

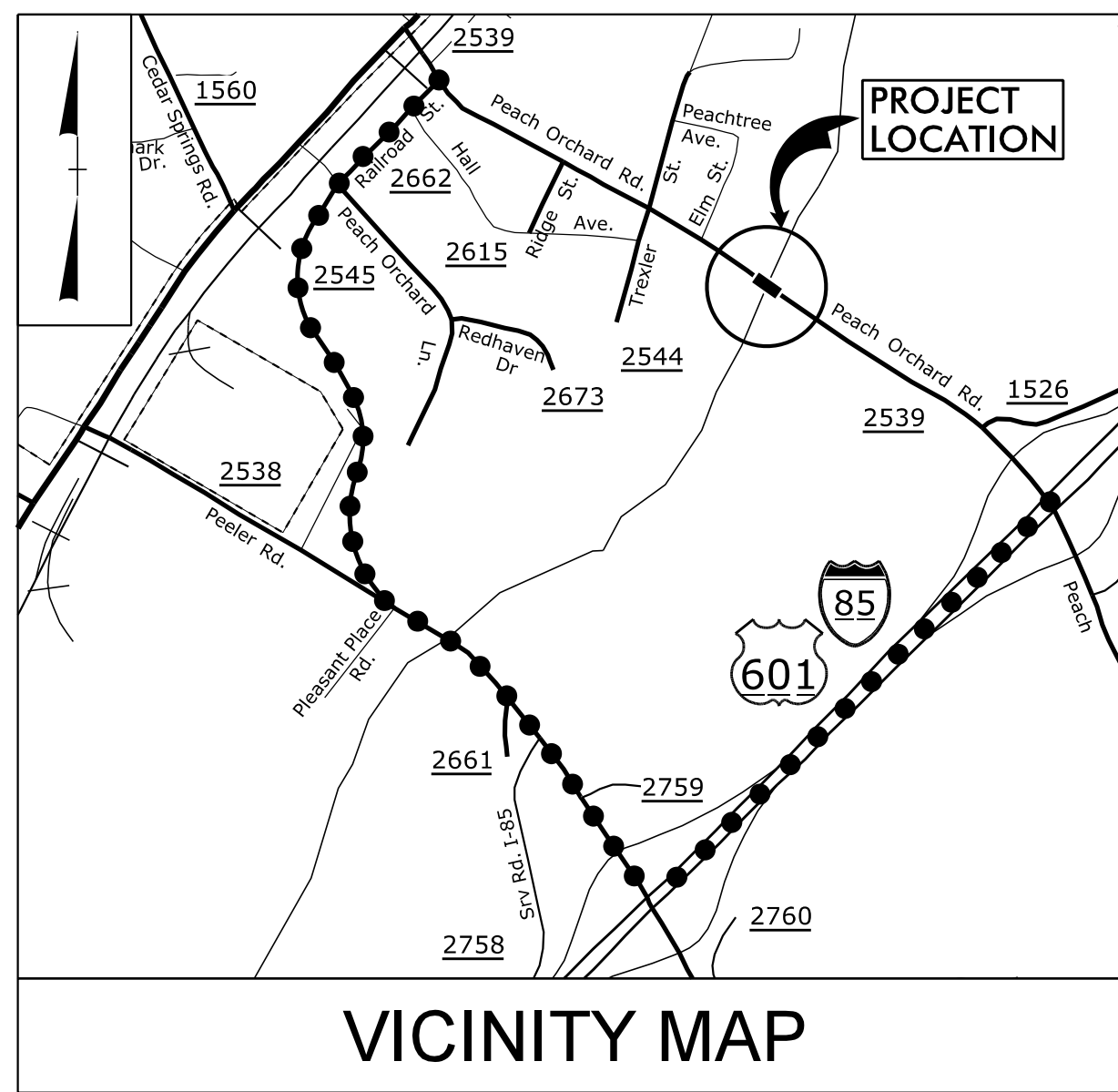
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with their signature on that page.**

**This file or an individual page  
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09/08/19

See Sheet 1-A For Index of Sheets  
See Sheet 1-B For Symbology Sheet



●-●-●-● DETOUR ROUTE

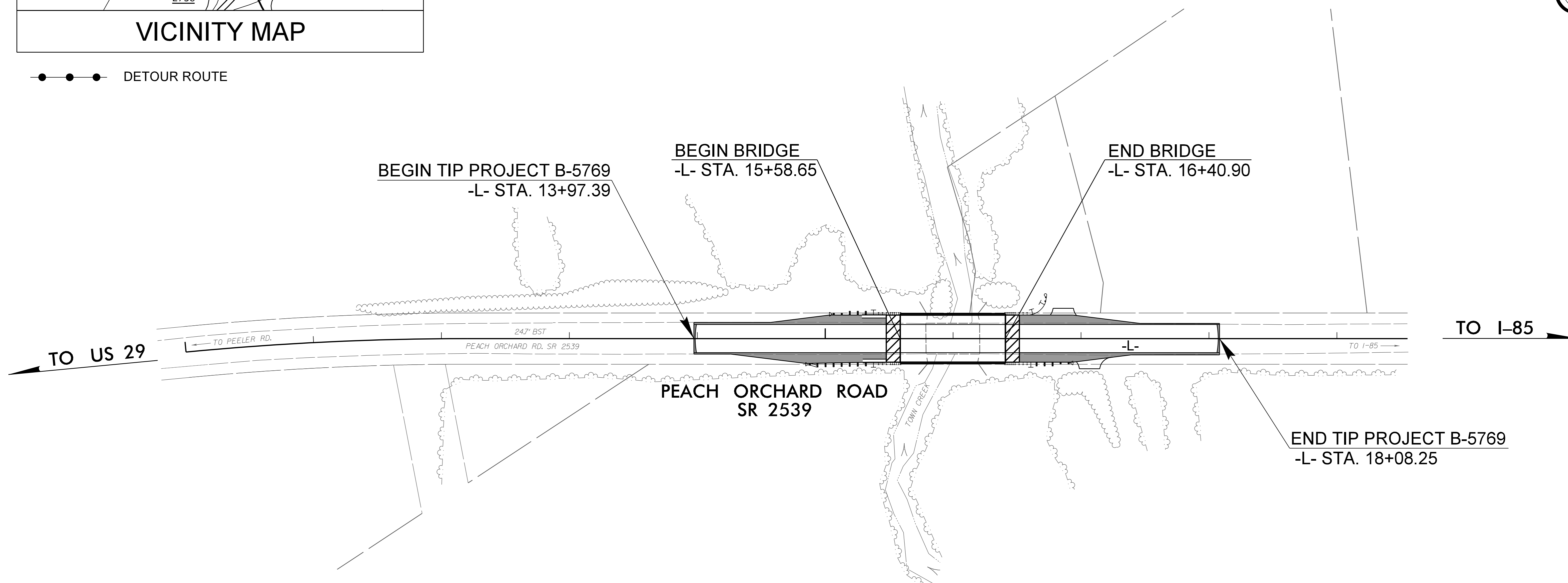
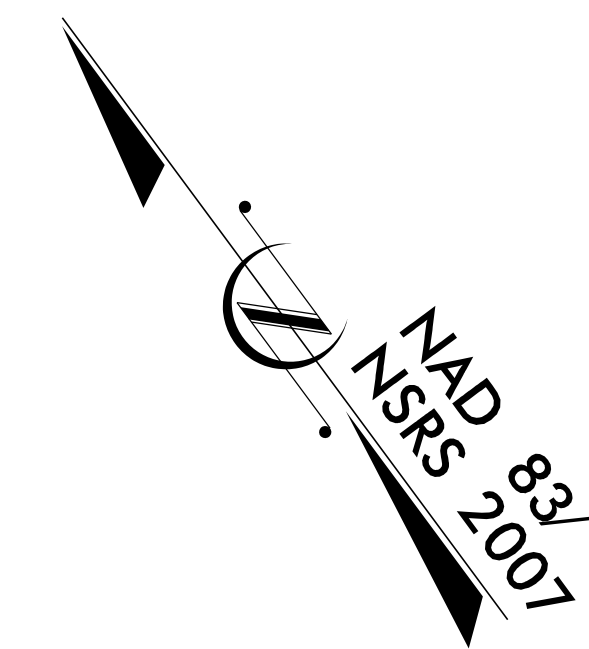
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# ROWAN COUNTY

**LOCATION: REPLACE EXISTING BRIDGE NO. 200  
OVER TOWN CREEK ON SR 2539  
(PEACH ORCHARD RD)**

**TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE**

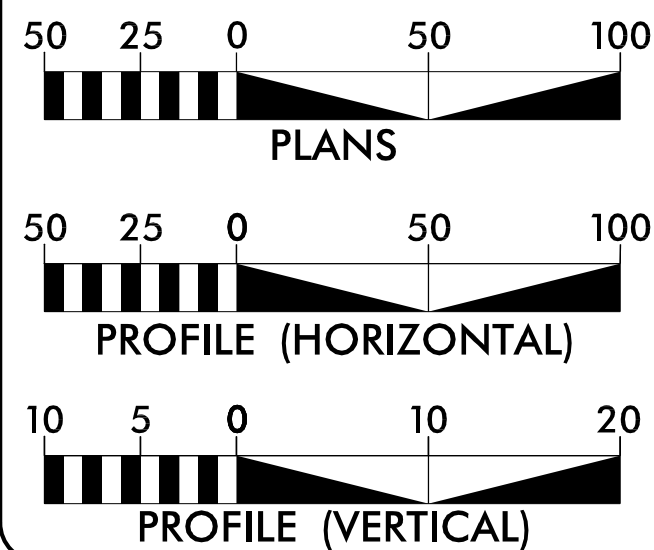
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	<b>B-5769</b>	<b>1</b>	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
45725.1.1	N/A	PE	
45725.2.1	N/A	RW UTIL	
45725.3.1	N/A	CONST.	



NOTE:  
1. THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

**GRAPHIC SCALES**



**DESIGN DATA**

ADT (2014) = 3500  
V = 45 MPH  
\* SUB-REGIONAL TIER GUIDELINES

**PROJECT LENGTH**

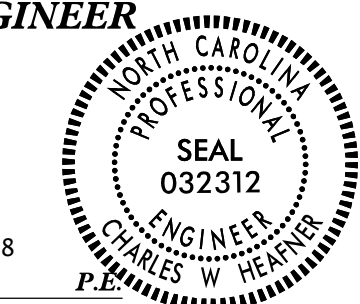
LENGTH ROADWAY TIP PROJECT B-5769 = 0.062 MI  
LENGTH STRUCTURE TIP PROJECT B-5769 = 0.016 MI  
TOTAL LENGTH TIP PROJECT B-5769 = 0.078 MI



FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
2012 STANDARD SPECIFICATIONS  
**RIGHT OF WAY DATE:** JUNE 30, 2017  
**LETTING DATE:** MAY 23, 2018  
**NC DOT CONTACT:** MATTHEW JONES, PE  
DIVISION 9 BRIDGE PROGRAM MANAGER

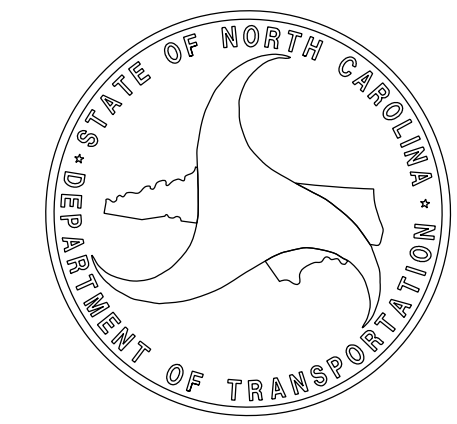
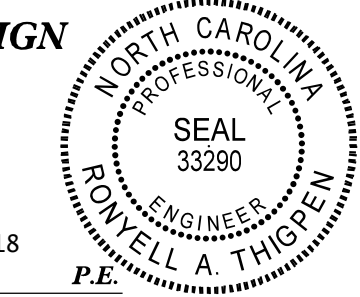
**HYDRAULICS ENGINEER**

DocuSigned by:  
*Charles Heafner* 2/3/2018  
SIGNATURE: [Signature]



**ROADWAY DESIGN ENGINEER**

DocuSigned by:  
*Royell Thigpen* 2/6/2018  
SIGNATURE: [Signature]



**TIP PROJECT: B-5769**

**CONTRACT: DI00198**

SHEET NUMBER	INDEX OF SHEETS:	SHEET
1	TITLE SHEET	
1A	INDEX OF SHEETS, GENERAL NOTES AND LIST OF STANDARD DRAWINGS	
1B	CONVENTIONAL SYMBOLS	
1C-1 THRU 1C-2	SURVEY CONTROL SHEETS	
2A-1	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS	
3B-1	GUARDRAIL SUMMARY, SUMMARY OF EARTHWORK, SHOULDER BERM GUTTER SUMMARY, PAVEMENT REMOVAL SUMMARY AND EXPRESSWAY GUTTER SUMMARY	
3D-1	LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)	
4	PLAN AND PROFILE SHEET	
TMP-1 THRU TMP-5	TRAFFIC MANAGEMENT PLANS	
EC-1 THRU EC-4	EROSION CONTROL PLANS	
X-1 THRU X-6	CROSS-SECTIONS	
S-1 THRU S-15	STRUCTURE PLANS	
SN	STRUCTURE STANDARD NOTES	
		EFF. 01-16-2018
DIVISION 2 - EARTHWORK		REV.
200.03	Method of Clearing - Method III	
225.02	Guide for Grading Subgrade - Secondary and Local	
225.04	Method of Obtaining Superelevation - Two Lane Pavement	
DIVISION 3 - PIPE CULVERTS		
300.01	Method of Pipe Installation	
DIVISION 4 - MAJOR STRUCTURES		
422.02	Bridge Approach Fills - Type II Modified Approach Fill	
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS		
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I	
DIVISION 8 - INCIDENTALS		
806.01	Concrete Right-of-Way Marker	
806.02	Granite Right-of-Way Marker	
815.03	Pipe Underdrain and Blind Drain	
840.00	Concrete Base Pad for Drainage Structures	
840.25	Anchorage for Frames - Brick or Concrete or Precast	
840.29	Frames and Narrow Slot Flat Grates	
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates	
846.01	Concrete Curb, Gutter and Curb & Gutter	
846.04	Drop Inlet Installation in Shoulder Berm Gutter	
862.01	Guardrail Placement	
862.02	Guardrail Installation	
862.03	Structure Anchor Units	
876.02	Guide for Rip Rap at Pipe Outlets	

## GENERAL NOTES:

2018 SPECIFICATIONS  
EFFECTIVE: 01-16-2018  
REVISED:

## GRADE LINE:

## GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

## CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

## SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

## SIDE ROADS:

THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

## UNDERDRAINS:

UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 AT LOCATIONS DIRECTED BY THE ENGINEER.

## END BENTS:

THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

## UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE: WATER AND SEWER- SALISBURY-ROWAN UTILITIES  
POWER - DUKE ENERGY PROGRESS-DISTRIBUTION  
COMMUNICATIONS - (NCDOT)  
TELEPHONE - AT&T-DISTRIBUTION  
CATV - TWC/CHARTER/SPECTRUM

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS EXCEPT AS NOTED ON PLANS.

## RIGHT-OF-WAY MARKERS:

ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY CONTRACT.



12/05/11

Note: Not to Scale

\*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

Table with 2 columns: PROJECT REFERENCE NO. (B-5769) and SHEET NO. (I-B)

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

Table listing symbols for State Line, County Line, Township Line, City Line, Reservation Line, Property Line, Existing Iron Pin, Property Corner, Property Monument, Parcel/Sequence Number, Existing Fence Line, Proposed Woven Wire Fence, Proposed Chain Link Fence, Proposed Barbed Wire Fence, Existing Wetland Boundary, Proposed Wetland Boundary, Existing Endangered Animal Boundary, Existing Endangered Plant Boundary, Known Soil Contamination: Area or Site, Potential Soil Contamination: Area or Site

BUILDINGS AND OTHER CULTURE:

Table listing symbols for Gas Pump Vent or U/G Tank Cap, Sign, Well, Small Mine, Foundation, Area Outline, Cemetery, Building, School, Church, Dam

HYDROLOGY:

Table listing symbols for Stream or Body of Water, Hydro, Pool or Reservoir, Jurisdictional Stream, Buffer Zone 1, Buffer Zone 2, Flow Arrow, Disappearing Stream, Spring, Wetland, Proposed Lateral, Tail, Head Ditch, False Sump

RAILROADS:

Table listing symbols for Standard Gauge, RR Signal Milepost, Switch, RR Abandoned, RR Dismantled

RIGHT OF WAY:

Table listing symbols for Baseline Control Point, Existing Right of Way Marker, Existing Right of Way Line, Proposed Right of Way Line, Proposed Right of Way Line with Iron Pin and Cap Marker, Proposed Right of Way Line with Concrete or Granite R/W Marker, Proposed Control of Access Line with Concrete C/A Marker, Existing Control of Access, Proposed Control of Access, Existing Easement Line, Proposed Temporary Construction Easement, Proposed Temporary Drainage Easement, Proposed Permanent Drainage Easement, Proposed Permanent Drainage / Utility Easement, Proposed Permanent Utility Easement, Proposed Temporary Utility Easement, Proposed Aerial Utility Easement, Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

Table listing symbols for Existing Edge of Pavement, Existing Curb, Proposed Slope Stakes Cut, Proposed Slope Stakes Fill, Proposed Curb Ramp, Existing Metal Guardrail, Proposed Guardrail, Existing Cable Guiderail, Proposed Cable Guiderail, Equality Symbol, Pavement Removal, VEGETATION: Single Tree, Single Shrub, Hedge, Woods Line

Table listing symbols for Orchard, Vineyard

EXISTING STRUCTURES:

Table listing symbols for MAJOR: Bridge, Tunnel or Box Culvert, Bridge Wing Wall, Head Wall and End Wall; MINOR: Head and End Wall, Pipe Culvert, Footbridge, Drainage Box: Catch Basin, DI or JB, Paved Ditch Gutter, Storm Sewer Manhole, Storm Sewer

UTILITIES:

Table listing symbols for POWER: Existing Power Pole, Proposed Power Pole, Existing Joint Use Pole, Proposed Joint Use Pole, Power Manhole, Power Line Tower, Power Transformer, U/G Power Cable Hand Hole, H-Frame Pole, Recorded U/G Power Line, Designated U/G Power Line (S.U.E.\*); TELEPHONE: Existing Telephone Pole, Proposed Telephone Pole, Telephone Manhole, Telephone Booth, Telephone Pedestal, Telephone Cell Tower, U/G Telephone Cable Hand Hole, Recorded U/G Telephone Cable, Designated U/G Telephone Cable (S.U.E.\*), Recorded U/G Telephone Conduit, Designated U/G Telephone Conduit (S.U.E.\*), Recorded U/G Fiber Optics Cable, Designated U/G Fiber Optics Cable (S.U.E.\*)

WATER:

Table listing symbols for Water Manhole, Water Meter, Water Valve, Water Hydrant, Recorded U/G Water Line, Designated U/G Water Line (S.U.E.\*), Above Ground Water Line

TV:

Table listing symbols for TV Satellite Dish, TV Pedestal, TV Tower, U/G TV Cable Hand Hole, Recorded U/G TV Cable, Designated U/G TV Cable (S.U.E.\*), Recorded U/G Fiber Optic Cable, Designated U/G Fiber Optic Cable (S.U.E.\*)

GAS:

Table listing symbols for Gas Valve, Gas Meter, Recorded U/G Gas Line, Designated U/G Gas Line (S.U.E.\*), Above Ground Gas Line

SANITARY SEWER:

Table listing symbols for Sanitary Sewer Manhole, Sanitary Sewer Cleanout, U/G Sanitary Sewer Line, Above Ground Sanitary Sewer, Recorded SS Forced Main Line, Designated SS Forced Main Line (S.U.E.\*)

MISCELLANEOUS:

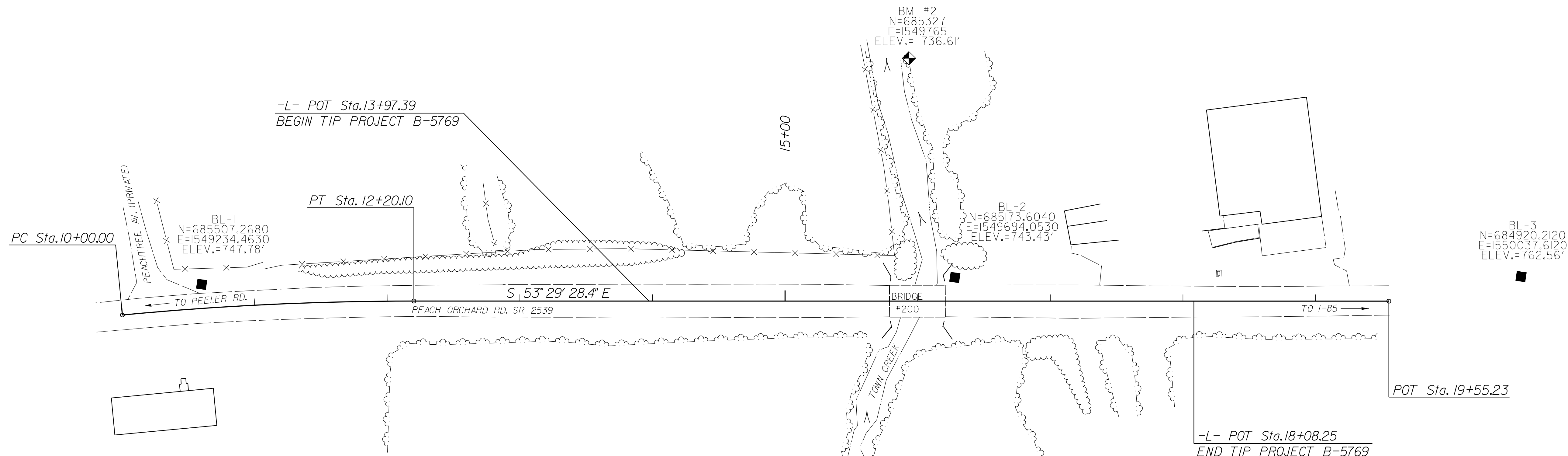
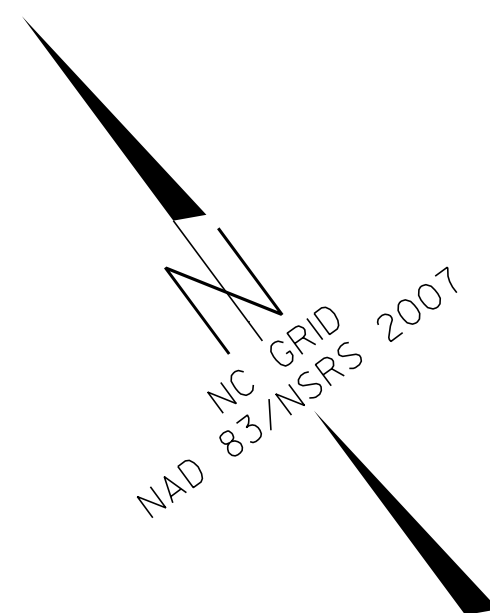
Table listing symbols for Utility Pole, Utility Pole with Base, Utility Located Object, Utility Traffic Signal Box, Utility Unknown U/G Line, U/G Tank; Water, Gas, Oil, Underground Storage Tank, Approx. Loc., A/G Tank; Water, Gas, Oil, Geoenvironmental Boring, U/G Test Hole (S.U.E.\*), Abandoned According to Utility Records, End of Information

# SURVEY CONTROL SHEET

PROJECT REFERENCE NO. B5769	SHEET NO. 1C-1
<b>Location and Surveys</b>	

PROJECT SURVEYOR

6/2/99



BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1			685507.2680	1549234.4630	747.78	10+61.19	18.04 LT
2			685173.6040	1549694.0530	743.43	16+27.99	17.75 LT
3			684920.2120	1550037.6120	762.56		OUTSIDE PROJECT LIMITS

```

.....
BM#1      ELEVATION = 762.56'
N 684920      E 1550038
L STATION 19+55.00
S 63°59'53.8" E  DIST 101.35'
REBAR WITH ALUMINUM CAP STAMPED
*79-0200-3" (SET FLUSH WITH THE GROUND)
.....
BM#2      ELEVATION = 736.61'
N 685327      E 1549765
L STATION 15+94.00 183' LEFT
R/R SPIKE SET IN ROOT OF 36" OAK
.....
    
```

**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "790200-2" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 685173.604(ft) EASTING: 1549694.053(ft) ELEVATION: 743.43(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99986281

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "790200-2" TO -L- STATION 10+00.00 IS N 56° 04' 13.87" W 628.29'

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
VERTICAL DATUM USED IS NAVD 88

**NOTES:**

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

12:10 PM 6/2/2018 i:\c-1.dgn

6/27/99

# SURVEY CONTROL SHEET

PROJECT REFERENCE NO. B5769	SHEET NO. 1C-2
<b>Location and Surveys</b>	

PROJECT SURVEYOR

TYPE	STATION	NORTH	EAST
PC	10+00.00	685524.2978	1549172.7452
PT	12+20.10	685402.0066	1549355.6477
POT	19+55.23	684964.6436	1549946.5205

### ROW MARKER CONCRETE OR GRANITE-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	13+97.39	20.00	685280.4572	1549486.2431
L	13+97.39	53.00	685253.9329	1549466.6099
L	13+97.39	-20.00	685312.6078	1549510.0409
L	13+97.39	-55.00	685340.7396	1549530.8640
L	16+80.00	-55.00	685172.6000	1549758.0190
L	17+25.00	53.00	685059.0207	1549729.9343
L	17+25.00	30.00	685077.5074	1549743.6180
L	17+28.15	-35.00	685127.8762	1549784.8239
L	18+08.25	30.00	685027.9761	1549810.5342
L	18+08.25	20.00	685036.0138	1549816.4837
L	18+08.25	-35.00	685080.2209	1549849.2057
L	18+08.25	-20.00	685068.1644	1549840.2815

### ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	12+05.84	20.00	685394.3088	1549332.3570
L	12+09.01	47.22	685370.4951	1549318.8078
L	12+07.79	-35.91	685438.2829	1549366.9408
L	12+09.06	-20.00	685424.6863	1549358.5791
L	12+15.94	20.00	685388.3862	1549340.4259
L	12+17.17	46.87	685366.0418	1549325.4538
L	13+97.39	-55.00	685340.7396	1549530.8640
L	14+26.34	-73.73	685338.5685	1549565.2791
L	14+36.33	-74.19	685332.9947	1549573.5824
L	14+36.81	-63.73	685324.3018	1549567.7451
L	15+36.00	53.00	685171.4655	1549578.0226
L	15+36.00	64.00	685162.6241	1549571.4782
L	15+69.00	64.00	685142.9909	1549598.0024
L	15+69.00	53.00	685151.8323	1549604.5468
L	16+68.41	-56.72	685180.8779	1549749.7266
L	16+69.31	-68.75	685190.0118	1549757.6072
L	16+79.48	-67.99	685183.3503	1549765.3294
L	18+00.44	30.00	685032.6266	1549804.2515
L	18+09.73	46.79	685013.6064	1549801.7301
L	18+10.36	34.41	685023.1756	1549809.5993
L	18+19.71	47.30	685007.2548	1549809.4539
L	18+20.34	35.00	685016.7639	1549817.2737
L	18+57.22	20.00	685006.8807	1549855.8422

### DATUM DESCRIPTION

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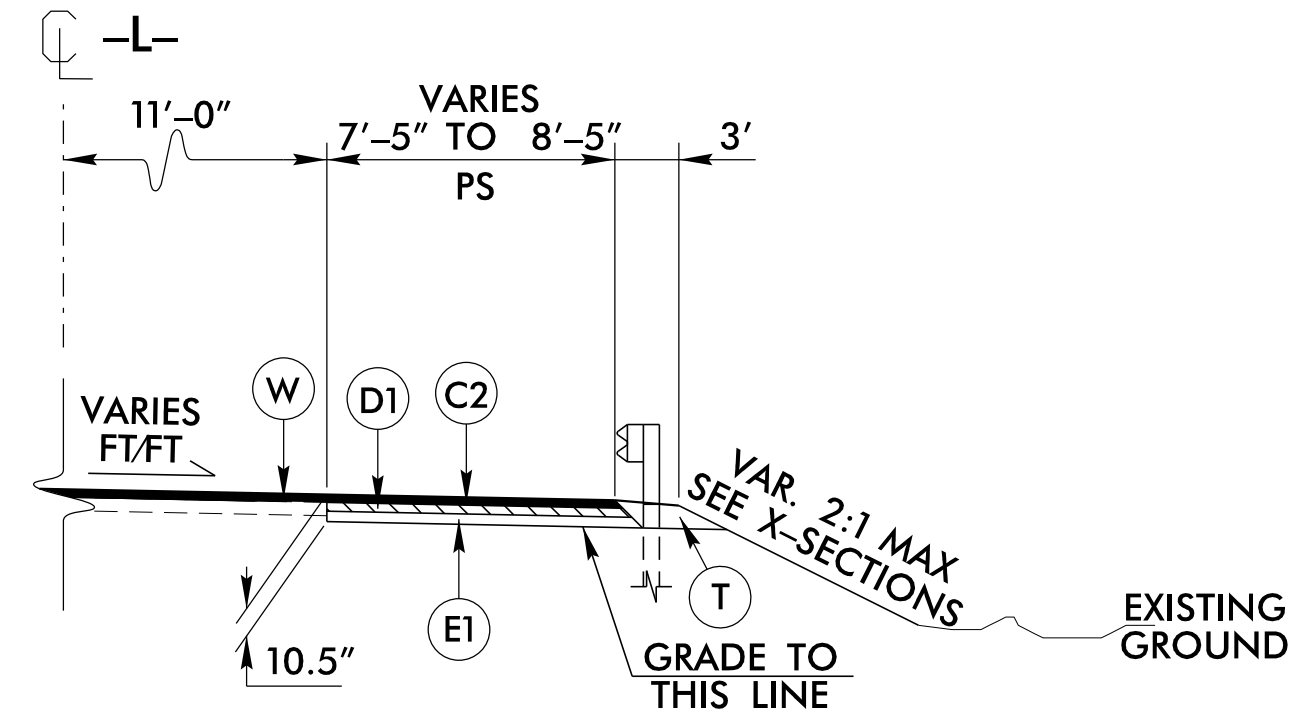
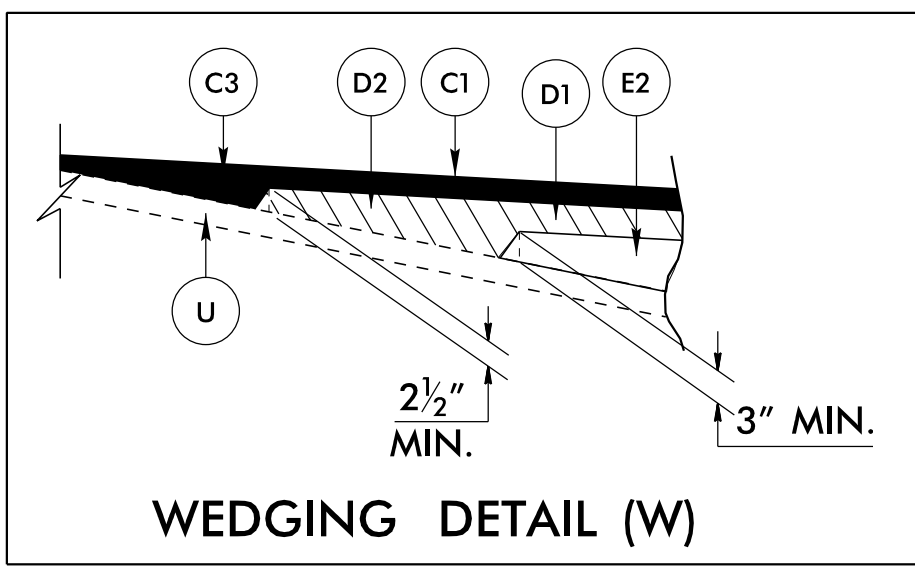
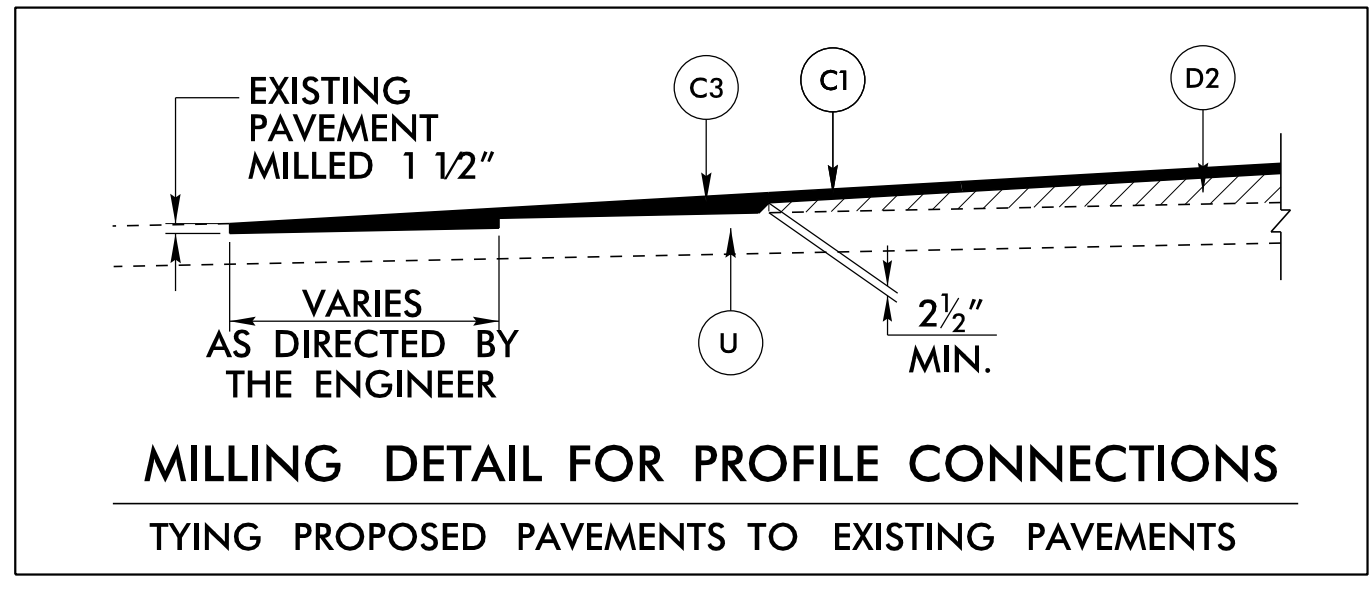
#### NOTES:

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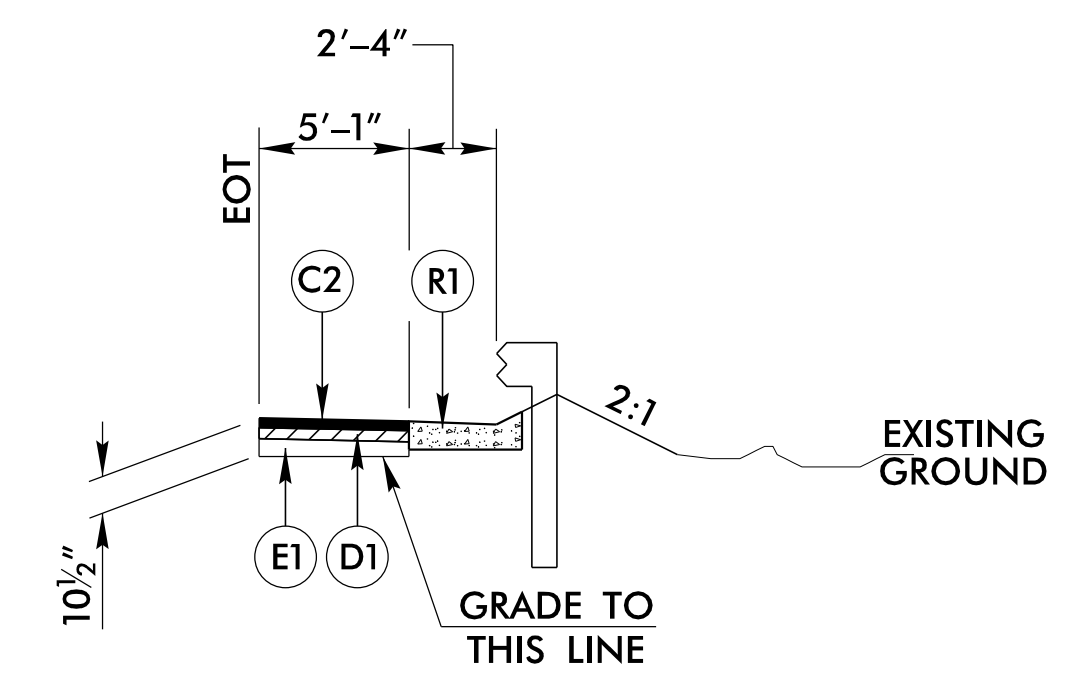
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8/17/99

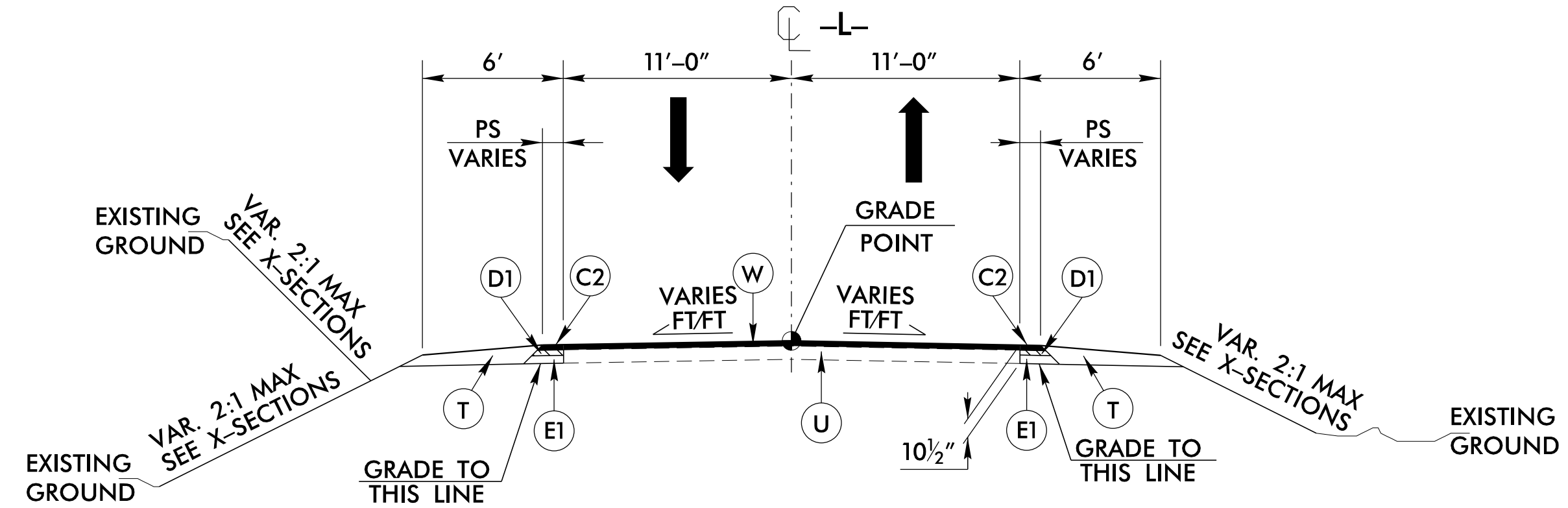
PROJECT REFERENCE NO. B-5769	SHEET NO. 2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	
<p><b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b></p>	
PLANS PREPARED BY:	
<p>WSP USA 434 FAYETTEVILLE STREET SUITE 1500 RALEIGH, NC 27601 TEL: 1.919.836.4040 FAX: 1.919.836.4099 LICENSE NO. F-0165</p>	



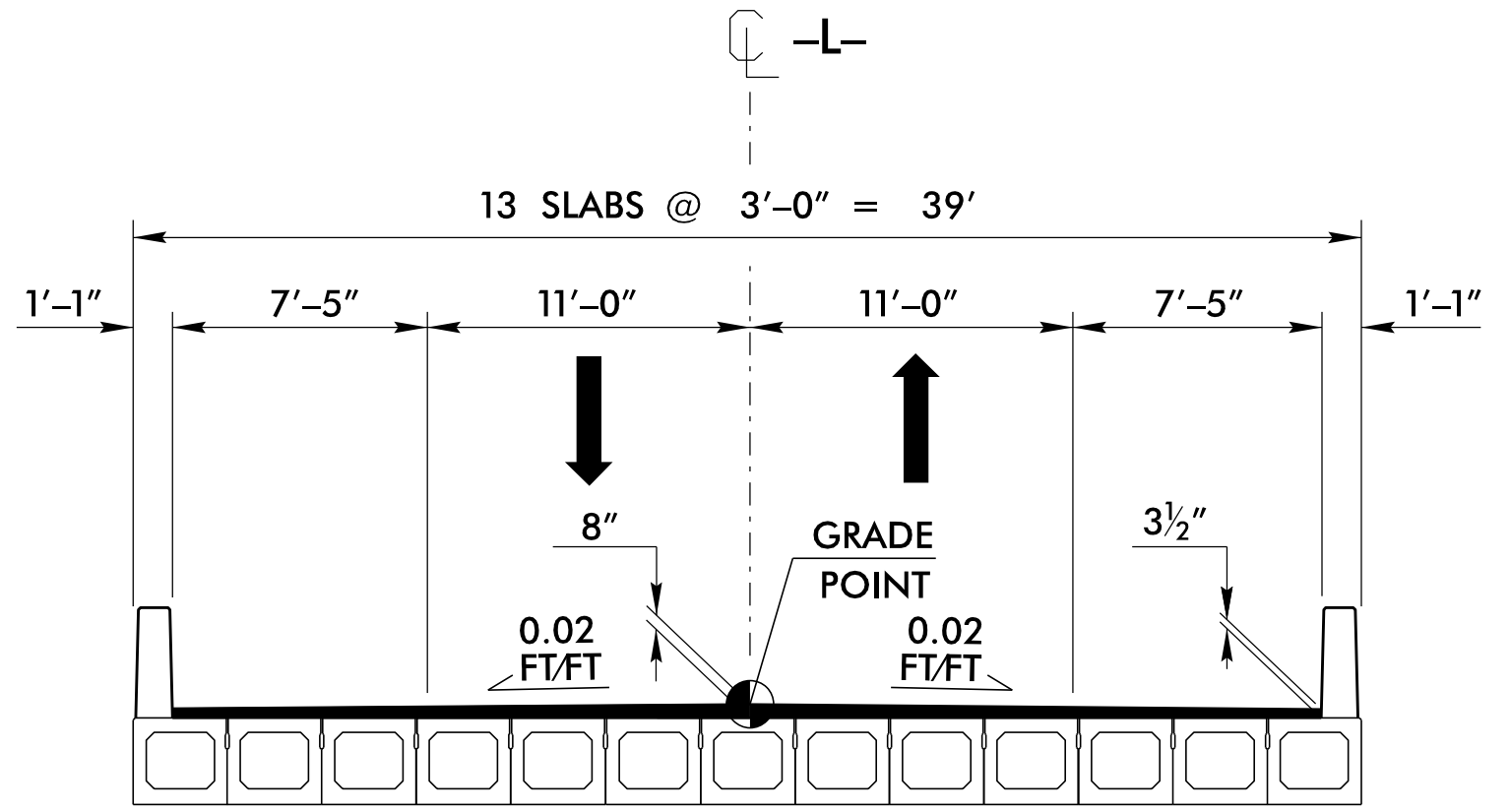
**DETAIL A**  
(USE IN CONJUNCTION WITH TYPICAL SECTION 1)  
 -L- STA. 15+03.27 TO 15+28.67 (LT)  
 -L- STA. 14+48.78 TO 15+29.35 (RT)  
 -L- STA. 16+51.78 TO 16+93.73 (LT)  
 -L- STA. 16+51.78 TO 16+93.73 (RT)



**DETAIL B**  
(USE IN CONJUNCTION WITH TYPICAL SECTION 1)  
 -L- STA. 15+28.67 TO 15+47.78 (LT)  
 -L- STA. 15+29.35 TO 15+47.78 (RT)



**TYPICAL SECTION NO. 1**  
 -L- STA. 13+97.39 TO STA. 15+58.65 (BEGIN BRIDGE)  
 -L- STA. 16+40.90 (END BRIDGE) TO STA. 18+08.25



**BRIDGE TYPICAL SECTION**  
 -L- STA. 15+58.65 TO STA. 16+40.90

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C AT AN AVERAGE RATE OF 168LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C AT AN AVERAGE RATE OF 168LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C AT AN AVERAGE RATE OF 112LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1" IN DEPTH OR GREATER THAN 1 1/2" IN DEPTH.
D1	PROPOSED APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C AT AN AVERAGE RATE OF 285 LBS. PER SQ. YARD.
D2	PROPOSED VARIABLE DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C AT AN AVERAGE RATE OF 114 LBS. PER SQ. YARD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2" OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 4" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	WEDGING DETAIL (SEE DETAIL THIS SHEET).

NOTES:  
 1. ALL SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.

REVISIONS

10/01/01 AM  
 10/01/01 AM  
 10/01/01 AM

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
<i>B-5769</i>	<i>3B-1</i>

"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**

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS										IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS					
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH	TRAILING	APPROACH	TRAILING	XI	GREU TL-2	GREU 350	M-350	III	CAT-1	VI MOD	BIC	AT-1	EA	G	NG										
-L-	15+03.27	15+58.65	LT.	55.38'				15+03.15	3'-11"	6'-11"		25'		0.5'		/																				
-L-	14+83.65	15+58.65	RT.	75'				14+83.65	3'-11"	6'-11"	50'		1'			/																				
-L-	16+40.90	16+72.90	LT.	25'	18.75'			16+72.90	3'-11"	6'-11"						/																				
-L-	16+40.90	16+93.73	RT.	52.83'				16+93.90	3'-11"	6'-11"		25'		0.5'		/																				
	LESS ANCHOR DEDUCTIONS																																			
	TYPE III	4 @ 18.75'	=	75'																																
	GREU 350	1 @ 50.00'	=	50'																																
	GREU TL-2	2 @ 25.00'	=	50'																																
	AT-1	1 @ 6.25'	=	6.25'																																
		TOTAL		26.96'	18.75'											2	1		4																	
		SAY		37.5'	18.75'																															

**SUMMARY OF EARTHWORK**

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
-L- 13+97.39	-L- 15+58.65	56	350	294	0
-L- 16+40.90	-L- 18+08.25	83	28	0	55
SUBTOTALS:		139	378	294	55
WASTE TO REPLACE BORROW				-55	-55
PROJECT TOTALS:		139	378	239	0
SAY:		140		240	

**SHOULDER BERM GUTTER SUMMARY**

SURVEY LINE	STATION	STATION	LENGTH
-L- LT	15+28.67	15+47.78	19.1'
-L- RT	15+29.35	15+47.78	18.4'
TOTAL:			37.5'
SAY:			38'

**PAVEMENT REMOVAL SUMMARY**

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD <sup>3</sup>
-L-	15+47.78	15+78.26	CL	81
-L-	16+21.27	16+51.78	CL	82
TOTAL:				163
SAY:				165

**NOTE:**

- 1) APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, SHOULDER BORROW, FINE GRADING, CLEARING AND GRUBBING, BREAKING OF EXISTING PAVEMENT, AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING".
- 2) EARTHWORK QUANTITIES EXCLUDE VOLUMES FOR "UNCLASSIFIED BRIDGE EXCAVATION".



STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

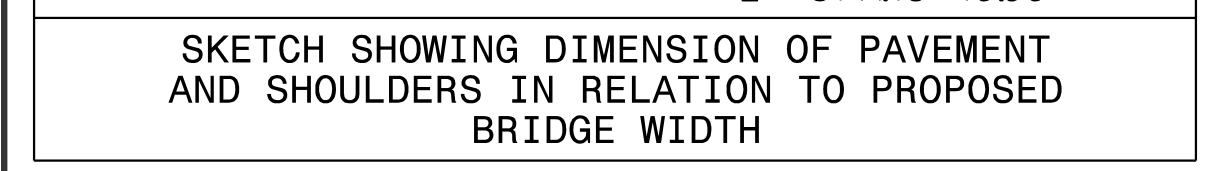
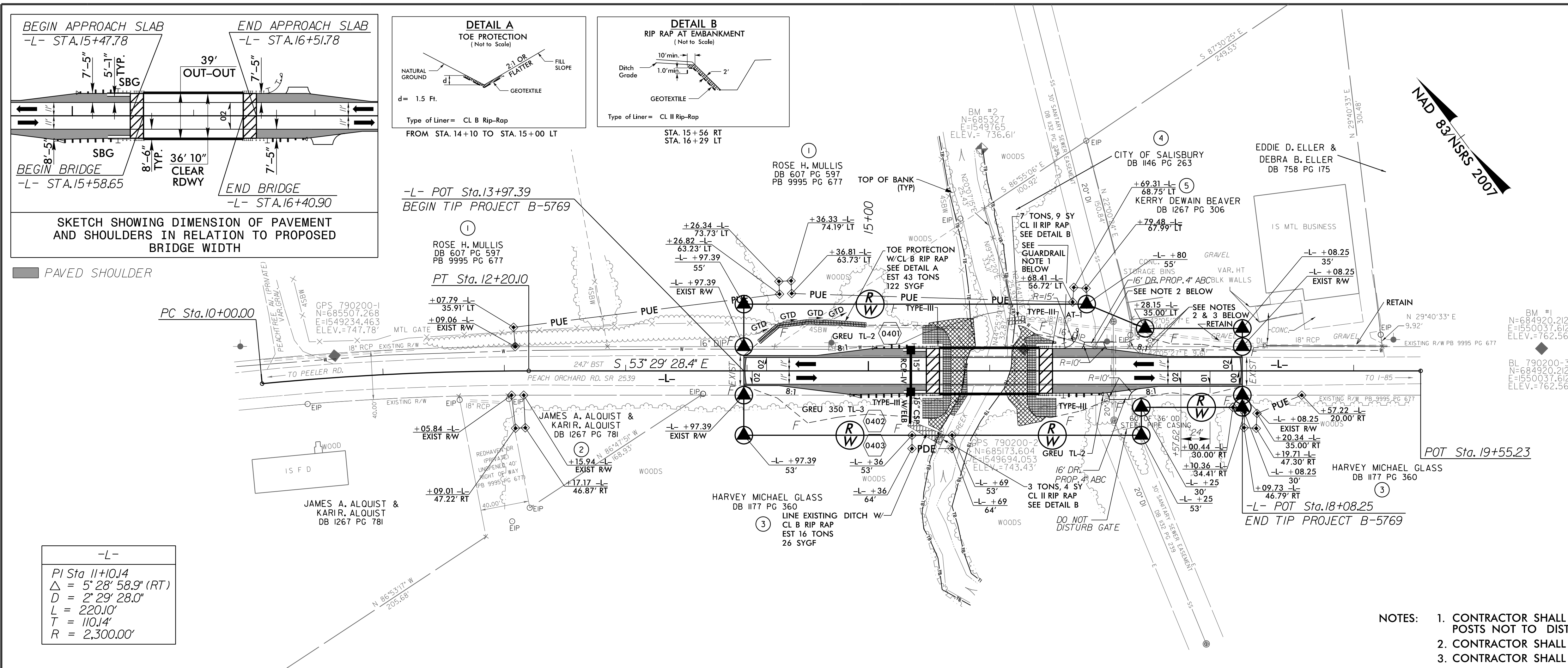
**LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)**

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO.	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC)							C.S. PIPE (UNLESS NOTED OTHERWISE)							CLASS IV R.C. PIPE (UNLESS OTHERWISE NOTED)							ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE)	QUANTITIES FOR DRAINAGE STRUCTURES  * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL."B")	FRAME, GRATES AND HOOD STANDARD 840.03	TYPE OF GRATE	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.29	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	T.B.G.D.I. STD. 840.35	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS			
							C.U. YDS.							C.U. YDS.							R.C.P.	C.S.P.	PER EACH (0' THRU 5.0')	5.0' THRU 10.0'	10.0' AND ABOVE	E	F																					G		
							12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"																													42"	48"
							THICKNESS OR GAUGE	FROM	TO																																									
15+35.00	LT	0401	744.27																																															
		0401/0402		741.02	740.80																																													
15+35.00	RT	0402	744.27																																															
		0402/0403		740.30	734.34																																													
TOTALS																																																		

SYTIME  
SECTION  
USER NAME

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.) GRATED DROP INLET (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

PROJECT REFERENCE NO. <b>B-5769</b>	SHEET NO. <b>4</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
PLANS PREPARED BY:	
WSP USA 434 FAYETTEVILLE STREET RALEIGH, NC 27601 TEL: 1.919.836.4040 FAX: 1.919.836.4099 LICENSE NO. F-0165	

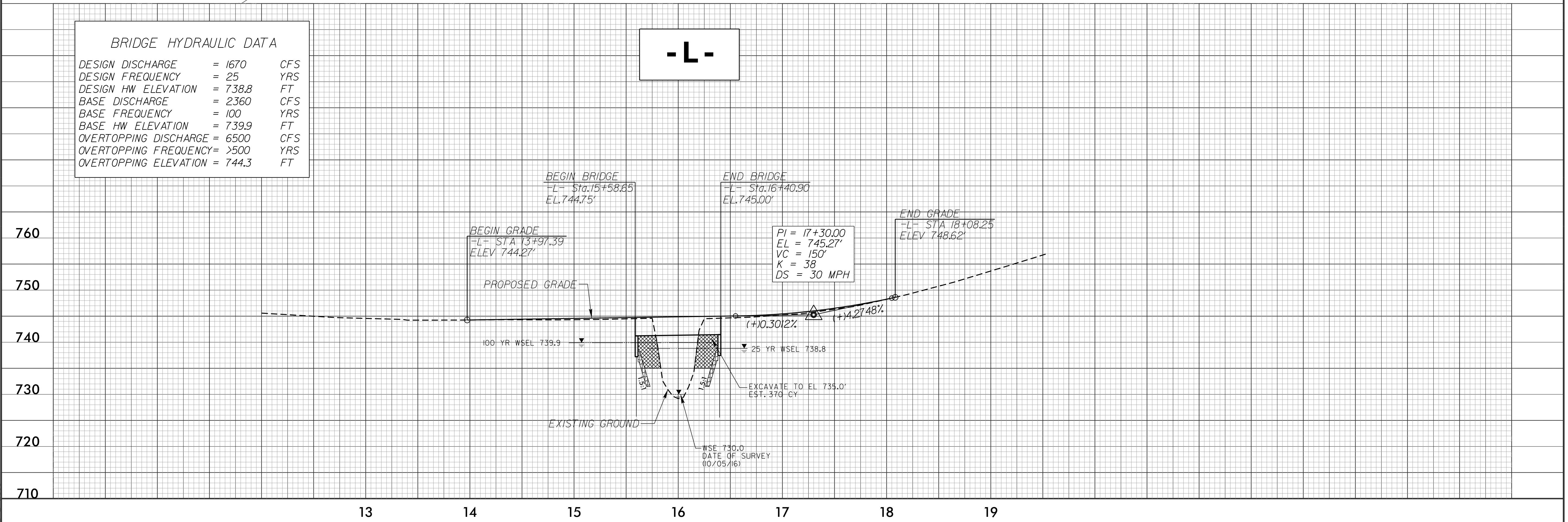


PAVED SHOULDER

-L-
PI Sta 11+10.14
$\Delta = 5' 28'' 58.9''$ (RT)
$D = 2' 29'' 28.0''$
$L = 220.10'$
$T = 110.14'$
$R = 2,300.00'$

- NOTES:
- CONTRACTOR SHALL PLACE GUARDRAIL POSTS NOT TO DISTURB OR IMPACT 16" DIP
  - CONTRACTOR SHALL RAISE WATER VALVE
  - CONTRACTOR SHALL GRADE AROUND FIRE HYDRANT

BRIDGE HYDRAULIC DATA	
DESIGN DISCHARGE	= 1670 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 738.8 FT
BASE DISCHARGE	= 2360 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 739.9 FT
OVERTOPPING DISCHARGE	= 6500 CFS
OVERTOPPING FREQUENCY	= >500 YRS
OVERTOPPING ELEVATION	= 744.3 FT



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2/22/2018



STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

STATE PROJECT REFERENCE NO.	SHEET NO.
B-5769	TMP-1

**PLAN FOR PROPOSED  
TRAFFIC CONTROL, MARKING & DELINEATION  
ROWAN COUNTY**

**B-5769**

**ROADWAY STANDARD DRAWINGS**

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JULY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.03	TEMPORARY ROAD CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1145.01	BARRICADES
1205.01	PAVEMENT MARKINGS - LINE TYPES & OFFSETS
1205.02	PAVEMENT MARKINGS - 2 LANE & MULTILANE ROADWAYS

**INDEX OF SHEETS**

SHEET NO.	TITLE
TMP-1	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND AND INDEX OF SHEETS
TMP-2	GENERAL NOTES, PHASING AND DETOUR SIGNING

**LEGEND**

- GENERAL**
- DIRECTION OF TRAFFIC FLOW
  - DIRECTION OF PEDESTRIAN TRAFFIC FLOW
  - NORTH ARROW
  - PROPOSED PVMT. EXIST. PVMT.
  - WORK AREA

**TRAFFIC CONTROL DEVICES**

- BARRICADE (TYPE III)
- CONE
- DRUM SKINNY DRUM

**TEMPORARY SIGNING**

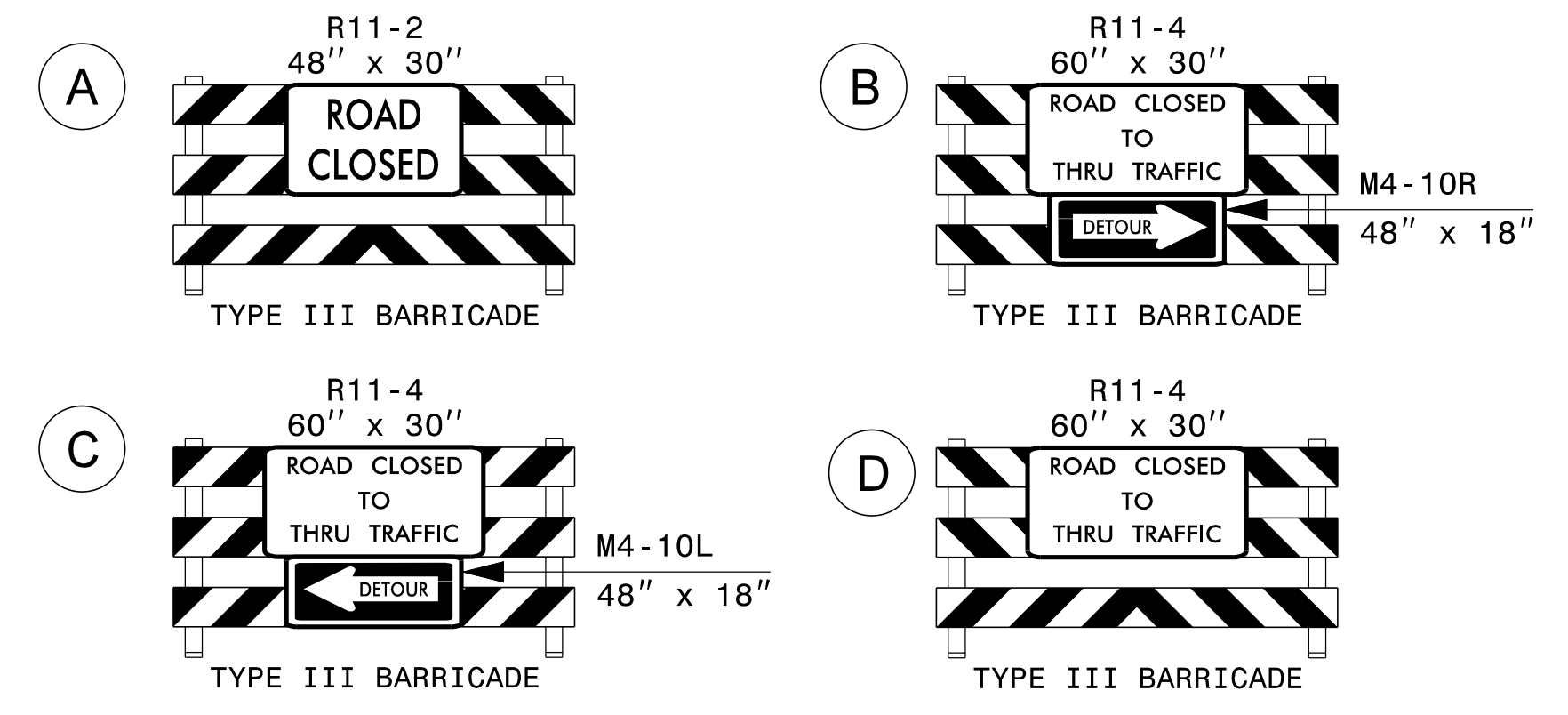
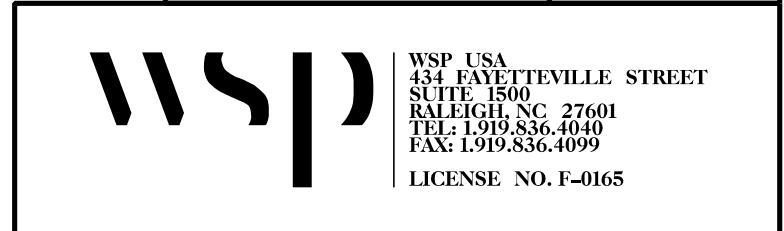
- STATIONARY SIGN
- PORTABLE SIGN
- STATIONARY OR PORTABLE SIGN

**TIP PROJECT:**

10/47/14 AM  
B-5769\_TIP\_PROJECT.dgn  
2/2/2018

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

<p>APPROVED: _____</p> <p>DATE: _____</p>	<p>WSP USA 434 FAYETTEVILLE STREET SUITE 1500 RALEIGH, NC 27601 TEL: 1.919.836.4040 FAX: 1.919.836.4099 LICENSE NO. F-0165</p>
<p>SEAL</p>	<p><b>RONYELL THIGPEN, PE</b> PROJECT ENGINEER</p> <p><b>LAUREN WILSON, PE</b> PROJECT DESIGN</p>



## GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESIRABLE OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.

### TRAFFIC PATTERN ALTERATIONS

- A) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

### SIGNING

- B) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.  
PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN ON THIS SHEET.
- C) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

### TRAFFIC CONTROL DEVICES

- D) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

### PAVEMENT MARKINGS AND MARKERS

- E) INSTALL PAVEMENT MARKINGS ON THE FINAL SURFACE AS FOLLOWS:
 

ROAD NAME	MARKING
SR 2539 (PEACH ORCHARD RD)	THERMOPLASTIC - NO RAISED MARKERS
- F) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- G) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

### LOCAL NOTES

MAINTAIN ACCESS TO ALL RESIDENCES AND BUSINESSES BETWEEN THE CLOSURE POINTS AT ALL TIMES DURING CONSTRUCTION.

## PHASING

### STEP 1:

INSTALL WORK ZONE ADVANCE WARNING SIGNS ON ALL ROADS ACCORDING TO ROADWAY STANDARD NO. 1101.01 WHERE WORK WILL BE OCCURRING NO MORE THAN THREE DAYS PRIOR TO BEGINNING CONSTRUCTION.

### STEP 2:

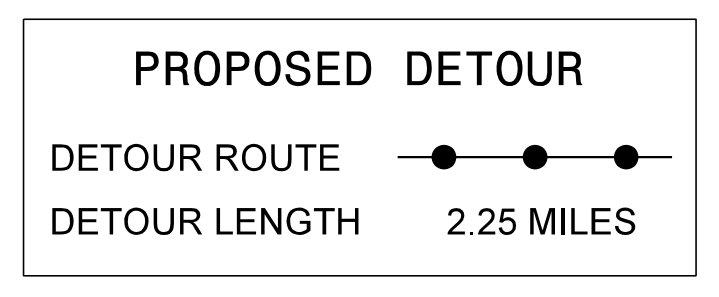
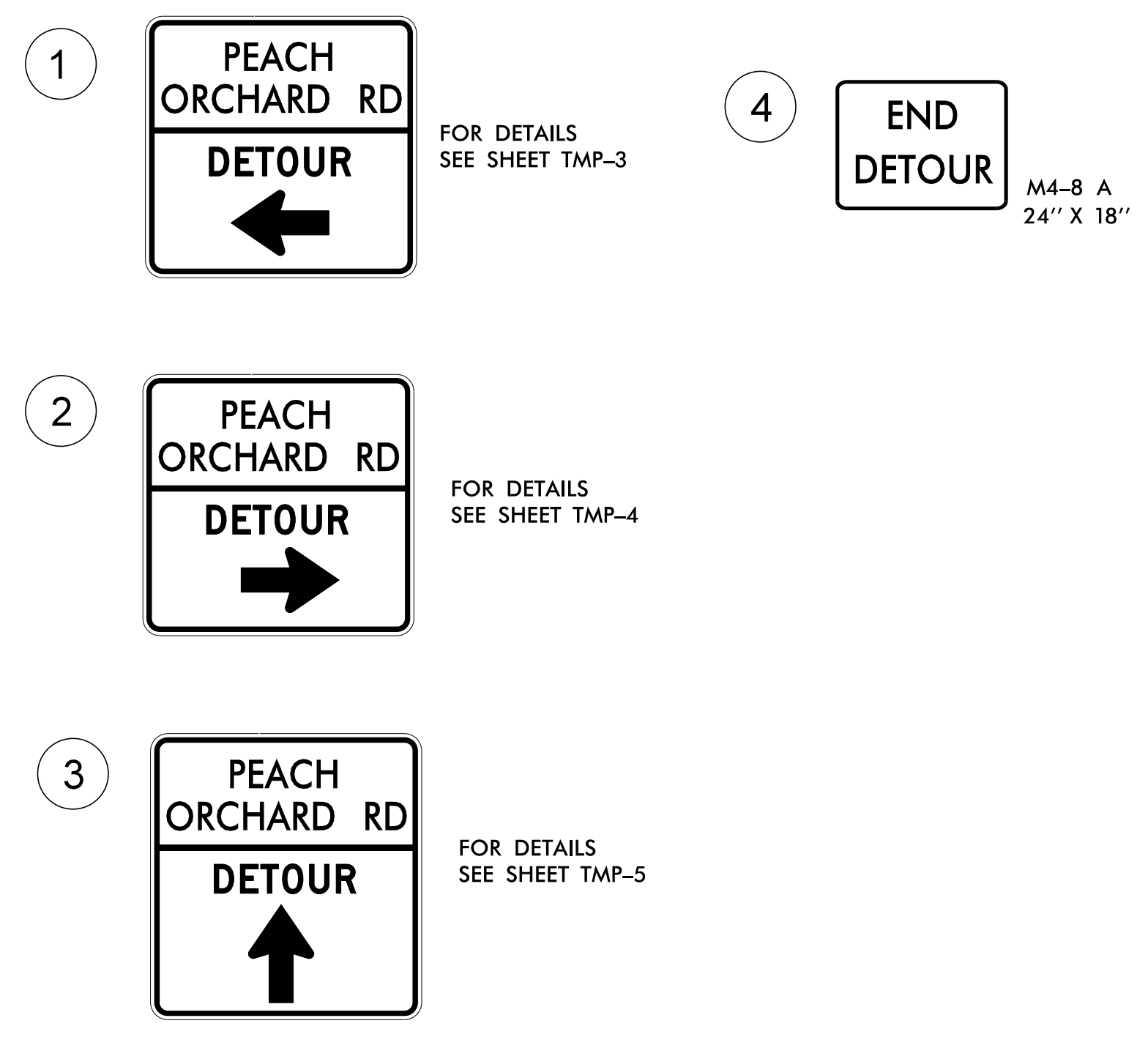
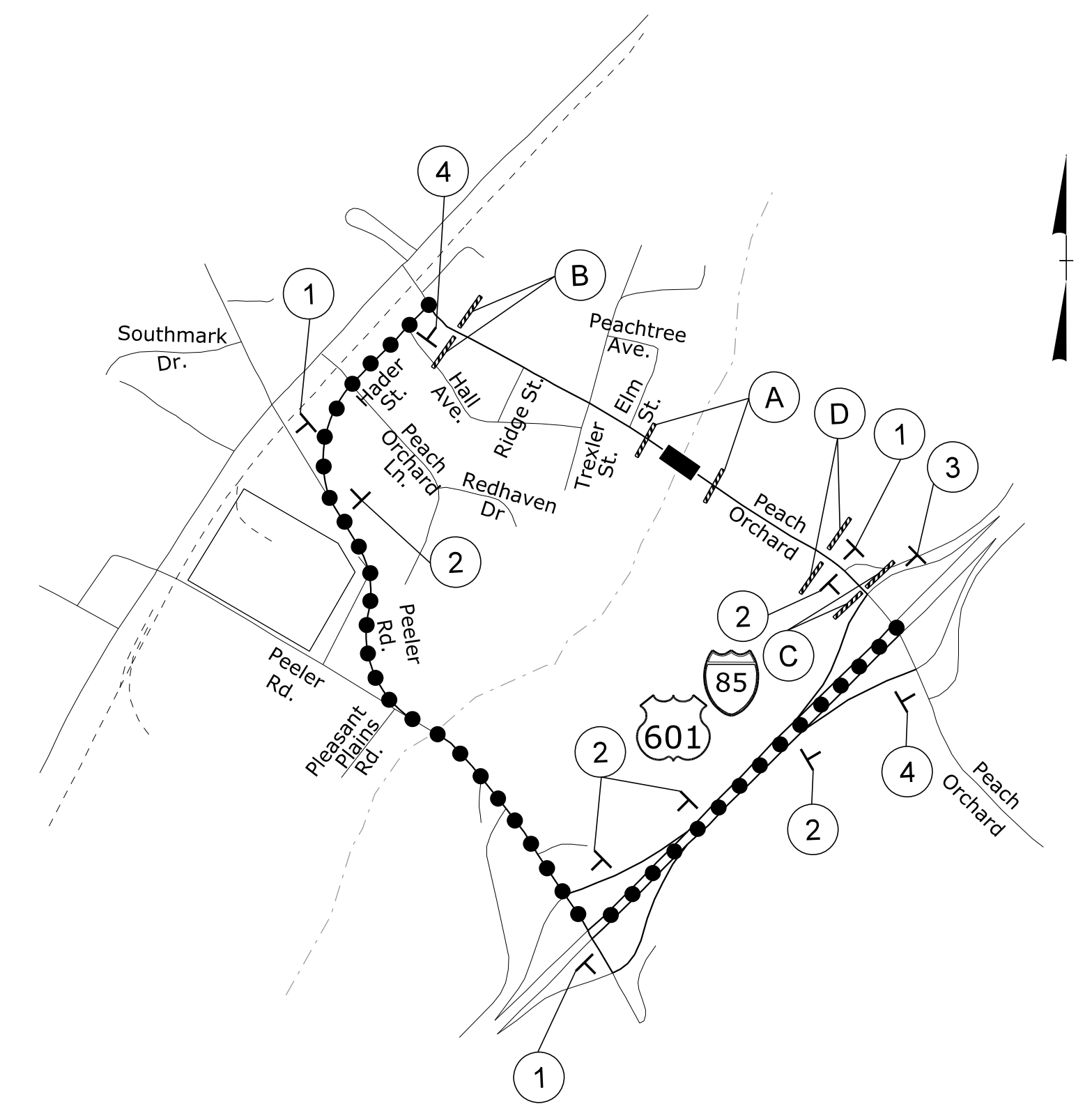
USING ROADWAY STANDARD DRAWING NO. 1101.03, SHEET 1 OF 9, AND SHEET TMP-4, INSTALL ROAD CLOSURE AND DETOUR SIGNS FOR PEACH ORCHARD RD. COVER SIGNS UNTIL DETOUR IS READY FOR OPERATION.

### STEP 3:

WHEN DETOUR IS READY FOR OPERATION, CLOSE RIMERTOWN RD. AND CONSTRUCT ALL PROPOSED ROADWAY AND STRUCTURE IMPROVEMENTS.

### STEP 4:

REMOVE ROAD CLOSURE DEVICES AND SIGNS ONCE CONSTRUCTION IS COMPLETE.



**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

APPROVED: _____ DATE: _____	<b>GENERAL NOTES, PHASING AND DETOUR SIGNING</b>	
	SCALE: NONE	
	DATE: 01/12/17	
	DWG. BY: LJW	
	DESIGN BY: LJW	
REVIEWED BY: RAT	REVISIONS	





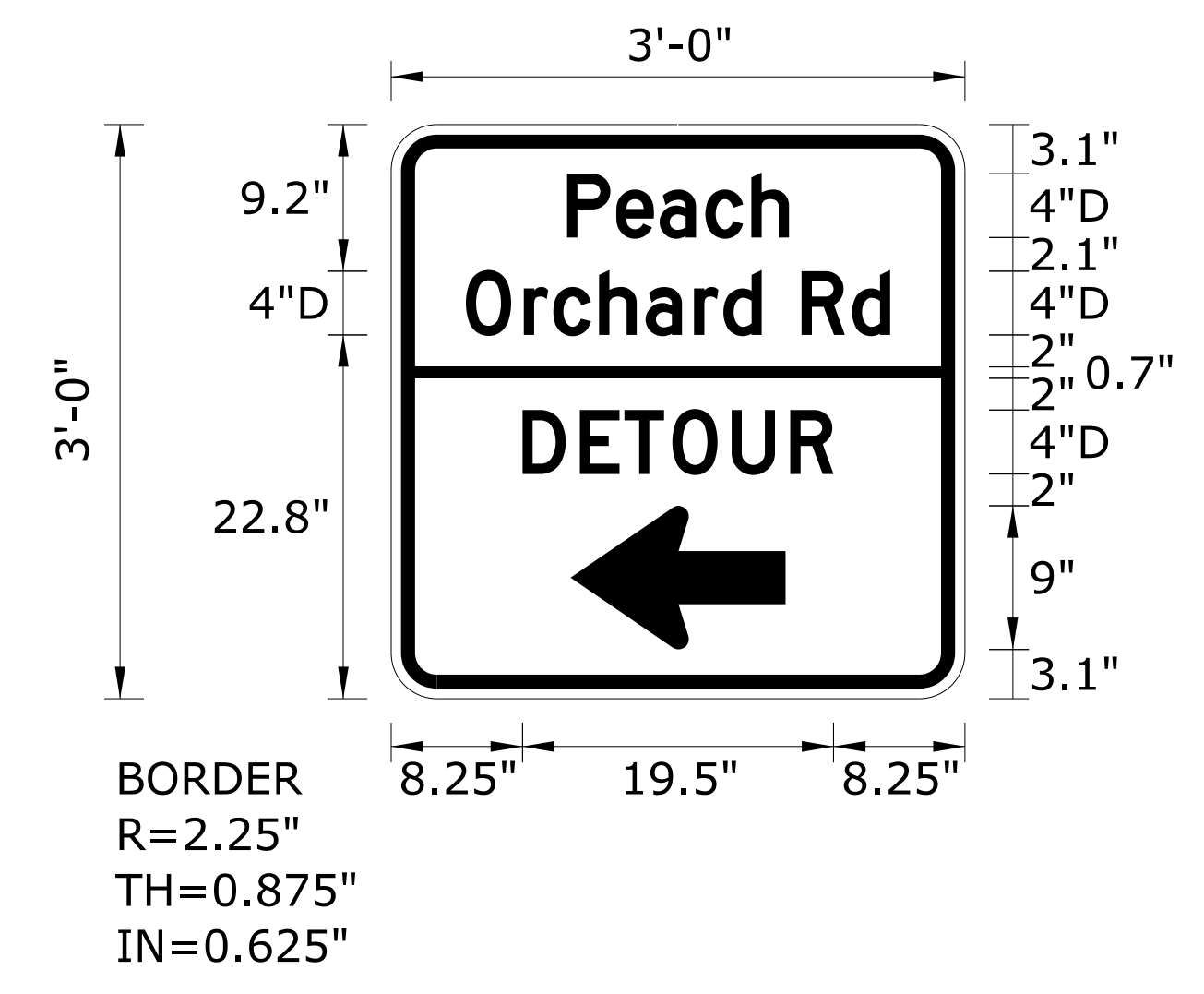
SIGN NUMBER: 001  
 TYPE: STATIONARY  
 QUANTITY: SEE PLANS  
 SIGN WIDTH: 3'-0"  
 HEIGHT: 3'-0"  
 TOTAL AREA: 9.0 Sq.Ft.  
 BORDER TYPE: INSET  
 RECESS: 0.625"  
 WIDTH: 0.875"  
 RADII: 2.25"  
 NO. Z BARS:  
 LENGTH:

BACKG COLOR: Orange/Orange  
 COPY COLOR: Black

SYMBOL	X	Y	WID	HT
AR_Type D	11.3	3.1	9	13.5

MAT'L: 0.080" (2.0 mm) ALUMINUM

DESIGN BY: KPD  
 PROJECT ID: B-5769  
 CHECKED BY: RAT  
 LOCATION: Rowan County  
 Mar 31, 2017  
 DIV: 9



Spacing Factor is 1 unless specified otherwise

- USE NOTES: 1,2
- Legend and border shall be direct applied black non-reflective sheeting.
  - Background shall be Type VII, VIII, or IX (prismatic) fluorescent orange retroreflective sheeting.

LETTER POSITIONS

Letter spacings are to start of next letter													Series/Size Text Length	
	P	e	a	c	h									D 2000
11	3.1	2.7	2.9	2.9	2.4	11								13.9
	O	r	c	h	a	r	d		R	d				D 2000
4.7	3.6	1.8	2.9	2.9	3	1.8	2.4	2.5	3.2	2.4	4.7			26.6
	D	E	T	O	U	R								D 2000
8.2	3.6	2.8	3	3.7	3.7	2.7	8.2							19.5

FILENAME: B-5769\_TC\_TCP\_Sheet3

NORTH CAROLINA D.O.T. SIGN DETAIL

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2/2/2018

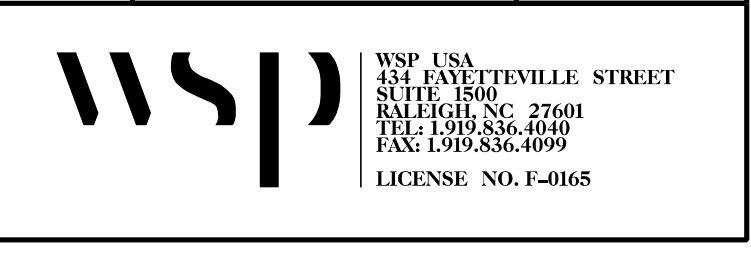
DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

DocuSign by Lauren Wilson

GENERAL NOTES, PHASING AND  
DETOUR SIGNING

SCALE: NONE		REVISIONS
DATE: 03/31/17		
DESIGN BY: KPD		
REVIEWED BY: LJW		



**SIGN NUMBER: 002**  
**TYPE: STATIONARY**  
**QUANTITY: SEE PLANS**  
**SIGN WIDTH: 3'-0"**  
**HEIGHT: 3'-0"**  
**TOTAL AREA: 9.0 Sq.Ft.**

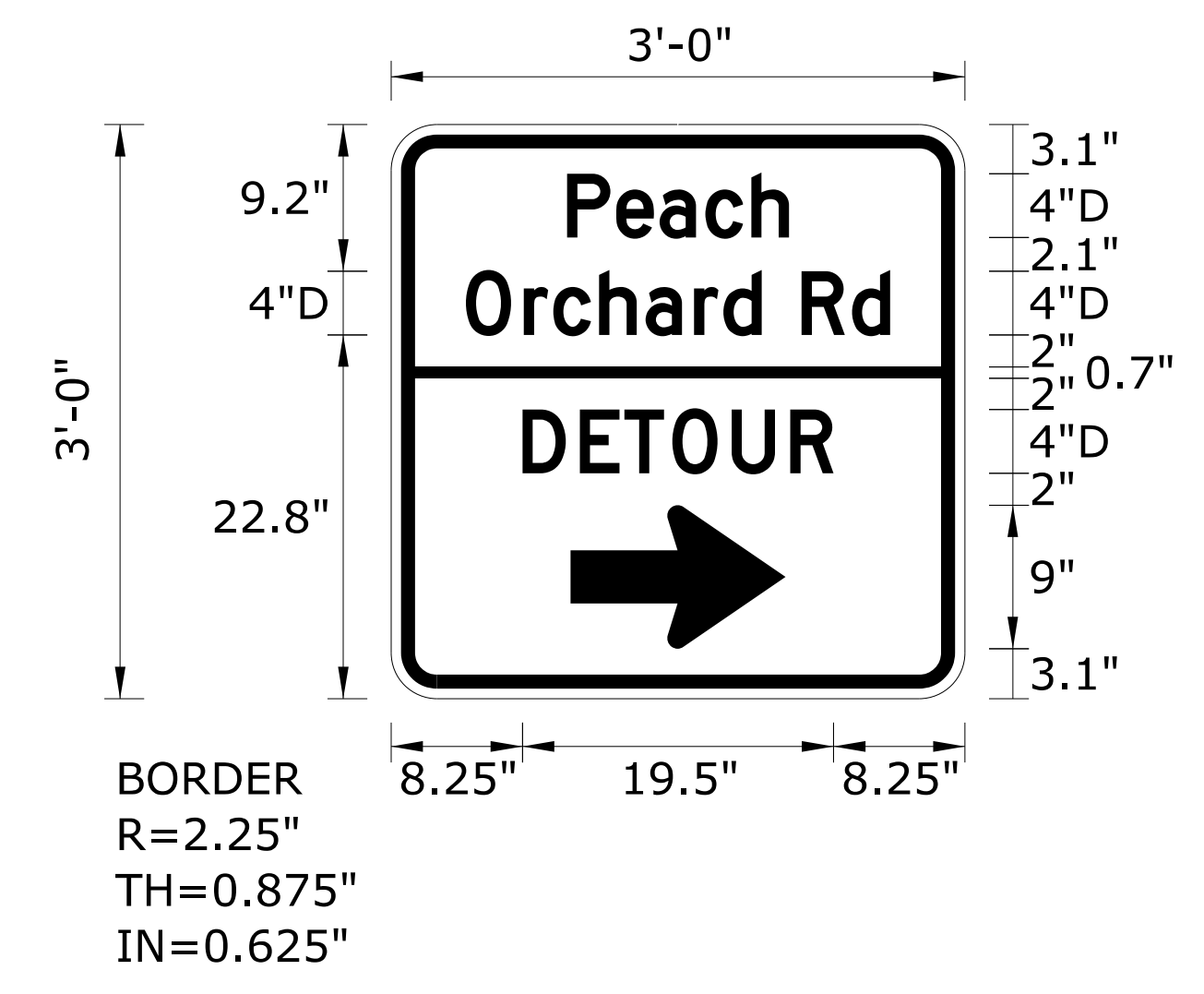
SYMBOL	X	Y	WID	HT
AR_Type D	11.3	3.1	9	13.5

**BACKG COLOR: Orange/Orange**  
**COPY COLOR: Black**  
**MAT'L: 0.080" (2.0 mm) ALUMINUM**

**BORDER TYPE: INSET**  
**RECESS: 0.625"**  
**WIDTH: 0.875"**  
**RADII: 2.25"**

**NO. Z BARS:**  
**LENGTH:**

**DESIGN BY:** KPD  
**PROJECT ID:** B-5769  
**CHECKED BY:** RAT  
**LOCATION:** Rowan County  
**DATE:** Mar 31, 2017  
**DIV:** 9



Spacing Factor is 1 unless specified otherwise

**USE NOTES: 1,2**

- Legend and border shall be direct applied black non-reflective sheeting.
- Background shall be Type VII, VIII, or IX (prismatic) fluorescent orange retroreflective sheeting.

**LETTER POSITIONS**

Letter spacings are to start of next letter												Series/Size
												Text Length
	P	e	a	c	h							D 2000
11	3.1	2.7	2.9	2.9	2.4	11						13.9
	O	r	c	h	a	r	d	R	d			D 2000
4.7	3.6	1.8	2.9	2.9	3	1.8	2.4	2.5	3.2	2.4	4.7	26.6
	D	E	T	O	U	R						D 2000
8.2	3.6	2.8	3	3.7	3.7	2.7	8.2					19.5

FILENAME: B-5769\_TC\_TCP\_Sheet4

NORTH CAROLINA D.O.T. SIGN DETAIL

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2/2/2018

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UNLESS ALL SIGNATURES COMPLETED

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

SEAL

DocuSigned by:  
Lauren Wilson  
227DE52DD8447

**GENERAL NOTES, PHASING AND DETOUR SIGNING**

SCALE: NONE		REVISIONS	
DATE: 03/31/17			
DESIGN BY: KPD			
REVIEWED BY: LJW			
CADD FILE			



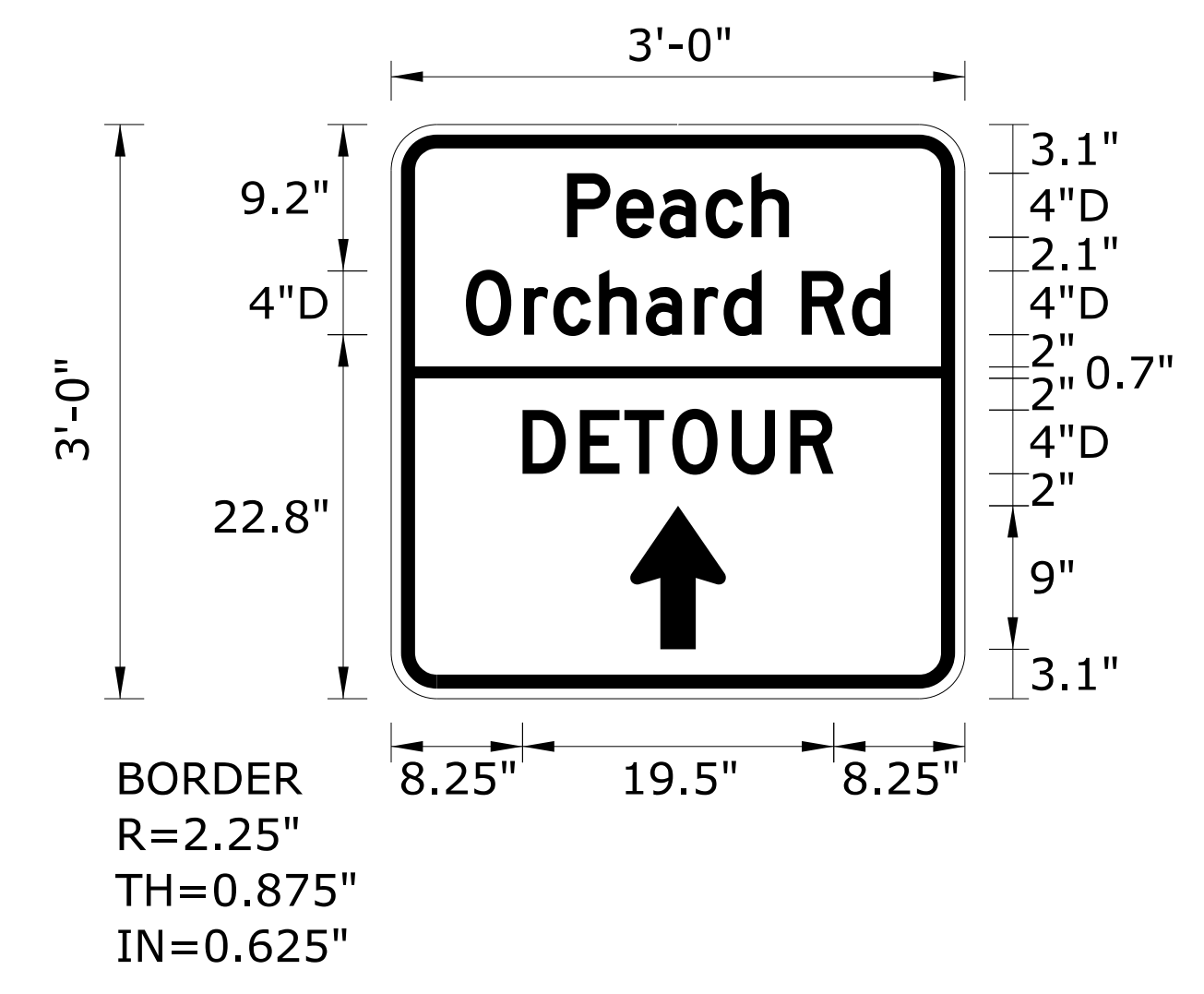
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 QUANTITY: SEE PLANS  
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 BORDER TYPE: INSET  
 RECESS: 0.625"  
 WIDTH: 0.875"  
 RADII: 2.25"  
 NO. Z BARS:  
 LENGTH:

BACKG COLOR: Orange/Orange  
 COPY COLOR: Black

SYMBOL	X	Y	WID	HT
AR_Type D	15	3.1	6	9

MAT'L: 0.080" (2.0 mm) ALUMINUM

DESIGN BY: KPD  
 PROJECT ID: B-5769  
 CHECKED BY: RAT  
 LOCATION: Rowan County  
 Apr 28, 2017  
 DIV: 9



USE NOTES: 1,2

- Legend and border shall be direct applied black non-reflective sheeting.
- Background shall be Type VII, VIII, or IX (prismatic) fluorescent orange retroreflective sheeting.

Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter													Series/Size Text Length	
	P	e	a	c	h									D 2000
11	3.1	2.7	2.9	2.9	2.4	11								13.9
	O	r	c	h	a	r	d		R	d				D 2000
4.7	3.6	1.8	2.9	2.9	3	1.8	2.4	2.5	3.2	2.4	4.7			26.6
	D	E	T	O	U	R								D 2000
8.2	3.6	2.8	3	3.7	3.7	2.7	8.2							19.5

FILENAME: B-5769\_TC\_TCP\_Sheet5

NORTH CAROLINA D.O.T. SIGN DETAIL

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 2/2/2018

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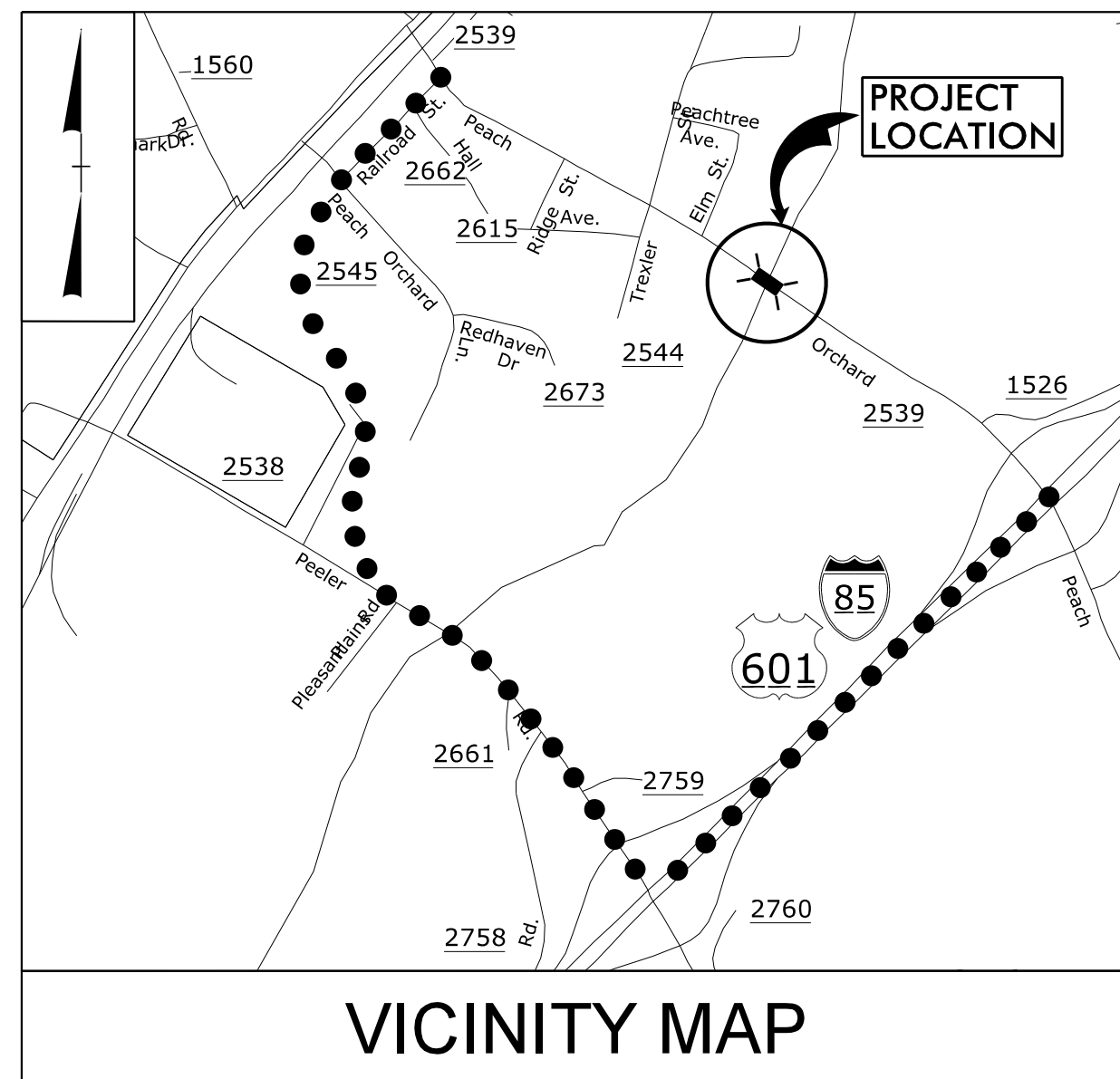
DocuSign  
 Lauren J. Wilson

GENERAL NOTES, PHASING AND  
 DETOUR SIGNING

SCALE: NONE		REVISIONS
DATE: 04/28/17		
DESIGN BY: KPD		
REVIEWED BY: RAT		



**TIP PROJECT: B-5769**

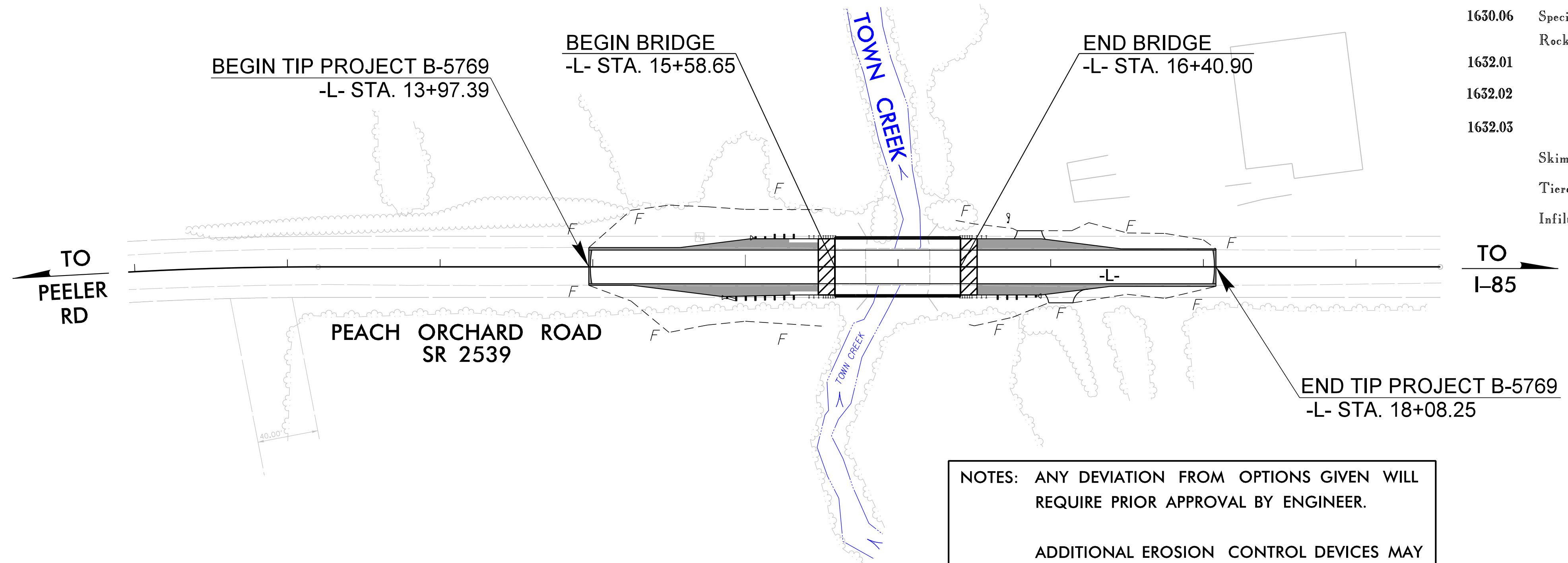


●—●—●—● DETOUR ROUTE

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
**PLAN FOR PROPOSED  
HIGHWAY EROSION CONTROL**  
ROWAN COUNTY

**LOCATION: REPLACE EXISTING BRIDGE NO. 200 ON  
SR 2539 - PEACH ORCHARD RD. OVER  
TOWN CREEK**

**TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE**



- NOTE:**
- CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
  - THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
  - THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.

**NOTES:** ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

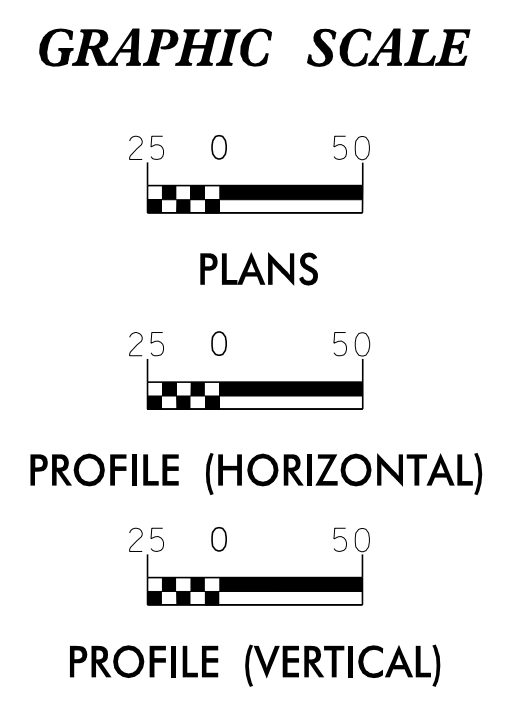
ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5769	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
45725.1.1	N/A	PE	
45725.2.1	N/A	R/W UTIL	
45725.3.1	N/A	CONST.	

**EROSION AND SEDIMENT CONTROL MEASURES**

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	TSF
1606.01	Special Sediment Control Fence	SSCF
1622.01	Temporary Berms and Slope Drains	TBSD
1630.02	Silt Basin Type B	SB
1633.01	Temporary Rock Silt Check Type-A	TRSC
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	TRSC-PAM
1633.02	Temporary Rock Silt Check Type-B	TRSC-B
	Wattle / Coir Fiber Wattle	W/CFW
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	W/CFW-PAM
1634.01	Temporary Rock Sediment Dam Type-A	TRSD
1634.02	Temporary Rock Sediment Dam Type-B	TRSD-B
1635.01	Rock Pipe Inlet Sediment Trap Type-A	RPIST
1635.02	Rock Pipe Inlet Sediment Trap Type-B	RPIST-B
1630.04	Stilling Basin	SB
1630.06	Special Stilling Basin	SSB
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	SB
	Tiered Skimmer Basin	TSSB
	Infiltration Basin	IB

**THIS PROJECT CONTAINS  
EROSION CONTROL PLANS  
FOR CLEARING AND  
GRUBBING PHASE OF  
CONSTRUCTION.**



ROADSIDE ENVIRONMENTAL UNIT  
DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY  
WITH THE REGULATIONS SET FORTH BY THE  
NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011  
ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND  
NATURAL RESOURCES DIVISION OF WATER QUALITY.

Prepared in the Office of:  
**WSP**  
1001 Morehead Square Drive  
Suite 610  
Charlotte, NC 28203

**2012 STANDARD SPECIFICATIONS**

Designed by:  
**CHARLES HEAFNER, PE** 3440  
NAME LEVEL III CERTIFICATION NO.

Roadway Standard Drawings

The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2012 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

1604.01 Railroad Erosion Control Detail	1632.01 Rock Inlet Sediment Trap Type A
1605.01 Temporary Silt Fence	1632.02 Rock Inlet Sediment Trap Type B
1606.01 Special Sediment Control Fence	1632.03 Rock Inlet Sediment Trap Type C
1607.01 Gravel Construction Entrance	1633.01 Temporary Rock Silt Check Type A
1622.01 Temporary Berms and Slope Drains	1633.02 Temporary Rock Silt Check Type B
1630.01 Riser Basin	1634.01 Temporary Rock Sediment Dam Type A
1630.02 Silt Basin Type B	1634.02 Temporary Rock Sediment Dam Type B
1630.03 Temporary Silt Ditch	1635.01 Rock Pipe Inlet Sediment Trap Type A
1630.04 Stilling Basin	1635.02 Rock Pipe Inlet Sediment Trap Type B
1630.05 Temporary Diversion	1640.01 Coir Fiber Baffle
1630.06 Special Stilling Basin	1645.01 Temporary Stream Crossing
1631.01 Matting Installation	



DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

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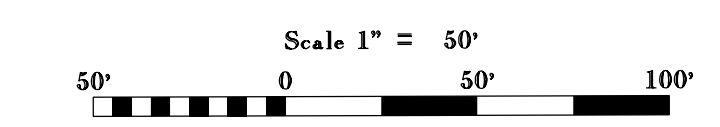
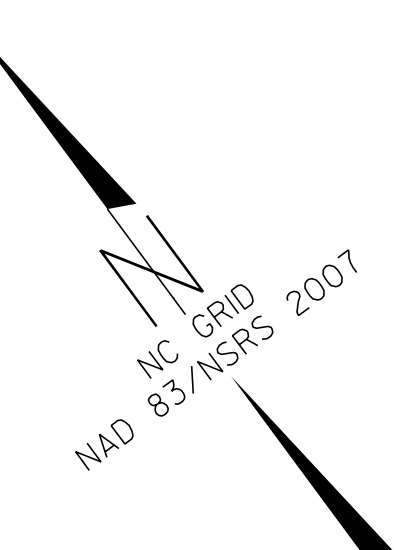
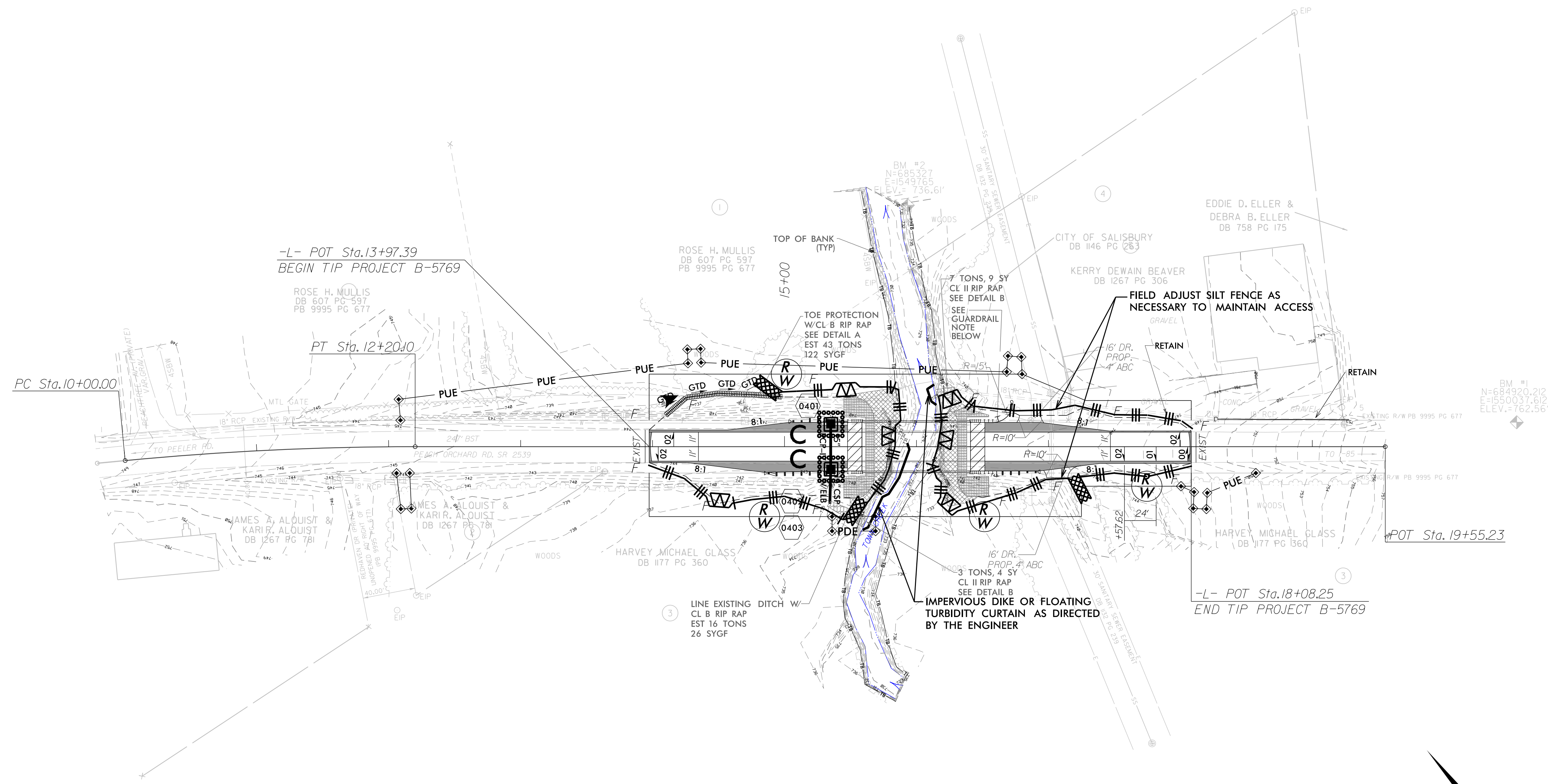
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## ***SOIL STABILIZATION TIMEFRAMES***

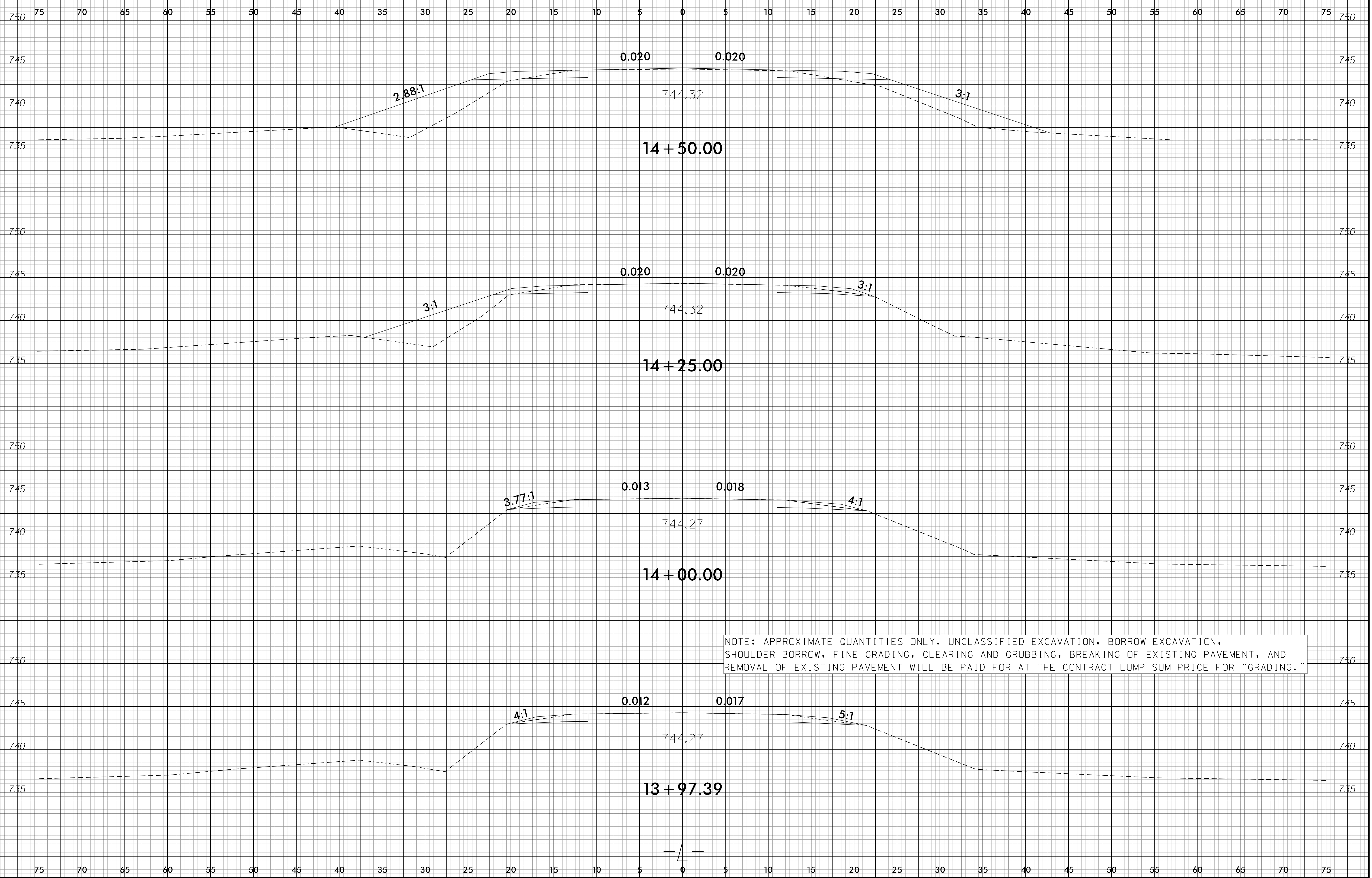
<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

PROJECT REFERENCE NO.	SHEET NO.
B-5769	EC-4/CONST.-4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

# EROSION CONTROL PLAN



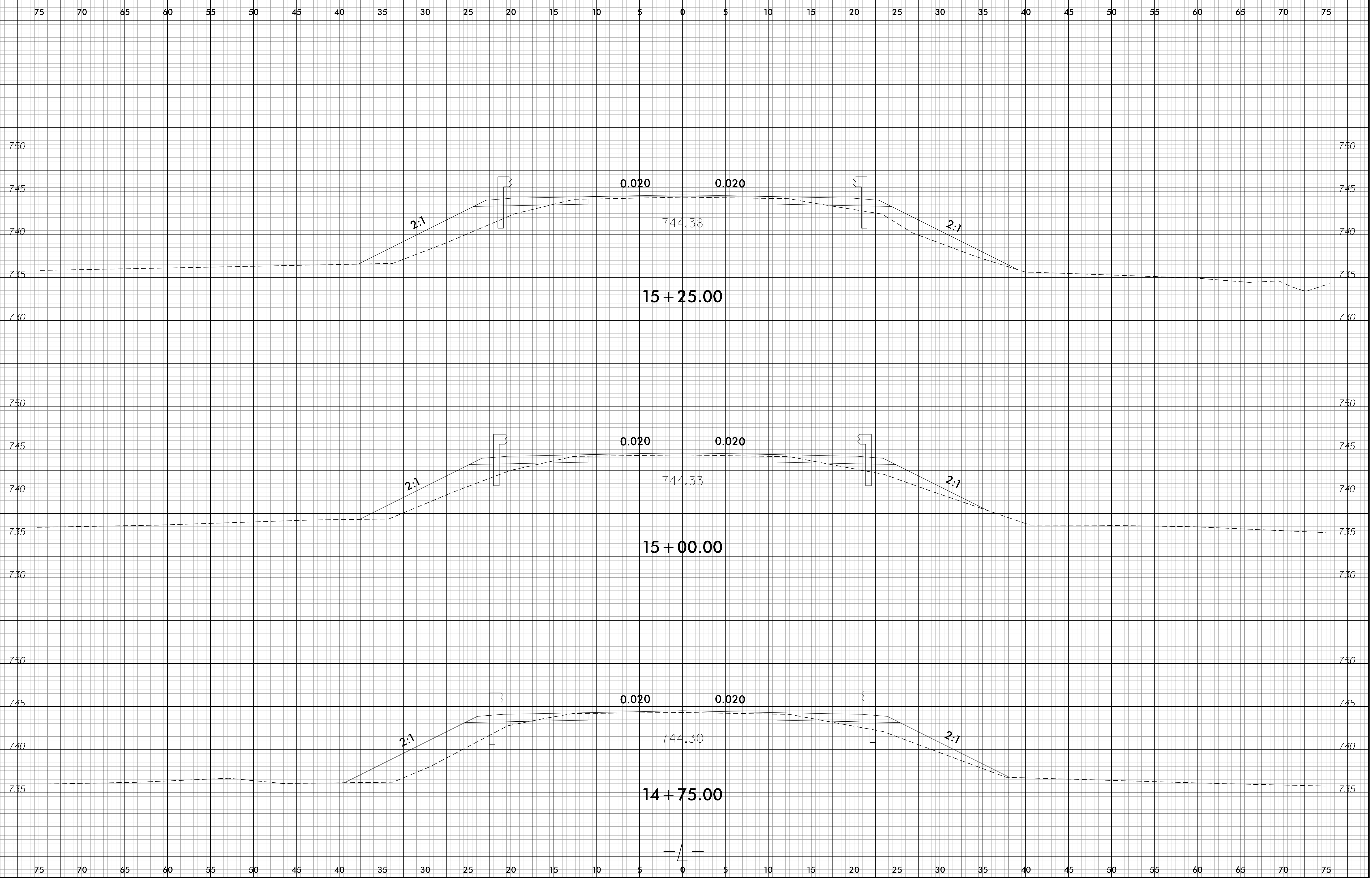
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	B-5769	X-2

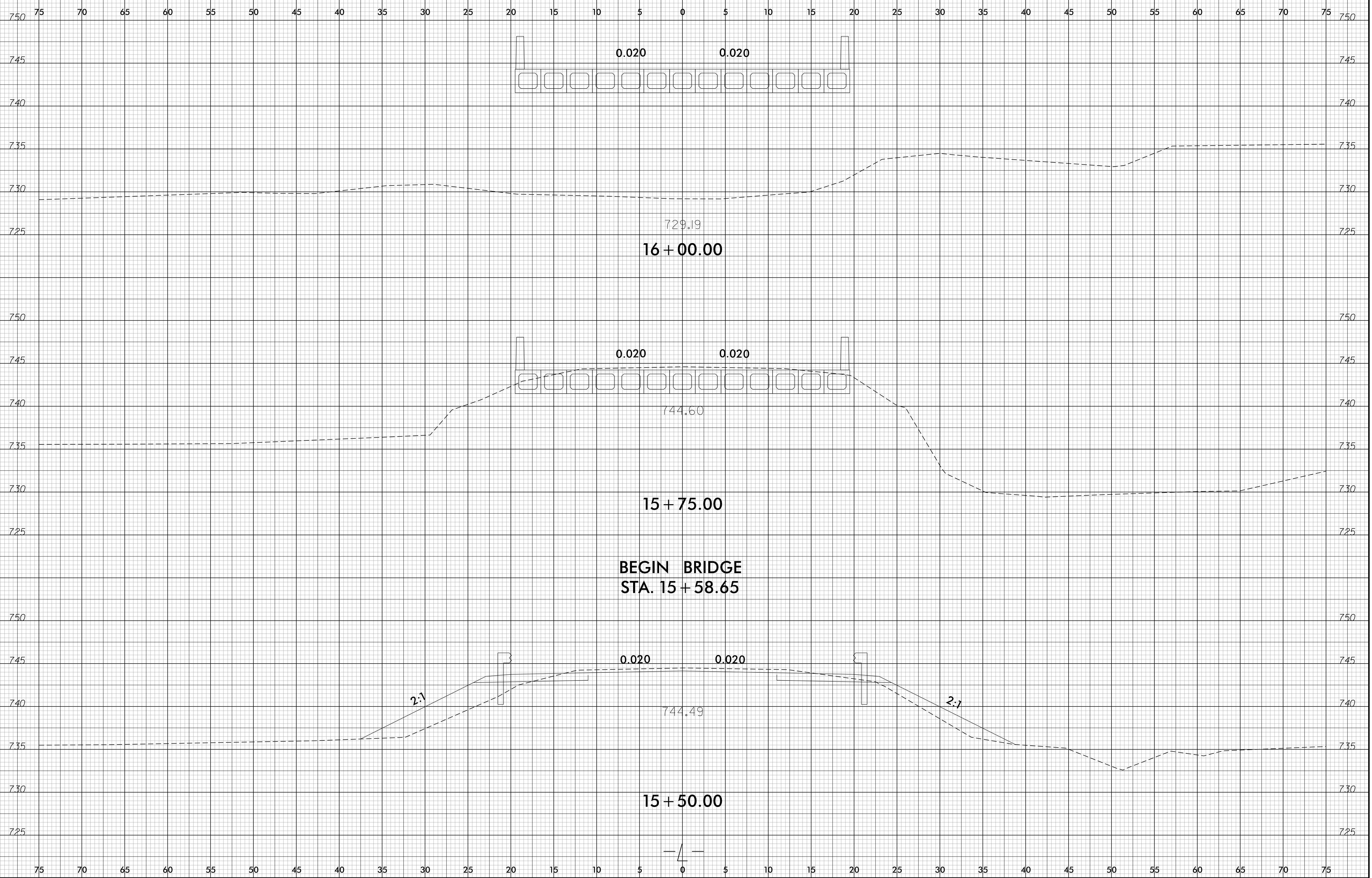


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8/23/99

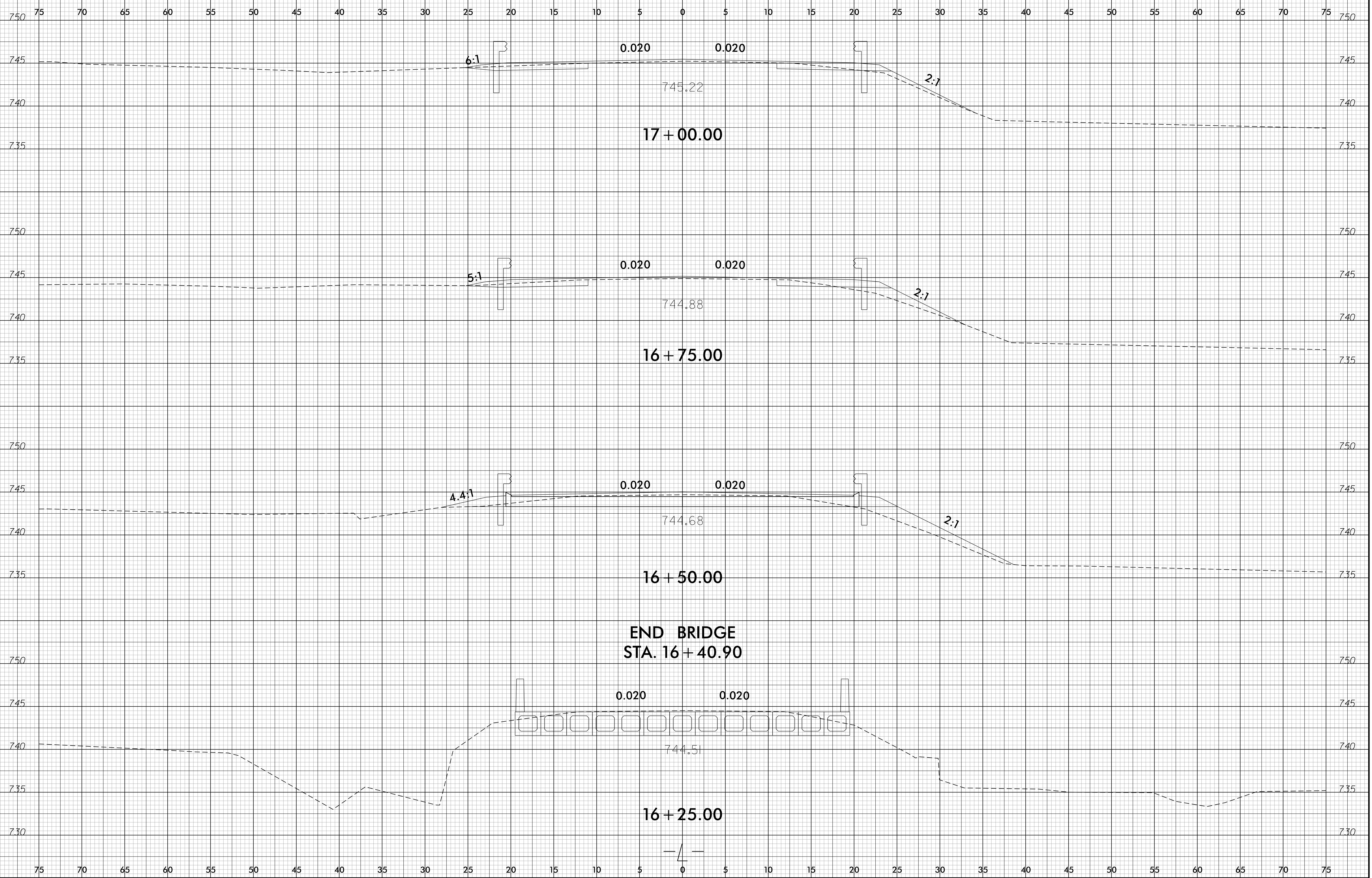
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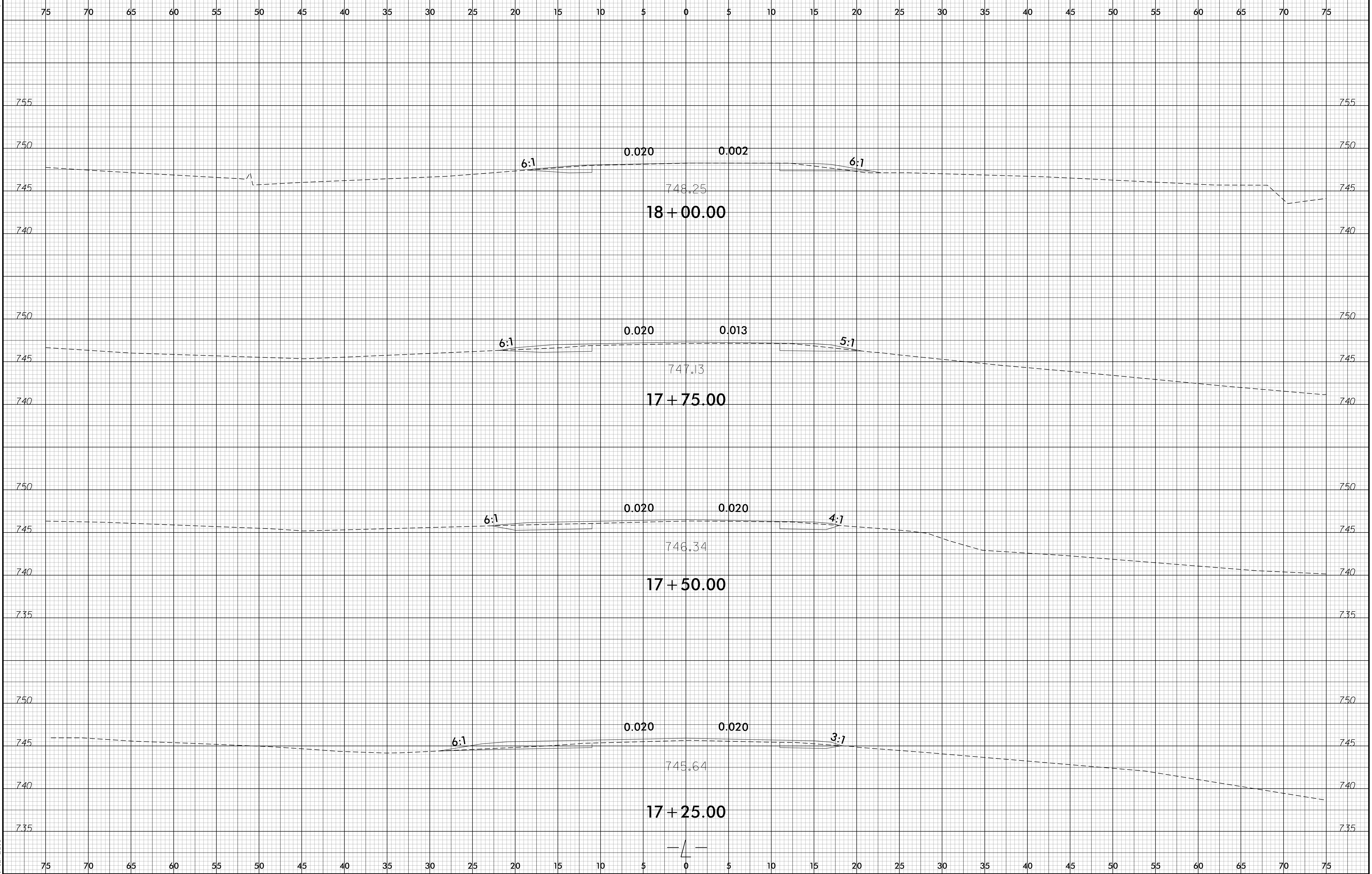
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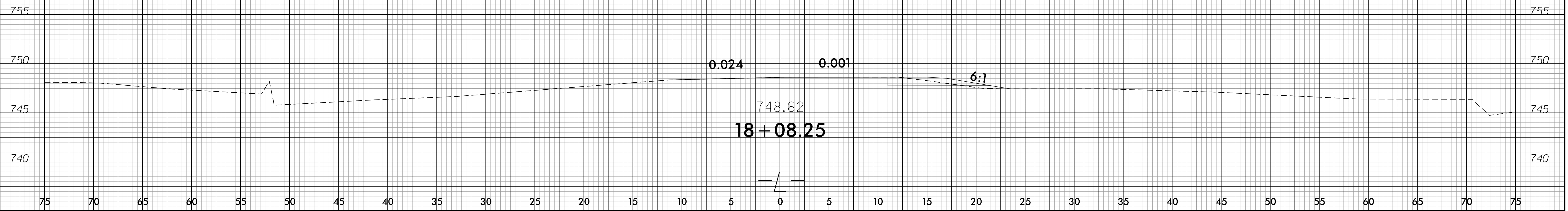


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8/23/99

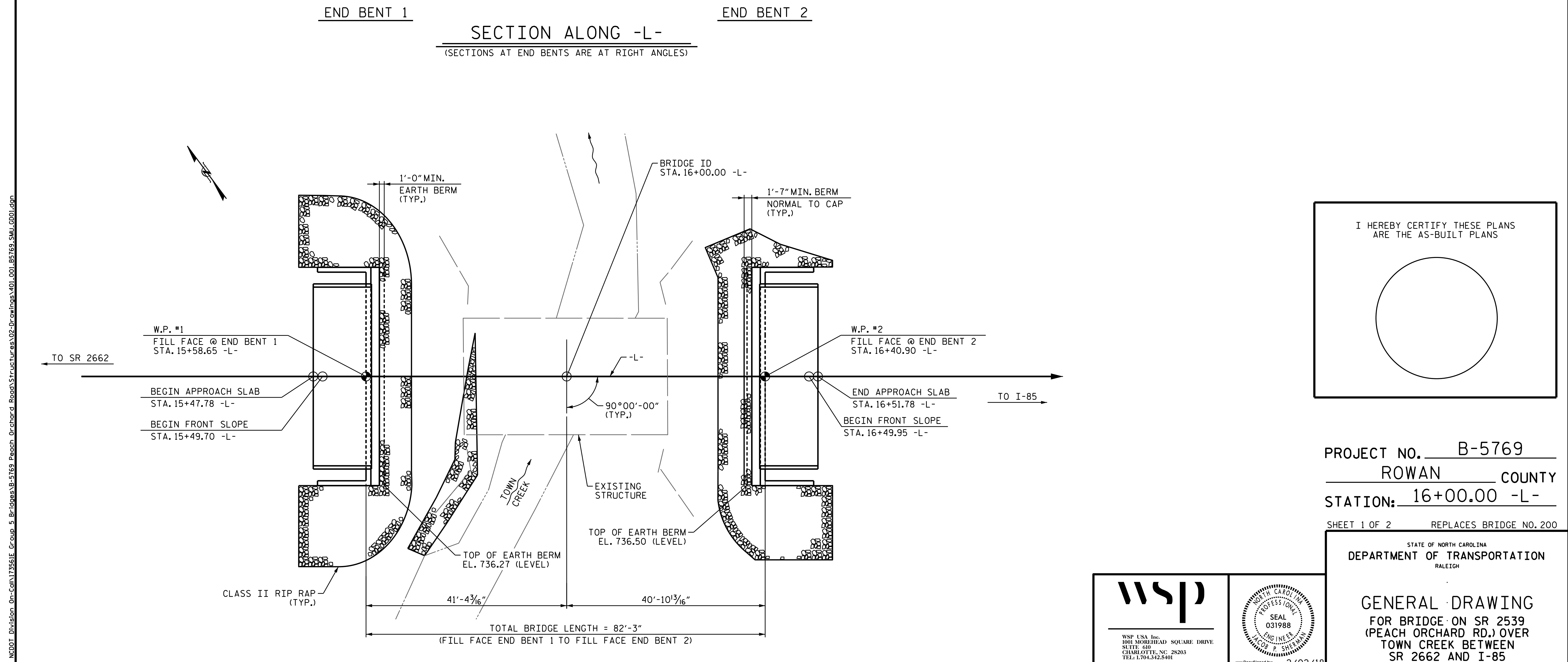
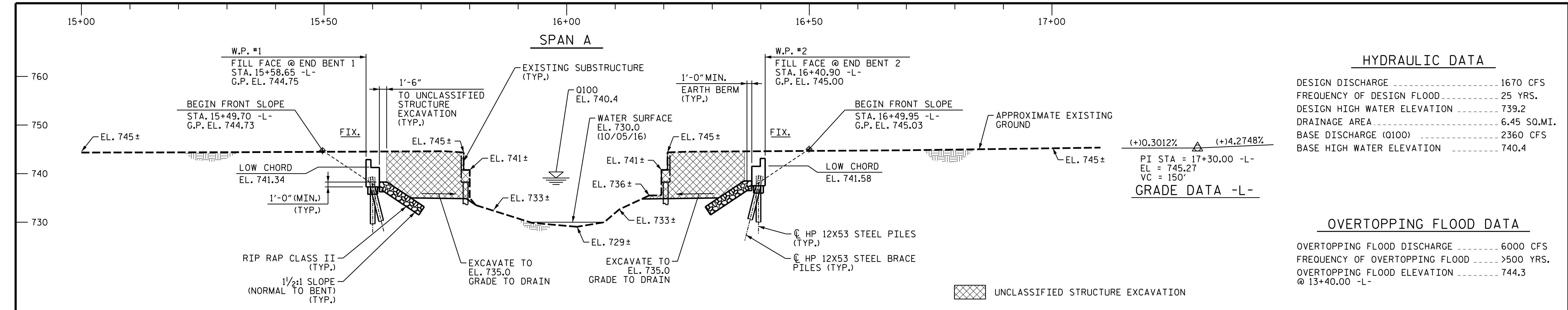
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	B-5769	X-6

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75



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8-5769\_rdyu\_xpl.dgn  
1/12/2018





I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. B-5769  
ROWAN COUNTY  
 STATION: 16+00.00 -L-  
 SHEET 1 OF 2      REPLACES BRIDGE NO. 200

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**  
 FOR BRIDGE ON SR 2539  
 (PEACH ORCHARD RD.) OVER  
 TOWN CREEK BETWEEN  
 SR 2662 AND I-85

**wsp**  
 WSP USA Inc.  
 801 MOREHEAD SQUARE DRIVE  
 SUITE 610  
 CHARLOTTE, NC 28203  
 TEL: 1.704.342.5401  
 WSP.COM  
 LICENSE NO. F-0165

DocuSigned by:  
 Jacob P. Sherman  
 2/02/18  
 A6328D0CE18486

**DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED**

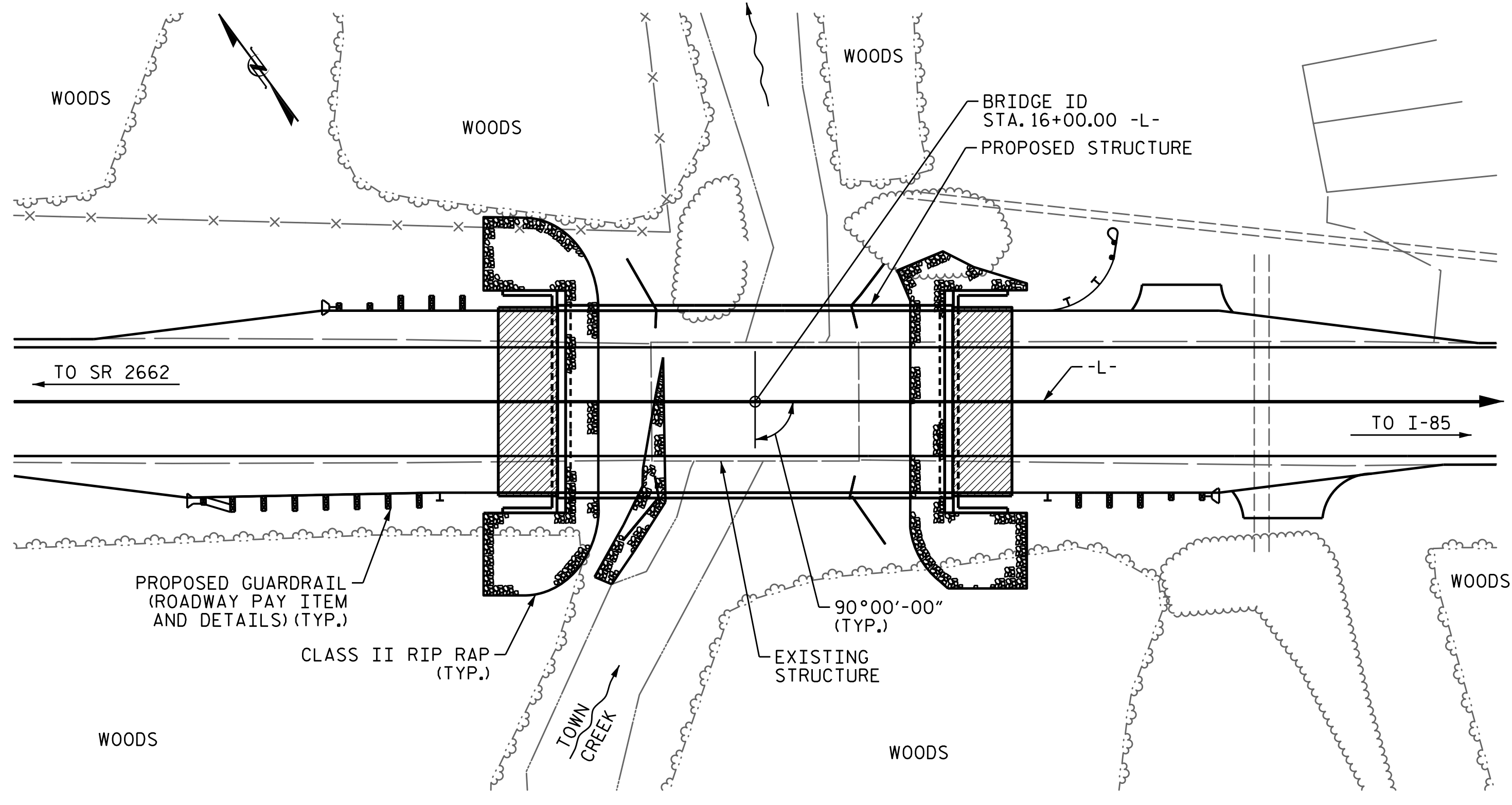
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			TOTAL SHEETS
2			4			15

2/2/2018 2:41:35 PM 2012 NCDOT Division On-County 5 Bridges SR 2539 Peach Orchard Road Structures 02-Drawing 01-001-B5769\_SML001.dgn

DESIGNED BY: M. HOBBS      DATE: APR 2017  
 DRAWN BY: M. HOBBS      DATE: APR 2017  
 CHECKED BY: J. SMITH      DATE: APR 2017  
 DESIGN ENGINEER OF RECORD: J. SHERMAN      DATE: FEB 2018



BM#2: R/R SPIKE SET IN ROOT OF 36" OAK, STA. 15+93.39 -L-, 183' LEFT, EL. 736.61'



**LOCATION SKETCH**

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

**NOTES**

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.  
 FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.  
 FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.  
 THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.  
 THE EXISTING STRUCTURE CONSISTING OF A SINGLE SPAN 41'-6", WITH A CLEAR ROADWAY WIDTH OF 29'-4". REINFORCED CONCRETE DECK WITH ASPHALT WEARING SURFACE ON STEEL I-BEAMS WITH REINFORCED CONCRETE CAPS ON TIMBER PILES AND SILL END BENTS AND LOCATED AT PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE, A LOAD LIMIT MAY BE POSTED AND BE MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.  
 REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.  
 INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE".  
 THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-1 SHALL BE EXCAVATED FOR A DISTANCE OF 20 FT (LEFT) AND 20 FT (RIGHT) OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.  
 THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.  
 THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18 - EVALUATING SCOUR AT BRIDGES".  
 ASPHALT WEARING SURFACE IS INCLUDED IN THE ROADWAY QUANTITY ON ROADWAY PLANS.

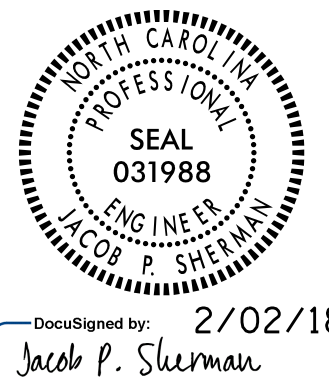
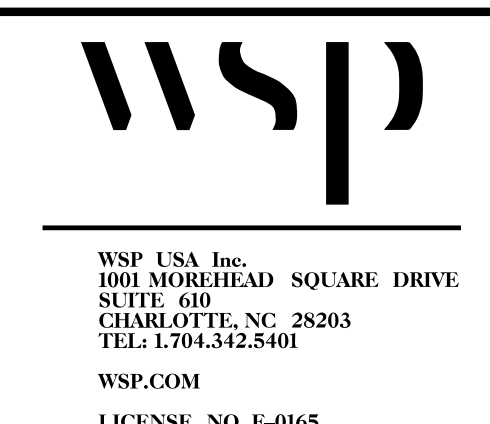
FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.  
 FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.  
 FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.  
 FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.  
 THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.  
 FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.  
 FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.  
 PILES AT END BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 110 TONS PER PILE.  
 DRIVE PILES AT END BENT 1 TO A REQUIRED DRIVING RESISTANCE OF 183 TONS PER PILE.  
 PILES AT END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 110 TONS PER PILE.  
 DRIVE PILES AT END BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 183 TONS PER PILE.

**TOTAL BILL OF MATERIAL**

	REMOVAL OF EXISTING STRUCTURE @ STA. 16+00.00 -L-	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 12 X 53 STEEL PILES		VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 2'-9" PRESTRESSED CONCRETE BOX BEAMS	
								No.	LIN. FT.					LIN. FT.	TONS
SUPERSTRUCTURE	LUMP SUM	LUMP SUM	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	EACH	No.	LIN. FT.	LIN. FT.	TONS	SO. YDS.	LUMP SUM	No.	LIN. FT.
END BENT 1			LUMP SUM	28.2		3957	7	7	259		165	183			
END BENT 2			LUMP SUM	28.2		3957	7	7	264		130	145			
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	56.4	LUMP SUM	7914	14	14	523	160	295	328	LUMP SUM	13	1040

PROJECT NO. B-5769  
 ROWAN COUNTY  
 STATION: 16+00.00 -L-  
 SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 GENERAL DRAWING  
 FOR BRIDGE ON SR 2539  
 (PEACH ORCHARD RD.) OVER  
 TOWN CREEK BETWEEN  
 SR 2662 AND I-85



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			15

**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

2/2/2018 2:41:35 PM 2012 NDDOT Division On-Community 5 Bridges B-5769 Peach Orchard Road Structures 02-Drawings 01\_003.B5769\_SML\_0002.dgn

DESIGNED BY: M. HOBBS DATE: APR 2017  
 DRAWN BY: M. HOBBS DATE: APR 2017  
 CHECKED BY: J. SMITH DATE: APR 2017  
 DESIGN ENGINEER OF RECORD: J. SHERMAN DATE: FEB 2018

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.155	--	1.75	0.273	1.72	A	EL	39.25	0.502	1.51	A	EL	7.85	0.80	0.273	1.15	A	EL	39.25		
	HL-93(Opr)	N/A	--	1.958	--	1.35	0.273	2.23	A	EL	39.25	0.502	1.96	A	EL	7.85	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.533	55.181	1.75	0.273	2.28	A	EL	39.25	0.502	1.91	A	EL	7.85	0.80	0.273	1.53	A	EL	39.25		
	HS-20(Opr)	36.000	--	2.473	89.021	1.35	0.273	2.96	A	EL	39.25	0.502	2.47	A	EL	7.85	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.509	47.376	1.4	0.273	6.53	A	EL	39.25	0.502	5.73	A	EL	7.85	0.80	0.273	3.51	A	EL	39.25	
		SNGARBS2	20.000	--	2.594	51.88	1.4	0.273	4.82	A	EL	39.25	0.502	4.06	A	EL	7.85	0.80	0.273	2.59	A	EL	39.25	
		SNAGRIS2	22.000	--	2.448	53.85	1.4	0.273	4.55	A	EL	39.25	0.502	3.76	A	EL	7.85	0.80	0.273	2.45	A	EL	39.25	
		SNCOTTS3	27.250	--	1.746	47.571	1.4	0.273	3.25	A	EL	39.25	0.502	2.86	A	EL	7.85	0.80	0.273	1.75	A	EL	39.25	
		SNAGGRS4	34.925	--	1.451	50.667	1.4	0.273	2.7	A	EL	39.25	0.502	2.36	A	EL	7.85	0.80	0.273	1.45	A	EL	39.25	
		SNS5A	35.550	--	1.419	50.453	1.4	0.273	2.64	A	EL	39.25	0.502	2.38	A	EL	7.85	0.80	0.273	1.42	A	EL	39.25	
		SNS6A	39.950	--	1.299	51.885	1.4	0.273	2.42	A	EL	39.25	0.502	2.17	A	EL	7.85	0.80	0.273	1.30	A	EL	39.25	
	SNS7B	42.000	--	1.237	51.941	1.4	0.273	2.3	A	EL	39.25	0.502	2.13	A	EL	7.85	0.80	0.273	1.24	A	EL	39.25		
	TTST	TNAGRIT3	33.000	--	1.583	52.231	1.4	0.273	2.94	A	EL	39.25	0.502	2.59	A	EL	7.85	0.80	0.273	1.58	A	EL	39.25	
		TNT4A	33.075	--	1.589	52.55	1.4	0.273	2.96	A	EL	39.25	0.502	2.53	A	EL	7.85	0.80	0.273	1.59	A	EL	39.25	
		TNT6A	41.600	--	1.296	53.907	1.4	0.273	2.41	A	EL	39.25	0.502	2.25	A	EL	7.85	0.80	0.273	1.30	A	EL	39.25	
		TNT7A	42.000	--	1.301	54.625	1.4	0.273	2.42	A	EL	39.25	0.502	2.21	A	EL	7.85	0.80	0.273	1.30	A	EL	39.25	
		TNT7B	42.000	--	1.341	56.333	1.4	0.273	2.49	A	EL	39.25	0.502	2.08	A	EL	7.85	0.80	0.273	1.34	A	EL	39.25	
		TNAGRIT4	43.000	--	1.279	55.001	1.4	0.273	2.38	A	EL	39.25	0.502	2.02	A	EL	7.85	0.80	0.273	1.28	A	EL	39.25	
TNAGT5A		45.000	--	1.207	54.337	1.4	0.273	2.25	A	EL	39.25	0.502	2	A	EL	7.85	0.80	0.273	1.21	A	EL	39.25		
TNAGT5B	45.000	3	1.194	53.739	1.4	0.273	2.22	A	EL	39.25	0.502	1.92	A	EL	7.85	0.80	0.273	1.19	A	EL	39.25			

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	$\gamma_{DC}$	$\gamma_{DW}$
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

- 1.
- 2.
- 3.
- 4.

# CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

2 DESIGN LOAD RATING (HS-20)

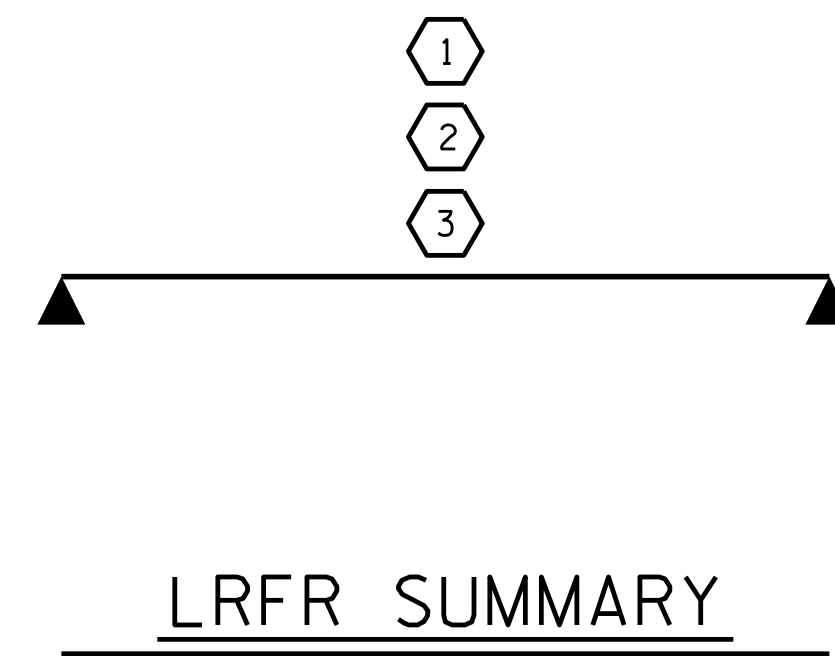
3 LEGAL LOAD RATING \*\*\*

\*\*\* SEE CHART FOR VEHICLE TYPE

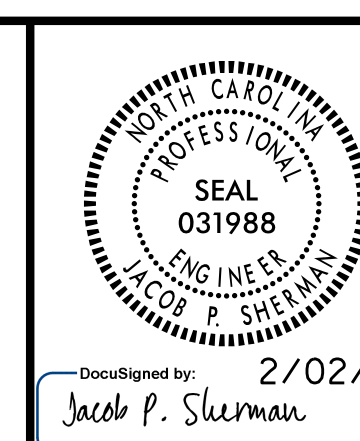
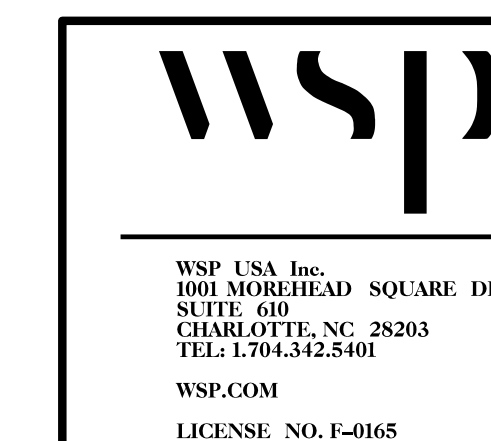
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GIRDER LOCATION

I - INTERIOR GIRDER  
EL - EXTERIOR LEFT GIRDER  
ER - EXTERIOR RIGHT GIRDER



PROJECT NO. B-5769  
ROWAN COUNTY  
 STATION: 16+00.00 -L-



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 LRFR SUMMARY FOR  
 80' BOX BEAM UNIT  
 90° SKEW  
 (NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			15

DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

2/2/2018 2:41:35 PM 2012 NCDOT Division On-Community 5 Bridges B-5769 Pecch Orchard Road Structures 02-Drawing 01-005-B5769-SML-LRFR.dgn

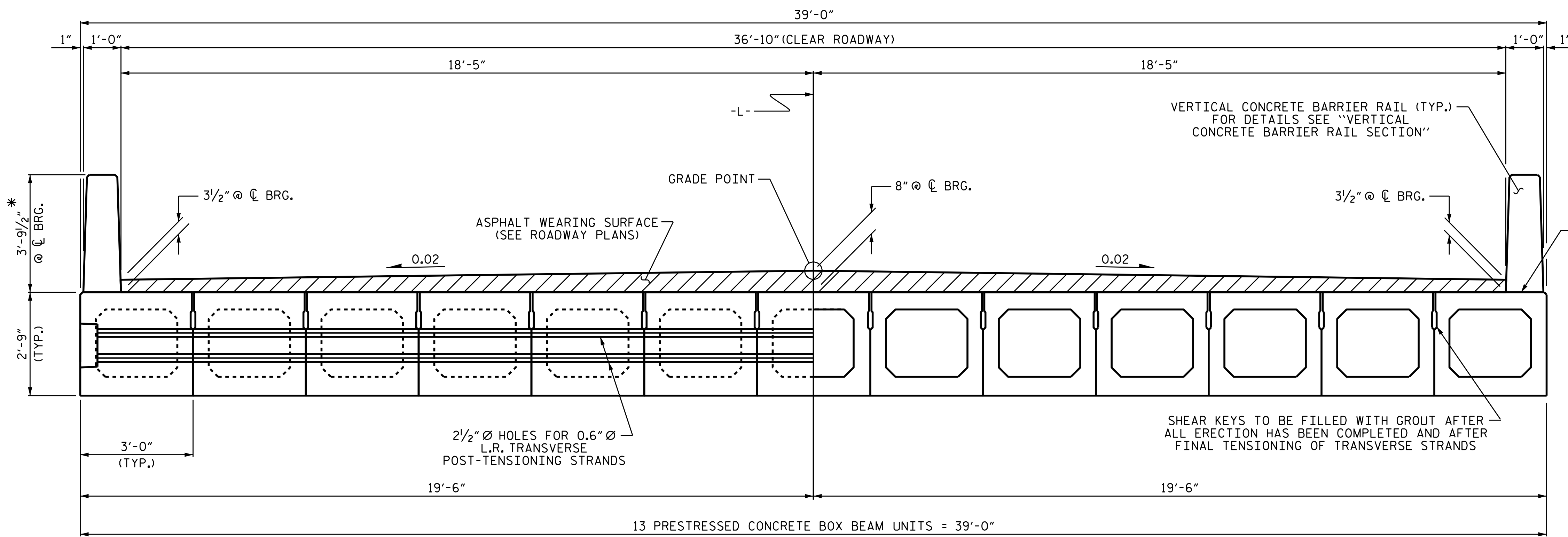
ASSEMBLED BY: M. HOBBS DATE: APR 2017  
 CHECKED BY: J. SMITH DATE: APR 2017  
 DESIGN ENGINEER OF RECORD: J. SHERMAN DATE: FEB 2018

DRAWN BY: TMG II/II  
 CHECKED BY: AAC II/II



**NOTES**

- ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
- ALL REINFORCING STEEL CAST WITH THE BOX BEAM SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BOX BEAMS.
- FLAME CUTTING OF THE TRANSVERSE POST-TENSIONING STRAND IS NOT ALLOWED.
- RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.
- THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF BOX BEAM SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.
- THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.
- THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6000 PSI.
- ALL REINFORCING STEEL IN VERTICAL CONCRETE BARRIER RAILS SHALL BE EPOXY COATED.
- PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE BOX BEAM UNIT ENDS.
- APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.
- VERTICAL GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOoled IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A VERTICAL CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.
- THE LOCATION OF THE VOID DRAINS MAY BE SHIFTED SLIGHTLY WHERE NECESSARY TO CLEAR PRESTRESSING STRANDS OR TRANSVERSE REINFORCING STEEL.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.
- THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.
- THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.
- THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.

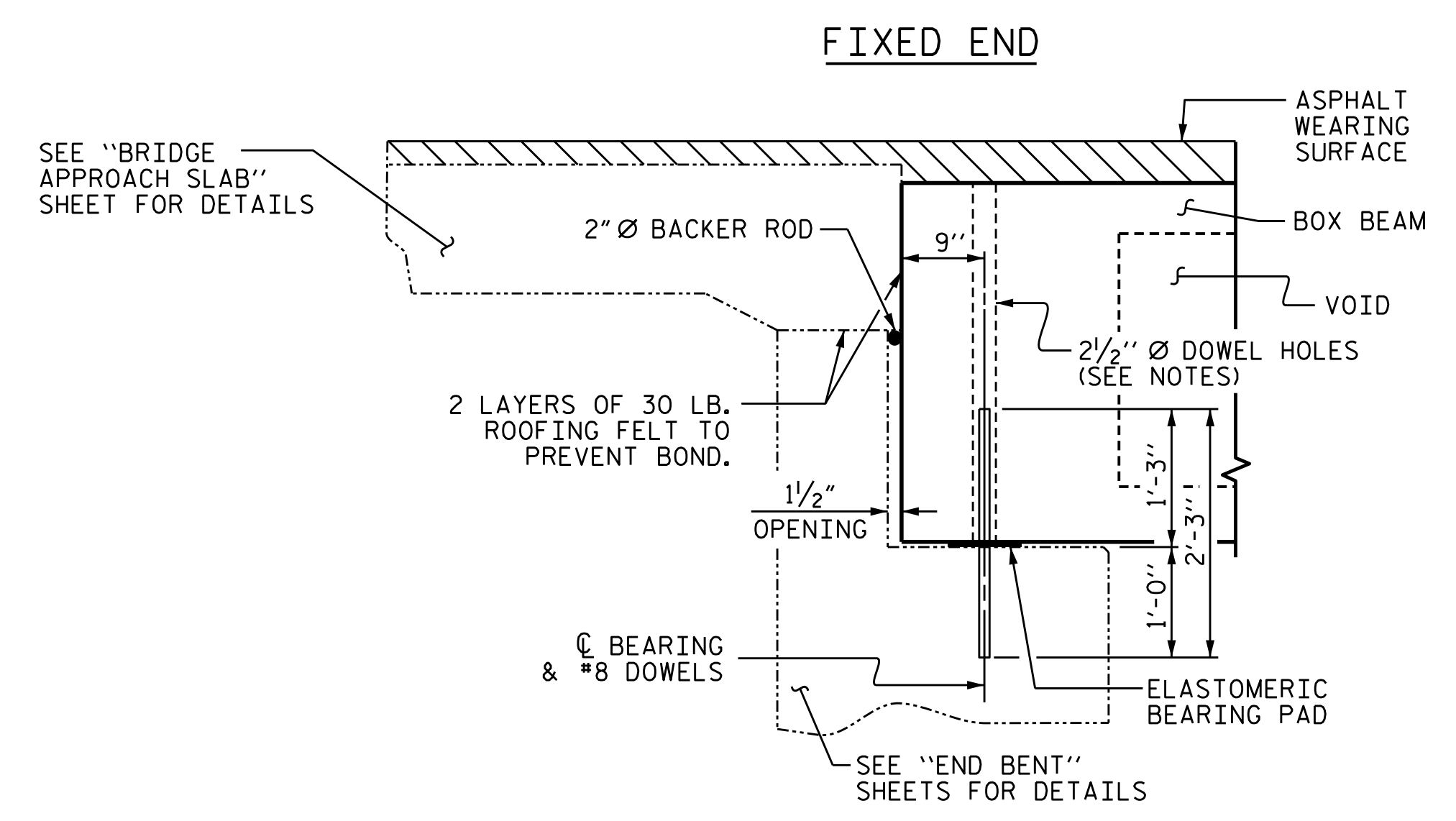


**HALF SECTION**  
AT INTERMEDIATE DIAPHRAGMS

**HALF SECTION**  
THROUGH VOIDS

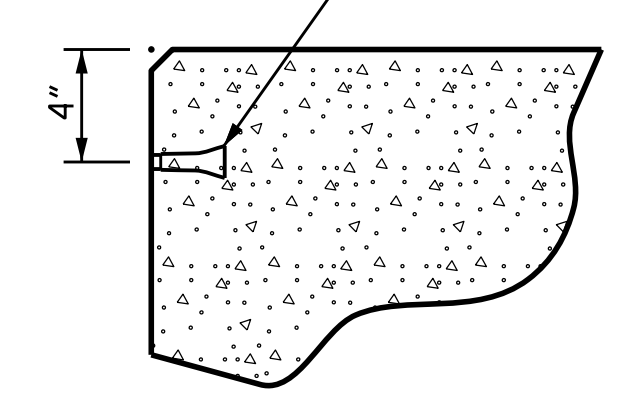
**TYPICAL SECTION**

\* THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.



**SECTION AT END BENT**

PERMITTED THREADED INSERT CAST IN OUTSIDE FACE OF EXTERIOR UNIT AND RECESSED 3/8" SIZE TO BE DETERMINED BY CONTRACTOR.



**THREADED INSERT DETAIL**

PROJECT NO. B-5769  
ROWAN COUNTY  
STATION: 16+00.00 -L-

SHEET 1 OF 5

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
3'-0" X 2'-9"  
PRESTRESSED CONCRETE  
BOX BEAM UNIT

**wsp**  
WSP USA Inc.  
100 MOREHEAD SQUARE DRIVE  
SUITE 610  
CHARLOTTE, NC 28203  
TEL: 1.704.342.5401  
WSP.COM  
LICENSE NO. F-0165

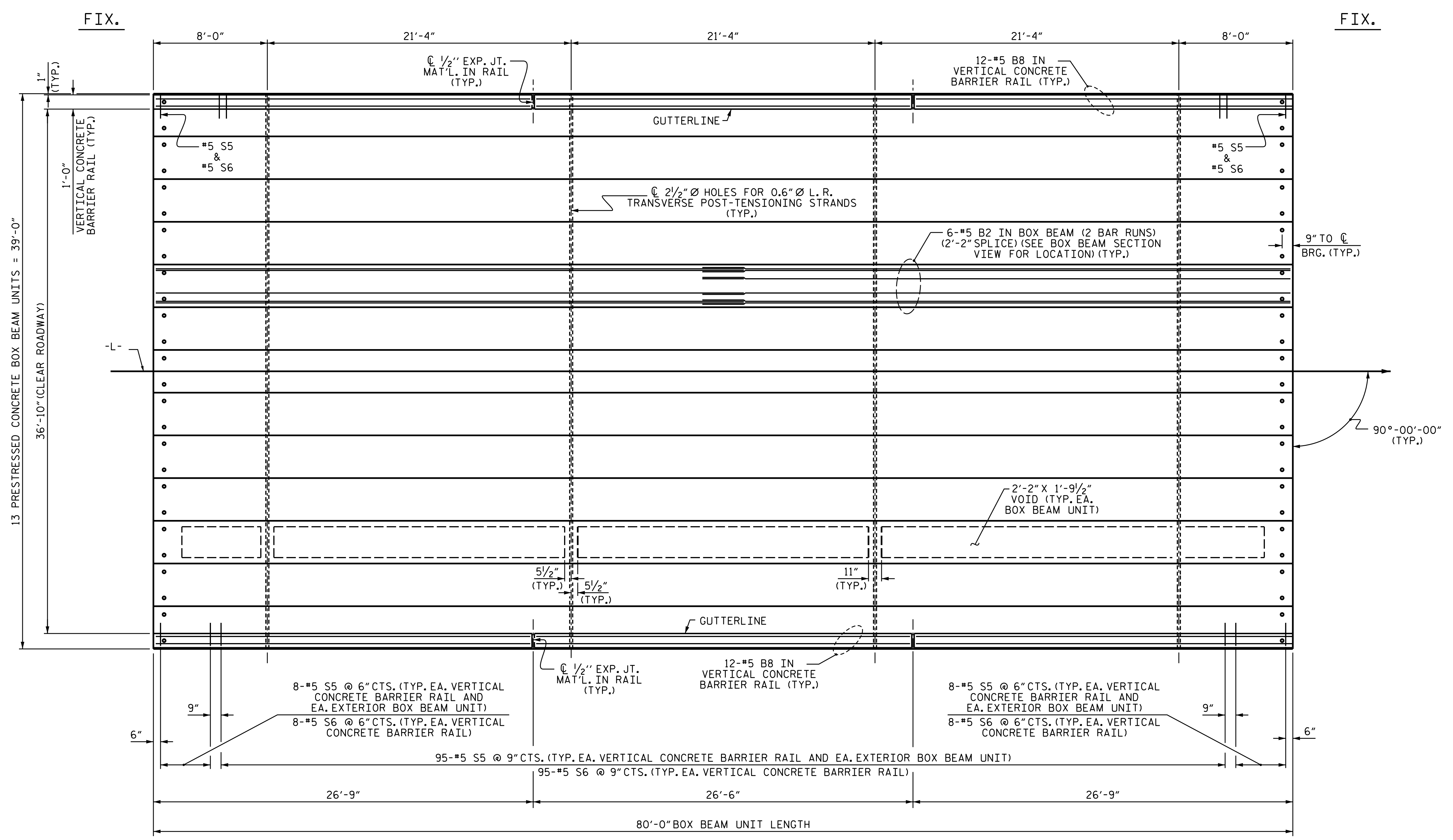
PROFESSIONAL ENGINEER  
SEAL  
031988  
JACOB P. SHERMAN  
DocuSigned by:  
Jacob P. Sherman  
2/02/18

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			15

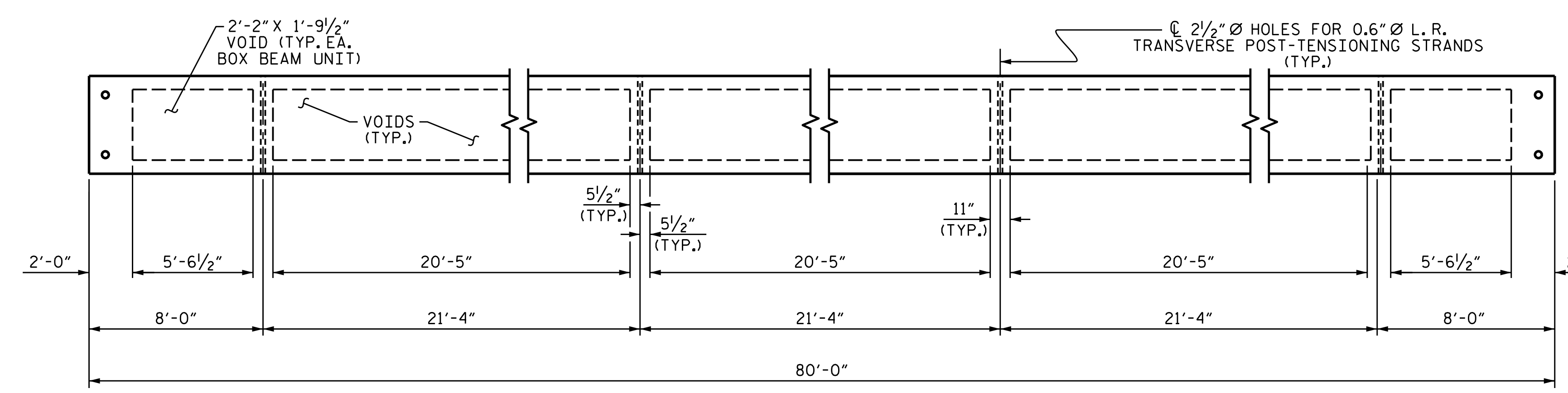
**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

2/2/2018 2:41:35 PM 2012 NCDOT Division 05-Community 5 Bridges B-5769 Pecan Orchard Road Structures 02-Drawing 01\_007-B5769-SMIL-BB01.dgn

ASSEMBLED BY: <u>M. HOBBS</u>	DATE: <u>APR 2017</u>	DRAWN BY: <u>DGE 8/II</u>	REV. <u>8/14</u>	MAA/TMG
CHECKED BY: <u>J. SMITH</u>	DATE: <u>APR 2017</u>	CHECKED BY: <u>TMG II/II</u>		
DESIGN ENGINEER OF RECORD: <u>J. SHERMAN</u>	DATE: <u>FEB 2018</u>			



PLAN OF UNIT



DIAPHRAGM AND VOID LAYOUT

PROJECT NO. B-5769  
ROWAN COUNTY  
 STATION: 16+00.00 -L-  
 SHEET 2 OF 5

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 PLAN OF 80' UNIT  
 36'-10" CLEAR ROADWAY  
 90° SKEW

**wsp**  
 WSP USA Inc.  
 801 MOREHEAD SQUARE DRIVE  
 SUITE 610  
 CHARLOTTE, NC 28203  
 TEL: 1.704.342.5401  
 WSP.COM  
 LICENSE NO. F-0165

PROFESSIONAL ENGINEER  
 SEAL  
 031988  
 ENGINEER  
 JACOB P. SHERMAN  
 2/02/18  
 Jacob P. Sherman

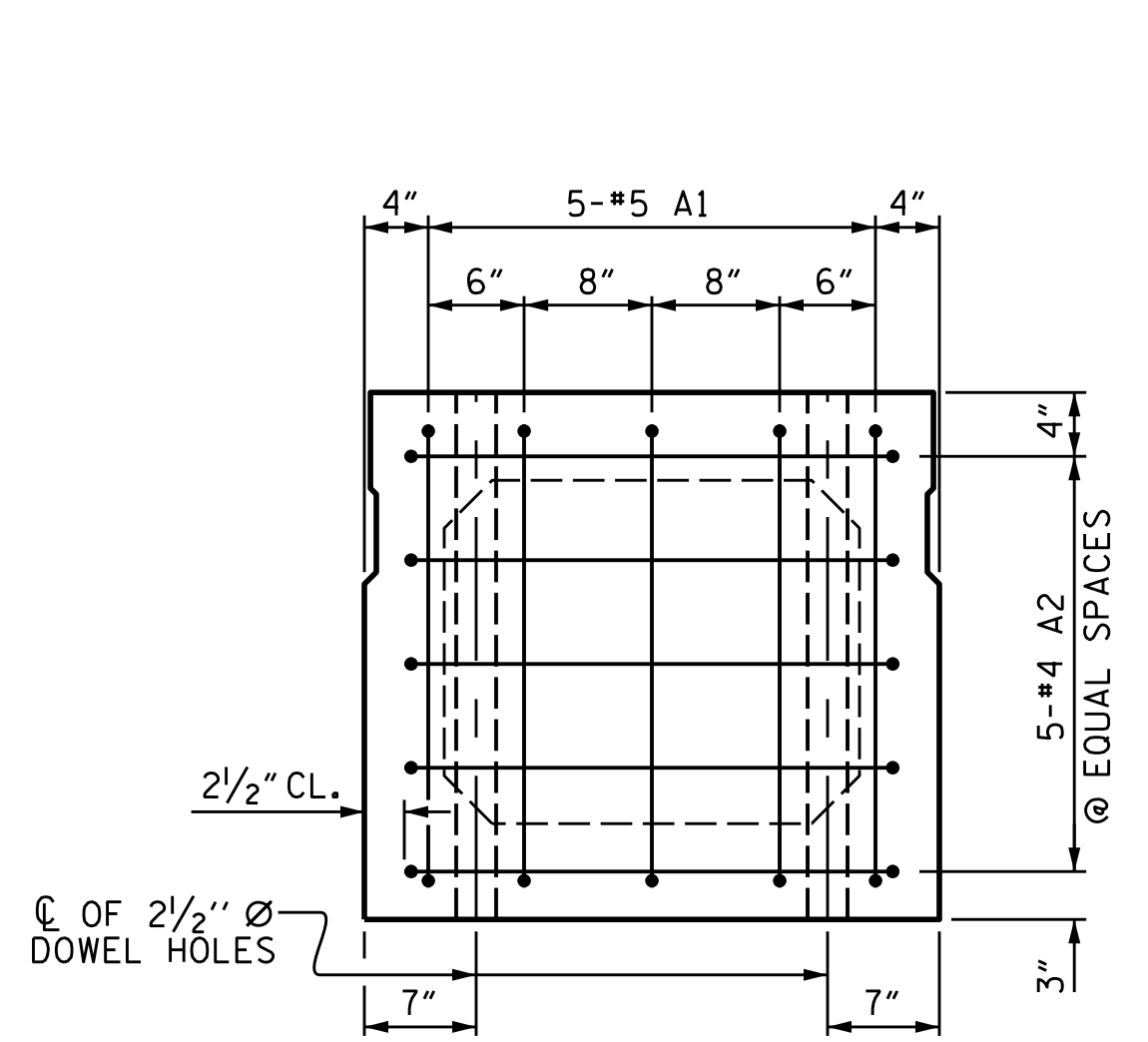
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			15

2/2/2018 2:21:35PM 2012 NCDOT Division On-Com/V2561E Group 5 Bridges/B-5769 Patch Orchard Road/Structures/02-Drawing/01\_009\_B5769\_SML\_B002.dgn

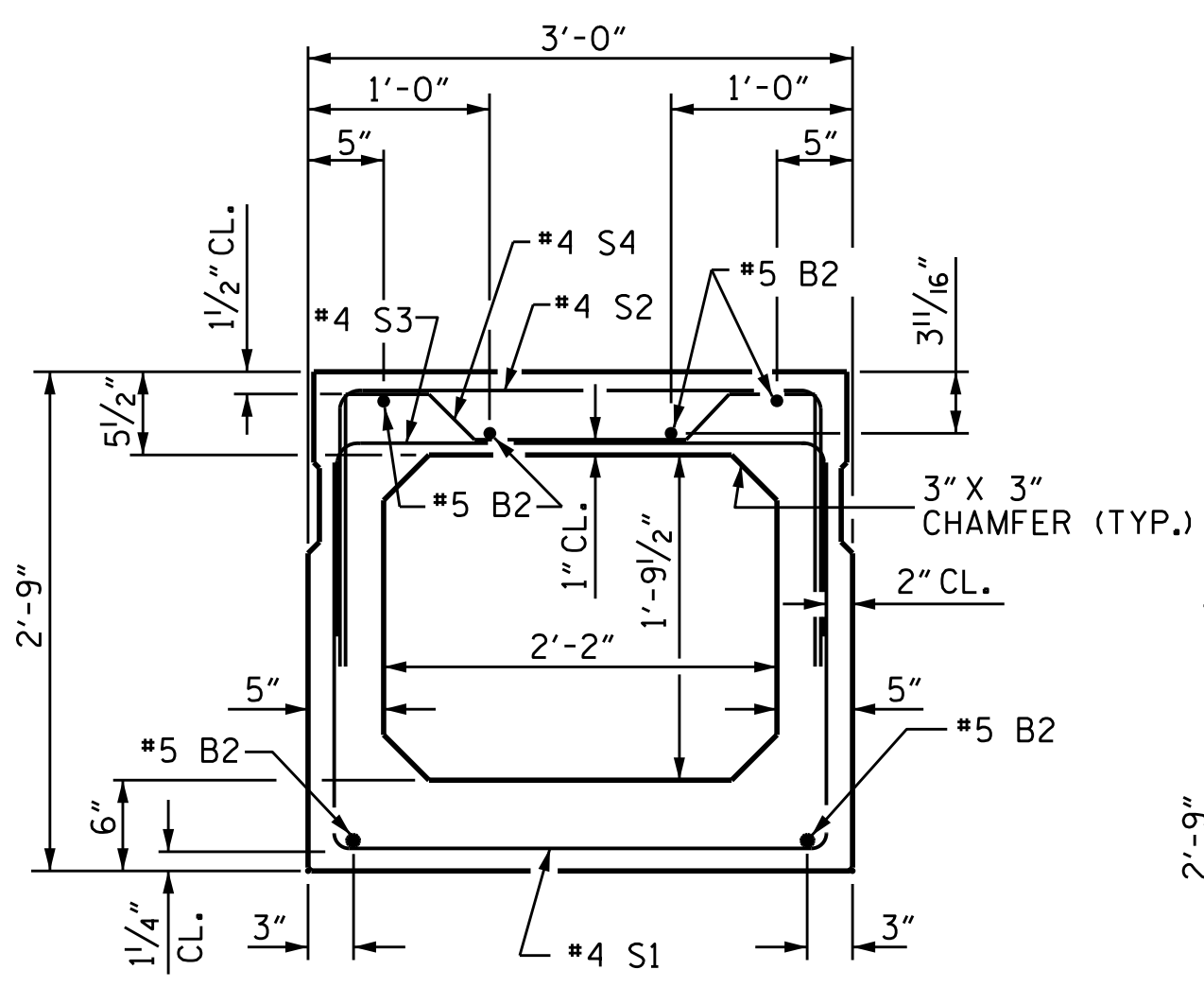
ASSEMBLED BY: <u>M. HOBBS</u>	DATE: <u>APR 2017</u>	DRAWN BY: <u>DGE 8/II</u>	REV. <u>8/14</u>	MAA/TMG
CHECKED BY: <u>J. SMITH</u>	DATE: <u>APR 2017</u>	CHECKED BY: <u>TMG II/II</u>		
DESIGN ENGINEER OF RECORD: <u>J. SHERMAN</u>	DATE: <u>FEB 2018</u>			

**DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED**

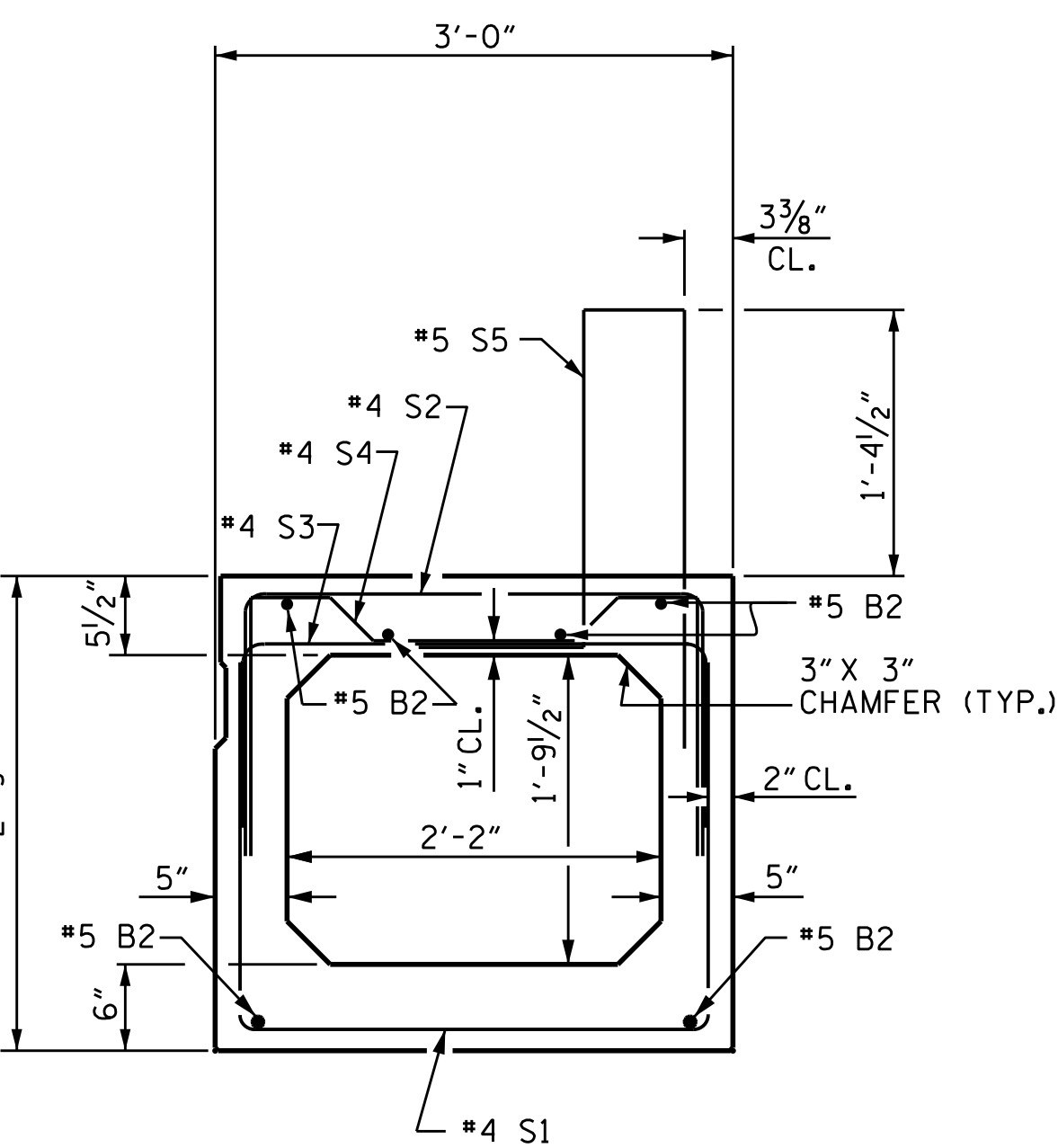




**END ELEVATION**  
SHOWING PLACEMENT OF #5 & #4 "A" BARS AND LOCATION OF DOWEL HOLES. (INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION. STRAND LAYOUT NOT SHOWN.)

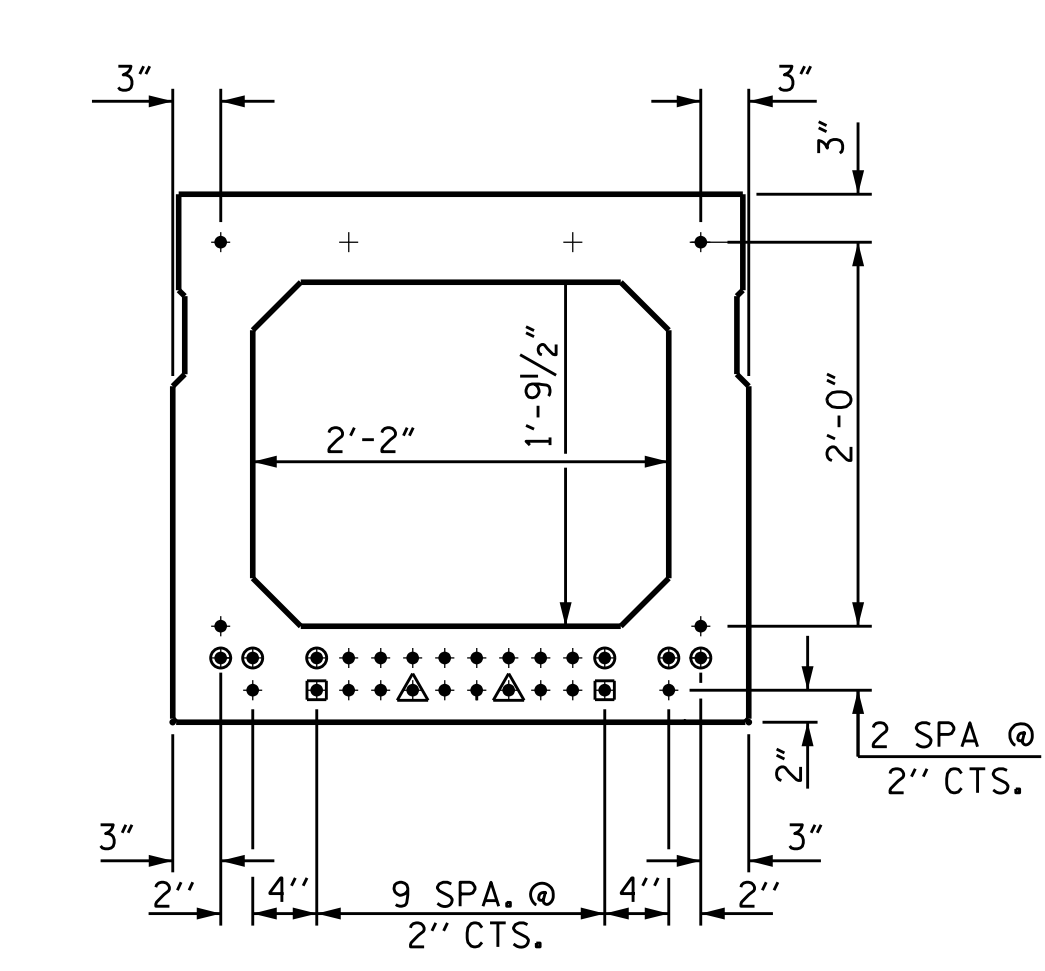


**INTERIOR BOX BEAM SECTION**  
(STRAND LAYOUT NOT SHOWN)



**EXTERIOR BOX BEAM SECTION**  
(STRAND LAYOUT NOT SHOWN)

**0.6" Ø LOW RELAXATION STRAND LAYOUT**

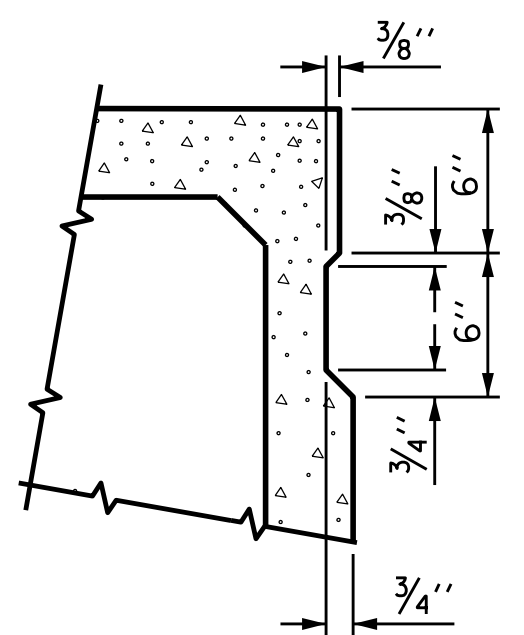


**TYPICAL STRAND LOCATION**  
(24 STRANDS REQUIRED)

**DEBONDING LEGEND**

- FULLY BONDED STRANDS
- ◻ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ◻ STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER
- OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE BOX BEAM UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST.

BOND SHALL BE BROKEN ON STRANDS AS SHOWN FOR THE SPECIFIED LENGTH FROM EACH END OF THE BOX BEAM. SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.



**SHEAR KEY DETAIL**

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR BOX BEAMS.

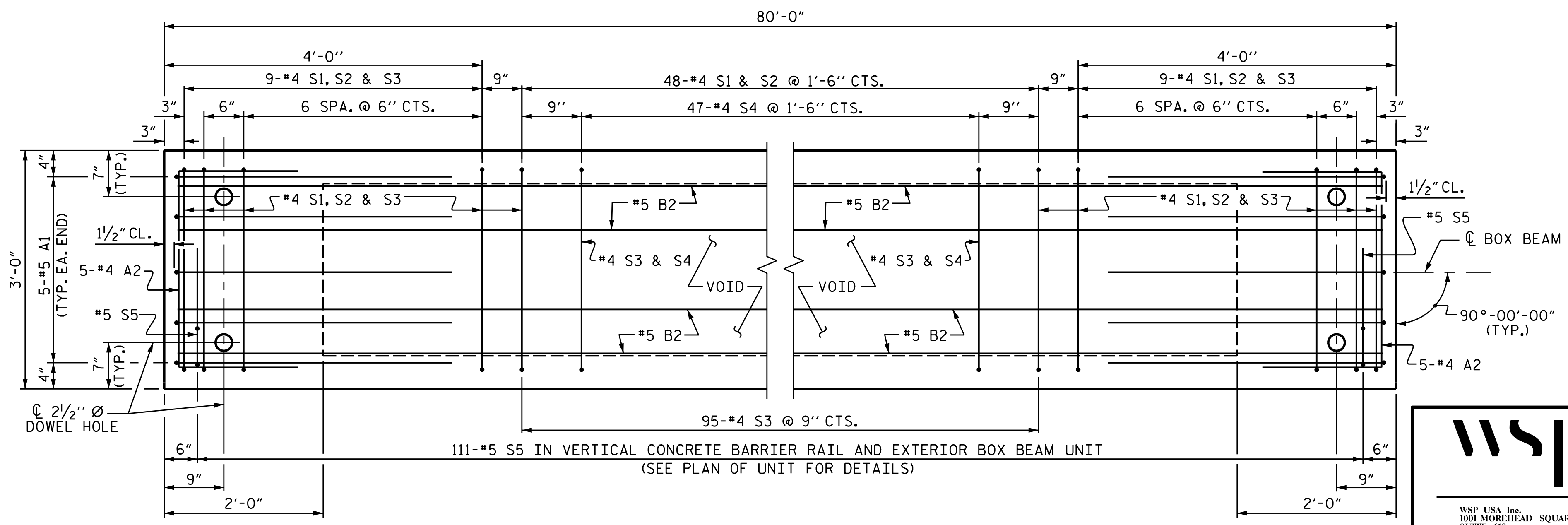
GRADE 270 STRANDS	
0.6" Ø L.R.	
AREA ( SQUARE INCHES )	0.217
ULTIMATE STRENGTH ( LBS. PER STRAND )	58,600
APPLIED PRESTRESS ( LBS. PER STRAND )	43,950

**BAR TYPES**

THIS LEG AT TOP OF UNIT

ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE BOX BEAM SECTION							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
A1	10	#5	1	6'-8"	70	6'-8"	70
A2	34	#4	2	5'-7"	127	5'-7"	127
B2	12	#5	STR	40'-11"	512	40'-11"	512
K1	12	#4	6	6'-2"	49	6'-2"	49
K2	8	#4	STR	2'-7"	14	2'-7"	14
S1	66	#4	3	7'-6"	331	7'-6"	331
S2	66	#4	3	5'-8"	250	5'-8"	250
S3	113	#4	3	4'-10"	365	4'-10"	365
S4	47	#4	4	5'-10"	183	5'-10"	183
* S5	111	#5	5	5'-10"	675	--	--
REINFORCING STEEL				1901	LBS.	1901	LBS.
* EPOXY COATED REINF. STEEL				675	LBS.		
8000 P.S.I. CONCRETE				14.2	CU. YDS.	14.1	CU. YDS.
0.6" Ø L.R. STRANDS				No. 24		No. 24	



**PLAN OF BOX BEAM**

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS. FOR LOCATION OF DIAPHRAGMS, SEE "PLAN OF UNIT". FOR THREADED INSERTS, SEE "THREADED INSERT DETAIL". FOR REINFORCING STEEL IN DIAPHRAGMS, SEE "DOUBLE DIAPHRAGM DETAILS".

PROJECT NO. B-5769  
ROWAN COUNTY  
STATION: 16+00.00 -L-  
SHEET 3 OF 5

**WSP**

WSP USA Inc.  
1001 MOREHEAD SQUARE DRIVE  
SUITE 610  
CHARLOTTE, NC 28203  
TEL: 1.704.342.5401  
WSP.COM  
LICENSE NO. F-0165

DocuSigned by:  
Jacob P. Sherman  
2/02/18  
SEAL  
031988  
ENGINEER  
JACOB P. SHERMAN

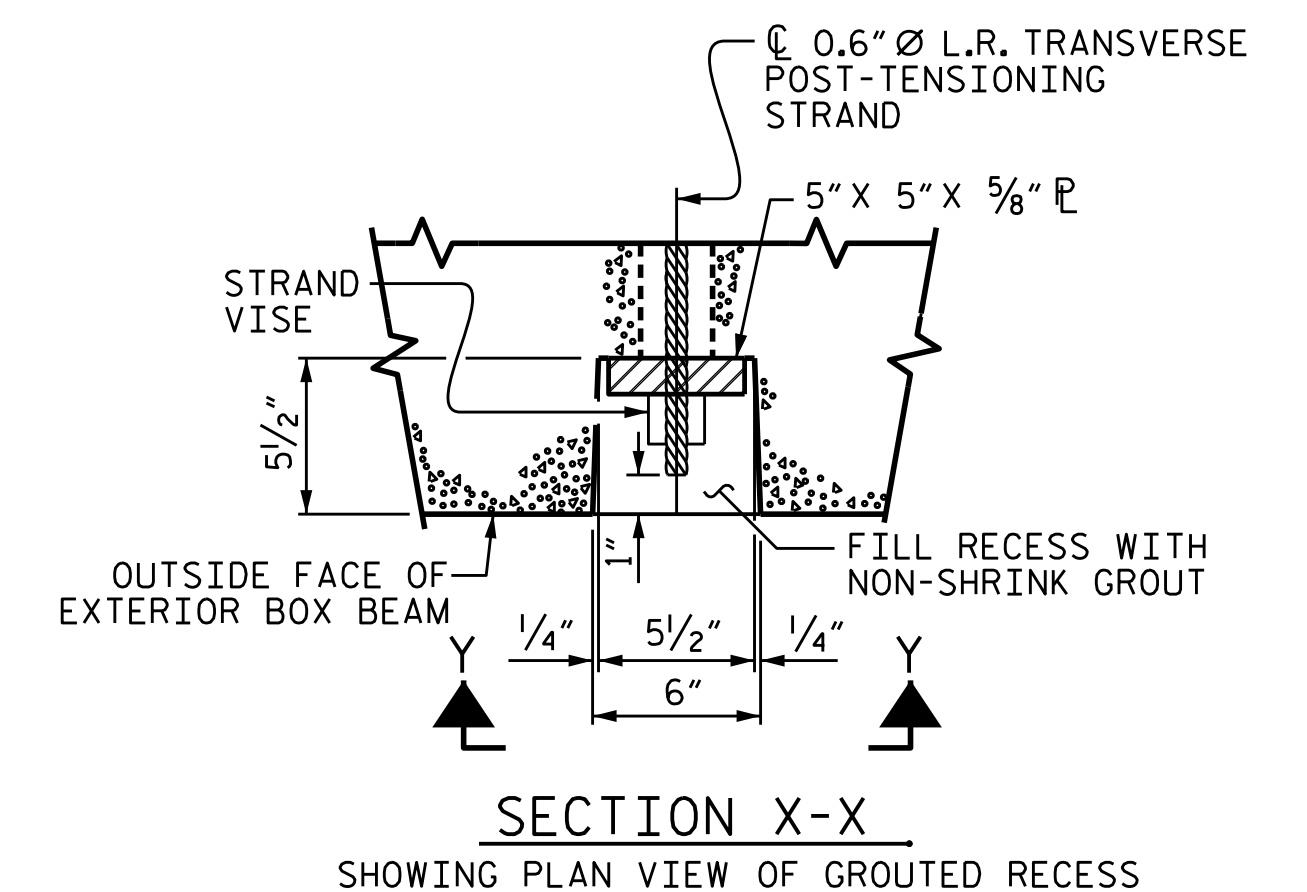
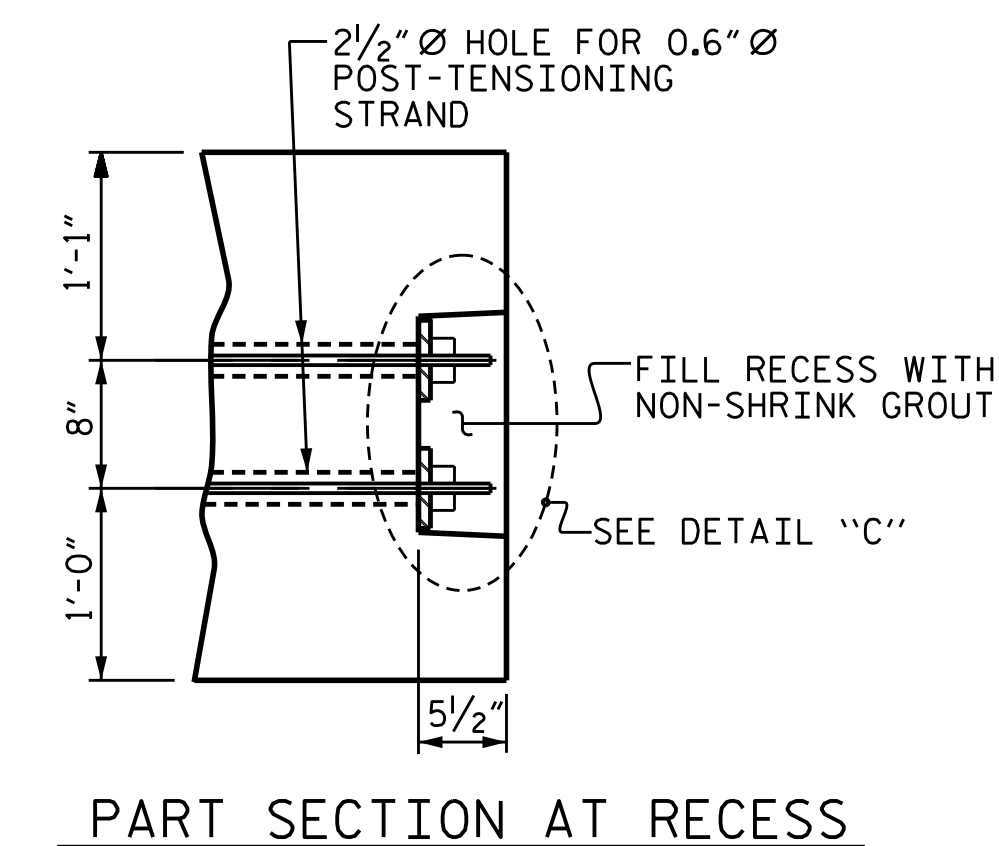
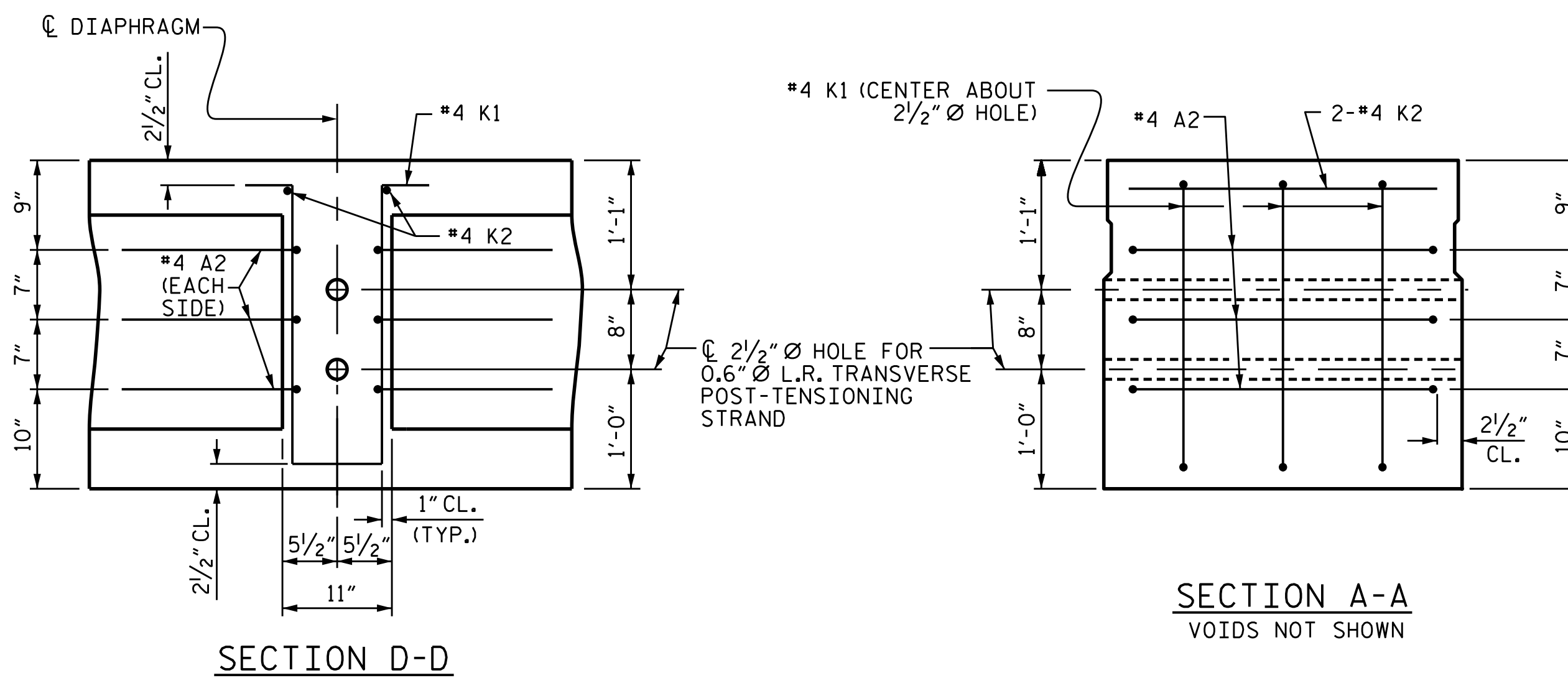
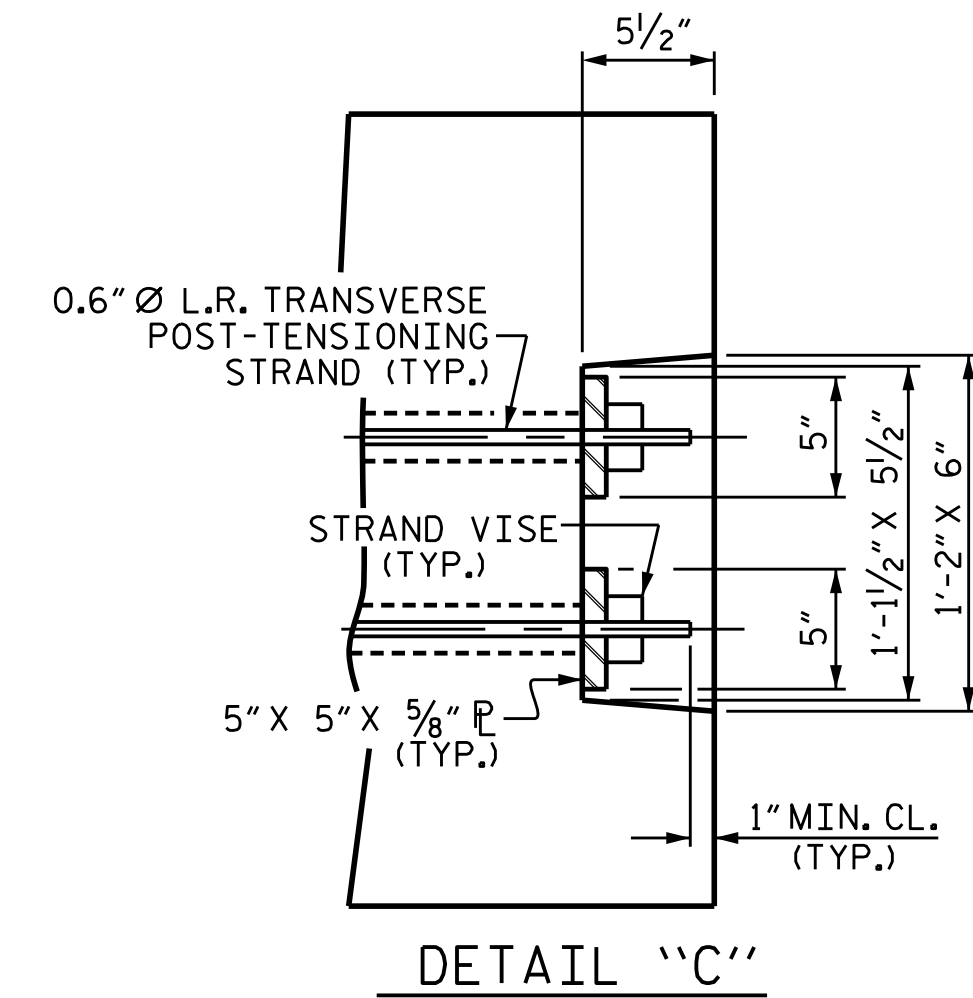
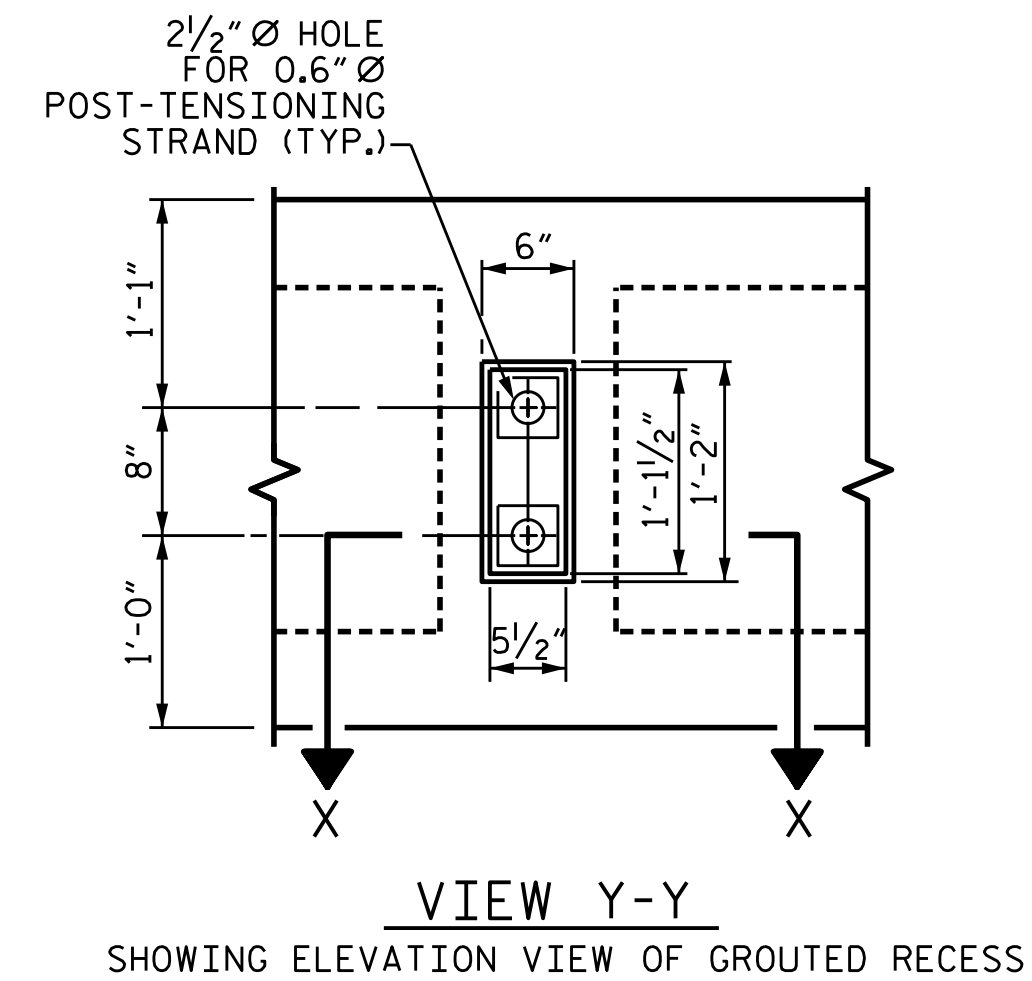
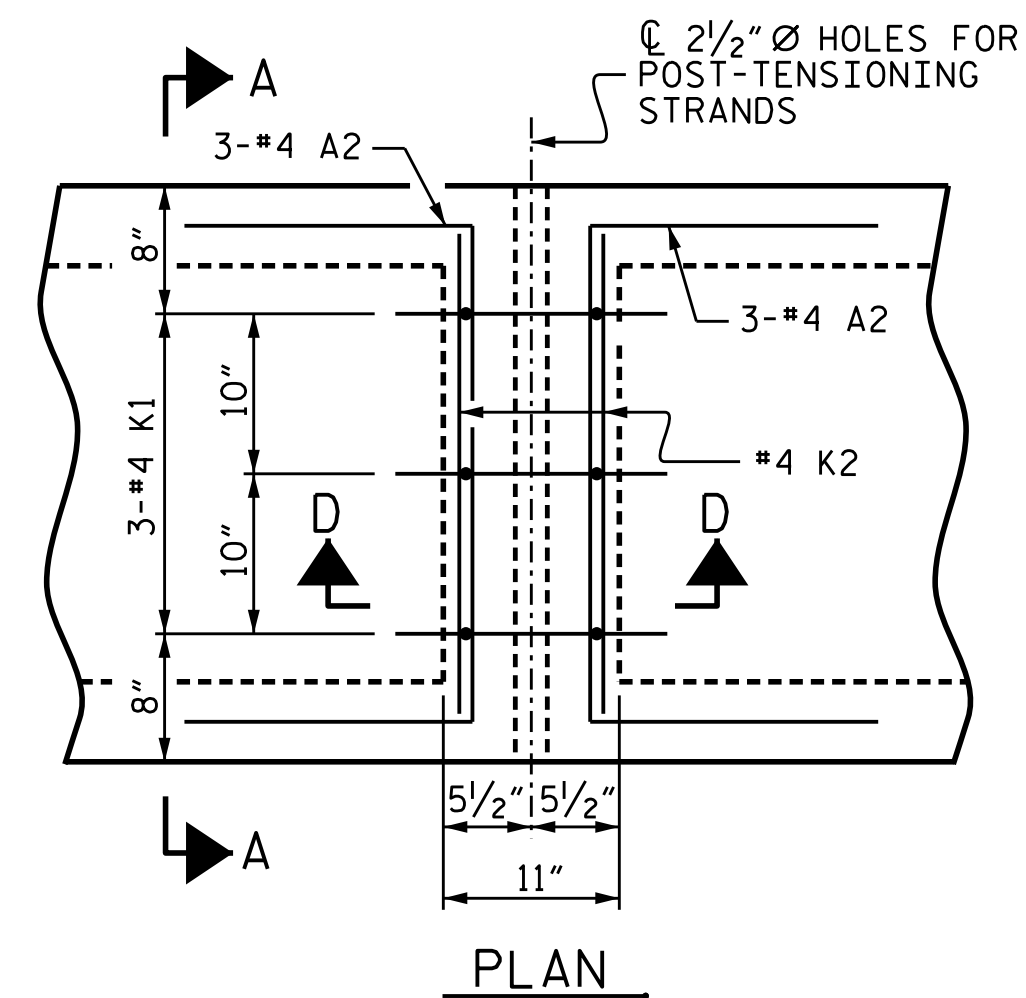
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
3'-0" X 2'-9"  
PRESTRESSED CONCRETE  
BOX BEAM UNIT

REVISIONS						SHEET NO. S-6
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 15
2			4			

2/2/2018 10:02 AM NCDOT Division On-County 5 Bridges B-5769 Pecan Orchard Road Structures 02-Drawing 01.L1.B5169.SMU.BB03.dgn

ASSEMBLED BY: M. HOBBS DATE: APR 2017  
CHECKED BY: J. SMITH DATE: APR 2017  
DESIGN ENGINEER: J. SHERMAN DATE: FEB 2018  
OF RECORD:

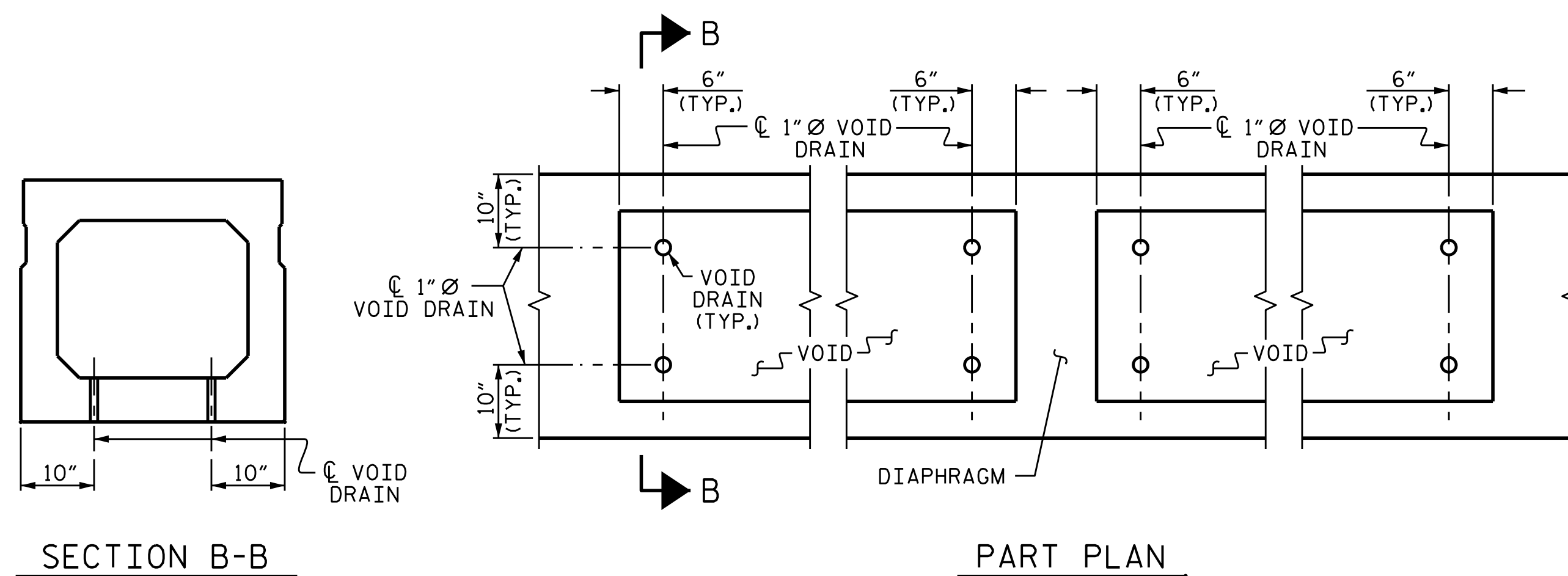
DRAWN BY: DGE 10/II REV. 9/14 MAA/TMG  
CHECKED BY: TMG 11/II



**DOUBLE DIAPHRAGM DETAILS**

#4 "S" BARS NOT SHOWN. #4 "S" BARS MAY BE SHIFTED SLIGHTLY TO CLEAR 2 1/2" Ø HOLE.

**GROUTED RECESS DETAIL AT END OF POST-TENSIONED STRANDS OF EXTERIOR BOX BEAM**



**VOID DRAIN DETAILS**

(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)

DEAD LOAD DEFLECTION AND CAMBER	
80' BOX BEAM UNIT	3'-0" x 2'-9"
CAMBER (SLAB ALONE IN PLACE)	0.6" Ø L.R. STRAND
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1 3/4" ↓
FINAL CAMBER	1/2" ↓
	1/4" ↑

\*\* INCLUDES FUTURE WEARING SURFACE

PROJECT NO. B-5769  
ROWAN COUNTY  
 STATION: 16+00.00 -L-

SHEET 4 OF 5

**wsp**  
 WSP USA Inc.  
 800 MOREHEAD SQUARE DRIVE  
 SUITE 610  
 CHARLOTTE, NC 28203  
 TEL: 1.704.342.5401  
 WSP.COM  
 LICENSE NO. F-0165

SEAL  
 031988  
 ENGINEER  
 JACOB P. SHERMAN  
 DocuSigned by:  
 Jacob P. Sherman  
 2/02/18  
 A6326DCE1848E

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 3'-0" X 2'-9"  
 PRESTRESSED CONCRETE  
 BOX BEAM UNIT

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.  
**S-7**  
 TOTAL SHEETS  
**15**

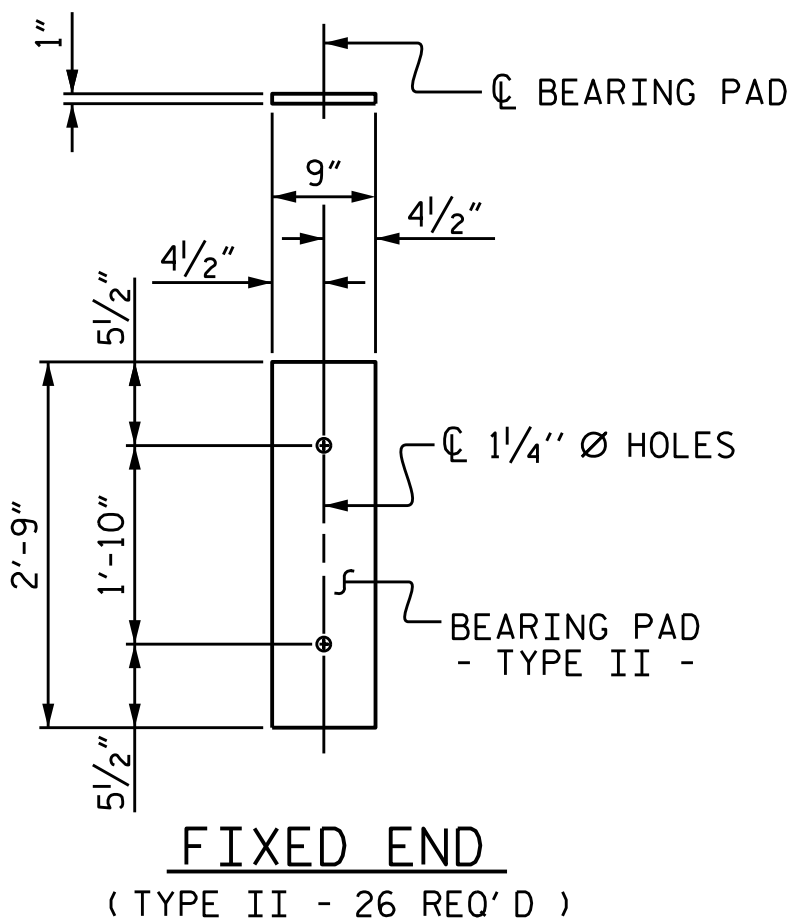
**DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED**

2/2/2018 2:41:35 PM 2012 NCDOT Division On-Com/VZ561E Group 5 Bridges/B-5769 Patch Orchard Road/Structures/02-Drawing/01-013-B5769-SMU-BB04.dgn

ASSEMBLED BY: M. HOBBS DATE: APR 2017  
 CHECKED BY: J. SMITH DATE: APR 2017  
 DESIGN ENGINEER OF RECORD: J. SHERMAN DATE: FEB 2018

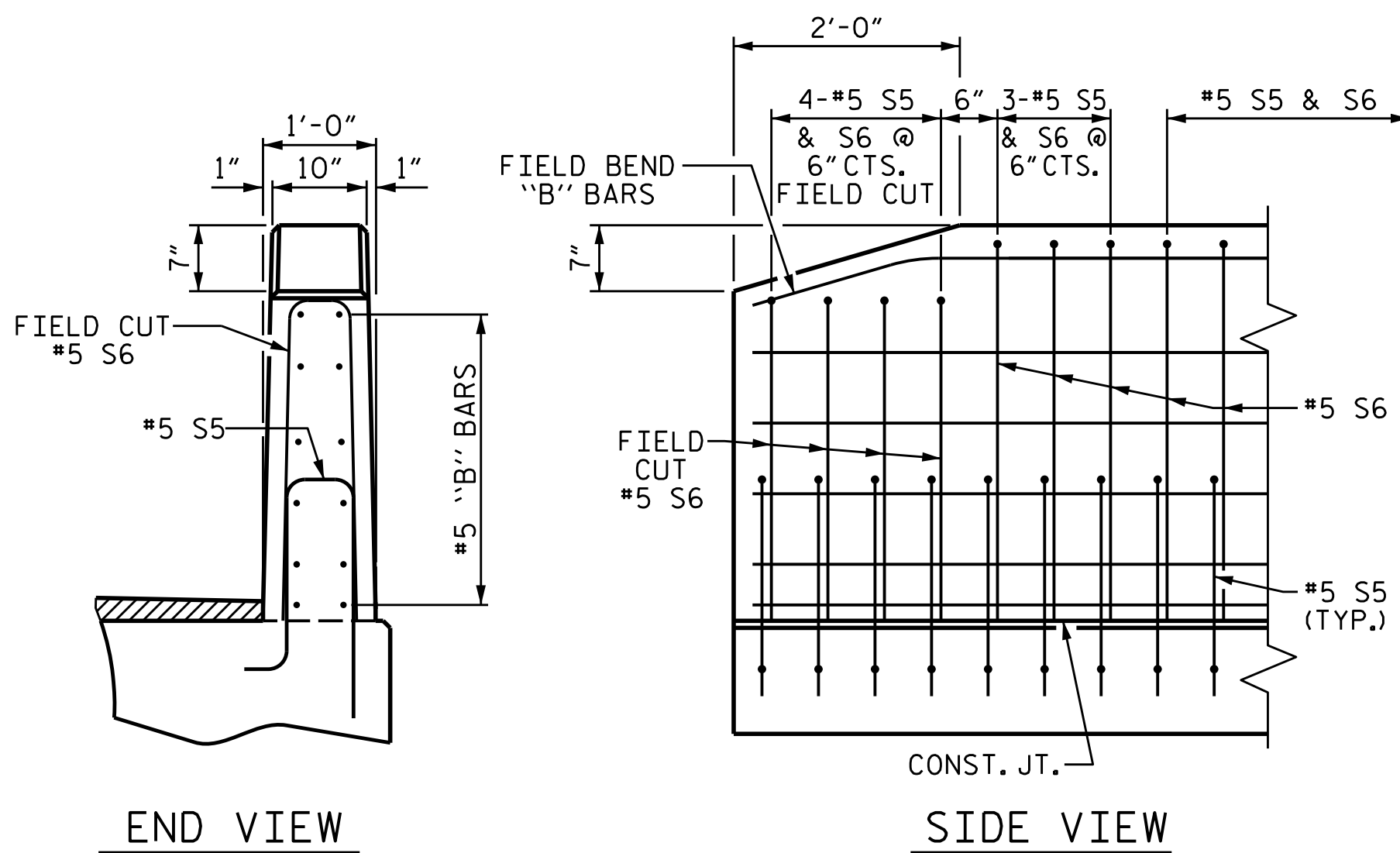
DRAWN BY: DCE 10/11 REV. 8/14 MAA/TMG  
 CHECKED BY: TMG 11/11





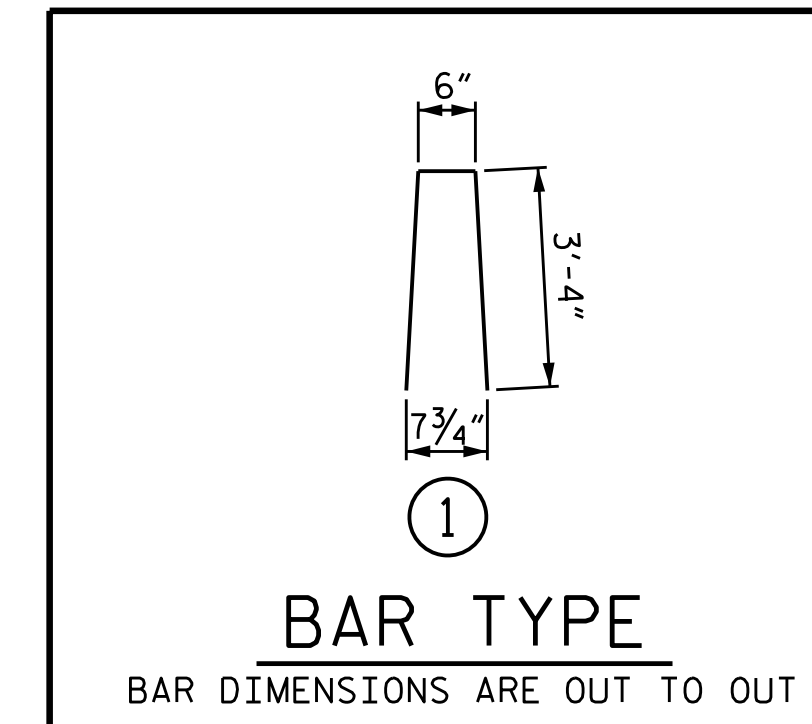
**ELASTOMERIC BEARING DETAILS**

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.



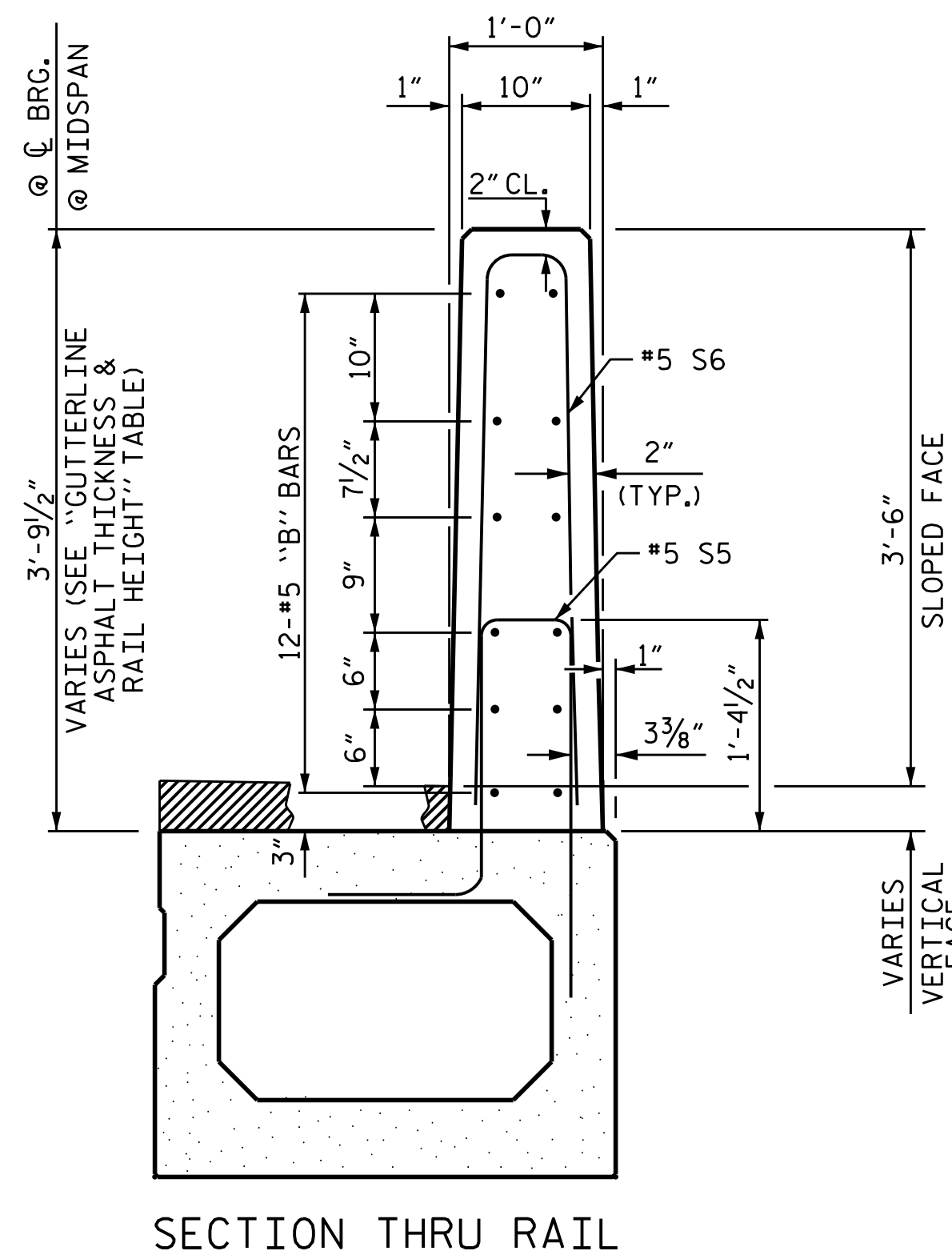
**END OF RAIL DETAILS**

BOX BEAM UNITS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR B.B.	2	80'-0"	160'-0"
INTERIOR B.B.	11	80'-0"	880'-0"
TOTAL	13		1040'-0"

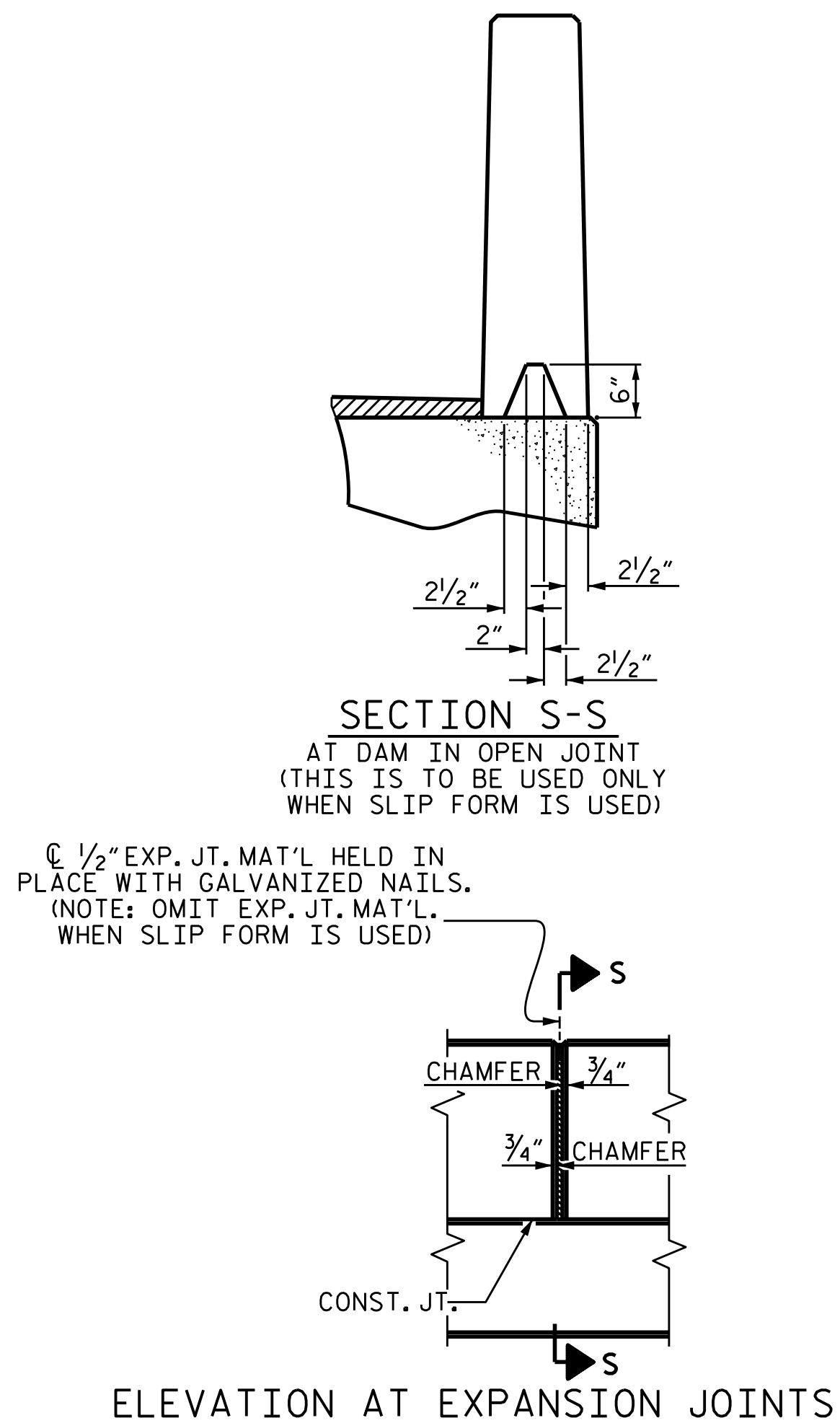


GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
80' UNITS	2 1/4"	3'-8 1/4"

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL					
BAR	BARS PER PAIR OF EXTERIOR UNITS	SIZE	TYPE	LENGTH	WEIGHT
	80' UNIT				
* B8	72	#5	STR	26'-3"	1971
* S6	222	#5	1	7'-2"	1659
* EPOXY COATED REINFORCING STEEL				LBS.	3630
CLASS AA CONCRETE				CU.YDS.	20.7
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.	160.0



**VERTICAL CONCRETE BARRIER RAIL DETAILS**



PROJECT NO. B-5769  
ROWAN COUNTY  
 STATION: 16+00.00 -L-  
 SHEET 5 OF 5

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 3'-0" X 2'-9"  
 PRESTRESSED CONCRETE  
 BOX BEAM UNIT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-8
2			4			TOTAL SHEETS 15

2/2/2018 2:41:35 PM 2012 NCDOT Division 01-Civil/2561E Group 5 Bridges/B-5769\_Peach Orchard Road/Structures/02-Drawings/01-015-B5769\_SML-BB05.dgn

ASSEMBLED BY: M. HOBBS DATE: APR 2017  
 CHECKED BY: J. SMITH DATE: APR 2017  
 DESIGN ENGINEER OF RECORD: J. SHERMAN DATE: FEB 2018  
 DRAWN BY: DGE 10/11 REV. 4/15 MAA/TMG  
 CHECKED BY: TMG 11/11

**DOCUMENT NOT CONSIDERED FINAL  
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NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 7/8" Ø BOLTS WITH NUTS AND WASHERS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

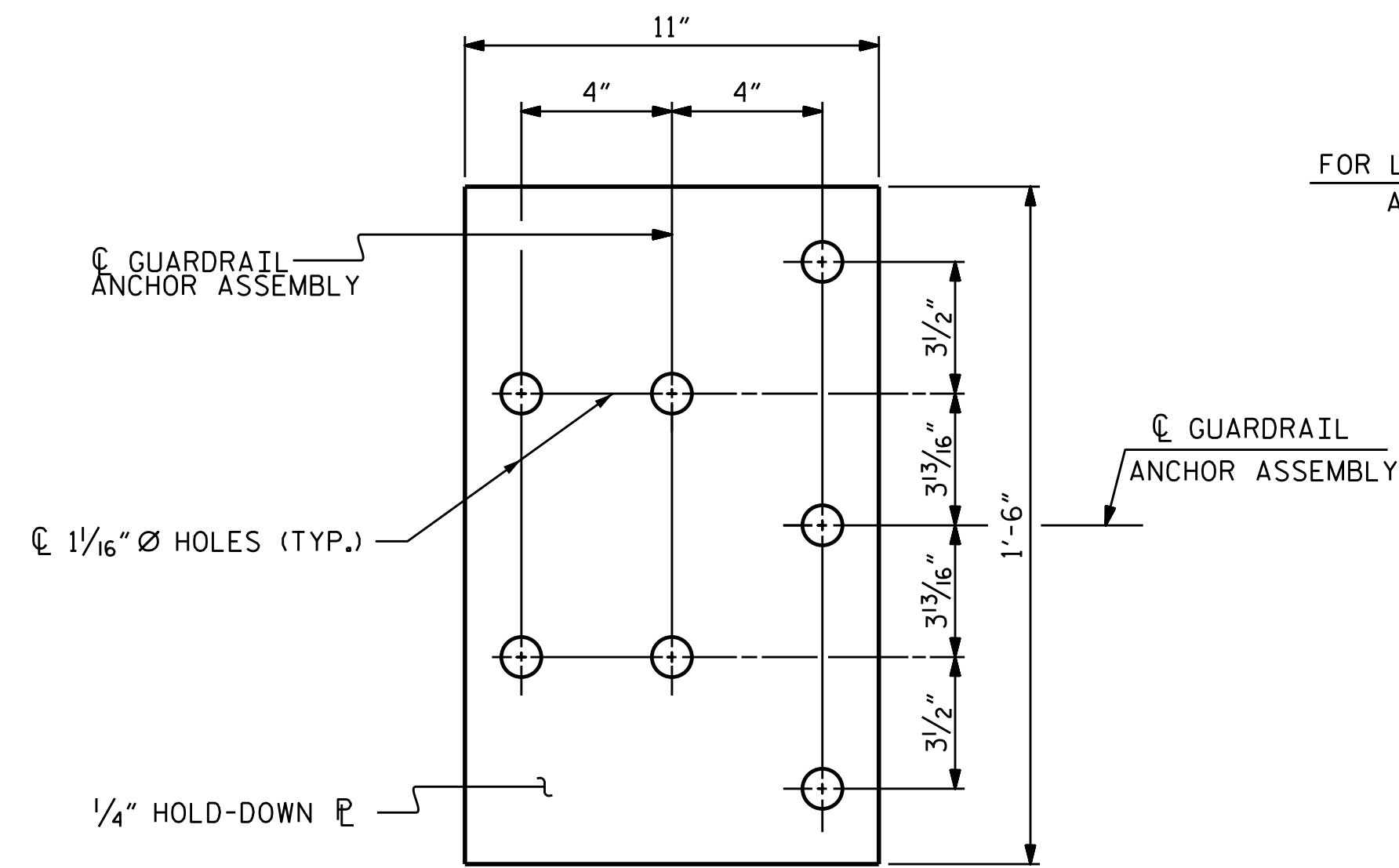
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

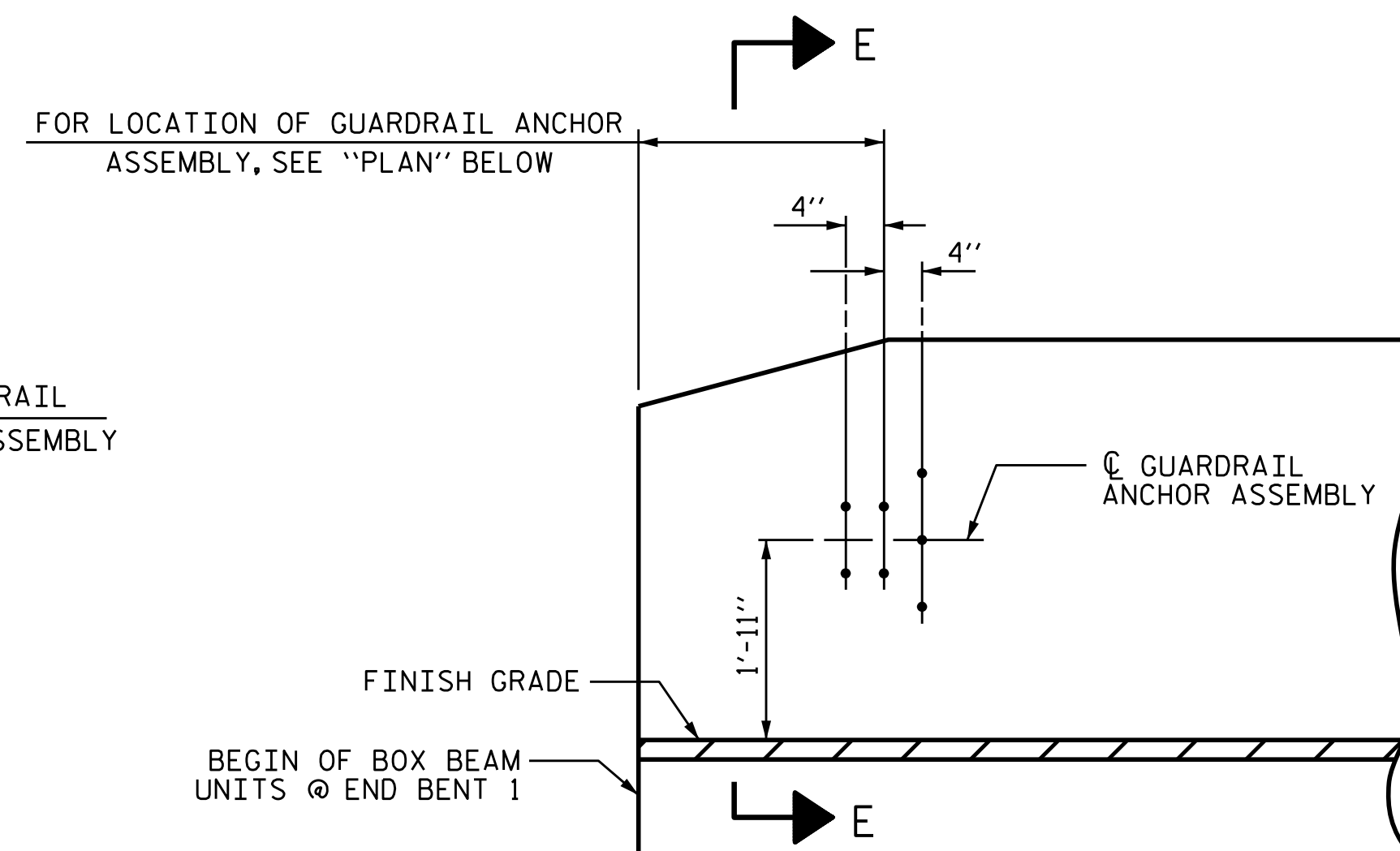
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

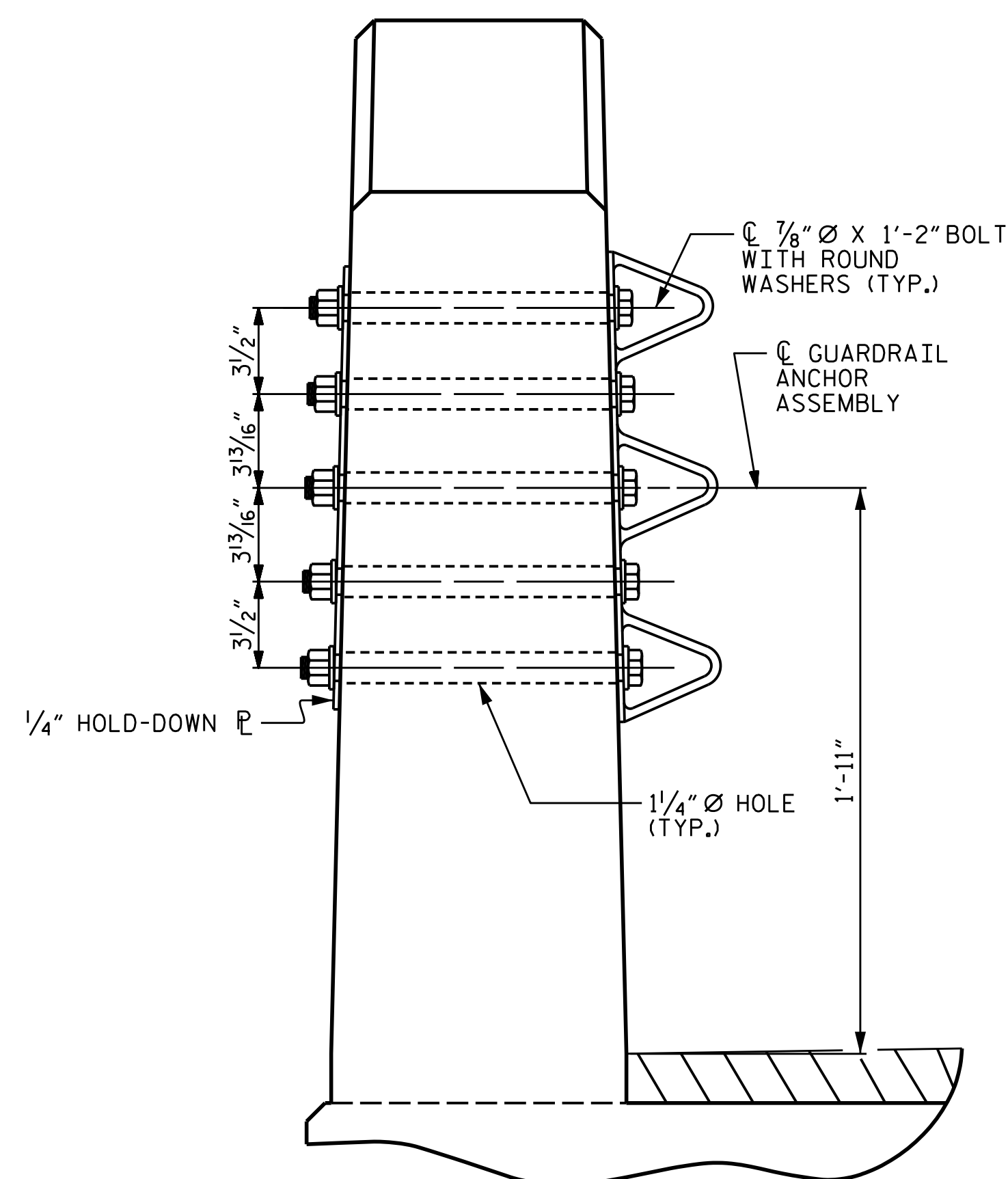
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



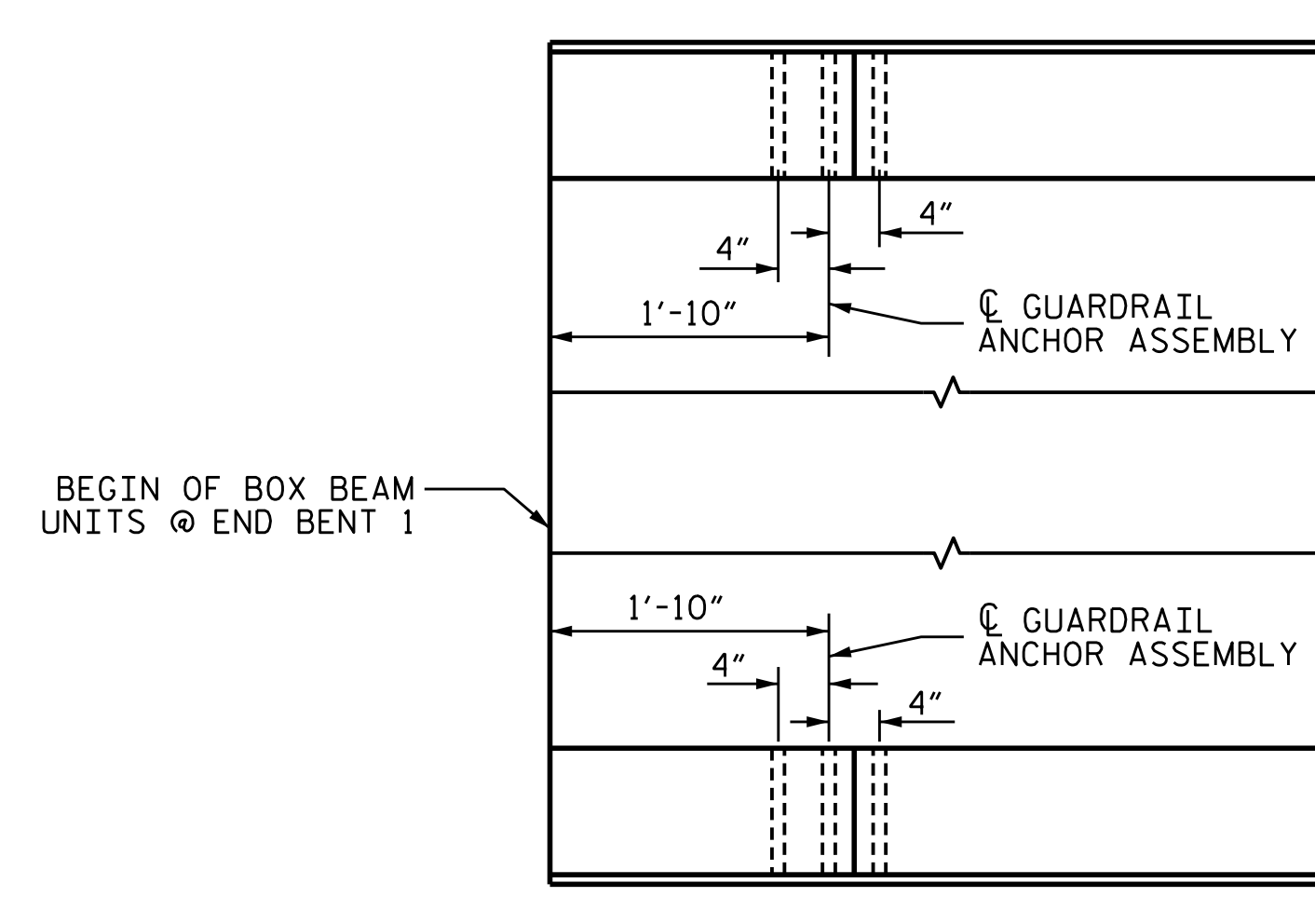
PLAN



ELEVATION



SECTION E-E  
GUARDRAIL ANCHOR ASSEMBLY DETAILS



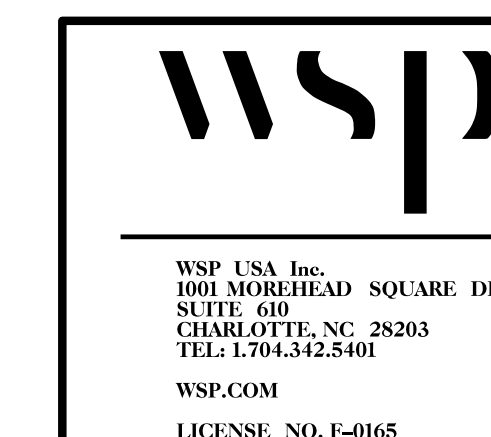
PLAN  
LOCATION OF ANCHORS FOR GUARDRAIL



SKETCH SHOWING POINTS OF ATTACHMENT

\* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-5769  
 ROWAN COUNTY  
 STATION: 16+00.00 -L-



DocuSigned by:  
 2/02/18  
 Jacob P. Sherman

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 GUARDRAIL ANCHORAGE  
 DETAILS  
 FOR VERTICAL CONCRETE  
 BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			15

**DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED**

STD. NO. GRA3

2/2/2018 2:41:35 PM 2012 NCDOT Division On-Community 5 Bridges B-5769 Patch Orchard Road Structures\02-Drawings\01-017-85769\_SML\_GRA01.dgn

ASSEMBLED BY: M. HOBBS	DATE: APR 2017	DRAWN BY: MAA	5/10	REV. 6/13	MAA/GM
CHECKED BY: J. SMITH	DATE: APR 2017	CHECKED BY: GM	5/10	REV. 1/15	MAA/TMG
DESIGN ENGINEER		REV. 12/17			MAA/THC
OF RECORD: J. SHERMAN	DATE: FEB 2018				

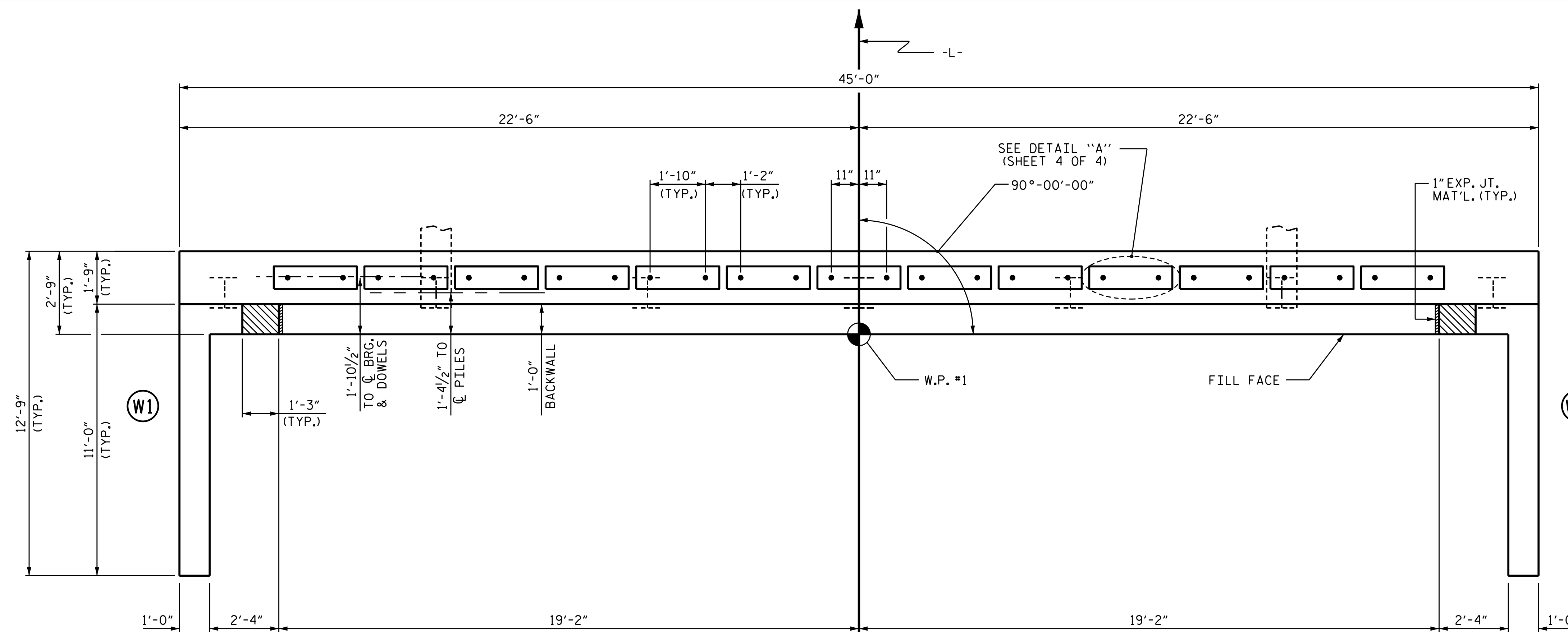
**NOTES**

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

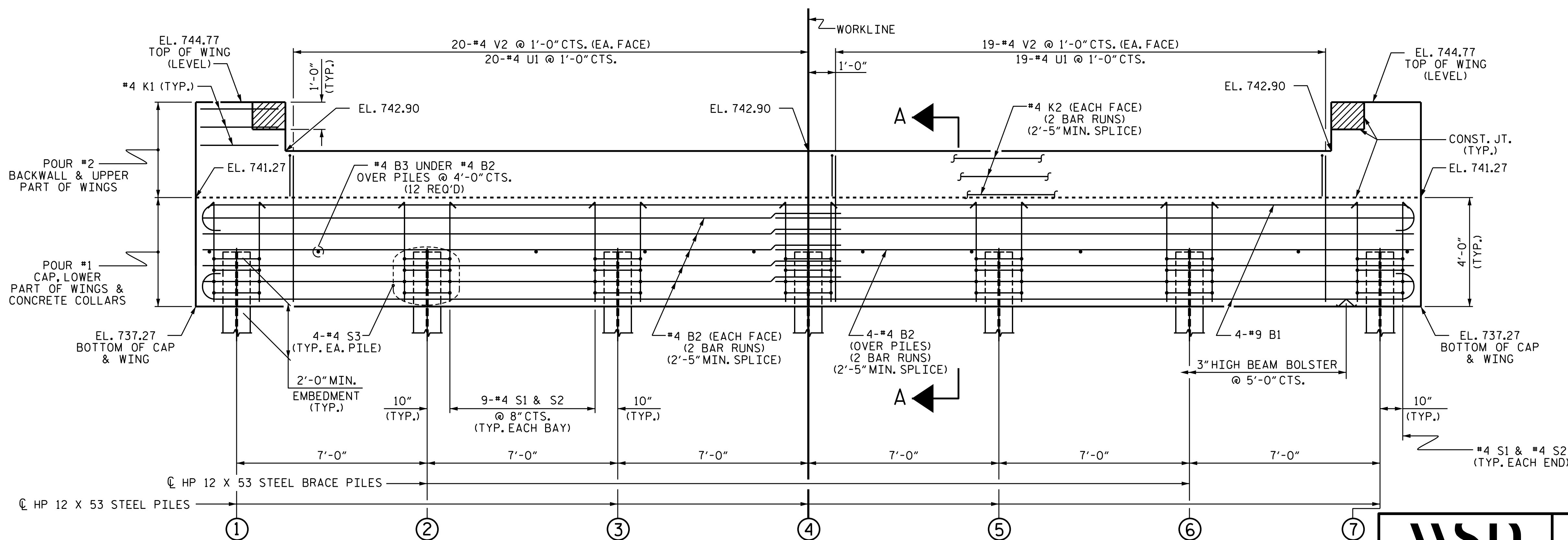
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



**PLAN**



**ELEVATION**

WINGS NOT SHOWN FOR CLARITY.  
FOR SECTION A-A, SEE SHEET 4 OF 4.  
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.  
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

PROJECT NO. B-5769  
ROWAN COUNTY  
STATION: 16+00.00 -L-

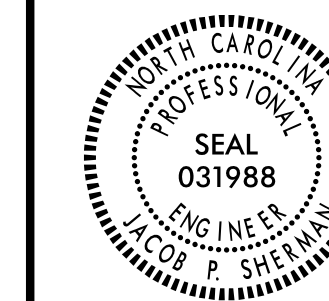
SHEET 1 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
END BENT 1



WSP USA Inc.  
100 MOREHEAD SQUARE DRIVE  
SUITE 610  
CHARLOTTE, NC 28203  
TEL: 1.704.342.5401  
WSP.COM  
LICENSE NO. F-0165



2/02/18  
Jacob P. Sherman

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.

S-10

TOTAL SHEETS

15

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STD. NO. EB-39-90S4-33BB

2/2/2018 2:41:35 PM 2012 NCDOT Division On-CoinV2561E Group 5 Bridges\B-5769\_Peach Orchard Road\Structures\02-Drawings\01-019-B5769\_SMU-EB1.dgn

ASSEMBLED BY: M. HOBBS DATE: APR 2017  
CHECKED BY: J. SMITH DATE: APR 2017  
DESIGN ENGINEER OF RECORD: J. SHERMAN DATE: FEB 2018

DRAWN BY: WJH 12/11 REV. 4/15 MAA/TMG  
CHECKED BY: AAC 12/11



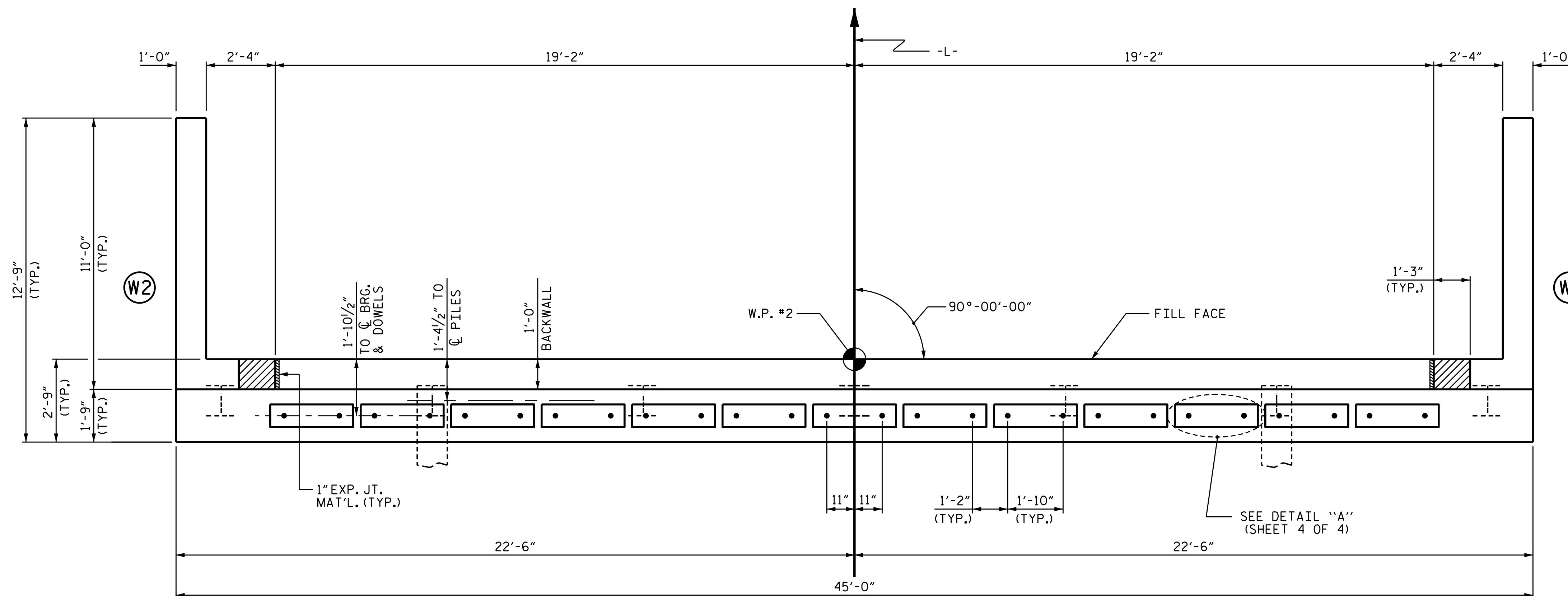
**NOTES**

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

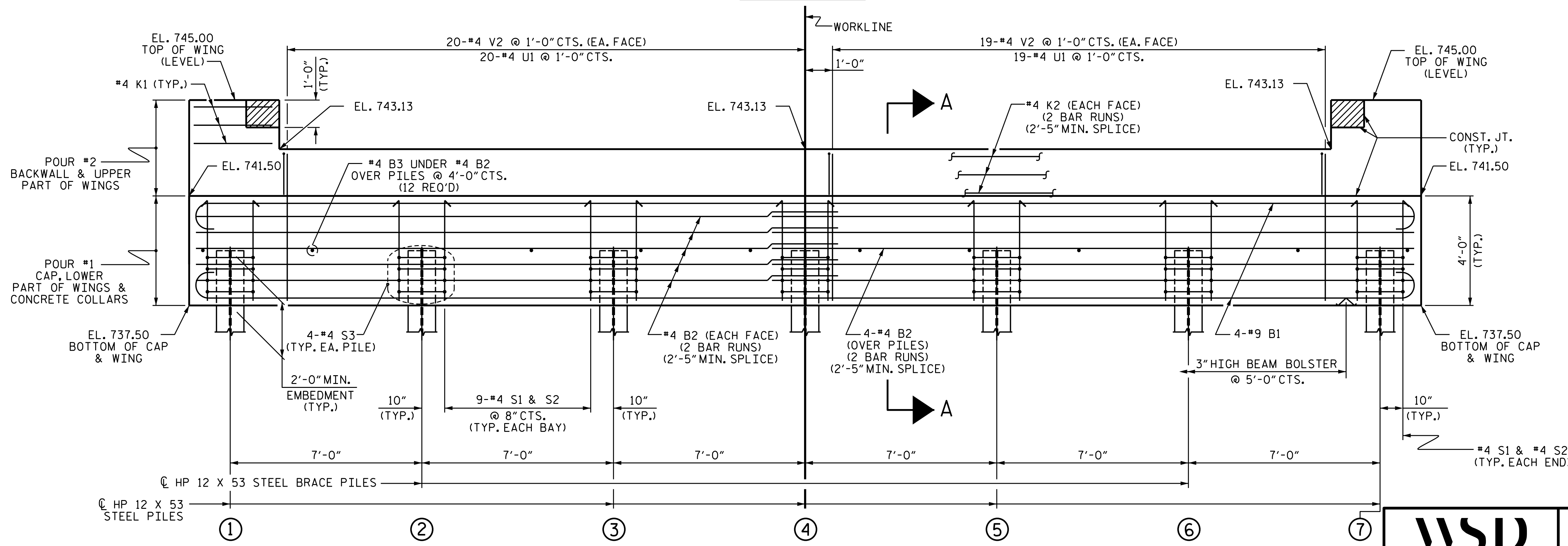
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



**PLAN**



**ELEVATION**

WINGS NOT SHOWN FOR CLARITY.  
 FOR SECTION A-A, SEE SHEET 4 OF 4.  
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.  
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

PROJECT NO. B-5769  
ROWAN COUNTY  
 STATION: 16+00.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT 2



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 100 MOREHEAD SQUARE DRIVE  
 SUITE 610  
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 LICENSE NO. F-0165



DocuSigned by:  
 Jacob P. Sherman  
 2/02/18

REVISIONS

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1			3		
2			4		

SHEET NO.  
**S-11**  
 TOTAL SHEETS  
**15**

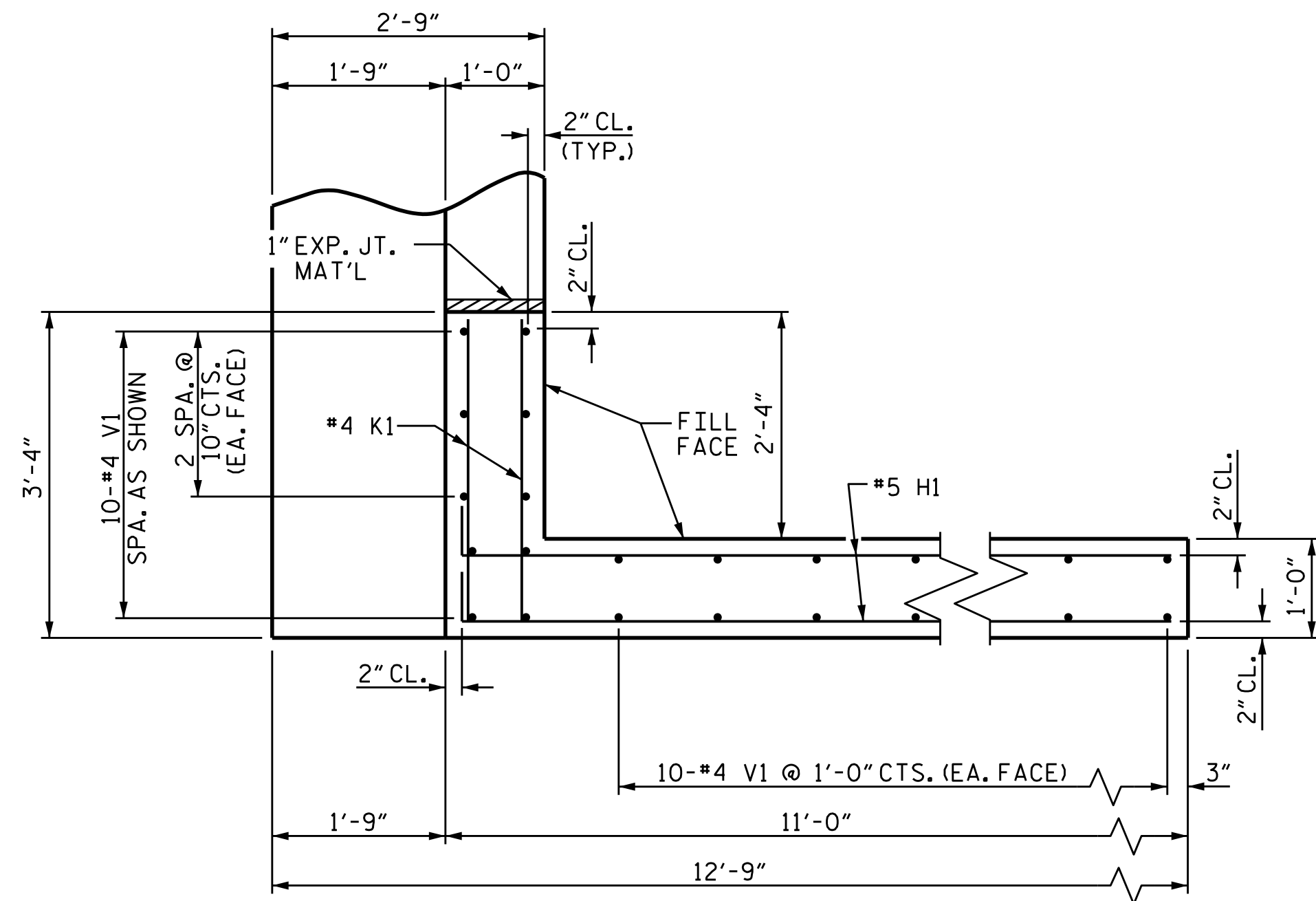
**DOCUMENT NOT CONSIDERED FINAL  
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STD. NO. EB-39-90S4-33BB

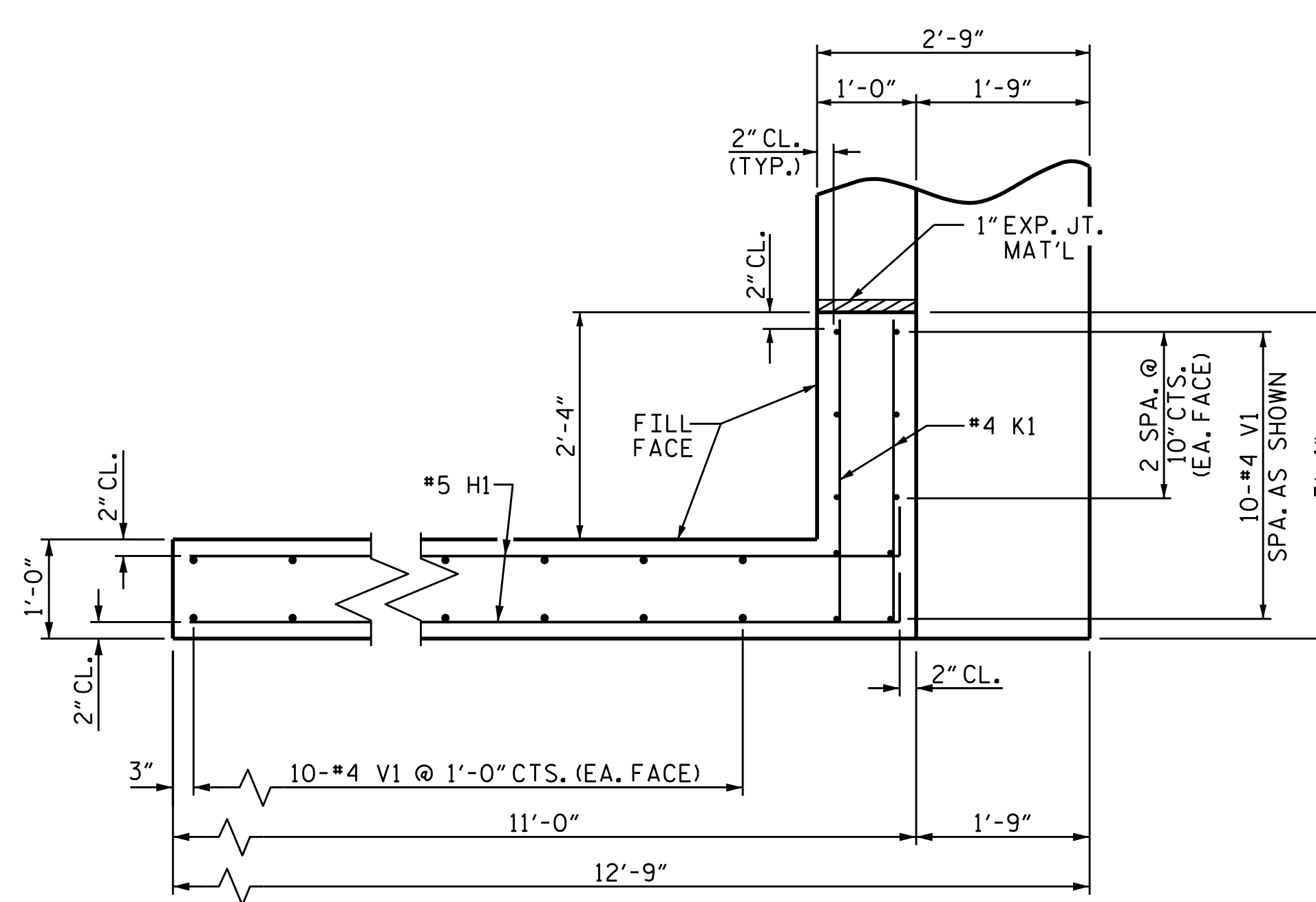
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ASSEMBLED BY: M. HOBBS DATE: APR 2017  
 CHECKED BY: J. SMITH DATE: APR 2017  
 DESIGN ENGINEER OF RECORD: J. SHERMAN DATE: FEB 2018

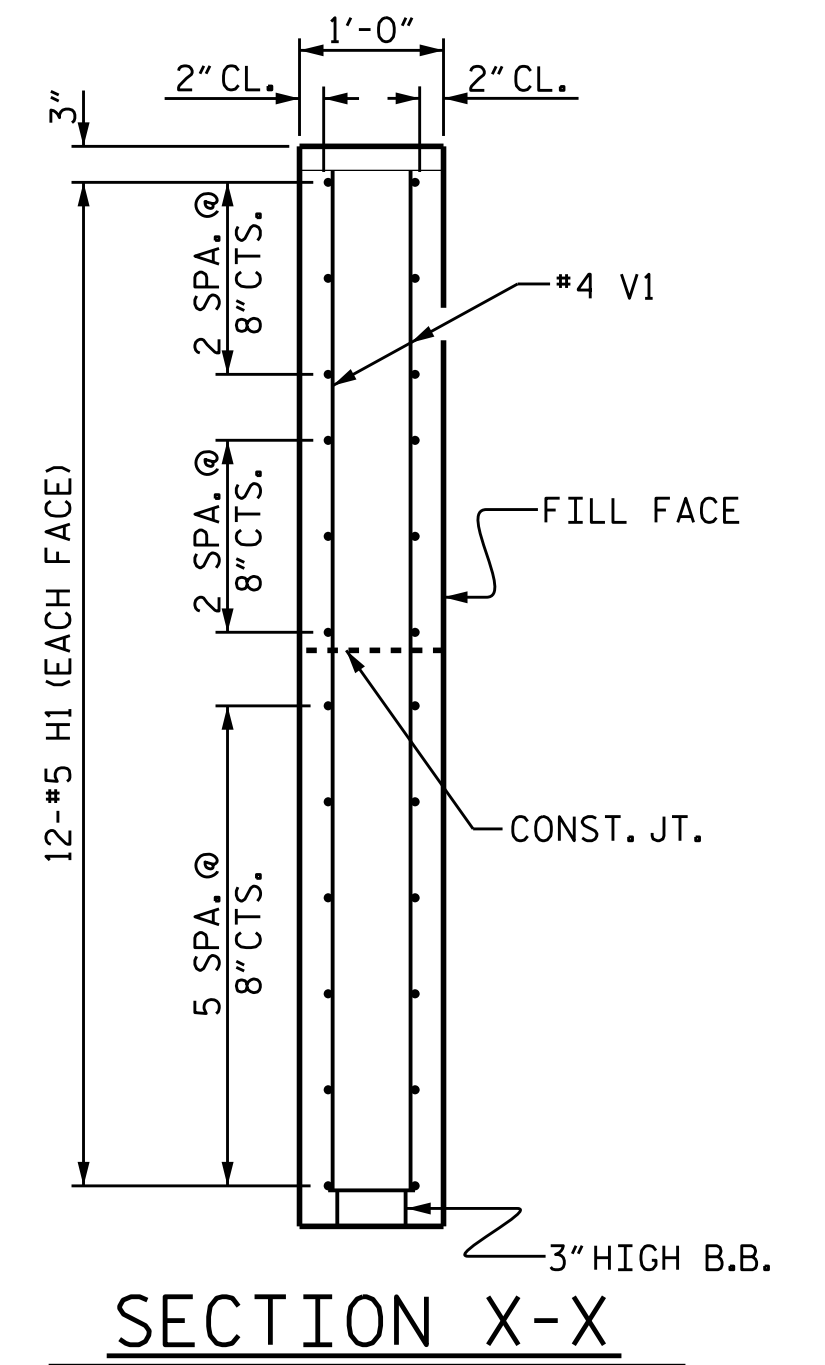
DRAWN BY: WJH 12/11 REV. 4/15 MAA/TMG  
 CHECKED BY: AAC 12/11



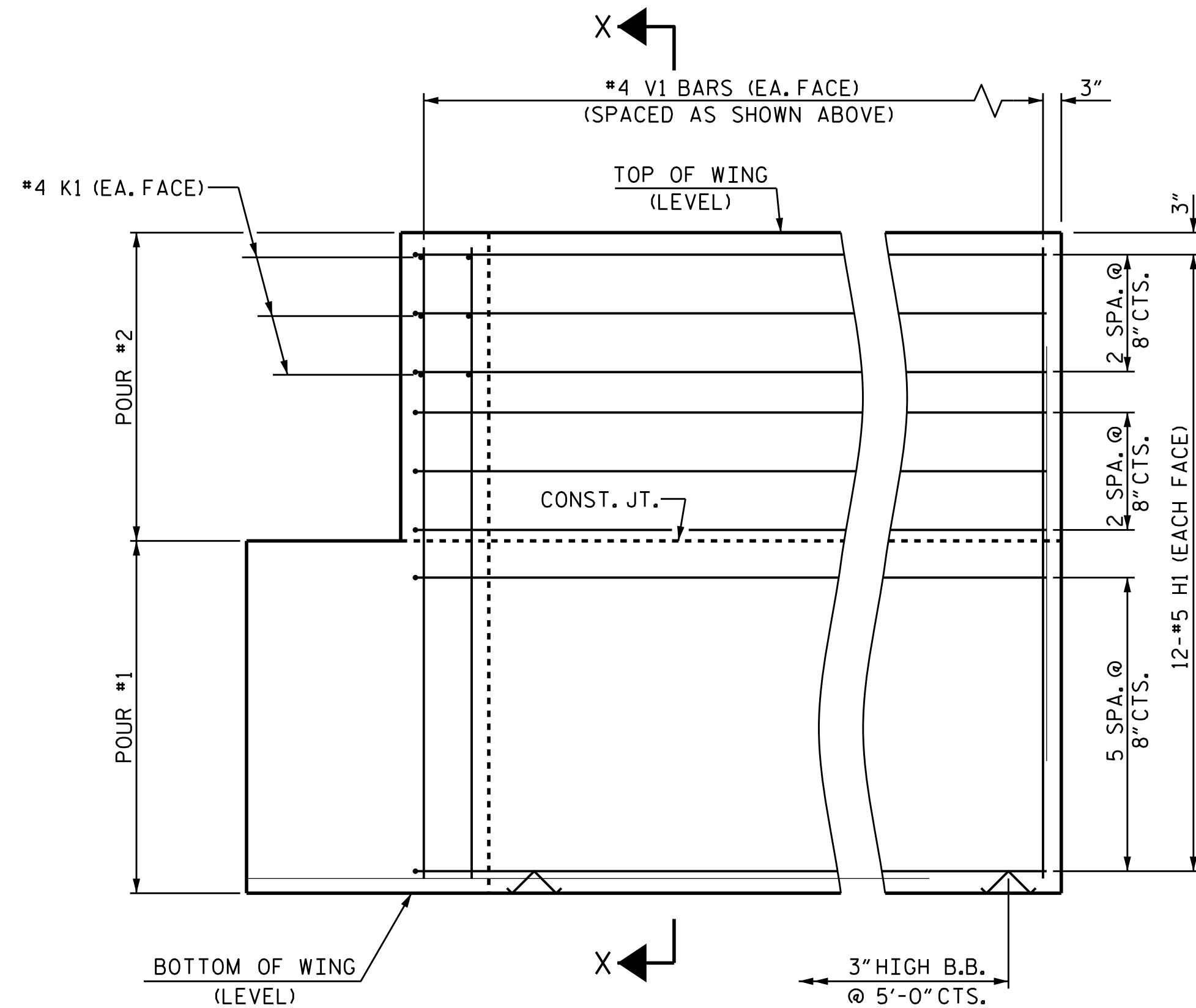
PLAN OF WING (W1)



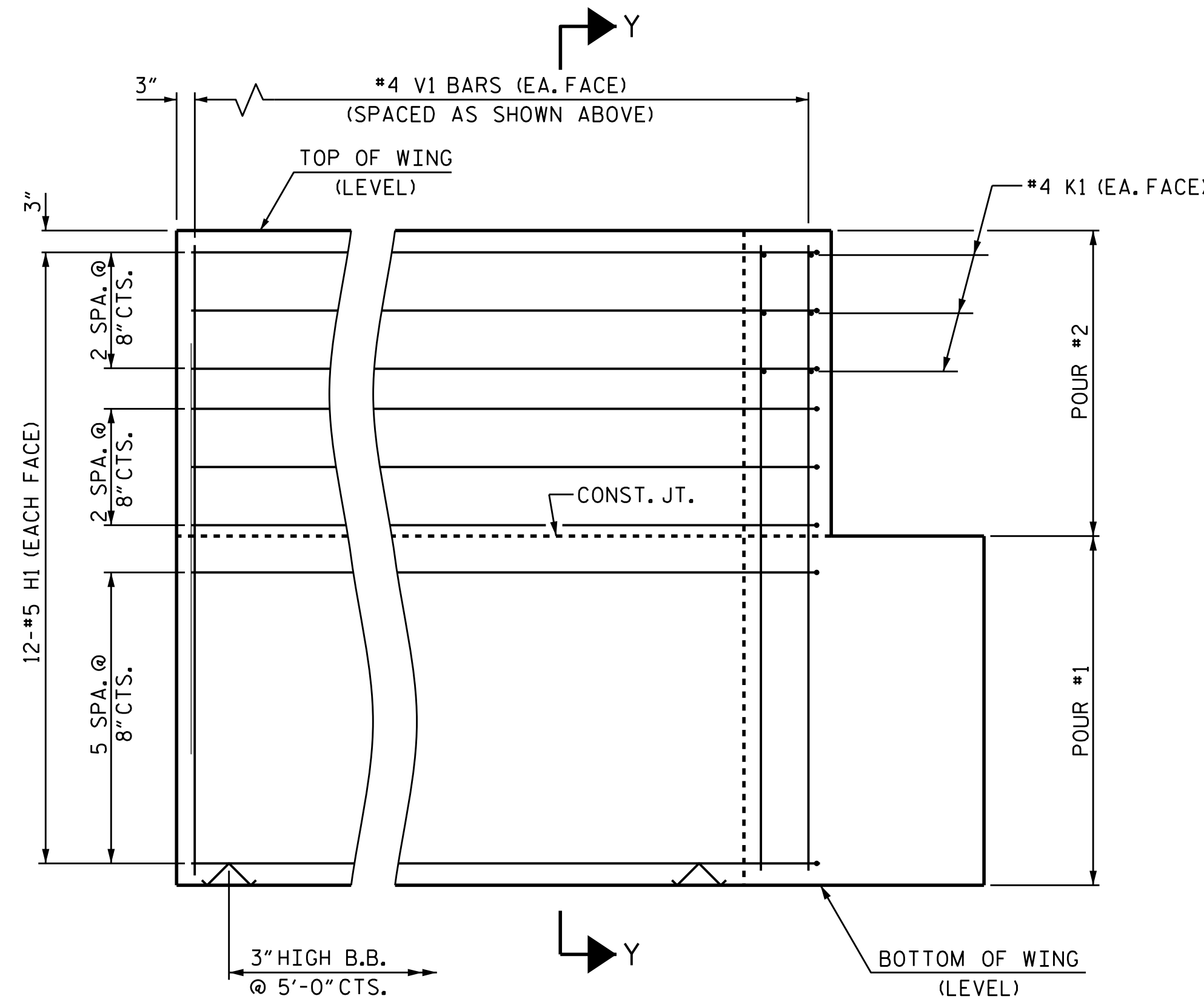
PLAN OF WING (W2)



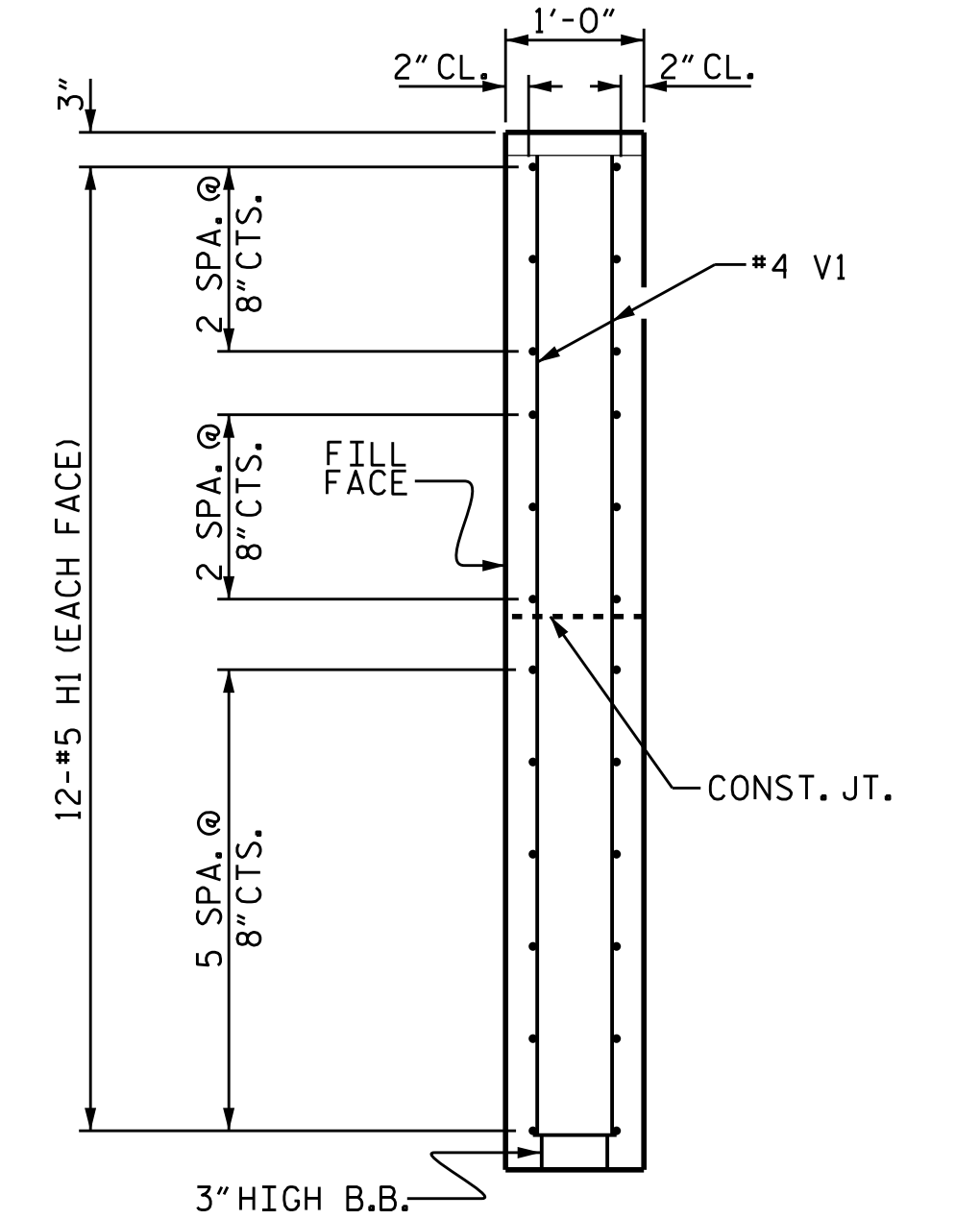
SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION Y-Y

WING DETAILS

PROJECT NO. B-5769  
 ROWAN COUNTY  
 STATION: 16+00.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT  
 WING DETAILS



WSP USA Inc.  
 100 MOREHEAD SQUARE DRIVE  
 SUITE 610  
 CHARLOTTE, NC 28203  
 TEL: 1.704.342.5401  
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2/02/18  
 Jacob P. Sherman

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1			3			TOTAL SHEETS	
2			4			15	

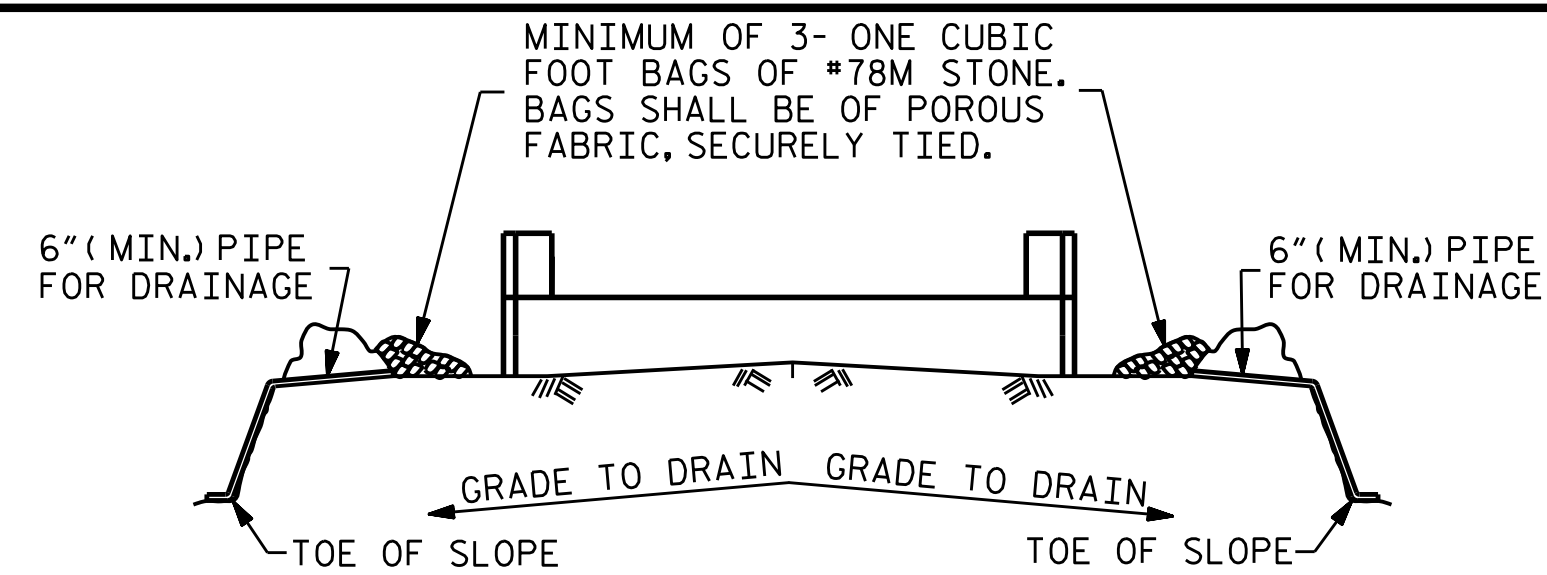
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STD. NO. EB-39-90S4-33BB

2/2/2018 2:41:35 PM C:\Users\B-5769\_Peach\Orchard Road\Structures\02-Drawing\01\_023\_05169\_SML\EB22.dgn

ASSEMBLED BY: M. HOBBS	DATE: APR 2017	DRAWN BY: WJH	12/11	REV. 4/15	MAA/TMG
CHECKED BY: J. SMITH	DATE: APR 2017	CHECKED BY: AAC	12/11		
DESIGN ENGINEER OF RECORD: J. SHERMAN	DATE: FEB 2018				



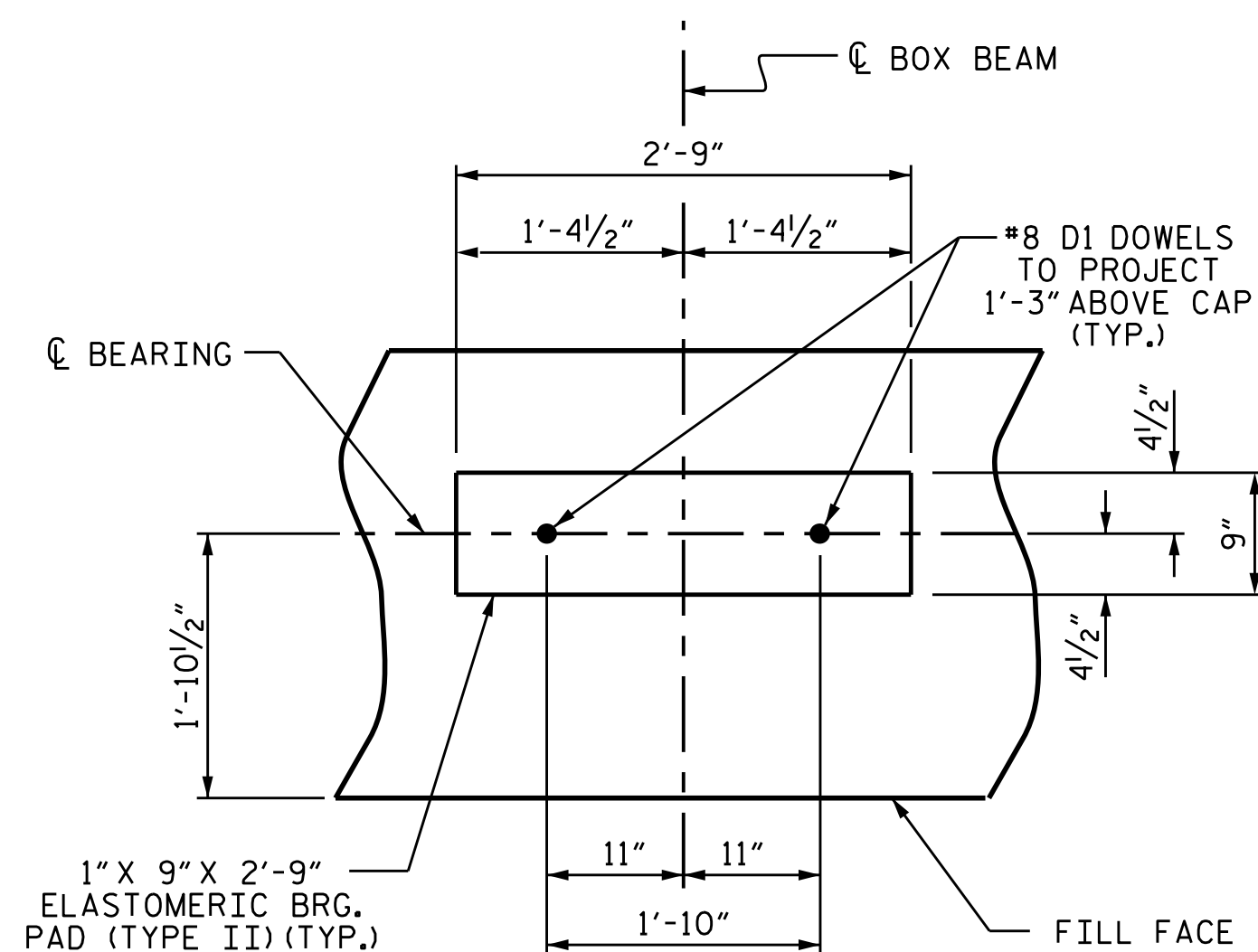


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

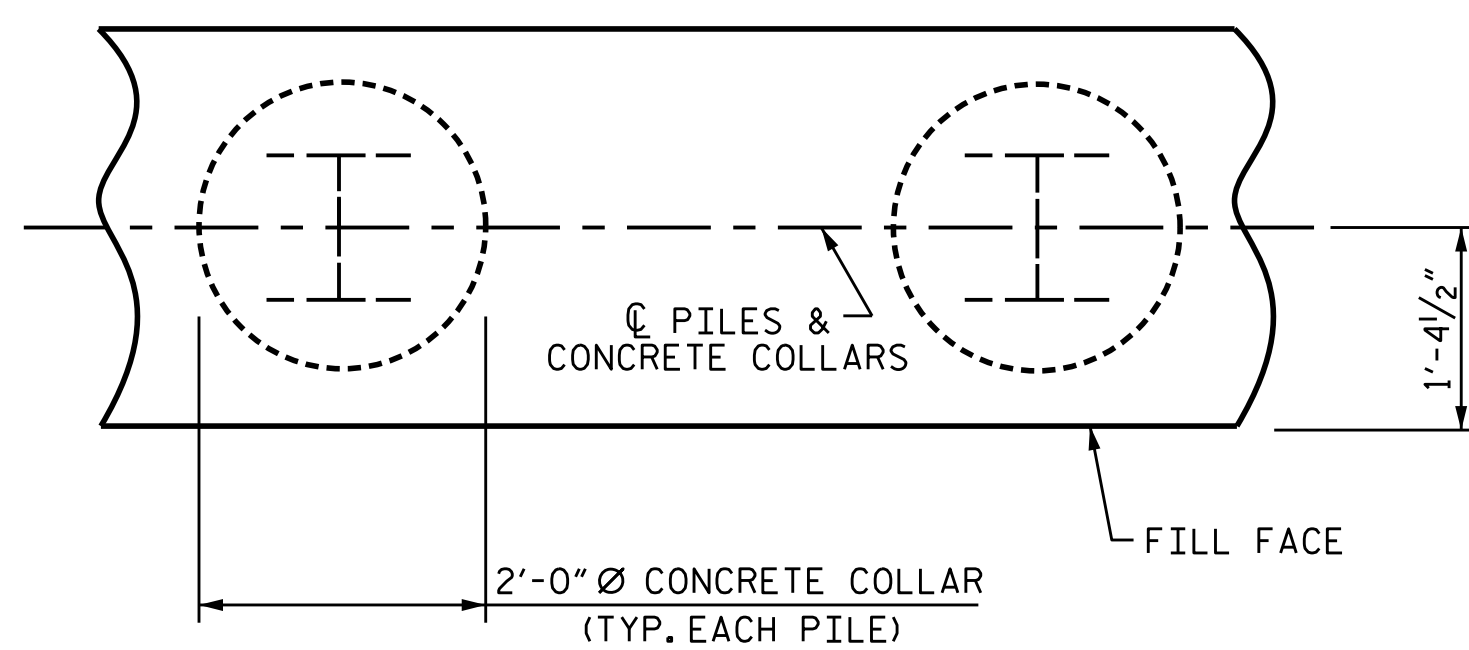
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

### TEMPORARY DRAINAGE AT END BENT



DETAIL "A"

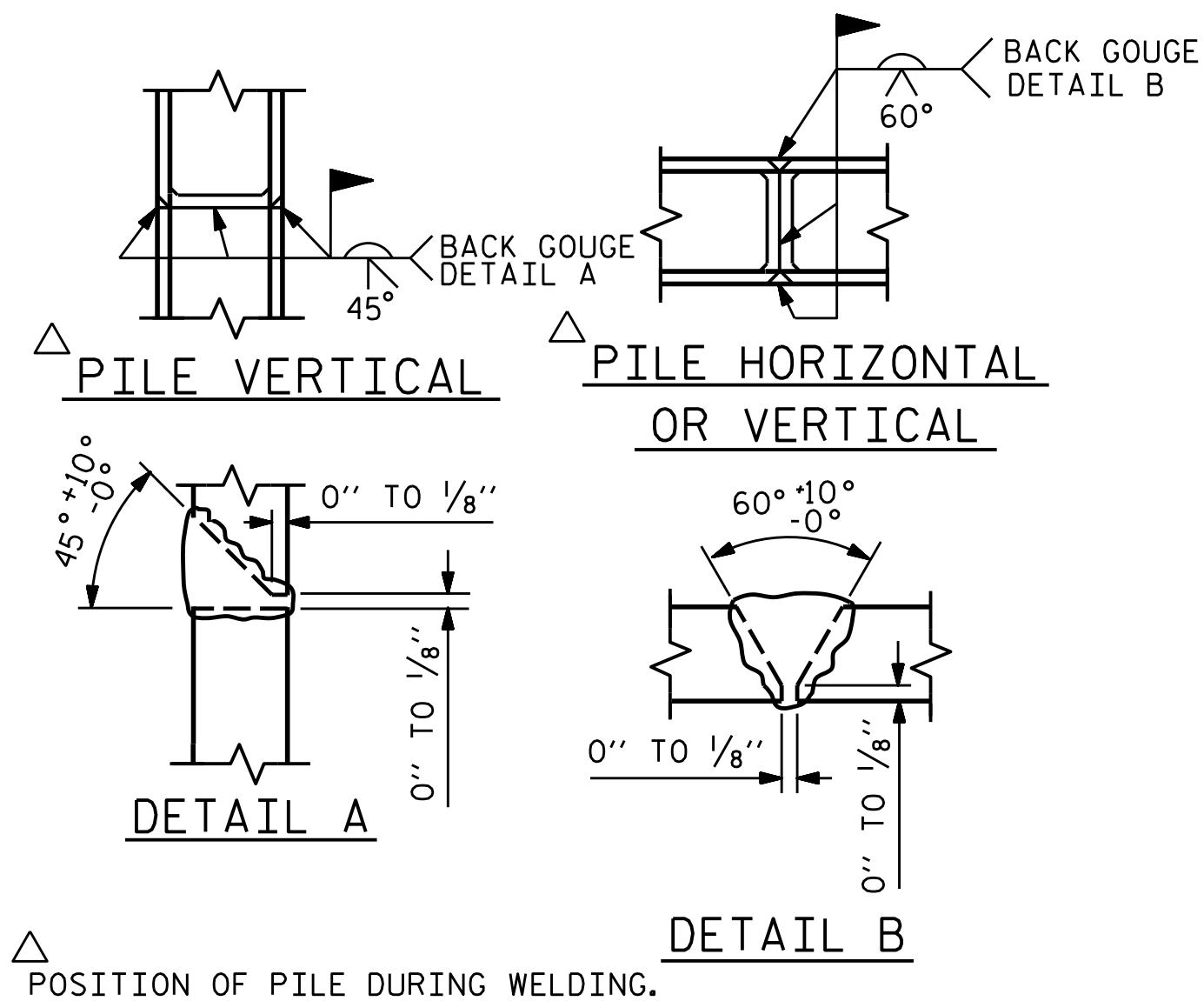
(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



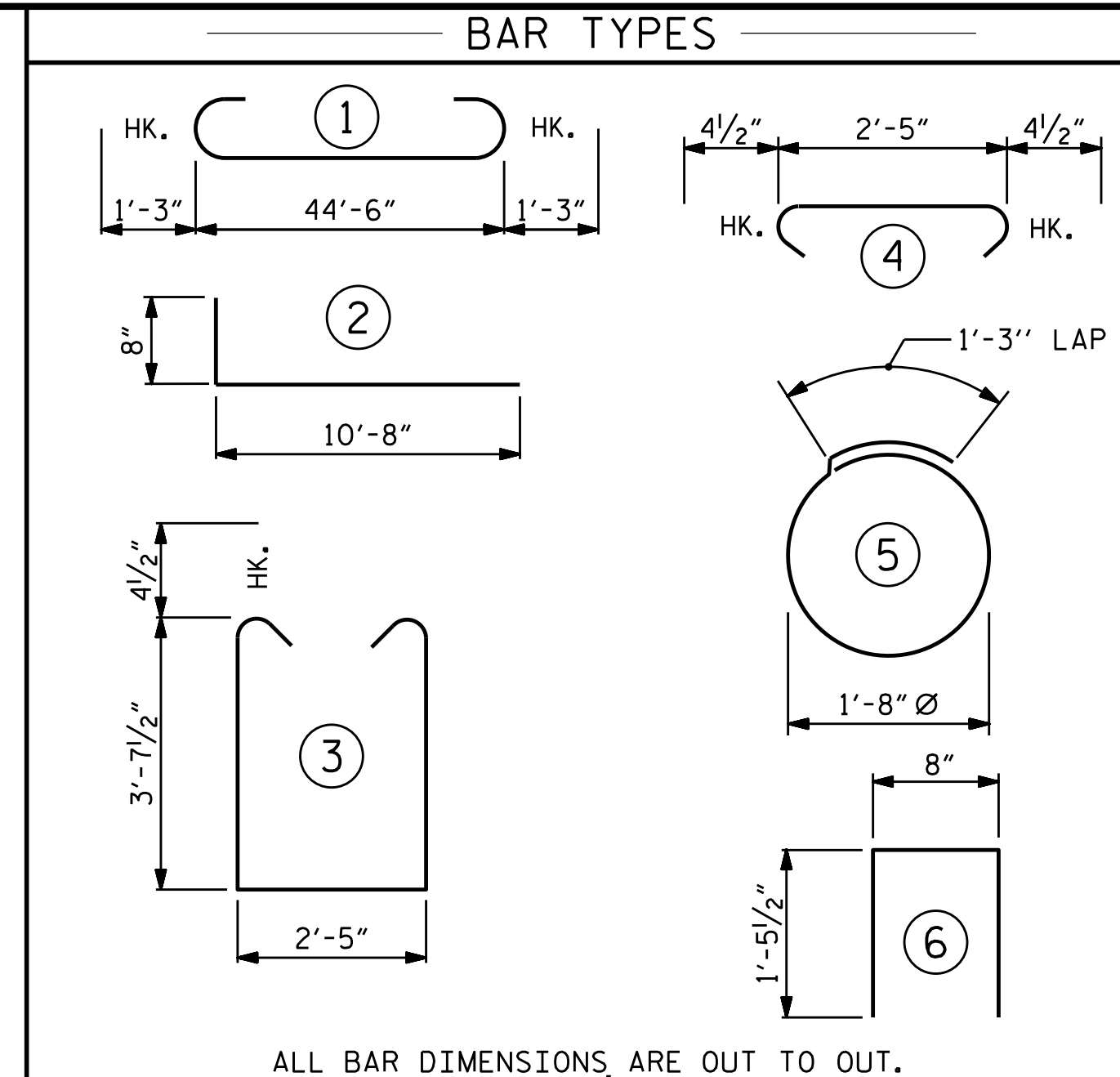
PLAN

### CORROSION PROTECTION FOR STEEL PILES DETAIL

(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)

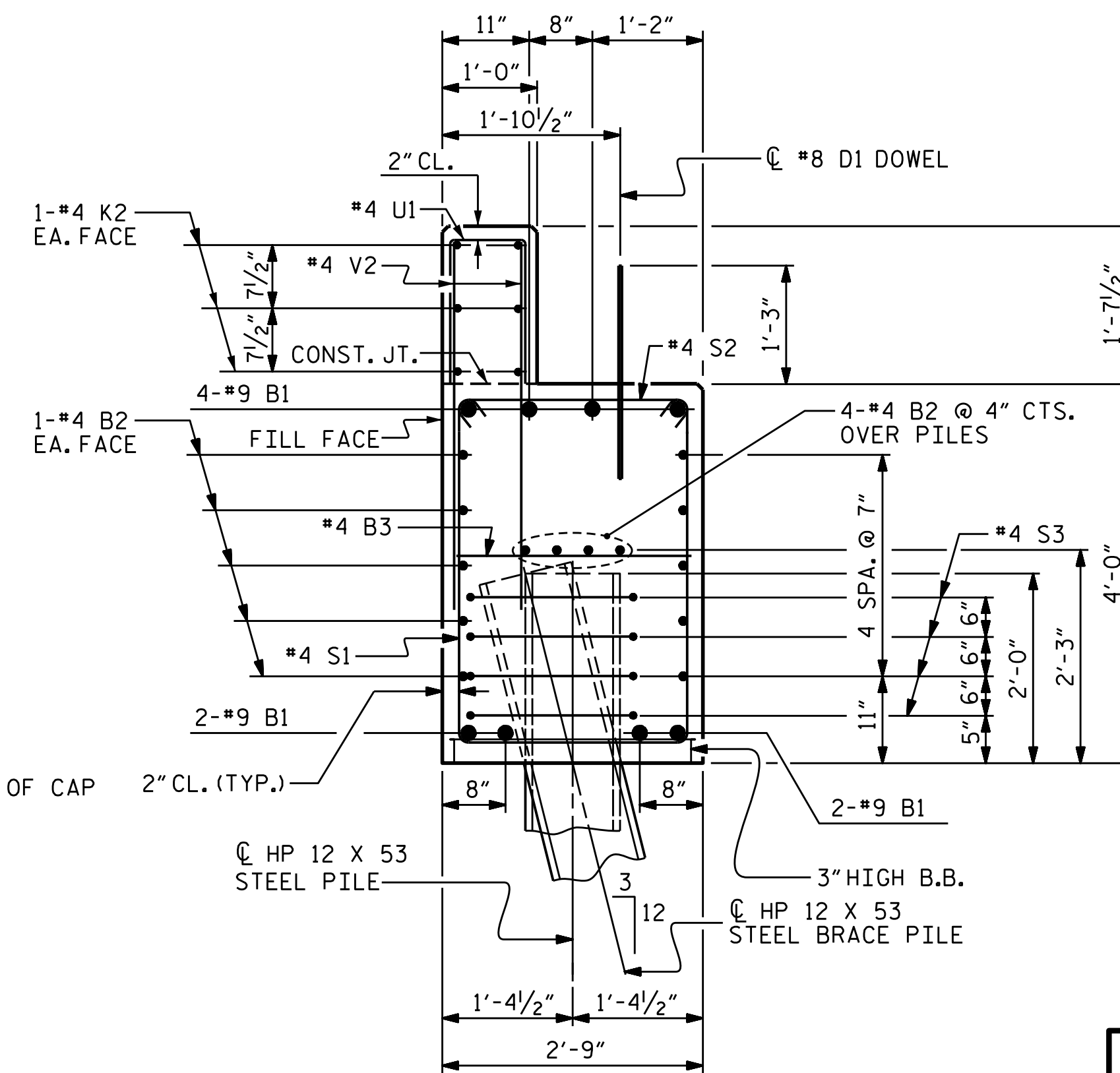


### PILE SPLICE DETAILS



END BENT 1	END BENT 2
HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES
NO: 7	NO: 7
LIN. FT.= 259	LIN. FT.= 264
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES
NO: 7	NO: 7

BILL OF MATERIAL FOR ONE END BENT					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	#8		47'-0"	1278	
B2	#4	STR	23'-7"	441	
B3	#4	STR	2'-5"	19	
D1	#8	STR	2'-3"	156	
H1	#5		11'-4"	567	
K1	#4	STR	2'-11"	23	
K2	#4	STR	23'-7"	189	
S1	#4	3	10'-5"	390	
S2	#4	4	3'-2"	118	
S3	#4	5	6'-6"	122	
U1	#4	6	3'-7"	93	
V1	#4	STR	7'-2"	287	
V2	#4	STR	5'-3"	274	
REINFORCING STEEL (FOR ONE END BENT)				3957	LBS.
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)					
POUR #1	CAP, LOWER PART OF WINGS & COLLARS			22.5	C.Y.
POUR #2	BACKWALL & UPPER PART OF WINGS			5.7	C.Y.
TOTAL CLASS A CONCRETE				28.2	C.Y.



SECTION A-A

(CONCRETE COLLAR NOT SHOWN FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL.")

PROJECT NO. B-5769

ROWAN COUNTY

STATION: 16+00.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
END BENTS 1 & 2  
DETAILS

**wsp**

WSP USA Inc.  
801 MOREHEAD SQUARE DRIVE  
SUITE 610  
CHARLOTTE, NC 28203  
TEL: 1.704.342.5401  
WSP.COM  
LICENSE NO. F-0165

DocuSigned by:  
Jacob P. Sherman  
2/02/18  
A683200DCE18488

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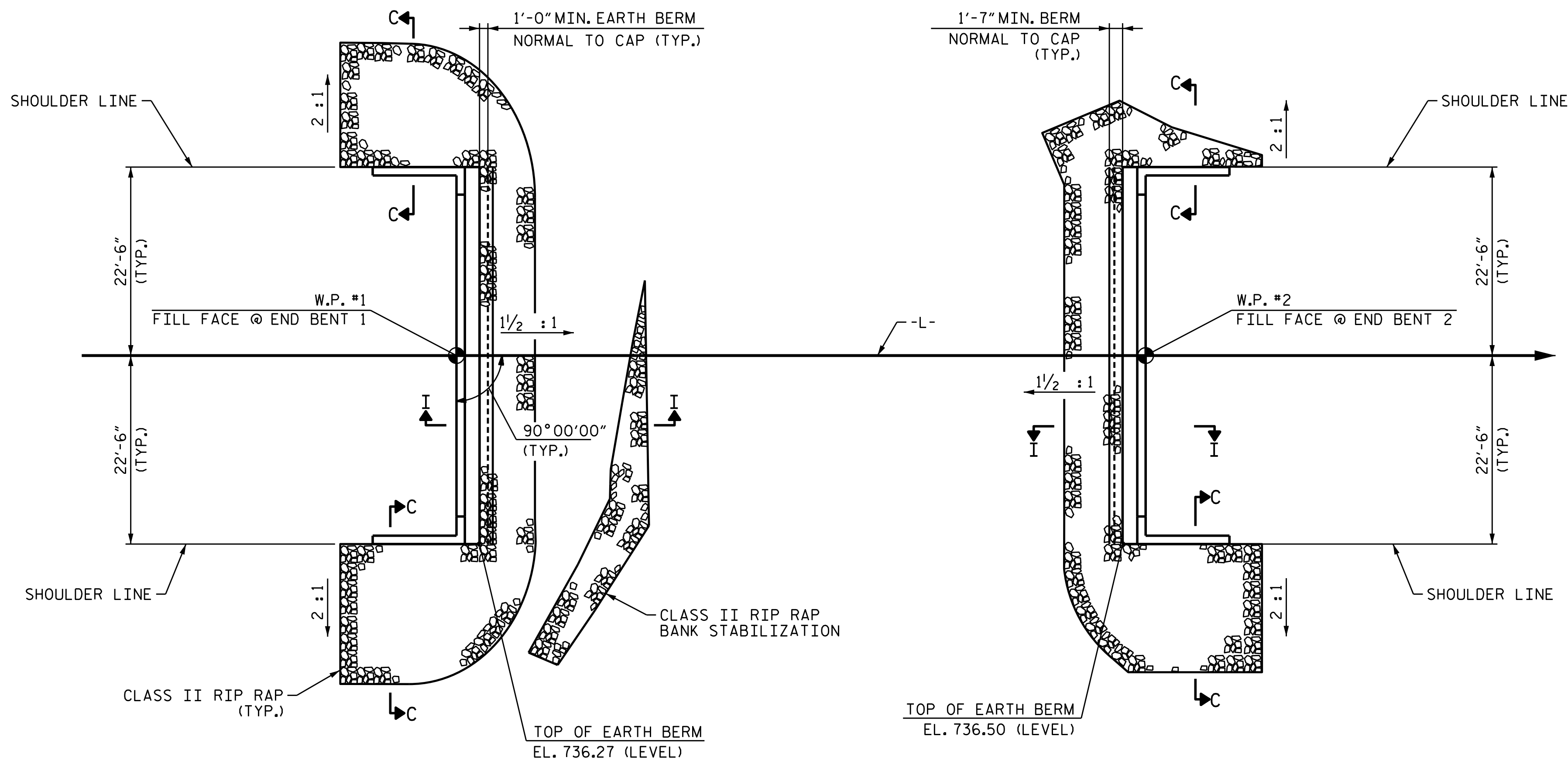
SHEET NO. S-13

TOTAL SHEETS 15

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2/2/2018 2:41:35PM 2012 NCDOT Division 01-Construction Group 5 Bridges/B-5769 Patch Orchard Road\Structures\02-Drawing\01-025-B5769-SML-EB23.dgn

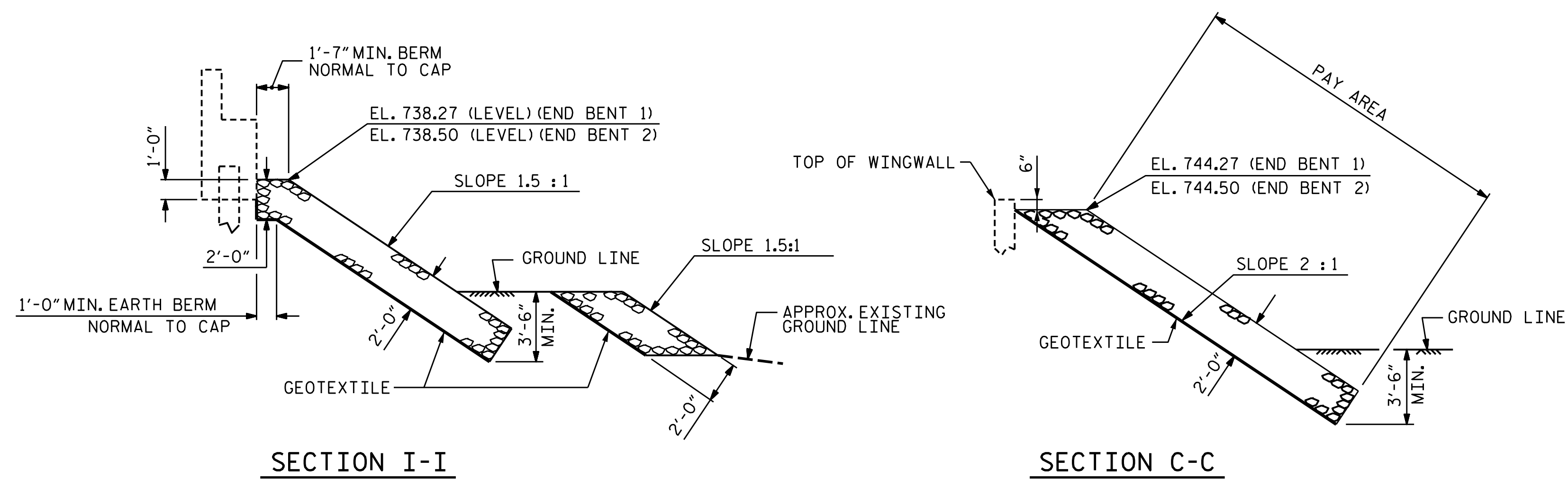
ASSEMBLED BY: M. HOBBS	DATE: APR 2017	DRAWN BY: WJH	12/11	REV. 4/17	MAA/THC
CHECKED BY: J. SMITH	DATE: APR 2017	CHECKED BY: AAC	12/11		
DESIGN ENGINEER OF RECORD: J. SHERMAN	DATE: FEB 2018				



PLAN

ESTIMATED QUANTITIES		
BRIDGE @ STA. 16+00.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	165 *	183 *
END BENT 2	130	145

\* - INCLUDES BANK STABILIZATION



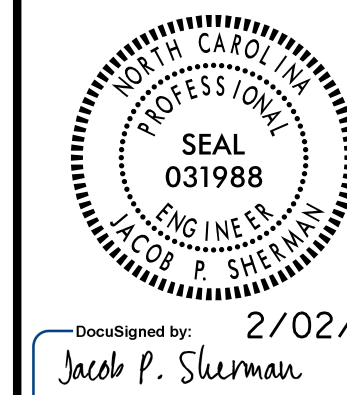
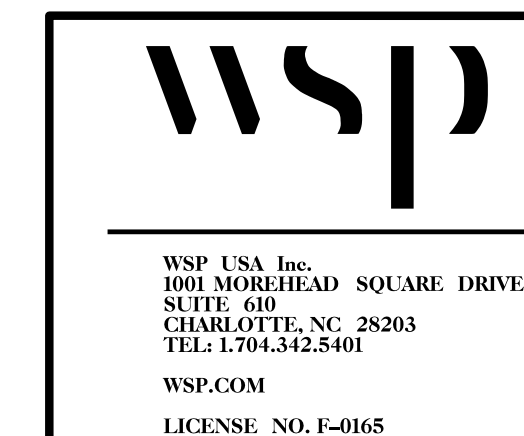
SECTION I-I

SECTION C-C

PROJECT NO. B-5769  
ROWAN COUNTY  
 STATION: 16+00.00 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

RIP RAP DETAILS



REVISIONS						SHEET NO.
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1			3			15
2			4			

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2/2/2018 2:41:35 PM 2012 NCDOT Division On-Community 5 Bridges B-5769 Pecan Orchard Road Structures 02-Drawing 01-027-B5769-SML-R01.dgn

ASSEMBLED BY: M. HOBBS DATE: APR 2017  
 CHECKED BY: J. SMITH DATE: APR 2017  
 DESIGN ENGINEER OF RECORD: J. SHERMAN DATE: FEB 2018



**NOTES**

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND SELECT MATERIAL BACKFILL, SEE ROADWAY PLANS.

GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

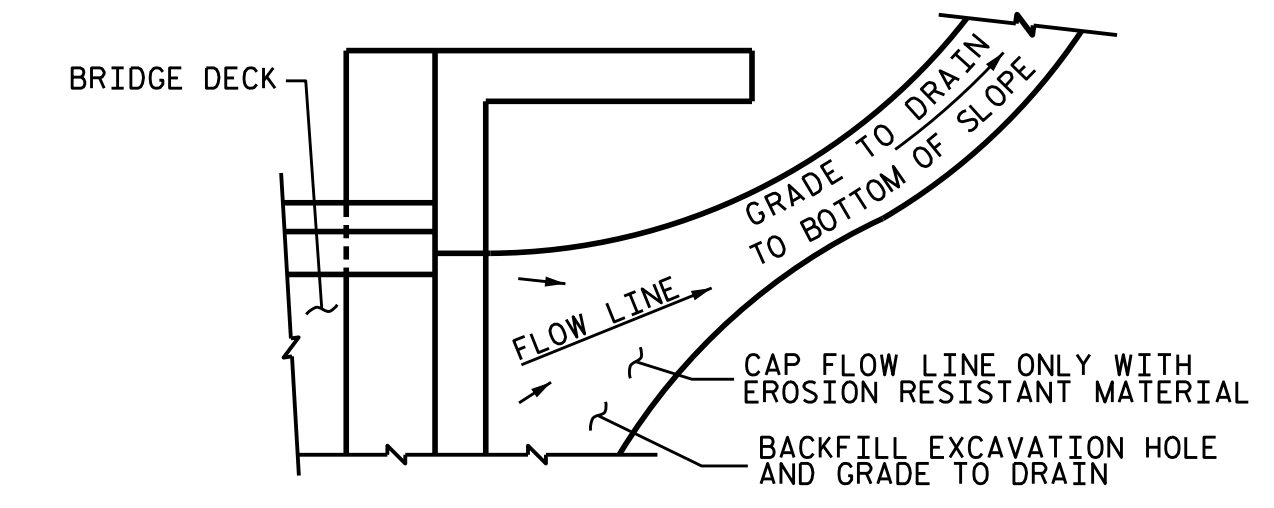
SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

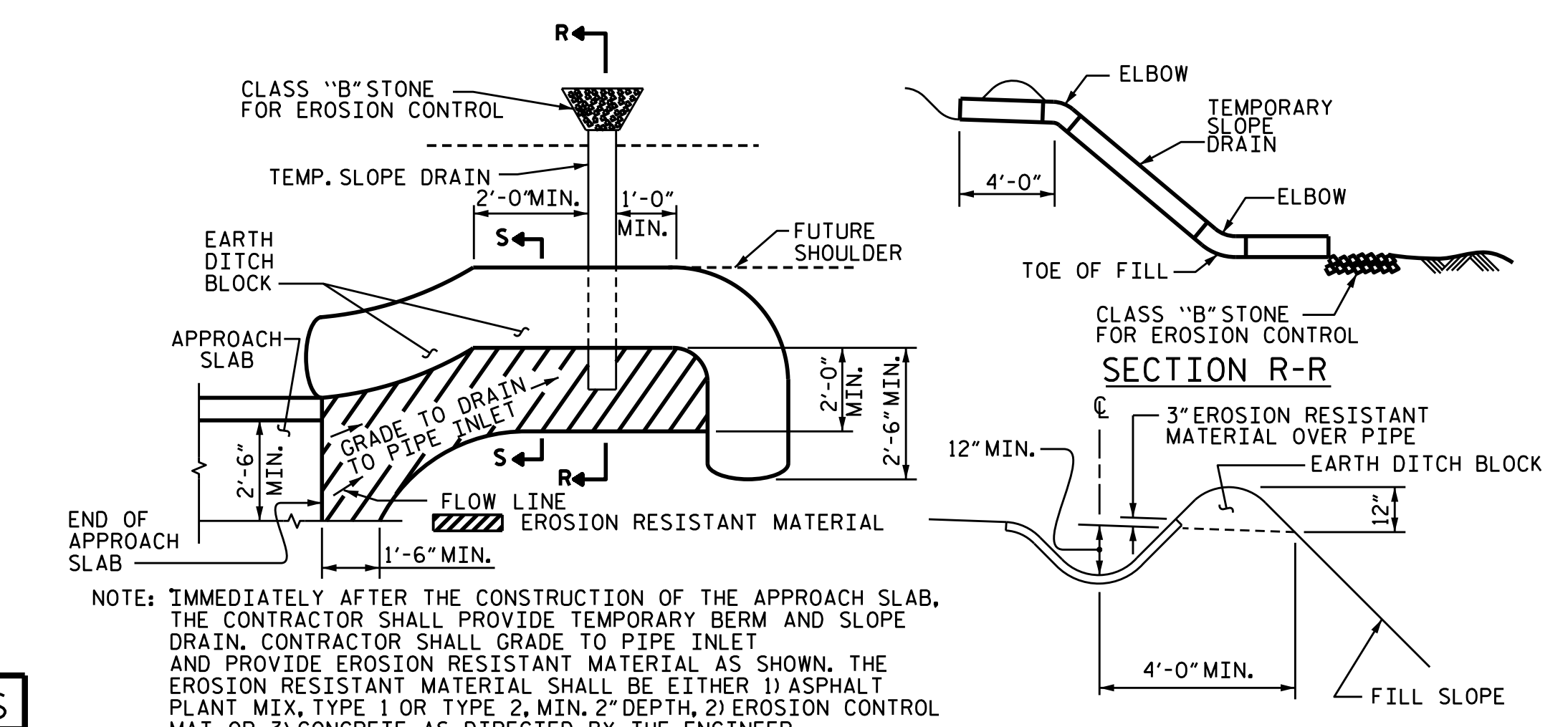
FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

APPROACH SLAB GROOVING IS NOT REQUIRED.



NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

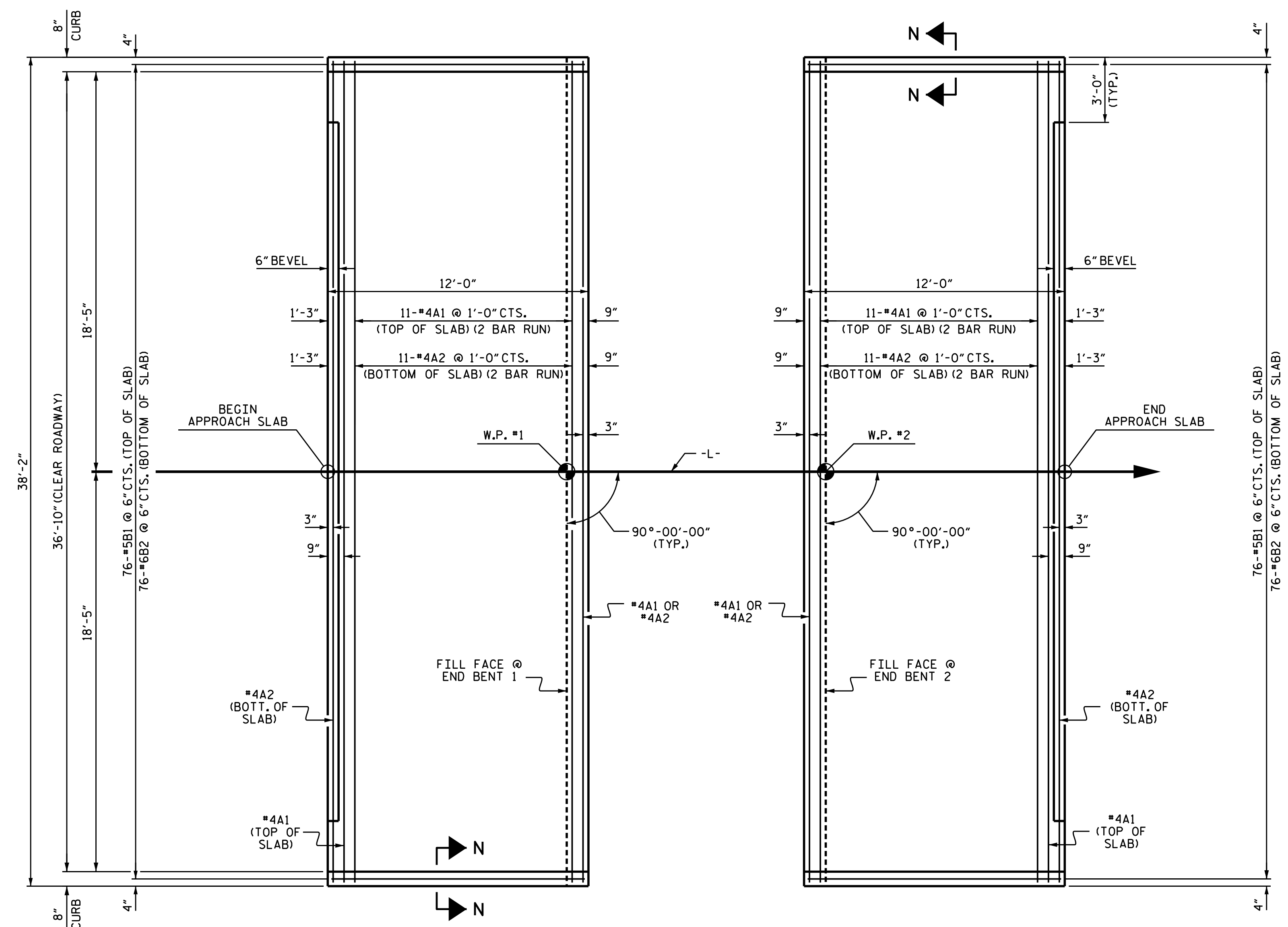
**TEMPORARY DRAINAGE DETAIL**



NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2" DEPTH, 2) EROSION CONTROL MAT, OR 3) CONCRETE, AS DIRECTED BY THE ENGINEER. THE SLOPE DRAIN SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.

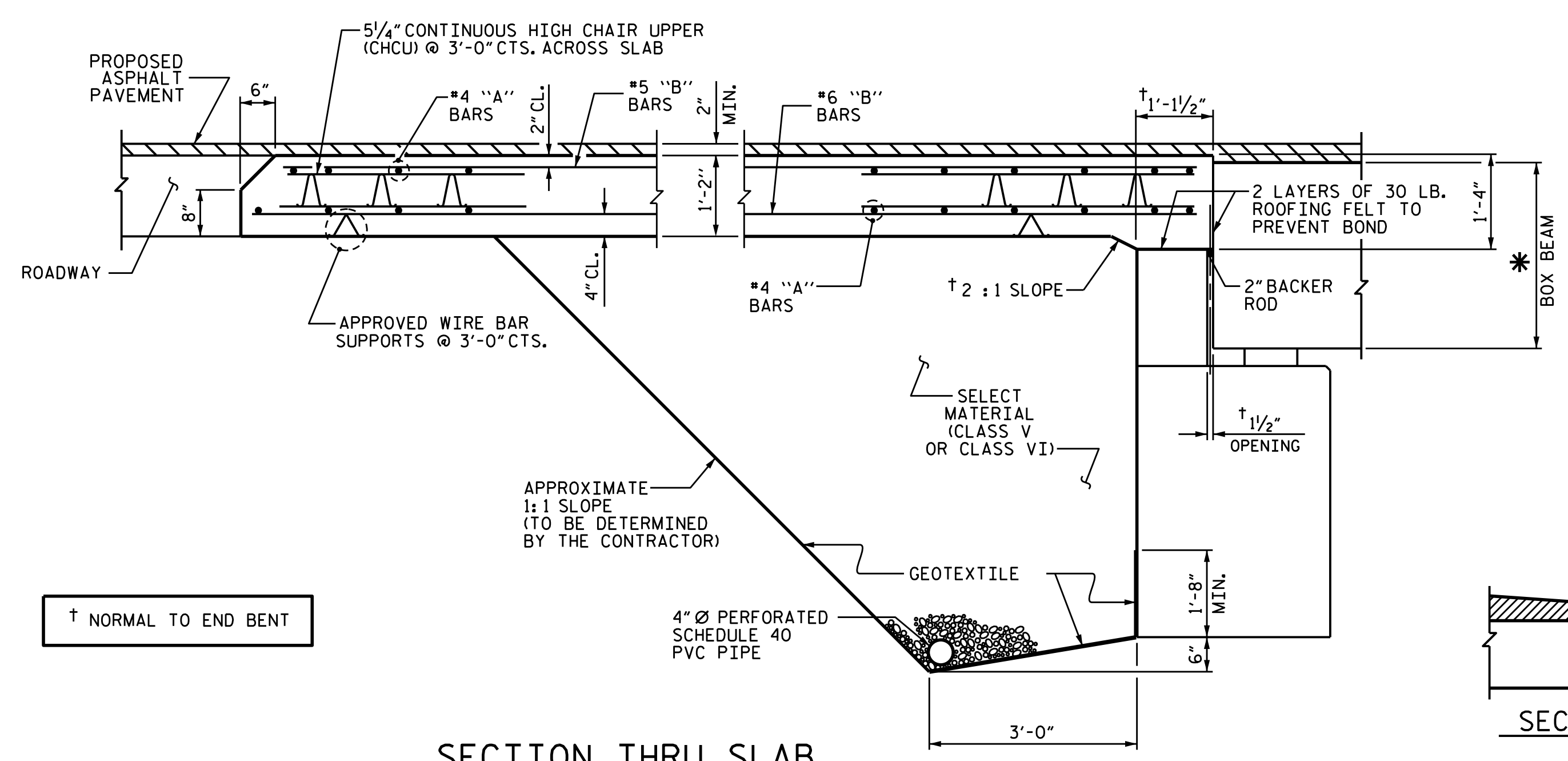
**TEMPORARY BERM AND SLOPE DRAIN DETAILS**  
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

BILL OF MATERIAL					
APPROACH SLAB AT EB 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	26	#4	STR	19'-11"	346
A2	26	#4	STR	19'-10"	344
*B1	76	#5	STR	11'-2"	885
B2	76	#6	STR	11'-8"	1332
REINFORCING STEEL				LBS.	1676
*EPOXY COATED REINFORCING STEEL				LBS.	1231
CLASS AA CONCRETE				C. Y.	20.1
APPROACH SLAB AT EB 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	26	#4	STR	19'-11"	346
A2	26	#4	STR	19'-10"	344
*B1	76	#5	STR	11'-2"	885
B2	76	#6	STR	11'-8"	1332
REINFORCING STEEL				LBS.	1676
*EPOXY COATED REINFORCING STEEL				LBS.	1231
CLASS AA CONCRETE				C. Y.	20.1

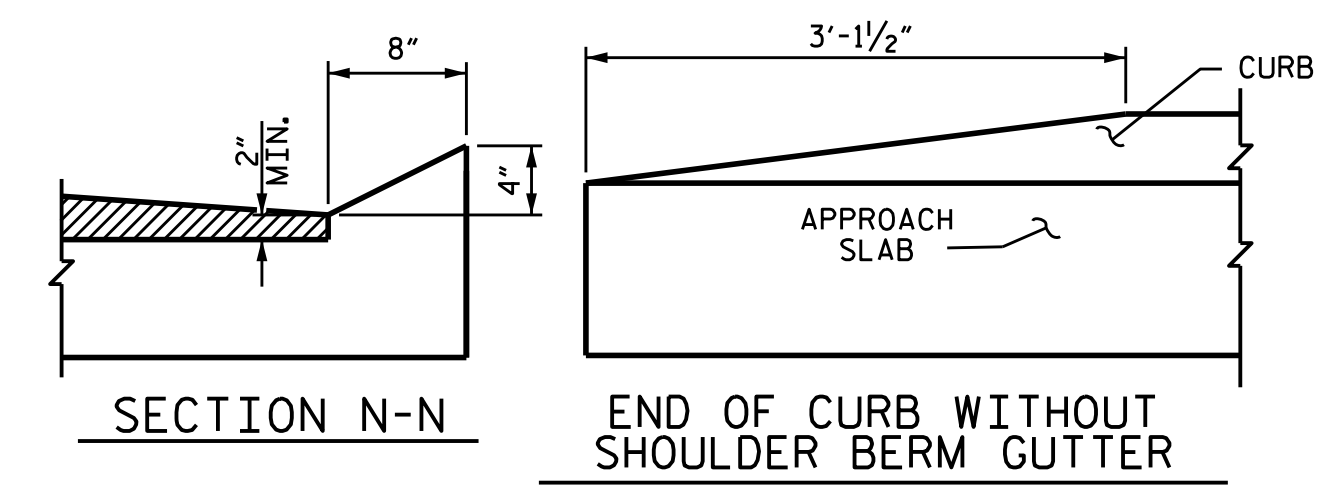


**PLAN @ END BENT 1** and **PLAN @ END BENT 2**  
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

SPlice LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"



**SECTION THRU SLAB**  
(TYPE II - MODIFIED APPROACH FILL)



**CURB DETAILS**

PROJECT NO. B-5769  
ROWAN COUNTY  
STATION: 16+00.00 -L-

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
BRIDGE APPROACH SLAB  
FOR PRESTRESSED CONCRETE  
BOX BEAM UNIT  
(SUB-REGIONAL TIER)  
90° SKEW

**wsp**  
WSP USA Inc.  
100 MOREHEAD SQUARE DRIVE  
SUITE 610  
CHARLOTTE, NC 28203  
TEL: 1.704.342.5401  
WSP.COM  
LICENSE NO. F-0165

Professional Engineer Seal  
SEAL 031988  
ENGINEER  
JACOB P. SHERMAN  
2/02/18

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1			3		
2			4		

SHEET NO. **S-15**  
TOTAL SHEETS 15

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2/2/2018 2:41:35PM 2012 NCDOT Division 01-Community Services Group 5 Bridges-B-5769 Patch Orchard Road Structures\02-Drawings\01-023-B5769-SML-AS01.dgn

ASSEMBLED BY: M. HOBBS DATE: APR 2017  
CHECKED BY: J. SMITH DATE: APR 2017  
DESIGN ENGINEER OF RECORD: J. SHERMAN DATE: FEB 2018

DRAWN BY: MAA 11/11  
CHECKED BY: AAC 11/11  
REV. 12-17 MAA/THC

## 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 2012 "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 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 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 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 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø 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 5/16" 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 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

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