	15" RC PIPE CULVERTS, CLASS III	96 LF		
0017	0372000000-E	310	18" RC PIPE CULVERTS, CLASS III	40 LF		

County : Macon

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0018	0448300000-E	310	18" RC PIPE CULVERTS, CLASS IV	80 LF		
0019	0576000000-E	310	**" CS PIPE CULVERTS, *****" THICK (12") (0.064")	40 LF		
0020	0995000000-E	340	PIPE REMOVAL	49 LF		
0021	0996000000-N	350	PIPE CLEAN OUT	1 EA		
0022	1099500000-E	505	SHALLOW UNDERCUT	300 CY		
0023	1099700000-E	505	CLASS IV SUBGRADE STABILIZA-TION	600 TON		
0024	1121000000-E	520	AGGREGATE BASE COURSE	50 TON		
0025	1220000000-E	545	INCIDENTAL STONE BASE	400 TON		
0026	1243000000-E	SP	SHOULDER CONSTRUCTION	0.02 SMI		
0027	1491000000-E	610	ASPHALT CONC BASE COURSE, TYPE B25.0C	470 TON		
0028	1519000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	560 TON		
0029	1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	65 TON		
0030	1693000000-E	654	ASPHALT PLANT MIX, PAVEMENT REPAIR	30 TON		
0031	2000000000-N	806	RIGHT-OF-WAY MARKERS	59 EA		
0032	2022000000-E	815	SUBDRAIN EXCAVATION	134.4 CY		
0033	2026000000-E	815	GEOTEXTILE FOR SUBSURFACE DRAINS	600 SY		
0034	2036000000-E	815	SUBDRAIN COARSE AGGREGATE	100.8 CY		
0035	2044000000-E	815	6" PERFORATED SUBDRAIN PIPE	600 LF		
0036	2070000000-N	815	SUBDRAIN PIPE OUTLET	3 EA		

County : Macon

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0037	2077000000-E	815	6" OUTLET PIPE	18 LF		
0038	2275000000-E	SP	FLOWABLE FILL	22 CY		
0039	2286000000-N	840	MASONRY DRAINAGE STRUCTURES	4 EA		
0040	2365000000-N	840	FRAME WITH TWO GRATES, STD 840.22	2 EA		
0041	2367000000-N	840	FRAME WITH TWO GRATES, STD 840.29	2 EA		
0042	2535000000-E	846	**"X **" CONCRETE CURB (8",18")	25 LF		
0043	2556000000-E	846	SHOULDER BERM GUTTER	40 LF		
0044	2570000000-N	SP	MODIFIED CONCRETE FLUME	1 EA		
0045	2619000000-E	850	4" CONCRETE PAVED DITCH	50 SY		
0046	3030000000-E	862	STEEL BEAM GUARDRAIL	56.25 LF		
0047	3045000000-E	862	STEEL BEAM GUARDRAIL, SHOP CURVED	43.75 LF		
0048	3145000000-E	862	EXTRA LENGTH GUARDRAIL POST (**' STEEL) (8')	15 EA		
0049	3150000000-N	862	ADDITIONAL GUARDRAIL POSTS	5 EA		
0050	3180000000-N	SP	GUARDRAIL ANCHOR UNITS, TYPE ********** (B-83, SHOP CURVED)	1 EA		
0051	3180000000-N	SP	GUARDRAIL ANCHOR UNITS, TYPE ********** (III, SHOP CURVED)	1 EA		
0052	3195000000-N	862	GUARDRAIL END UNITS, TYPE AT-1	1 EA		
0053	3215000000-N	SP	GUARDRAIL ANCHOR UNITS, TYPE III	2 EA		
0054	3288000000-N	SP	GUARDRAIL END UNITS, TYPE TL-2	3 EA		

County : Macon

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0055	3380000000-E	862	TEMPORARY STEEL BEAM GUARDRAIL	268.75 LF		
0056	3382000000-E	862	TEMPORARY STEEL BEAM GUARDRAIL (SHOP CURVED)	31.25 LF		
0057	3389150000-N	SP	TEMPORARY GUARDRAIL END UNITS, TYPE ***** (TYPE AT-1)	2 EA		
0058	3389150000-N	SP	TEMPORARY GUARDRAIL END UNITS, TYPE ***** (TYPE TL-2)	8 EA		
0059	3628000000-E	876	RIP RAP, CLASS I	78 TON		
0060	3649000000-E	876	RIP RAP, CLASS B	20 TON		
0061	3656000000-E	876	GEOTEXTILE FOR DRAINAGE	897 SY		
0062	4400000000-E	1110	WORK ZONE SIGNS (STATIONARY)	416 SF		
0063	4405000000-E	1110	WORK ZONE SIGNS (PORTABLE)	396 SF		
0064	4410000000-E	1110	WORK ZONE SIGNS (BARRICADE MOUNTED)	130 SF		
0065	4424500000-N	SP	TEMPORARY PORTABLE TRAFFIC SIGNAL SYSTEM	3 EA		
0066	4430000000-N	1130	DRUMS	250 EA		
0067	4435000000-N	1135	CONES	65 EA		
0068	4445000000-E	1145	BARRICADES (TYPE III)	168 LF		
0069	4455000000-N	1150	FLAGGER	115 DAY		
0070	4465000000-N	1160	TEMPORARY CRASH CUSHIONS	2 EA		
0071	4470000000-N	1160	REMOVE & RESET TEMPORARY CRASH CUSHION	1 EA		
0072	4490000000-E	1170	PORTABLE CONCRETE BARRIER (ANCHORED)	155 LF		

County : Macon

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0073	4810000000-E	1205	PAINT PAVEMENT MARKING LINES (4")	11,670 LF		
0074	4835000000-E	1205	PAINT PAVEMENT MARKING LINES (24")	20 LF		
0075	4870000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (24")	20 LF		
0076	6000000000-E	1605	TEMPORARY SILT FENCE	1,295 LF		
0077	6006000000-E	1610	STONE FOR EROSION CONTROL, CLASS A	315 TON		
0078	6009000000-E	1610	STONE FOR EROSION CONTROL, CLASS B	300 TON		
0079	6012000000-E	1610	SEDIMENT CONTROL STONE	410 TON		
0080	6015000000-E	1615	TEMPORARY MULCHING	2 ACR		
0081	6018000000-E	1620	SEED FOR TEMPORARY SEEDING	300 LB		
0082	6021000000-E	1620	FERTILIZER FOR TEMPORARY SEEDING	1.5 TON		
0083	6024000000-E	1622	TEMPORARY SLOPE DRAINS	600 LF		
0084	6029000000-E	SP	SAFETY FENCE	1,400 LF		
0085	6030000000-E	1630	SILT EXCAVATION	540 CY		
0086	6036000000-E	1631	MATTING FOR EROSION CONTROL	2,000 SY		
0087	6037000000-E	SP	COIR FIBER MAT	400 SY		
0088	6042000000-E	1632	1/4" HARDWARE CLOTH	170 LF		
0089	6070000000-N	1639	SPECIAL STILLING BASINS	12 EA		
0090	6071010000-E	SP	WATTLE	150 LF		
0091	6071020000-E	SP	POLYACRYLAMIDE (PAM)	55 LB		

County : Macon

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0092	6084000000-E	1660	SEEDING & MULCHING	4 ACR		
0093	6087000000-E	1660	MOWING	1.5 ACR		
0094	6090000000-E	1661	SEED FOR REPAIR SEEDING	150 LB		
0095	6093000000-E	1661	FERTILIZER FOR REPAIR SEEDING	0.75 TON		
0096	6096000000-E	1662	SEED FOR SUPPLEMENTAL SEEDING	150 LB		
0097	6108000000-E	1665	FERTILIZER TOPDRESSING	1.5 TON		
0098	6111000000-E	SP	IMPERVIOUS DIKE	455 LF		
0099	6114500000-N	1667	SPECIALIZED HAND MOWING	30 MHR		
0100	6117000000-N	SP	RESPONSE FOR EROSION CONTROL	39 EA		
0101	6117500000-N	SP	CONCRETE WASHOUT STRUCTURE	8 EA		
0102	6123000000-E	1670	REFORESTATION	3 ACR		
0134	3420000000-E	SP	GENERIC GUARDRAIL ITEM POWDER COATED GALVANIZED STEEL BEAM GUARDRAIL	43.75 LF		
0135	3420000000-E	SP	GENERIC GUARDRAIL ITEM POWDER COATED GALVANIZED STEEL BEAM GUARDRAIL, SHOP CURVED	31.25 LF		
0136	3435000000-N	SP	GENERIC GUARDRAIL ITEM POWDER COATED GALVANIZED ADDITIONAL GUARDRAIL POSTS	10 EA		
0137	3435000000-N	SP	GENERIC GUARDRAIL ITEM POWDER COATED GALVANIZED GUARD RAIL ANCHOR UNITS, TYPE III, SHOP CURVED	2 EA		
0138	3435000000-N	SP	GENERIC GUARDRAIL ITEM POWDER COATED GALVANIZED GUARD RAIL ANCHOR UNIT, TYPE B-83, SHOP CURVED	2 EA		

County : Macon

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0139	3435000000-N	SP	GENERIC GUARDRAIL ITEM POWDER COATED GALVANIZED GUARD RAIL END UNITS, TYPE AT-1	3 EA		
0140	3435000000-N	SP	GENERIC GUARDRAIL ITEM POWDER COATED GALVANIZED GUARD RAIL ANCHOR UNIT, TYPE III	4 EA		
0141	3435000000-N	SP	GENERIC GUARDRAIL ITEM POWDER COATED GALVANIZED GUARD RAIL END UNITS, TYPE TL-2	5 EA		
			STRUCTURE ITEMS			
0103	8035000000-N	402	REMOVAL OF EXISTING STRUCTURE AT STATION ********** (-L- STA. 13+00.00)	Lump Sum	L.S.	
0104	8035000000-N	402	REMOVAL OF EXISTING STRUCTURE AT STATION ********** (-L- STA. 13+20.00)	Lump Sum	L.S.	
0105	8035000000-N	402	REMOVAL OF EXISTING STRUCTURE AT STATION ********** (-L- STA. 16+13.00)	Lump Sum	L.S.	
0106	8065000000-N	SP	ASBESTOS ASSESSMENT	Lump Sum	L.S.	
0107	8096000000-E	450	PILE EXCAVATION IN SOIL	151 LF		
0108	8097000000-E	450	PILE EXCAVATION NOT IN SOIL	85 LF		
0109	8121000000-N	412	UNCLASSIFIED STRUCTURE EXCAVATION AT STATION ******** (-L- STA. 13+00.00)	Lump Sum	L.S.	
0110	8121000000-N	412	UNCLASSIFIED STRUCTURE EXCAVATION AT STATION ******** (-L- STA. 13+20.00)	Lump Sum	L.S.	
0111	8121000000-N	412	UNCLASSIFIED STRUCTURE EXCAVATION AT STATION ******** (-L- STA. 16+13.00)	Lump Sum	L.S.	

County : Macon

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0112	8147000000-E	420	REINFORCED CONCRETE DECK SLAB	1,592 SF		
0113	8161000000-E	420	GROOVING BRIDGE FLOORS	1,750 SF		
0114	8182000000-E	420	CLASS A CONCRETE (BRIDGE)	176.2 CY		
0115	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ********** (-L- STA. 13+00.00)	Lump Sum	L.S.	
0116	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ********** (-L- STA. 13+20.00)	Lump Sum	L.S.	
0117	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ********** (-L- STA. 16+13.00)	Lump Sum	L.S.	
0118	8217000000-E	425	REINFORCING STEEL (BRIDGE)	22,323 LB		
0119	8280000000-E	440	APPROX ..... LBS STRUCTURAL STEEL	1 LS		
0120	8328200000-E	450	PILE DRIVING EQUIPMENT SETUP FOR *** STEEL PILES (HP 12 X 53)	37 EA		
0121	8364000000-E	450	HP12X53 STEEL PILES	936 LF		
0122	8391000000-N	450	STEEL PILE POINTS	5 EA		
0124	8483000000-E	460	32" ALASKA RAIL	87.71 LF		
0125	8517000000-E	460	1'-**"X *****" CONCRETE PARA-PET (2", 2'-8 3/4")	110 LF		
0126	8517000000-E	460	1'-**"X *****" CONCRETE PARA-PET (2", 2'-9 3/8")	100 LF		
0127	8608000000-E	876	RIP RAP CLASS II (2'-0" THICK)	360 TON		
0128	8622000000-E	876	GEOTEXTILE FOR DRAINAGE	310 SY		
0129	8657000000-N	430	ELASTOMERIC BEARINGS	Lump Sum	L.S.	

County : Macon

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0130	8692000000-N	SP	FOAM JOINT SEALS	Lump Sum	L.S.	
0131	8762000000-E	430	3'-0" X 1'-9" PRESTRESSED CONC CORED SLABS	945 LF		
0132	8892000000-E	SP	GENERIC STRUCTURE ITEM (STEEL SHEET PILES)	1,570 SF		
0133	8892000000-E	SP	GENERIC STRUCTURE ITEM 18" GALVANIZED STEEL SHEET PILES	1,624 SF		
0142	8867000000-E	SP	GENERIC STRUCTURE ITEM ANODIZED TWO BAR METAL RAIL	93.66 LF		
0143	8867000000-E	SP	GENERIC STRUCTURE ITEM ANODIZED TWO BAR METAL RAIL	83.66 LF		

1407/May24/Q65797.7/D626709230000/E142 **Total Amount Of Bid For Entire Project :**