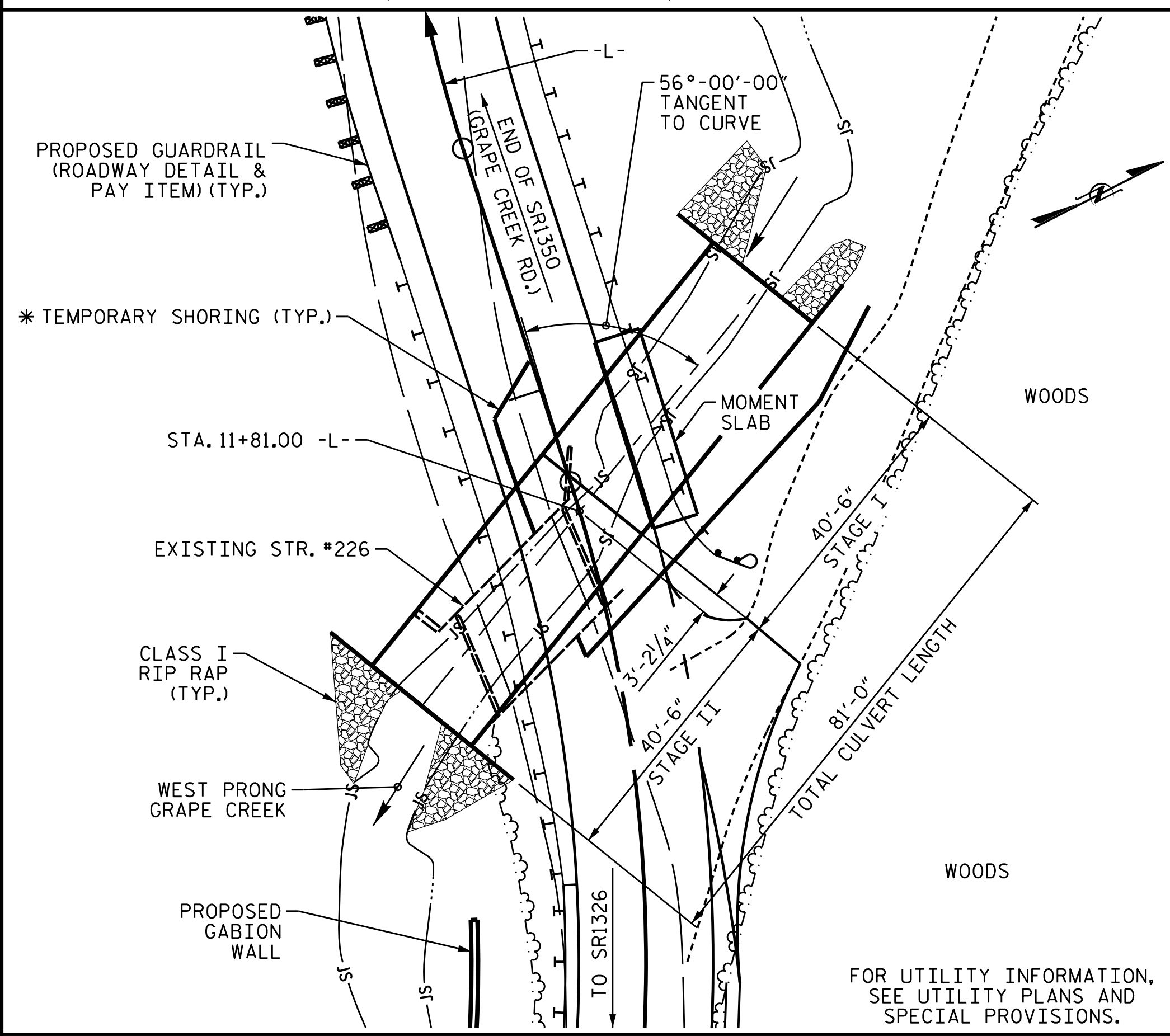


**This electronic collection of documents is provided  
for the convenience of the user  
and is Not a Certified Document –**

**The documents contained herein were originally issued  
and sealed by the individuals whose names and license  
numbers appear on each page, on the dates appearing  
with their signature on that page.**

**This file or an individual page  
shall not be considered a certified document.**

BM#2: 8" SPIKE SET IN BASE OF TRIPLE MAPLE TREE,  
32' LEFT, STA 11+40.36-L-, ELEV. = 1788.41



LOCATION SKETCH

NOTES

ASSUMED LIVE LOAD.....HL-93 OR ALTERNATE LOADING.  
 MAXIMUM DESIGN FILL..... 3.3'  
 MINIMUM DESIGN FILL..... 2.5'  
 FOR OTHER DESIGN DATA AND NOTES, SEE STANDARD NOTE SHEET.  
 THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES."  
 AFTER SERVING AS A TEMPORARY STRUCTURE THE EXISTING STRUCTURE CONSISTING OF A SINGLE SPAN; 16'-6" WITH AN ASPHALT WEARING SURFACE ON A TIMBER DECK ON TIMBER JOISTS, HAVING A CLEAR ROADWAY WIDTH OF 20'-1/2" SUPPORTED ON A SUBSTRUCTURE OF TIMBER CAPS, AND TIMBER POSTS AND SILLS SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.  
 THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.  
 FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE \* OF TRAFFIC, SEE ROADWAY PLANS.  
 FOR TRAFFIC PHASING, SEE TRAFFIC CONTROL PLANS.  
 REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.  
 FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.  
 FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.  
 FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.  
 FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE RESIDENT ENGINEER SHALL CHECK THE LENGTH OF THE CULVERT BEFORE STAKING IT OUT TO MAKE CERTAIN THAT IT WILL PROPERLY TAKE CARE OF THE FILL.  
 FOR ALUMINUM BOX CULVERT AND FOUNDATIONS, SEE SPECIAL PROVISIONS FOR ALUMINUM BOX CULVERT.  
 THE DETAILS SHOWN HERE ARE FOR GENERAL LAYOUT ONLY. THE SUPPLIER SHALL SUPPLY DESIGNS AND DETAILS FOR REVIEW AND APPROVAL THAT MEET THE REQUIREMENTS OF AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12, AND ARE SEALED BY A NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER.  
 FOR CULVERT DIVERSION DETAILS AND PAY ITEM, SEE EROSION CONTROL PLANS.  
 THE CONTRACTOR SHALL SUBMIT SEALED SHOP DRAWING PLANS FOR THE ALUMINUM BOX CULVERT, ALUMINUM HEADWALL AND ANY REQUIRED FOUNDATIONS TO NCDOT FOR APPROVAL PRIOR TO CONSTRUCTION.  
 UNLESS OTHERWISE INDICATED, THE SUPPLIER SHALL DESIGN, DETAIL, AND FURNISH ALL STRUCTURAL ELEMENTS AND HARDWARE.  
 THE MANUFACTURER OF THE 19'-0" X 6'-1" ALUMINUM BOX CULVERT SHALL PROVIDE LOAD RESISTANCE FACTOR RATINGS (LRFR) SUMMARY PER NCDOT REQUIREMENTS.  
 THE CORRUGATED ALUMINUM BOX CULVERT AT STATION 11+81.00 -L- IS DESIGNED FOR A FACTORED RESISTANCE OF 2 TSF. CHECK FIELD CONDITIONS FOR THE REQUIRED RESISTANCE OF 4.5 TSF JUST BEFORE PLACING CULVERT.  
 EXCAVATE 1 FOOT BELOW CULVERT AND REPLACE WITH FOUNDATION CONDITIONING MATERIAL IN ACCORDANCE WITH SECTION 414 OF THE STANDARD SPECIFICATIONS.  
 FOR BLASTING ADJACENT TO HIGHWAY STRUCTURES, SEE ARTICLE 410-9 OF THE STANDARD SPECIFICATIONS.  
 GUARDRAIL POST LOCATIONS SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER TO ENSURE ADEQUATE COVER FOR INSTALLATION. AT LOCATIONS OF INADEQUATE COVER GUARDRAIL POSTS MAY BE BOLTED TO THE ALUMINUM BOX CULVERT.  
 AT THE CONTRACTOR'S OPTION HE MAY SUBMIT TO THE ENGINEER FOR APPROVAL DESIGN AND DETAIL DRAWINGS FOR PRECAST REINFORCED CONCRETE HEADWALL IN LIEU OF THE ALUMINUM HEADWALLS SHOWN ON THE PLANS. THE DESIGN SHALL PROVIDE THE SAME SIZE AND LAYOUT AS USED ON THE ALUMINUM HEADWALL DESIGN. FOR OPTIONAL PRECAST REINFORCED CONCRETE HEADWALLS, SEE SPECIAL PROVISIONS.

HYDRAULIC DATA

DESIGN DISCHARGE = 310 CFS  
 FREQUENCY OF DESIGN FLOOD = 10 YEARS  
 DESIGN HIGH WATER ELEVATION = 1790.0  
 DRAINAGE AREA = 1.08 SQ.MI.  
 BASE DISCHARGE (Q100) = 600 CFS  
 BASE HIGH WATER ELEVATION = 1791.15

GRADE DATA

GRADE POINT ELEV. @ STA. 11+81.00-L- = 1791.70  
 INVERT ELEV. @ STA. 11+81.00-L- = 1782.21  
 ROADWAY SIDE SLOPES = 2:1 MAX

OVERTOPPING DATA

OVERTOPPING DISCHARGE = 420+ CFS  
 FREQUENCY OF OVERTOPPING FLOOD = 25+ YEARS  
 OVERTOPPING FLOOD ELEVATION = 1790.8

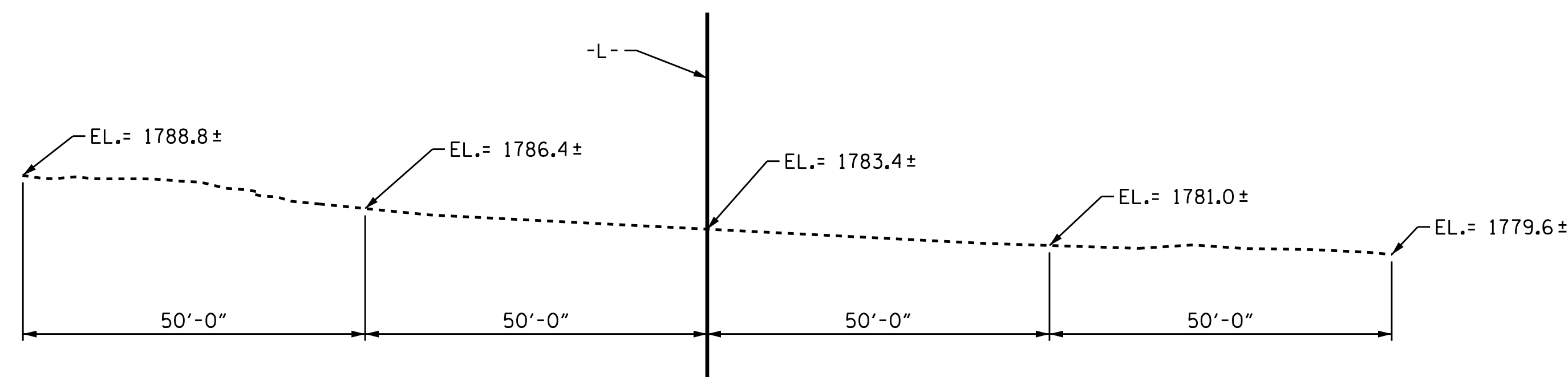
HORIZONTAL CURVE DATA

P.I. STA. = 11+39.42 -L-  
 Δ = 22°-55'-57.5" (LT)  
 D = 24°-30'-00.0"  
 L = 93.60'  
 T = 47.44'  
 R = 233.86'

TOTAL STRUCTURE QUANTITIES

ALUMINUM BOX CULVERT	LUMP SUM
CULVERT EXCAVATION	LUMP SUM
FOUNDATION COND. MAT'L	143 TONS
REMOVAL OF EXISTING STRUCTURE	LUMP SUM
CLASS I RIP RAP	32 TONS
* EPOXY COATED REINFORCING STEEL	1,147 LBS.
* CLASS AA CONCRETE	11.4 C.Y.
* FOUNDATION COND. MAT'L, MINOR STRUCTURES	5 TONS

\* PAYMENT FOR MOMENT SLAB



PROFILE ALONG CULVERT

PROJECT NO. 17BP.14.R.86

CHEROKEE COUNTY

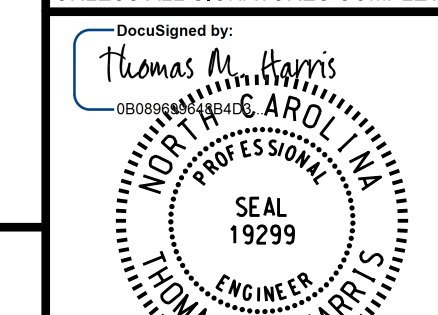
STATION: 11+81.00-L-

SHEET 1 OF 4 REPLACES BRIDGE #226

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SINGLE 19'-0" X 6'-1"  
ALUMINUM BOX CULVERT  
56° SKEW

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

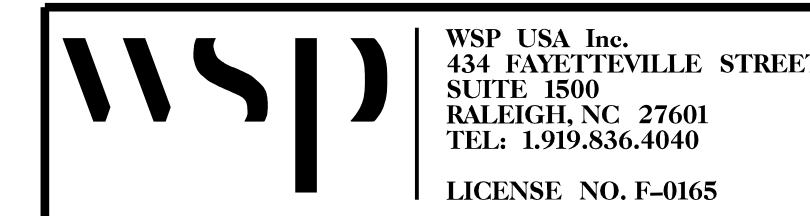


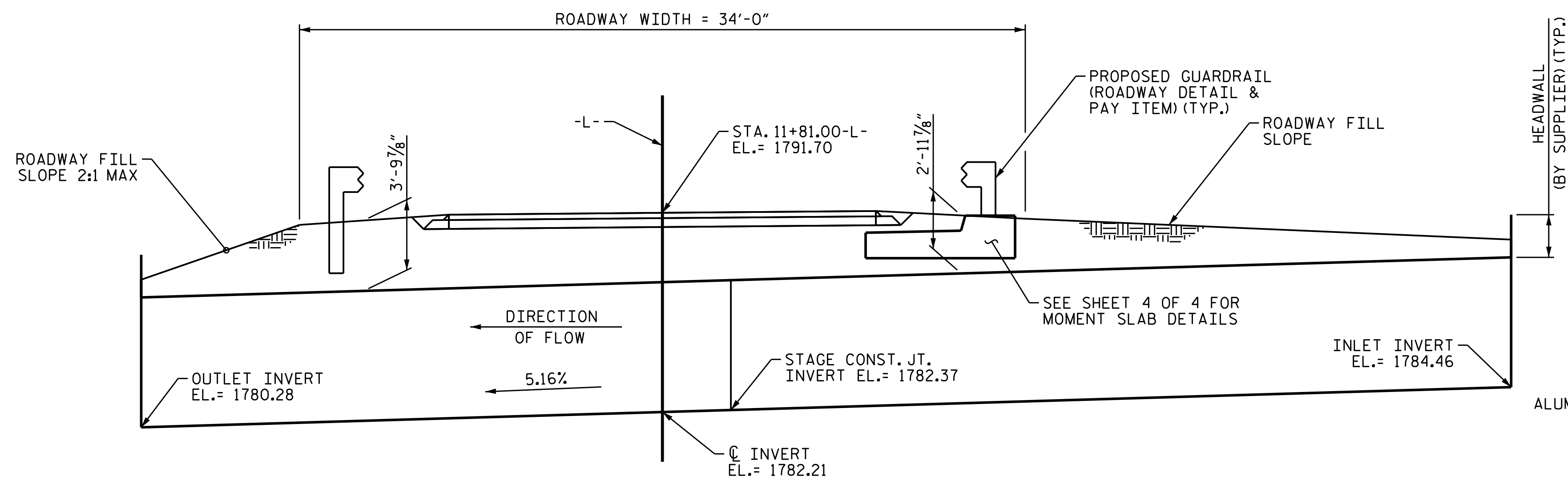
9/28/2018 7:17:50 AM PDT

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

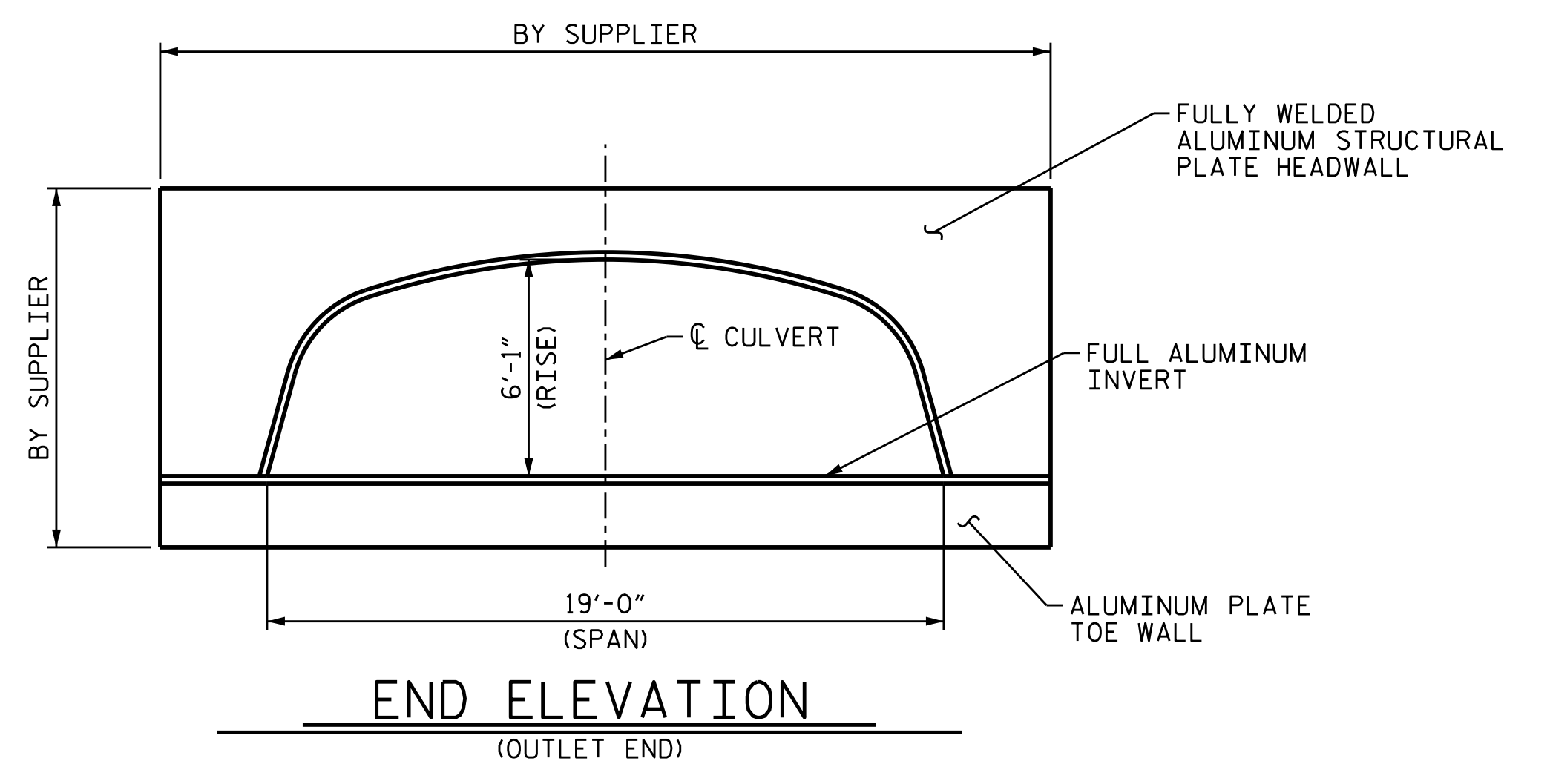
DESIGN ENGINEER OF RECORD DATE  
T.M. HARRIS 09/28/2018

DRAWN BY: N. PIERCE DATE: 08/2014  
CHECKED BY: M. HOBBS DATE: 09/2014

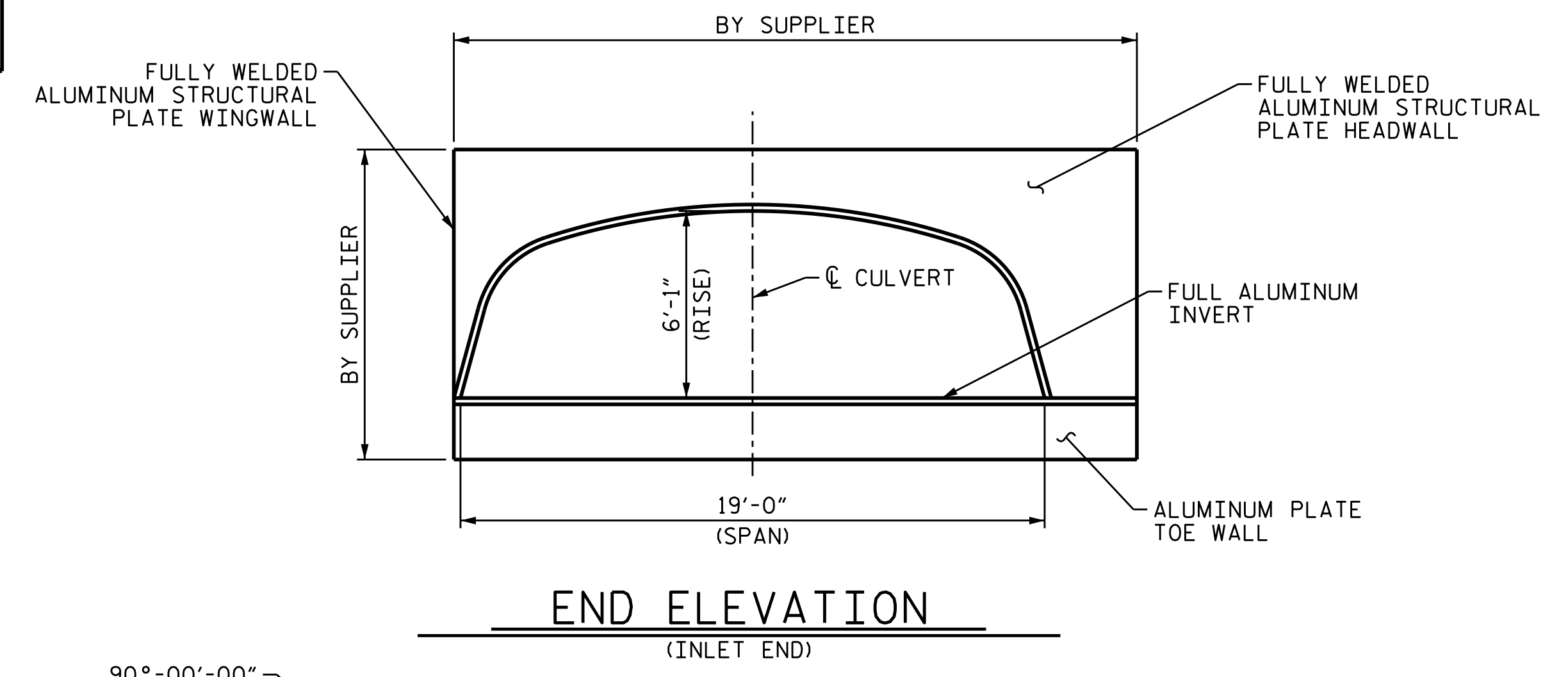




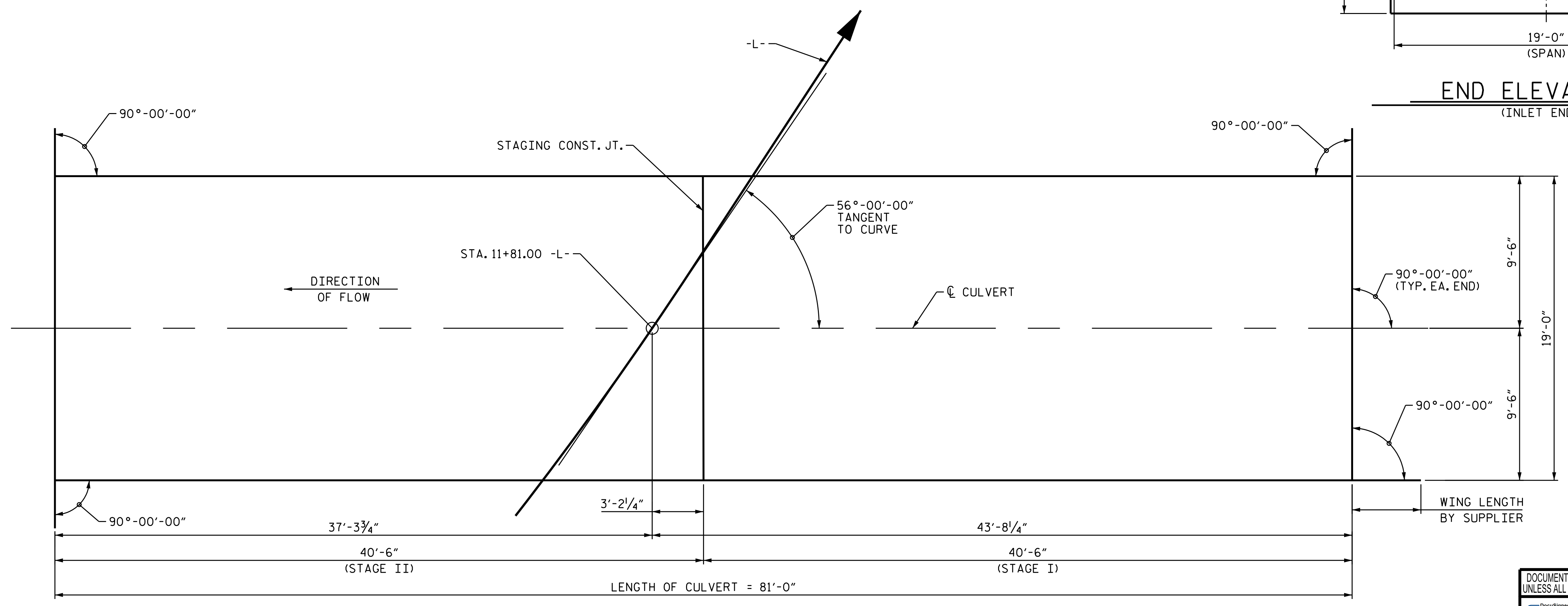
**CULVERT SECTION NORMAL TO ROADWAY**



**END ELEVATION (OUTLET END)**



**END ELEVATION (INLET END)**



**PLAN VIEW**

PROJECT NO. 17BP.14.R.86  
 CHEROKEE COUNTY  
 STATION: 11+81.00-L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**SINGLE 19'-0" X 6'-1" ALUMINUM BOX CULVERT**  
 56° SKEW

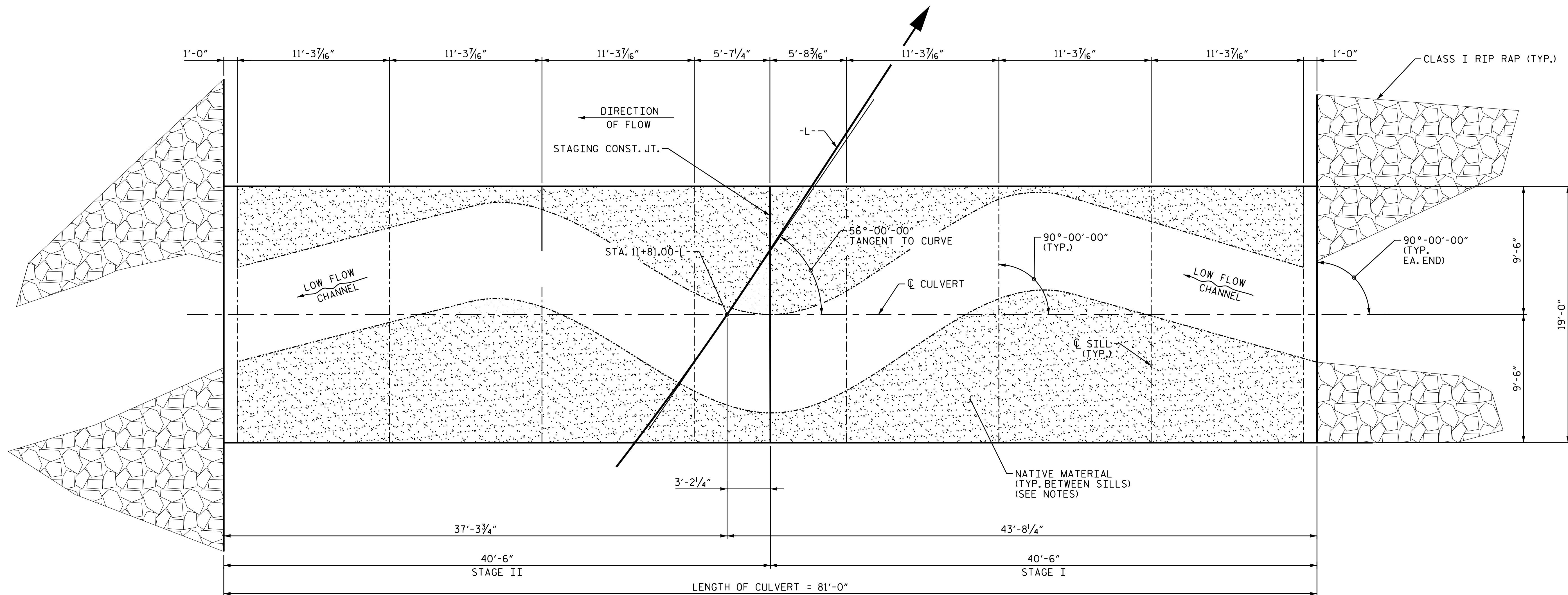
DESIGN ENGINEER OF RECORD T.M. HARRIS	DATE 09/28/2018
DRAWN BY : N. PIERCE	DATE : 08/2014
CHECKED BY : M. HOBBS	DATE : 08/2014

**wsp**  
 WSP USA Inc.  
 434 FAYETTEVILLE STREET  
 SUITE 1500  
 RALEIGH, NC 27601  
 TEL: 1.919.836.4040  
 LICENSE NO. F-0165

DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

9/28/2018 7:17:50 AM PDT

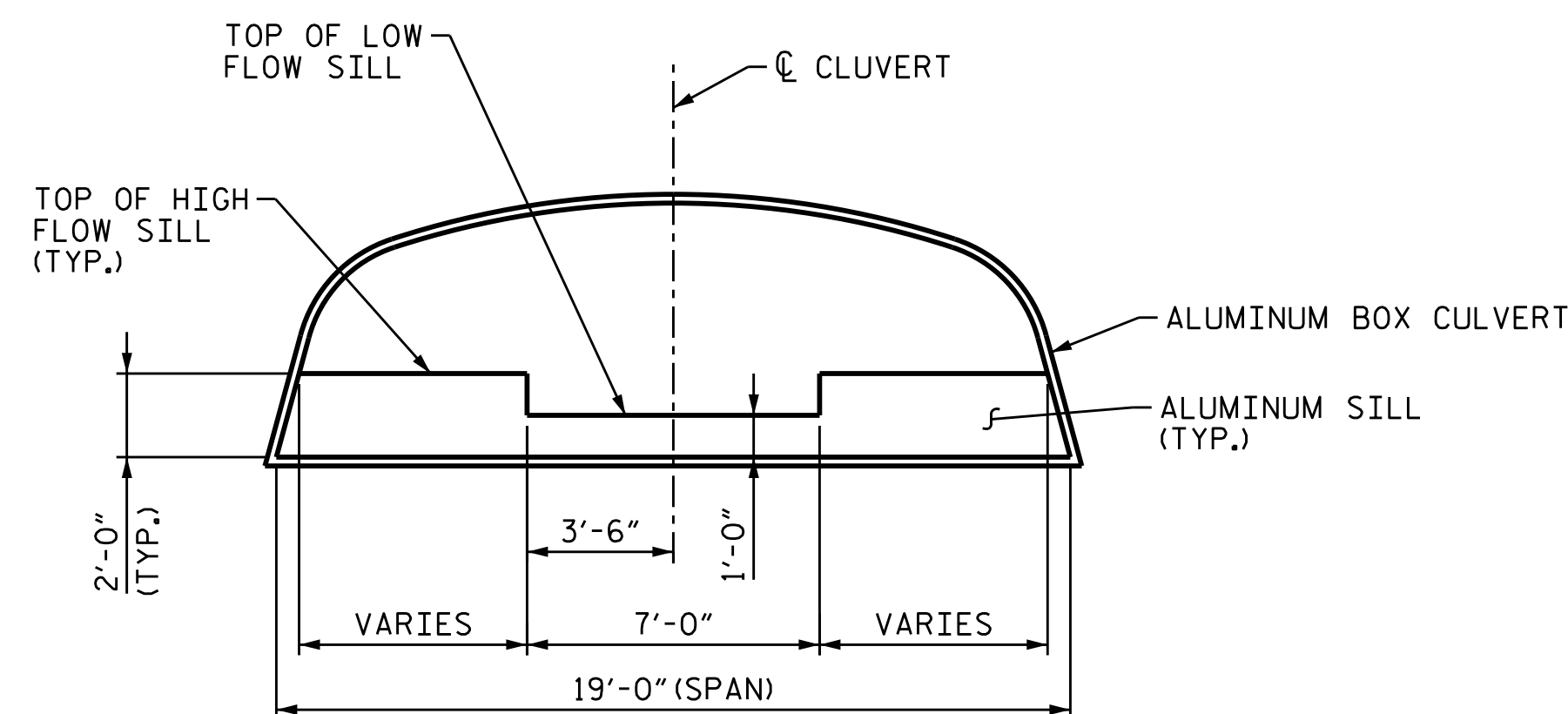
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-2
1			3			TOTAL SHEETS
2			4			4



### FLOOR SILL LAYOUT

### NOTES

- NATIVE MATERIAL EXCAVATED FROM THE EXISTING STREAM BED OR FLOOD PLAIN AT THE PROJECT SITE DURING CULVERT CONSTRUCTION SHALL BE STOCKPILED AND LATER PLACED IN THE PROPOSED CULVERT BETWEEN SILLS TO PROVIDE A CONTINUOUS LOW FLOW CHANNEL. NATIVE MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.
- THE STOCKPILED NATIVE MATERIAL SHALL BE PLACED AS SHOWN IN THE "FLOOR SILL LAYOUT" SKETCH TO PROVIDE A 1'-0" DEPTH LOW FLOW CHANNEL BETWEEN LOW FLOW SILLS, AND SHALL BE PLACED TO THE DEPTH OF 2'-0" BETWEEN HIGH FLOW SILL.
- SUPPLEMENTAL STONE OF SIMILAR CHARACTERISTICS OF THE NATIVE MATERIAL MAY BE USED AS NECESSARY WITH APPROVAL BY ENGINEER.
- THE COST OF WORK REQUIRED TO PLACE THE EXCAVATED MATERIAL SHALL BE INCLUDED IN THE CONTRACT LUMP SUM PRICE BID FOR CULVERT EXCAVATION.
- THE SILLS ARE ALUMINUM AND BOLTED INTO THE CULVERT.
- THE COST OF THE ALUMINUM SILLS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR THE ALUMINUM BOX CULVERT.
- TOP OF LOW FLOW SILLS SHOULD MATCH STREAM BED ELEVATION IN LOW FLOW CHANNEL OF STREAM.
- DO NOT SET ELEVATION OF HIGH FLOW SILLS ABOVE BANK FILL.



ELEVATION NORMAL TO CULVERT  
(LOOKING DOWNSTREAM)

PROJECT NO. 17BP.14.R.86  
 CHEROKEE COUNTY  
 STATION: 11+81.00-L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SINGLE 19'-0" X 6'-1"  
 ALUMINUM BOX CULVERT  
 56° SKEW

DESIGN ENGINEER OF RECORD T.M. HARRIS	DATE 09/28/2018
DRAWN BY : N. PIERCE	DATE : 08/2014
CHECKED BY : M. HOBBS	DATE : 08/2014

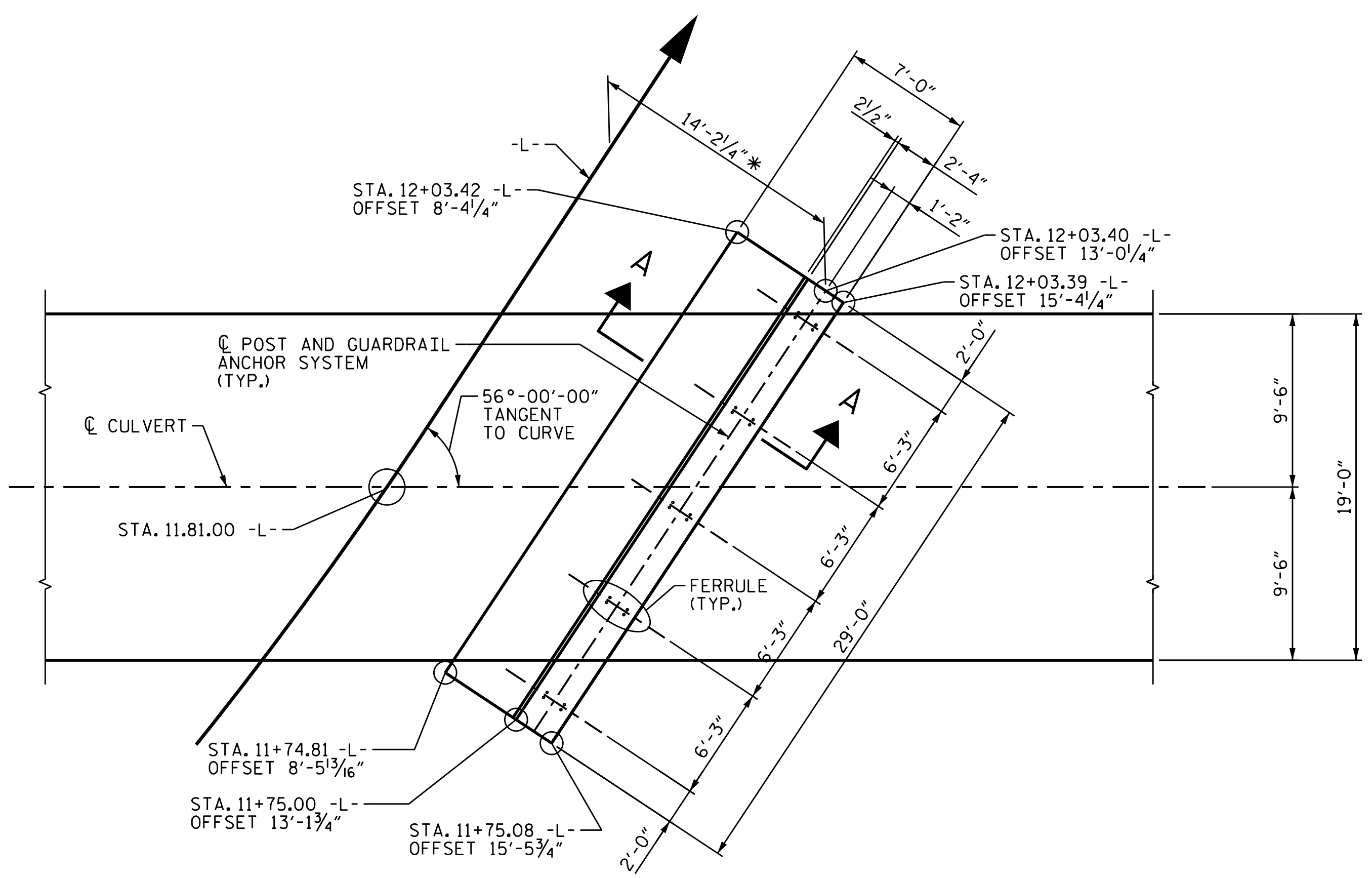
**wsp**  
 WSP USA Inc.  
 434 FAYETTEVILLE STREET  
 SUITE 1500  
 RALEIGH, NC 27601  
 TEL: 1.919.836.4040  
 LICENSE NO. F-0165

DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

Seal of Thomas M. Harris, Professional Engineer, No. 19299, State of North Carolina.

9/28/2018 7:17:50 AM PDT

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



**NOTES**

FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2 1/2".

ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE 1" Ø AND MEET THE REQUIREMENTS OF ASTM A325. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED.

PAYMENT FOR GUARDRAIL, POSTS, ADHESIVELY ANCHORED ANCHOR BOLTS AND POST BASE PLATES IS INCLUDED IN ROADWAY PAY ITEMS.

THE GUARDRAIL POSTS SHALL NOT BE ATTACHED UNTIL THE MOMENT SLAB HAS ATTAINED AN AGE OF THREE CURING DAYS OR A MINIMUM COMPRESSIVE STRENGTH OF 2000 PSI. IN ADDITION, NO FILL MATERIAL, ASPHALT, OR CONSTRUCTION EQUIPMENT IS ALLOWED ON THE MOMENT SLAB PRIOR TO SATISFYING THE MINIMUM CONCRETE CURING AND STRENGTH REQUIREMENTS.

ALL REINFORCING STEEL IN THE MOMENT SLAB SHALL BE EPOXY COATED.

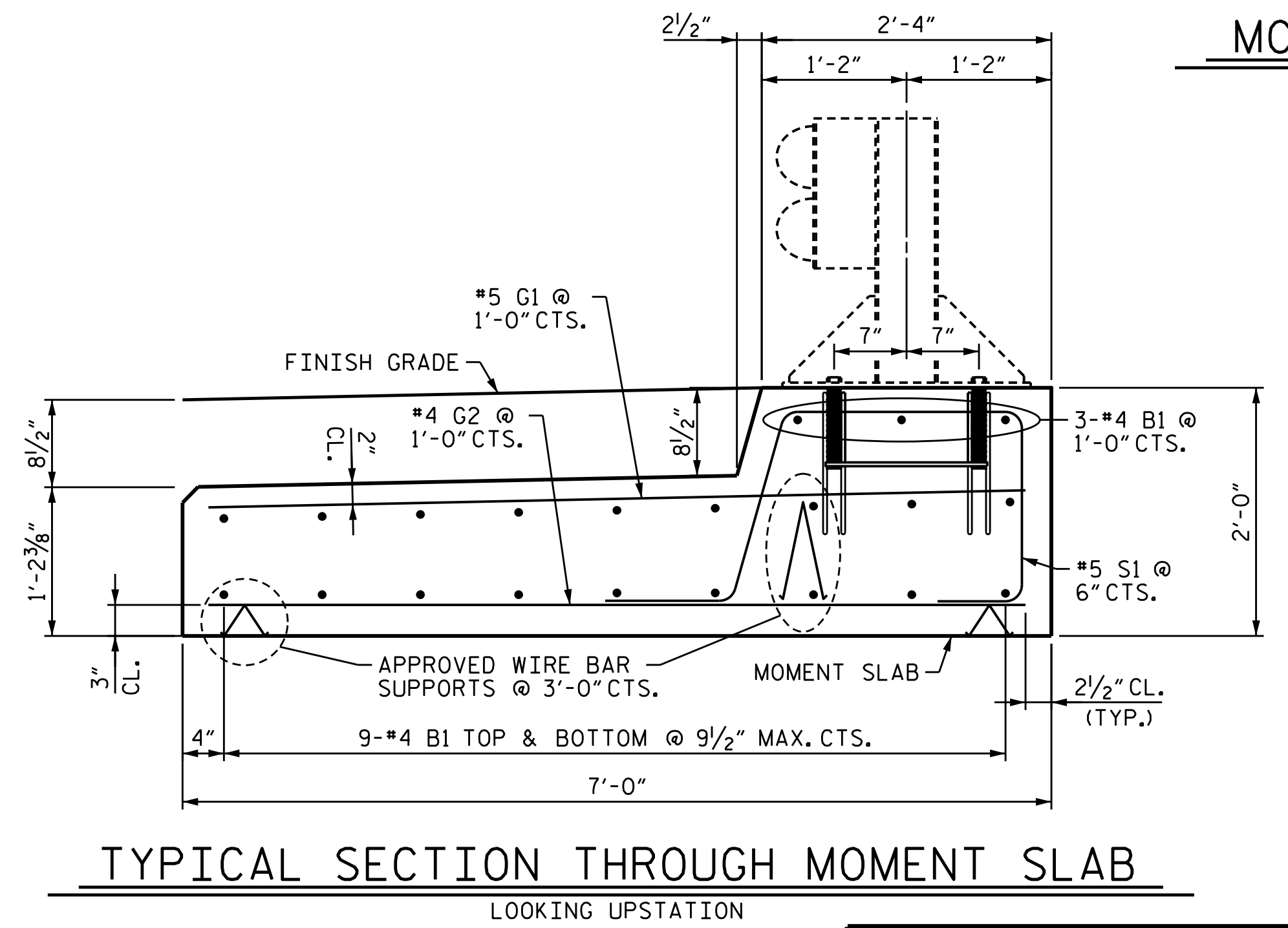
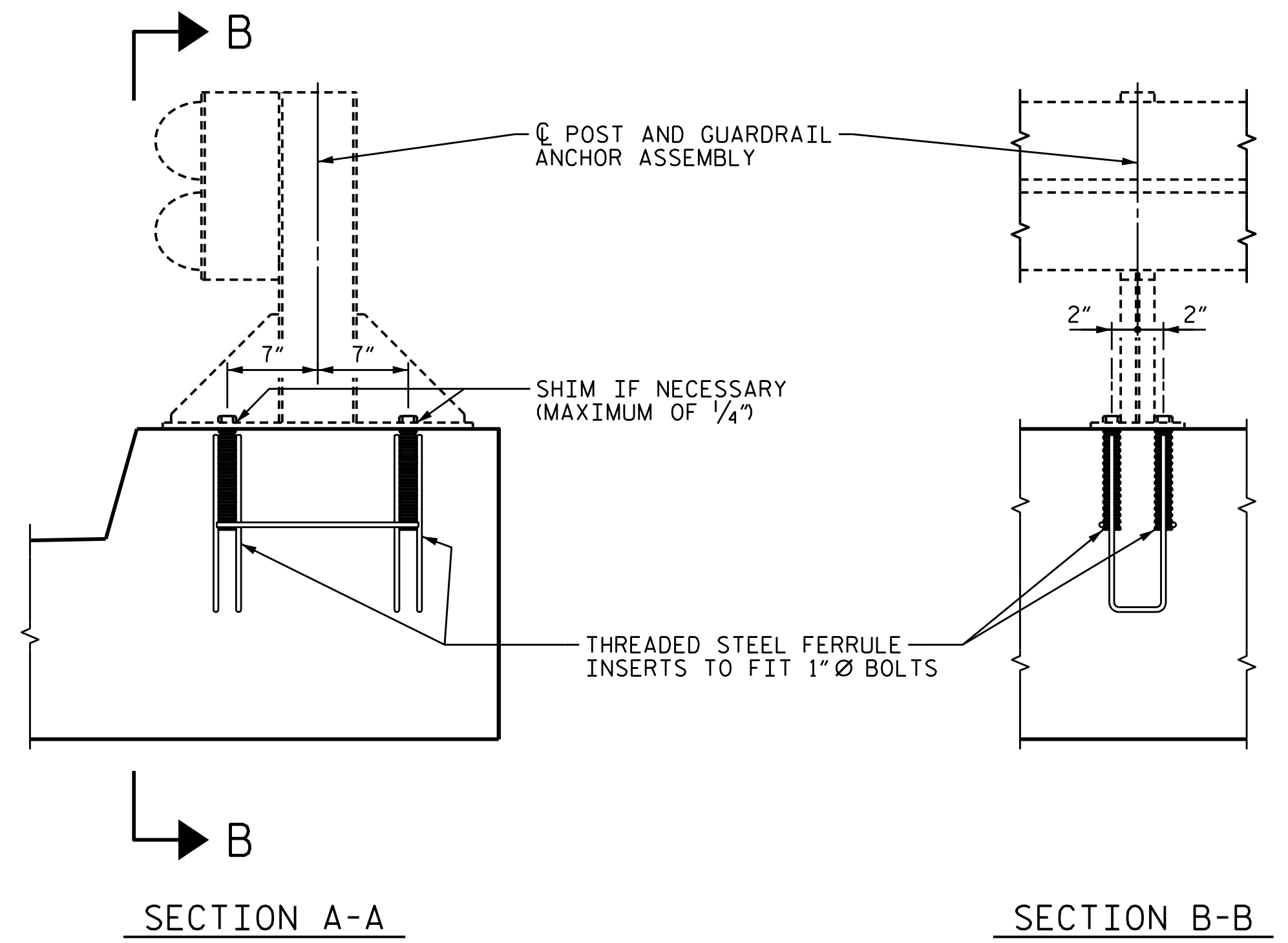
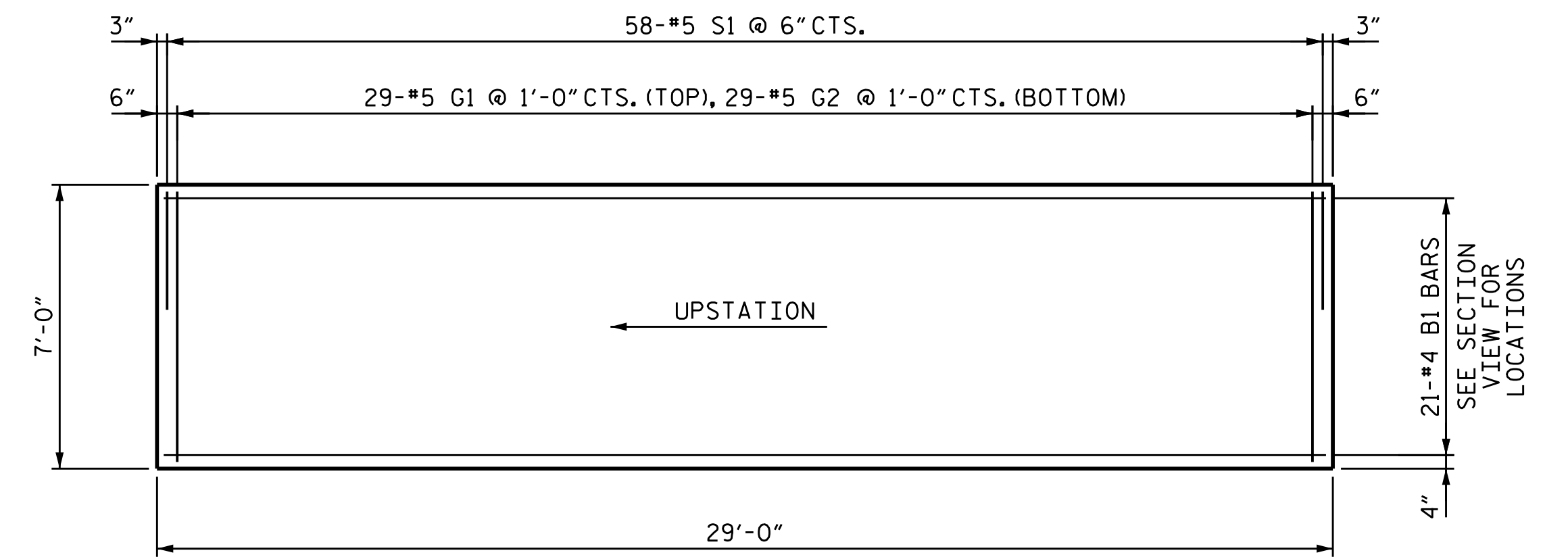
THE CONTRACT PRICE FOR "CLASS AA CONCRETE" AND "EPOXY COATED REINFORCING STEEL" WILL BE FULL COMPENSATION FOR SUBMITTALS, LABOR, TOOLS, EQUIPMENT, MOMENT SLAB MATERIALS, EXCAVATING, BACKFILLING, HAULING AND REMOVING EXCAVATED MATERIALS, AND SUPPLYING ANY INCIDENTALS NECESSARY TO CONSTRUCT THE CONCRETE MOMENT SLAB.

FOR GUARDRAIL ANCHORAGE DETAILS, SEE STANDARD DRAWING 862.03 SHEET 7 OR 7.

GUARDRAIL POST AND FERRULE LOCATIONS SHALL BE FIELD VERIFIED BEFORE POURING MOMENT SLAB.

PLACE CONCRETE SLAB ON 6" MINIMUM (3" MINIMUM ABOVE TOP OF CULVERTS) OF COMPACTED CLASS II TYPE 1 SELECT MATERIAL. CLASS II TYPE 1 SELECT MATERIAL, SHALL BE IN ACCORDANCE WITH ARTICAL 1016-3 OF STANDARD SPECIFICATIONS AND SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR CONDITIONING MATERIAL, MINOR STRUCTURES.

BAR TYPE					
BAR DIMENSIONS ARE OUT TO OUT.					
BILL OF MATERIAL FOR ONE MOMENT SLAB					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	21	#4	STR	28'-8"	402
G1	29	#5	STR	6'-7"	199
G2	29	#4	STR	6'-7"	128
S1	58	#5	1	6'-11"	418
EPOXY COATED REINFORCING STEEL					1,147 LBS.
CLASS AA CONCRETE					11.4 C.Y.



PROJECT NO. 17BP.14.R.86  
 CHEROKEE COUNTY  
 STATION: 11+81.00-L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SINGLE 19'-0" X 6'-1" ALUMINUM BOX CULVERT  
 56° SKEW

DESIGN ENGINEER OF RECORD T.M. HARRIS	DATE 09/28/2018
DRAWN BY : M.J. OSTRISHKO	DATE : 07/2018
CHECKED BY : M. HOBBS	DATE : 08/2018

**wsp** WSP USA Inc.  
 434 FAYETTEVILLE STREET  
 SUITE 1500  
 RALEIGH, NC 27601  
 TEL: 1.919.836.4040  
 LICENSE NO. F-0165

DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

Thomas M. Harris  
 PROFESSIONAL ENGINEER  
 SEAL 19299  
 9/28/2018 7:17:50 AM PDT

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

## NOTES

FOR GABION RETAINING WALLS, SEE GABION RETAINING WALL PROVISION.

FOR GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.

IF THE BACK OF THE GABION IS LESS THAN 4 FEET AWAY FROM BACK OF PROPOSED GUARDRAIL, 8 FEET GUARDRAIL POSTS ON 3'-1/2" SPACING SHALL BE USED WITH A MINIMUM CLEARANCE OF 2.5 FT. THE RETAINING WALL SHALL BE DESIGNED FOR A TRAFFIC IMPACT LOAD OF 300 LB/FT.

BEFORE BEGINNING GABION RETAINING WALL DESIGN, SURVEY EXISTING GROUND ELEVATIONS SHOWN ON THE WALL PROFILE VIEW (WALL ENVELOPE) AND SUBMIT A REVISED WALL ENVELOPE FOR REVIEW. DO NOT START DESIGN UNTIL THIS ENVELOPE IS ACCEPTED.

TEMPORARY SHORING IS REQUIRED IN ACCORDANCE WITH THE TEMPORARY SHORING PROVISIONS. SEE TRAFFIC CONTROL PLANS.

THE MINIMUM EMBEDMENT FOR THE WALL IS 2 FEET BELOW THE PROPOSED OR EXISTING GROUND ELEVATIONS.

TRANSITION ENDS OF WALL BY SPILLING ADJACENT SLOPE SOILS AROUND FACE OF WALL AS DIRECTED BY ENGINEER.

WHERE THE GABION RETAINING WALL INTERSECTS DRAINAGE PIPES, SUBMIT PENETRATION REINFORCEMENT DETAILS FOR APPROVAL PRIOR TO ORDERING MATERIALS OR BEGINNING CONSTRUCTION. SEE DRAINAGE PLANS FOR ADDITIONAL INFORMATION.

THE TOP OF WALL LOCATION, AS SHOWN IN DETAIL, CORRESPONDS TO WALL LOCATION AS SHOWN IN ROADWAY PLANS. THE CONTRACTOR/DESIGNER IS RESPONSIBLE FOR LOCATING THE FACE OF THE BOTTOM OF WALL SO THE TOP OF WALL LINES UP WITH THE CORRECT OFFSET AS SHOWN ON THE PLANS.

SEE ROADWAY PLANS FOR FINISH GRADE DETAILS.

EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL POSTS, PAVEMENTS, PIPES, INLETS, OR UTILITIES MAY INTERFERE WITH THE REINFORCEMENT FOR GABION RETAINING WALLS.

DO NOT PLACE LEVELING PAD STONE, SELECT MATERIAL UNTIL OBTAINING APPROVAL OF THE EXCAVATION DEPTH AND FOUNDATION MATERIAL.

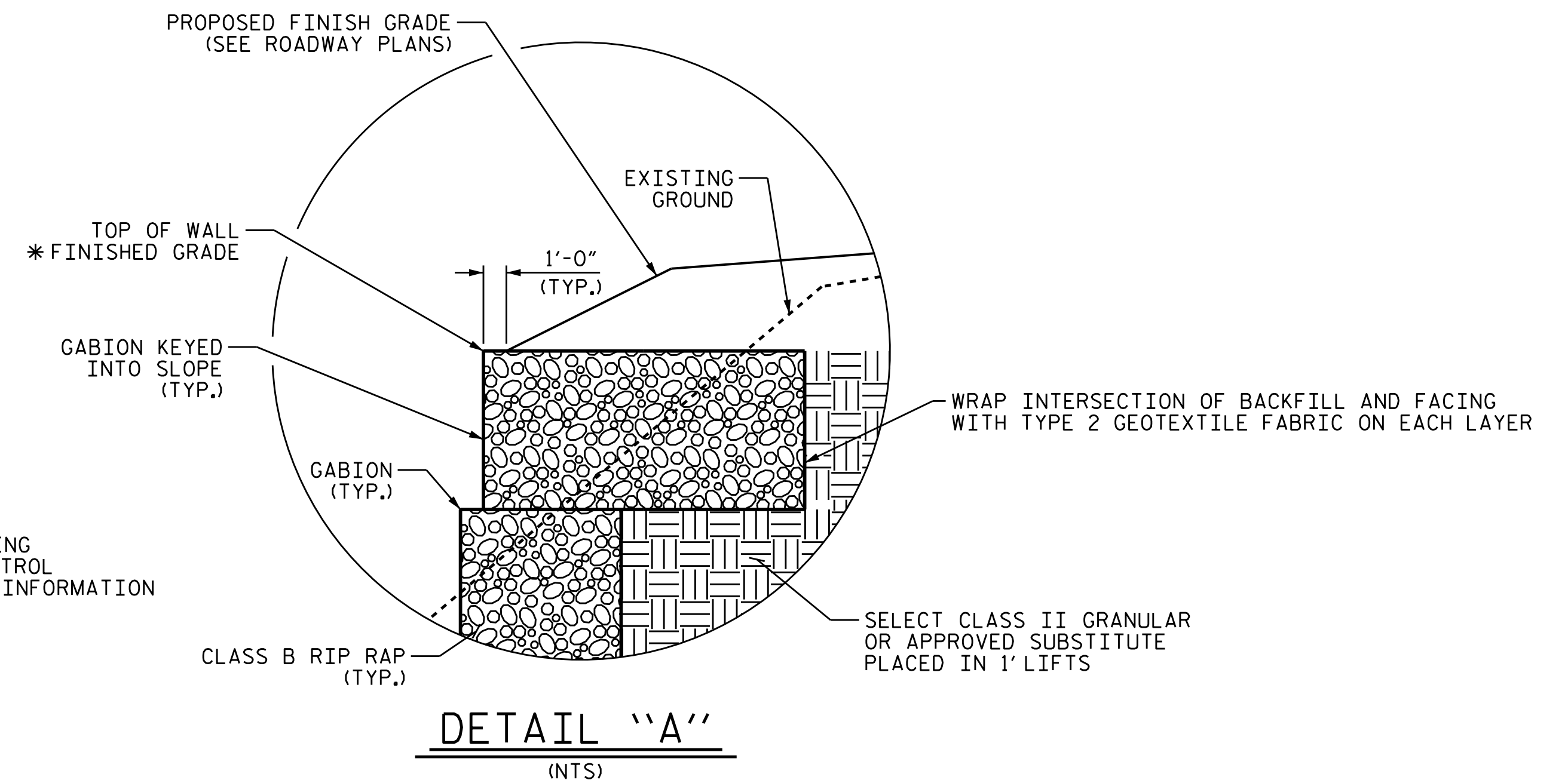
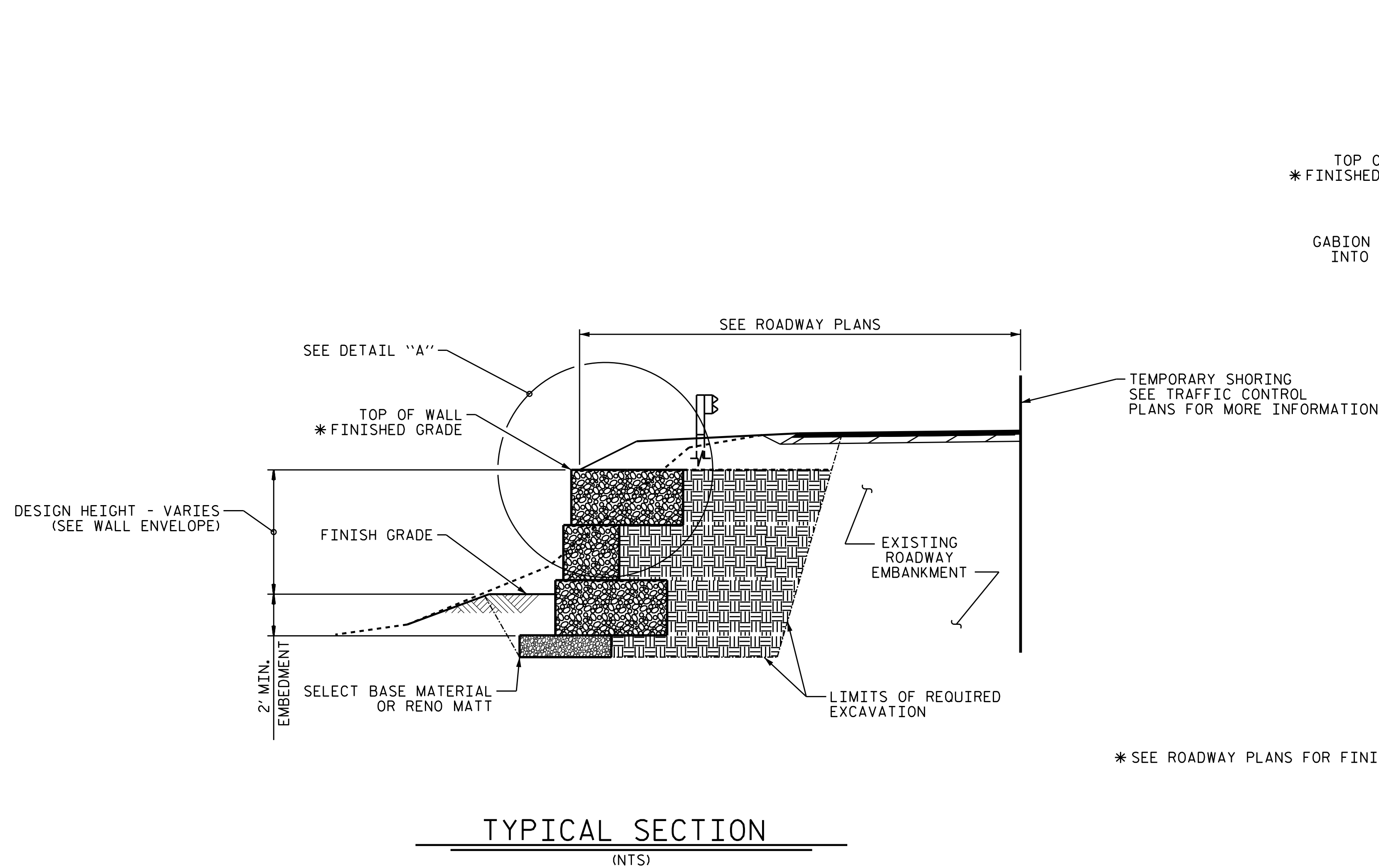
DESIGN GABION RETAINING WALL FOR A HEIGHT EQUAL TO DESIGN HEIGHT AND EMBEDMENT.

MINIMUM SERVICE LIFE = 75 YEARS

ALLOWABLE BEARING CAPACITY = 2000 PSF.

IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT ( $\gamma$ ) LB/CF	FRICTION ANGLE ( $\phi$ ) DEGREES	COHESION ( $c$ ) LB/SF
BACKFILL	120	32	0
FOUNDATION	110	28	0



\* SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.

PROJECT NO. 17BP.14.R.86  
CHEROKEE COUNTY  
 STATION: 10+55.00-L- TO  
11+20.00-L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

### GABION RETAINING WALL DETAILS

DESIGN ENGINEER OF RECORD T.M. HARRIS	DATE 09/28/2018
DRAWN BY : M.J. OSTRISHKO	DATE : 01/2015
CHECKED BY : N.A. PIERCE	DATE : 01/2015

**wsp**  
 WSP USA Inc.  
 434 FAYETTEVILLE STREET  
 SUITE 1500  
 RALEIGH, NC 27601  
 TEL: 1.919.836.4040  
 LICENSE NO. F-0165

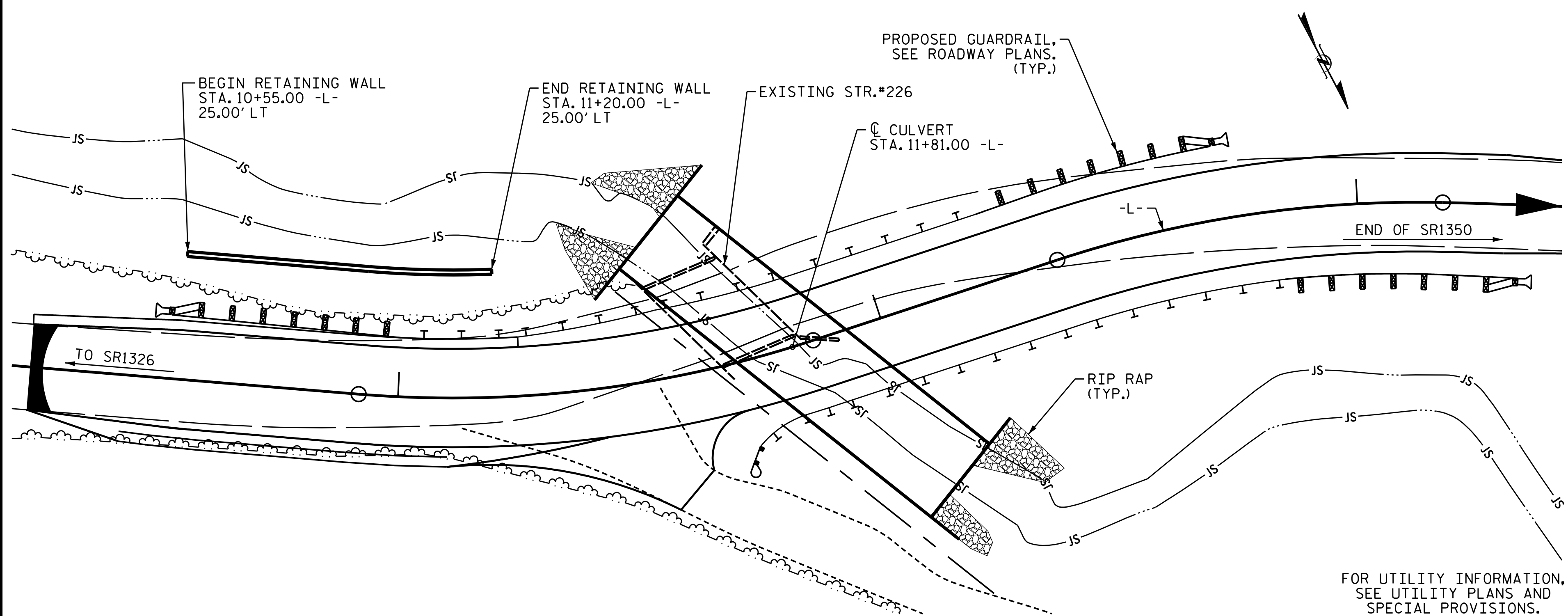
DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

Designed by  
*Thomas M. Harris*  
 REGISTERED PROFESSIONAL ENGINEER  
 STATE OF NORTH CAROLINA  
 SEAL 19299  
 THOMAS M. HARRIS

9/28/2018 7:17:50 AM PDT

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

BM2: 8" SPIKE SET IN BASE OF MAPLE TREES, 32' LEFT OF STA. 11+40.36-L-, EL. =1788.41



LOCATION SKETCH

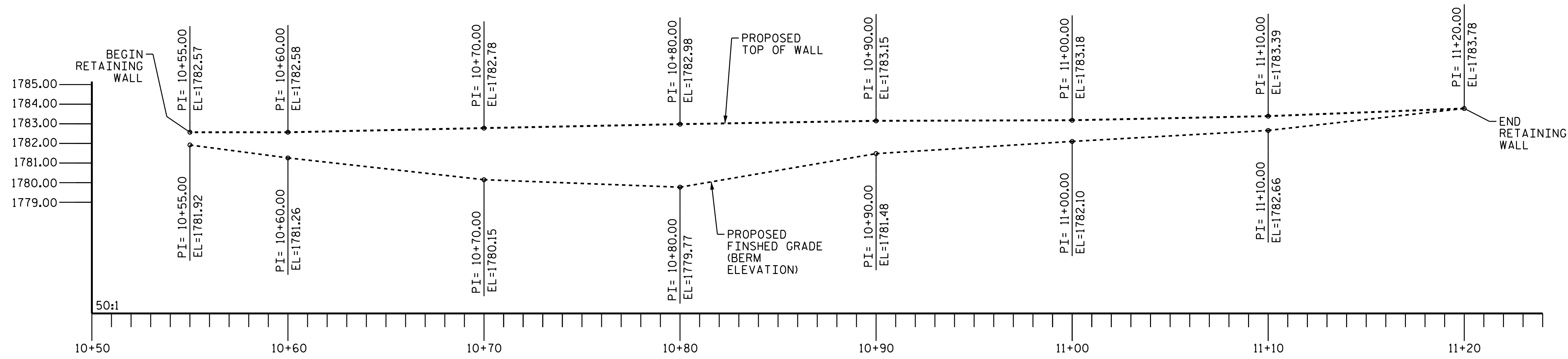
NOTES

- FOR GABION RETAINING WALL DETAILS, SEE SHEET 1 OF 2.
- \* ELEVATION AT PROPOSED FINISHED GRADE AND EXPOSED WALL.
- \*\* DESIGN WALL HEIGHT "H" DOES NOT INCLUDE EMBEDMENT DEPTH.

RETAINING WALL ELEVATIONS				
-L- STATION	OFFSET FROM C (LEFT)	ELEV. AT TOP OF WALL	* PROPOSED BERM ELEVATION	** DESIGN WALL HEIGHT "H"
10+55.00	25.00'	1782.57	1781.92	0.65
10+60.00	25.00'	1782.57	1781.26	1.31
10+70.00	25.00'	1782.78	1780.15	2.63
10+80.00	25.00'	1782.98	1779.77	3.21
10+90.00	25.00'	1783.15	1781.48	1.67
11+00.00	25.00'	1783.18	1782.10	1.08
11+10.00	25.00'	1783.39	1782.66	0.73
11+20.00	25.00'	1783.78	1783.78	0.00

TOTAL STRUCTURE QUANTITIES	
GABION RETAINING WALL	105.0 SQ.FT.

NOTE: SQ.FT. IN TOTAL STRUCTURE QUANTITIES DOES NOT INCLUDE EMBEDMENT DEPTH



WALL ENVELOPE

PROJECT NO. 17BP.14.R.86  
 CHEROKEE COUNTY  
 STATION: 10+55.00 -L- TO 11+20.00 -L-  
 SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

GABION RETAINING WALL  
 WALL ENVELOPE

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

DESIGN ENGINEER OF RECORD  
 T.M. HARRIS  
 DATE: 09/28/2018

DRAWN BY: M.J. OSTRISHKO  
 CHECKED BY: N.A. PIERCE  
 DATE: 01/2015

**wsp**  
 WSP USA Inc.  
 434 FAYETTEVILLE STREET  
 SUITE 1500  
 RALEIGH, NC 27601  
 TEL: 1.919.836.4040  
 LICENSE NO. F-0165

DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

Seal of Thomas M. Harris, Professional Engineer, State of North Carolina, License No. 19299

9/28/2018 7:17:50 AM PDT

## STANDARD NOTES

### DESIGN DATA:

SPECIFICATIONS	- - - - -	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	- - - - -	SEE PLANS
IMPACT ALLOWANCE	- - - - -	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF STRUCTURAL STEEL - AASHTO M270 GRADE 36	- -	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	- -	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	- -	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION - GRADE 60	- - -	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	- - - - -	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	- - - - -	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR UNTREATED EXTREME FIBER STRESS	- - -	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	- - - - -	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	- - - - -	30 LBS. PER CU. FT. (MINIMUM)

### MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2018 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N.C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

### CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

### CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED  $\frac{3}{4}$ " WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO  $1\frac{1}{2}$ " RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A  $\frac{1}{4}$ " FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A  $\frac{1}{4}$ " RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

### DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

### ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

### REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

### STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE  $\frac{7}{8}$ "  $\emptyset$  SHEAR STUDS FOR THE  $\frac{3}{4}$ "  $\emptyset$  STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 -  $\frac{7}{8}$ "  $\emptyset$  STUDS FOR 4 -  $\frac{3}{4}$ "  $\emptyset$  STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF  $\frac{7}{8}$ "  $\emptyset$  STUDS ALONG THE BEAM AS SHOWN FOR  $\frac{3}{4}$ "  $\emptyset$  STUDS BASED ON THE RATIO OF 3 -  $\frac{7}{8}$ "  $\emptyset$  STUDS FOR 4 -  $\frac{3}{4}$ "  $\emptyset$  STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST  $\frac{3}{16}$ " IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY  $\frac{1}{16}$ " INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

### HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

### SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

# ENGLISH

JANUARY, 1990

STD. NO. SN