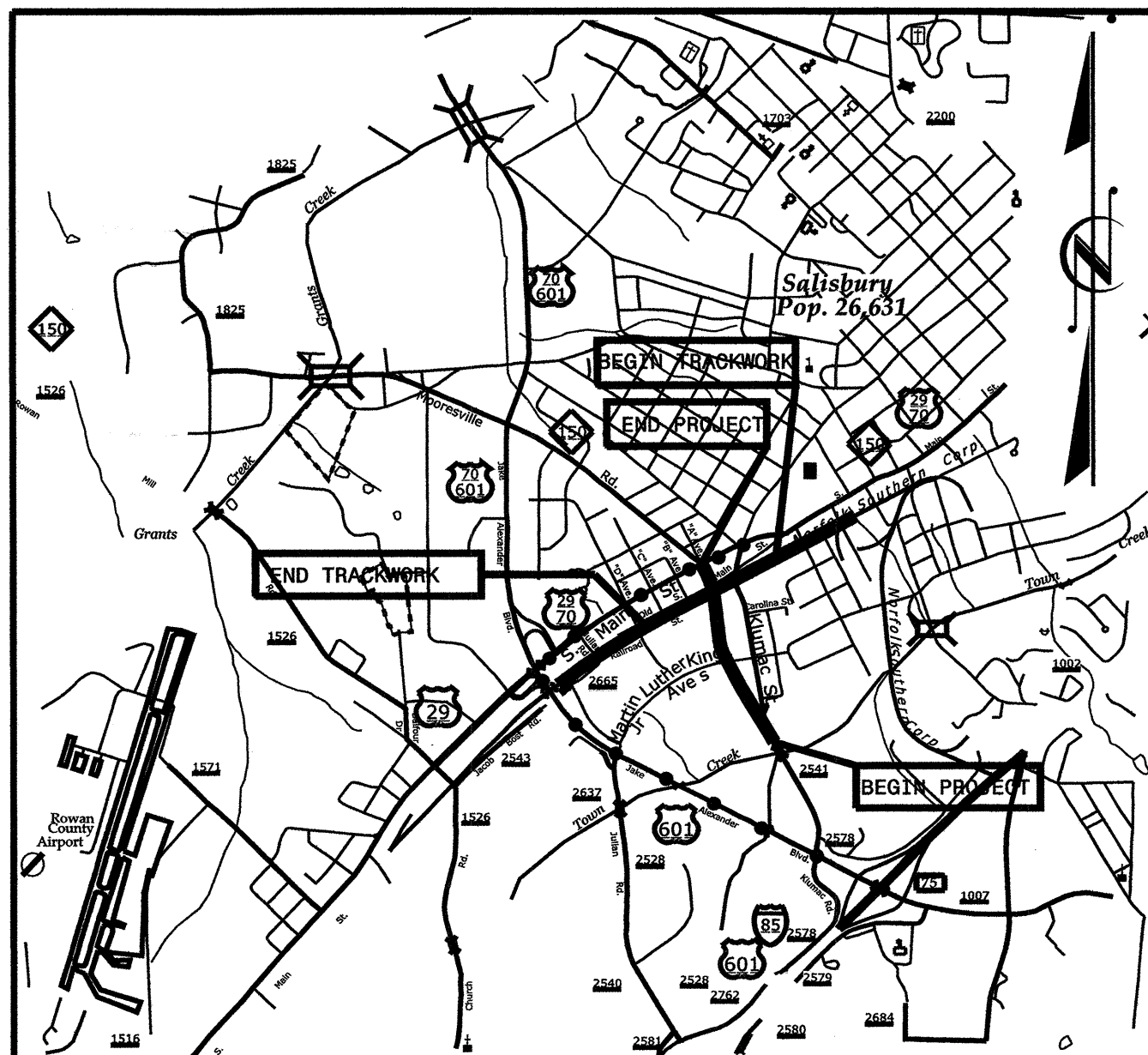


0302DEL_P12

TIP PROJECT: U-3459

CONTRACT: C203127



VICINITY MAP
● — ● — ● — ● — ● — OFFSITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

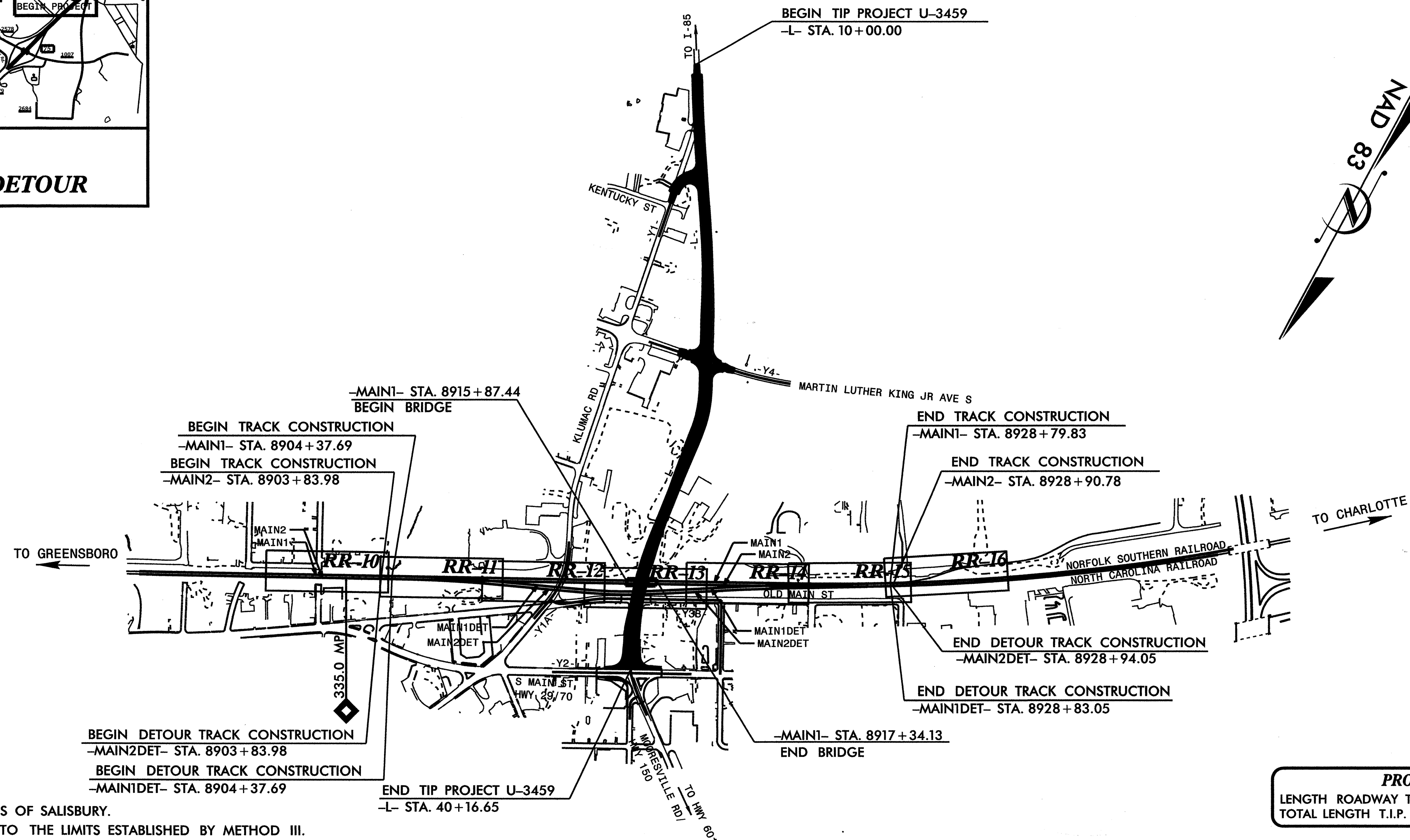
ROWAN COUNTY

LOCATION: PROPOSED SR 2541 (KLUMAC ROAD) GRADE SEPARATION
WITH THE NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN CORPORATION.

TYPE OF WORK: GRADING, DRAINAGE, STRUCTURE, SHORING AND TRACKBED

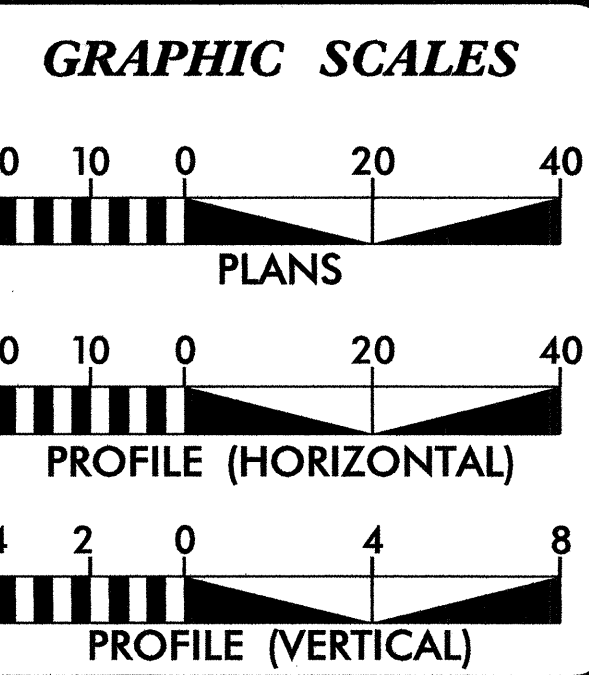
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3459	S-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34951.1.1	STP-2541(4)	P.E.	
43219.2.STR1U3459		R/W	
53500.3.STR01T4		UTIL	

STRUCTURE



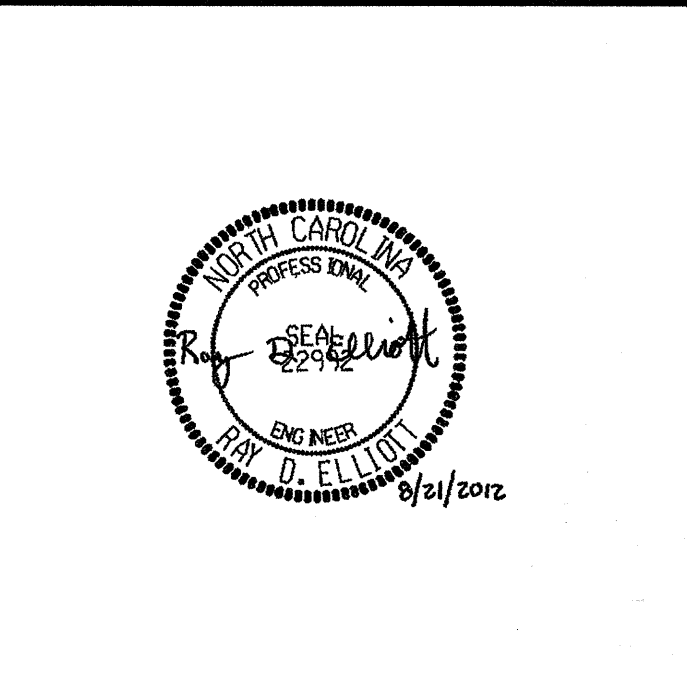
THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF SALISBURY.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

PROJECT LENGTH	
LENGTH ROADWAY T.I.P. PROJECT U-3459	= 0.571 MILES
TOTAL LENGTH T.I.P. PROJECT U-3459	= 0.571 MILES



DESIGN DATA

ADT 2010	= 7,000
ADT 2035	= 10,200
DHV	= 10 %
D	= 65 %
T	= 7 %
V	= 40 MPH
* TTST	= 2% DUAL 5%
FUNC CLASS	=
URBAN	COLLECTOR



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION
2012 STANDARD SPECIFICATIONS

LEONARD G. FLETCHER, PE, PLS
PROJECT ENGINEER

RAY D. ELLIOTT, PE
PROJECT DESIGN ENGINEER

LETTING DATE:
DECEMBER, 2012

PROJECT	U-3459 - KLUMAC ROAD
TITLE	
SHEET S-1	
LOCATION	SALISBURY-SR 2541 (KLUMAC RD) at NCRRS
PLANS PREPARED BY:	TGS ENGINEERS 107-A WICA AVENUE MORGANTON, NC 28655 PH 1828 437-4681 CORP. LICENSE NO. 1 C-0275
RAILROAD	NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
VAL SEC	V-8
PLANS PREPARED FOR:	NCDOT RAIL DIVISION
MILE POST	MP 335.2
Charlotte Division SHEET 1 OF 51	

SYSTEMTIME\$\$\$\$\$
\$\$\$\$\$DGN\$\$\$\$\$
\$\$\$\$\$USERNAME\$\$\$\$\$

8915+00

8915+50

8916+00

8916+50

8917+00

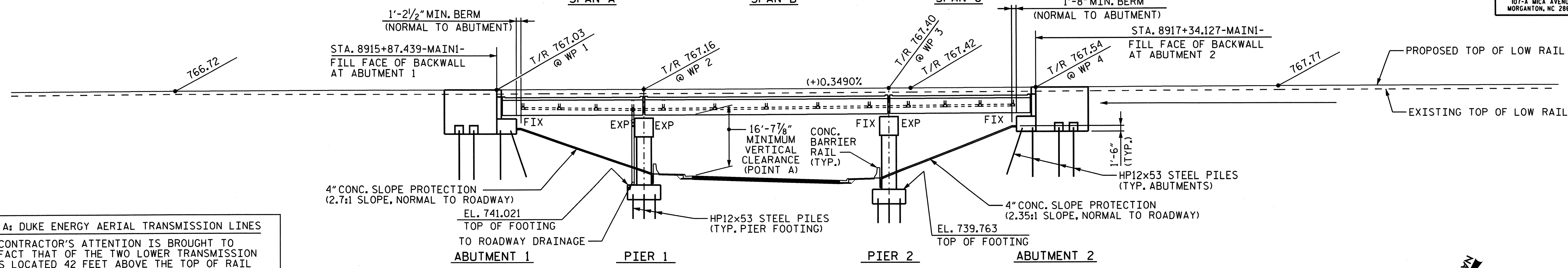
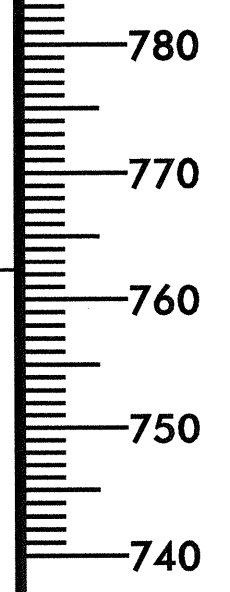
8917+50

8918+00

8918+50

PREPARED BY
TGS ENGINEERS
107-A WICA AVENUE
MORGANTON, NC 28655

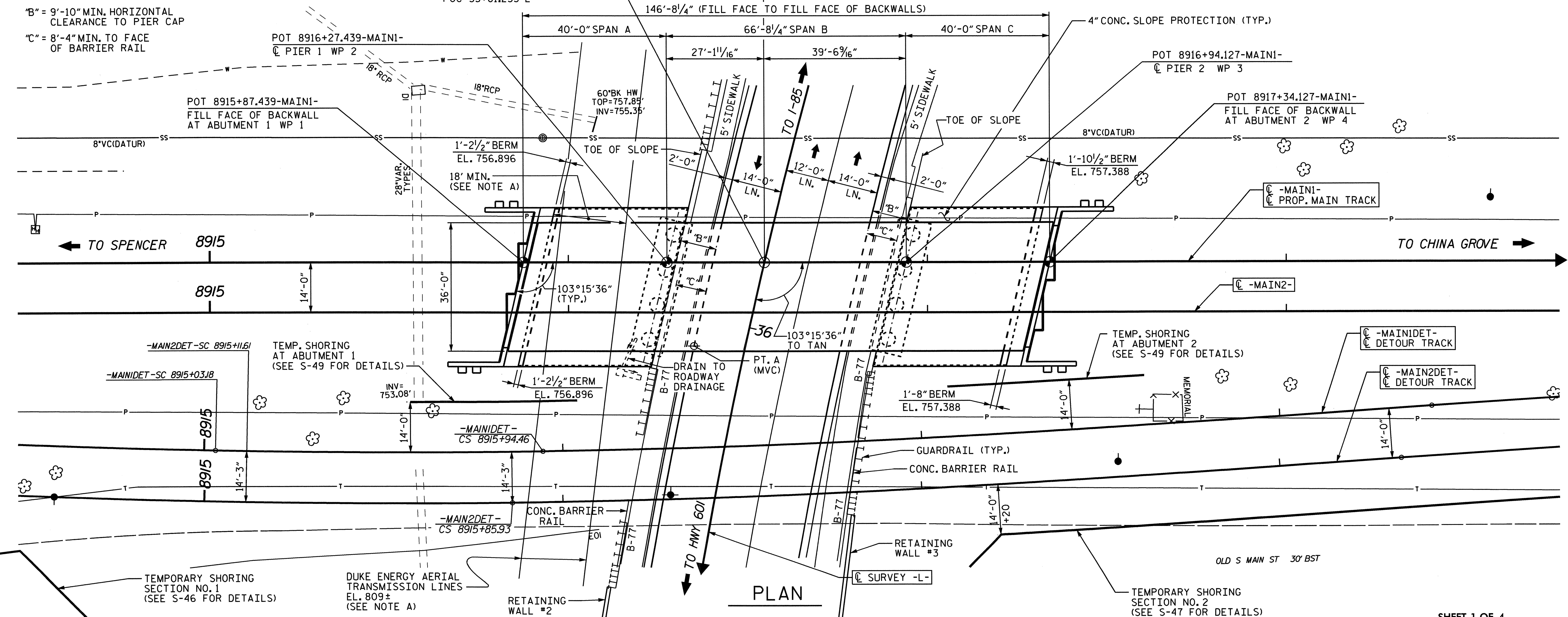
0302DEL_P12



NOTE A: DUKE ENERGY AERIAL TRANSMISSION LINES
THE CONTRACTOR'S ATTENTION IS BROUGHT TO THE FACT THAT OF THE TWO LOWER TRANSMISSION LINES LOCATED 42 FEET ABOVE THE TOP OF RAIL AND NEAR STATION 8916+00-MAIN1- THAT CROSS THE BRIDGE, THE ONE NEAREST TO ABUTMENT 1 SHALL BE DE-ENERGIZED DURING CONSTRUCTION. AN 18 FOOT MINIMUM DISTANCE SHALL BE MAINTAINED FROM THE ABUTMENT CAP TO THE REMAINING LIVE TRANSMISSION LINE.

SECTION ALONG Q PROPOSED TRACKS -MAIN1-

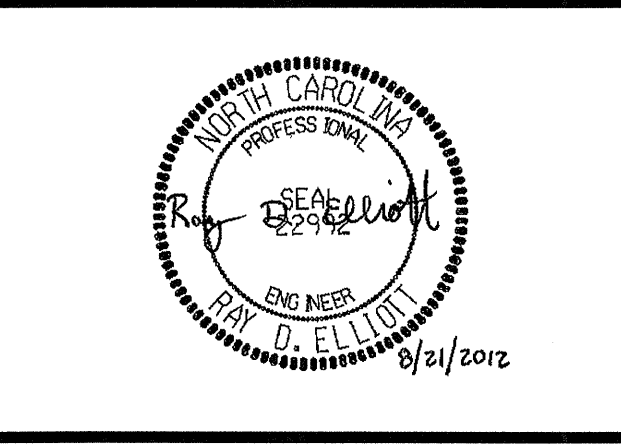
(SUBSTRUCTURE AT RIGHT ANGLES TO SUBSTRUCTURE)



PLAN

SHEET 1 OF 4

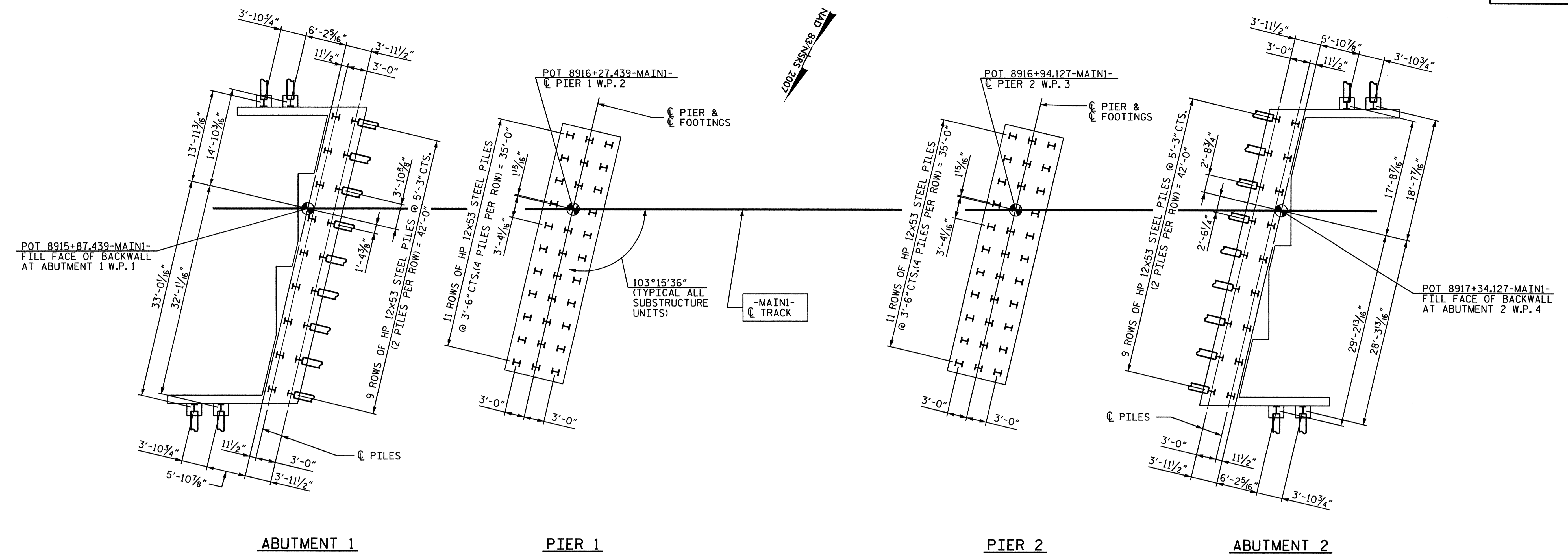
Table with columns for NO., BY, DATE, and REVISION.



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION
ENGINEERING & SAFETY BRANCH

PROJECT U-3459 - KLUMAC ROAD
TITLE GENERAL DRAWING
LOCATION SALISBURY-SR 2541 (KLUMAC RD) at NCRNRS
DGN BY CPB RAILROAD NORTH CAROLINA RAILROADNORFOLK SOUTHERN MILE POST MP 335.2
DWN BY RTJ VAL SEC V-8
CHK BY JLA DATE 4/12 SCALE 1" = 15'
SHEET 2 OF 51

0302DEL_PT12



INDICATES PILE BATTER 3 : 12 IN DIRECTION SHOWN

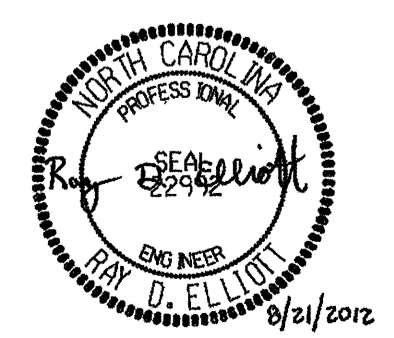
NOTES:
ALL PILES ARE HP12x53 STEEL PILES.
DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE.

FOUNDATION RECOMMENDATION NOTES:

- FOR PILES, SEE SPECIAL PROVISIONS.
- PILES AT END BENT NO.1 ARE DESIGNED FOR AN ALLOWABLE CAPACITY OF 75 TONS PER PILE. DRIVE PILES TO A REQUIRED BEARING CAPACITY OF 150 TONS PER PILES.
- PILES AT END BENT NO.2 ARE DESIGNED FOR AN ALLOWABLE CAPACITY OF 75 TONS PER PILE. DRIVE PILES TO A REQUIRED BEARING CAPACITY OF 150 TONS PER PILES.
- PILES AT BENT NO.1 ARE DESIGNED FOR AN ALLOWABLE CAPACITY OF 75 TONS PER PILE. DRIVE PILES TO A REQUIRED BEARING CAPACITY OF 150 TONS PER PILES.
- PILES AT BENT NO.2 ARE DESIGNED FOR AN ALLOWABLE CAPACITY OF 75 TONS PER PILE. DRIVE PILES TO A REQUIRED BEARING CAPACITY OF 150 TONS PER PILES.
- IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY FROM 20,099 TO 40,198 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO.1, BENT NO.1, BENT NO.2, AND END BENT NO.2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH THE PILES PROVISION.
- TESTING A PRODUCTION PILE WITH THE PILE DRIVING ANALYZER DURING DRIVING, RESTRIKING, AND/OR REDRIVING IS REQUIRED AT END BENT 2

FOUNDATION LAYOUT PLAN

NO.	BY	DATE	REVISION



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: **ENGINEERING & SAFETY BRANCH**
MAIL SERVICE CENTER 1526 MAIL SERVICE CENTER RALEIGH, NC 27699-1526
DELIVERY: 660 CAPITAL BOULEVARD RALEIGH, NC 27603
PHONE: 1919 715-8803 FAX: 1919 715-8804

PROJECT	U-3459 - KLUMAC ROAD		
TITLE	GENERAL DRAWING		
LOCATION	SALISBURY SR 2541 (KLUMAC RD) at NCRVNS		
DGN BY	CPB	RAILROAD	NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
DWN BY	JLA	VAL SEC	V-8
CHK BY	RTJ	DATE	4/12
MILE POST	MP 335.2		SCALE 1/8" = 1'-0"
SHEET 3 OF 51			

0302DEL_P12

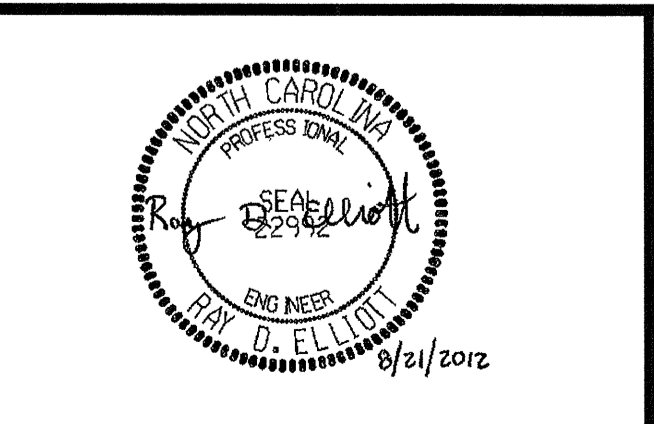
TOTAL BILL OF MATERIAL

ITEM	TEMPORARY RAILROAD SHORING	FOUNDATION EXCAVATION	PDA TESTING		REINFORCED CONCRETE DECK SLAB	CLASS AA CONCRETE	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	STRUCTURAL STEEL	PAINTING STRUCTURAL STEEL	HP 12x53 STEEL PILES	
UNIT	LUMP SUM	LUMP SUM	EACH		SO. FT.	CU. YD.	LBS.	LBS.	APPROX. LBS.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE					5,182				428,600	LS		
ABUTMENT 1		LS				75.0	11,464				22	1,584
PIER 1		LS				110.8	20,519	1726			33	1,386
PIER 2		LS				113.8	21,125	1918			33	1,551
ABUTMENT 2		LS	1			75.0	11,304				22	1,628
TOTALS	LUMP SUM	LUMP SUM	1		5,182	374.6	64,412	3644	428,600	LUMP SUM	110	6,149

ITEM	METHOD B DAMP-PROOFING	TWO PART MEMBRANE WATER-PROOFING SYSTEM	MEMBRANE LAYER WATER-PROOFING FOR DECK	1" ASPHALT PLANKING PROTECTIVE COURSE FOR DECK	METAL HANDRAIL	1'x2'-1" CONCRETE PARAPET	4" CONCRETE SLOPE PROTECTION	SELF-LUBRICATING EXPANSION BEARING ASSEMBLIES	STRUCTURE DRAINAGE SYSTEM	4" Ø SIGNAL CONDUIT SYSTEM	
UNIT	SO. YDS.	SO. YDS.	SO. YDS.	SO. YDS.	LIN. FT.	LIN. FT.	SO. YDS.	LUMP SUM	LUMP SUM	LUMP SUM	
SUPERSTRUCTURE			545	525	291.3	287.9		LS	LS	LS	
ABUTMENT 1	120	40			37.0		210		LS		
PIER 1	115	15							LS		
PIER 2	115	15							LS		
ABUTMENT 2	120	40			37.0		215		LS		
TOTALS	470	70	545	525	365.3	287.9	425	LUMP SUM	LUMP SUM	LUMP SUM	

\$\$\$USERNAME\$\$\$ \$\$\$SYSTEM\$\$\$ \$\$\$DON\$\$\$

NO.	BY	DATE	REVISION



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: **ENGINEERING & SAFETY BRANCH**

MAIL: 1556 MAIL SERVICE CENTER RALEIGH, NC 27699-1556
DELIVERY: 860 CAPITAL BOULEVARD RALEIGH, NC 27603
PHONE: (919) 715-8803
FAX: (919) 715-8804

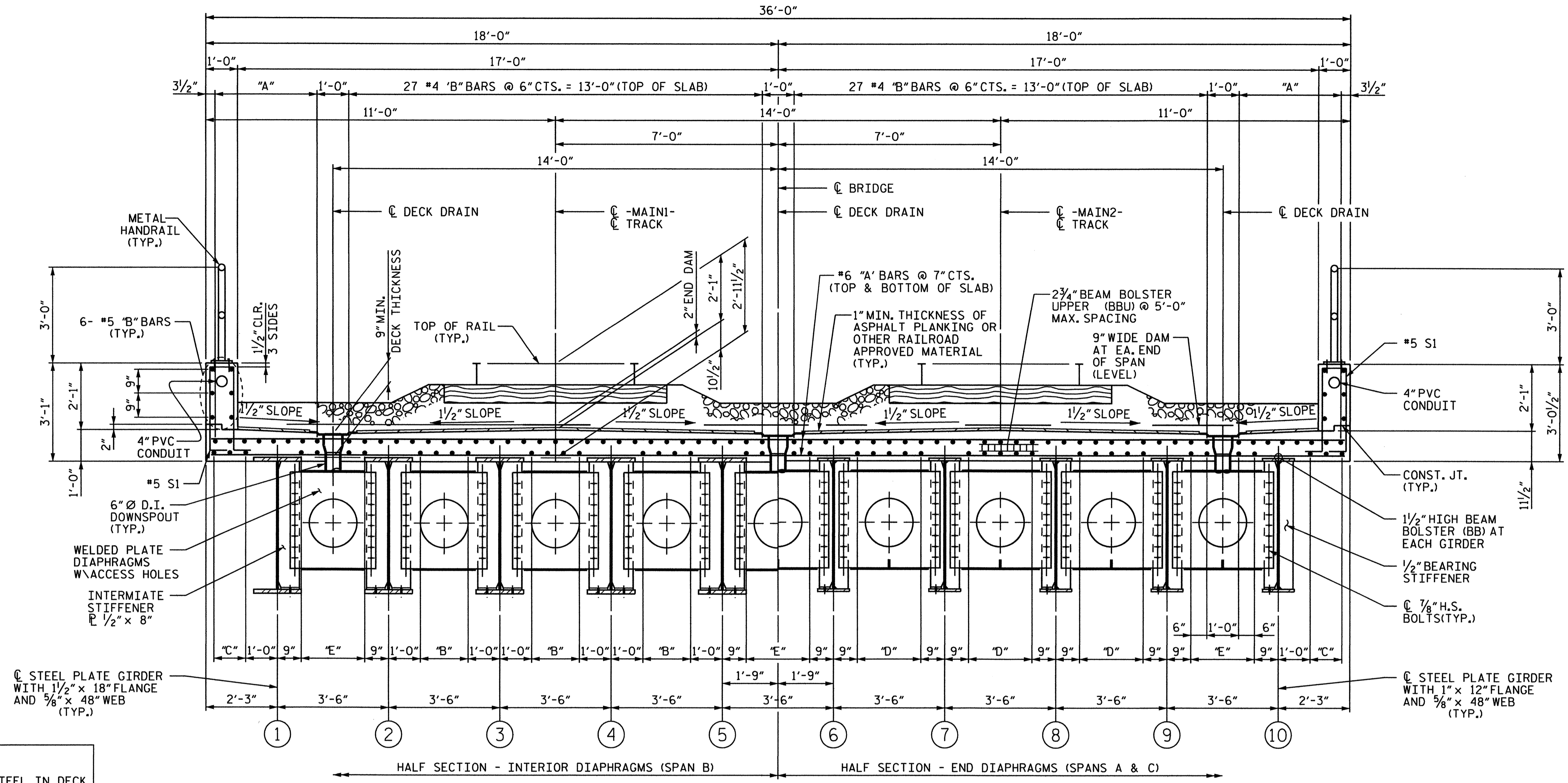
PROJECT: U-3459 - KLUMAC ROAD
TITLE: GENERAL DRAWING BILL OF MATERIALS

LOCATION: SALISBURY-SR 2541 (KLUMAC RD) of NCR RNLS

DGN BY: CPB RAILROAD: NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN MILE POST: MP 335.2
DWN BY: NMW VAL SEC: V-8
CHK BY: RDE DATE: 3/12 SCALE:

SHEET 5 OF 51

0302DEL_P12

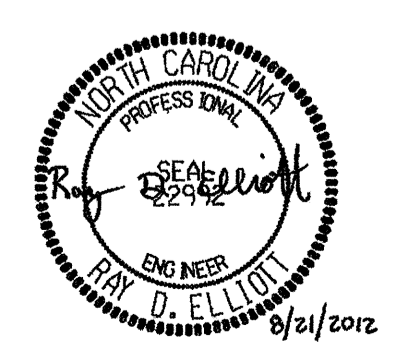


NOTE :
ALL REINFORCING STEEL IN DECK AND PARAPET IS EPOXY-COATED.

- "A" = 8 #4 "B" BARS @ 5 1/2" CTS. = 3'-2 1/2" (TOP OF SLAB)
- "B" = 4 #4 "B" BARS @ 6" CTS. = 1'-6" (BOTTOM OF SLAB)
- "C" = 3 #4 "B" BARS @ 6" CTS. = 1'-0" (BOTTOM OF SLAB)
- "D" = 5 #4 "B" BARS @ 2'-0" (BOTTOM OF SLAB)
- "E" = 4 #4 "B" BARS SPACED AS SHOWN = 2'-0" (BOTTOM OF SLAB)

TYPICAL DECK SECTION - SPANS A THRU C

NO.	BY	DATE	REVISION



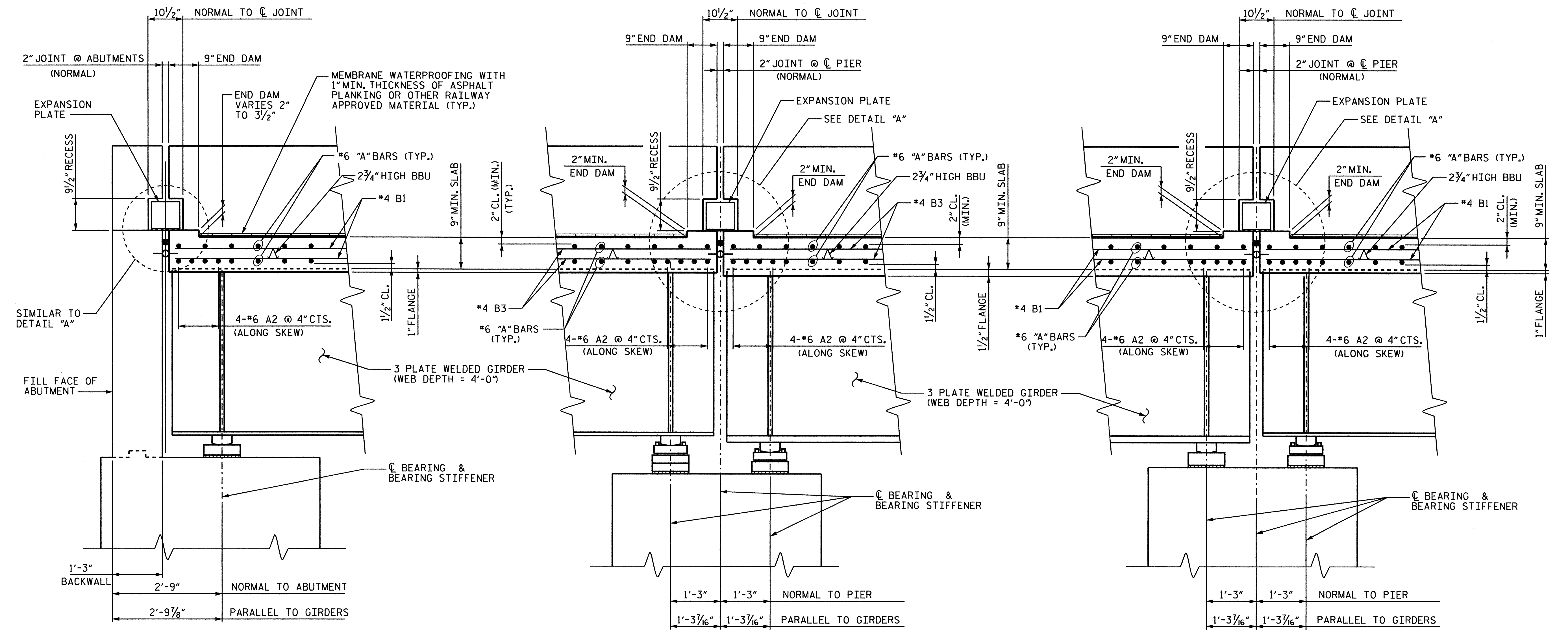
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: **ENGINEERING & SAFETY BRANCH**

MAIL: 1256 MAIL SERVICE CENTER, RALEIGH, NC 27699-1556
DELIVERY: 850 CAPITAL BOULEVARD, RALEIGH, NC 27603
PHONE: (919) 715-8903
FAX: (919) 715-8904

PROJECT U-3459 - KLUMAC ROAD		TITLE	
		TYPICAL SECTION SPANS A, B & C	
LOCATION SALISBURY-SR 2541 (KLUMAC RD) of NCRRA'S			
DGN BY	CPB	RAILROAD	NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
DWN BY	JLA	VAL SEC	V-8
CHK BY	RTJ	DATE	4/12
SCALE 1/2" = 1'-0"		MILE POST MP 335.2	
		SHEET 6 OF 51	

0302DEL_P12



SECTION A-A

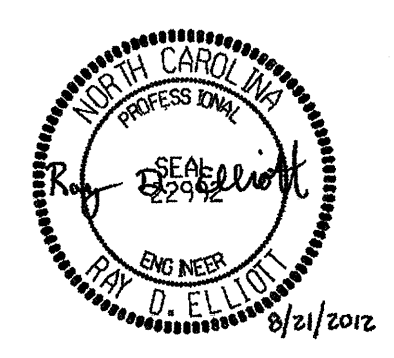
SECTION B-B

SECTION C-C

ALL REINFORCING STEEL TO BE EPOXY COATED.

*****SYSTEMTIME*****

NO.	BY	DATE	REVISION



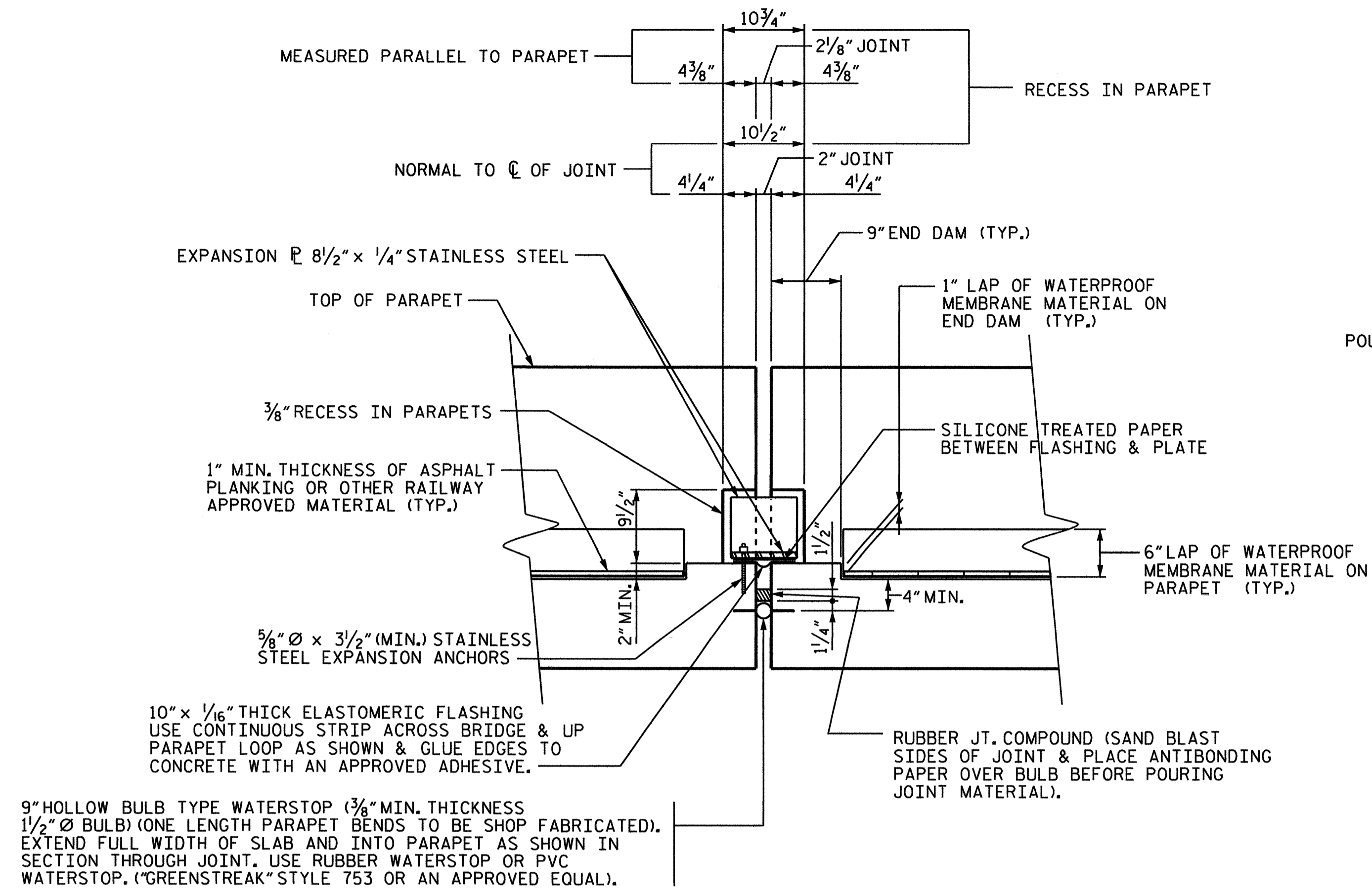
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: **ENGINEERING & SAFETY BRANCH**

MAIL: 1056 MAIL SERVICE CENTER RALEIGH, NC 27699-1556
DELIVERY: 850 CAPITAL BOULEVARD RALEIGH, NC 27603
PHONE: (919) 715-8803
FAX: (919) 715-8804

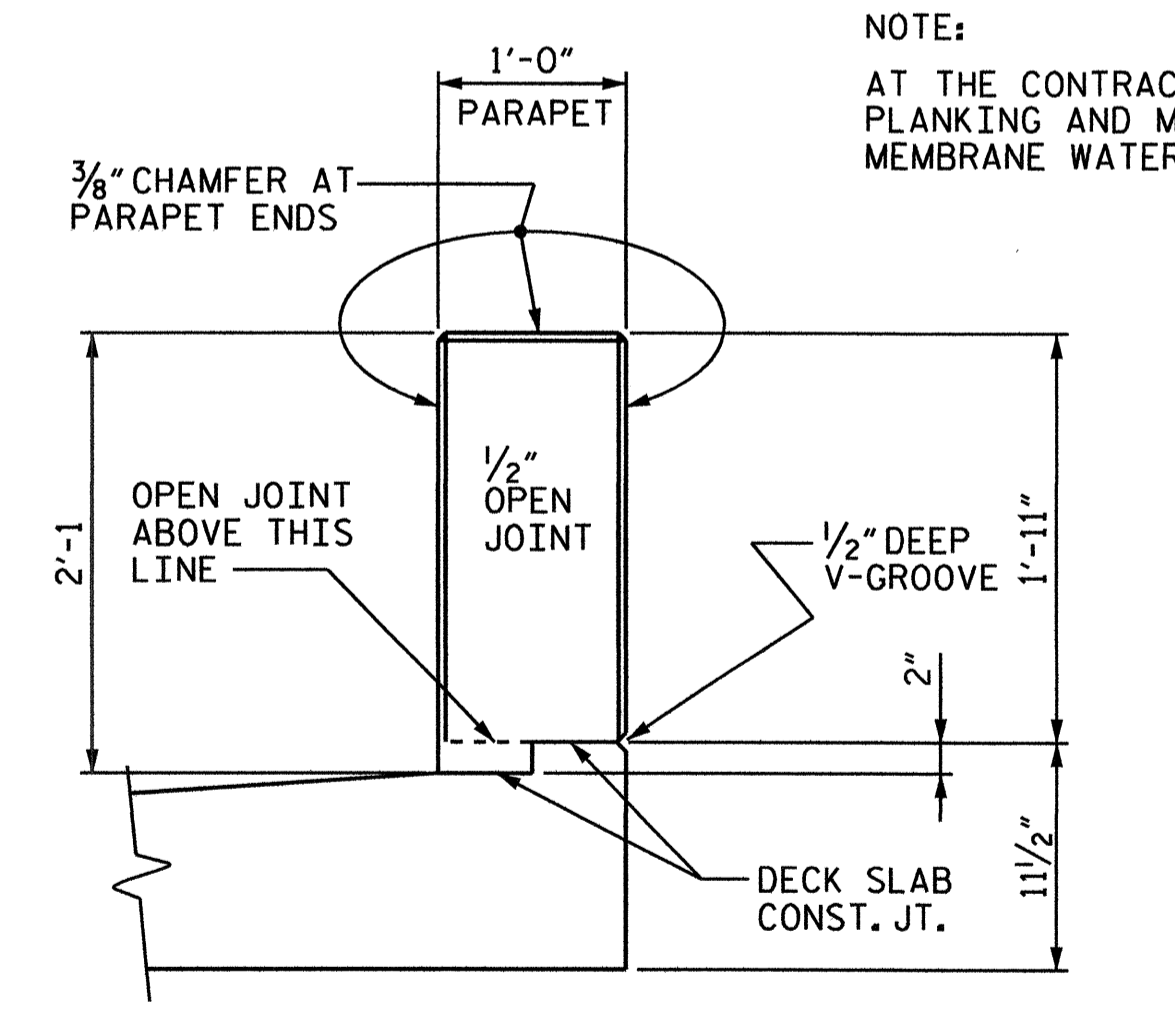
PROJECT U-3459 - KLUMAC ROAD		TITLE	
CONCRETE DECK SECTIONS			
LOCATION SALISBURY-SR 2541 (KLUMAC RD) of NCRRA'S			
DGN BY CPB	RAILROAD NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN	MILE POST	MP 335.2
DWN BY JLA	VAL SEC V-8		
CHK BY RTJ	DATE 5/12	SCALE	3/4" = 1'-0"
			SHEET 7 OF 51

0302DEL_PT2



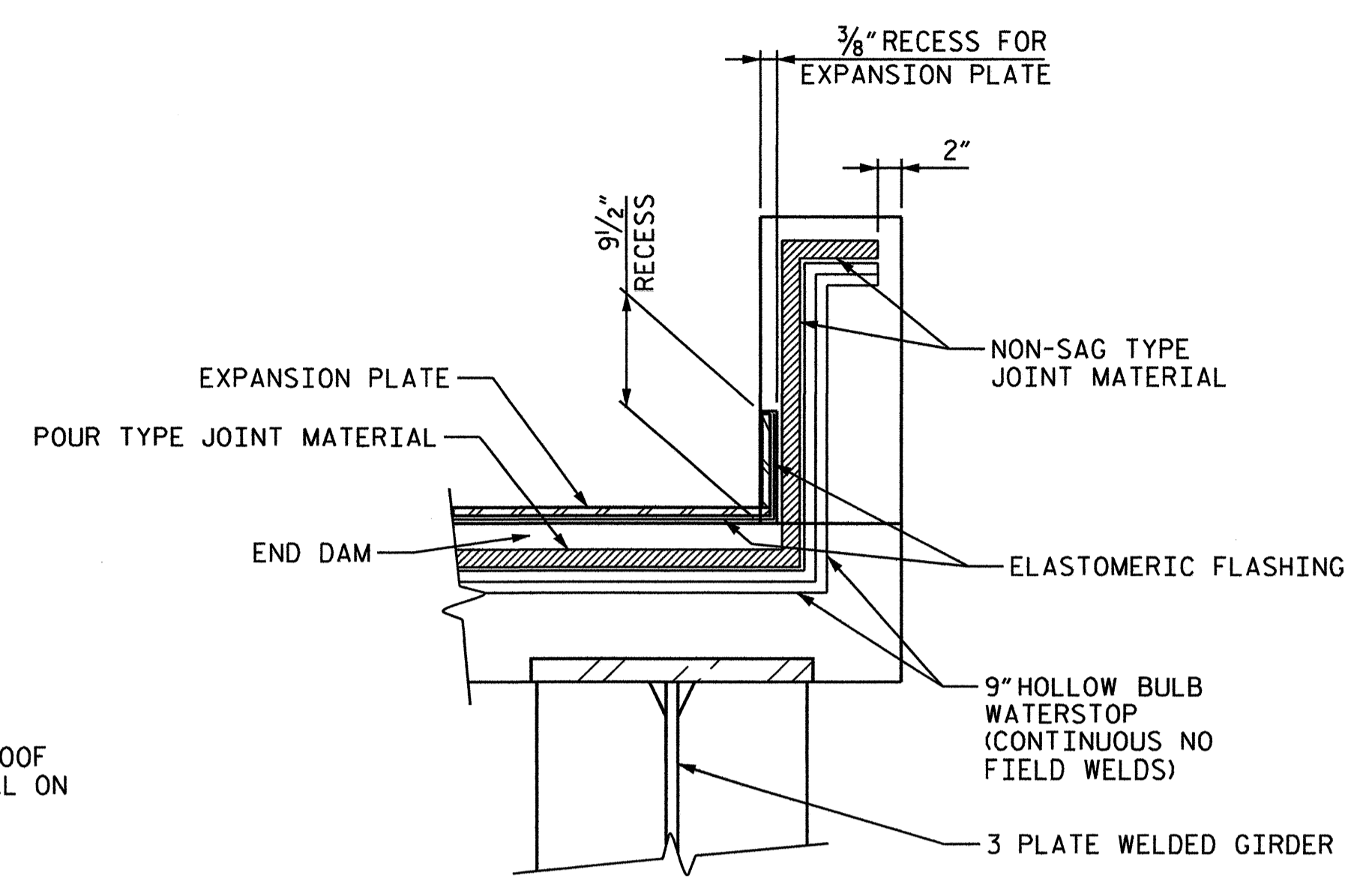
NOTE: JOINT SHALL BE TESTED FOR LEAKS AND MADE WATERTIGHT BEFORE FLASHING AND EXP. PLATE COVERS ARE INSTALLED.

DETAIL "A"

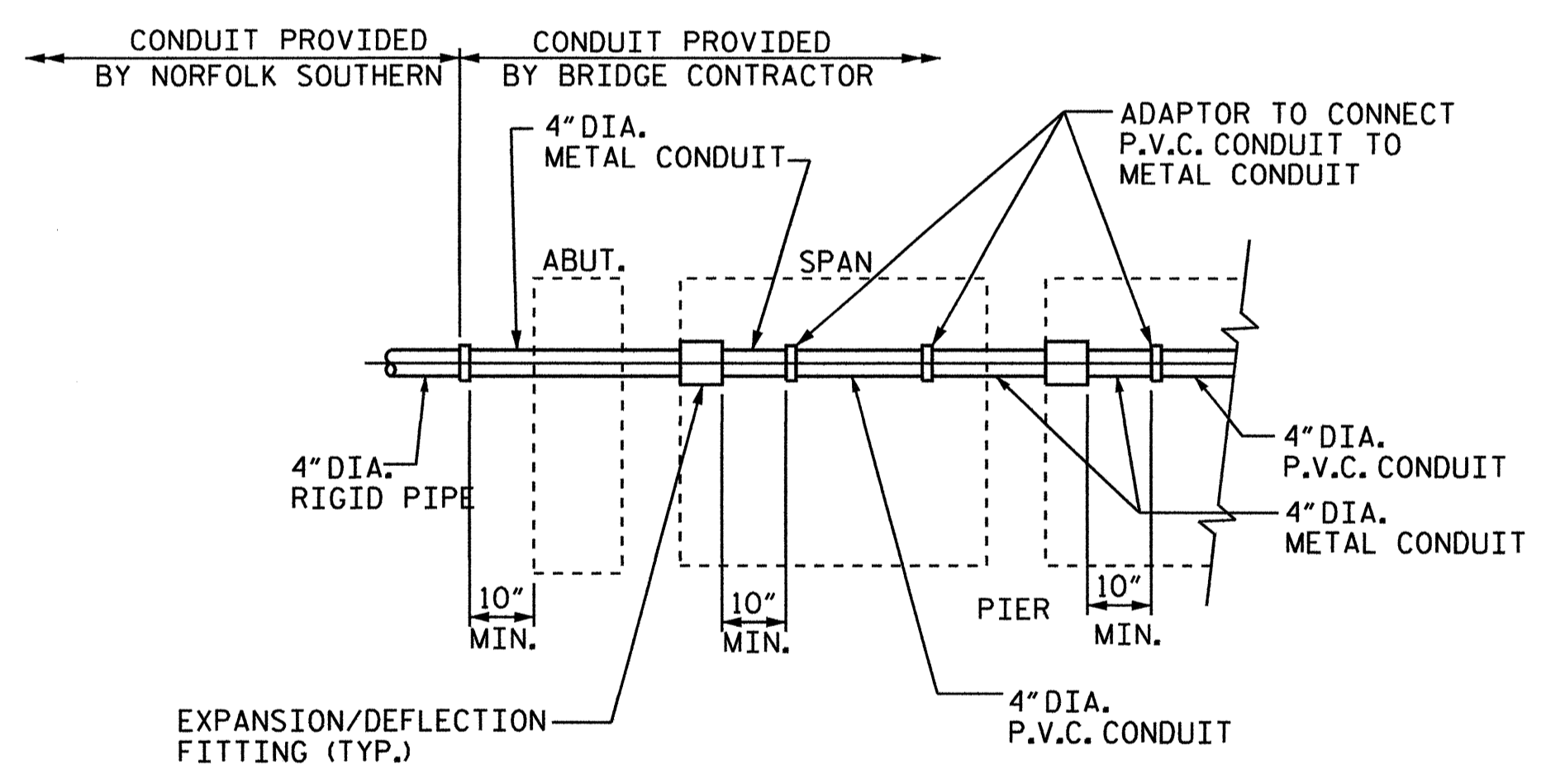


SECTION THRU OPEN JOINT IN PARAPET
(DOES NOT APPLY BETWEEN SPANS)

NOTE: AT THE CONTRACTOR'S OPTION, IN PLACE OF THE 1" ASPHALT PLANKING AND MEMBRANE LAYER, HE MAY USE POLYURETHANE MEMBRANE WATERPROOFING SYSTEM APPROVED BY THE RAILROAD.



PART SECTION AT EXPANSION JOINT



SIGNAL CONDUIT LAYOUT
(NOT TO SCALE)

NOTES FOR CONDUITS IN PARAPETS

CONDUIT TO BE 4" DIA. IN ACCORDANCE WITH UNDERWRITER'S LABORATORY SPECIFICATIONS.

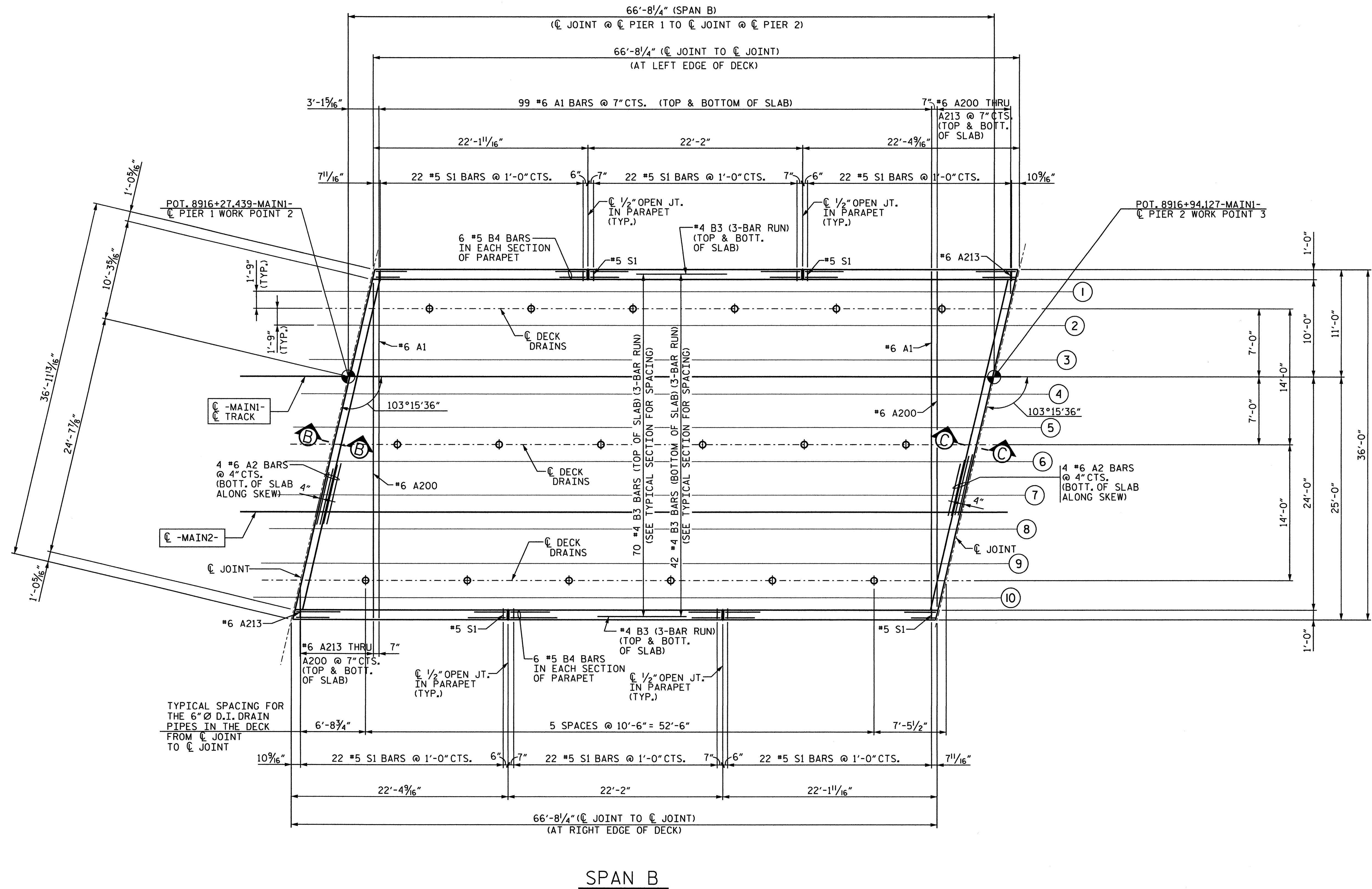
EXPANSION FITTINGS OF CONDUIT SHALL BE LOCATED AT DECK JOINT AT PIER 1 & 2.

COUPLING SHALL BE PROVIDED BEHIND BACKWALL OF ABUTMENT 1 & 2 FOR CONNECTION TO 4" DIA. RIGID PIPE. (RIGID PIPE BY NORFOLK SOUTHERN).

NO.	BY	DATE	REVISION

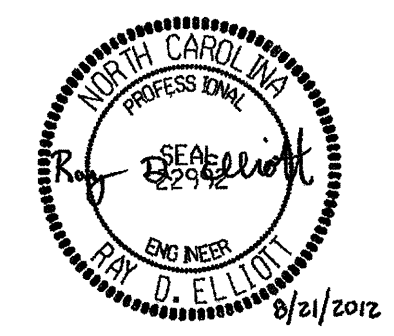
	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RAIL DIVISION	PROJECT U-3459 - KLUMAC ROAD TITLE PARAPET DETAILS
	ENGINEERING & SAFETY BRANCH <small>MAIL: 1556 MAIL SERVICE CENTER RALEIGH, NC 27699-1556 DELIVERY: 600 CAPITAL BOULEVARD RALEIGH, NC 27603 PHONE: (919) 715-8803 FAX: (919) 715-8804</small>	LOCATION SALISBURY-SR 2541 (KLUMAC RD) of NCRPNS DGN BY CPB RAILROAD NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN MILE POST MP 335.2 DWN BY JLA VAL SEC V-8 CHK BY RTJ DATE 5/12 SCALE 1" = 1'-0"
SHEET 8 OF 51		

0302DEL_P12



SPAN B

NO.	BY	DATE	REVISION



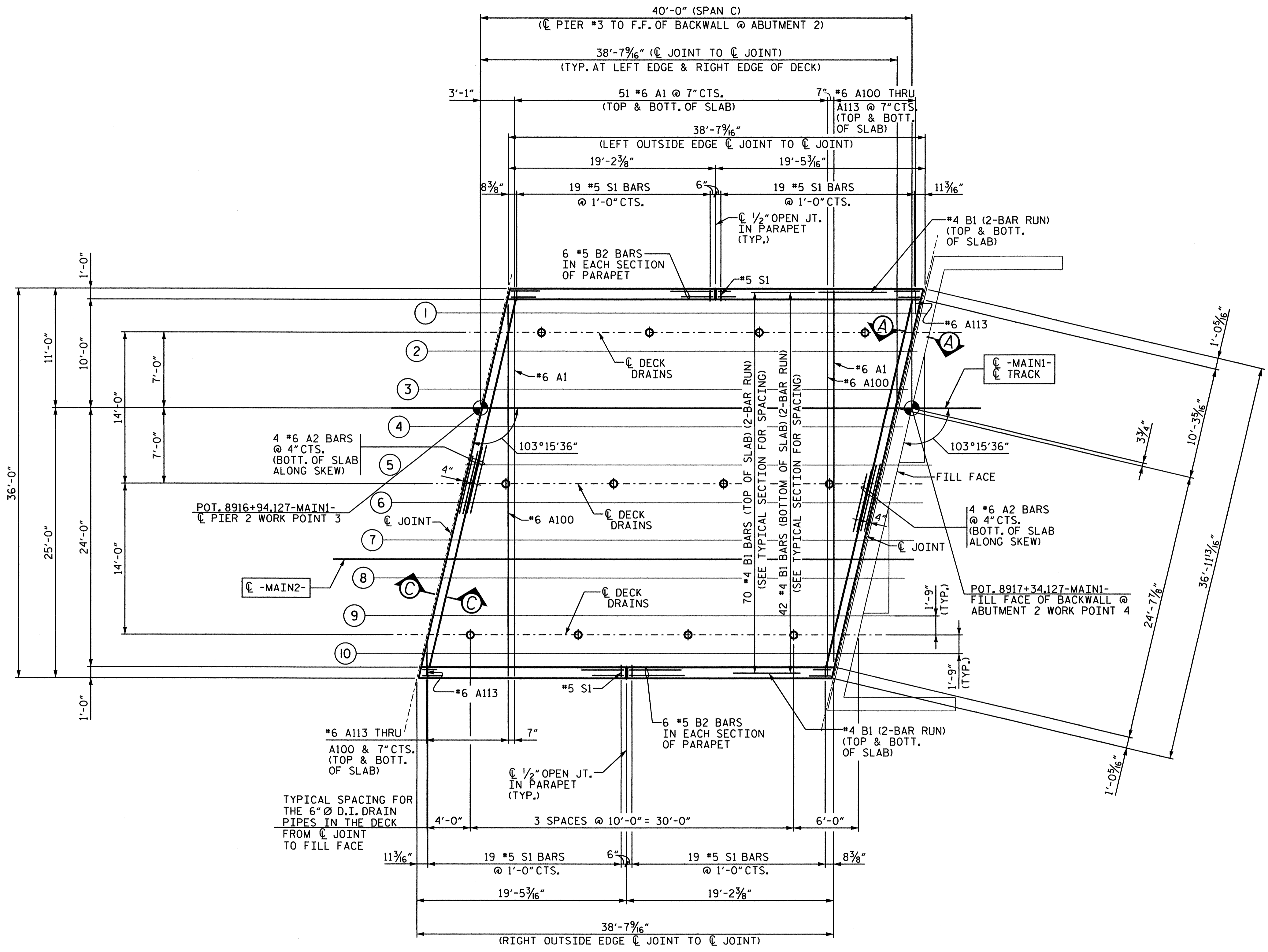
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: **ENGINEERING & SAFETY BRANCH**

MAIL: 1526 MAIL SERVICE CENTER, RALEIGH, NC 27603
DELIVERY: 260 CAPITAL BOULEVARD, RALEIGH, NC 27603
PHONE: (919) 715-8803, FAX: (919) 715-8804

PROJECT	U-3459 - KLUMAC ROAD		
TITLE	PLAN OF SPAN B		
LOCATION	SALISBURY-SR 2541 (KLUMAC RD) of NCRBN		
DGN BY	CPB	RAILROAD	NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
DWN BY	NMW	VAL SEC	V-8
CHK BY	RTJ	DATE	5/12
MILE POST	MP 335.2	SCALE	3/16" = 1'-0"
SHEET 10 OF 51			

0302 DEL_P12



SPAN C

NO.	BY	DATE	REVISION

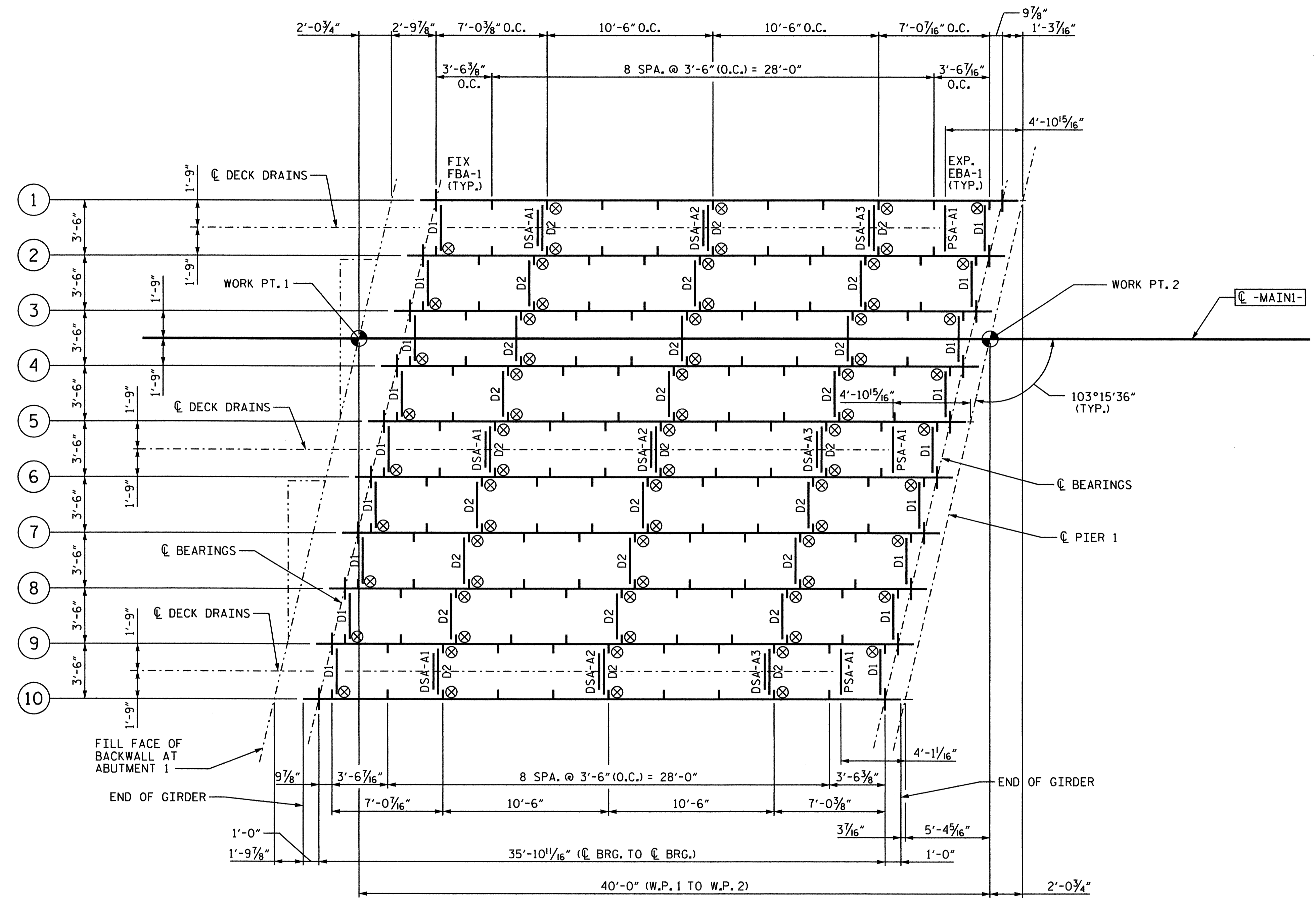


NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: **ENGINEERING & SAFETY BRANCH**

MAIL: 1556 MAIL SERVICE CENTER RALEIGH, NC 27603-1556
DELIVERY: 350 CAPITAL BOULEVARD RALEIGH, NC 27603
PHONE: (919) 715-8803 FAX: (919) 715-8804

PROJECT	U-3459 - KLUMAC ROAD		
TITLE	PLAN OF SPAN C		
LOCATION	SALISBURY-SR 2541 (KLUMAC RD) @ NCRRTS		
DGN BY	CPB	RAILROAD	NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
DWN BY	NMW	VAL SEC	V-8
CHK BY	RTJ	DATE	5/12
SCALE		3/16" = 1'-0"	
MILE POST			MP 335.2
SHEET 11 OF 51			

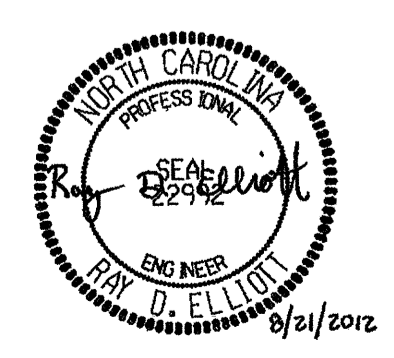


FRAMING PLAN - SPAN A

⊗ DENOTES LOCATION OF INTERMEDIATE STIFFENERS WITH BOLTED BOTTOM FLANGE CONNECTIONS, SEE DETAIL "C" ON SHEET 19 OF 51.

*****SYSTEMTIME*****

NO.	BY	DATE	REVISION

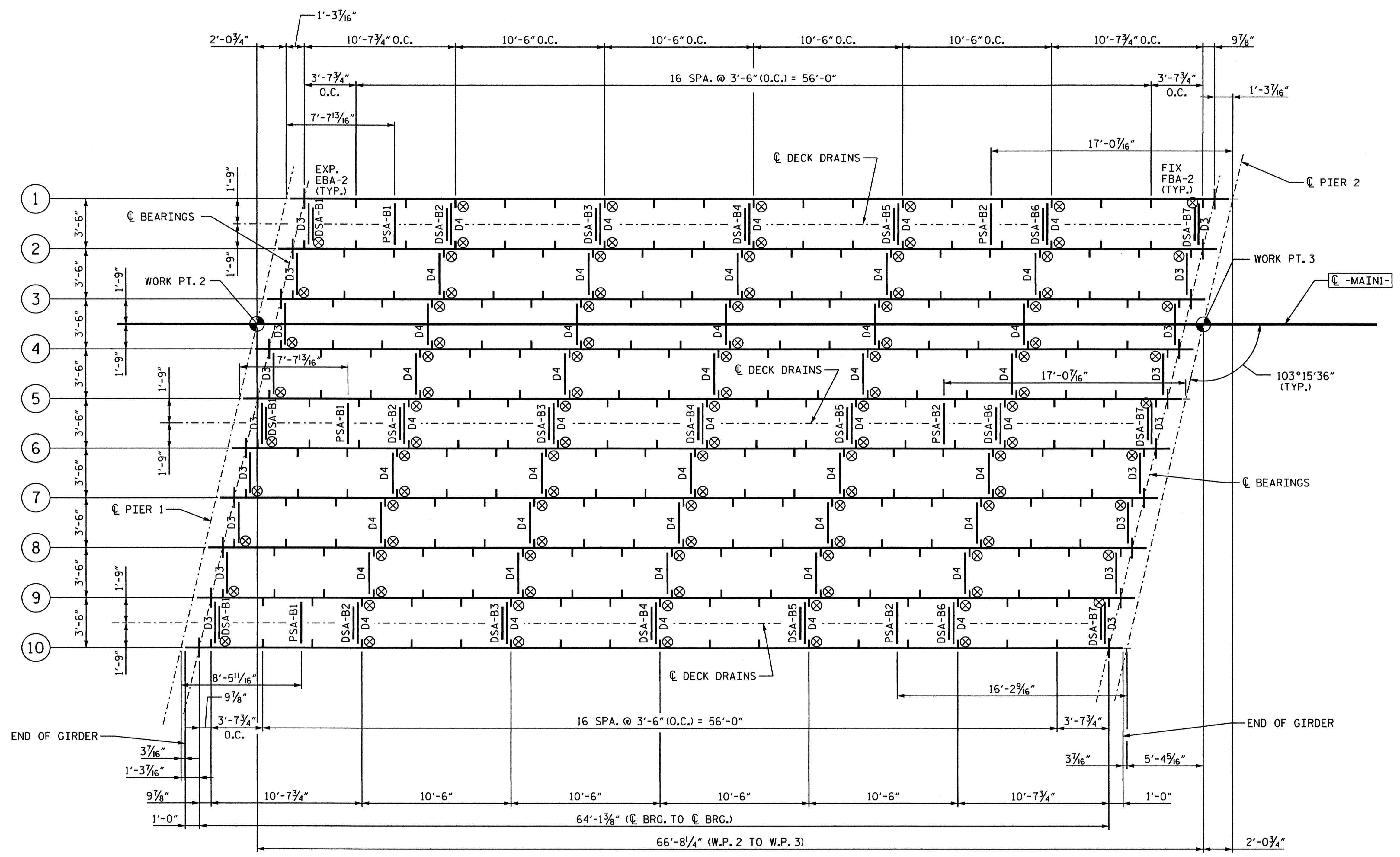


NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: **ENGINEERING & SAFETY BRANCH**

MAIL: 1556 MAIL SERVICE CENTER, RALEIGH, NC 27659-5556
DELIVERY: 850 CAPITAL BOULEVARD, RALEIGH, NC 27603
PHONE: (919) 715-8903
FAX: (919) 715-8904

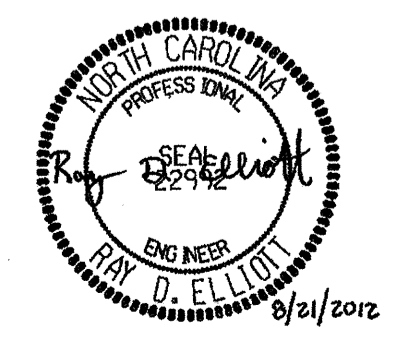
PROJECT		U-3459 - KLUMAC ROAD	
TITLE			
FRAMING PLAN - SPAN A			
LOCATION			
SALISBURY-SR 2541 (KLUMAC RD) of NCRRTS			
DGN BY	CPB	RAILROAD	NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
DWN BY	JLA	VAL SEC	V-8
CHK BY	RTJ	DATE	5/12
SCALE			1/4" = 1'-0"
MILE POST			MP 335.2
SHEET 12			OF 51



FRAMING PLAN - SPAN B

⊗ DENOTES LOCATION OF INTERMEDIATE STIFFENERS WITH BOLTED BOTTOM FLANGE CONNECTIONS, SEE DETAIL "D" ON SHEET 19 OF 51.

NO.	BY	DATE	REVISION



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY:
ENGINEERING & SAFETY BRANCH

MAIL: 1556 MAIL SERVICE CENTER RALEIGH, NC 27603-1556
DELIVERY: 560 CAPITAL BUILDING RALEIGH, NC 27603
PHONE: (919) 715-8803 FAX: (919) 715-8804

PROJECT	U-3459 - KLUMAC ROAD		
TITLE	FRAMING PLAN - SPAN B		
LOCATION	SALISBURY-SR 2541 (KLUMAC RD) of NCR RN'S		
DGN BY	CPB	RAILROAD	NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
DWN BY	JLA	VAL SEC	V-8
CHK BY	RTJ	DATE	5/12
MILE POST	MP 335.2	SCALE	1/4" = 1'-0"
SHEET 13 OF 51			

STRUCTURAL STEEL NOTES

DESIGN DATA:

SPECIFICATIONS: CURRENT A.R.E.M.A. AND NORFOLK SOUTHERN RAILWAY DESIGN CRITERIA

LIVE LOAD: COOPERS E-80 + ALTERNATE WITH IMPACT AS PER SPECIFICATIONS
MAX. SPEED = 90 MPH PASSENGER
50 MPH FREIGHT

STRUCTURAL STEEL: $f_s = 27,500$ PSI. THE STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING ASTM SPECIFICATIONS:

BOTTOM FLANGES AND TENSION PORTIONS OF WEBS OF MAIN GIRDERS: A709, GRADE 50, WITH SUPPLEMENTALS S84-F2, S91 AND S93 APPLYING, AND WITH IMPACT TEST REQUIREMENT OF 25 FT.-LBS. @ 40°F AS GOVERNED BY ASTM A673 FOR TEST FREQUENCY "P".

TOP FLANGES AND COMPRESSION PORTIONS OF WEBS OF MAIN GIRDERS: A709, GRADE 50, WITH SUPPLEMENTALS S83-T2, S91 AND S93 APPLYING, AND WITH IMPACT TEST REQUIREMENT OF 15 FT.-LBS. @ 40°F AS GOVERNED BY ASTM A673 FOR TEST FREQUENCY "P".

OTHER MISCELLANEOUS MATERIAL : A709, GRADE 50.

SPECIFICATIONS: CURRENT A.R.E.M.A. SPECIFICATION CHAPTER 15, STEEL STRUCTURES - GIRDER BOTTOM FLANGE PLATE INCLUDING WEB TO FLANGE WELD AND TENSION ZONE OF WEB PLATE IS DESIGNATED FRACTURE CRITICAL MEMBERS.

MILL TEST REPORTS: NORFOLK SOUTHERN CORPORATION SHALL BE FURNISHED COPIES OF MILL TEST REPORTS FOR ALL MATERIALS EXCEPT MISCELLANEOUS PLATES AND SHAPES. REPORTS SHALL INDICATE COMPLIANCE WITH ALL SPECIFIED REQUIREMENTS.

INSPECTION: SHOP INSPECTION BY NORFOLK SOUTHERN CORPORATION OR ITS AUTHORIZED AGENT. SEE SPECIAL PROVISIONS FOR ADDITIONAL WELDING INSPECTION OF FLANGE PLATE TO WEB PLATE WELD.

PAINTING STRUCTURAL STEEL: FOR PAINT SYSTEM FOR STRUCTURAL STEEL, SEE SPECIAL PROVISION "NORFOLK SOUTHERN PAINT SPECIFICATION."

FOR PROTECTION OF PAINTED STEEL, SEE SPECIAL PROVISIONS.

FOR STRUCTURAL STEEL, SEE SPECIAL PROVISION "NORFOLK SOUTHERN SPECIFICATIONS FOR STRUCTURAL STEEL."

ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL UNLESS OTHERWISE NOTED.

FOR FABRICATION OF STRUCTURAL STEEL, SEE SPECIAL PROVISIONS.

SHOP DRAWINGS: SHOP DRAWINGS SHALL BE APPROVED BY THE CHIEF ENGINEER - BRIDGES & STRUCTURES, NORFOLK SOUTHERN CORPORATION, ATLANTA, GEORGIA. SHOP DRAWINGS SHALL BE LABELED NORFOLK SOUTHERN MP NS-335.2.

FIELD CONNECTIONS SHALL BE BOLTED WITH $\frac{7}{8}$ " DIAMETER ASTM A325, TYPE 1 HIGH STRENGTH BOLTS WITH HARDENED WASHERS IN ACCORDANCE WITH A.R.E.M.A. SPECIFICATIONS USING THE TURN OF NUT METHOD.

HOLES: OPEN HOLES AS NOTED.

HIGH STRENGTH BOLTS, NUTS & WASHERS : ASTM DESIGNATION A325.

ANCHOR BOLTS: SHALL BE $1\frac{1}{4}$ " IN ACCORDANCE WITH A.R.E.M.A. SPECIFICATIONS AND SHALL BE GROUDED IN FORMED HOLES AFTER GIRDERS ARE ERECTED.

SHOP SPLICES SHALL NOT BE PERMITTED UNLESS NOTED.

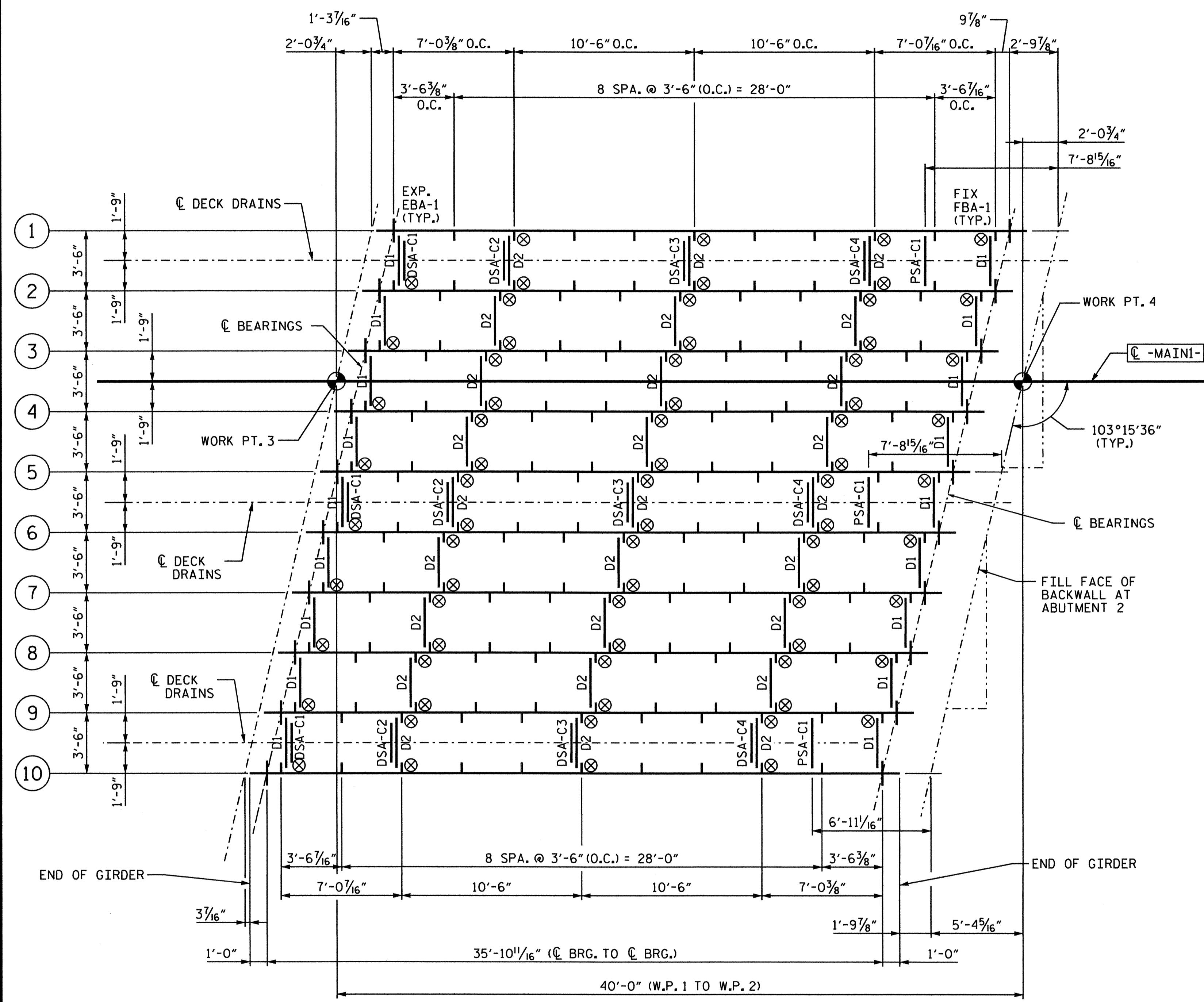
NO CAMBER FOR GIRDER REQUIRED, TURN NATURAL MILL CAMBER UP.

BEARING PADS SHALL BE USED WHENEVER STEEL MASONRY PLATE, OR OTHER STEEL BEARING PLATE, BEARS ON CONCRETE. PADS SHALL BE PREFORMED FABRIC BEARING PADS, $\frac{1}{2}$ " THICK, AND SHALL BE EITHER SHOCK PAD STYLE 15175 AS MANUFACTURED BY THE ALERT MANUFACTURING AND SUPPLY COMPANY, CHICAGO, IL; OR FABREEKA PADS, AS MANUFACTURED BY THE FABREEKA PRODUCTS COMPANY, BOSTON, MA; OR SORBTEX PADS AS MANUFACTURED BY VOSS ENGINEERING, INC. CHICAGO, IL, OR AN APPROVED EQUAL.

ELECTROSLAG WELDING IS NOT PERMITTED.

NOTES (SPAN A, B & C)

- INTERMEDIATE STIFFENERS, (NO MARKS SHOWN), SHALL NOT HAVE DIAPHRAGM CONNECTIONS AND SHALL NOT BE ATTACHED TO THE BOTTOM FLANGE OF THE GIRDERS. THESE INTERMEDIATE STIFFENERS SHALL BE A "TIGHT FIT" ON THE BOTTOM FLANGE OF THE GIRDER WITH NO WELD AND NO OTHER CONNECTIONS PRESENT.
- INTERMEDIATE STIFFENERS (MARK \otimes), SHALL HAVE DIAPHRAGM CONNECTIONS AND SHALL REQUIRE STIFFENER CONNECTOR PLATES WHICH ARE BOLTED TO THE BOTTOM FLANGE OF THE GIRDER, AS SHOWN IN DETAILS "C" & "D" ON THE "STRUCTURAL STEEL DIAPHRAGM DETAILS" SHEET 2 OF 2.

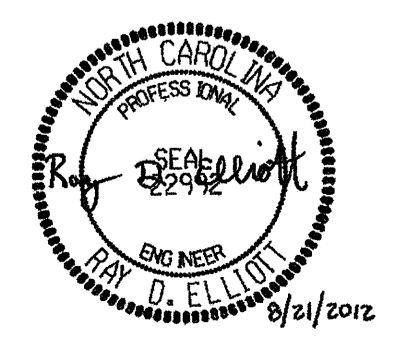


FRAMING PLAN - SPAN C

\otimes DENOTES LOCATION OF INTERMEDIATE STIFFENERS WITH BOLTED BOTTOM FLANGE CONNECTIONS, SEE DETAIL "C" ON SHEET 19 OF 51.

*****SYSTEM*****

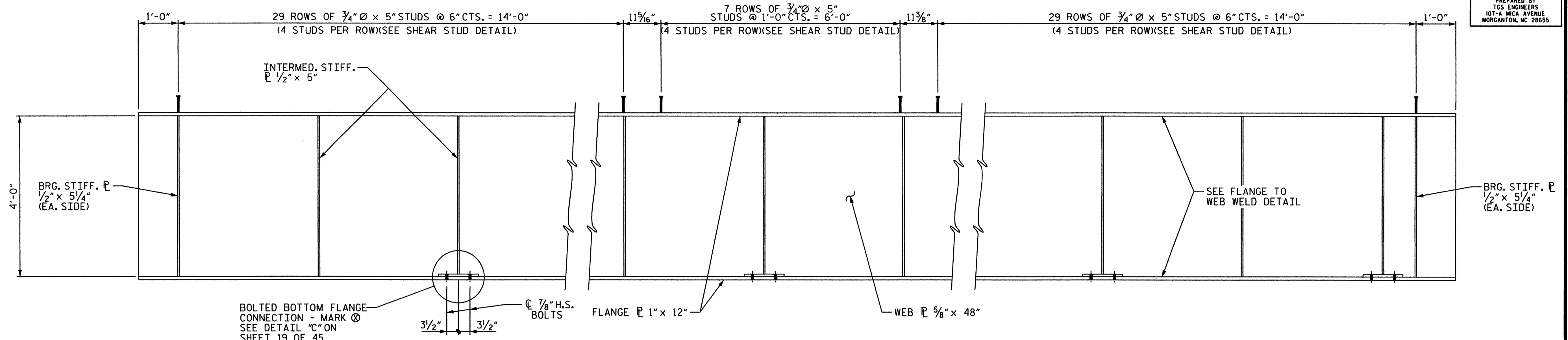
NO.	BY	DATE	REVISION



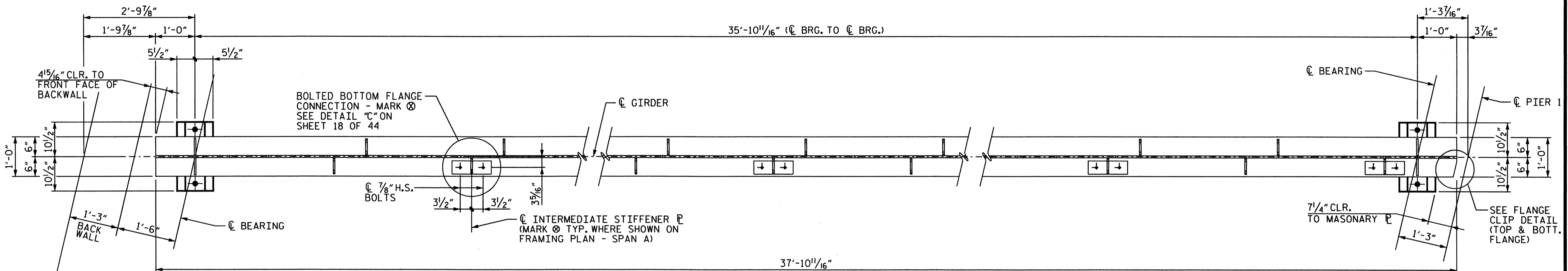
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: **ENGINEERING & SAFETY BRANCH**
MAIL: 1556 MAIL SERVICE CENTER, RALEIGH, NC 27699-1556
DELIVERY: 960 CAPITAL BOULEVARD, RALEIGH, NC 27603
PHONE: (919) 715-8803
FAX: (919) 715-8804

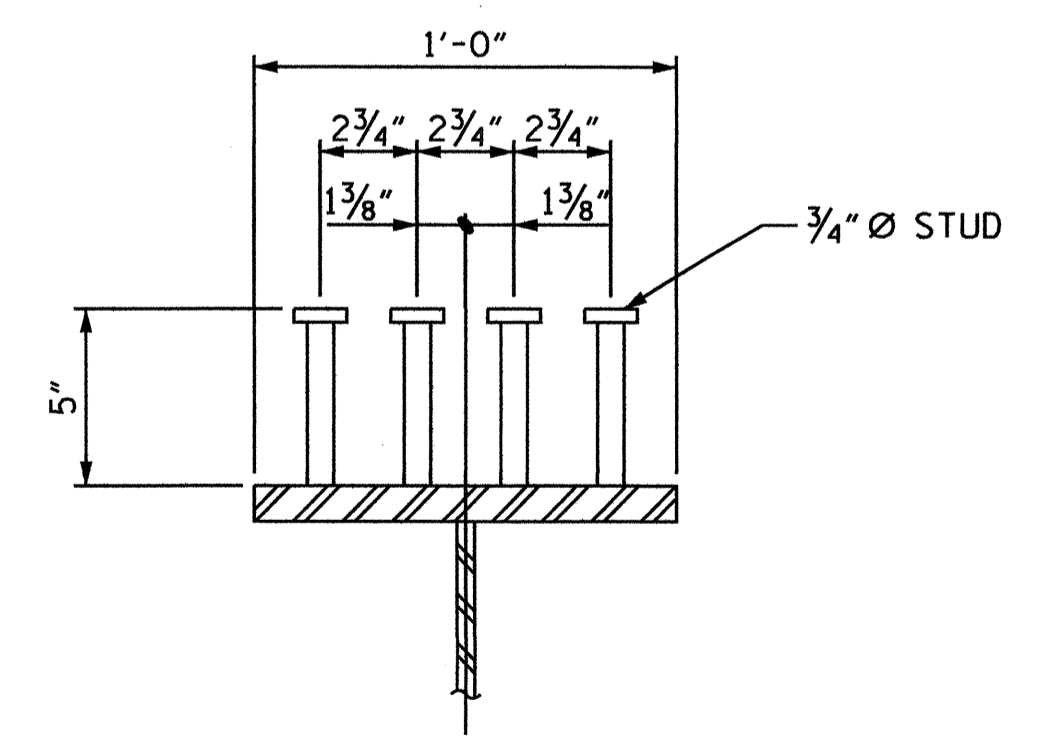
PROJECT	U-3459 - KLUMAC ROAD		
TITLE	FRAMING PLAN - SPAN C		
LOCATION	SALISBURY-SR 2541 (KLUMAC RD) of NCRBNS		
DGN BY	CPB	RAILROAD	NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
DWN BY	JLA	VAL SEC	V-8
CHK BY	RTJ	DATE	5/12
MILE POST	MP 335.2		
SCALE	1/4" = 1'-0"		
SHEET 14 OF 51			



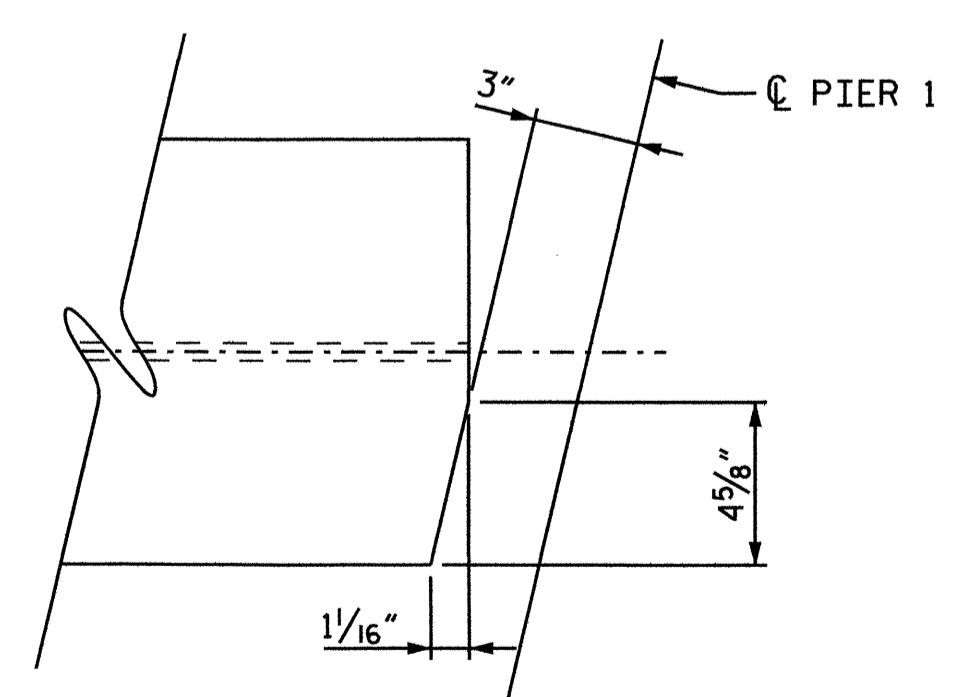
TYPICAL GIRDER ELEVATION - SPAN A



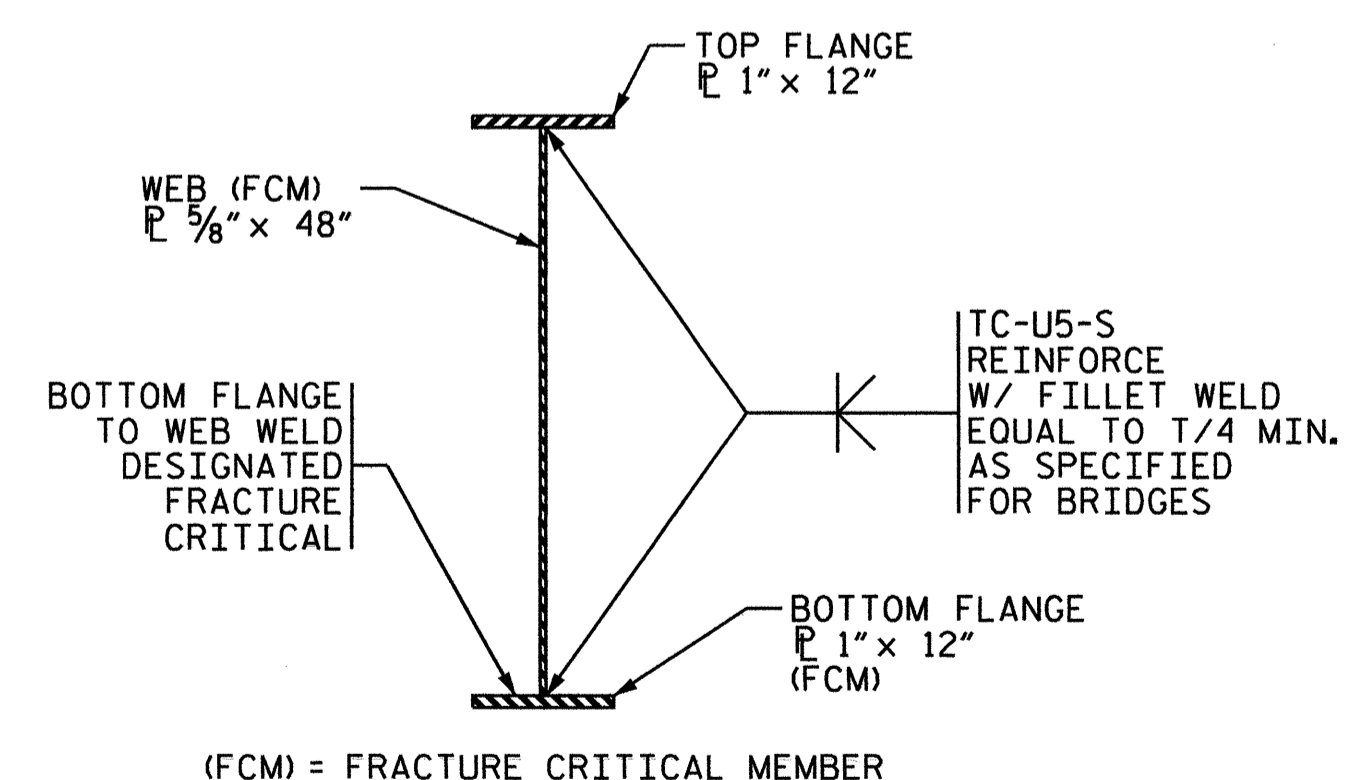
BOTTOM FLANGE DETAIL - SPAN A



SHEAR STUD DETAIL - SPAN A



FLANGE CLIP DETAIL - SPAN A



FLANGE TO WEB WELD DETAIL - SPANS A & C

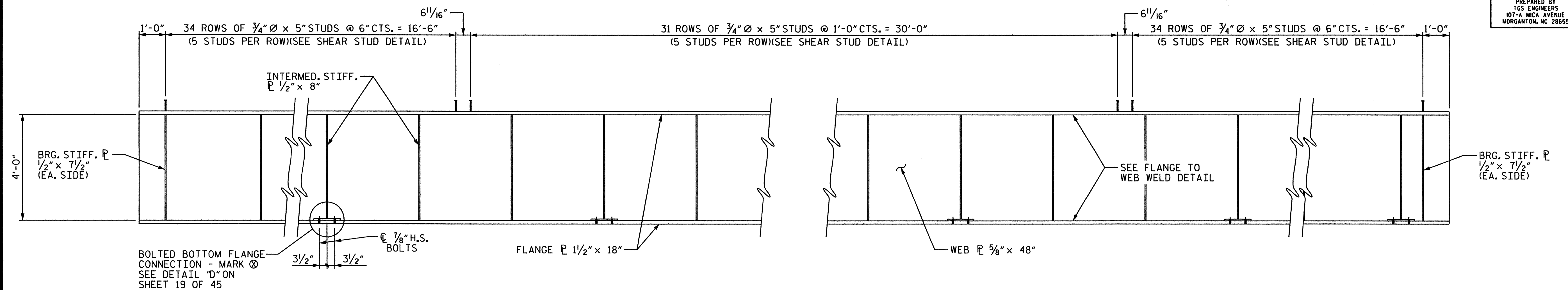
NO.	BY	DATE	REVISION



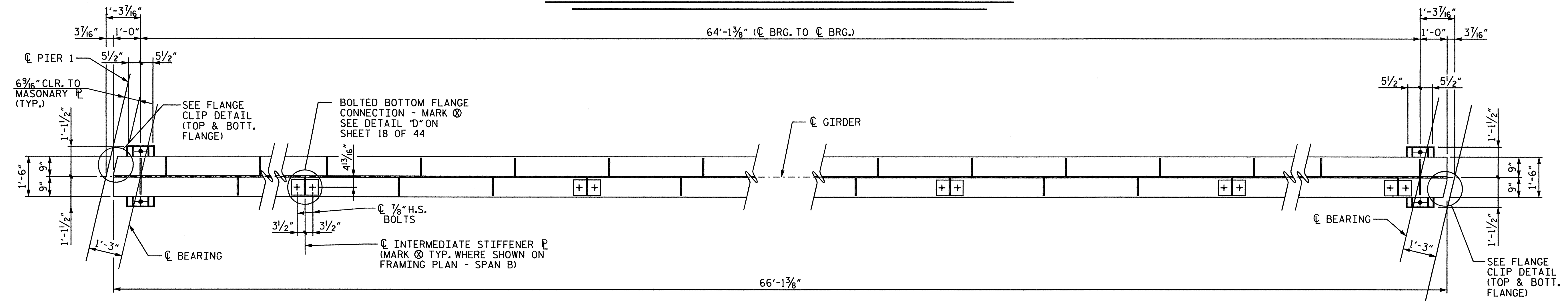
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION
ENGINEERING & SAFETY BRANCH
MAIL SERVICE CENTER, RALEIGH, NC 27699-1556
DELIVERY, 800 CAPITAL BOULEVARD, RALEIGH, NC 27603
PHONE: (919) 715-8803
FAX: (919) 715-8804

PROJECT	U-3459 - KLUMAC ROAD		
TITLE	GIRDER DETAIL SPAN A		
LOCATION	SALISBURY-SR 2541 (KLUMAC RD) of NCRVNS		
DGN BY	CPB	RAILROAD	NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
DWN BY	JLA	VAL SEC	V-8
CHK BY	RTJ	DATE	5/12
SCALE	3/4" = 1'-0"		MILE POST MP 335.2
SHEET 15 OF 51			

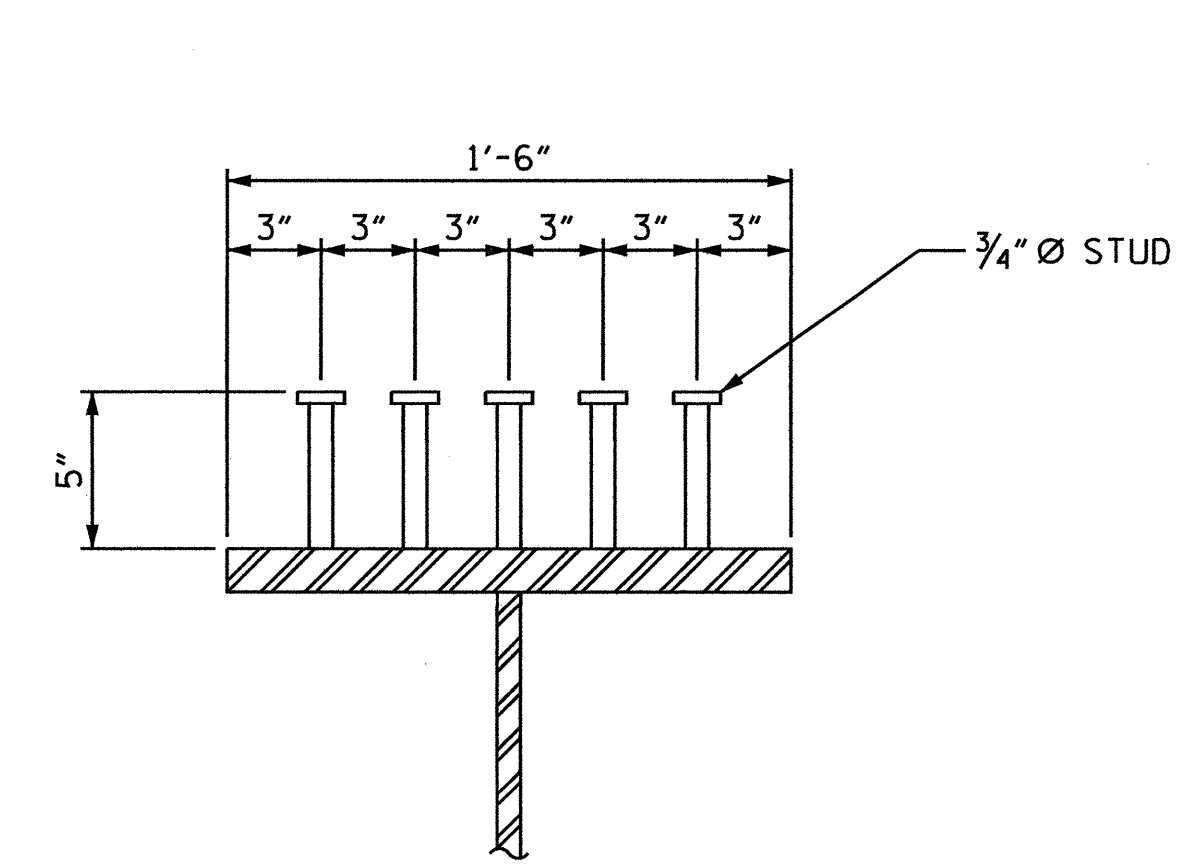
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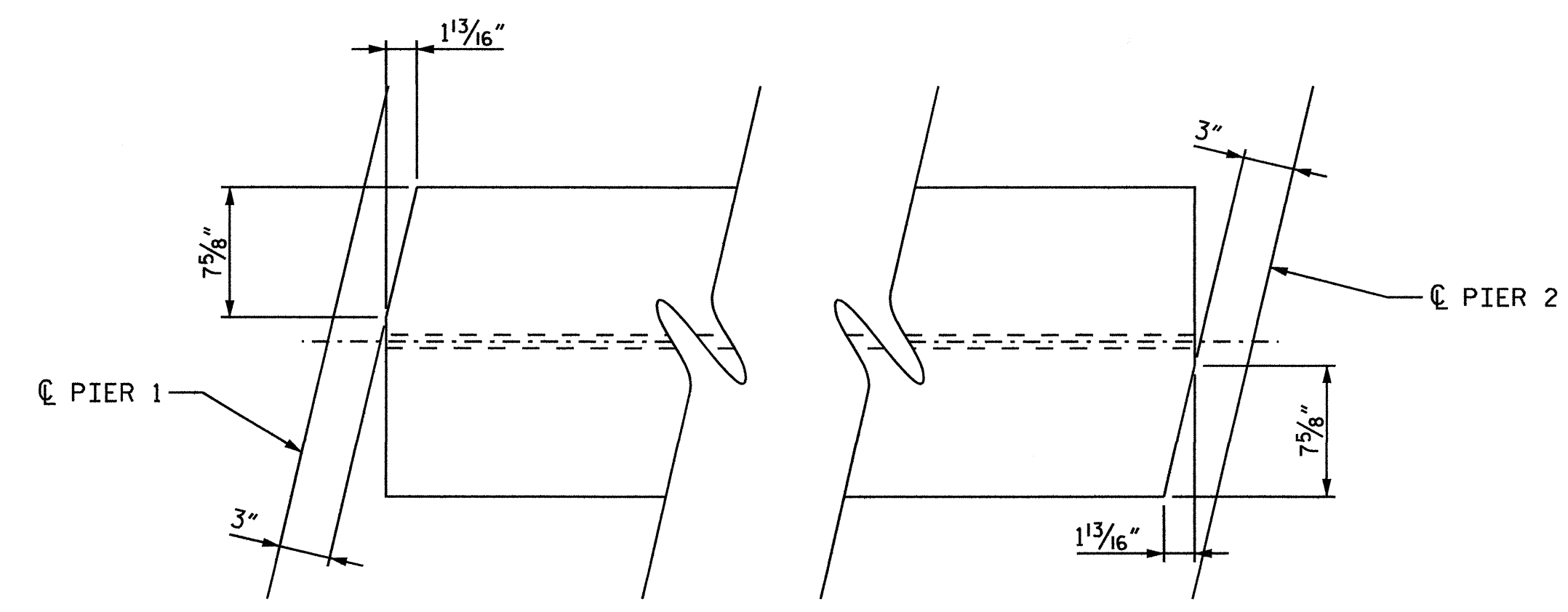
TYPICAL GIRDER ELEVATION - SPAN B



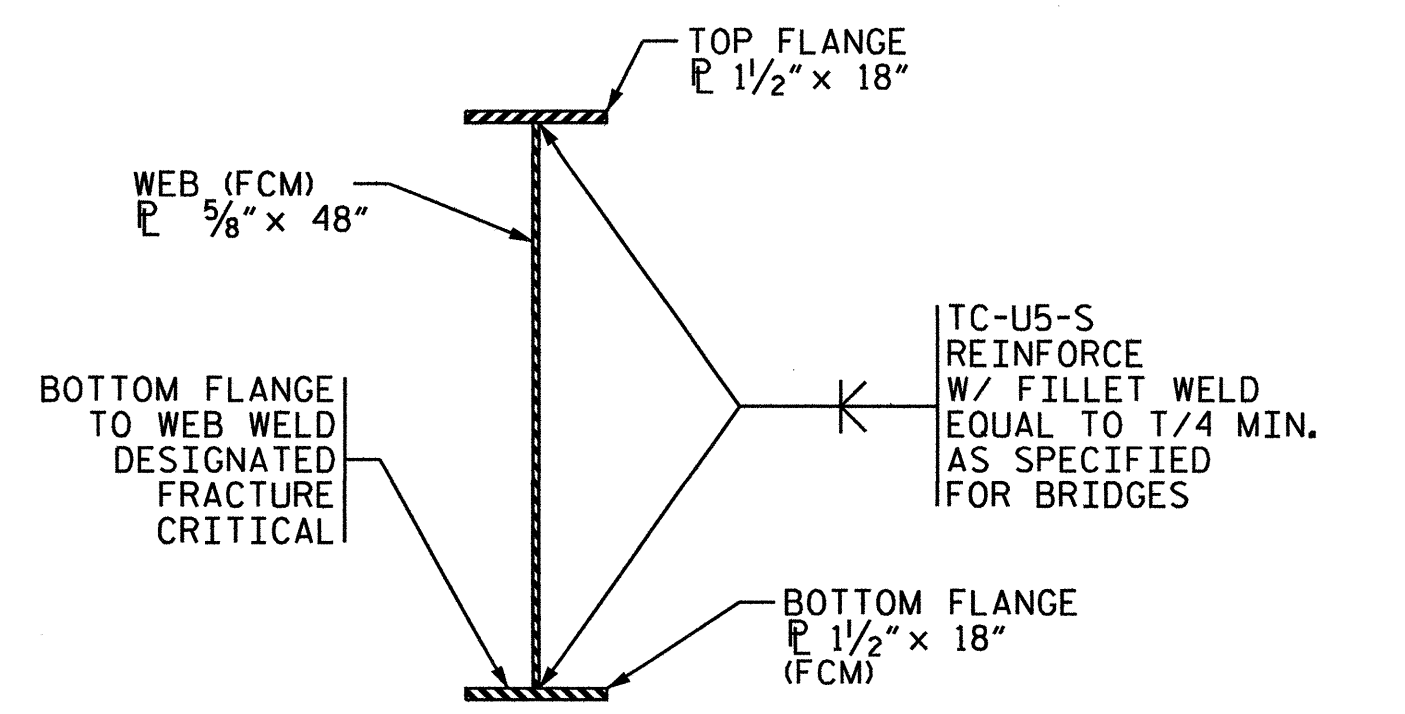
BOTTOM FLANGE DETAIL - SPAN B



SHEAR STUD DETAIL - SPAN B



FLANGE CLIP DETAIL - SPAN B

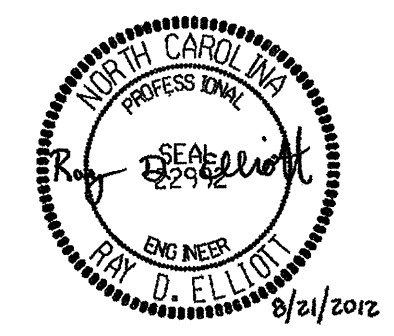


(FCM) = FRACTURE CRITICAL MEMBER

FLANGE TO WEB WELD DETAIL - SPAN B

SHEET 2 OF 3

NO.	BY	DATE	REVISION

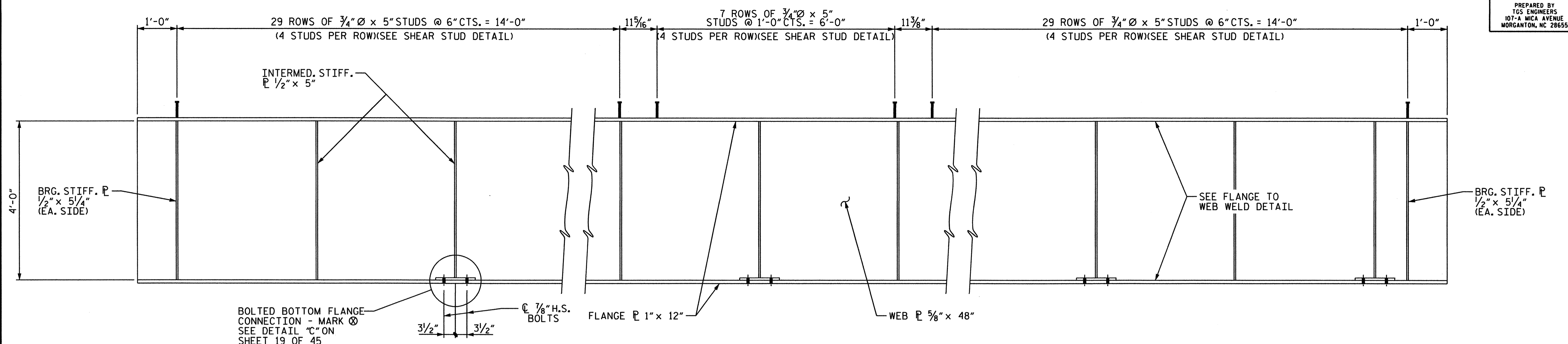


NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

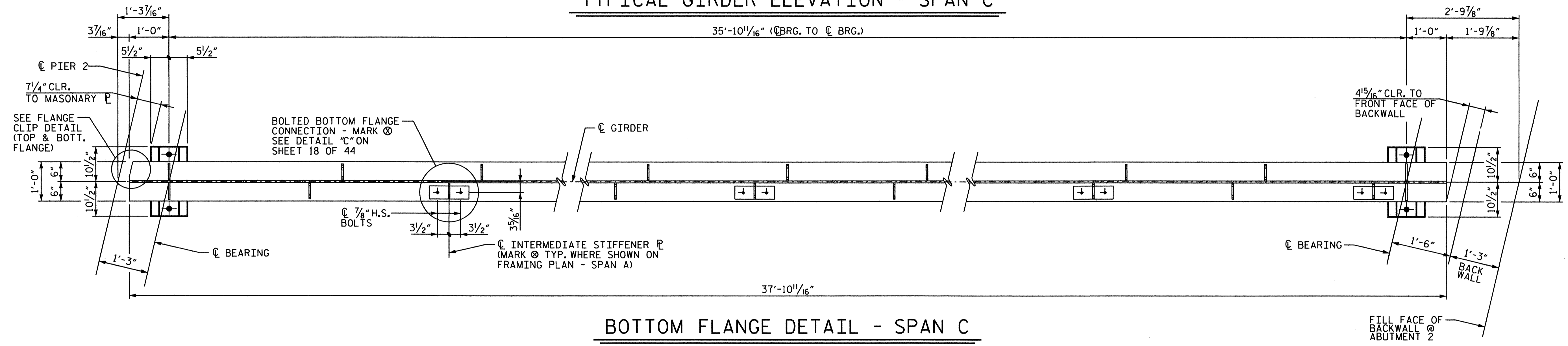
ENGINEERING & SAFETY BRANCH

MAIL: 1556 MAIL SERVICE CENTER RALEIGH, NC 27603
DELIVERY: 260 CAPITAL BOULEVARD RALEIGH, NC 27603
PHONE: (919) 715-8803 FAX: (919) 715-8804

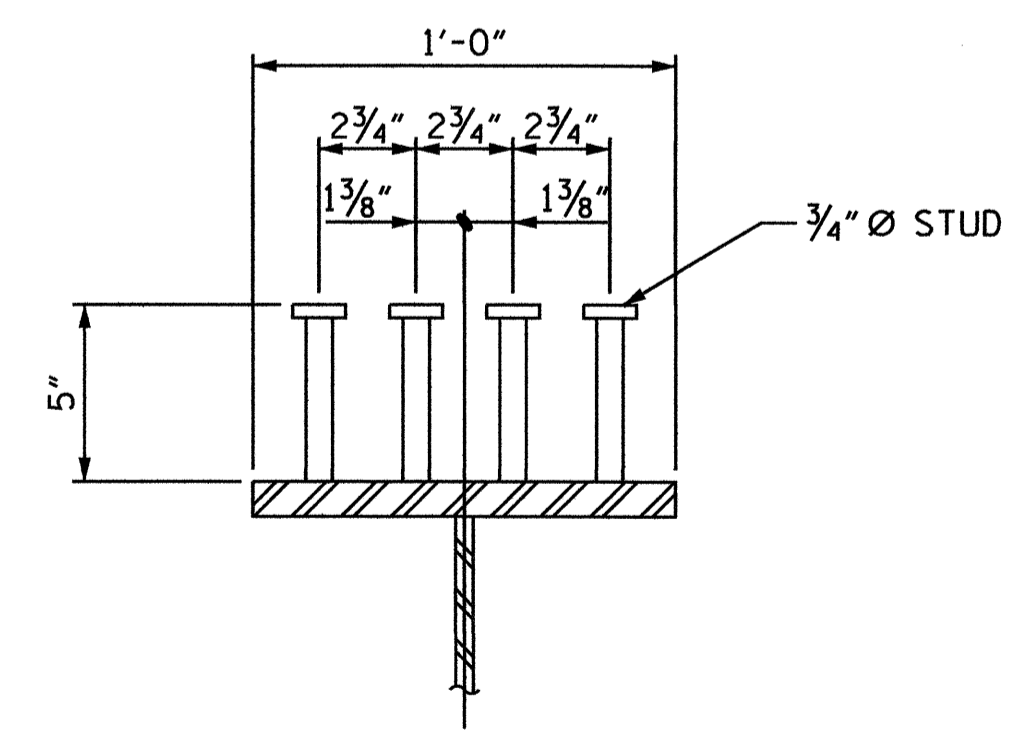
PROJECT	U-3459 - KLUMAC ROAD		
TITLE	GIRDER DETAIL SPAN B		
LOCATION	SALISBURY-SR 2541 (KLUMAC RD) of NCRRTS		
DGN BY	CPB	RAILROAD	NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
DWN BY	JLA	VAL SEC	V-8
CHK BY	RTJ	DATE	5/12
SCALE	1/2" = 1'-0"		
MILE POST	MP 335.2		
SHEET 16 OF 51			



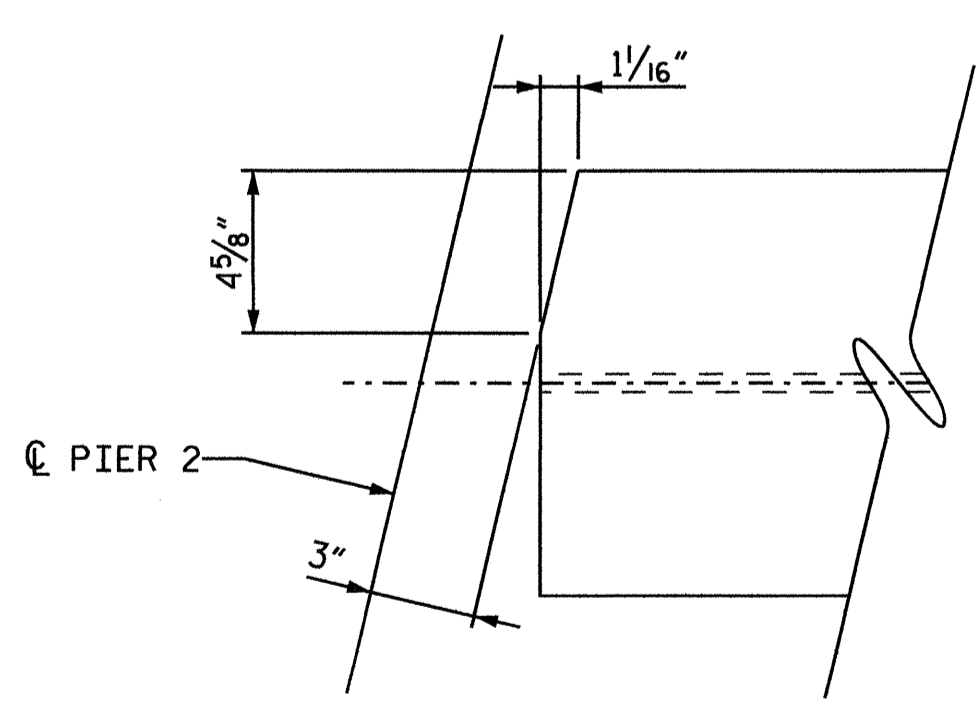
TYPICAL GIRDER ELEVATION - SPAN C



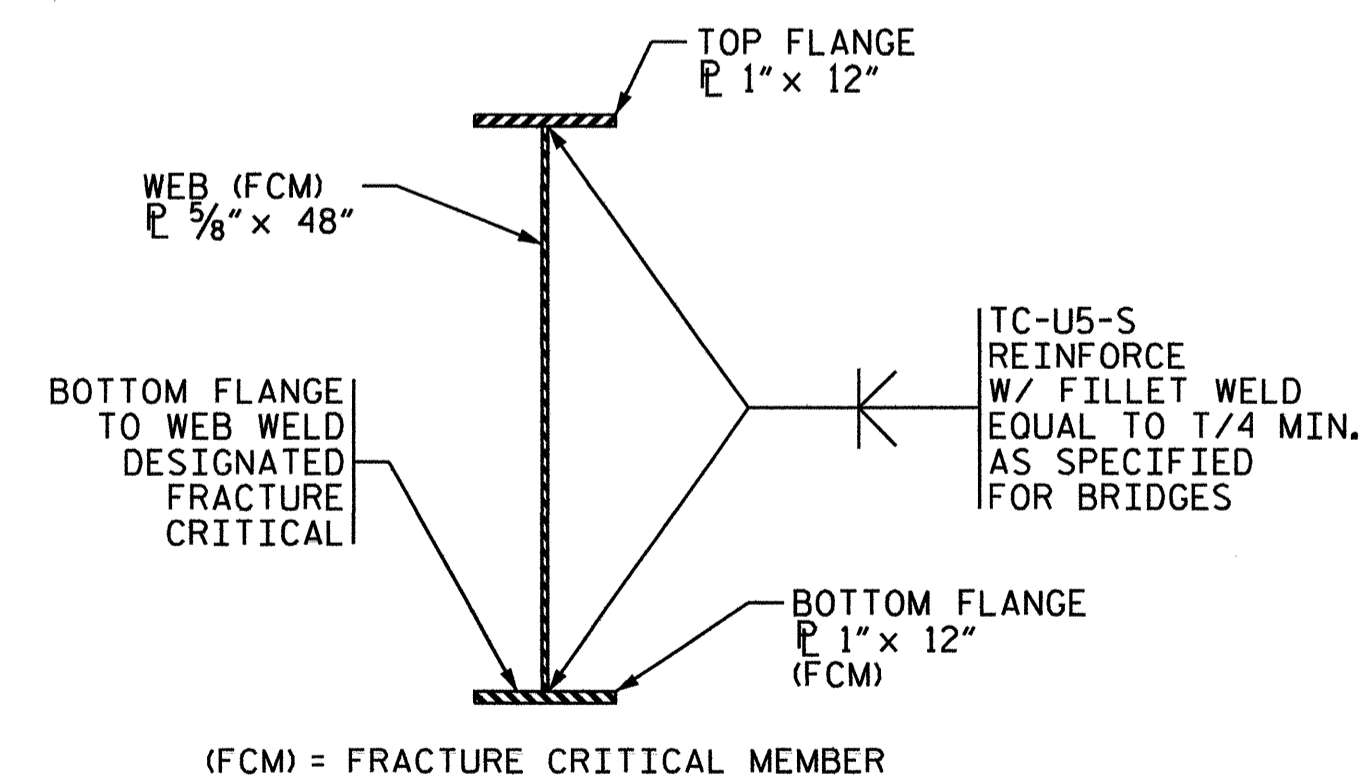
BOTTOM FLANGE DETAIL - SPAN C



SHEAR STUD DETAIL - SPAN C

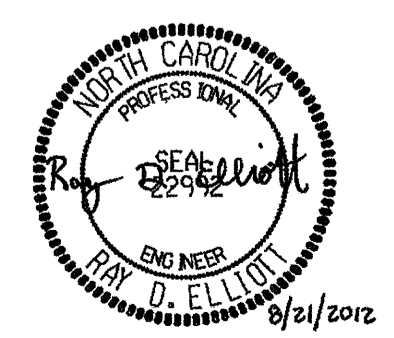


FLANGE CLIP DETAIL - SPAN C



FLANGE TO WEB WELD DETAIL - SPANS A & C

NO.	BY	DATE	REVISION

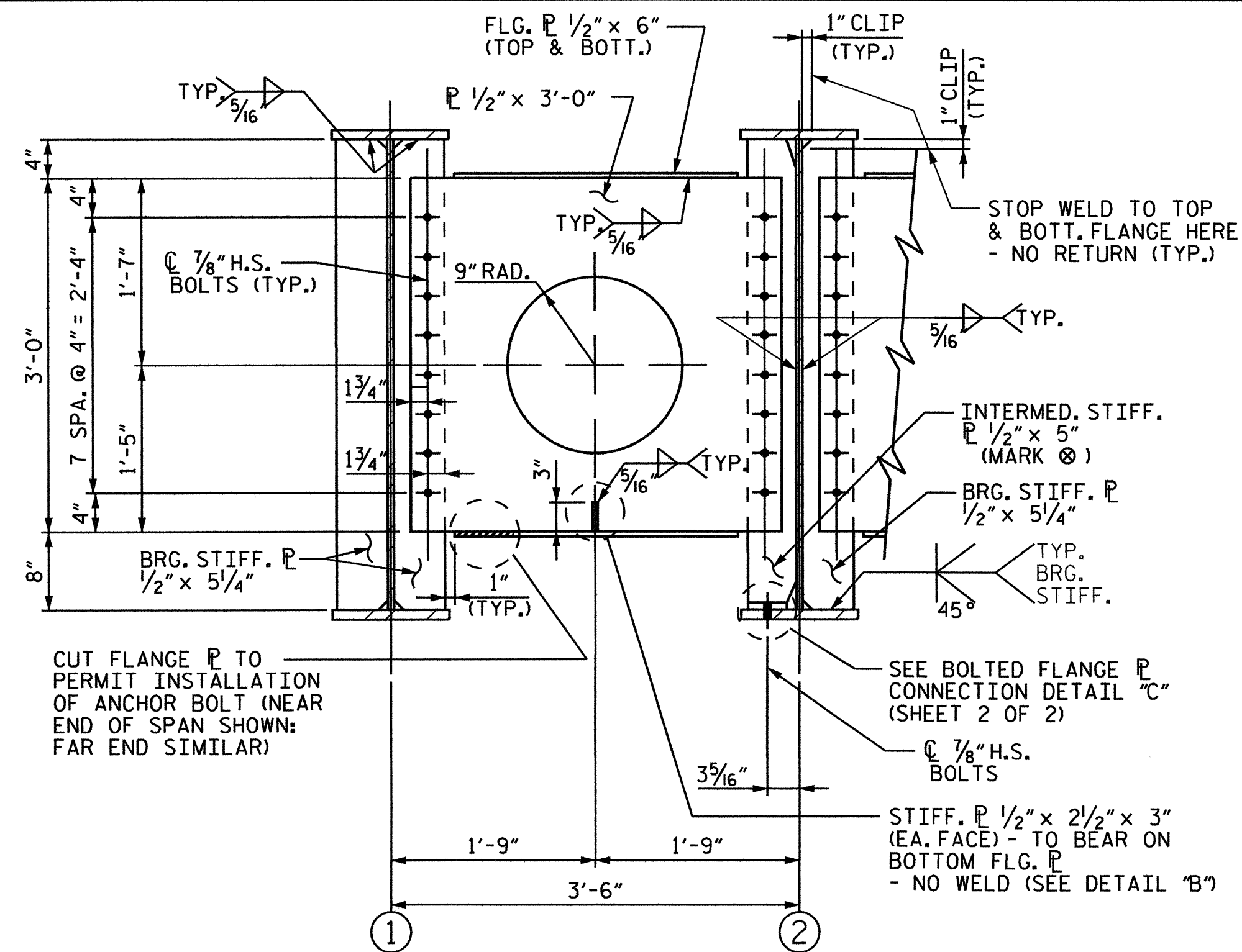


NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

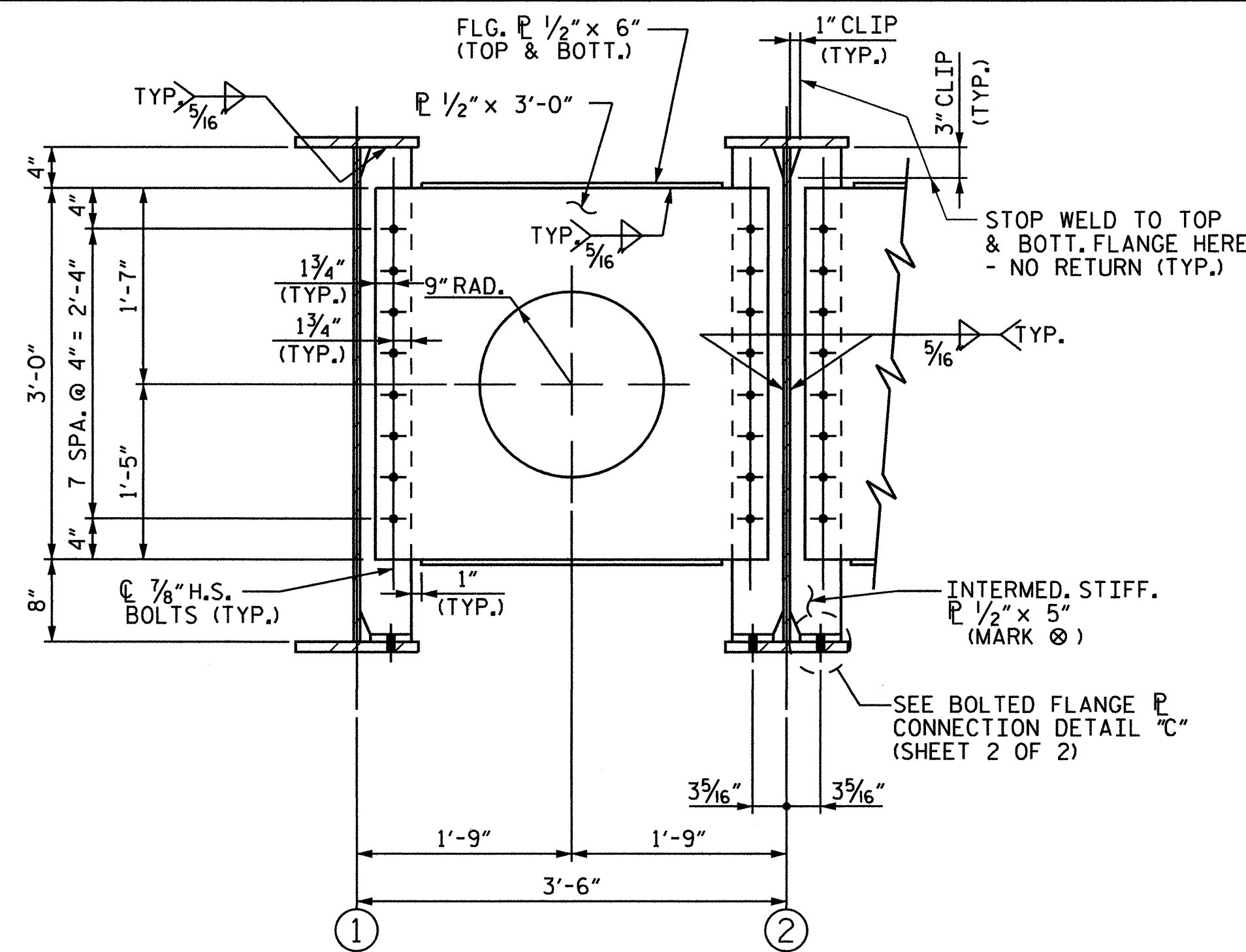
PREPARED BY: **ENGINEERING & SAFETY BRANCH**

MAIL: 1556 MAIL SERVICE CENTER, RALEIGH, NC 27699-1556
DELIVERY: 600 CAPITAL BOULEVARD, RALEIGH, NC 27603
PHONE: (919) 715-8803
FAX: (919) 715-8804

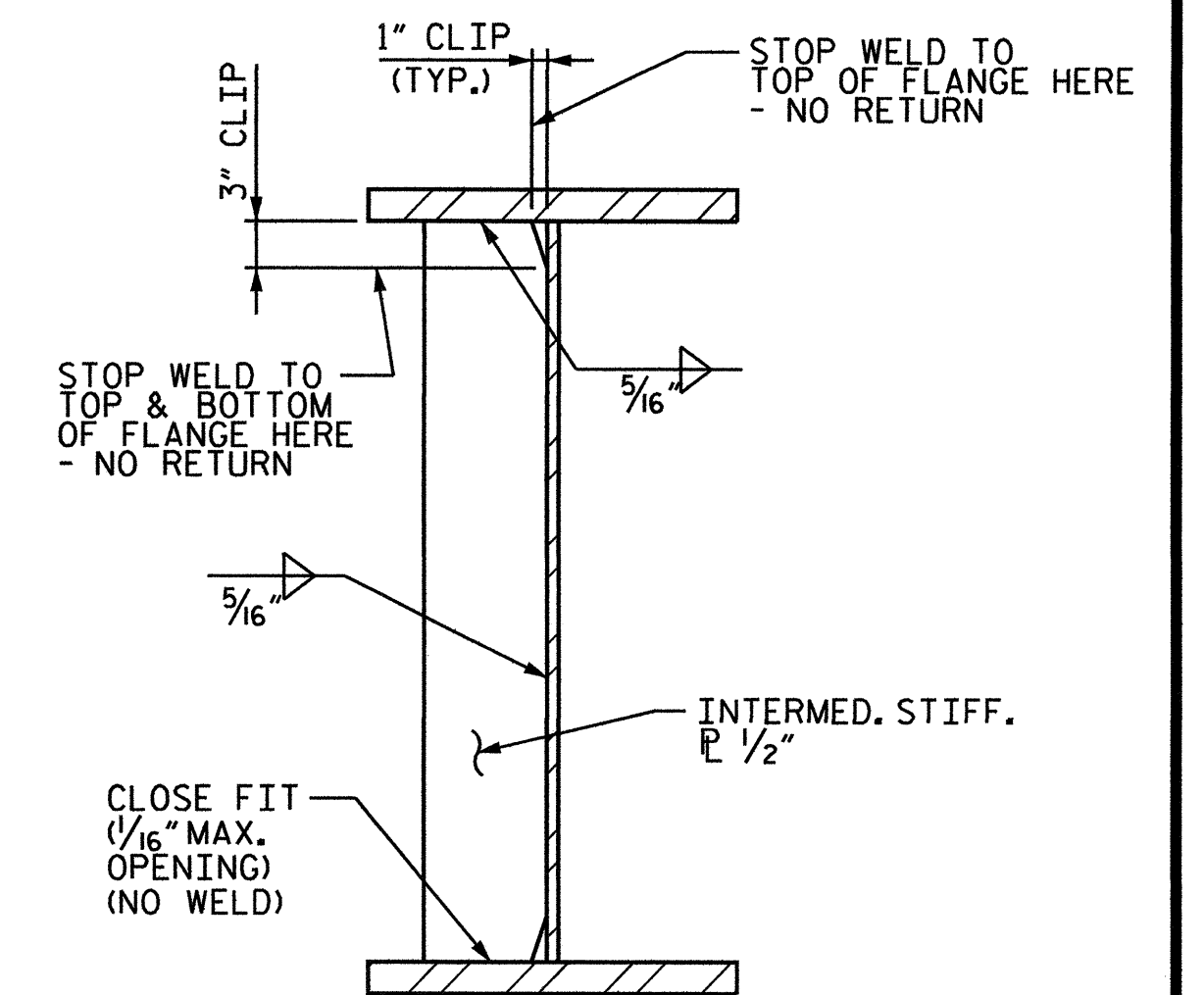
PROJECT	U-3459 - KLUMAC ROAD		
TITLE	GIRDER DETAIL SPAN C		
LOCATION	SALISBURY-SR 2541 (KLUMAC RD) of NCRBNS		
DGN BY	CPB	RAILROAD	NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
DWN BY	JLA	VAL SEC	V-8
CHK BY	RTJ	DATE	5/12
SCALE	3/4" = 1'-0"		
MILE POST	MP 335.2		
SHEET 17 OF 51			



SECTION AT END DIAPHRAGM - MARK D1

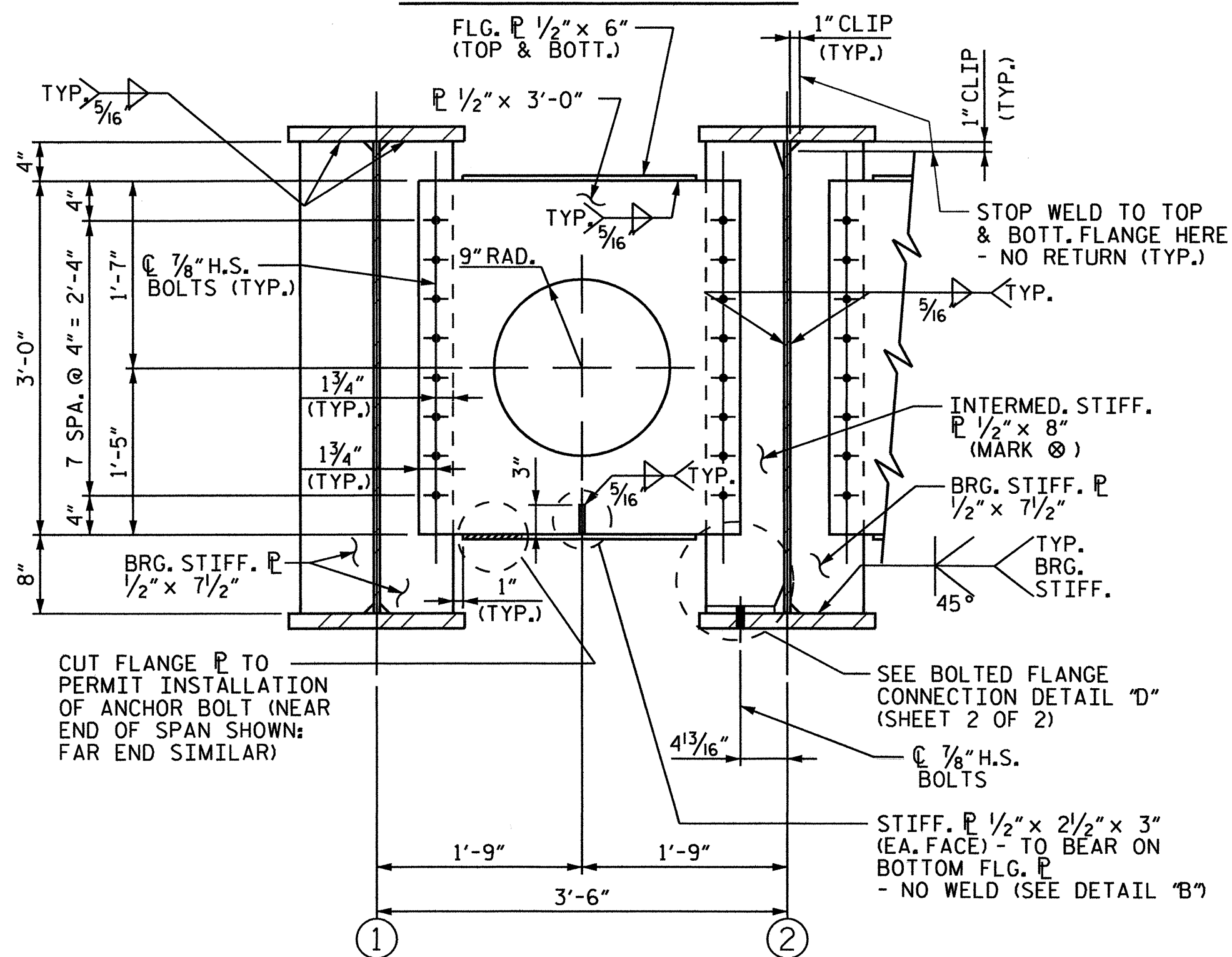


SECTION AT INTERMEDIATE DIAPHRAGM - MARK D2



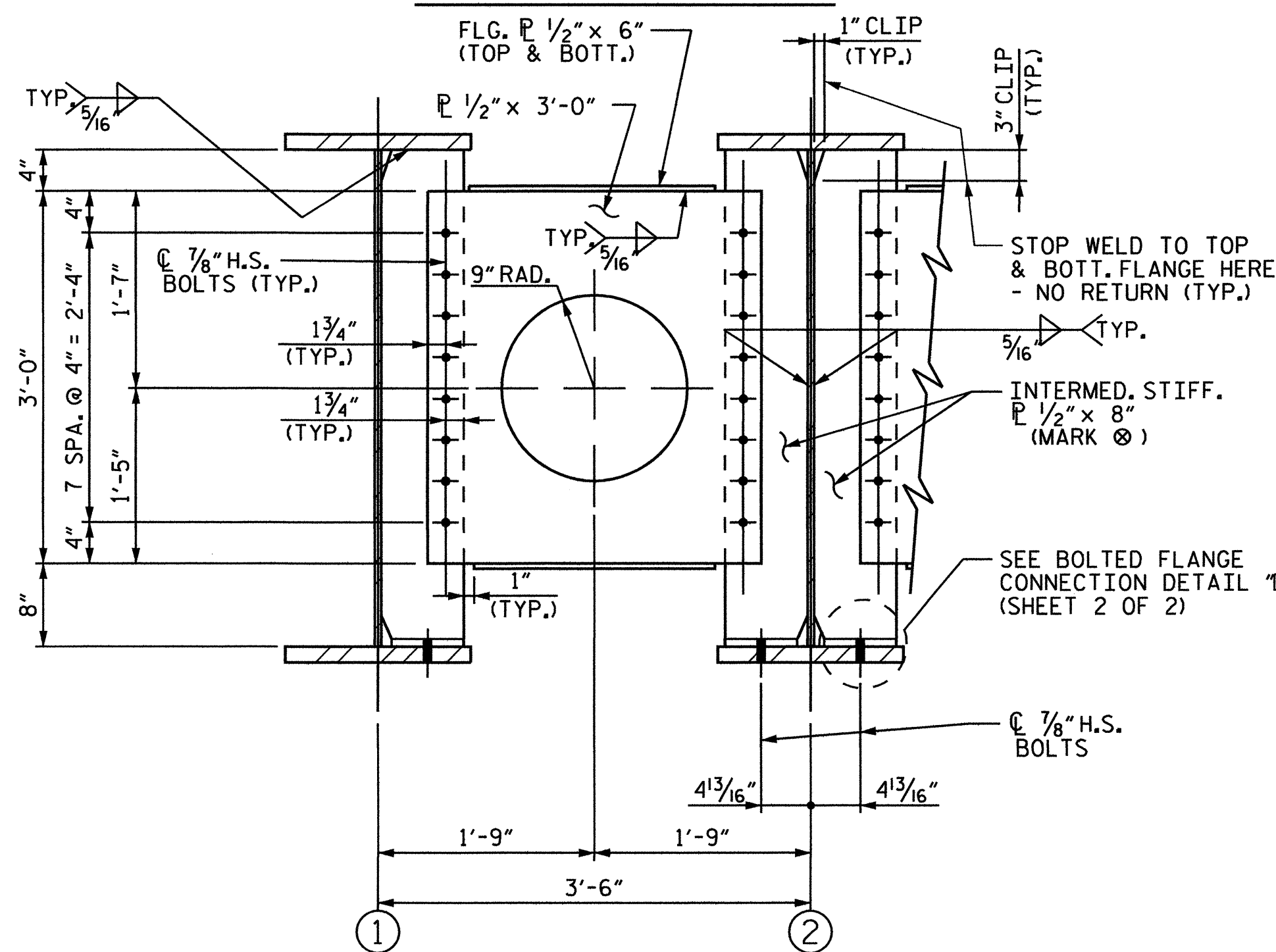
DETAIL OF STIFFENER PLATE WHEN NOT USED AS A CONNECTOR PLATE

SPANS A & C

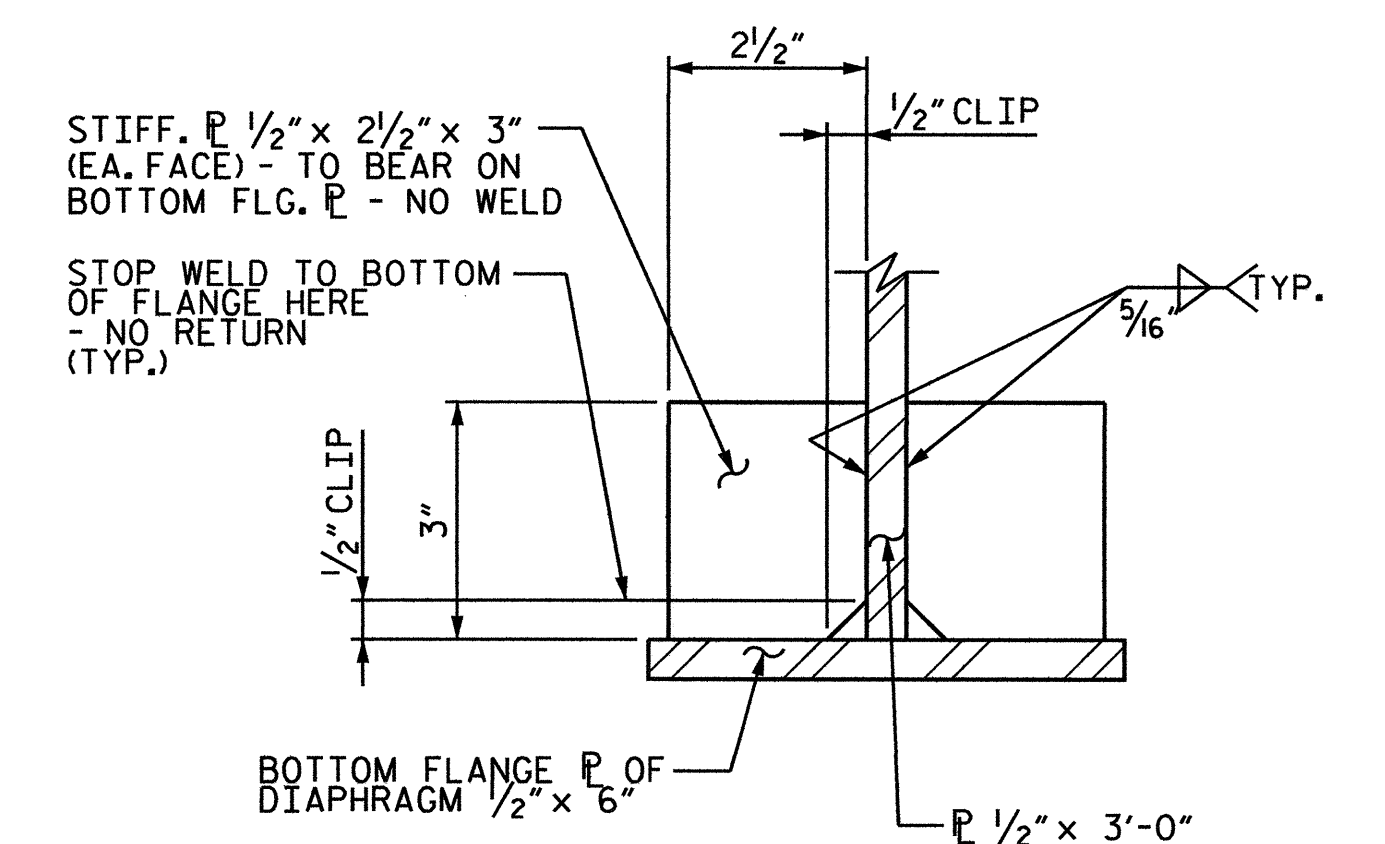


SECTION AT END DIAPHRAGM - MARK D3

SPANS A & C



SECTION AT INTERMEDIATE DIAPHRAGM - MARK D4

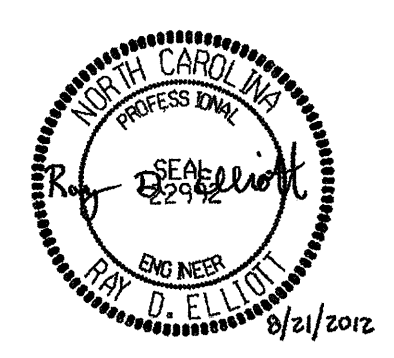


DETAIL "B"

SPAN B

SPAN B

NO.	BY	DATE	REVISION



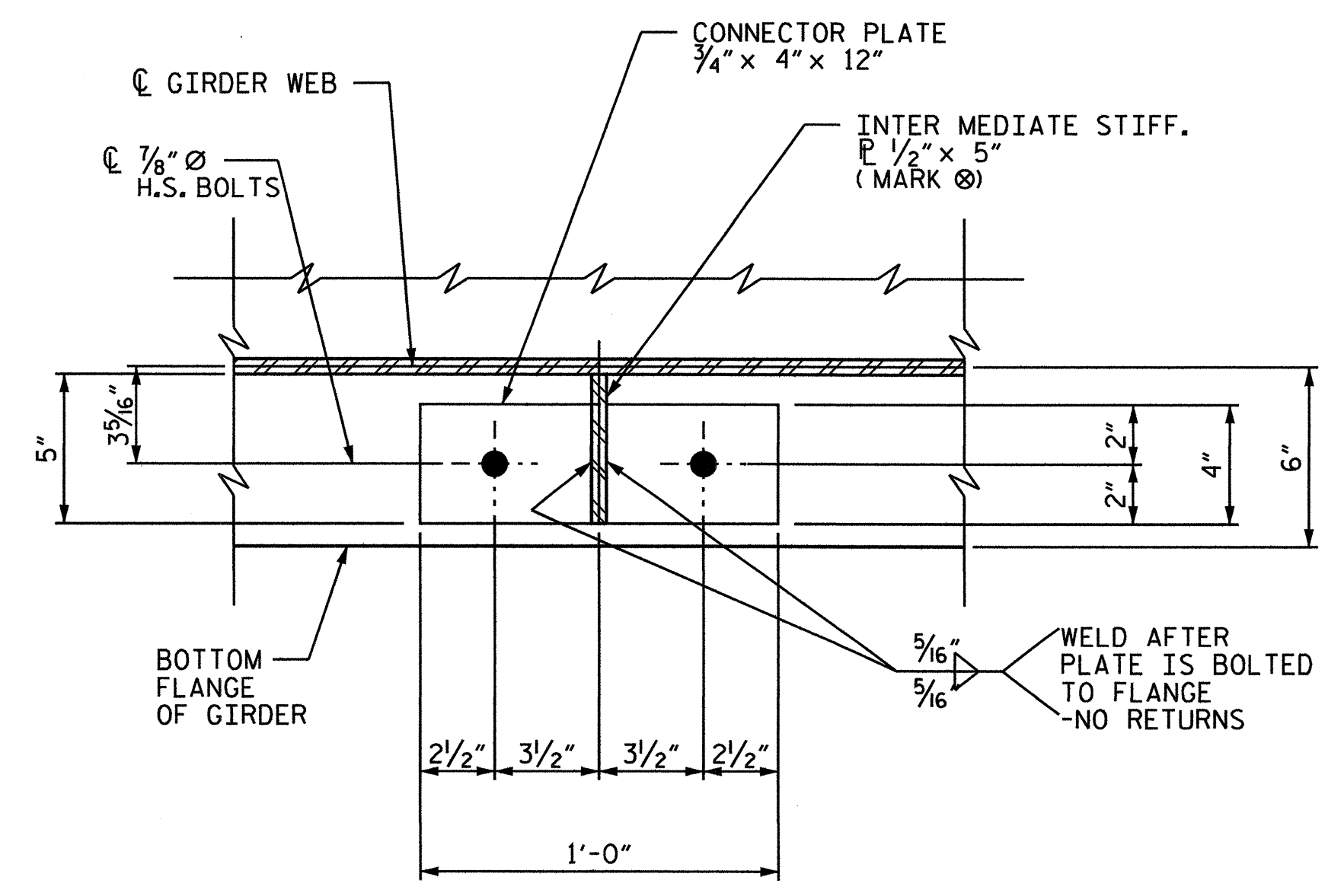
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY:
ENGINEERING & SAFETY BRANCH

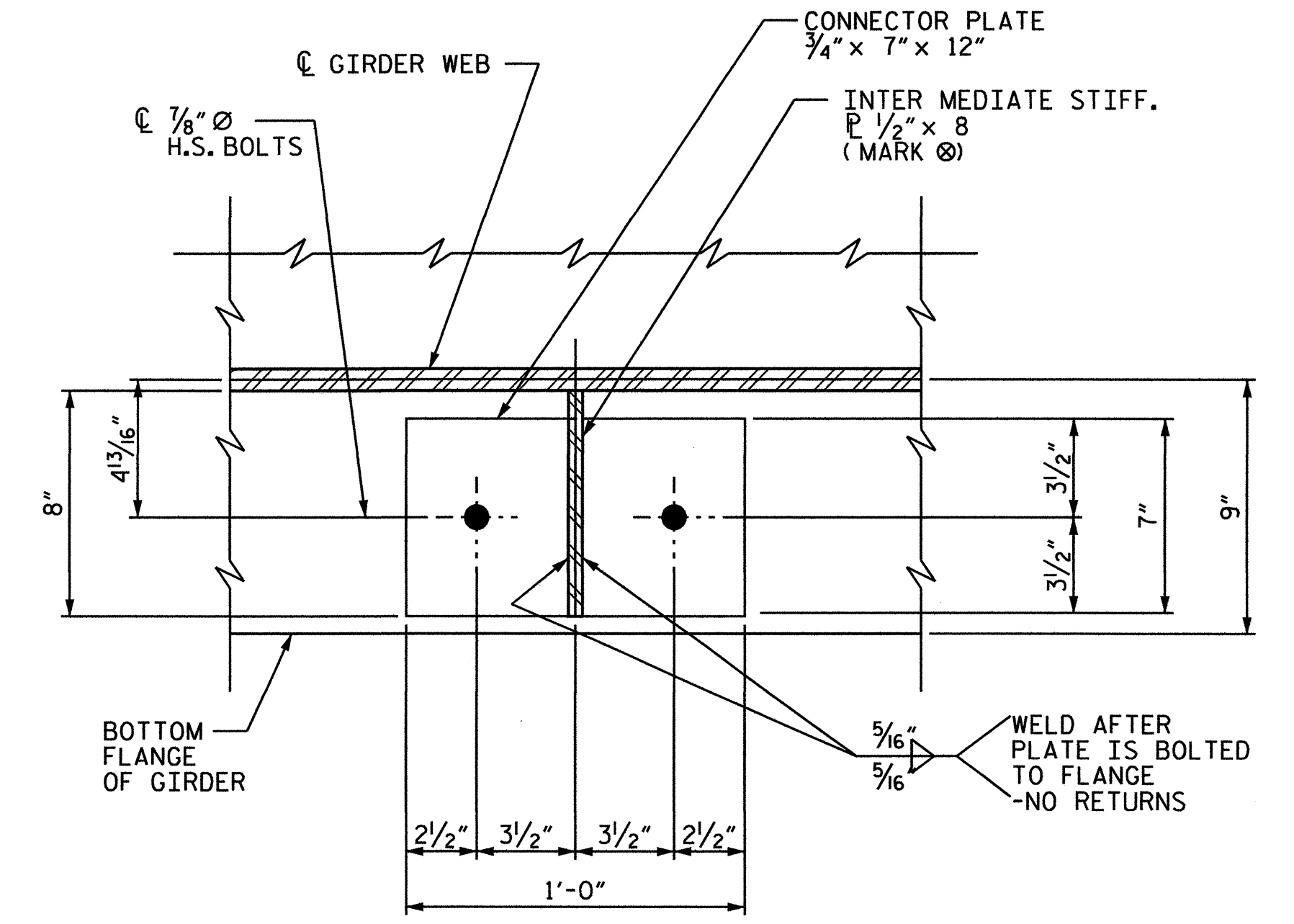
MAIL: 1256 MAIL SERVICE CENTER RALEIGH, NC 27639-2556
DELIVERY: 850 CAPITAL BOULEVARD RALEIGH, NC 27603
PHONE: (919) 715-8903 FAX: (919) 715-8804

PROJECT	U-3459 - KLUMAC ROAD		
TITLE	STRUCTURAL STEEL DIAPHRAGM DETAILS SPANS A, B & C		
LOCATION	SALISBURY-SR 2541 (KLUMAC RD) at NCRRA		
DGN BY	CPB	RAILROAD	NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
DWN BY	JLA	VAL SEC	V-8
CHK BY	RTJ	DATE	5/12
SCALE	1" = 1'-0"		
MILE POST	MP 335.2		
SHEET 18 OF 51			

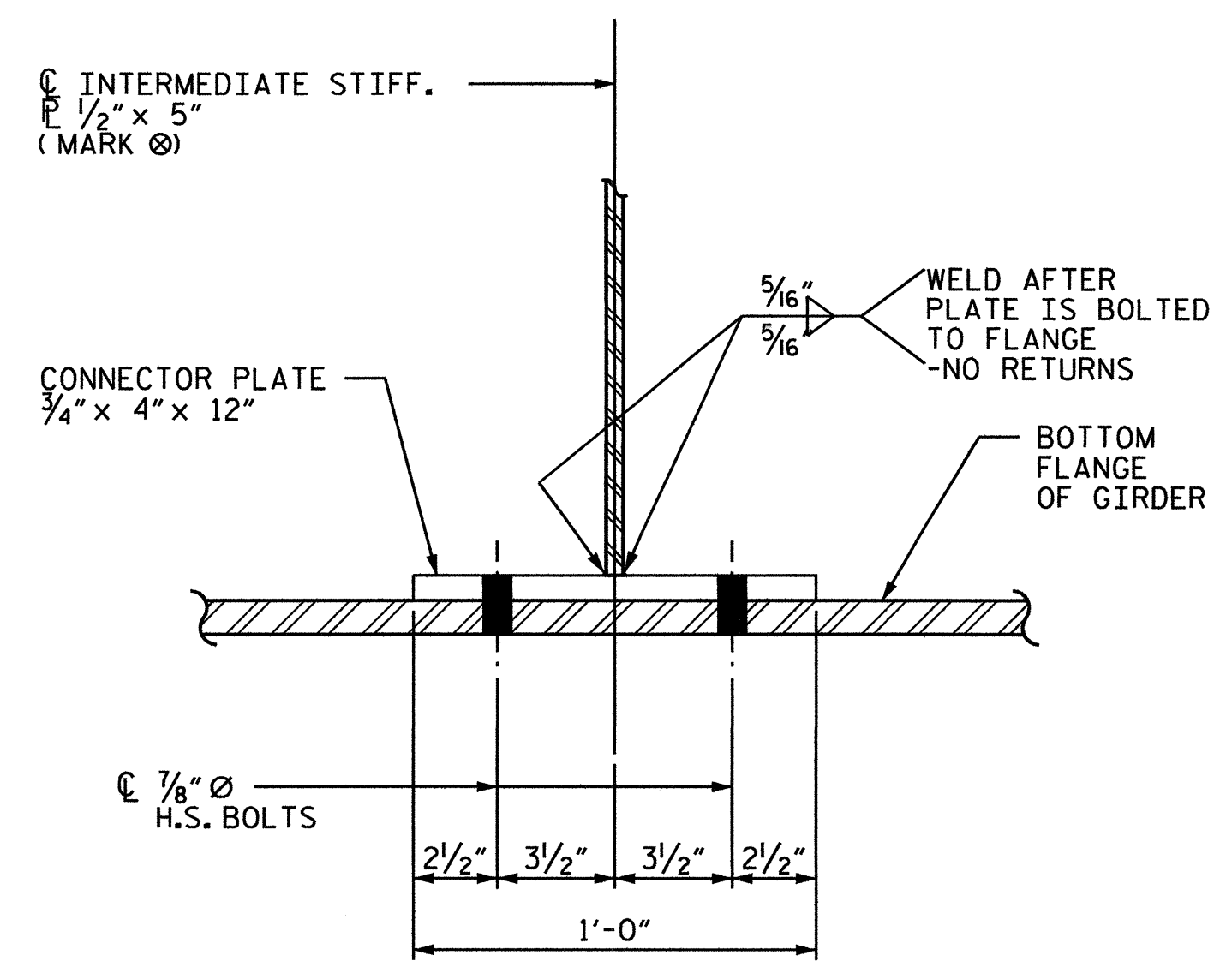
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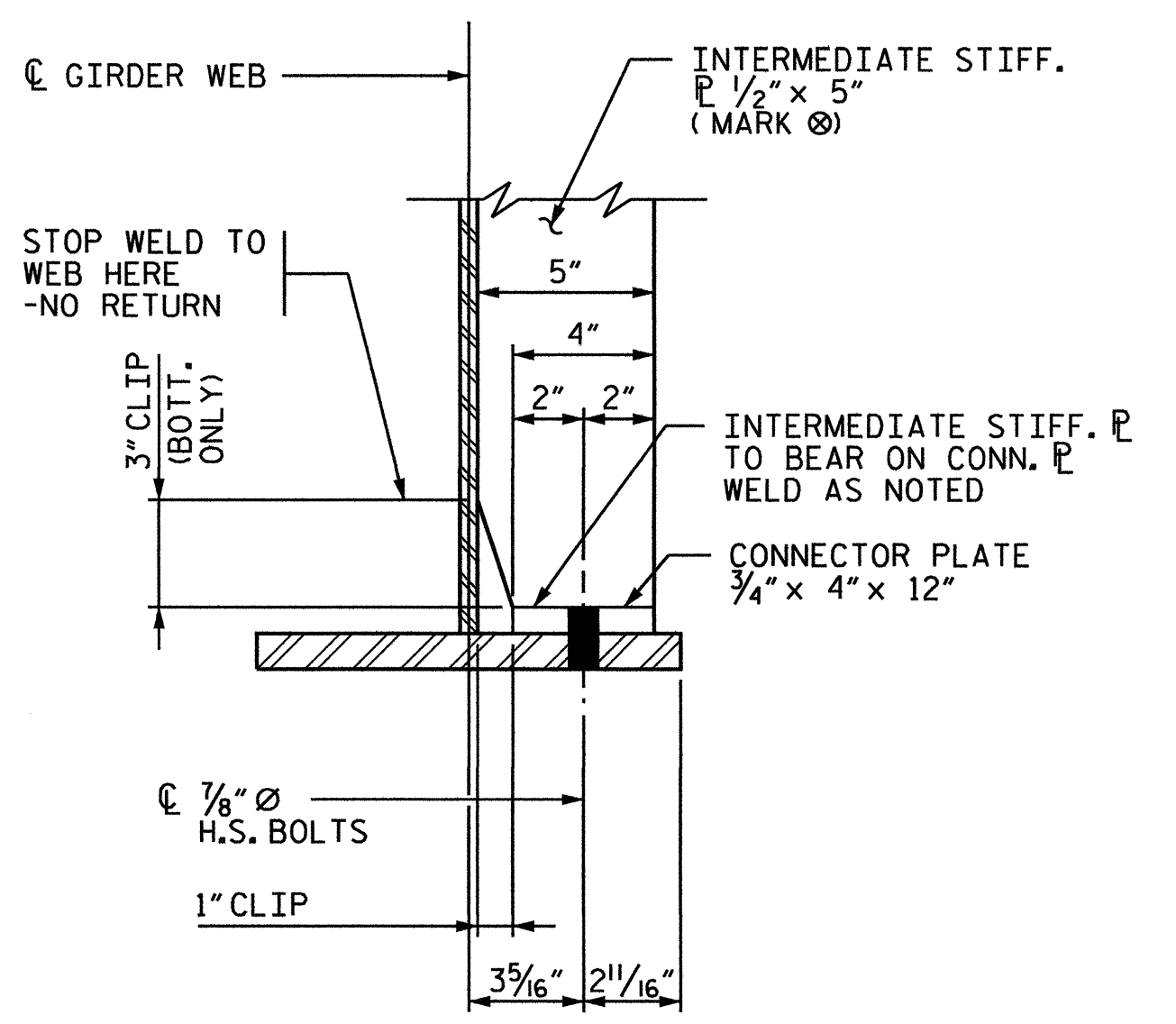
PLAN



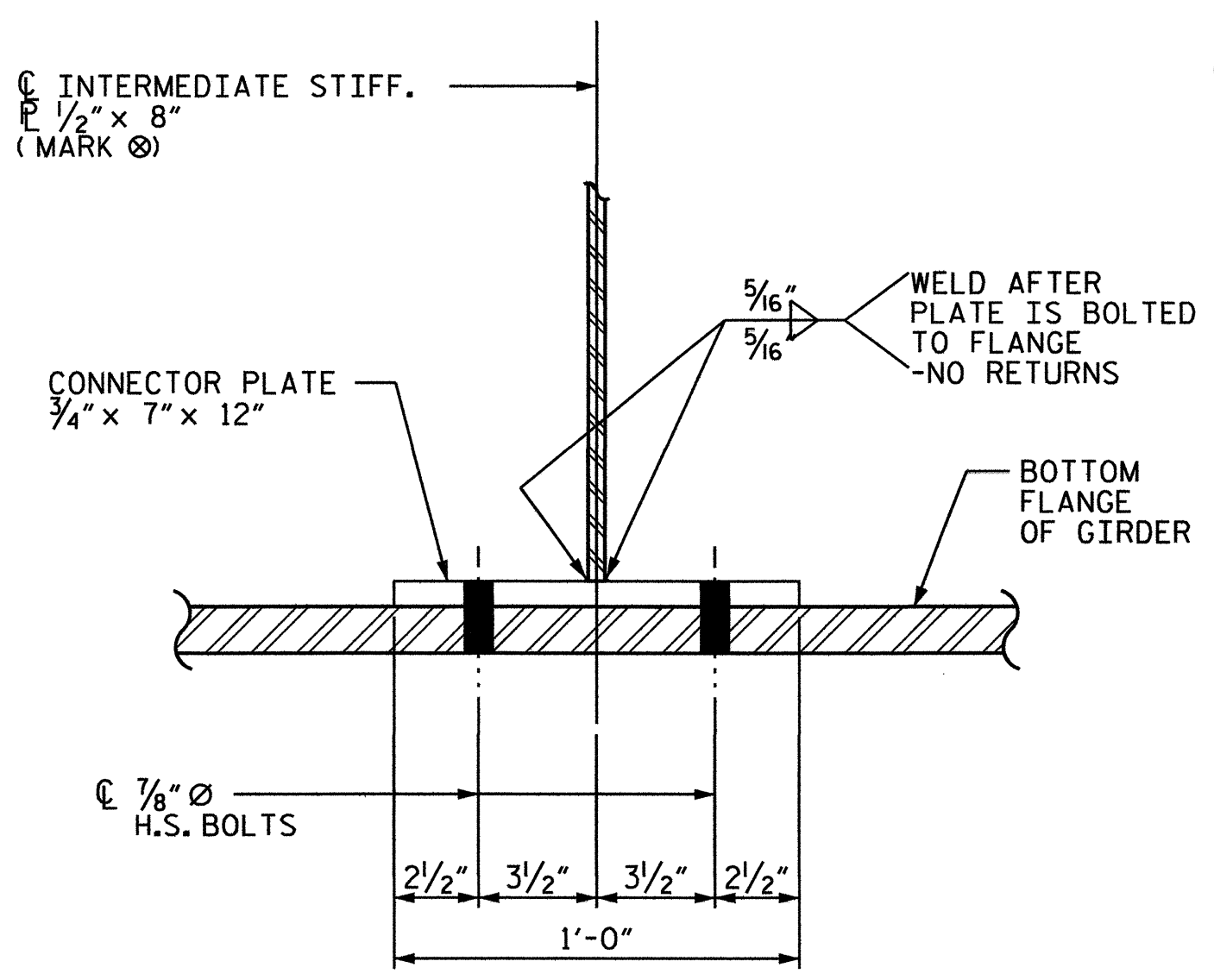
PLAN



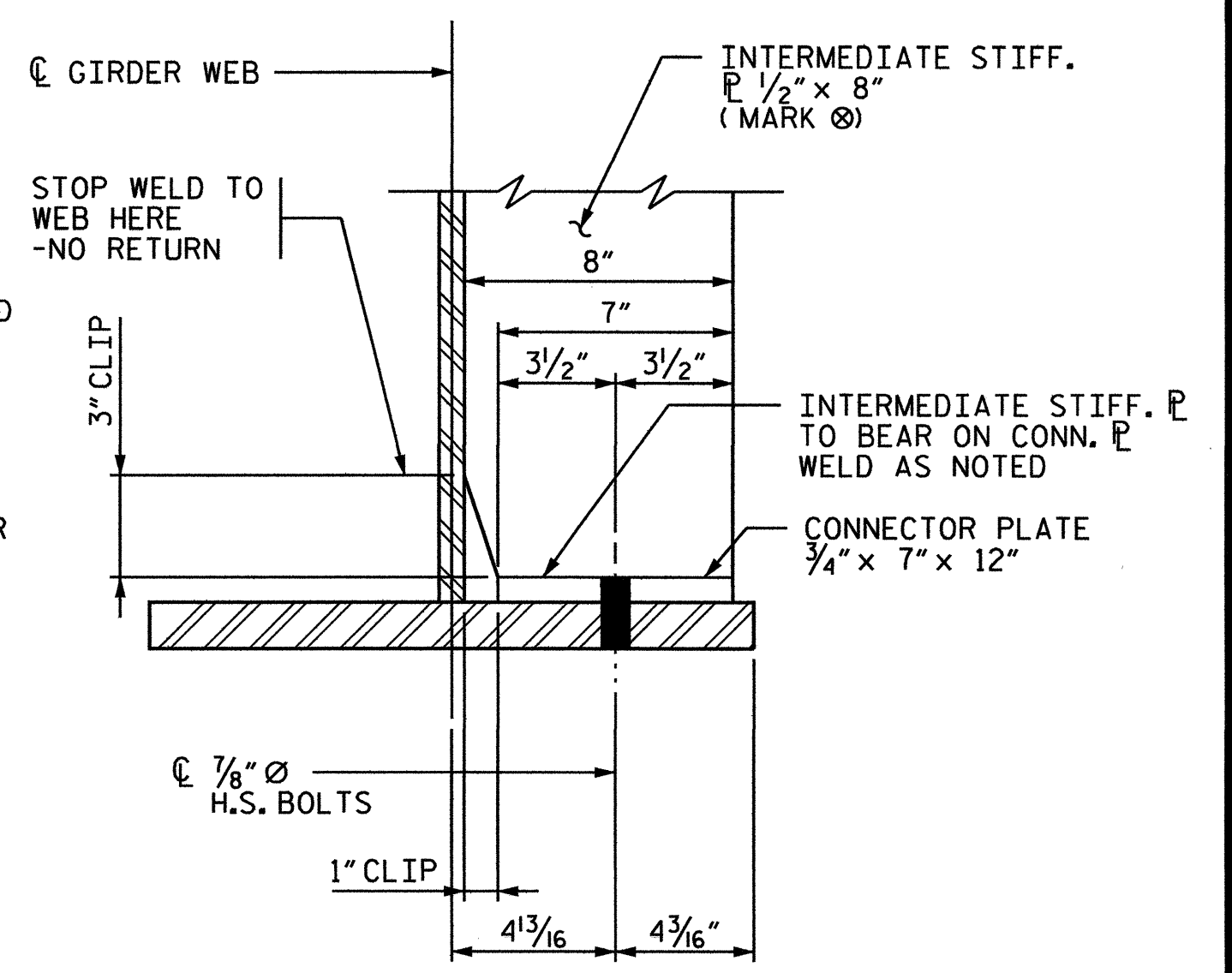
ELEVATION



END ELEVATION



ELEVATION

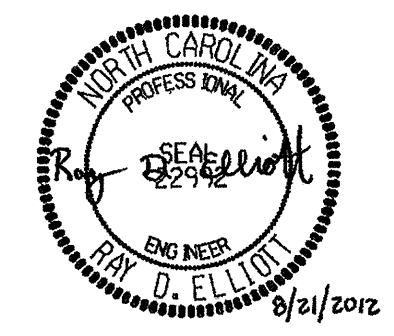


END ELEVATION

DETAIL "C"

DETAIL "D"

NO.	BY	DATE	REVISION

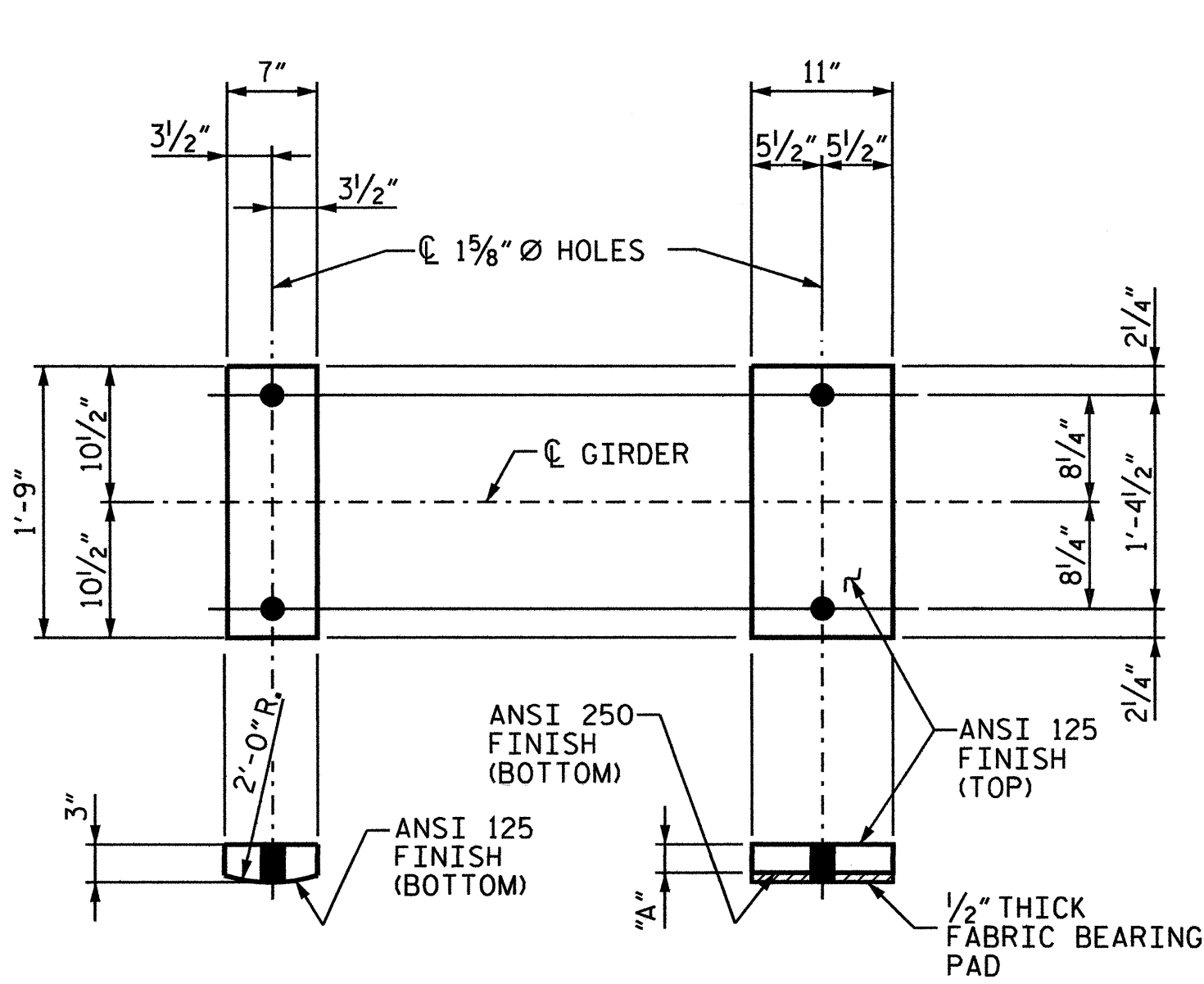


NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

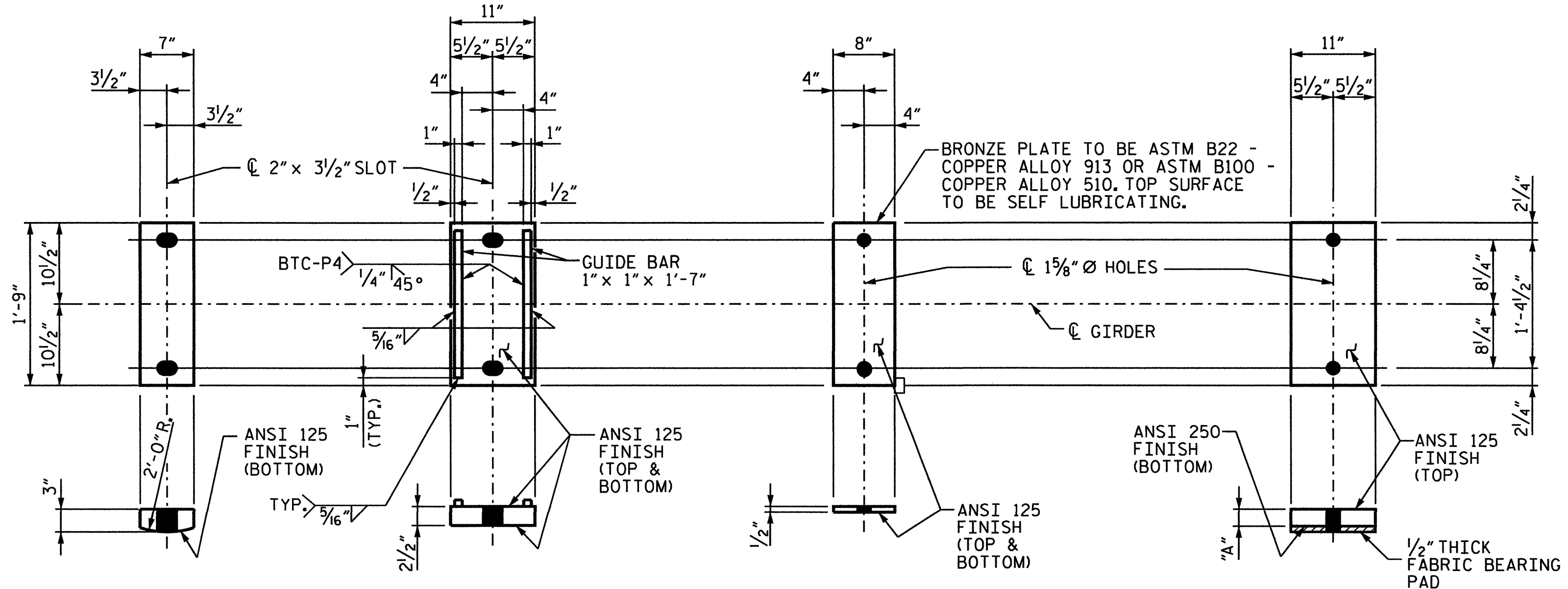
PREPARED BY: **ENGINEERING & SAFETY BRANCH**

MAIL: 1556 MAIL SERVICE CENTER, RALEIGH, NC 27603-1556
DELIVERY: 650 CAPITAL BOULEVARD, RALEIGH, NC 27603
PHONE: (919) 715-8803
FAX: (919) 715-8804

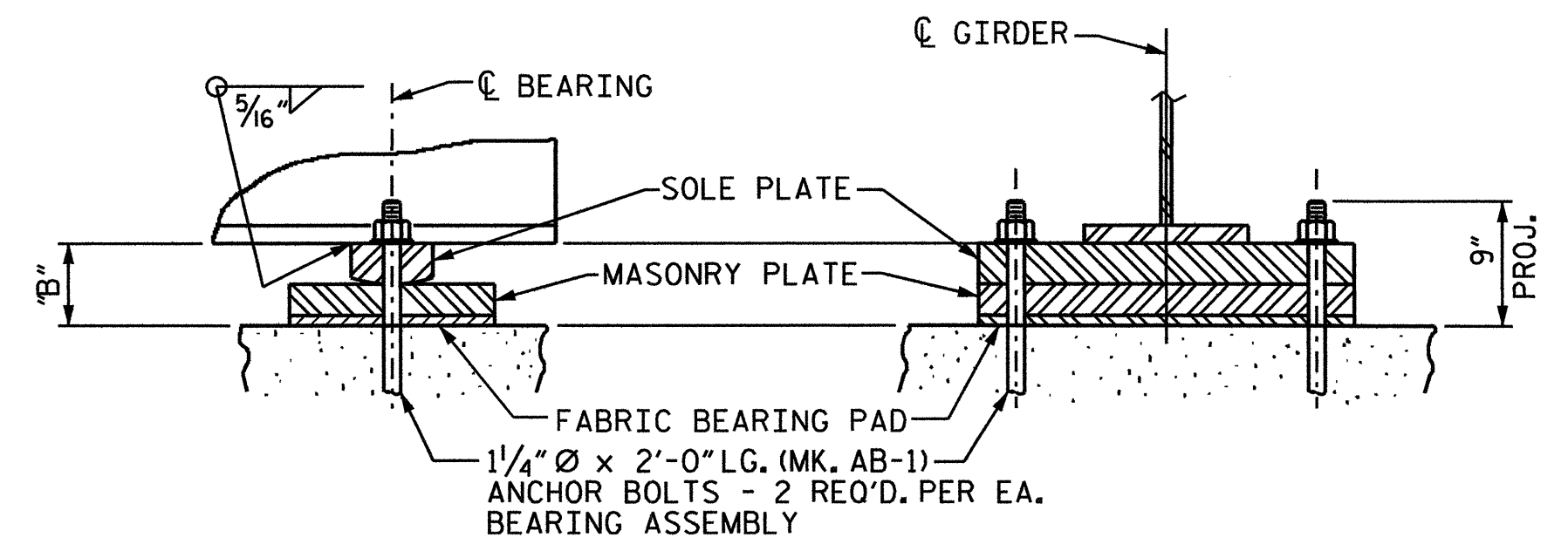
PROJECT: U-3459 - KLUMAC ROAD		TITLE: STRUCTURAL STEEL DIAPHRAGM DETAILS SPANS A, B, AND C	
LOCATION: SALISBURY-SR 2541 (KLUMAC RD) of NCRRTS			
DGN BY: CPB	RAILROAD: NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN	MILE POST: MP 335.2	SHEET 19 OF 51
DWN BY: JLA	VAL SEC: V-8	SCALE: 2" = 1'-0"	
CHK BY: RTJ	DATE: 5/12		



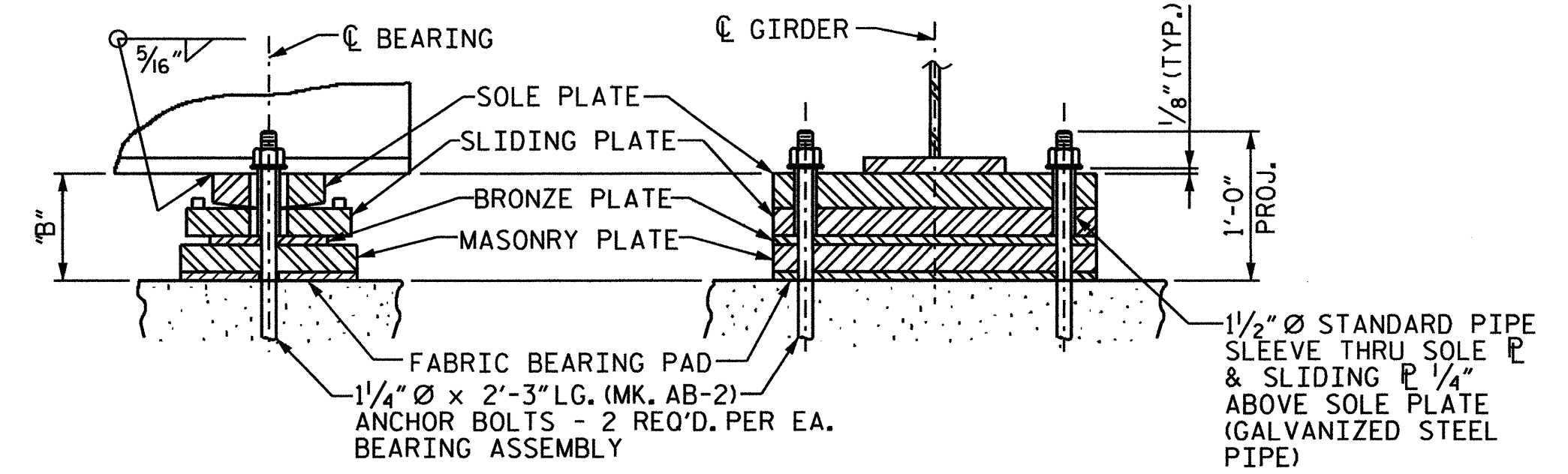
SOLE PLATE MASONRY PLATE
BEARINGS - FIXED END



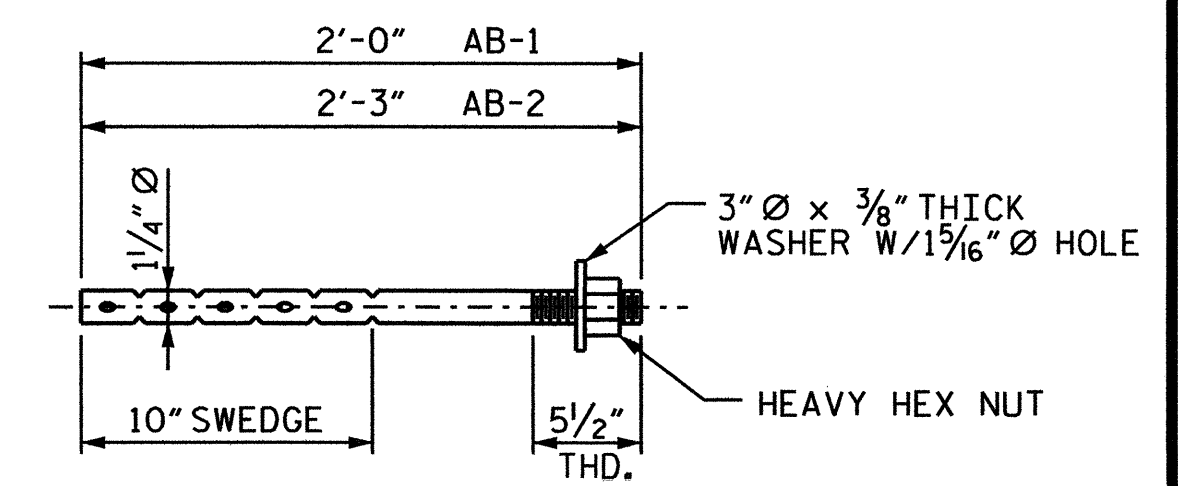
SOLE PLATE SLIDING PLATE BRONZE PLATE MASONRY PLATE
BEARINGS - EXPANSION END



BEARING ASSEMBLY - FIXED END - (FBA-1)
(20 REQ'D)



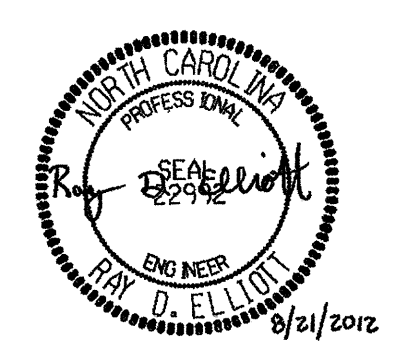
BEARING ASSEMBLY - EXPANSION - (EBA-1)
(20 REQ'D)



DETAIL OF ANCHOR BOLTS
NOTE: ANCHOR BOLTS SHALL HAVE 1'-3" MIN. ENBEDMENT

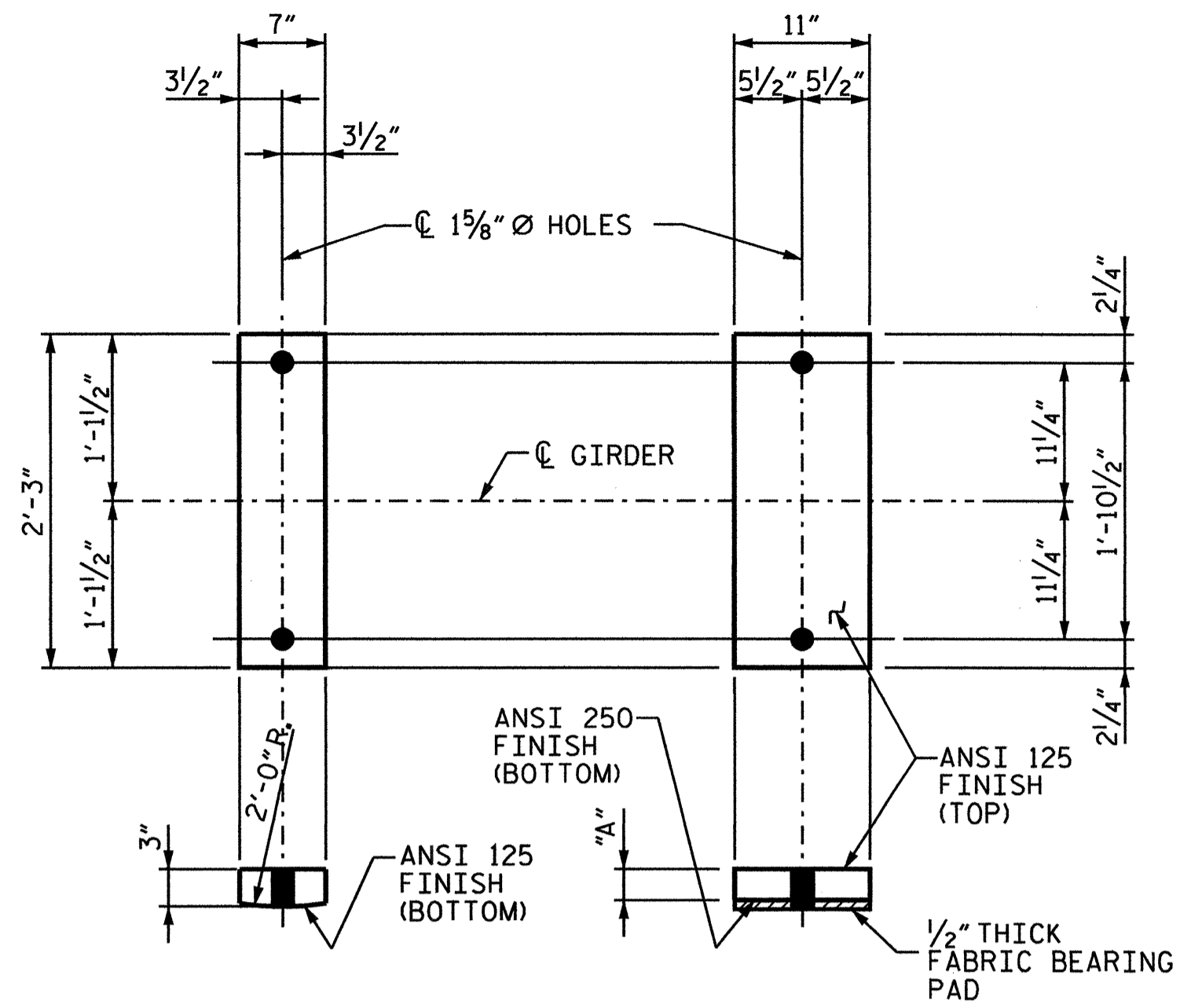
MASONRY PLATE SCHEDULE (DIMENSIONS IN INCHES)												
GIRDER	SPAN A - FIXED END @ ABUTMENT 1			SPAN A - EXPANSION END @ PIER 1			SPAN C - EXPANSION END @ PIER 2			SPAN C - FIXED END @ ABUTMENT 2		
	"A"	"B"	ANCHOR BOLT	"A"	"B"	ANCHOR BOLT	"A"	"B"	ANCHOR BOLT	"A"	"B"	ANCHOR BOLT
1	2 13/16"	6 5/16"	AB-1	3 11/16"	10 3/16"	AB-2	2 13/16"	9 9/16"	AB-2	2 3/16"	6 9/16"	AB-1
2	2 3/4"	6 1/4"	AB-1	3 5/8"	10 1/8"	AB-2	2 3/4"	9 1/4"	AB-2	2 3/4"	6 1/4"	AB-1
3	2 3/4"	6 1/4"	AB-1	3 5/8"	10 1/8"	AB-2	2 3/4"	9 1/4"	AB-2	2 3/4"	6 1/4"	AB-1
4	2 11/16"	6 3/16"	AB-1	3 3/16"	10 1/16"	AB-2	2 11/16"	9 3/16"	AB-2	2 11/16"	6 3/16"	AB-1
5	2 11/16"	6 3/16"	AB-1	3 3/16"	10 1/16"	AB-2	2 11/16"	9 3/16"	AB-2	2 11/16"	6 3/16"	AB-1
6	2 5/8"	6 1/8"	AB-1	3 1/2"	10"	AB-2	2 5/8"	9 1/8"	AB-2	2 5/8"	6 1/8"	AB-1
7	2 5/8"	6 1/8"	AB-1	3 1/2"	10"	AB-2	2 5/8"	9 1/8"	AB-2	2 5/8"	6 1/8"	AB-1
8	2 9/16"	6 1/16"	AB-1	3 7/16"	9 5/16"	AB-2	2 9/16"	9 1/16"	AB-2	2 9/16"	6 1/16"	AB-1
9	2 9/16"	6 1/16"	AB-1	3 7/16"	9 5/16"	AB-2	2 9/16"	9 1/16"	AB-2	2 9/16"	6 1/16"	AB-1
10	2 1/2"	6"	AB-1	3 3/8"	9 1/8"	AB-2	2 1/2"	9"	AB-2	2 1/2"	6"	AB-1

NO.	BY	DATE	REVISION



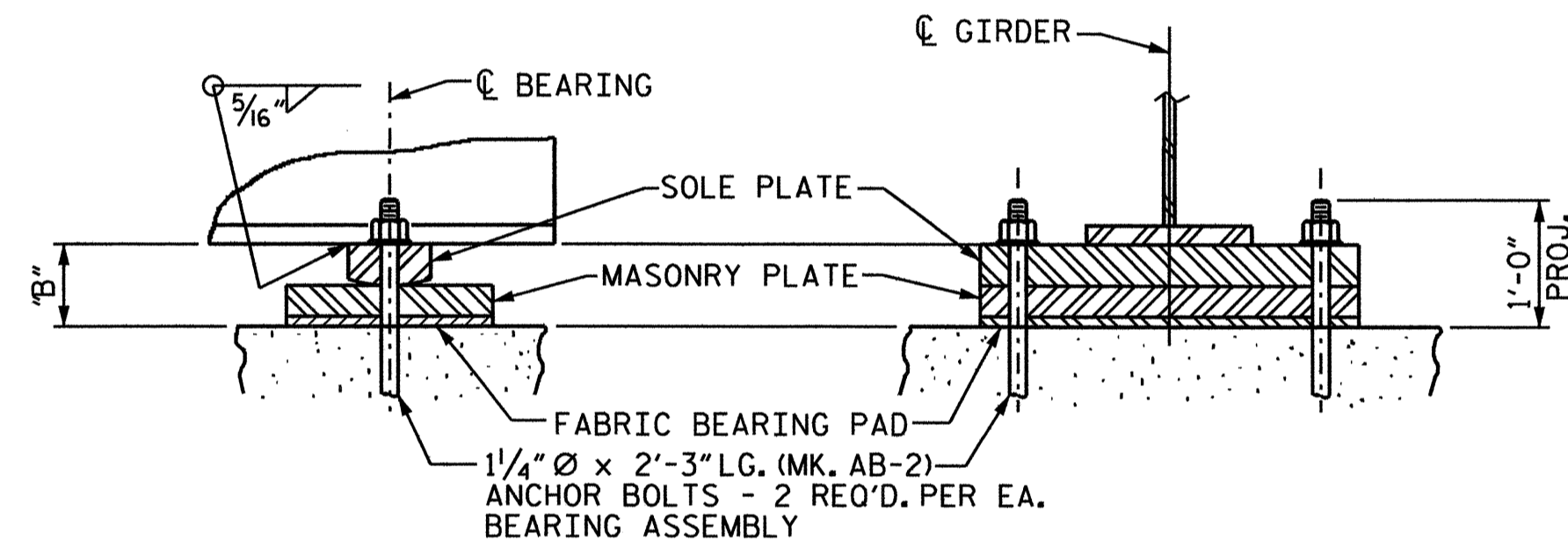
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION
ENGINEERING & SAFETY BRANCH
MAIL: 1256 MAIL SERVICE CENTER, RALEIGH, NC 27699-1556
DELIVERY: 650 CAPITAL BOULEVARD, RALEIGH, NC 27603
PHONE: (919) 715-8803
FAX: (919) 715-8804

PROJECT: U-3459 - KLUMAC ROAD
TITLE: BEARING DETAILS SPANS A & C
LOCATION: SALISBURY-SR 2541 (KLUMAC RD) of NCRNRS
DGN BY: CPB RAILROAD
VAL SEC: V-8
CHK BY: RTJ DATE: 5/12
MILE POST: MP 335.2
SCALE: 1" = 1'-0"
SHEET 20 OF 51



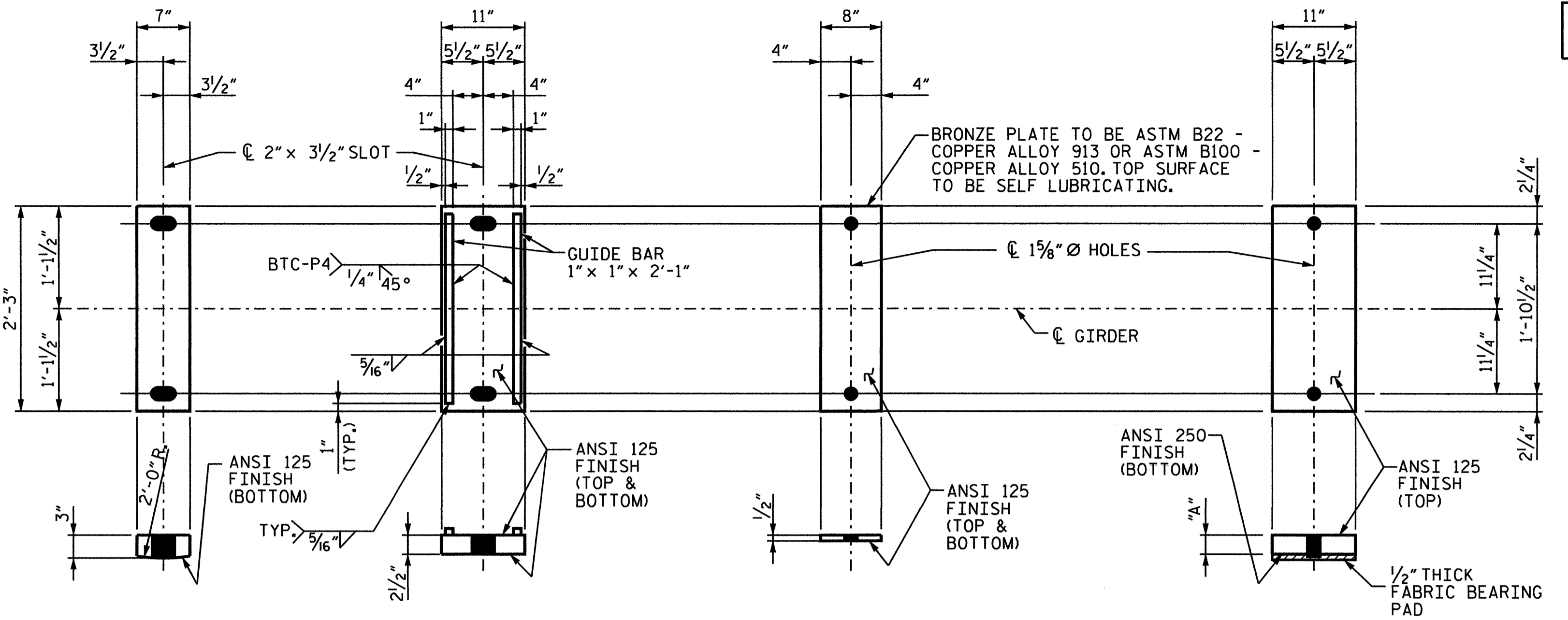
SOLE PLATE MASONRY PLATE

BEARINGS - FIXED END



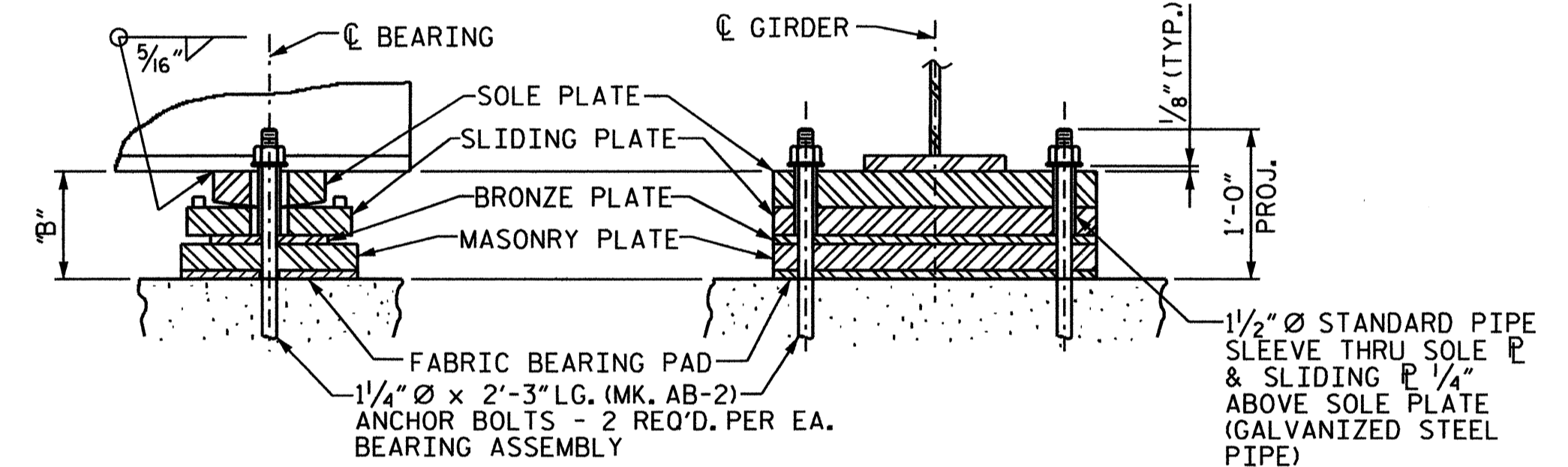
BEARING ASSEMBLY - FIXED END - (FBA-2)

(10 REQ'D)



SOLE PLATE SLIDING PLATE BRONZE PLATE MASONRY PLATE

BEARINGS - EXPANSION END



BEARING ASSEMBLY - EXPANSION - (EBA-2)

(10 REQ'D)

MASONRY PLATE SCHEDULE (DIMENSIONS IN INCHES)							
GIRDER	SPAN B - EXPANSION END @ PIER 1			SPAN B - FIXED END @ PIER 2			
	"A"	"B"	ANCHOR BOLT	"A"	* FILL PLATE	"B"	ANCHOR BOLT
1	2 13/16"	9 3/16"	AB-2	4"	1 1/16"	8 3/16"	AB-2
2	2 3/4"	9 1/4"	AB-2	4"	5/8"	8 1/8"	AB-2
3	2 3/4"	9 1/4"	AB-2	4"	5/8"	8 1/8"	AB-2
4	2 11/16"	9 3/16"	AB-2	4"	9/16"	8 1/16"	AB-2
5	2 11/16"	9 3/16"	AB-2	4"	9/16"	8 1/16"	AB-2
6	2 5/8"	9 1/8"	AB-2	4"	1/2"	8"	AB-2
7	2 5/8"	9 1/8"	AB-2	4"	1/2"	8"	AB-2
8	2 9/16"	9 1/16"	AB-2	4"	7/16"	7 15/16"	AB-2
9	2 9/16"	9 1/16"	AB-2	4"	7/16"	7 15/16"	AB-2
10	2 1/2"	9"	AB-2	4"	3/8"	7 7/8"	AB-2

* AT THE CONTRACTOR'S OPTION, HE MAY COMBINE FILL PLATES, WITH THE MASONRY PLATE AT THE LOCATION SHOWN ON THE FRAMING PLAN. FILL PLATES NOT COMBINED SHALL HAVE THE THICKNESS AS SHOWN ON THE PLANS AND SHALL HAVE THE SAME LENGTH, WIDTH AND HOLE PATTERN AS THE MASONRY PLATE.

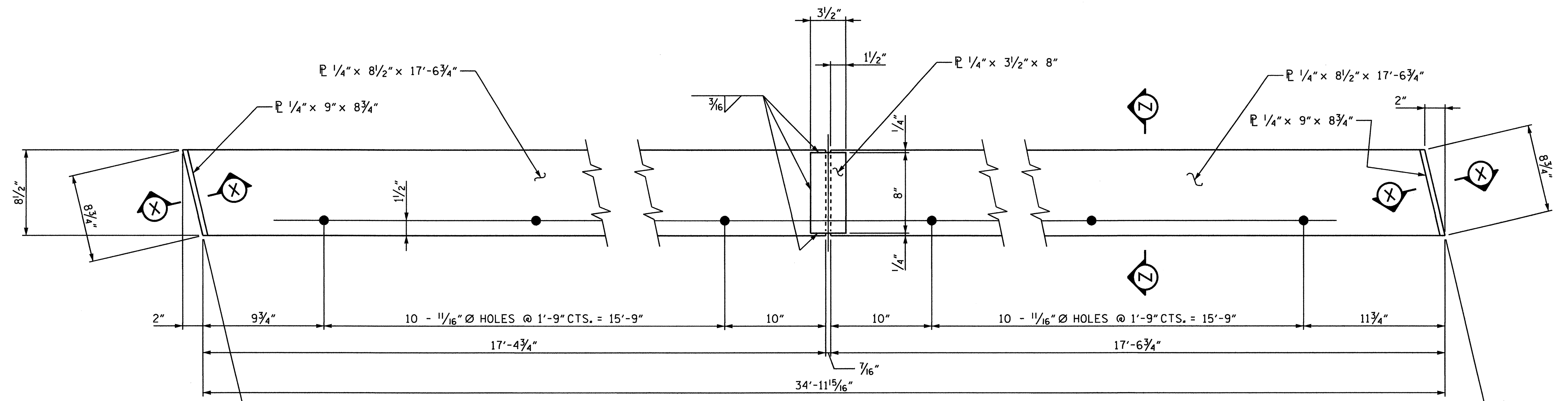
NO.	BY	DATE	REVISION



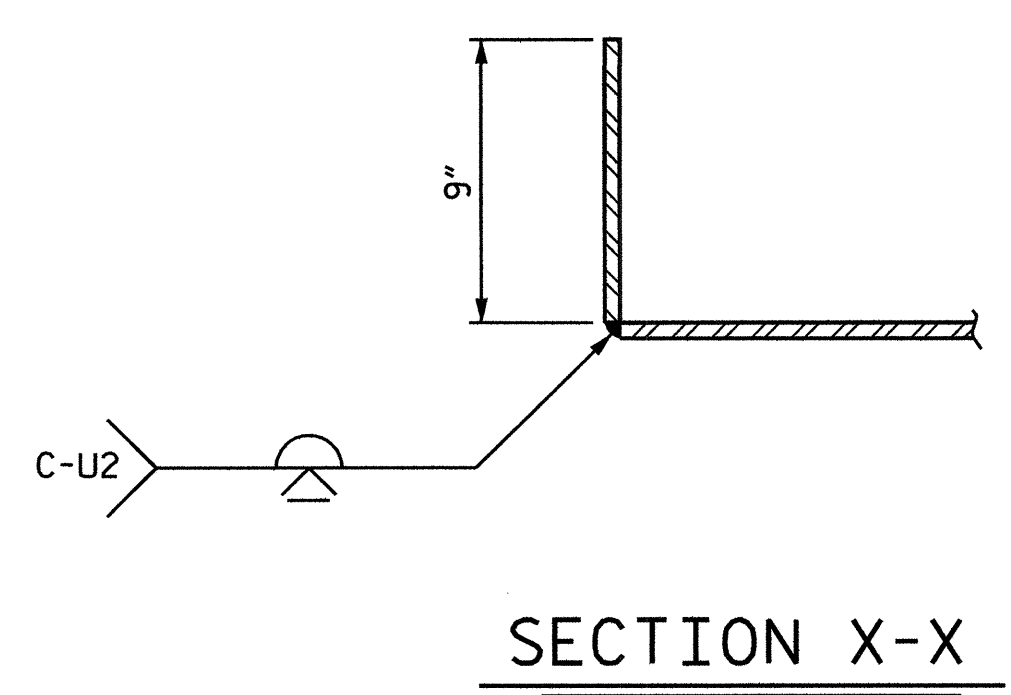
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION
ENGINEERING & SAFETY BRANCH
MAIL: 1556 MAIL SERVICE CENTER RALEIGH, NC 27699-1556
DELIVERY: 650 CAPITAL BOULEVARD RALEIGH, NC 27603
PHONE: (919) 715-8803 FAX: (919) 715-8804

PROJECT U-3459 - KLUMAC ROAD
TITLE BEARING DETAILS SPAN B
LOCATION SALISBURY-SR 2541 (KLUMAC RD) at NCRVNS
DGN BY CPB RAILROAD NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN MILE POST MP 335.2
DWN BY JLA VAL SEC V-8
CHK BY RTJ DATE 5/12 SCALE 1" = 1'-0" SHEET 21 OF 51

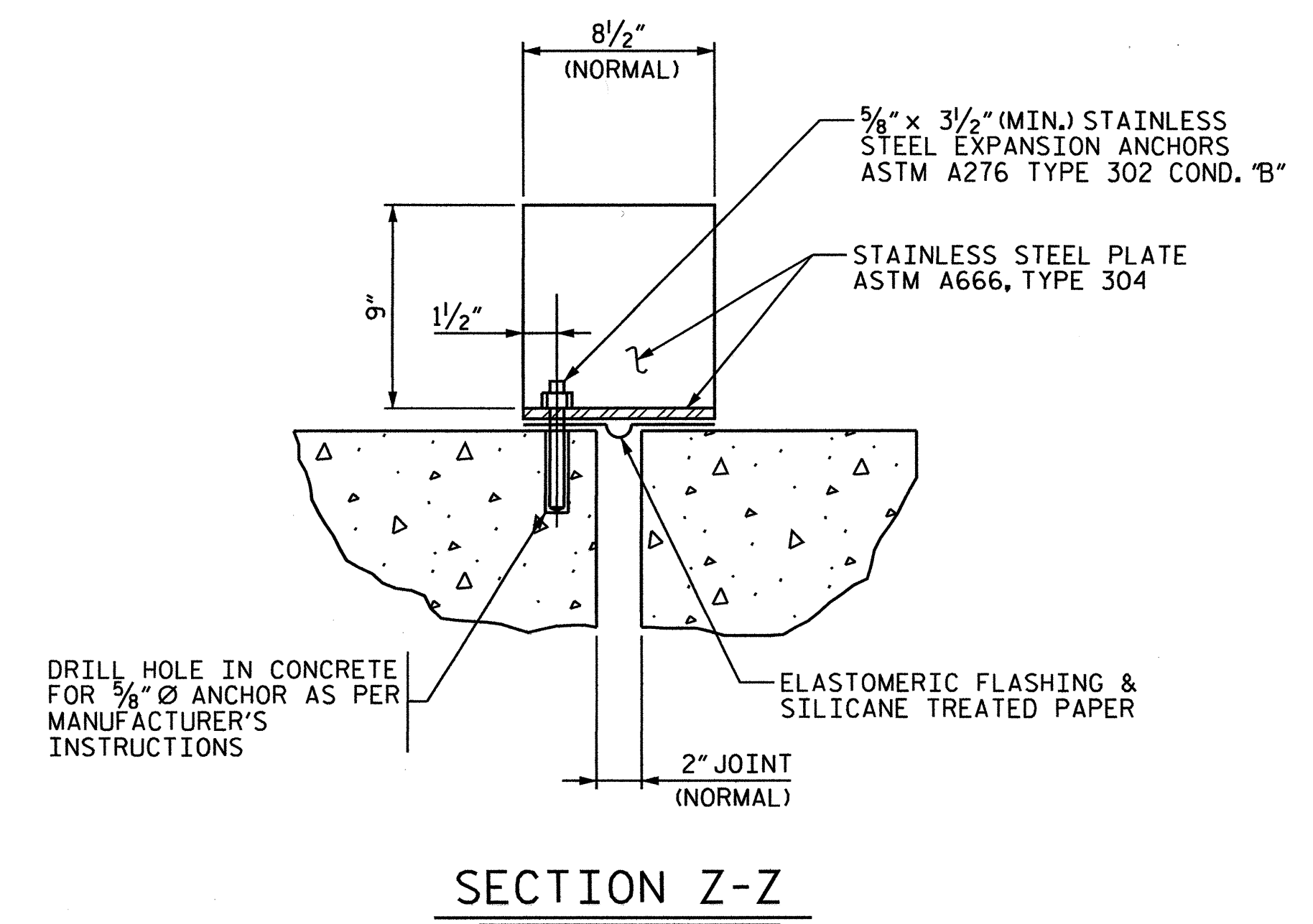
0302DEL_PT12



EXPANSION PLATE PLAN

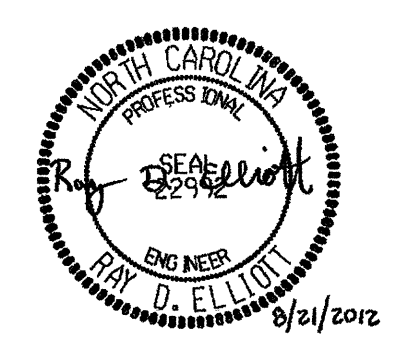


SECTION X-X



SECTION Z-Z

NO.	BY	DATE	REVISION

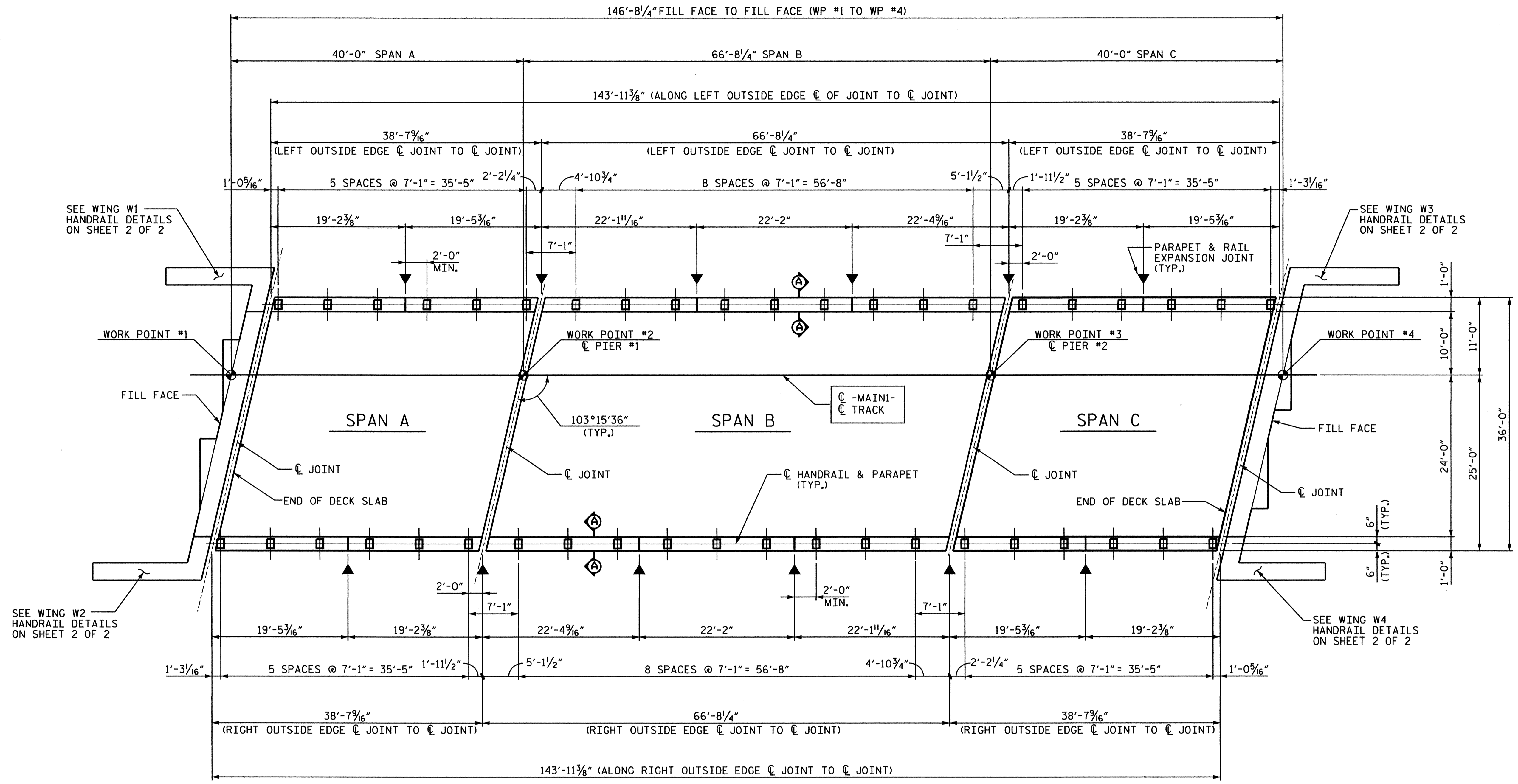


NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: **ENGINEERING & SAFETY BRANCH**

MAIL: 1526 MAIL SERVICE CENTER RALEIGH, NC 27603-1526
DELIVERY: 360 CAPITAL BOULEVARD RALEIGH, NC 27603
PHONE: (919) 715-8803 FAX: (919) 715-8804

PROJECT	U-3459 - KLUMAC ROAD		
TITLE	EXPANSION PLATE DETAILS		
LOCATION	SALISBURY-SR 2541 (KLUMAC RD) of NCRRTS		
DGN BY	CPB	RAILROAD	NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
DWN BY	NMW	VAL SEC	V-8
CHK BY	RTJ	DATE	5/12
MILE POST	MP 335.2		SCALE 2" = 1'-0"
SHEET 22 OF 51			



HANDRAIL POST SPACING - SPANS A B & C

*****SYSTEMTIME*****

▲ OPENING IN HANDRAIL (SPlice GAP)

NO.	BY	DATE	REVISION

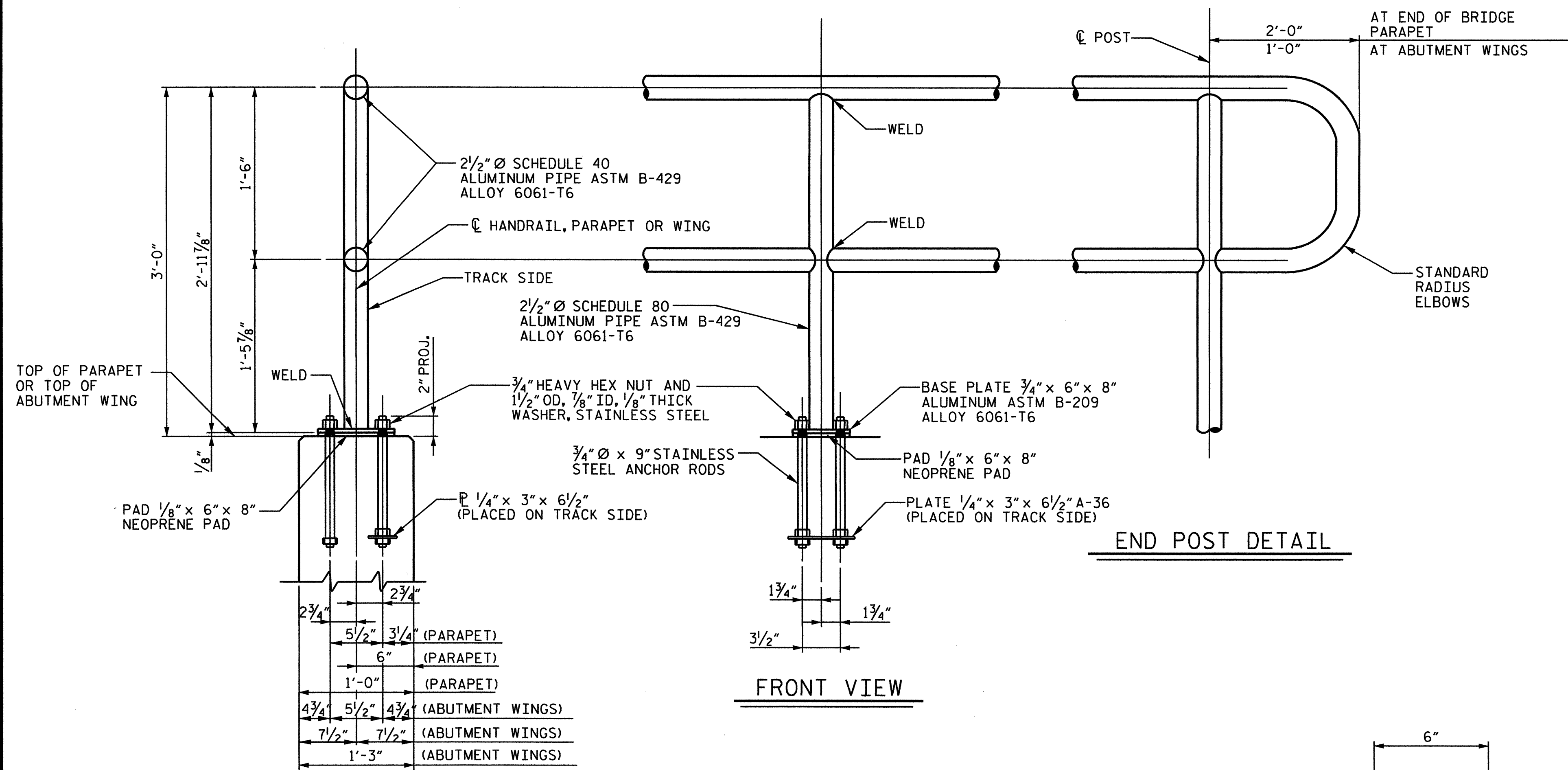


NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

ENGINEERING & SAFETY BRANCH

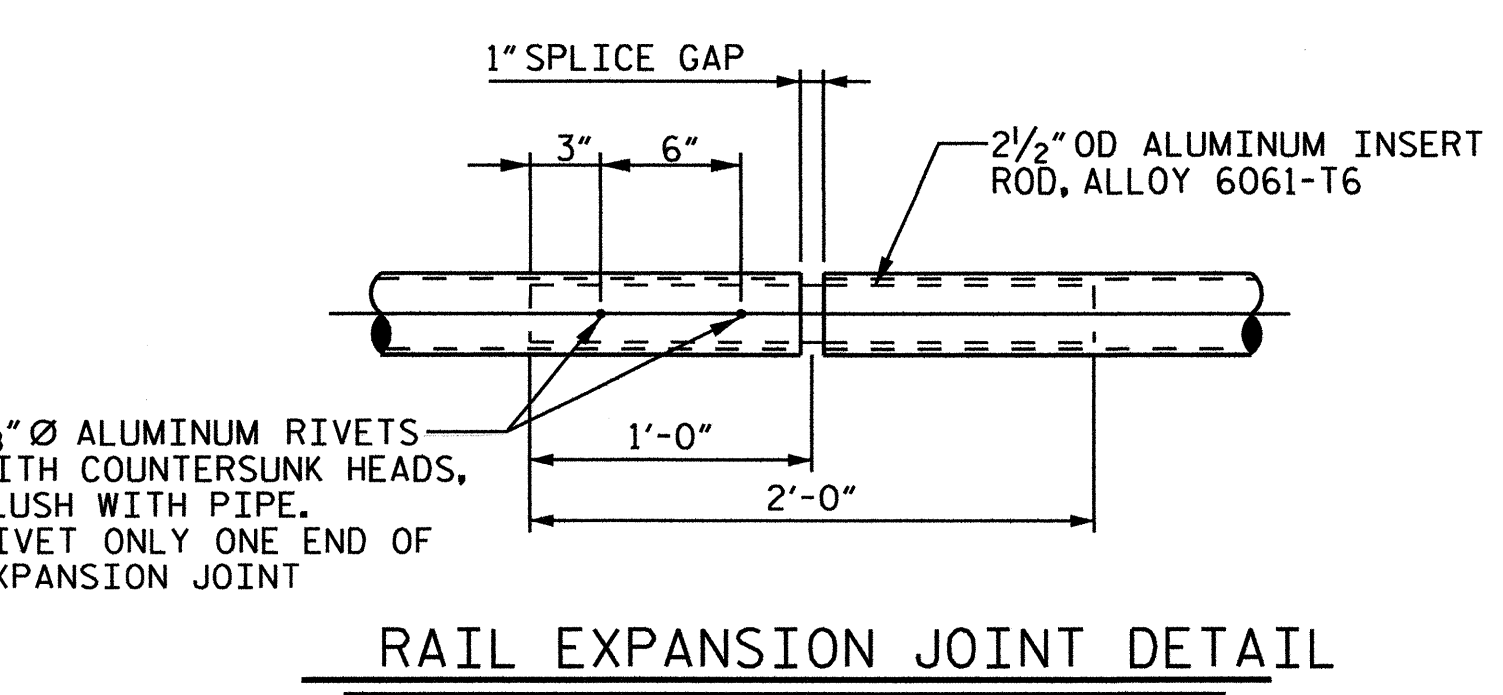
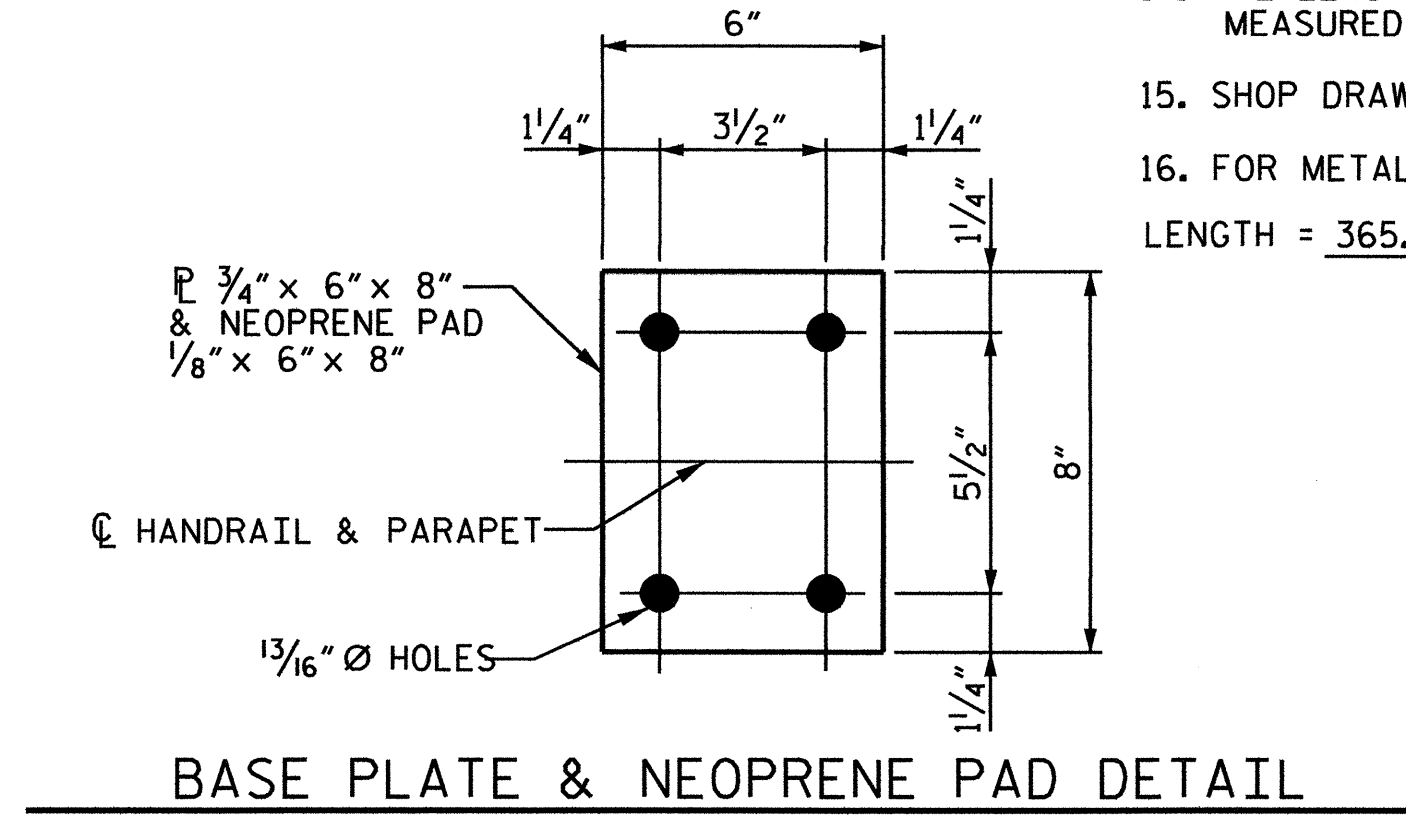
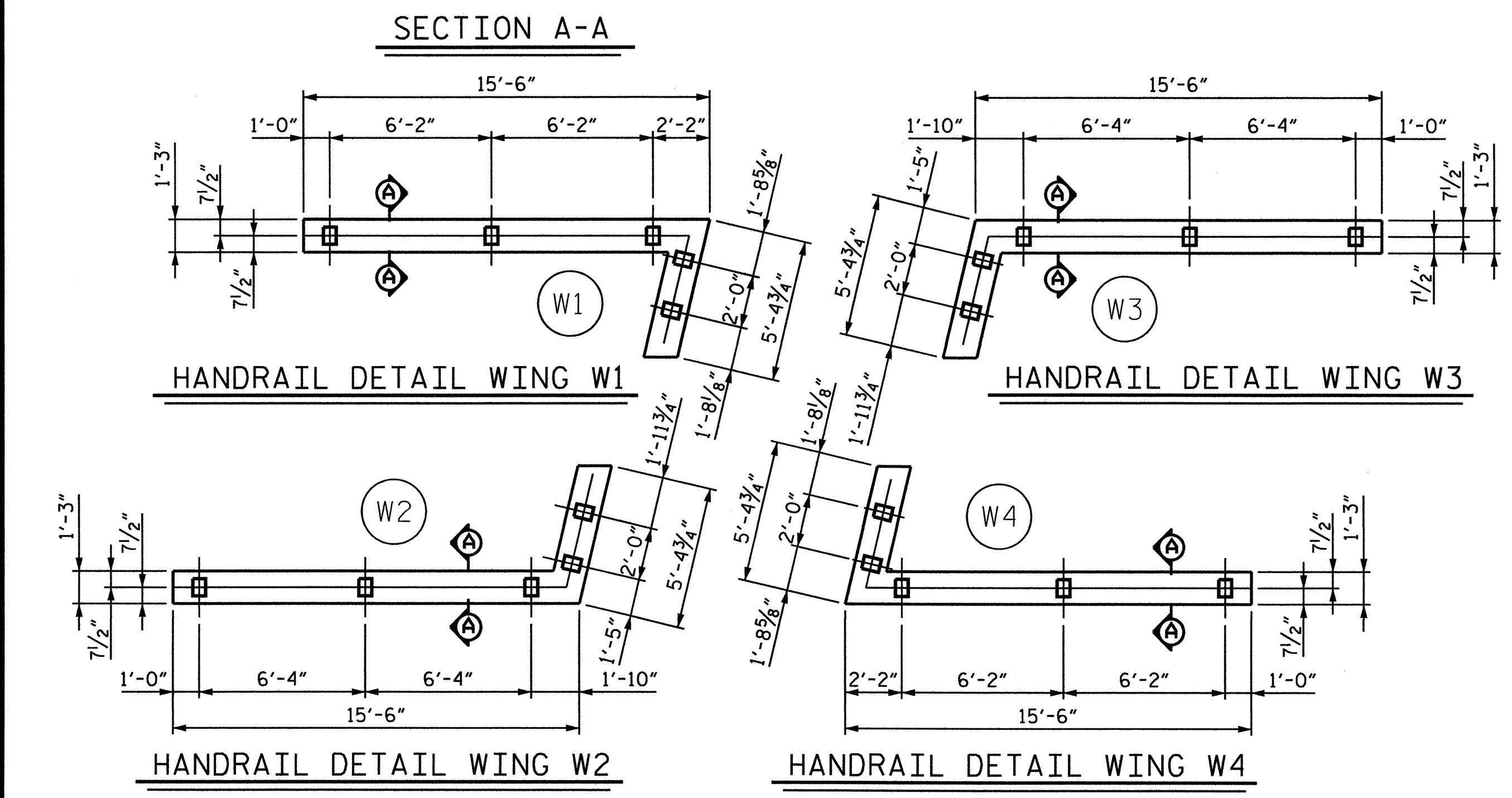
MAIL: 1556 MAIL SERVICE CENTER RALEIGH, NC 27639-1556
DELIVERY: 650 CAPITAL BOULEVARD RALEIGH, NC 27603
PHONE: (919) 715-8803 FAX: (919) 715-8804

PROJECT U-3459 - KLUMAC ROAD		TITLE DETAILS OF METAL HANDRAIL	
LOCATION SALISBURY-SR 2541 (KLUMAC RD) of NCRMS			
DGN BY CPB	RAILROAD NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN	MILE POST	MP 335.2
DWN BY NMW	VAL SEC V-8	SCALE 1/8" = 1'-0"	
CHK BY RTJ	DATE 5/12	SHEET 23 OF 51	



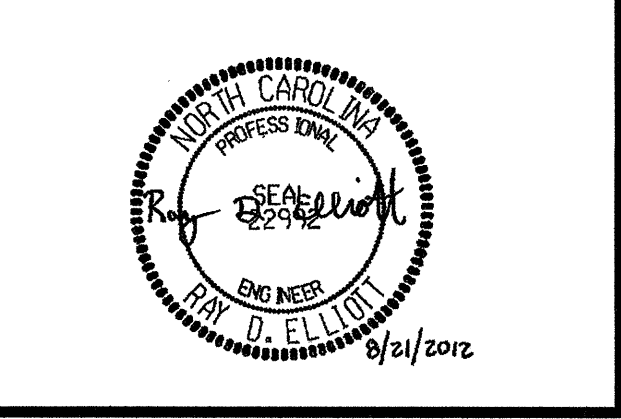
NOTES:

1. JOINTS IN RAILING (SPlice GAP) SHALL BE LOCATED AS SHOWN IN POST SPACING PLAN.
2. ALUMINUM PIPE TO BE ASTM B-429, ALLOY 6061-T6 AND BASE PLATE TO BE ASTM B-209, ALLOY 6061-T6.
3. STAINLESS STEEL BOLTS, CAP SCREWS, AND NUTS TO BE ASTM A-276 TYPE 304. STAINLESS STEEL WASHERS TO BE ASTM A-276 TYPE 302.
4. POSTS TO BE SET PERPENDICULAR TO TOP OF PARAPET AND RAILS SHALL BE PLACED PARALLEL TO THE GRADE OF THE BRIDGE.
5. CERTIFIED MILL REPORTS ARE REQUIRED FOR RAIL AND POSTS. SHOP INSPECTIONS ARE NOT REQUIRED.
6. AFTER ANCHOR ROD NUTS HAVE BEEN TIGHTENED, THREADS SHALL BE SCORED TO LOCK NUTS.
7. CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY AT HIS OPTION HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.
8. ANCHOR PLATES SHALL BE STEEL CONFORMING TO ASTM SPECIFICATION A36.
9. ANCHOR RODS SHALL CONFORM TO ASTM SPECIFICATION A276 TYPE 302 OR 304. STAINLESS STEEL AND THREADS SHALL BE ROLLED, NOT CUT.
10. UPPER ANCHOR ROD NUTS SHALL BE HEAVY HEX NUTS, PER ASTM A276 TYPE 302 OR 304 STAINLESS STEEL.
11. LOWER ANCHOR ROD NUTS SHALL BE HEAVY HEX STEEL NUTS, PER ASTM A563.
12. THE CENTERLINE OF ANY SPLICE AND/OR EXPANSION JOINT IS TO BE LOCATED AT LEAST 2'-0" AWAY FROM CENTERLINE OF POST. EXPANSION AND/OR SPLICE JOINTS FOR EACH RAILING ARE TO BE PLACED IN THE SAME LOCATION AND IN THE SAME PANEL.
13. WELDING SHALL BE IN ACCORDANCE WITH THE CURRENT AWS STRUCTURAL WELDING CODE - ALUMINUM.
14. THE LENGTH OF METAL RAIL TO BE PAID FOR SHALL BE THE CONTINUOUS LENGTH MEASURED FROM END TO END OF RAIL, ALONG THE TOP RAIL.
15. SHOP DRAWINGS SHALL BE REQUIRED.
16. FOR METAL HANDRAIL, SEE SPECIAL PROVISIONS.



METAL HANDRAIL POST SPACING - WINGWALLS

NO.	BY	DATE	REVISION



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY:
ENGINEERING & SAFETY BRANCH

MAIL: 1556 MAIL SERVICE CENTER, RALEIGH, NC 27603
DELIVERY: 850 CAPITAL BOULEVARD, RALEIGH, NC 27603
PHONE: (919) 715-8803
FAX: (919) 715-8804

PROJECT	U-3459 - KLUMAC ROAD		
TITLE	DETAILS OF METAL HANDRAIL		
LOCATION	SALISBURY-SR 2541 (KLUMAC RD) of NCRANS		
DGN BY	CPB	RAILROAD	NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
DWN BY	NMW	VAL SEC	V-8
CHK BY	RTJ	DATE	5/12
MILE POST	MP 335.2	SCALE	1/4" = 1'-0"
SHEET 24 OF 51			

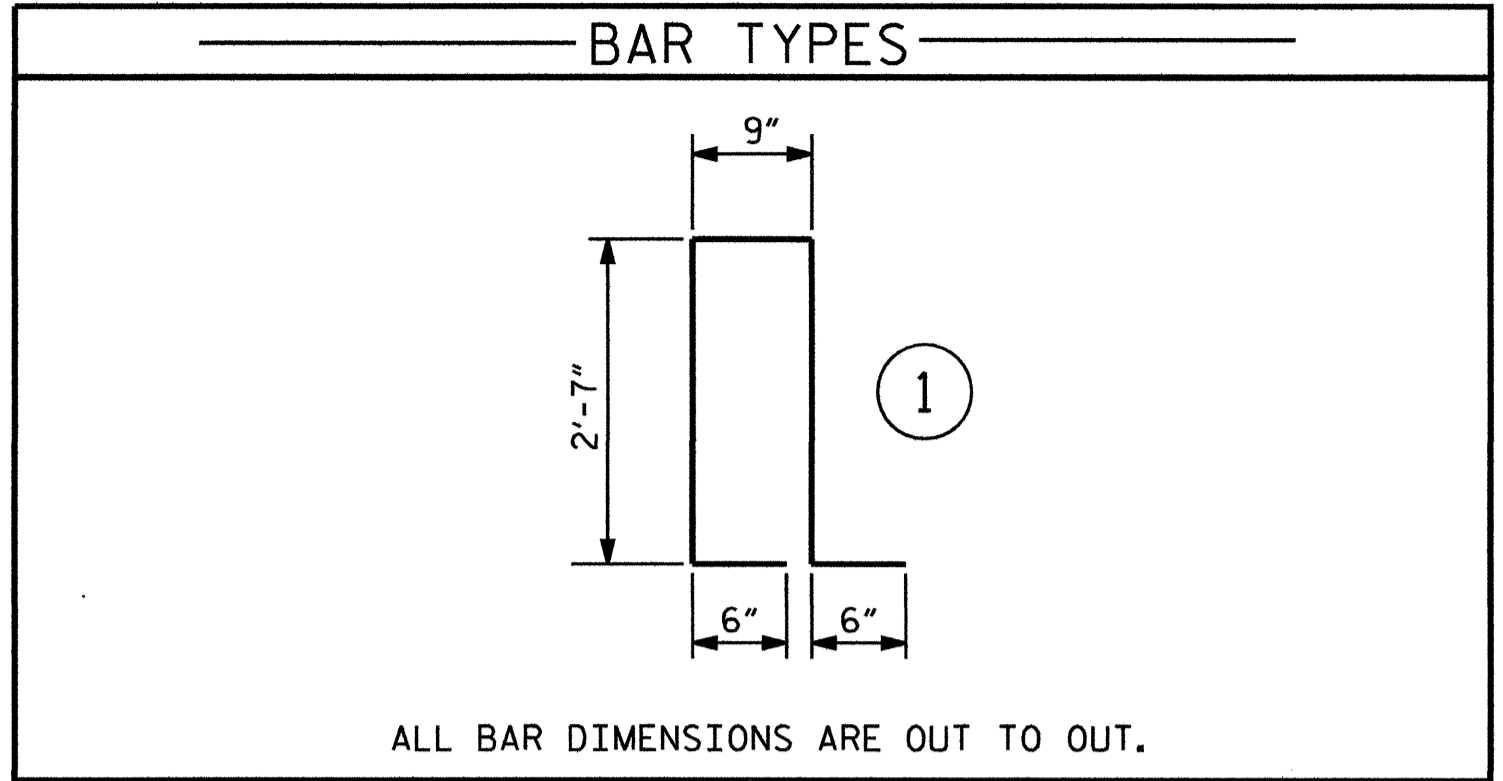
EPOXY-COATED REINFORCING STEEL BAR SCHEDULE

0302DEL_PT2

SPAN A					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	102	#6	STR.	35'-8"	5,464
A2	8	#6	STR.	36'-7"	440
A100	4	#6	STR.	34'-4"	206
A101	4	#6	STR.	31'-10"	191
A102	4	#6	STR.	29'-4"	176
A103	4	#6	STR.	26'-11"	162
A104	4	#6	STR.	24'-5"	147
A105	4	#6	STR.	21'-11"	132
A106	4	#6	STR.	19'-6"	117
A107	4	#6	STR.	17'-0"	102
A108	4	#6	STR.	14'-6"	87
A109	4	#6	STR.	12'-0"	72
A110	4	#6	STR.	9'-7"	58
A111	4	#6	STR.	7'-1"	43
A112	4	#6	STR.	4'-7"	28
A113	4	#6	STR.	2'-2"	13
B1	224	#4	STR.	20'-1"	3,005
B2	24	#5	STR.	18'-10"	471
S1	76	#5	1	6'-11"	548
TOTAL EPOXY-COATED REIN. STEEL:					11,462

SPAN B					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	198	#6	STR.	35'-8"	10,607
A2	8	#6	STR.	36'-7"	440
A200	4	#6	STR.	34'-5"	207
A201	4	#6	STR.	32'-0"	192
A202	4	#6	STR.	29'-6"	177
A203	4	#6	STR.	27'-0"	162
A204	4	#6	STR.	24'-6"	147
A205	4	#6	STR.	22'-1"	133
A206	4	#6	STR.	19'-7"	118
A207	4	#6	STR.	17'-1"	103
A208	4	#6	STR.	14'-8"	88
A209	4	#6	STR.	12'-2"	73
A210	4	#6	STR.	9'-8"	58
A211	4	#6	STR.	7'-2"	43
A212	4	#6	STR.	4'-9"	29
A213	4	#6	STR.	2'-3"	14
B3	336	#4	STR.	23'-5"	5,256
B4	36	#5	STR.	21'-9"	817
S1	132	#5	1	6'-11"	952
TOTAL EPOXY-COATED REIN. STEEL:					19,616

SPAN C					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	102	#6	STR.	35'-8"	5,464
A2	8	#6	STR.	36'-7"	440
A100	4	#6	STR.	34'-4"	206
A101	4	#6	STR.	31'-10"	191
A102	4	#6	STR.	29'-4"	176
A103	4	#6	STR.	26'-11"	162
A104	4	#6	STR.	24'-5"	147
A105	4	#6	STR.	21'-11"	132
A106	4	#6	STR.	19'-6"	117
A107	4	#6	STR.	17'-0"	102
A108	4	#6	STR.	14'-6"	87
A109	4	#6	STR.	12'-0"	72
A110	4	#6	STR.	9'-7"	58
A111	4	#6	STR.	7'-1"	43
A112	4	#6	STR.	4'-7"	28
A113	4	#6	STR.	2'-2"	13
B1	224	#4	STR.	20'-1"	3,005
B2	24	#5	STR.	18'-10"	471
S1	76	#5	1	6'-11"	548
TOTAL EPOXY-COATED REIN. STEEL:					11,462

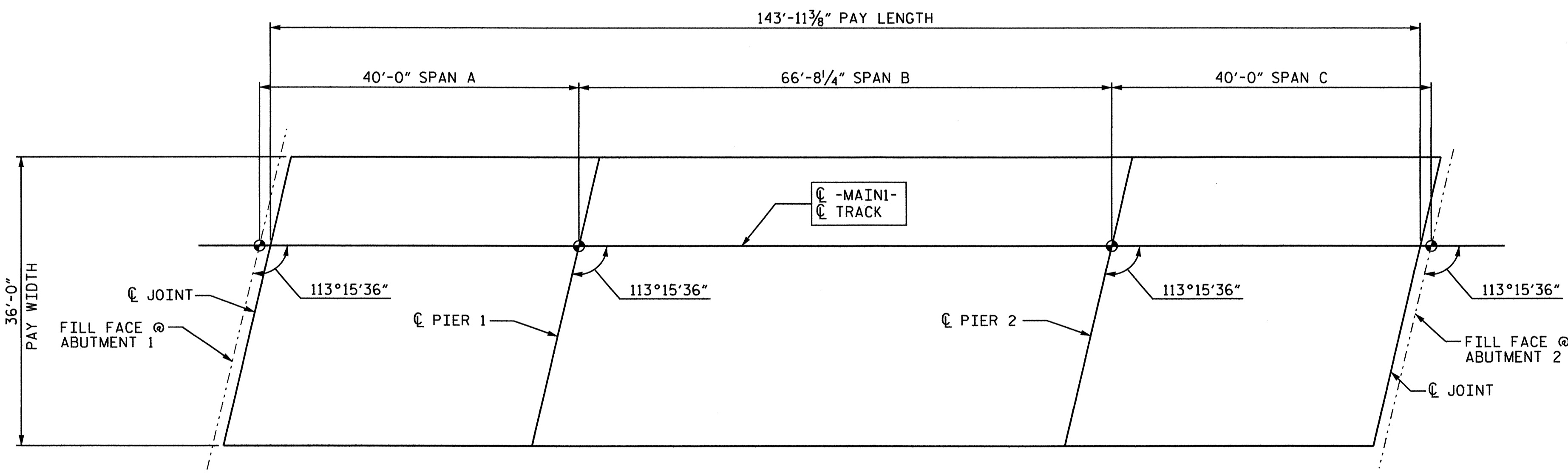


— SUPERSTRUCTURE BILL OF MATERIAL —

	CLASS AA CONCRETE (CU. YDS.)	REINFORCED CONCRETE DECK SLAB (SQ. FT.)	EPOXY COATED REINFORCING STEEL (LBS.)
DECK SLAB	170.7	5,182	40,781
PARAPET (2)	21.3		1,759
TOTALS	192.0	5,182	42,540

QUANTITY BREAKDOWN BY SPAN

	EPOXY-COATED REINFORCNG STEEL LBS.	CLASS AA CONCRETE CU. YDS.	
		DECK SLAB	PARAPETS
SPAN A	11,462	45.7	5.7
SPAN B	19,616	79.3	9.9
SPAN C	11,462	45.7	5.7
TOTALS	42,540	170.7	21.3

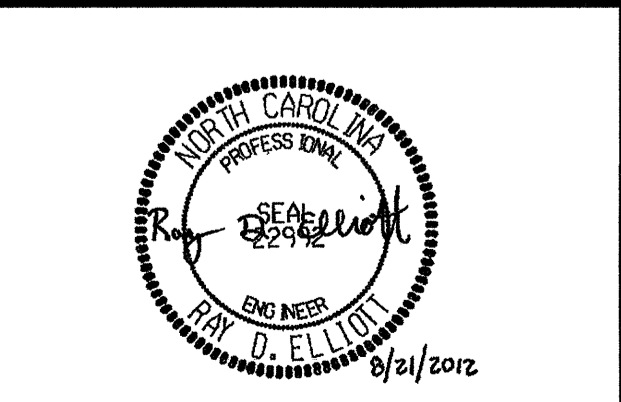


LAYOUT FOR COMPUTING AREA
OF REINFORCED CONCRETE DECK SLAB
(SQ. FT. = 5,182)

SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

BAR SIZE	SUPERSTRUCTURE EXCEPT SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"
#5	2'-6"	2'-2"	2'-6"	2'-2"	3'-5"
#6	3'-0"	2'-7"	3'-10"	2'-7"	4'-4"
#7	5'-3"	3'-6"			
#8	6'-10"	4'-7"			

NO.	BY	DATE	REVISION



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

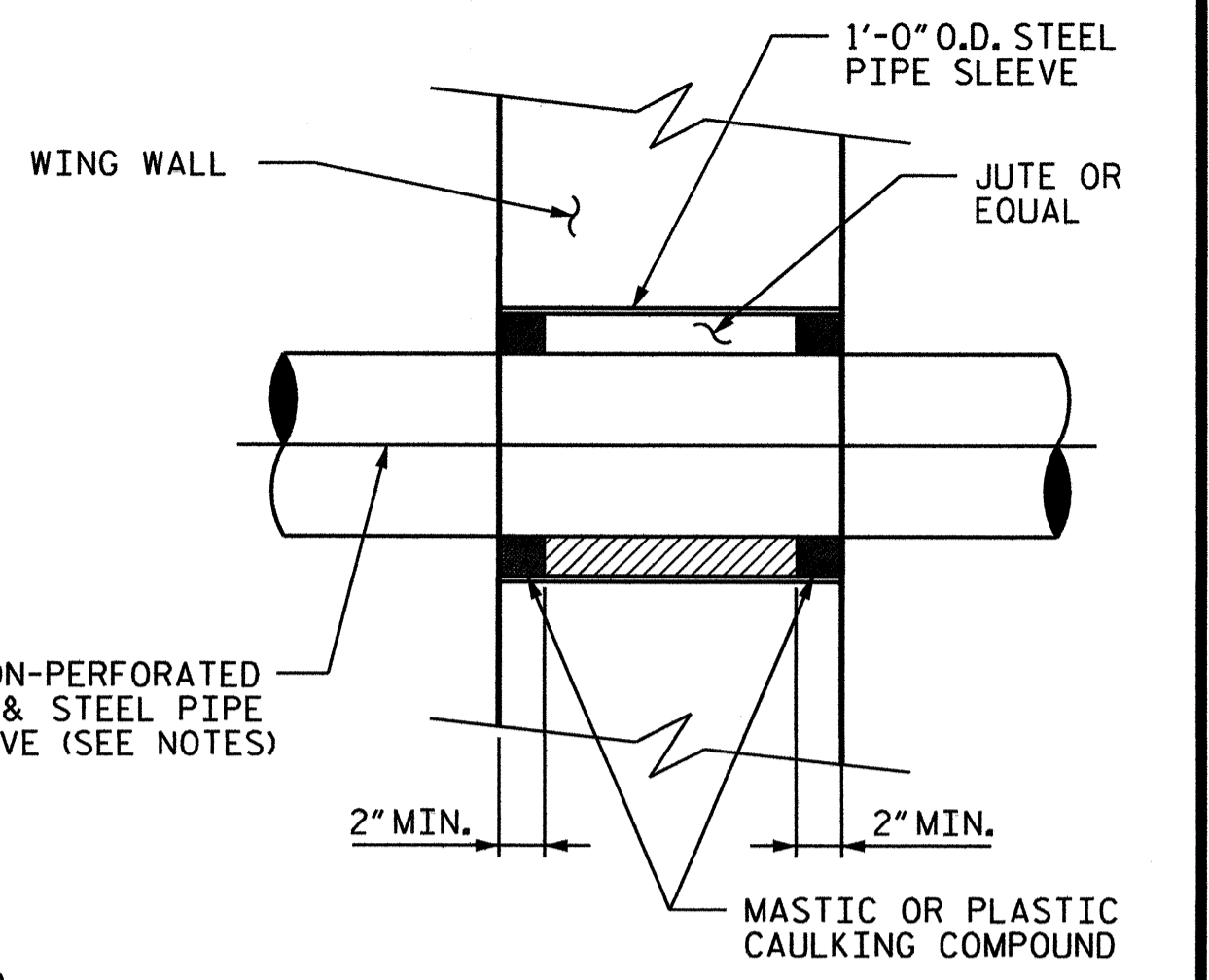
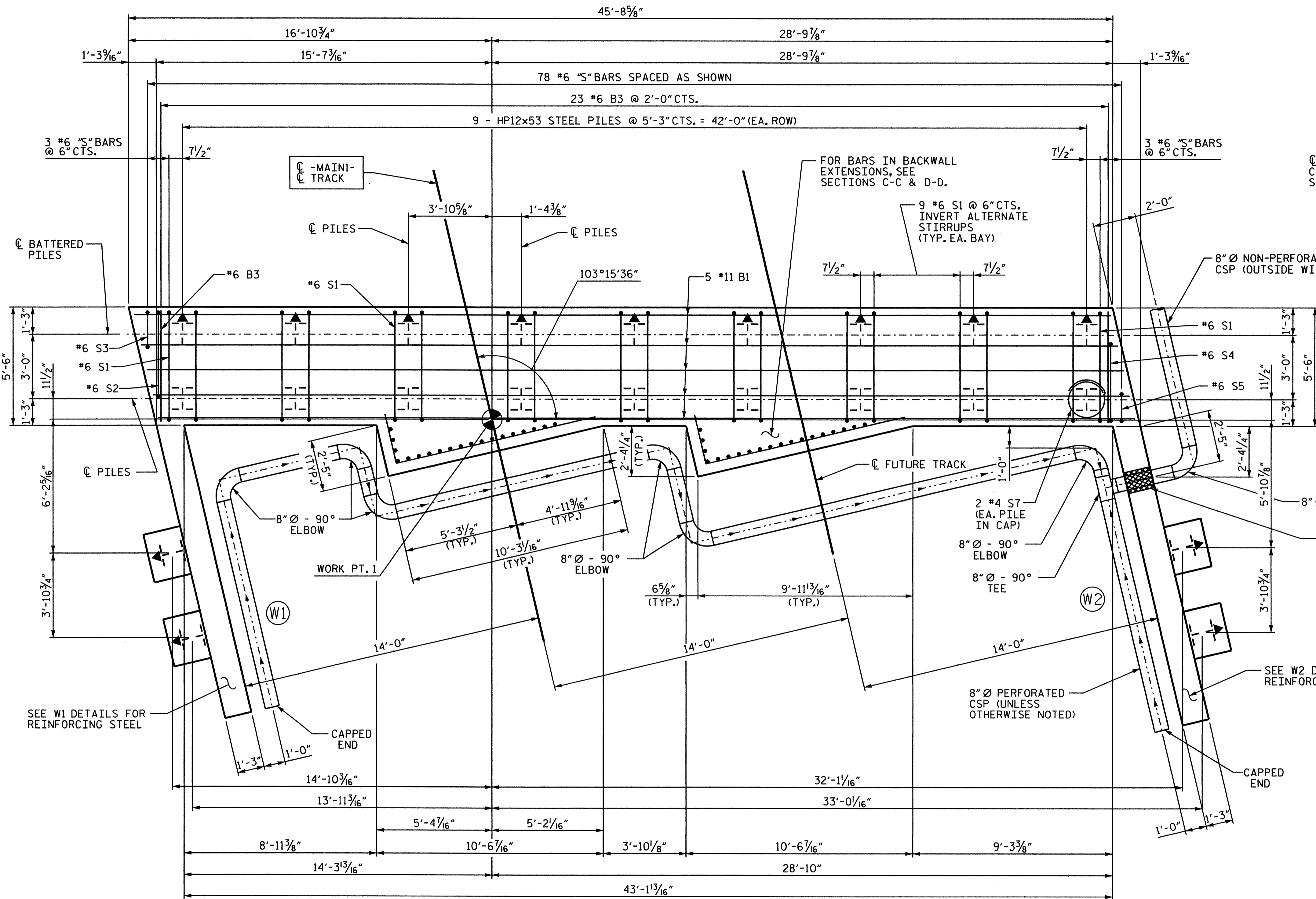
ENGINEERING & SAFETY BRANCH

MAIL: 1556 MAIL SERVICE CENTER, RALEIGH, NC 27699-1556
DELIVERY: 650 CAPITAL BOULEVARD, RALEIGH, NC 27603
PHONE: (919) 715-8803
FAX: (919) 715-8804

PROJECT TITLE		U-3459 - KLUMAC ROAD	
BILL OF MATERIAL			
LOCATION: SALISBURY-SR 2541 (KLUMAC RD) of NCR/RNS			
DGN BY	CPB	RAILROAD	NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
DWN BY	NMW	VAL SEC	V-8
CHK BY	RTJ	DATE	5/12
SCALE		1" = 10'-0"	
MILE POST		MP 335.2	
SHEET 25 OF 51			

▲ BATTER PILES 3:12 IN DIRECTION SHOWN

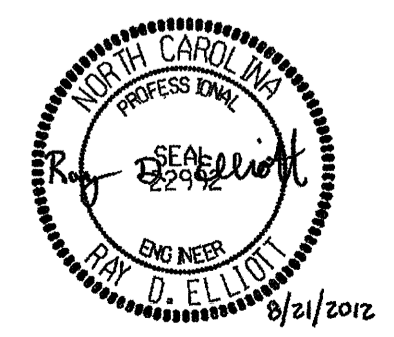
PREPARED BY
TGS ENGINEERS
107-A MICA AVENUE
MORGANTON, NC 28655



NOTES:
FOR PIPE SLEEVE INSERTS, SEE SPECIAL PROVISIONS FOR STRUCTURE DRAINAGE SYSTEM.
CORRUGATED STEEL PIPE LOCATED IN DRAINAGE AREA BETWEEN WINGS SHALL BE PERFORATED. ALL OTHER CSP SHALL BE NON-PERFORATED.

SECTION B-B

NO.	BY	DATE	REVISION



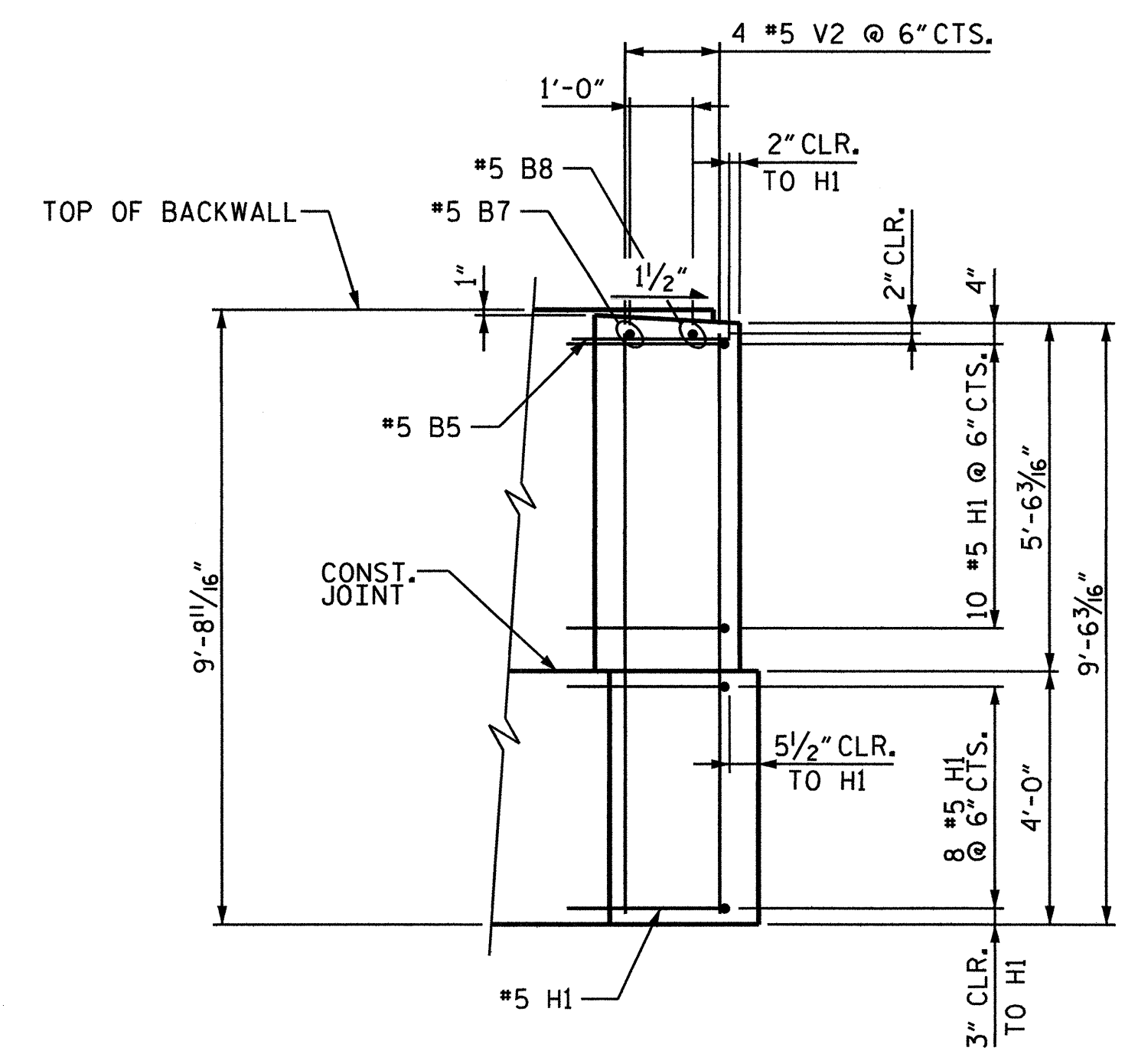
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

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ENGINEERING & SAFETY BRANCH

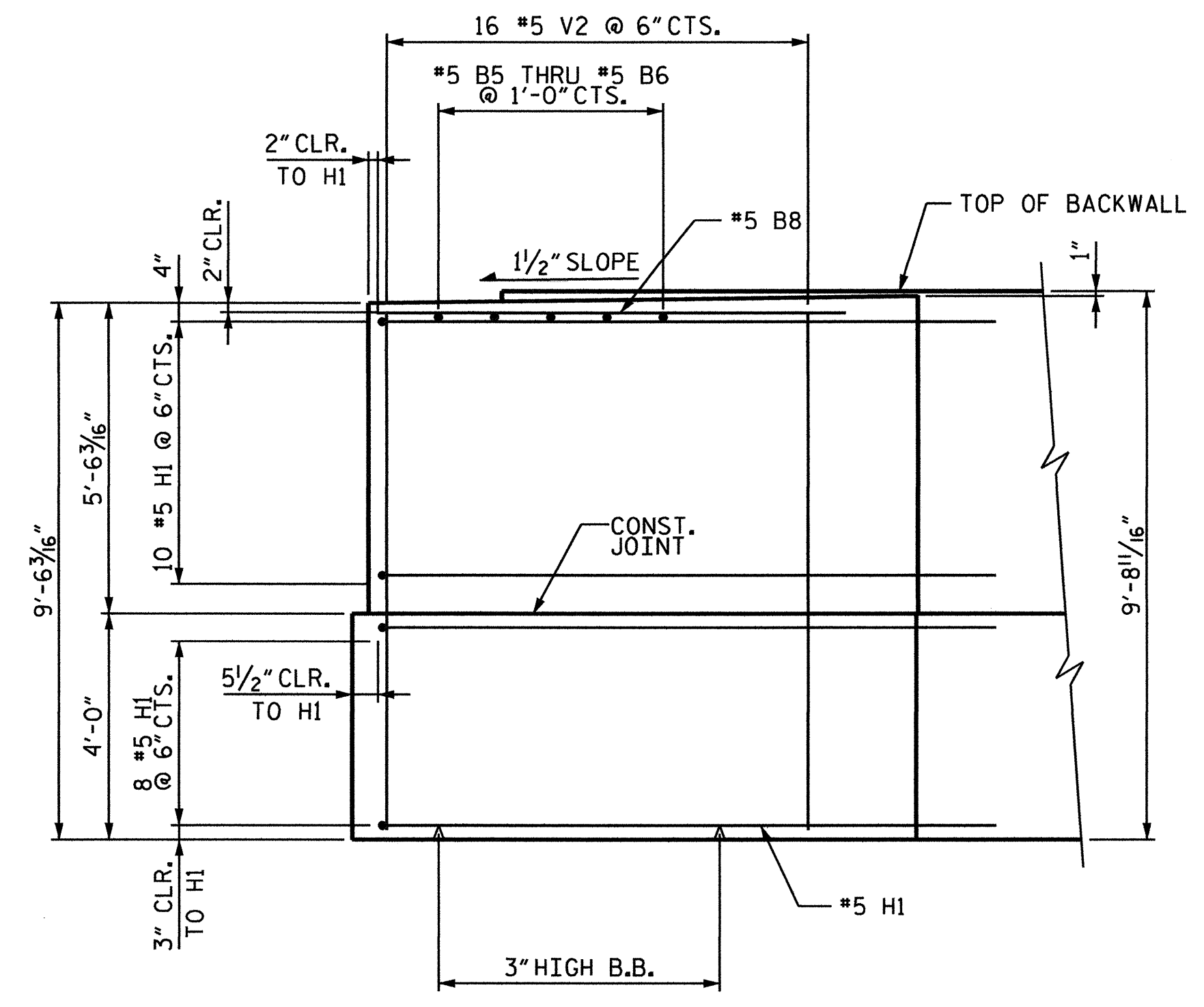
MAIL: 1056 MAIL SERVICE CENTER, RALEIGH, NC 27699-1556
DELIVERY: 850 CAPITAL BOULEVARD, RALEIGH, NC 27603
PHONE: (919) 715-8803
FAX: (919) 715-8804

PROJECT	U-3459 - KLUMAC ROAD		
TITLE	ABUTMENT 1		
LOCATION	SALISBURY-SR 2541 (KLUMAC RD) of NCRRTS		
DGN BY	RDE	RAILROAD	NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
DWN BY	JLA	VAL SEC	V-8
CHK BY	NMW	DATE	5/12
MILE POST	MP 335.2		SCALE 3/8" = 1'-0"
SHEET 27 OF 51			

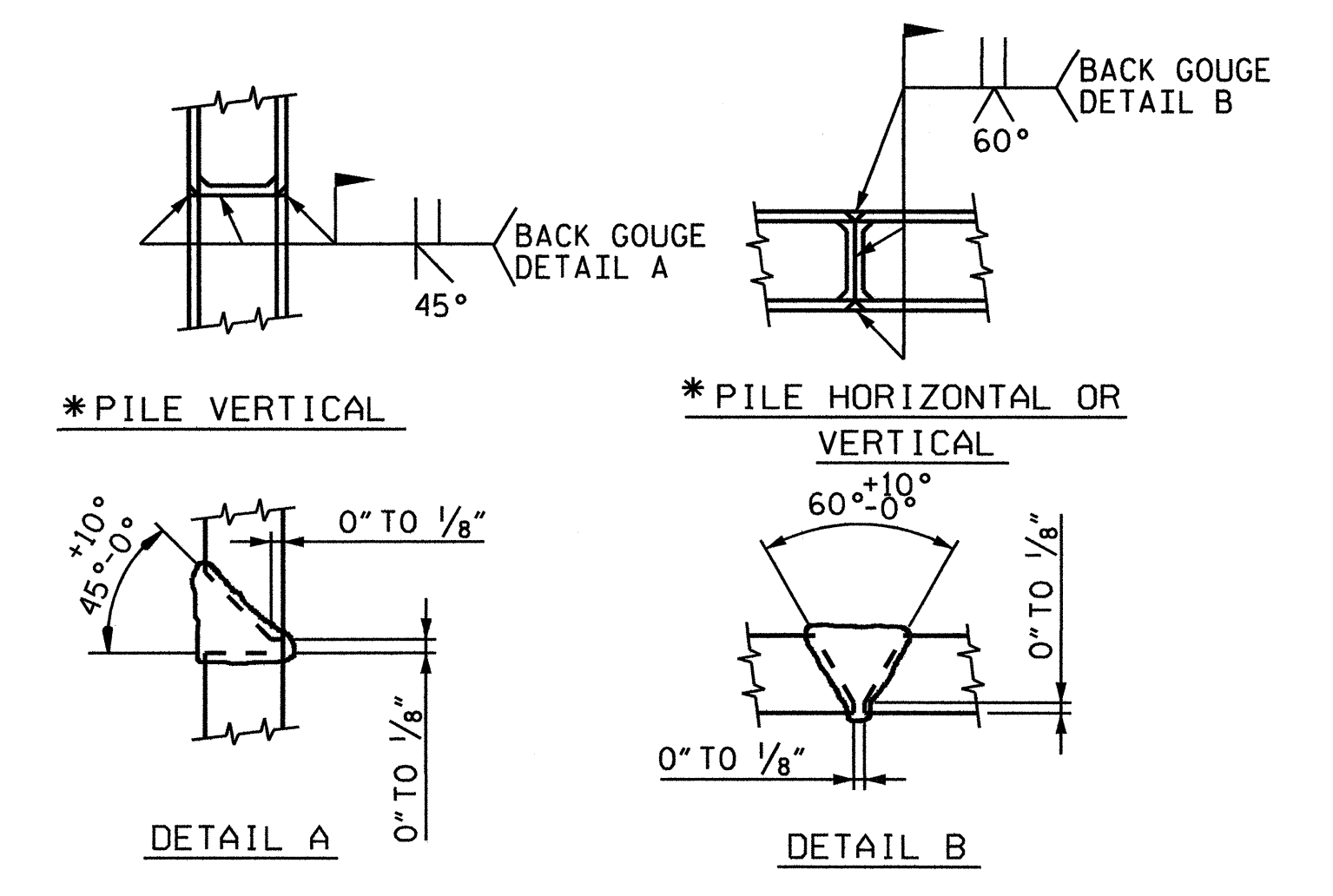
0302DEL_PT2



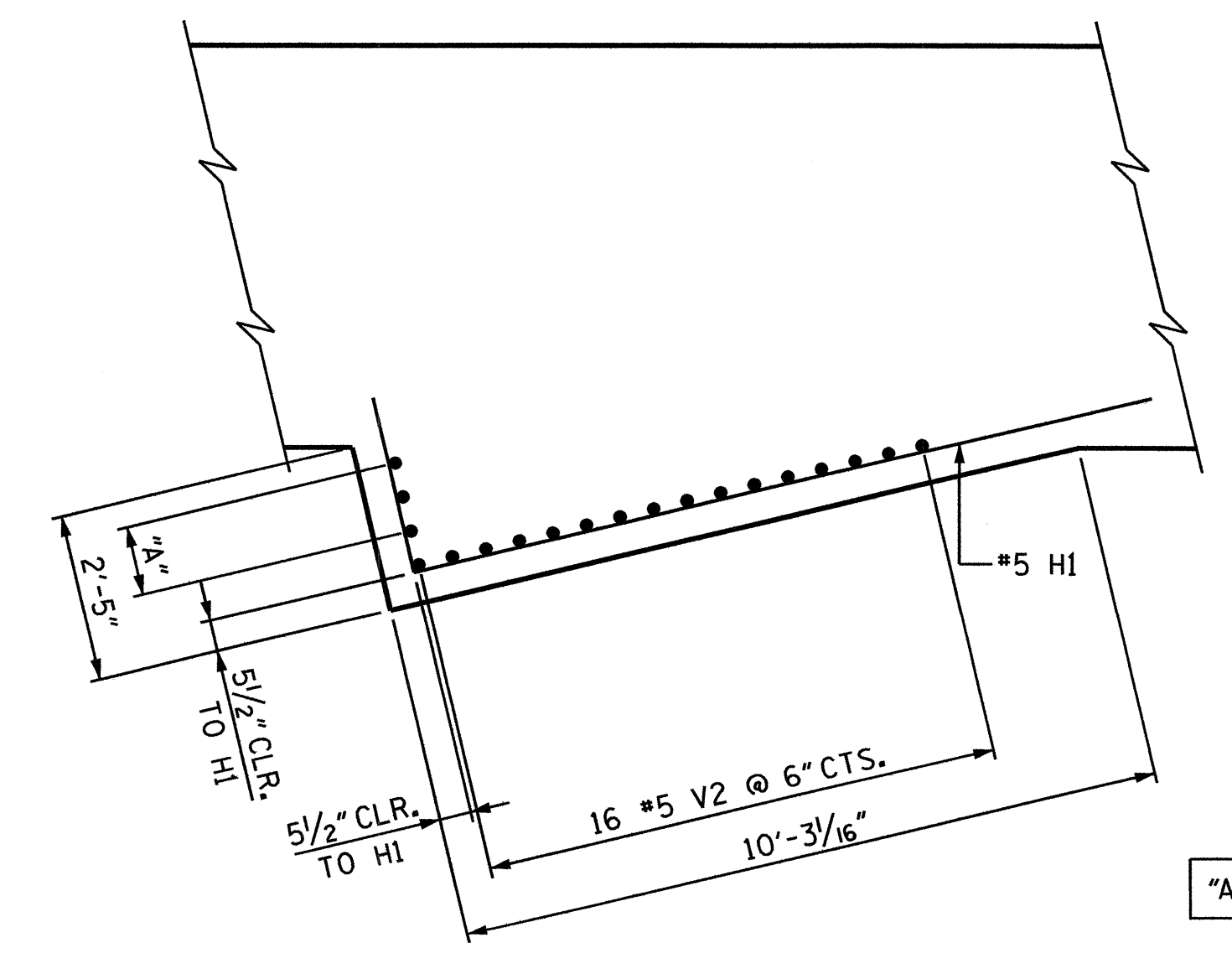
SECTION E-E



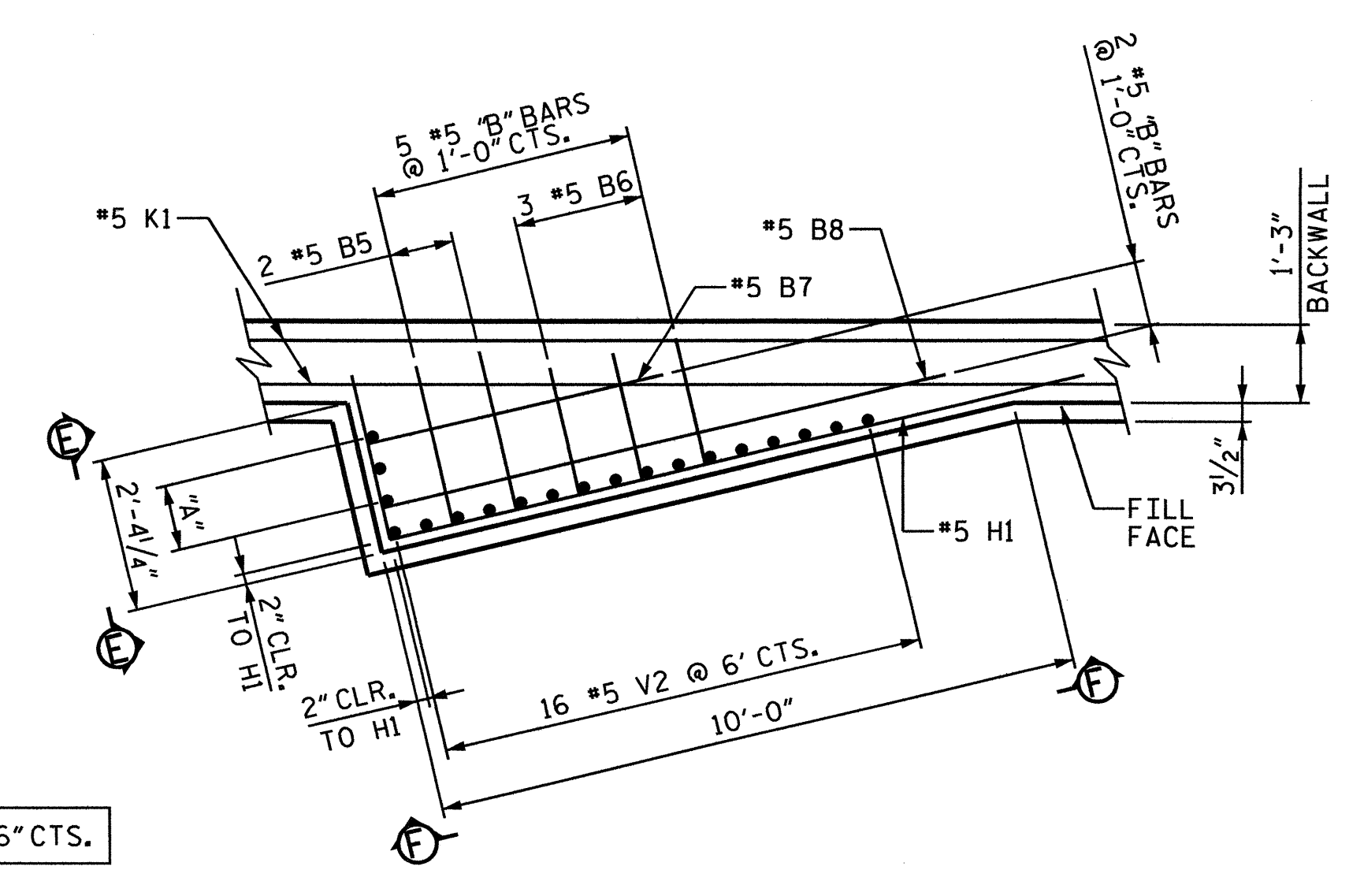
SECTION F-F



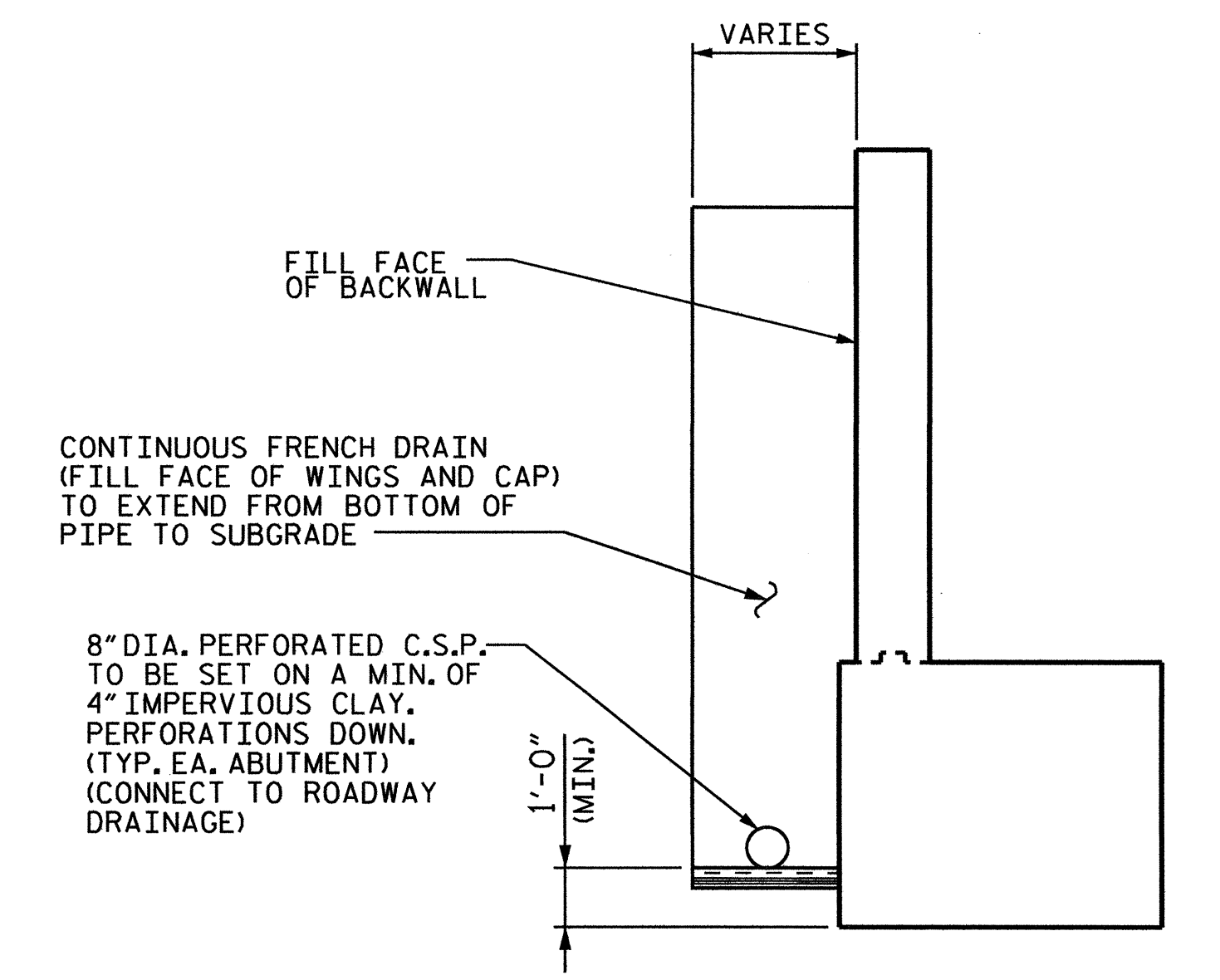
* POSITION OF PILE DURING WELDING
PILE SPLICE DETAILS



SECTION C-C
(REINFORCEMENT TOP OF CAP EXTENSION)



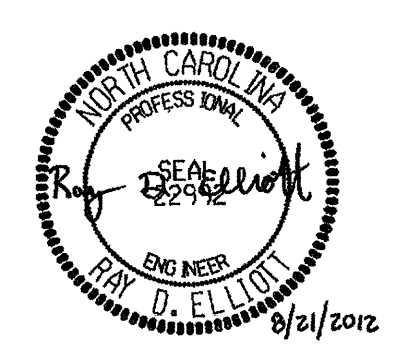
SECTION D-D
(REINFORCEMENT TOP OF BACKWALL EXTENSION)



DRAINAGE AT ABUTMENTS
ABUTMENT 1 SHOWN, ABUTMENT 2 SIMILAR

SHEET 3 OF 5

NO.	BY	DATE	REVISION

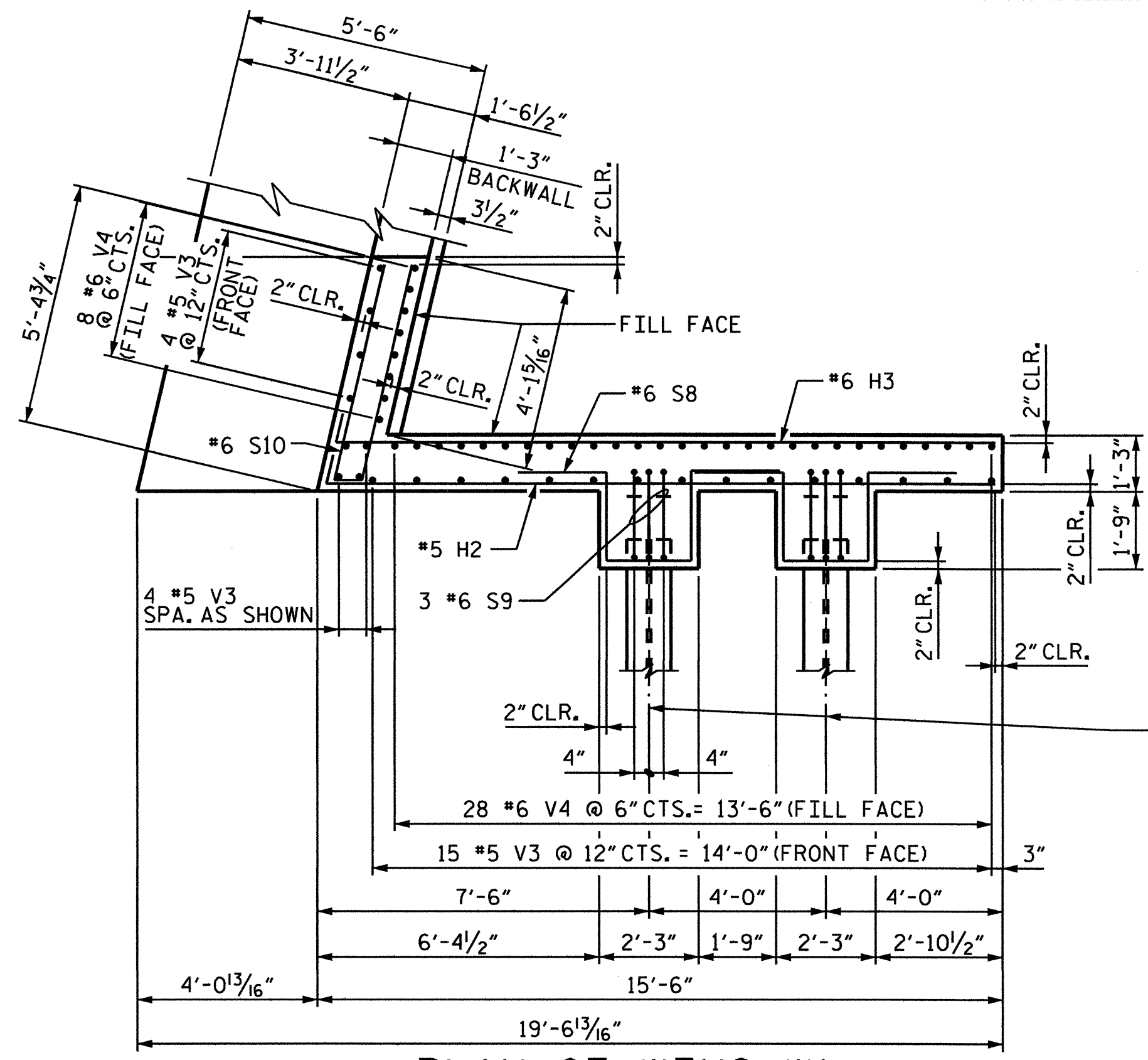


NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

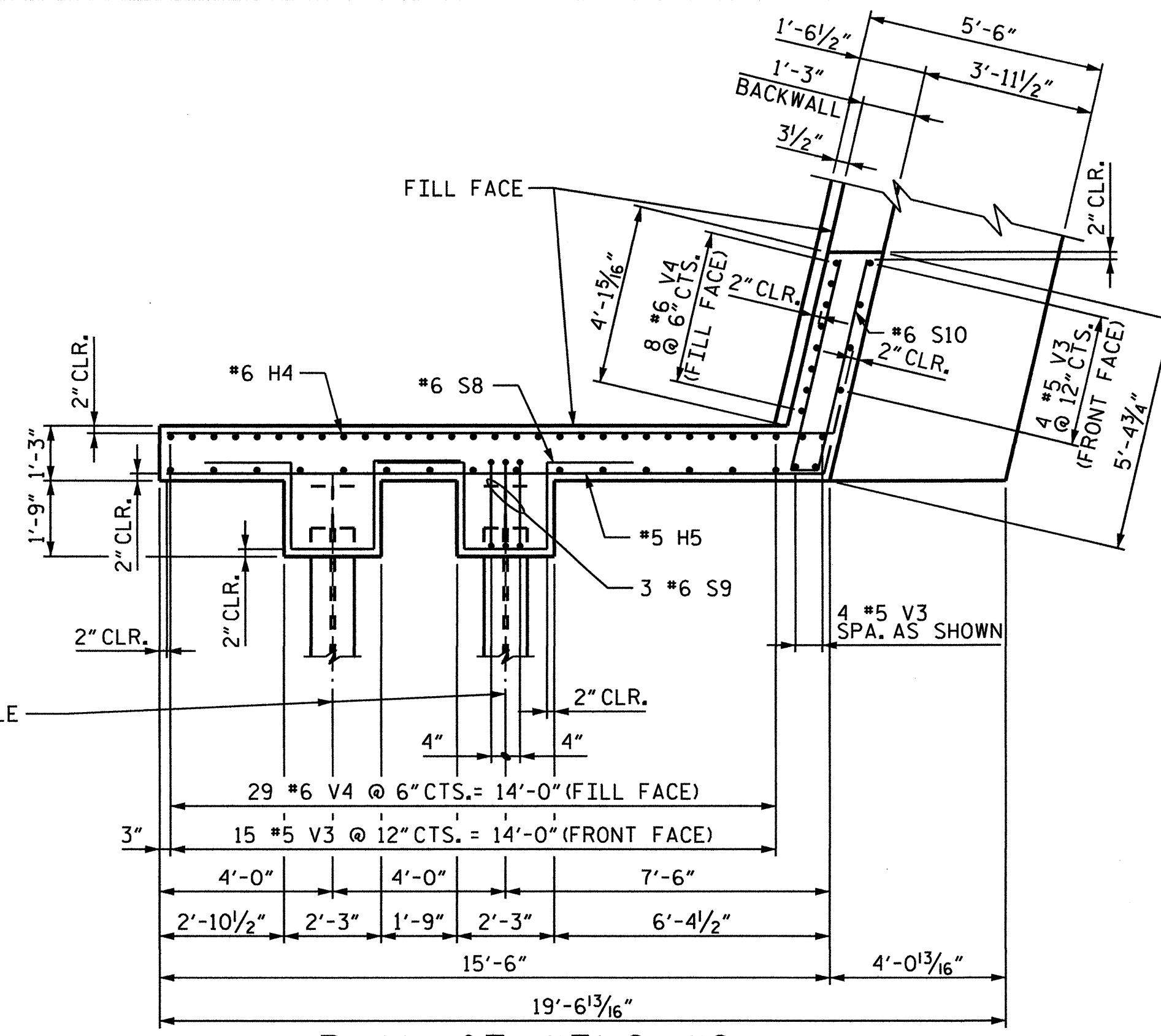
ENGINEERING & SAFETY BRANCH

MAIL: 1256 MAIL SERVICE CENTER, RALEIGH, NC 27699-1556
DELIVERY: 650 CAPITAL BOULEVARD, RALEIGH, NC 27603
PHONE: (919) 715-8803
FAX: (919) 715-8804

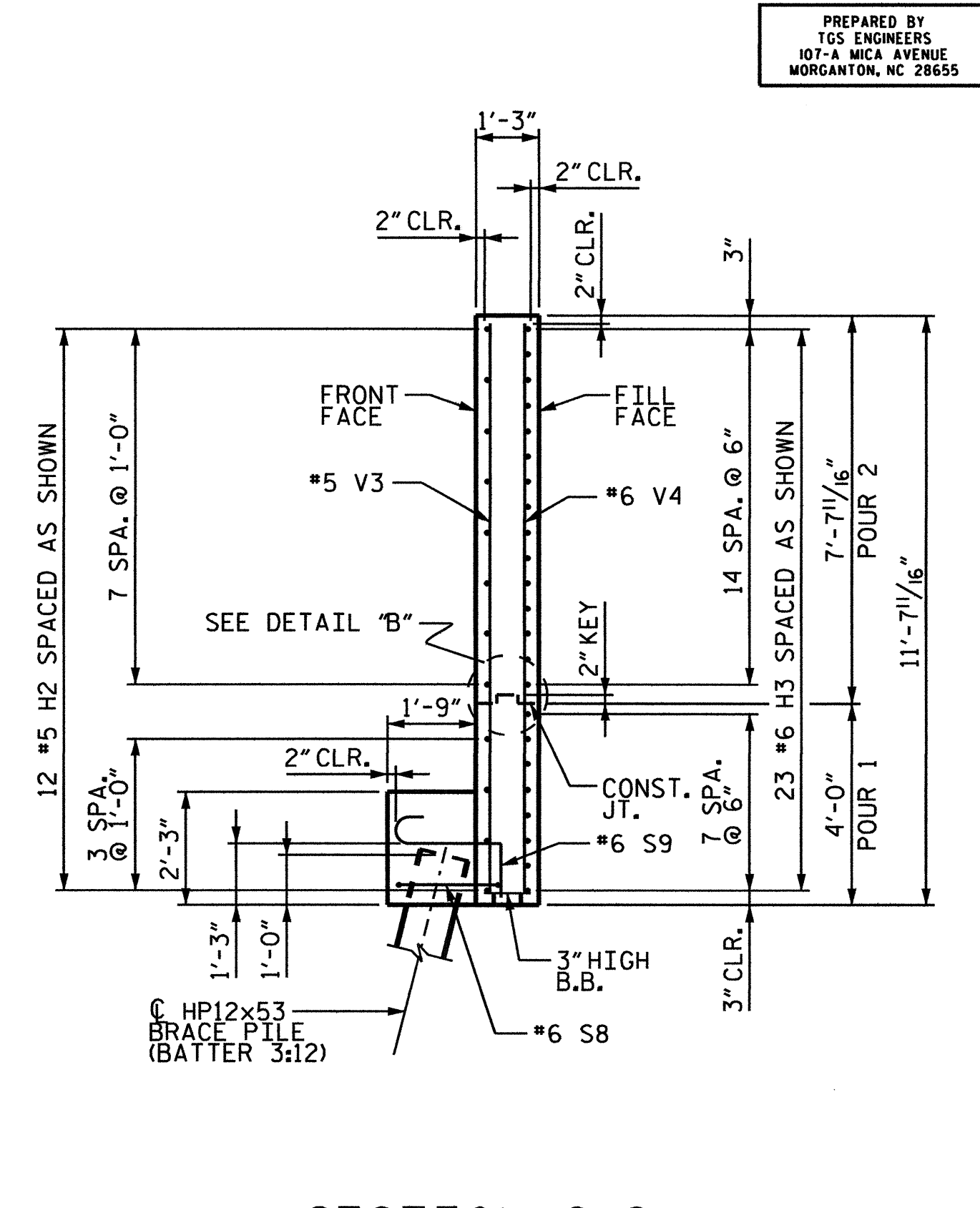
PROJECT	U-3459 - KLUMAC ROAD		
TITLE	ABUTMENT 1 BACKWALL EXTENSION DETAILS		
LOCATION	SALISBURY-SR 2541 (KLUMAC RD) of NCRRA'S		
DGN BY	RDE	RAILROAD	NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
DWN BY	JLA	VAL SEC	V-8
CHK BY	NMW	DATE	5/12
SCALE	7/16" = 1'-0"		
MILE POST	MP 335.2		
SHEET 28 OF 51			



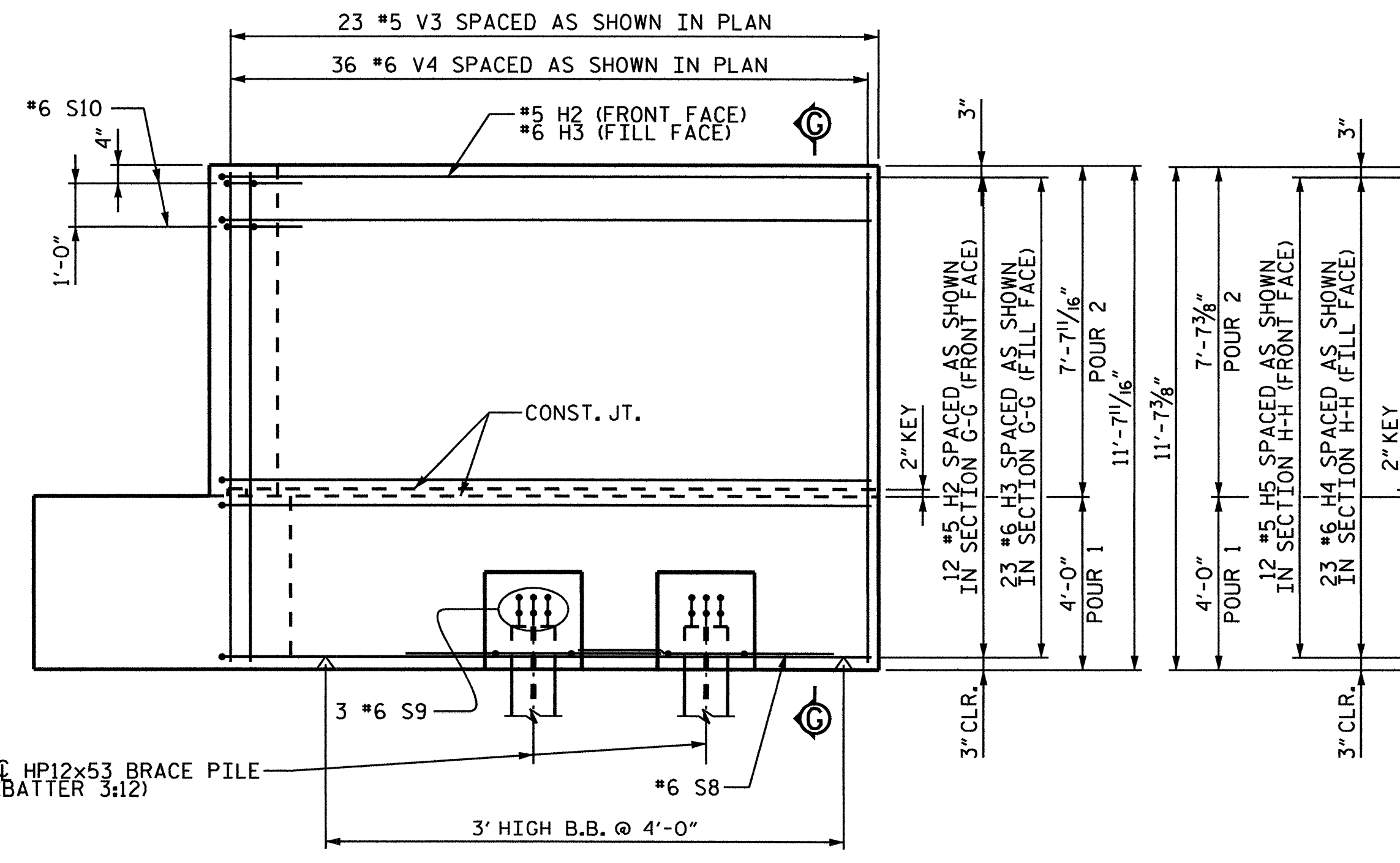
PLAN OF WING W1



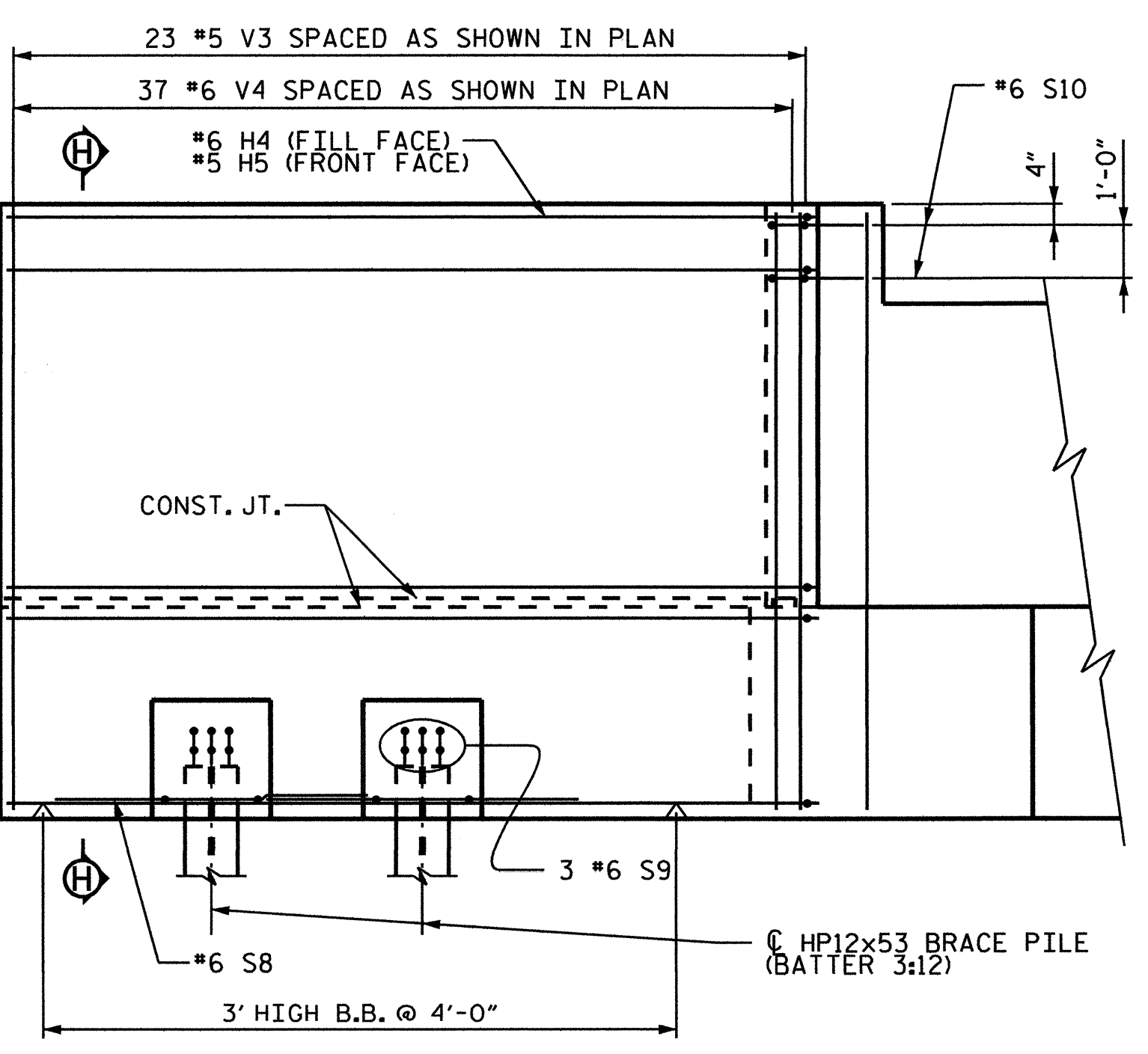
PLAN OF WING W2



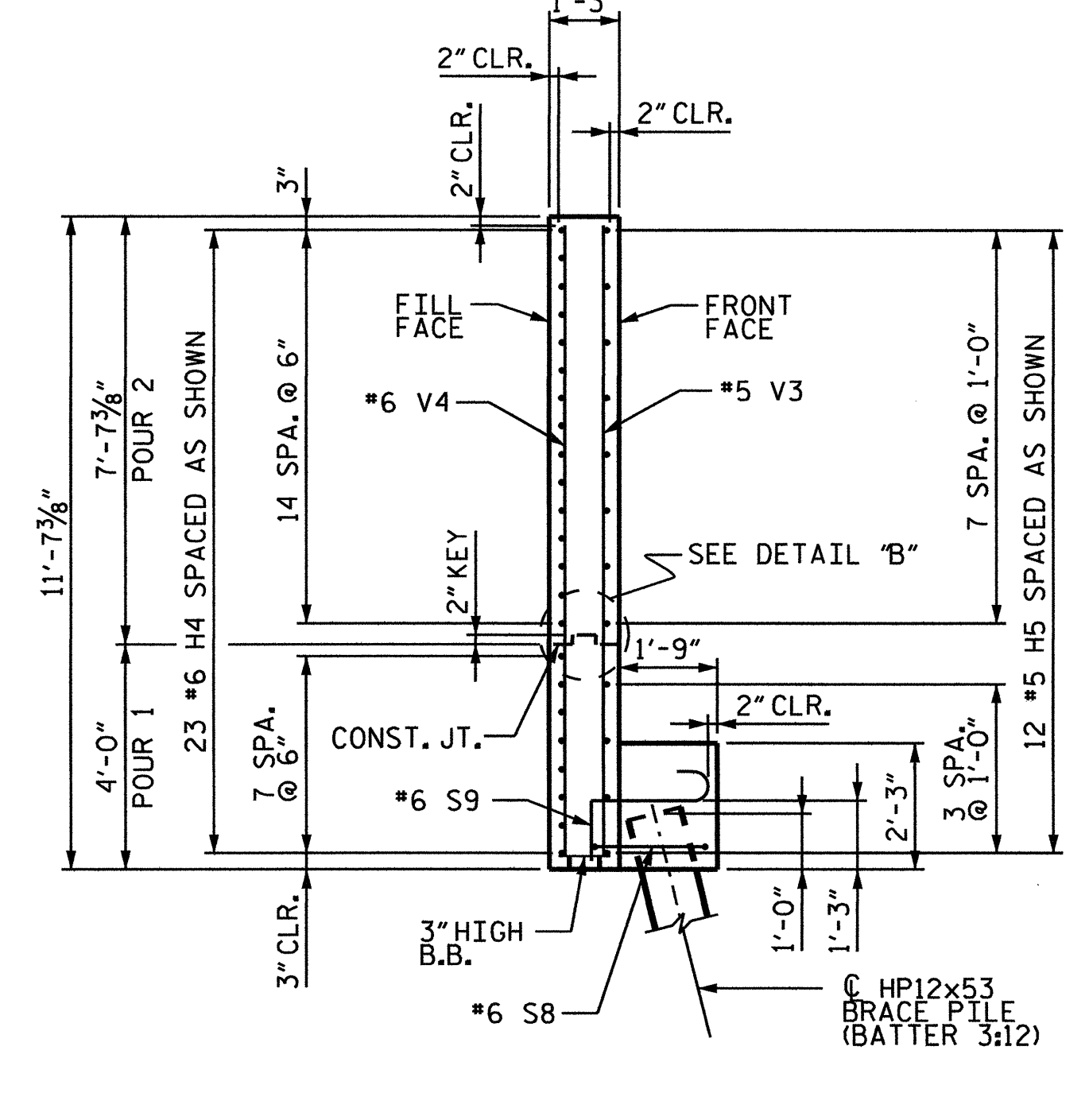
SECTION G-G



ELEVATION W1



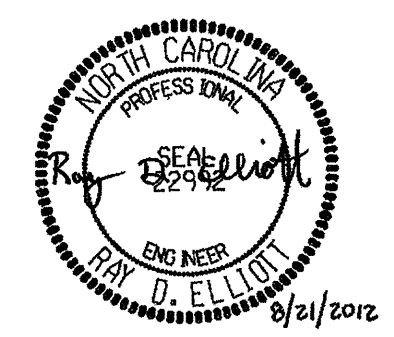
ELEVATION W2



SECTION H-H

*****SYTIME*****

NO.	BY	DATE	REVISION



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

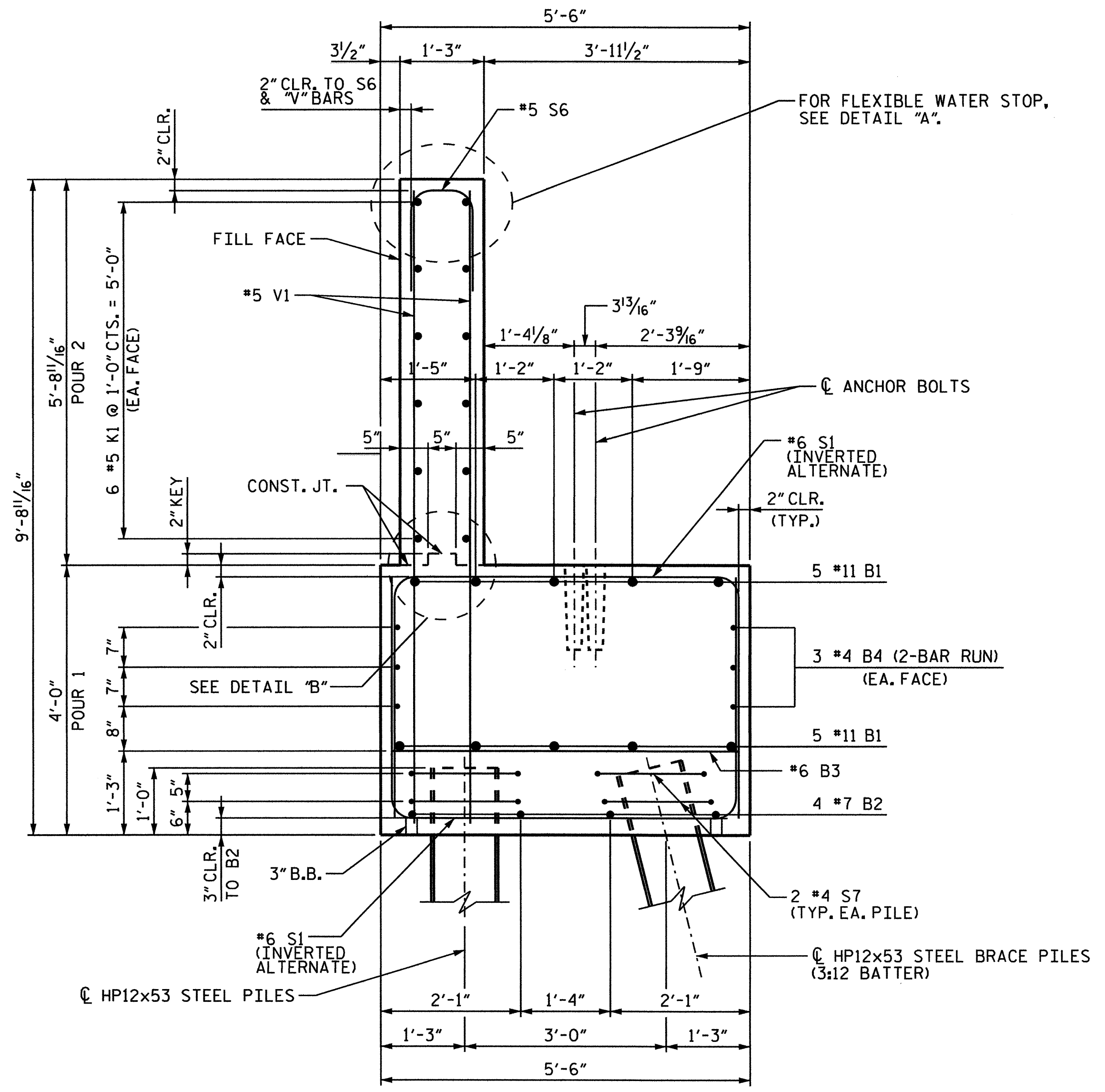
PREPARED BY: **ENGINEERING & SAFETY BRANCH**

MAIL: 1506 MAIL SERVICE CENTER, RALEIGH, NC 27603
DELIVERY: 600 CAPITAL BUILDING, RALEIGH, NC 27603
PHONE: (919) 715-2803
FAX: (919) 715-3804

PROJECT	U-3459 - KLUMAC ROAD		
TITLE	ABUTMENT 1 WING DETAILS		
LOCATION	SALISBURY-SR 2541 (KLUMAC RD) at NCR RN5		
DGN BY	RDE	RAILROAD	NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
DWN BY	JLA	VAL SEC	V-8
CHK BY	NMW	DATE	5/12
MILE POST	MP 335.2	SCALE	3/8" = 1'-0"
SHEET 29 OF 51			

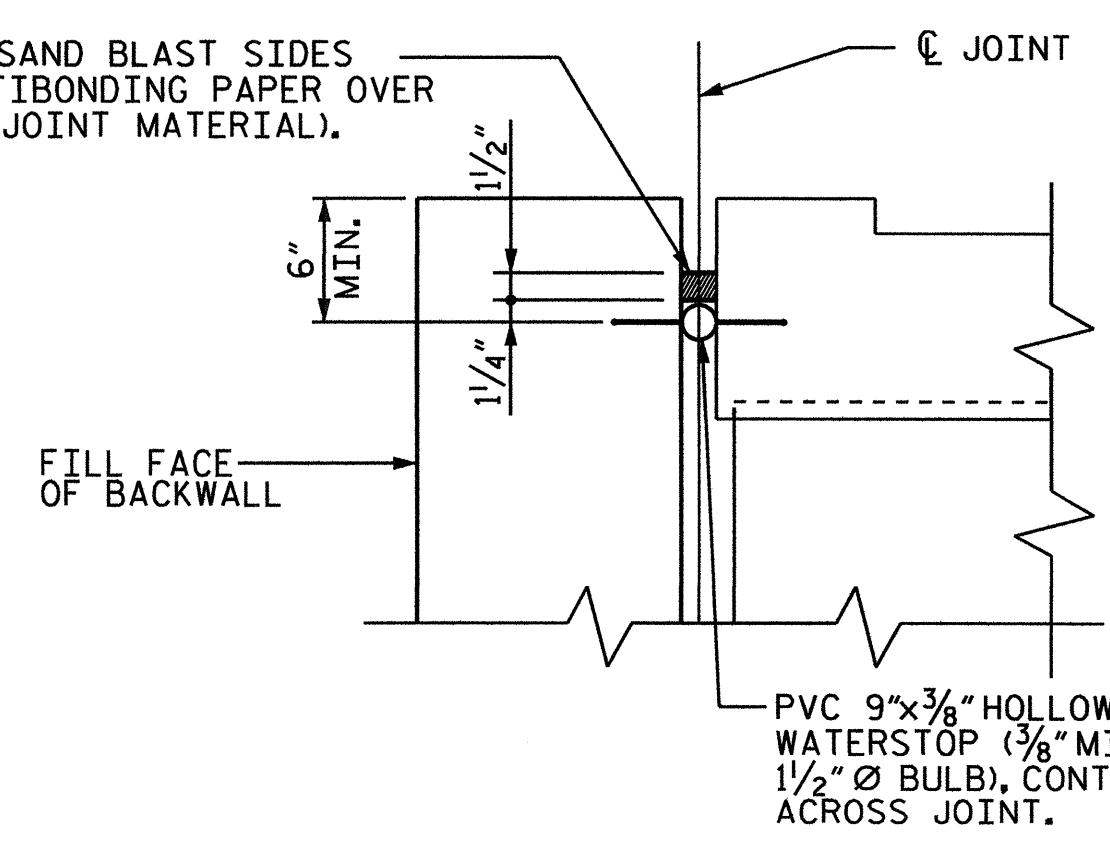
0302DEL_P12

PREPARED BY
TGS ENGINEERS
107-A MICA AVENUE
MORGANTON, NC 28655

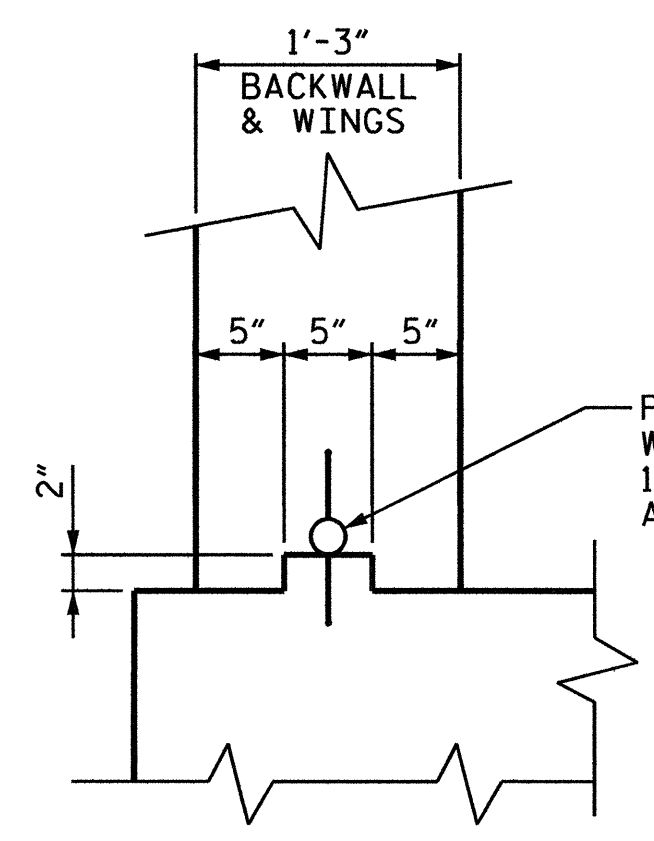


SECTION A-A

RUBBER JT. COMPOUND (SAND BLAST SIDES OF JOINT & PLACE ANTIBONDING PAPER OVER BULB BEFORE POURING JOINT MATERIAL).

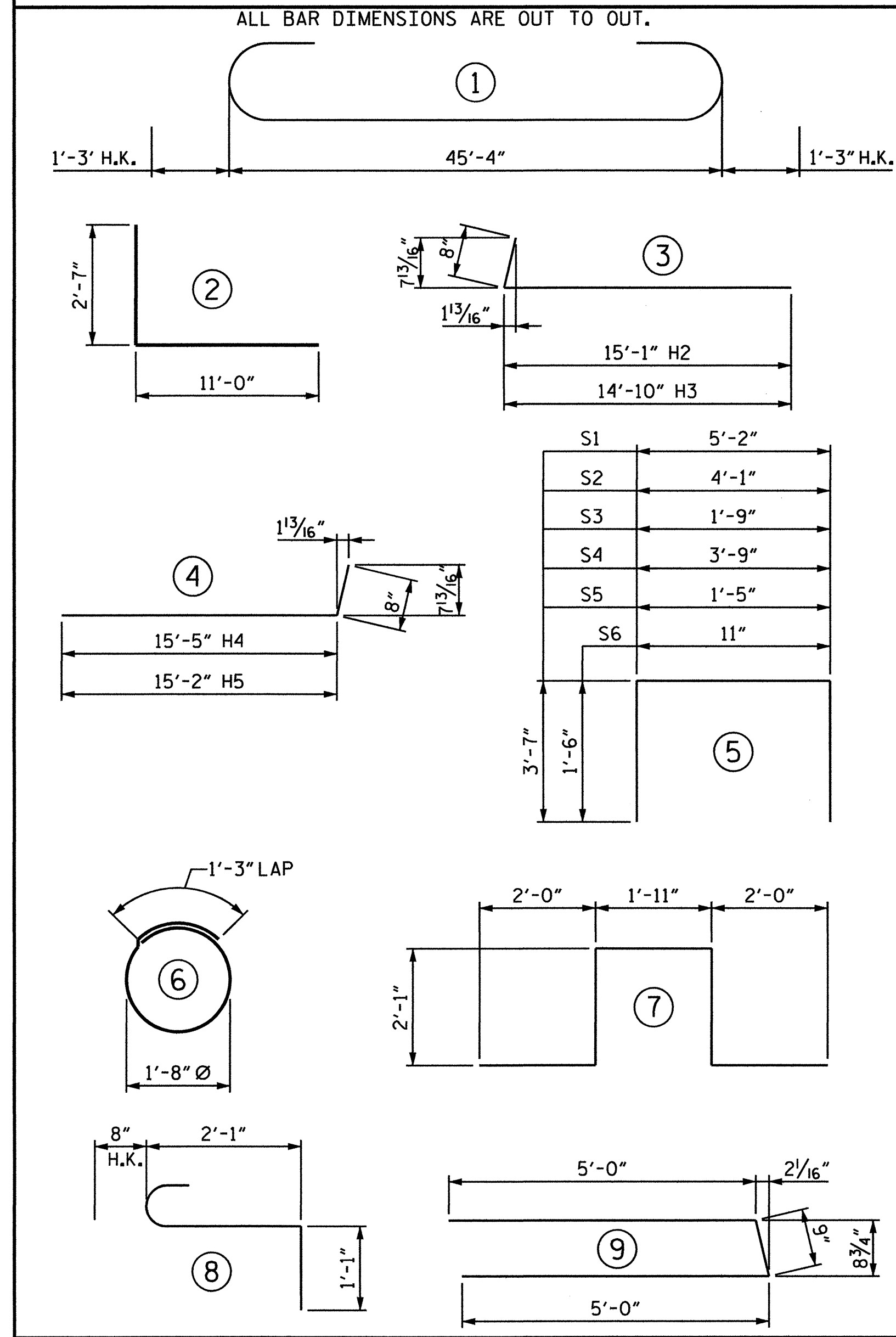


DETAIL "A"



DETAIL "B"

BAR TYPES



REINFORCING STEEL SCHEDULE FOR ABUTMENT 1

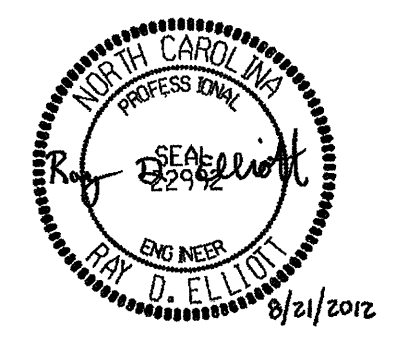
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	1	47'-10"	2,541
B2	4	#7	STR.	45'-4"	371
B3	23	#6	STR.	5'-2"	178
B4	12	#4	STR.	23'-11"	192
B5	4	#5	STR.	2'-6"	10
B6	6	#5	STR.	2'-0"	13
B7	2	#5	STR.	4'-8"	10
B8	2	#5	STR.	8'-11"	19
H1	36	#5	2	13'-7"	510
H2	12	#5	3	15'-9"	197
H3	23	#6	3	15'-6"	535
H4	23	#6	4	16'-1"	556
H5	12	#5	4	15'-10"	198
K1	12	#5	STR.	45'-4"	567
S1	74	#6	5	12'-4"	1,371
S2	1	#6	5	11'-3"	17
S3	1	#6	5	8'-11"	13
S4	1	#6	5	10'-11"	16
S5	1	#6	5	8'-7"	13
S6	70	#5	5	3'-11"	286
S7	36	#4	6	6'-6"	156
S8	4	#6	7	10'-1"	61
S9	12	#6	8	3'-10"	69
S10	4	#6	9	10'-9"	65
V1	140	#5	STR.	9'-4"	1,363
V2	38	#5	STR.	9'-2"	363
V3	46	#5	STR.	11'-3"	540
V4	73	#6	STR.	11'-3"	1,234

BILL OF MATERIAL - QUANTITIES FOR ABUTMENT 1

TOTAL REINFORCING STEEL	11,464 LBS.
CLASS AA CONCRETE	
POUR 1 (CAP & WINGS)	47.2 CU. YDS.
POUR 2 (BACKWALL, BACKWALL EXT. & WINGS)	27.8 CU. YDS.
TOTAL CLASS AA CONCRETE	75.0 CU. YDS.
HP12x53 STEEL PILES	NO. = 22 1584

SHEET 5 OF 5

NO.	BY	DATE	REVISION



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: **ENGINEERING & SAFETY BRANCH**

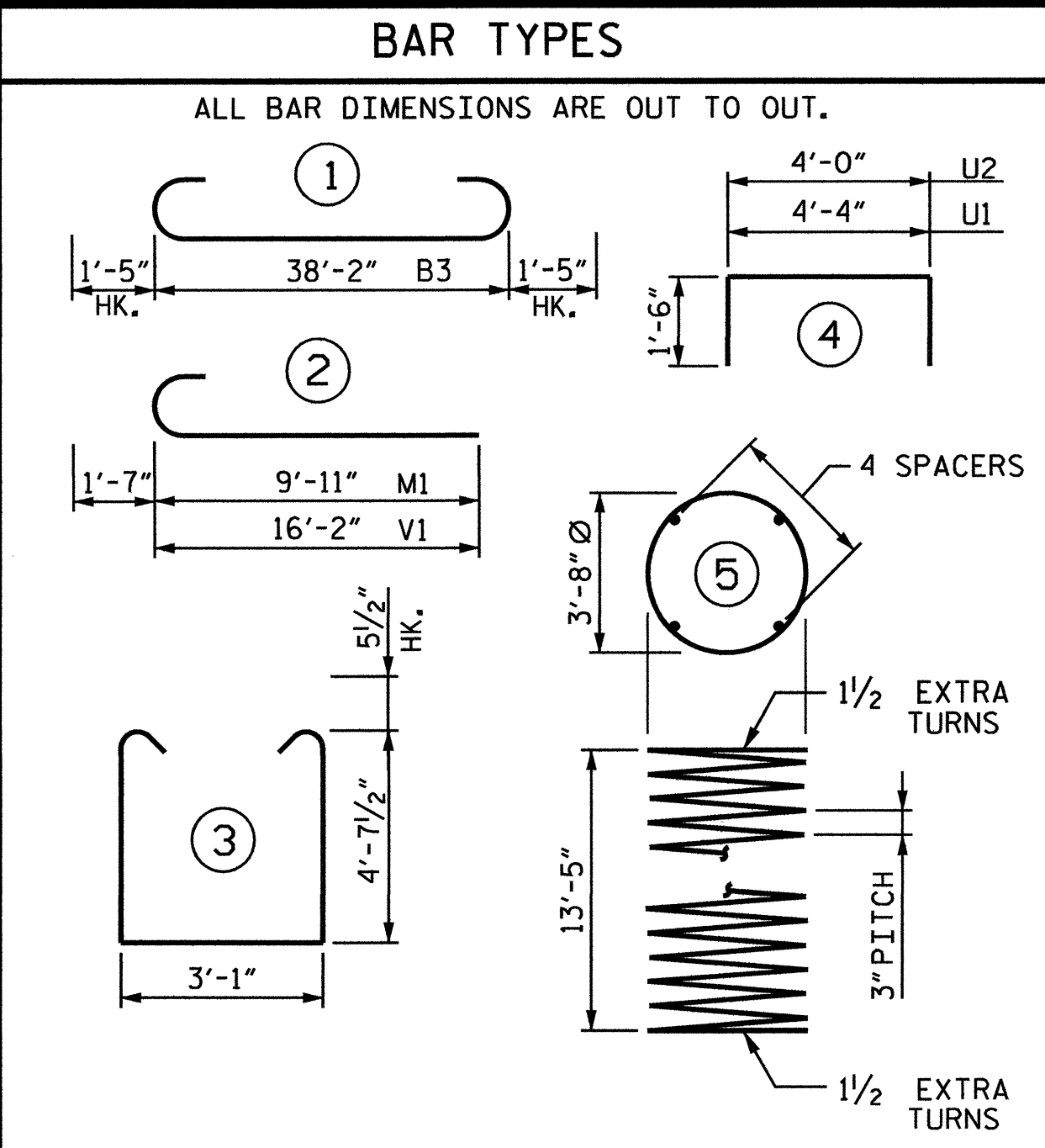
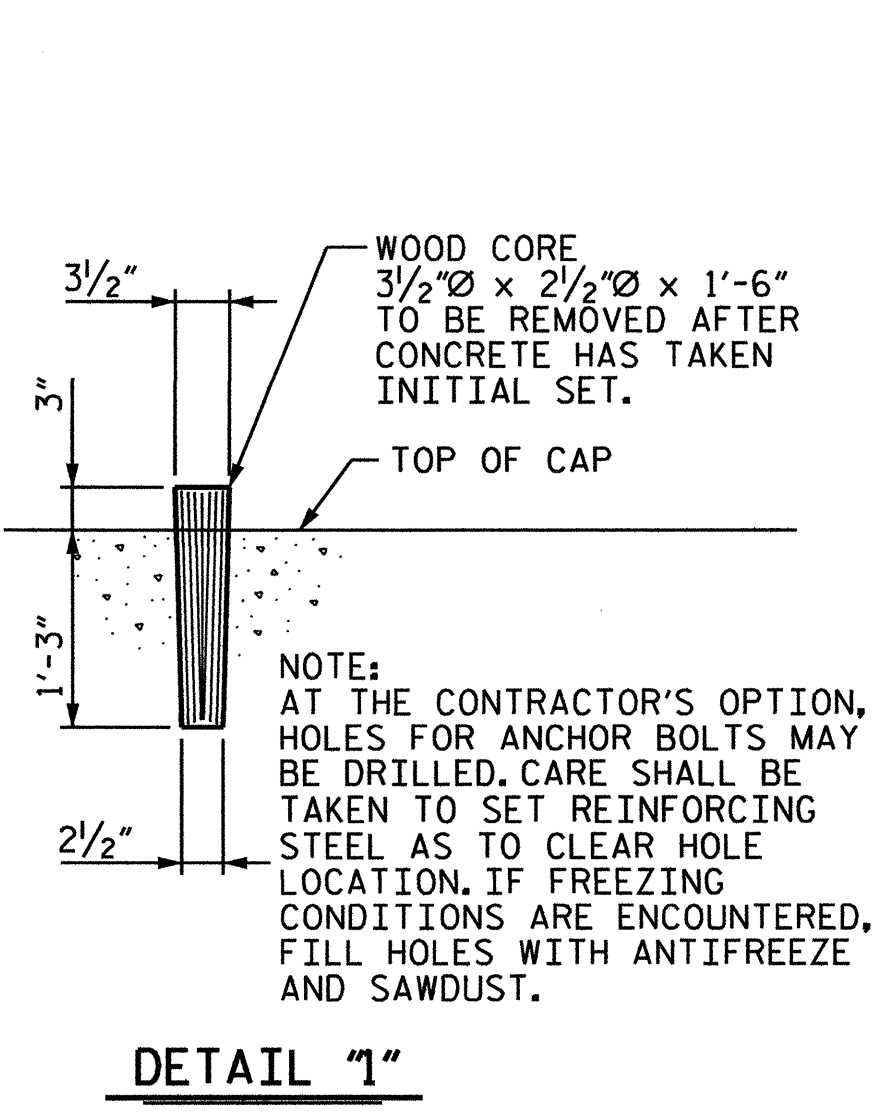
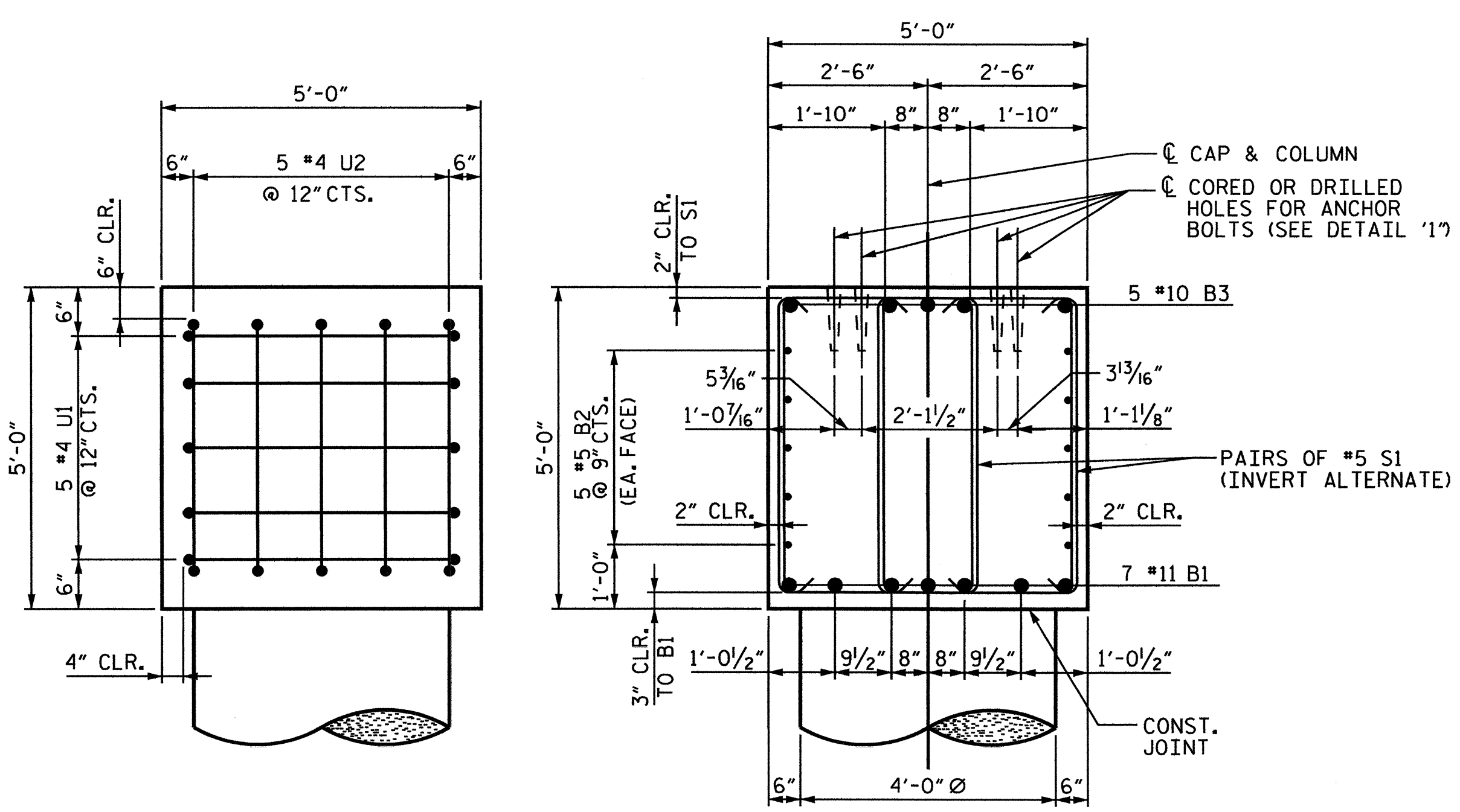
MAIL: 1056 MAIL SERVICE CENTER, RALEIGH, NC 27603
DELIVERY: 850 CAPITAL BOULEVARD, RALEIGH, NC 27603
PHONE: (919) 715-8903 FAX: (919) 715-8804

PROJECT: U-3459 - KLUMAC ROAD
TITLE: **ABUTMENT 1 DETAILS**

LOCATION: SALISBURY-SR 2541 (KLUMAC RD) of NCRRNS
DGN BY: RDE RAILROAD: NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN MILE POST: MP 335.2
DWN BY: JLA VAL SEC: V-8
CHK BY: NAW DATE: 5/12 SCALE: 3/4" = 1'-0"

SHEET 30 OF 51

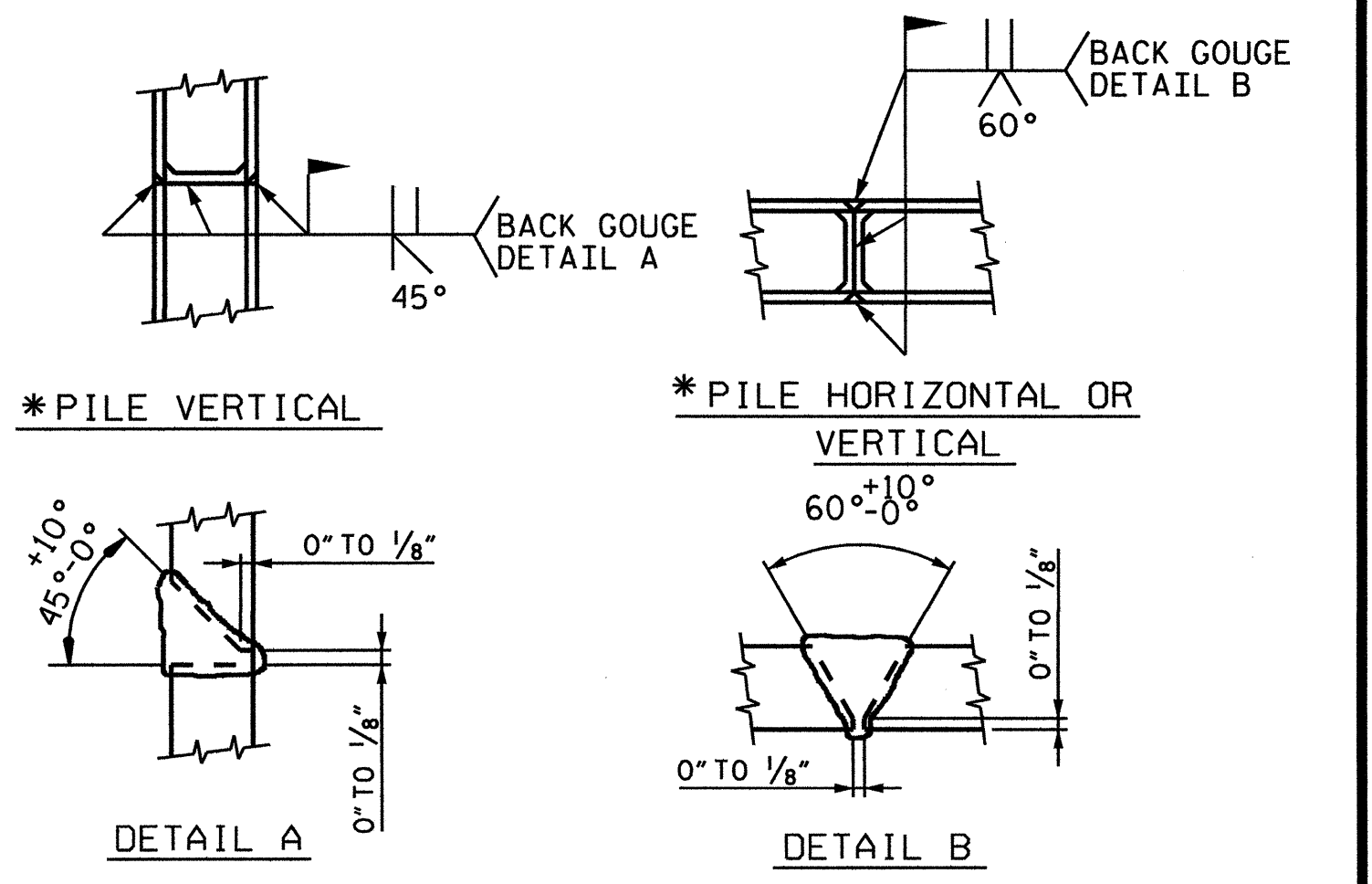
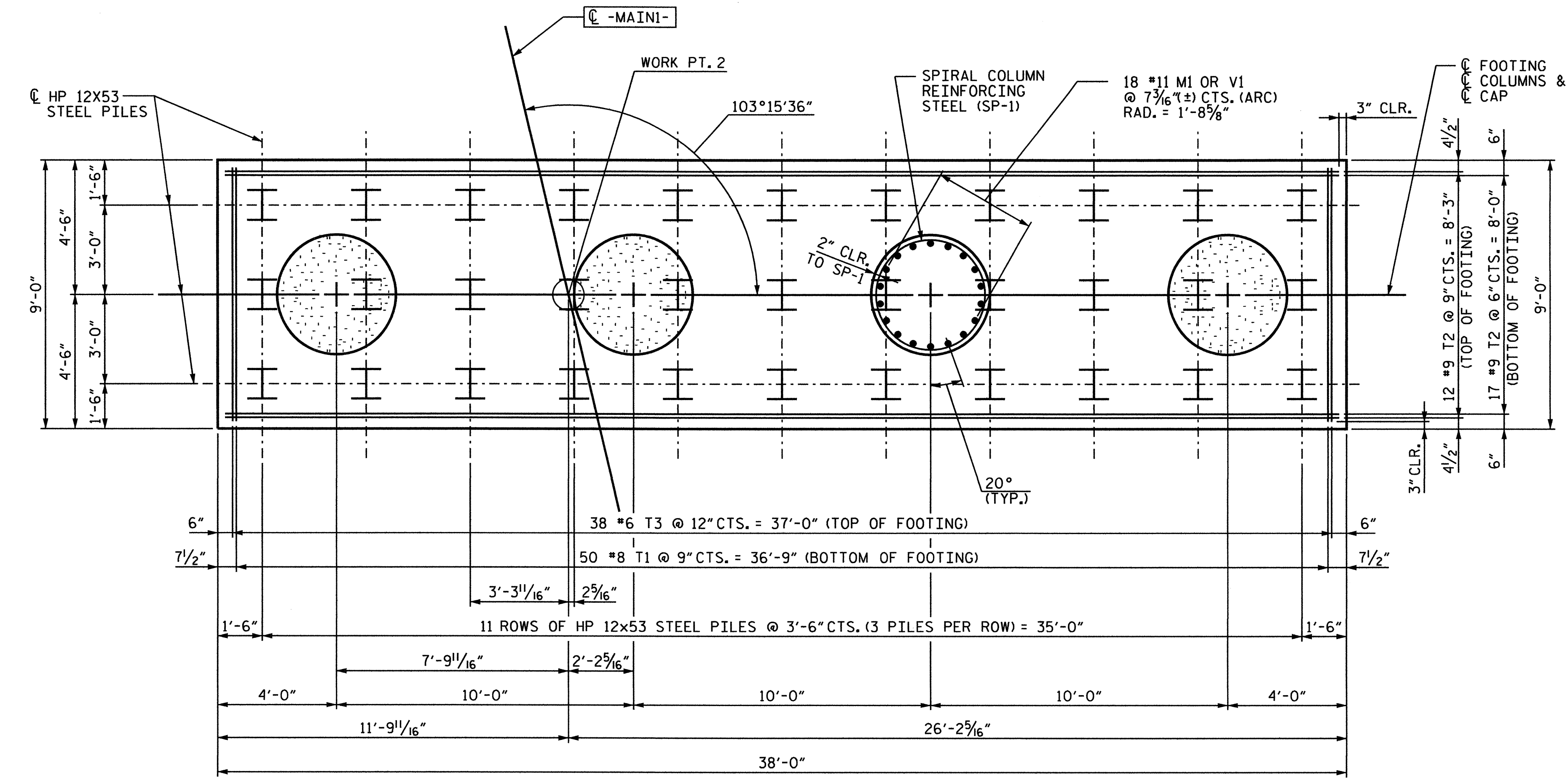
0302DEL_P12



* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

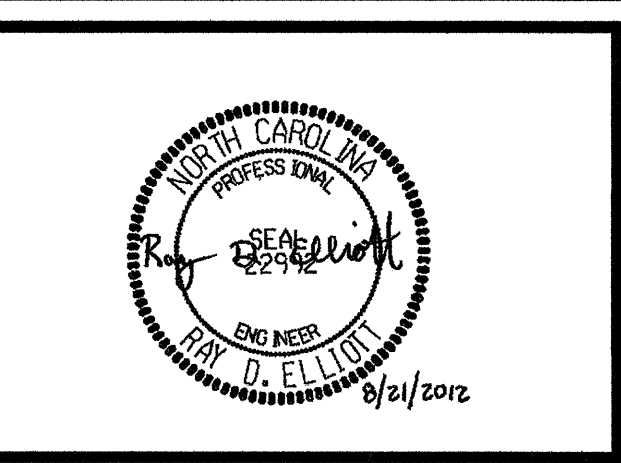
REINFORCING STEEL SCHEDULE					
PIER 1					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	7	#11	STR.	38'-2"	1,420
B2	10	#5	STR.	38'-2"	398
B3	5	#10	1	41'-0"	882
M1	72	#11	2	11'-6"	4,399
S1	88	#5	3	13'-3"	1,216
T1	50	#8	STR.	8'-6"	1,135
T2	29	#9	STR.	37'-6"	3,698
T3	38	#6	STR.	8'-6"	485
U1	10	#4	4	7'-4"	49
U2	10	#4	4	7'-0"	47
V1	72	#11	2	17'-9"	6,790
SP-1	4	**	5	645'-11"	1,726

QUANTITY SUMMARY	
TOTAL REINFORCING STEEL - LBS.	20,519
SPIRAL COLUMN REIN. STEEL - LBS.	1,726
CLASS AA CONCRETE :	
POUR 1 (FOOTINGS)	50.7 CU. YDS.
POUR 2 (COLUMNS)	24.5 CU. YDS.
POUR 3 (CAP)	35.6 CU. YDS.
TOTAL CLASS AA CONCRETE :	110.8 CU. YDS.
HP 12x53 STEEL PILES	
NO. = 33	LIN. FT. = 1,386
FOUNDATION EXCAVATION	LUMP SUM



* POSITION OF PILE DURING WELDING
PILE SPLICE DETAILS

NO.	BY	DATE	REVISION



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

ENGINEERING & SAFETY BRANCH

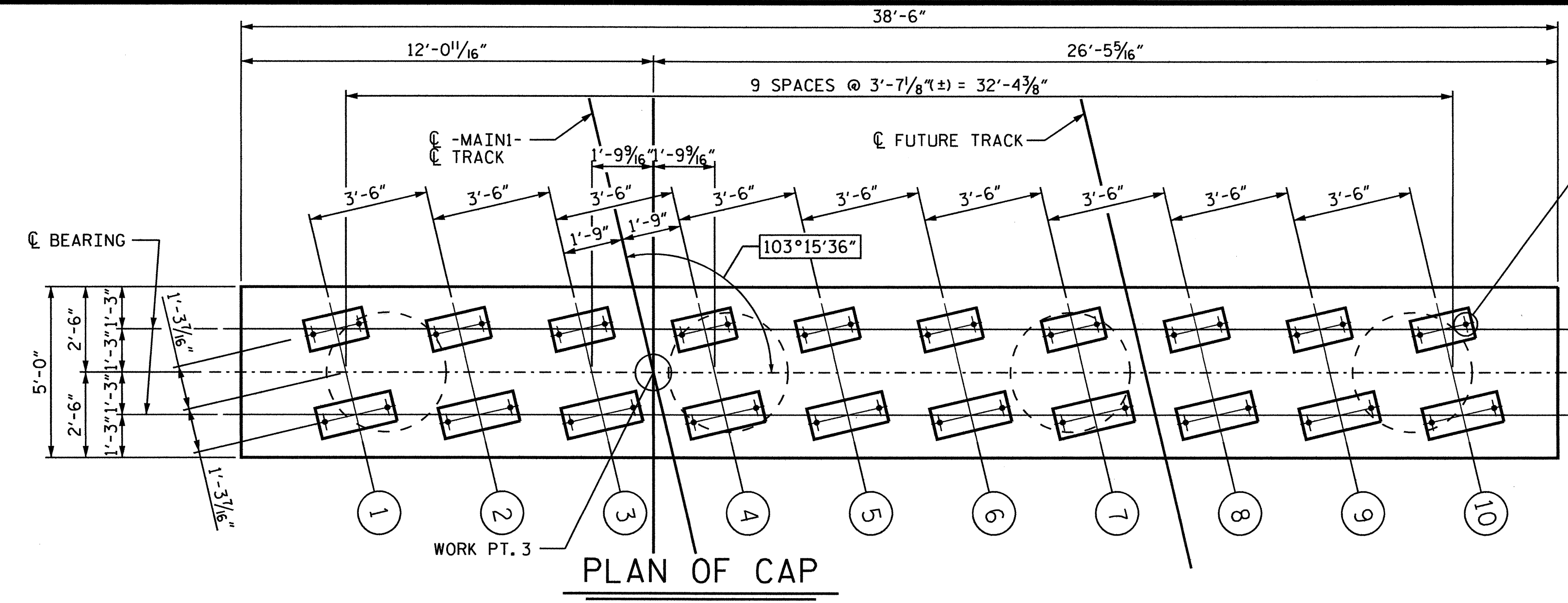
PREPARED BY: [Signature]

MAIL: 1556 MAIL SERVICE CENTER RALEIGH, NC 27699-1556
DELIVERY: 860 CAPITAL BOULEVARD RALEIGH, NC 27603
PHONE: (919) 715-8903 FAX: (919) 715-8804

PROJECT	U-3459 - KLUMAC ROAD		
TITLE	PIER 1 DETAILS AND BILL OF MATERIALS		
LOCATION	SALISBURY-SR 2541 (KLUMAC RD) of NCR/RNS		
DGN BY	CPB	RAILROAD	NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
DWN BY	JLA	VAL SEC	V-8
CHK BY	NNW	DATE	5/12
MILE POST	MP 335.2		
SCALE	3/8" = 1'-0"		
SHEET 32 OF 51			

0302DEL_P12

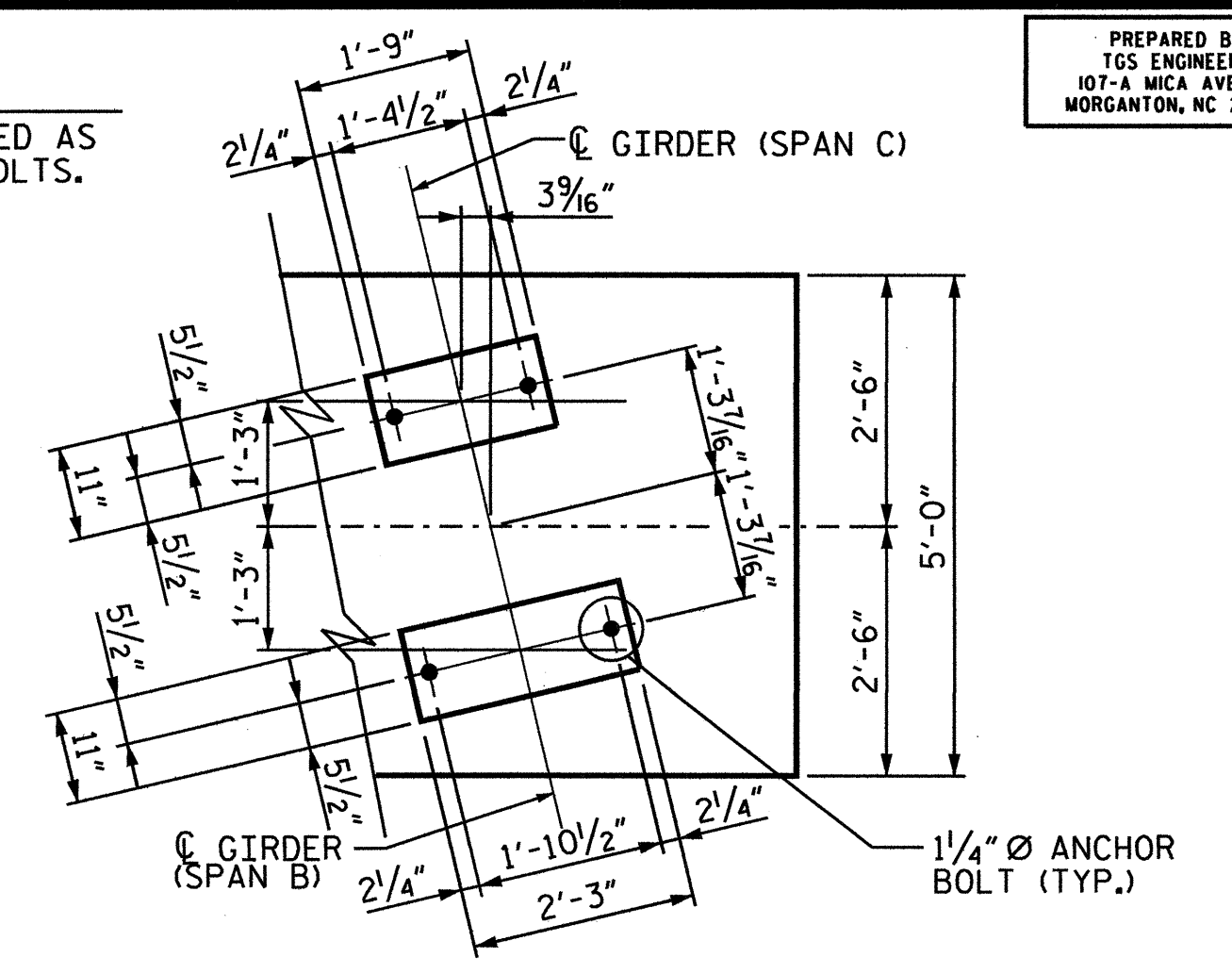
PREPARED BY
TGS ENGINEERS
107-A MICA AVENUE
MORGANTON, NC 28655



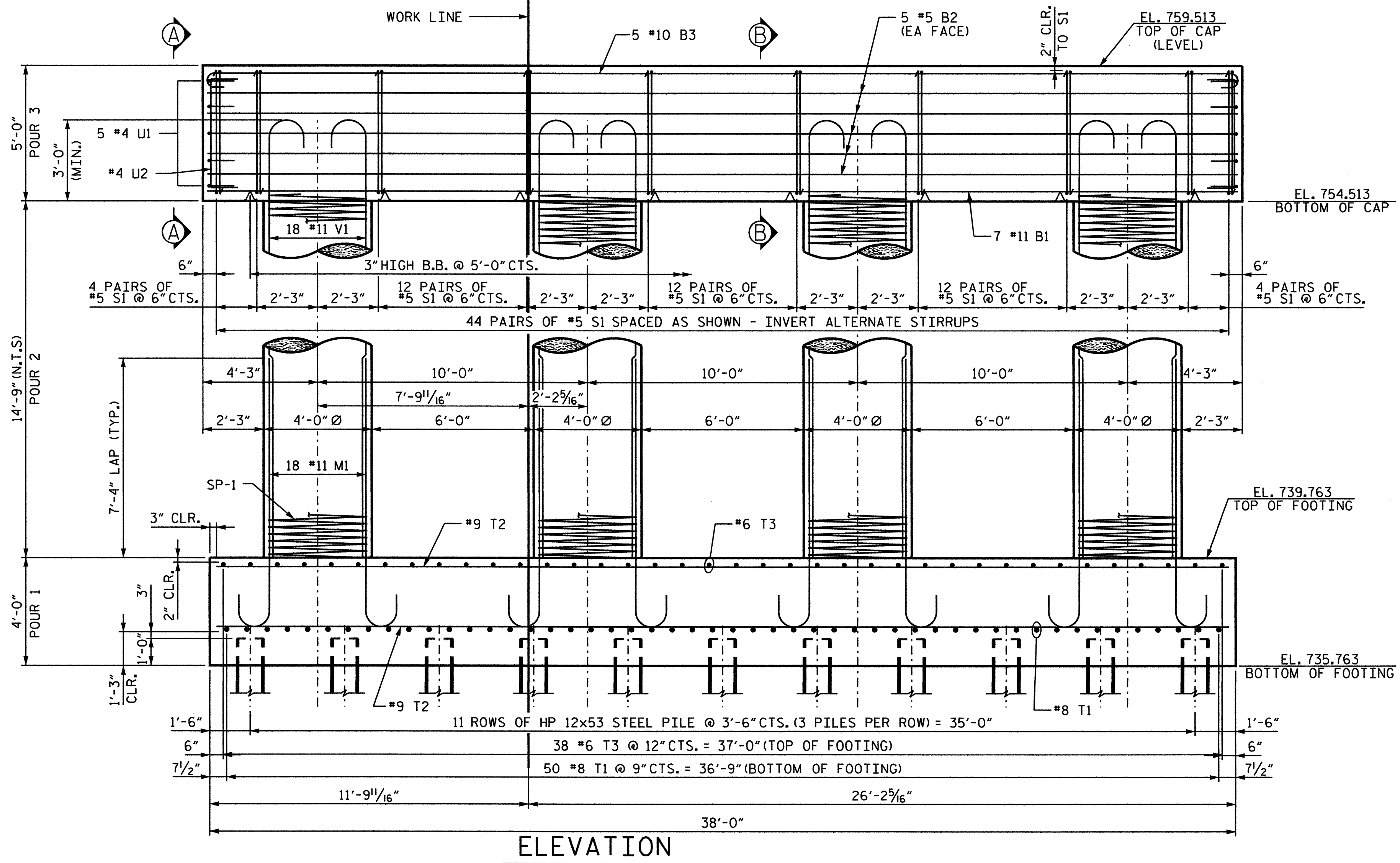
NOTES :
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

CORED OR DRILLED HOLES FOR ANCHOR BOLTS (SEE DETAIL '1')

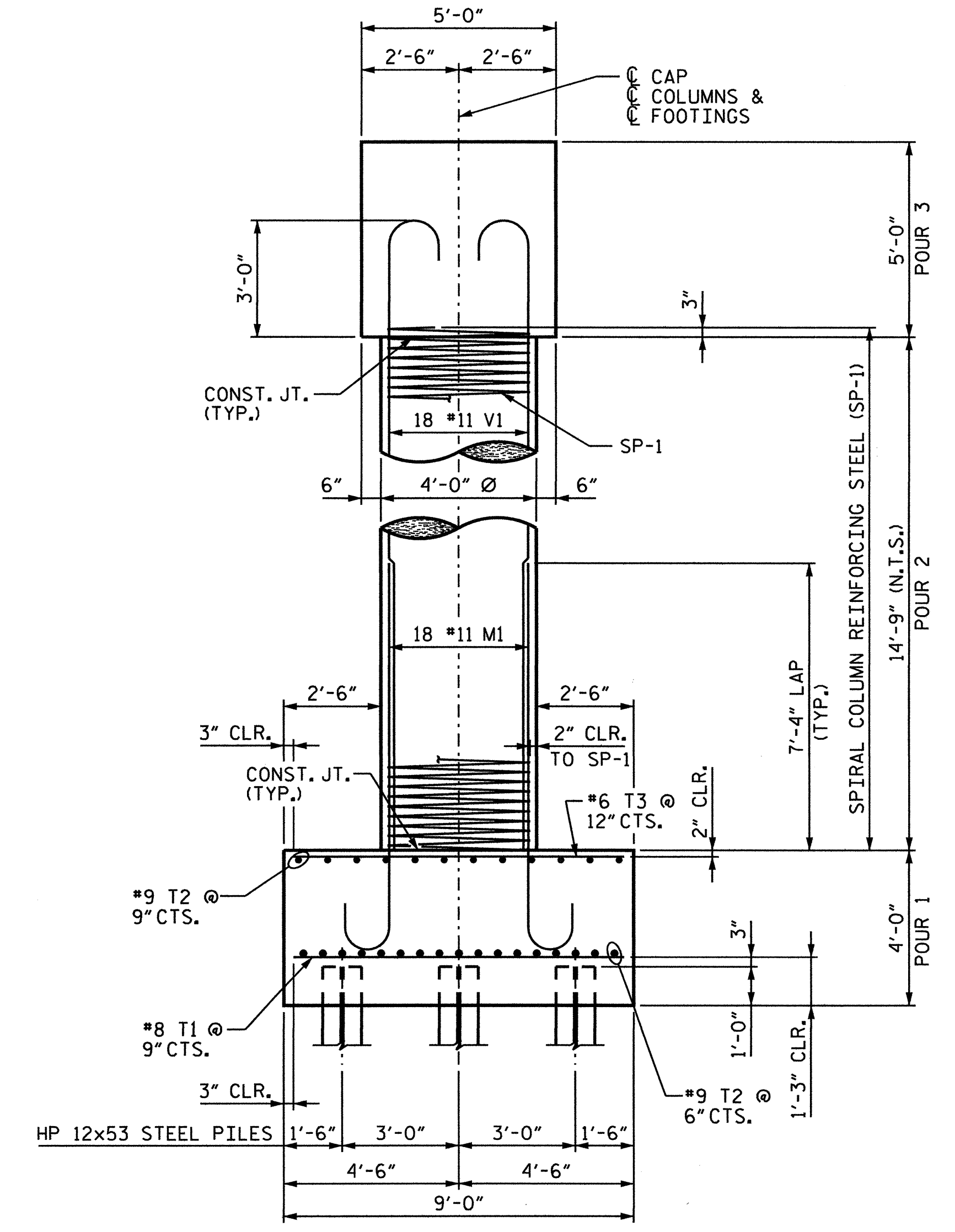
CL CAP COLUMNS & FOOTINGS



DETAIL OF BEARING LAYOUT



ELEVATION

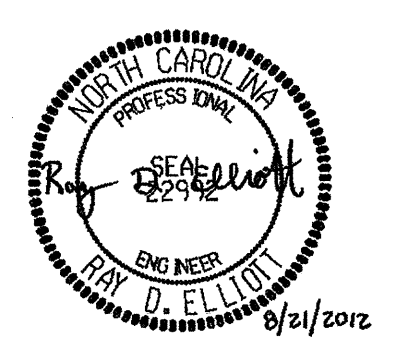


END ELEVATION

SHEET 1 OF 2

*****SYSTEMTIME*****

NO.	BY	DATE	REVISION



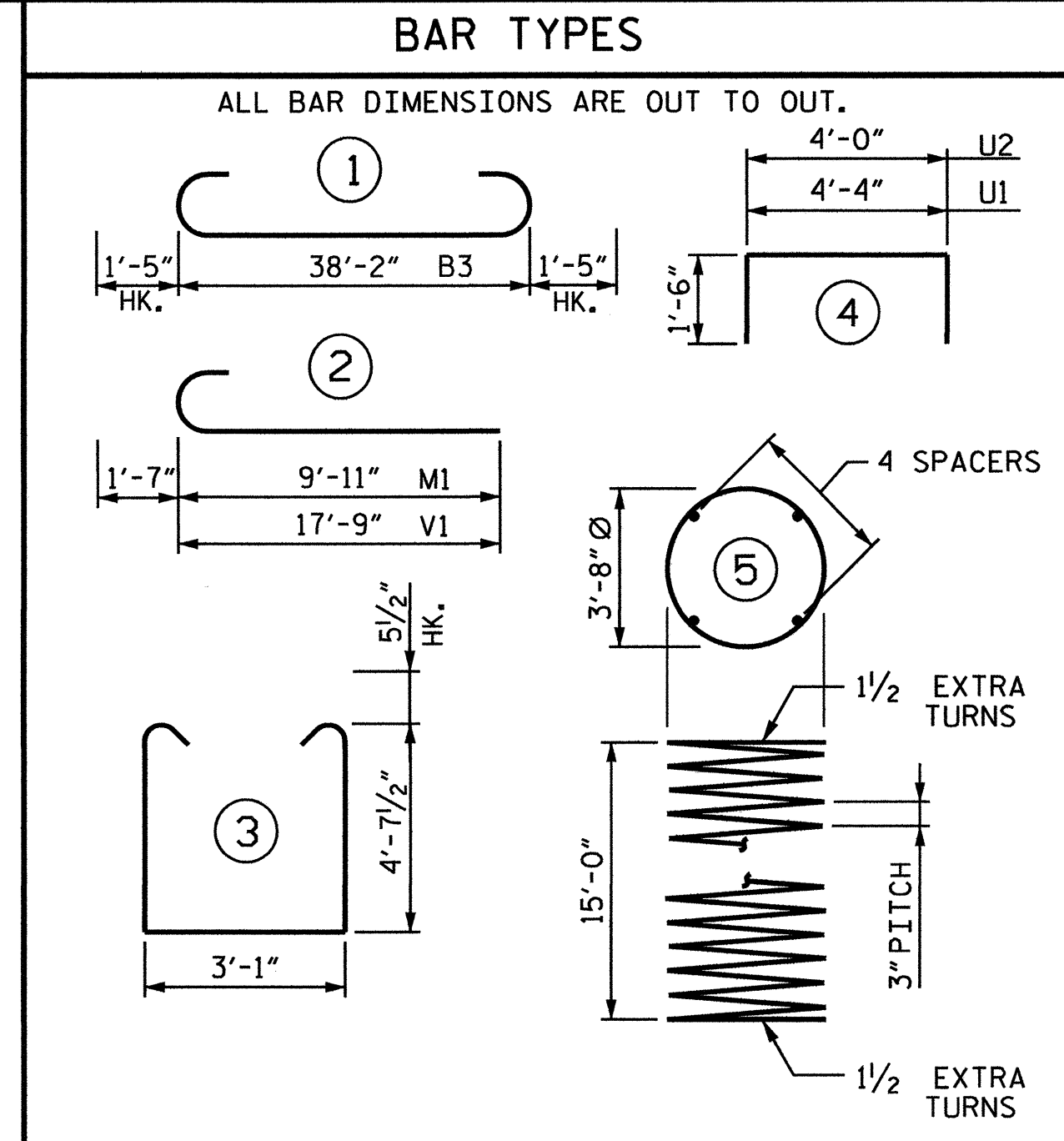
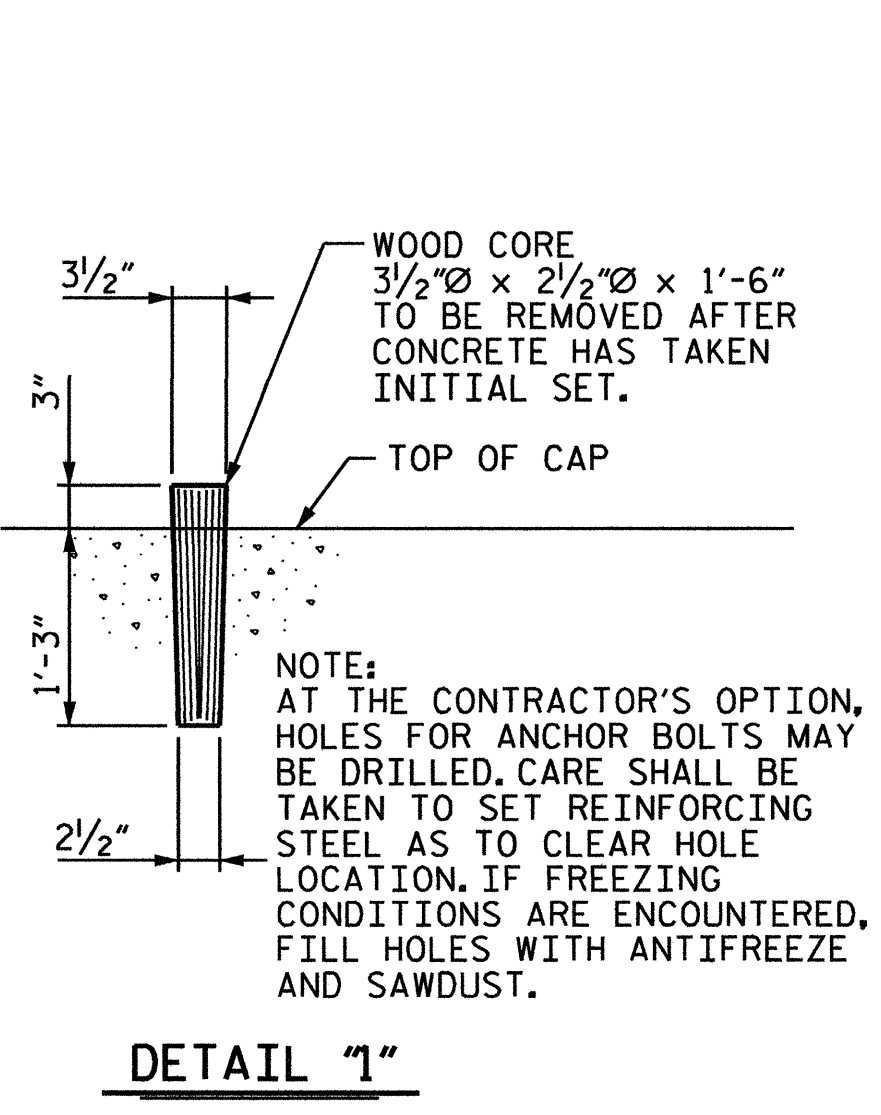
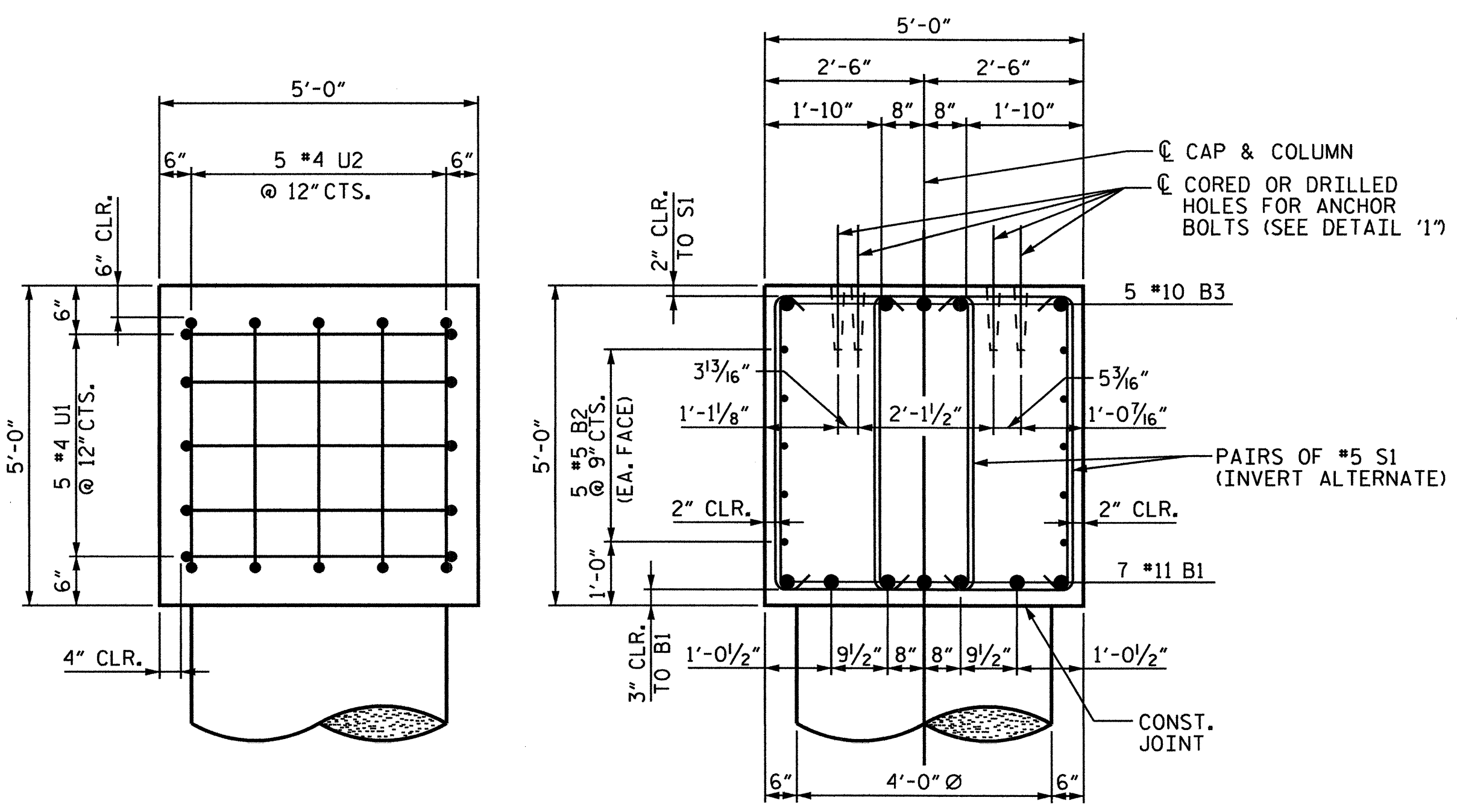
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: **ENGINEERING & SAFETY BRANCH**

MAIL: 1256 MAIL SERVICE CENTER, RALEIGH, NC 27699-2556
DELIVERY: 120 CAPITAL BOULEVARD, RALEIGH, NC 27603
PHONE: 1919 715-8803
FAX: 1919 715-8804

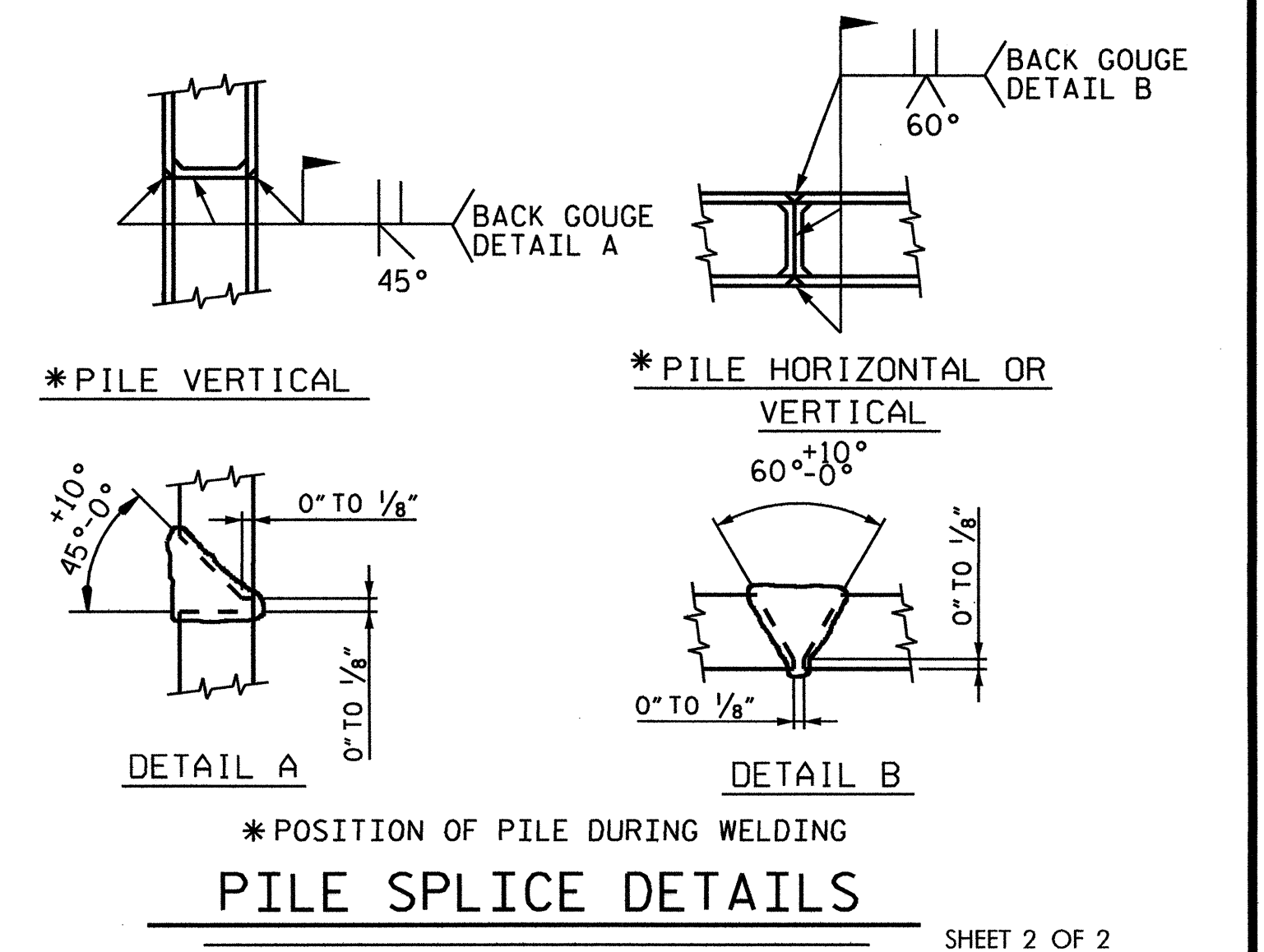
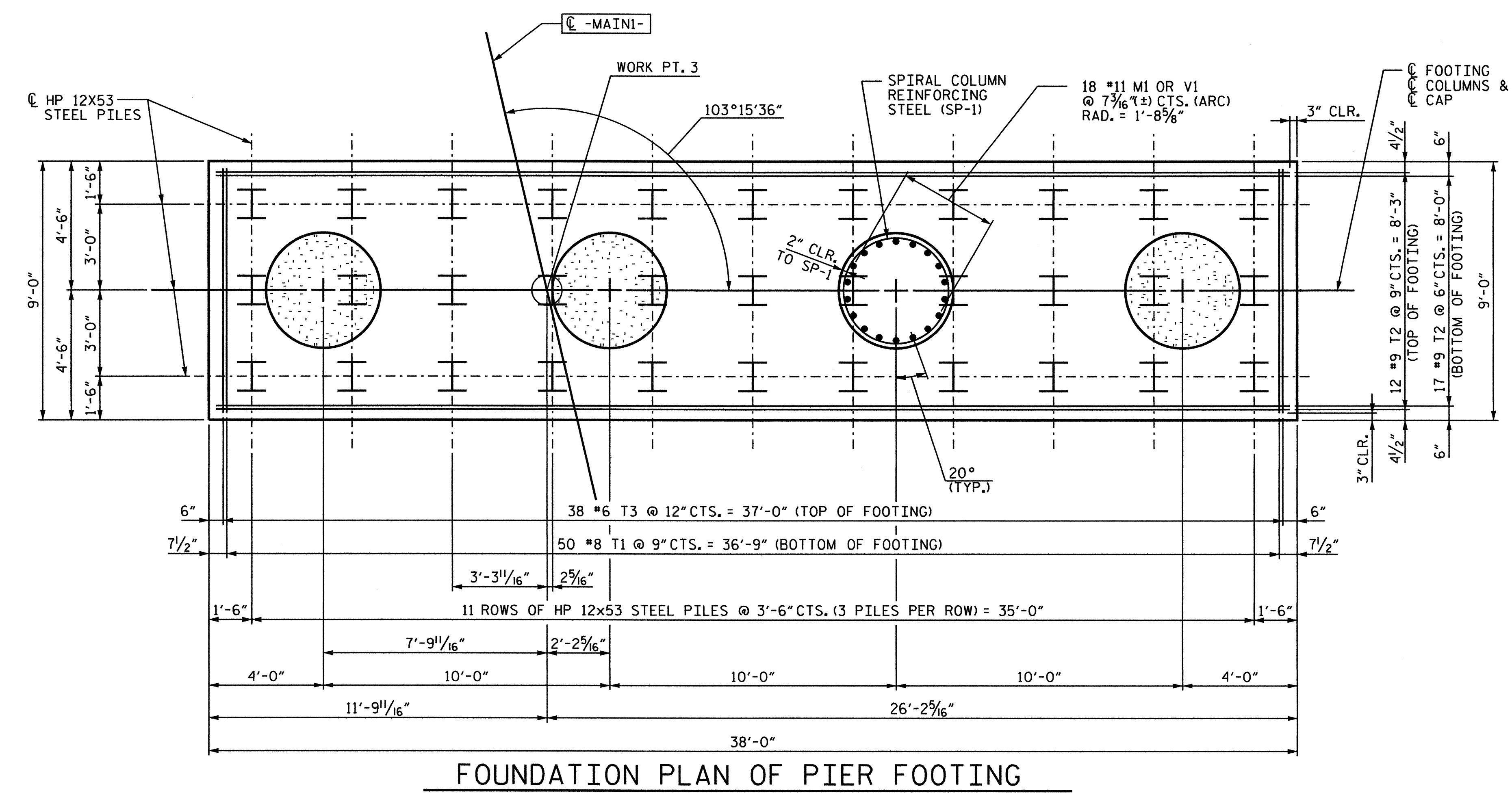
PROJECT	U-3459 - KLUMAC ROAD		
TITLE	PIER 2 PLAN AND ELEVATION		
LOCATION	SALISBURY-SR 2541 (KLUMAC RD) at NCRNNS		
DGN BY	CPB	RAILROAD	NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
DWN BY	JLA	VAL SEC	V-8
CHK BY	NMW	DATE	5/12
MILE POST	MP 335.2		SCALE 3/8" = 1'-0"
SHEET 33 OF 51			

0302DEL_P12



** THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

REINFORCING STEEL SCHEDULE					
PIER 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	7	#11	STR.	38'-2"	1,420
B2	10	#5	STR.	38'-2"	398
B3	5	#10	1	41'-0"	882
M1	72	#11	2	11'-6"	4,399
S1	88	#5	3	13'-3"	1,216
T1	50	#8	STR.	8'-6"	1,135
T2	29	#9	STR.	37'-6"	3,698
T3	38	#6	STR.	8'-6"	485
U1	10	#4	4	7'-4"	49
U2	10	#4	4	7'-0"	47
V1	72	#11	2	19'-4"	7,396
SP-1	4	**	5	717'-8"	1,918
QUANTITY SUMMARY					
TOTAL REINFORCING STEEL - LBS.					21,125
SPIRAL COLUMN REINF. STEEL - LBS.					1,918
CLASS AA CONCRETE :					
POUR 1 (FOOTINGS)					50.7 CU. YDS.
POUR 2 (COLUMNS)					27.5 CU. YDS.
POUR 3 (CAP)					35.6 CU. YDS.
TOTAL CLASS AA CONCRETE :					113.8 CU. YDS.
HP 12x53 STEEL PILES					
NO. = 33					LIN. FT. = 1551
FOUNDATION EXCAVATION					LUMP SUM



*****SYSTEMTIME*****

NO.	BY	DATE	REVISION

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

RAIL DIVISION

ENGINEERING & SAFETY BRANCH

MAIL: 1256 MAIL SERVICE CENTER, RALEIGH, NC 27699-1556
 DELIVERY: 120 CAPITAL BOULEVARD, RALEIGH, NC 27603
 PHONE: (919) 715-8803
 FAX: (919) 715-8804

PROJECT: U-3459 - KLUMAC ROAD

TITLE: PIER 2 DETAILS AND BILL OF MATERIALS

LOCATION: SALISBURY-SR 2541 (KLUMAC RD) at NCRVNS

DGN BY: CPB RAILROAD: NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN MILE POST: MP 335.2

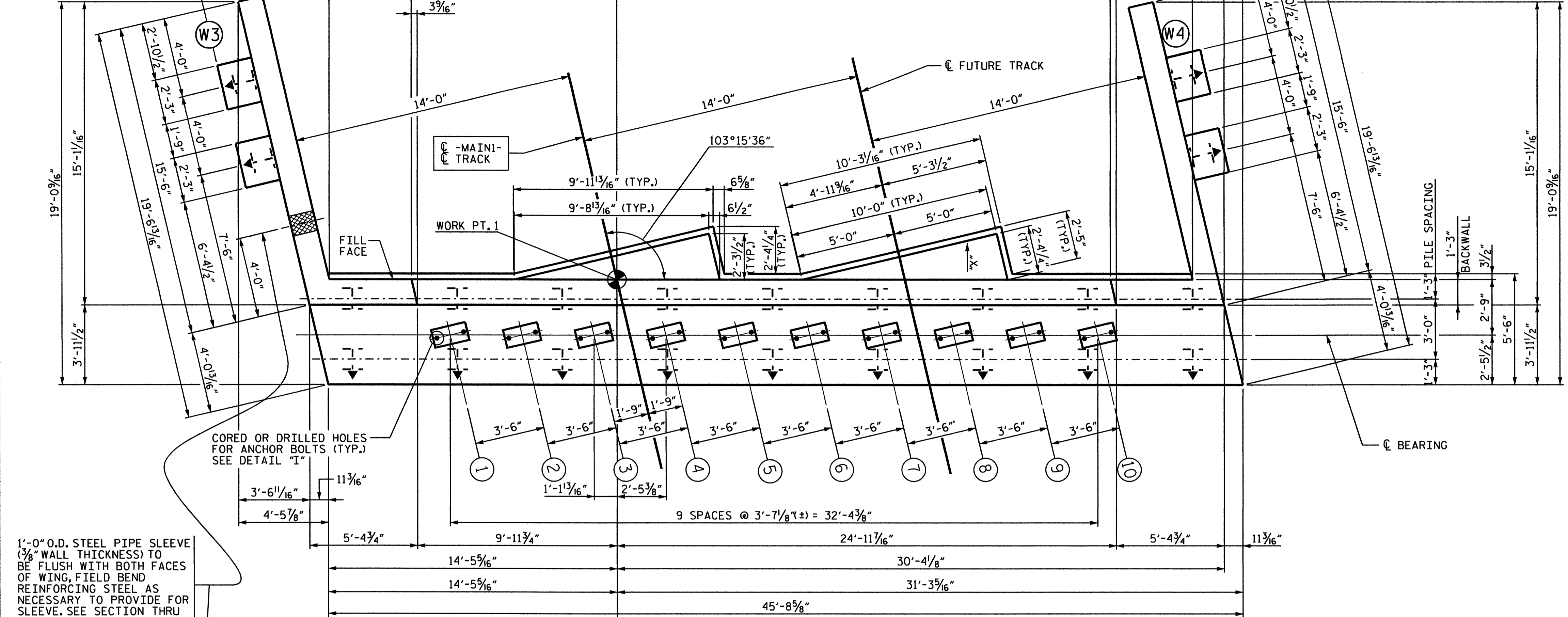
DWN BY: JLA VAL SEC: V-8

CHK BY: NMW DATE: 5/12 SCALE: 3/8" = 1'-0"

SHEET 34 OF 51

▲ BATTER PILES 3:12 IN DIRECTION SHOWN
"X" = 1/2" SLOPE (TYP.)

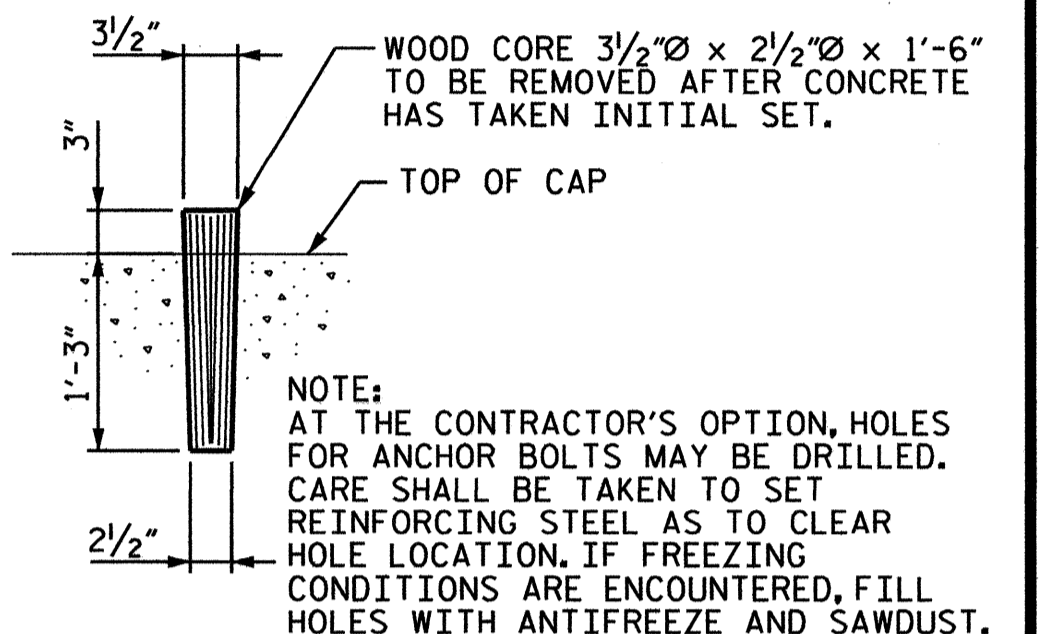
PREPARED BY
TGS ENGINEERS
107-A MICA AVENUE
MORGANTON, NC 28655



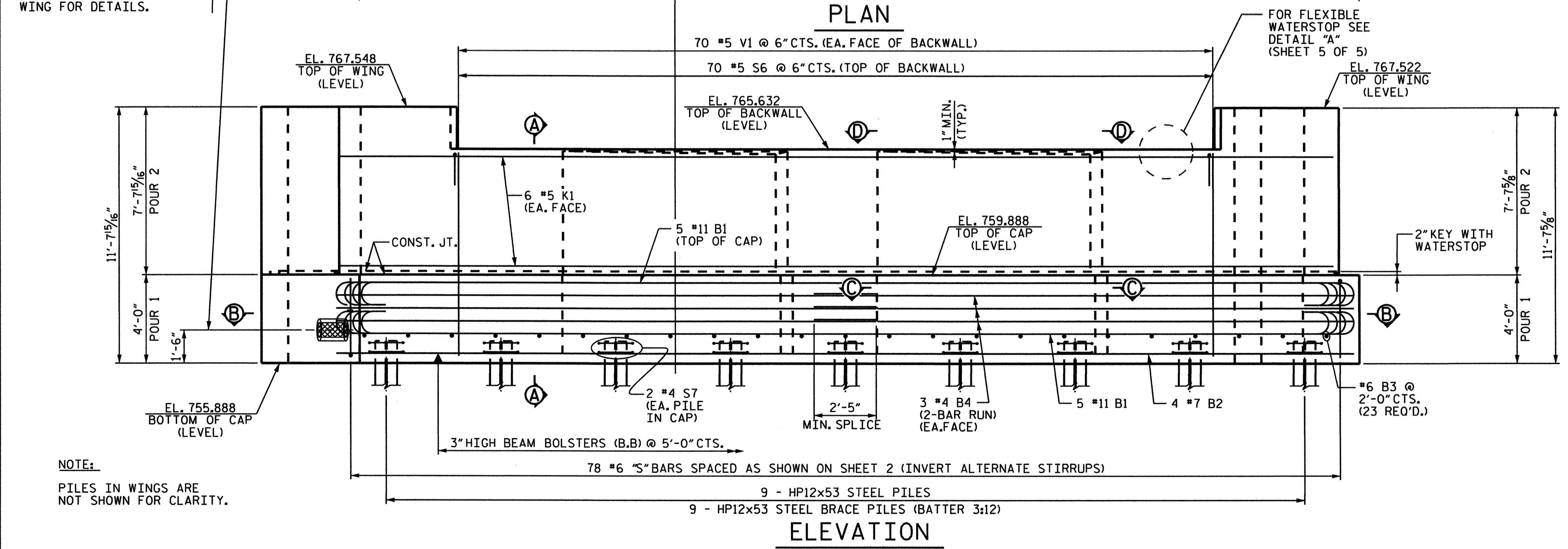
1'-0" O.D. STEEL PIPE SLEEVE (3/8" WALL THICKNESS) TO BE FLUSH WITH BOTH FACES OF WING, FIELD BEND REINFORCING STEEL AS NECESSARY TO PROVIDE FOR SLEEVE. SEE SECTION THRU WING FOR DETAILS.

CORED OR DRILLED HOLES FOR ANCHOR BOLTS (TYP.) SEE DETAIL "I"

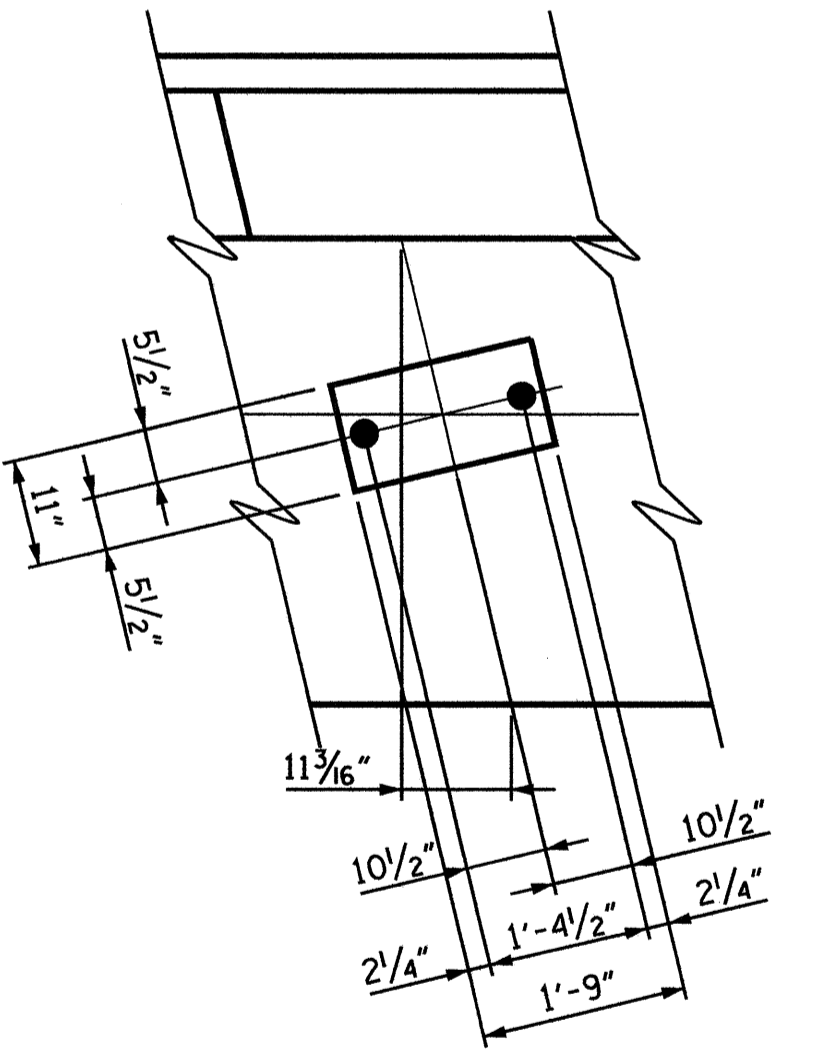
NOTES:
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.



NOTE:
AT THE CONTRACTOR'S OPTION, HOLES FOR ANCHOR BOLTS MAY BE DRILLED. CARE SHALL BE TAKEN TO SET REINFORCING STEEL AS TO CLEAR HOLE LOCATION. IF FREEZING CONDITIONS ARE ENCOUNTERED, FILL HOLES WITH ANTIFREEZE AND SAWDUST.



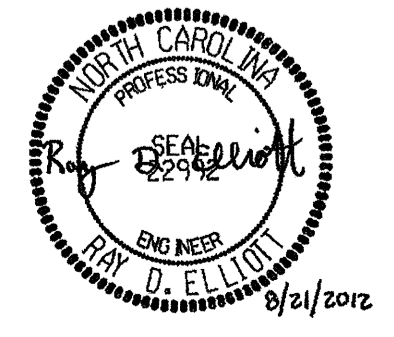
NOTE:
PILES IN WINGS ARE NOT SHOWN FOR CLARITY.



BEARING DETAIL

*****SYTIME*****

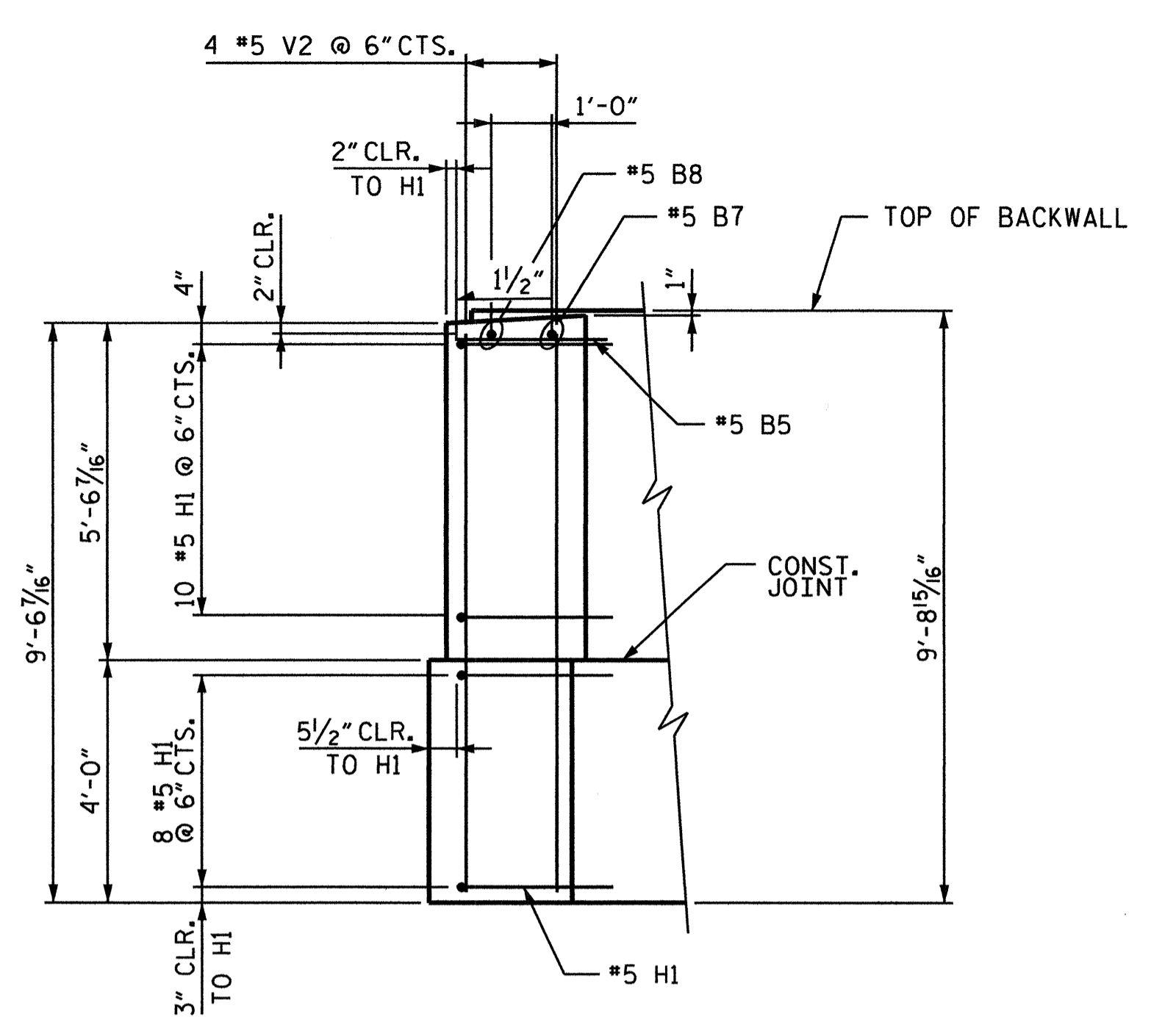
NO.	BY	DATE	REVISION



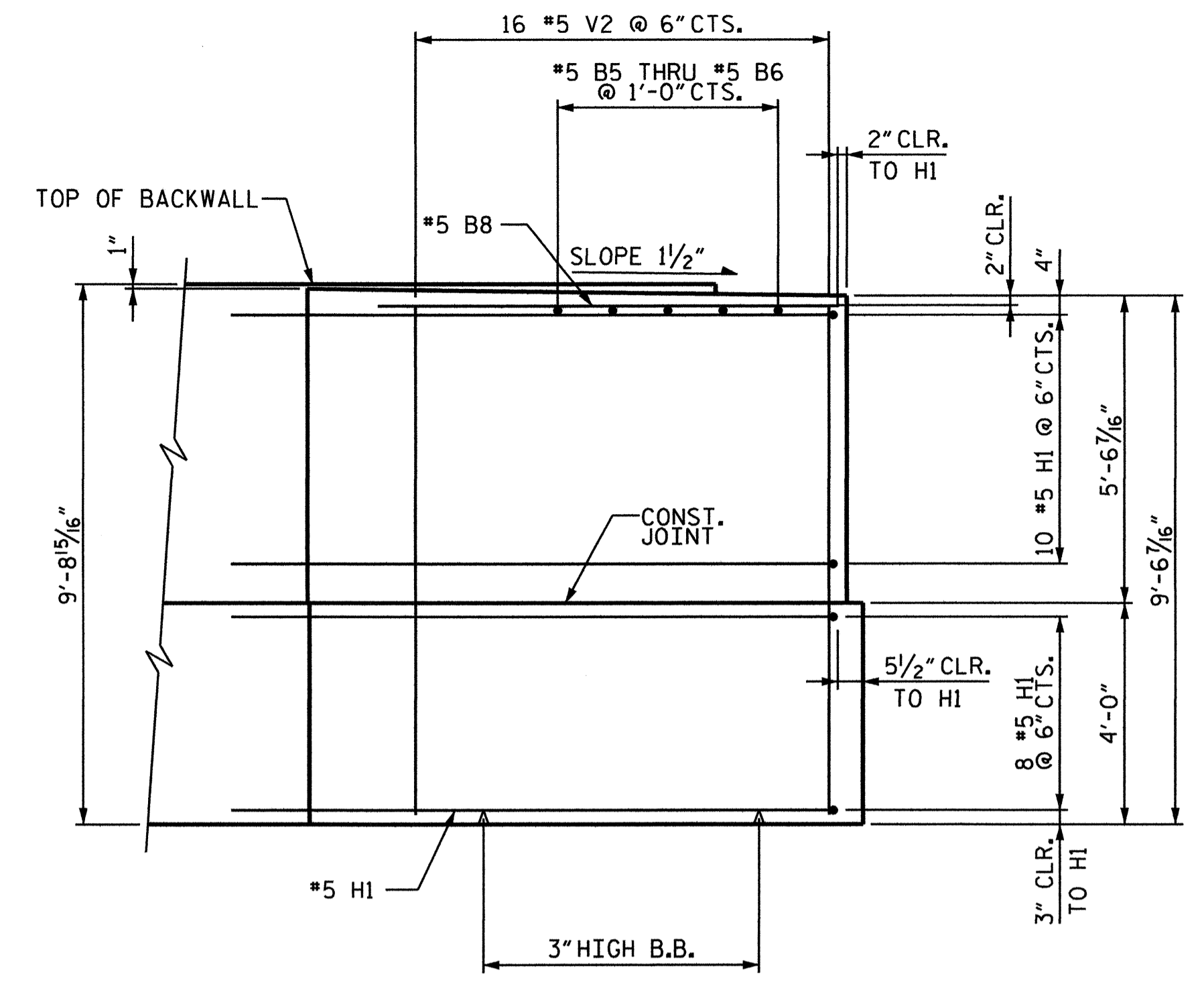
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION
ENGINEERING & SAFETY BRANCH
MAIL: 1256 MAIL SERVICE CENTER, RALEIGH, NC 27699-1556
DELIVERY: 850 CAPITAL BOULEVARD, RALEIGH, NC 27603
PHONE: (919) 715-8803
FAX: (919) 715-8804

PROJECT	U-3459 - KLUMAC ROAD		
TITLE	ABUTMENT 2		
LOCATION	SALISBURY-SR 2541 (KLUMAC RD) at NCRNRS		
DGN BY	RDE	RAILROAD	NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
DWN BY	JLA	VAL SEC	V-8
CHK BY	NMW	DATE	512
MILE POST	MP 335.2		
SCALE	516" = 1'-0"		
SHEET 35 OF 51			

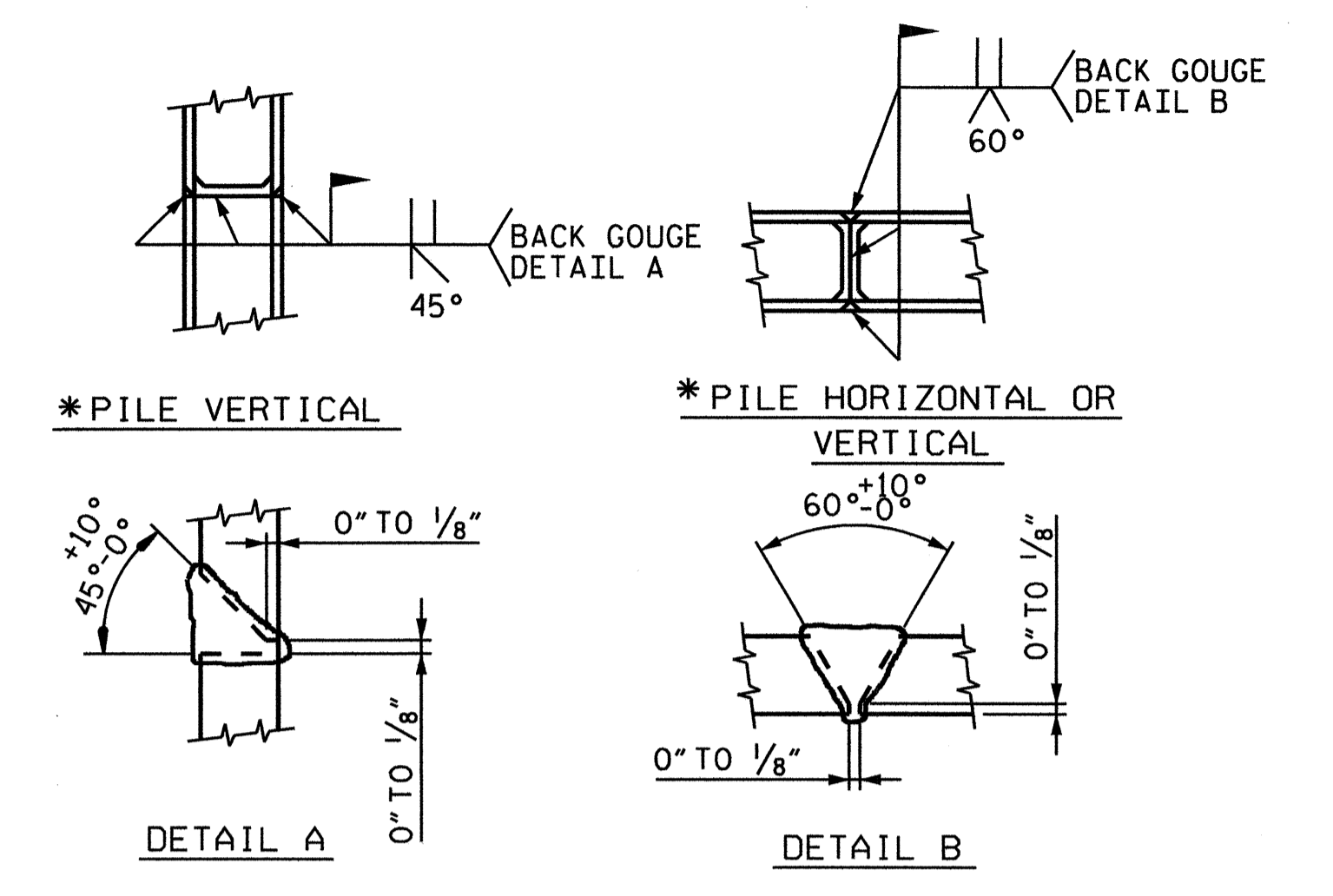
DGN 0302DEL_P12



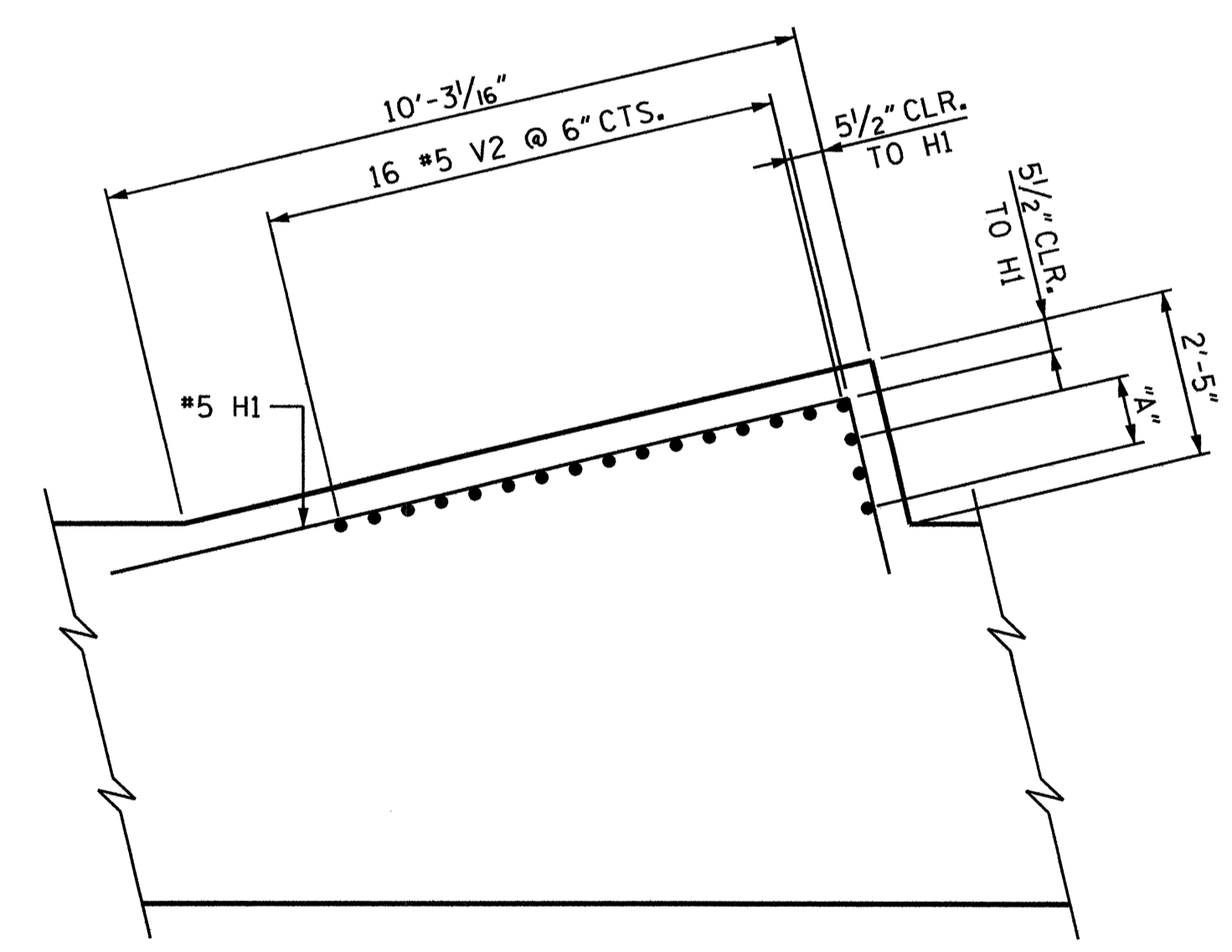
SECTION E-E



SECTION F-F

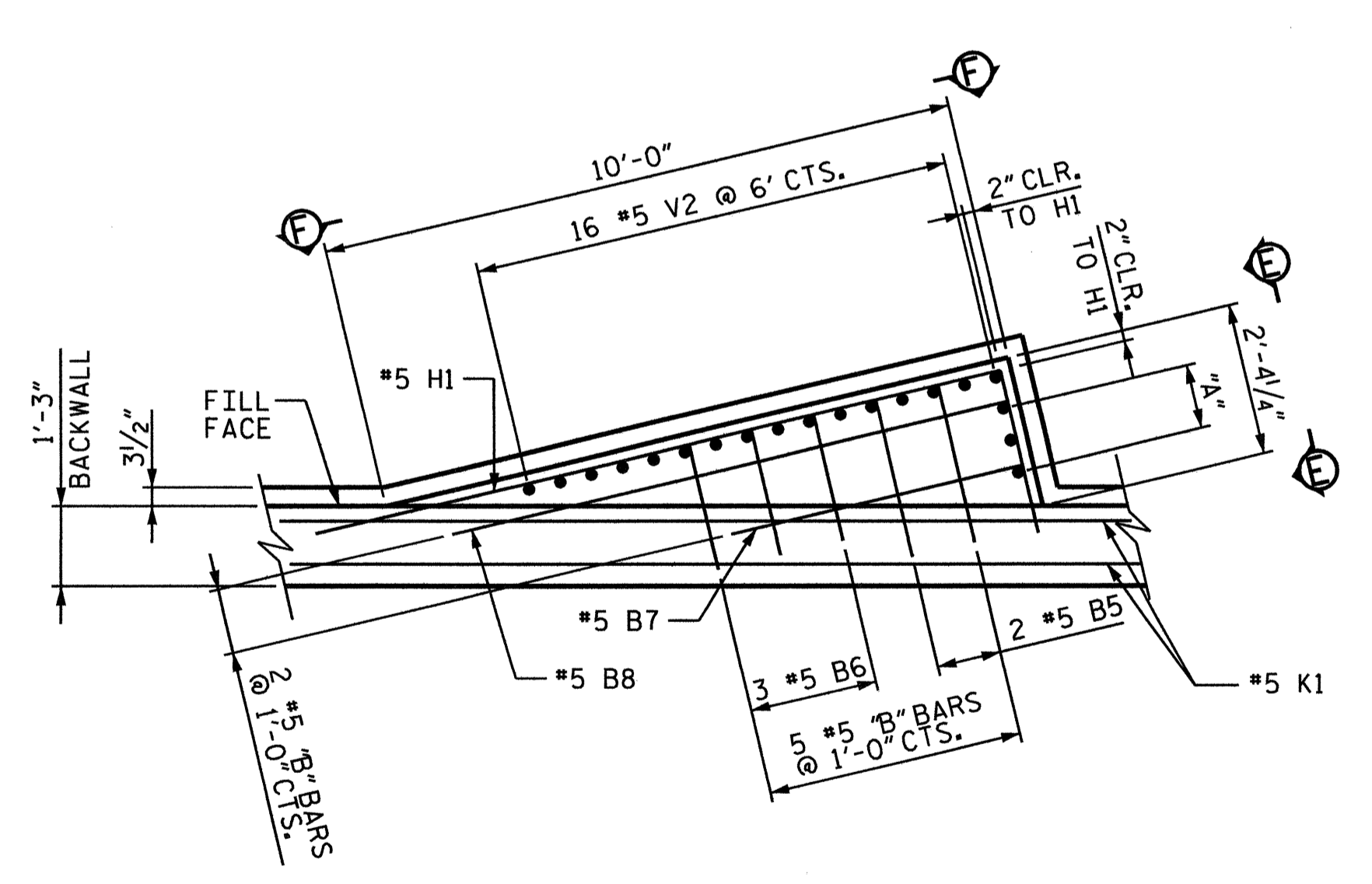


* POSITION OF PILE DURING WELDING
PILE SPLICE DETAILS

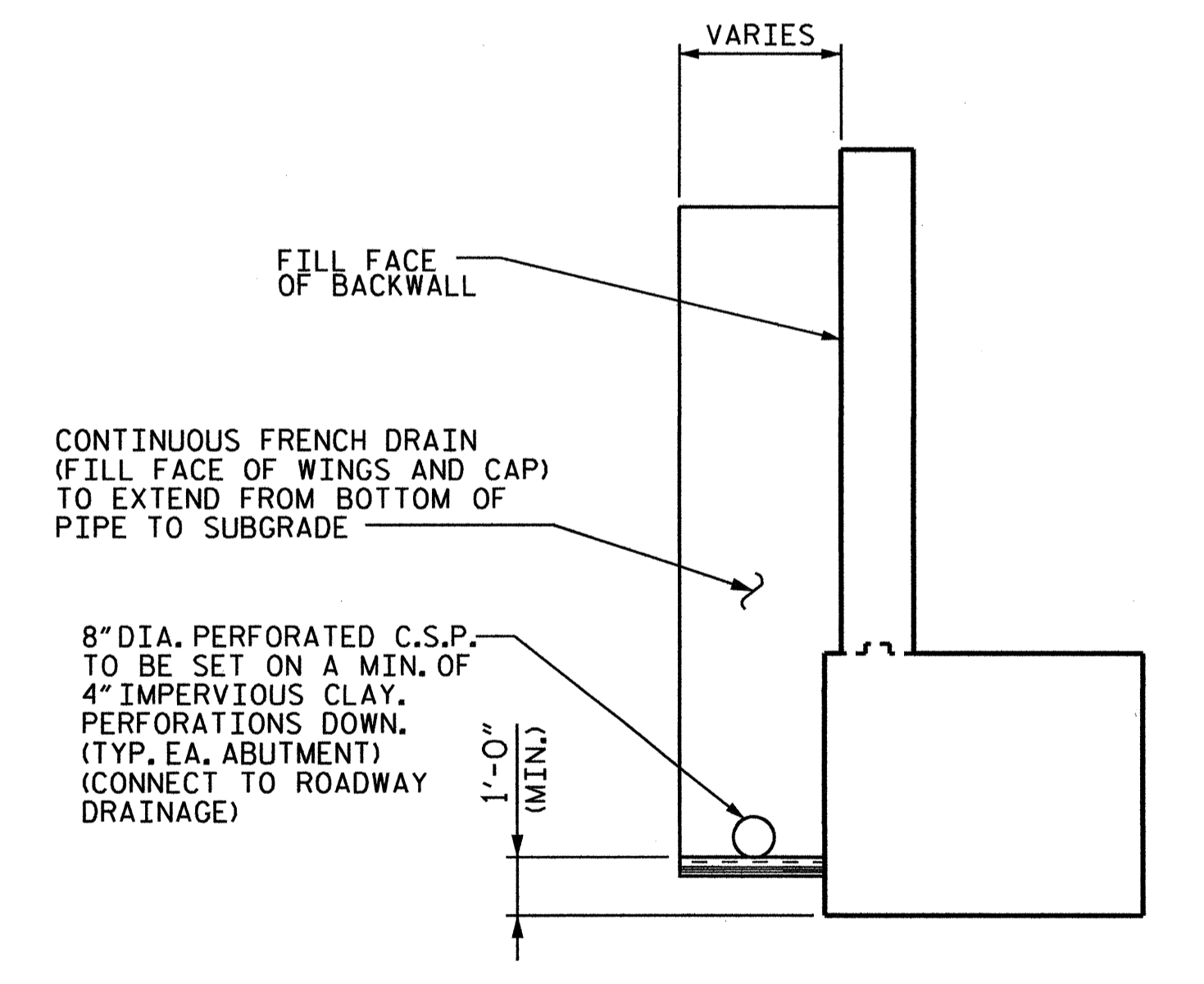


SECTION C-C
(REINFORCEMENT TOP OF CAP EXTENSION)

"A" = 3 #5 V2 @ 6" CTS.



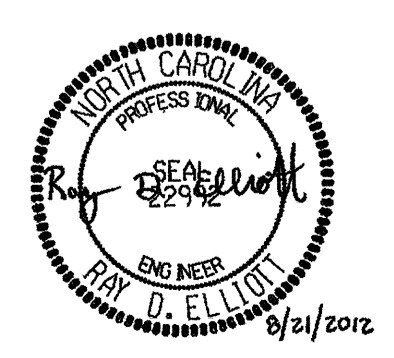
SECTION D-D
(REINFORCEMENT TOP OF BACKWALL EXTENSION)



DRAINAGE AT ABUTMENTS
ABUTMENT 2 SHOWN, ABUTMENT 1 SIMILAR

SHEET 3 OF 5

NO.	BY	DATE	REVISION



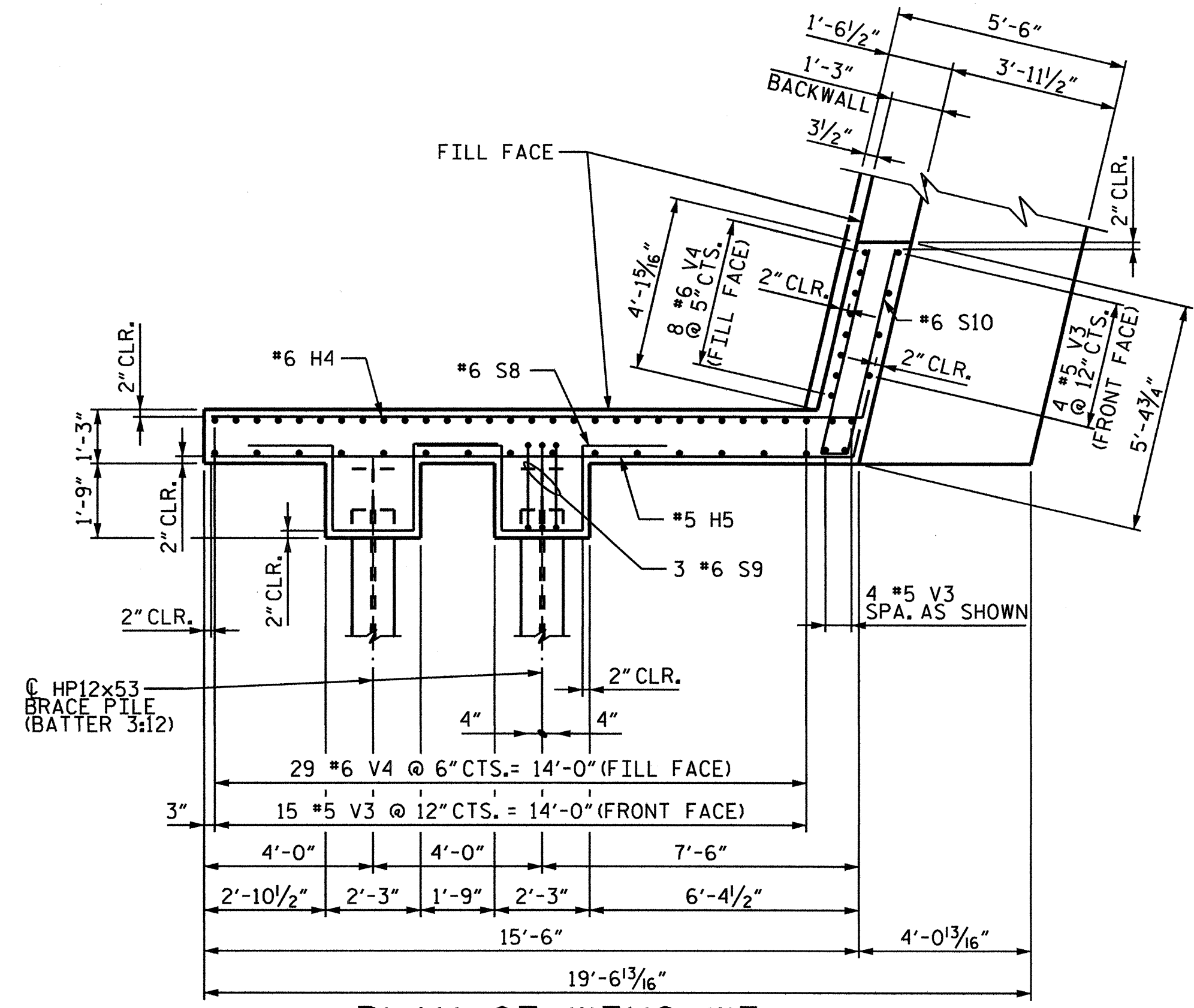
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY:
ENGINEERING & SAFETY BRANCH

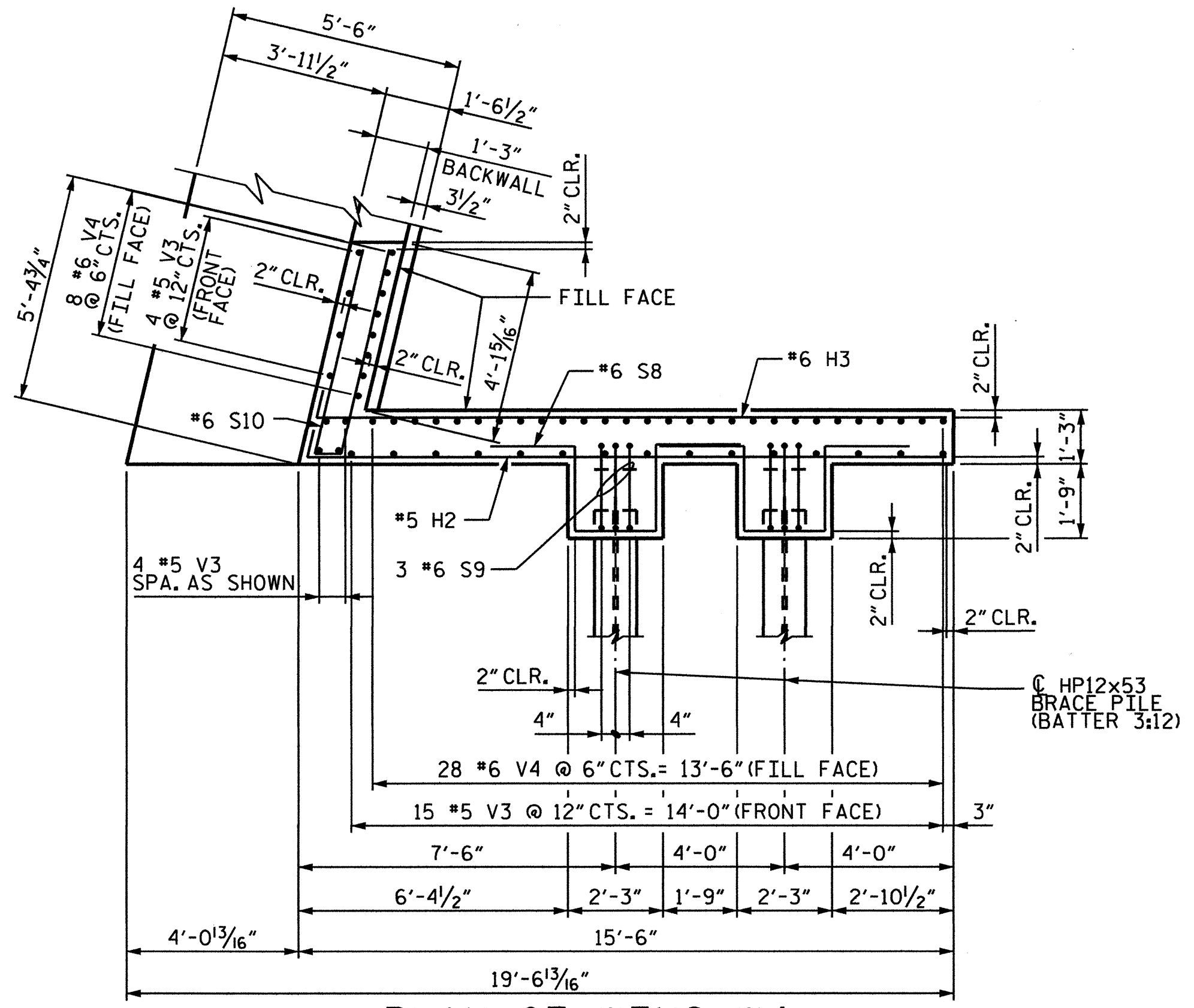
MAIL: 1256 MAIL SERVICE CENTER, RALEIGH, NC 27699-1256
DELIVERY: 850 CAPITAL BOULEVARD, RALEIGH, NC 27603
PHONE: (919) 715-8803
FAX: (919) 715-8804

PROJECT	U-3459 - KLUMAC ROAD		
TITLE	ABUTMENT 2 BACKWALL EXTENSION DETAILS		
LOCATION	SALISBURY-SR 2541 (KLUMAC RD) at NCRRA'S		
DGN BY	RDE	RAILROAD	NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
DWN BY	JLA	VAL SEC	V-8
CHK BY	NMW	DATE	5/12
MILE POST	MP 335.2		
SCALE	7/16" = 1'-0"		
SHEET 37 OF 51			

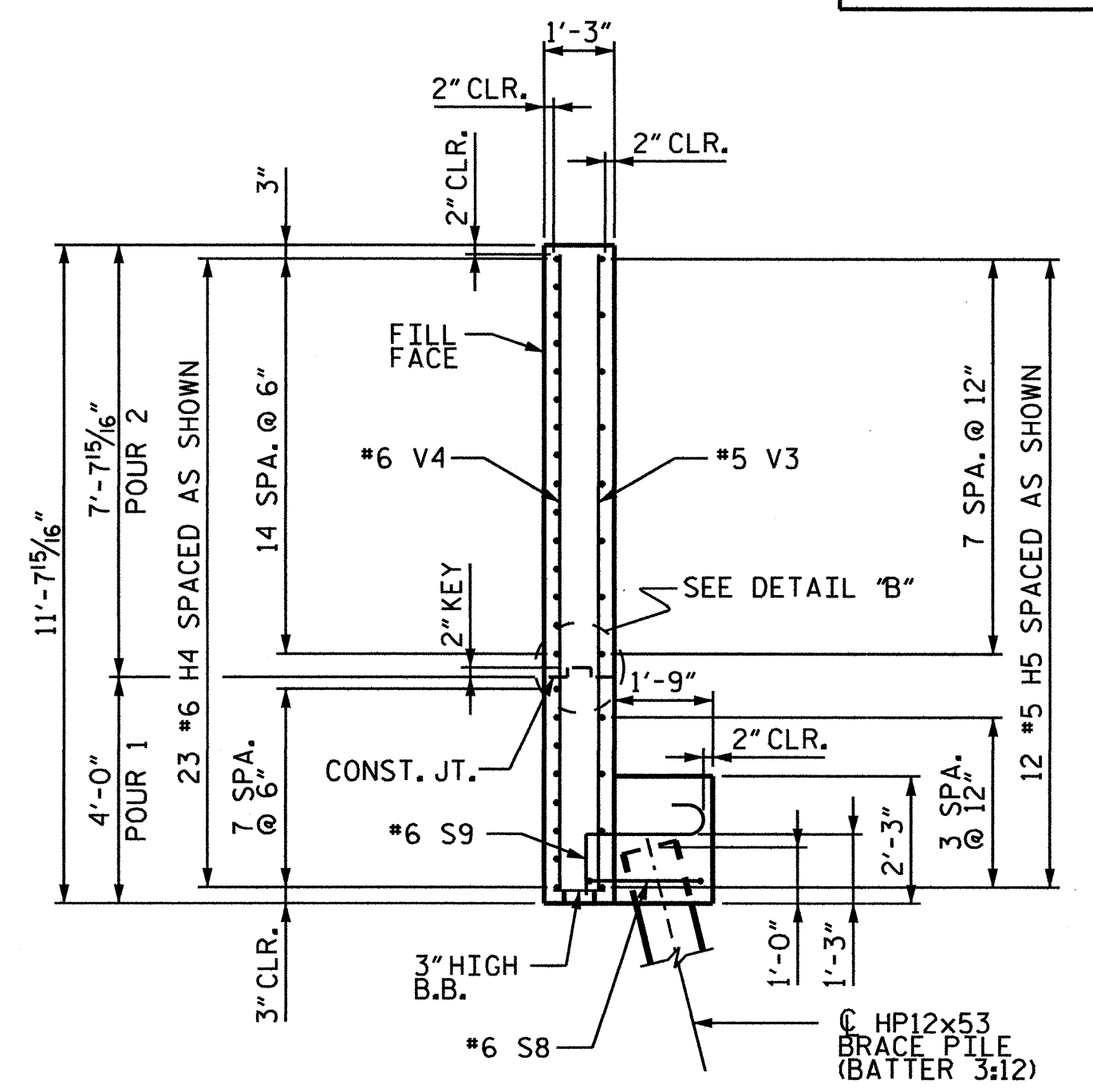
DCN
0302DEL_P12



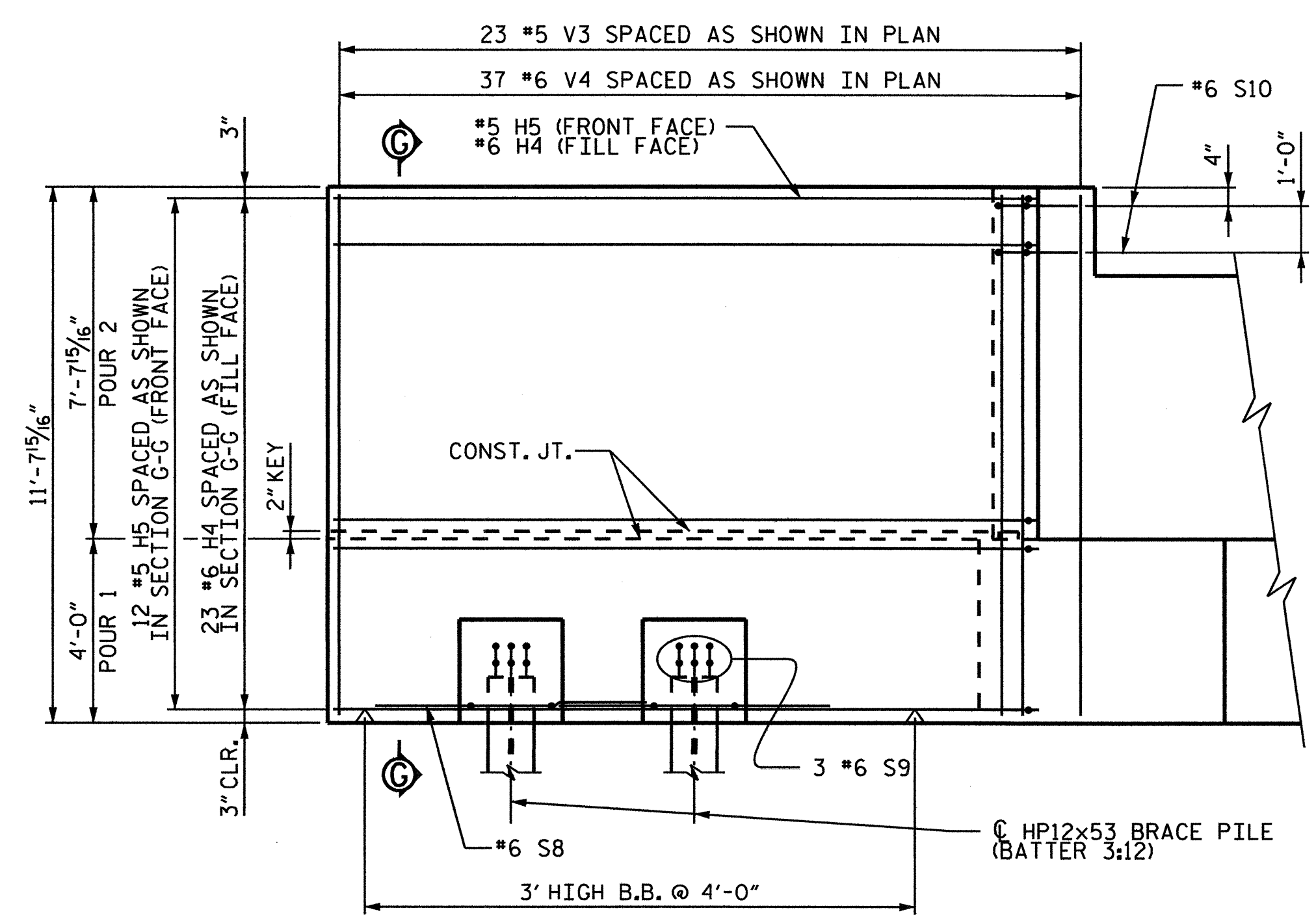
PLAN OF WING W3



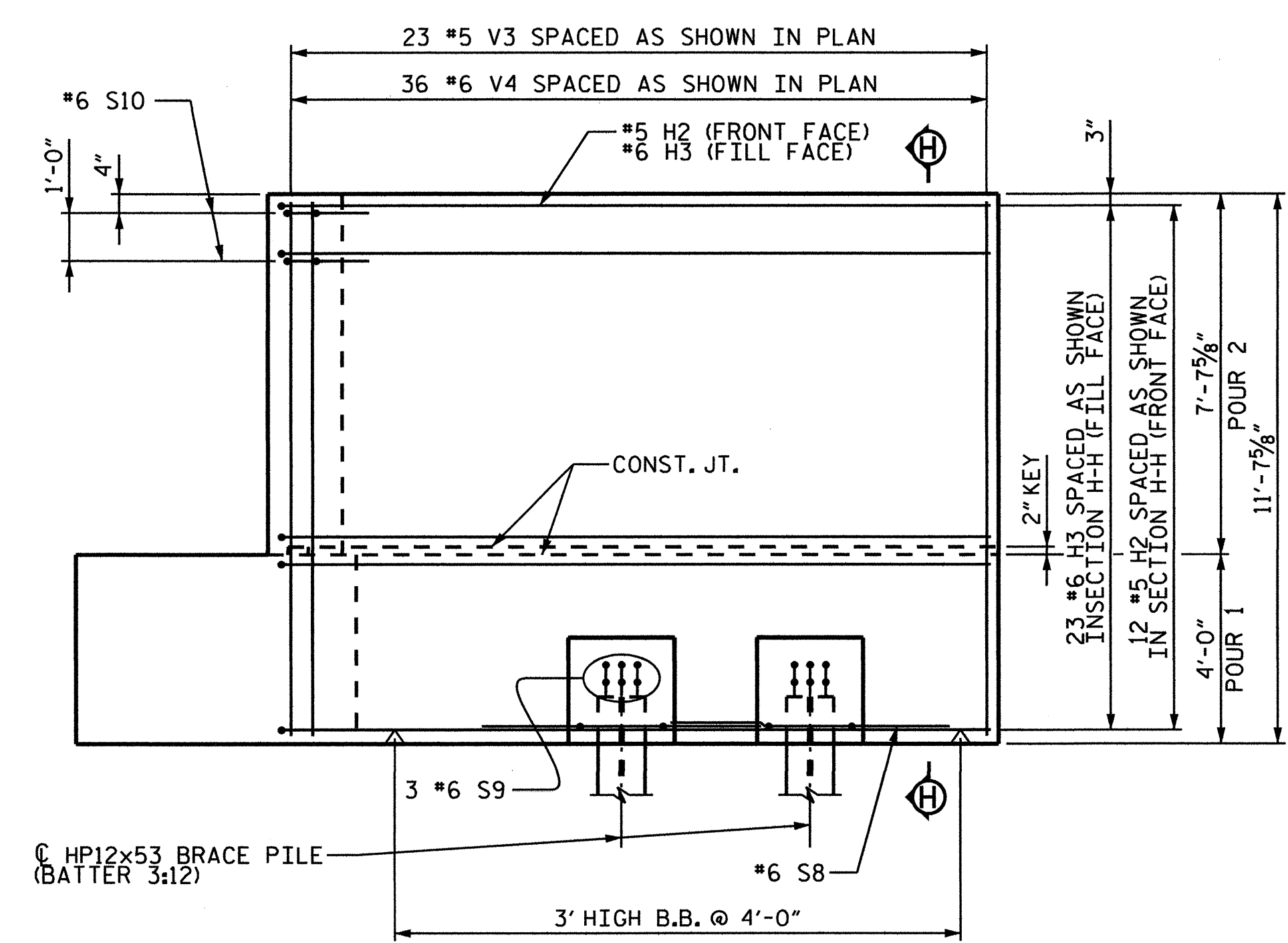
PLAN OF WING W4



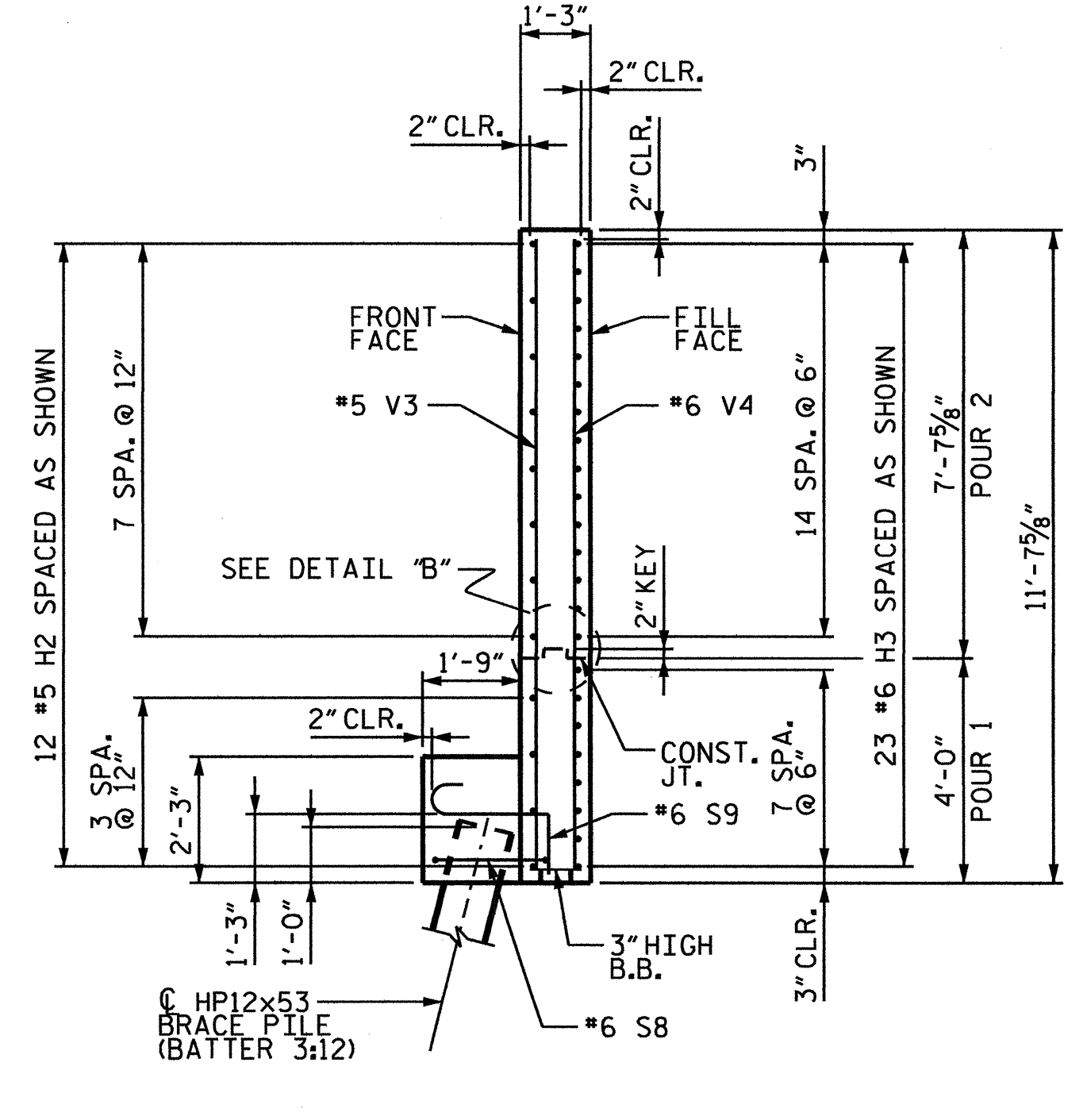
SECTION G-G



ELEVATION W3



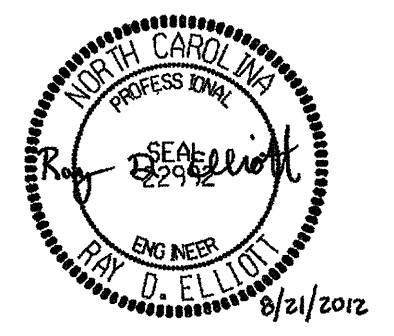
ELEVATION W4



SECTION H-H

SHEET 4 OF 5

NO.	BY	DATE	REVISION



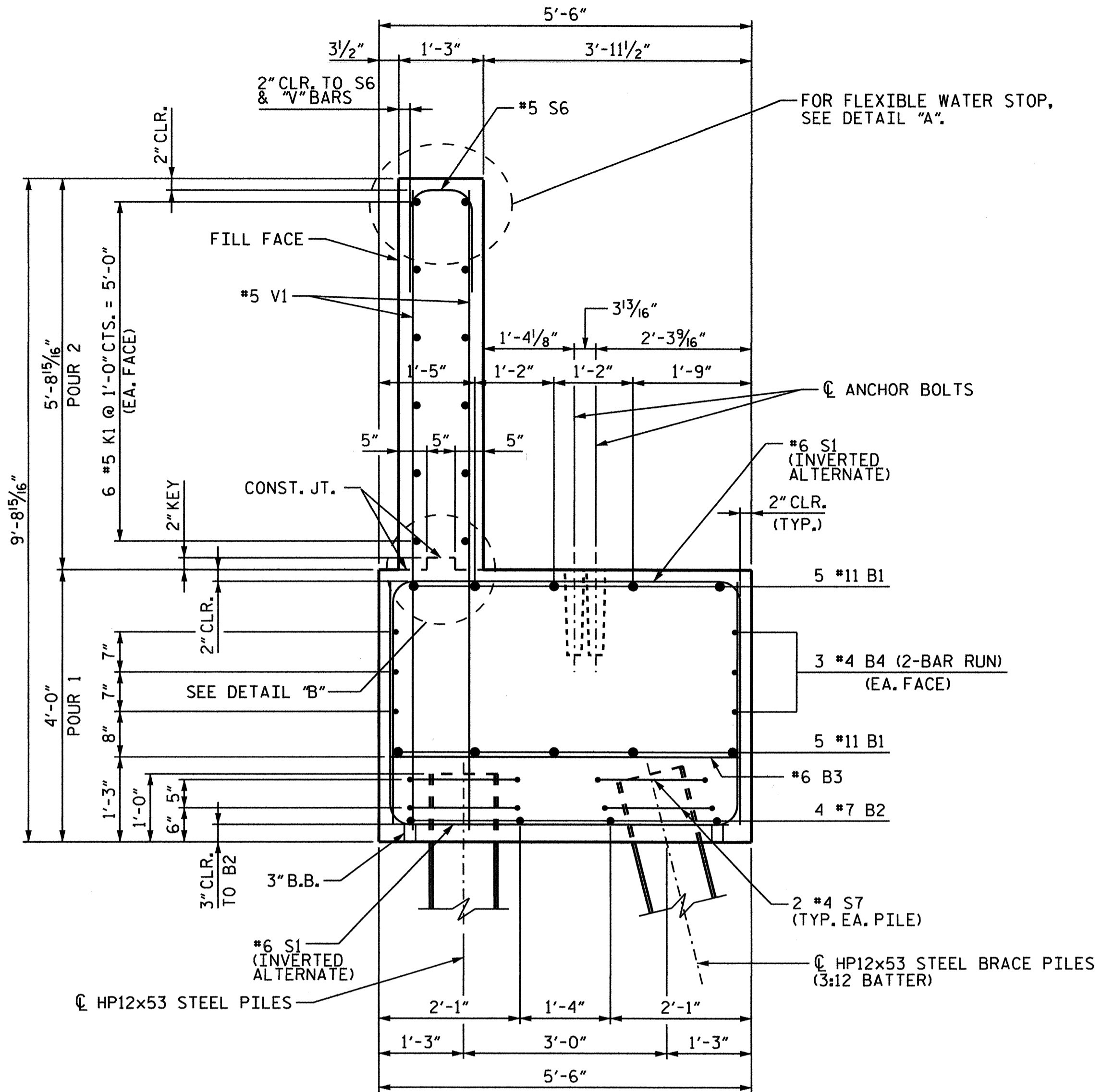
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY:
ENGINEERING & SAFETY BRANCH

MAIL: 1555 MAIL SERVICE CENTER RALEIGH, NC 27699-1556
DELIVERY: 200 CAPITAL BOULEVARD RALEIGH, NC 27603
PHONE: (919) 715-8803 FAX: (919) 715-8804

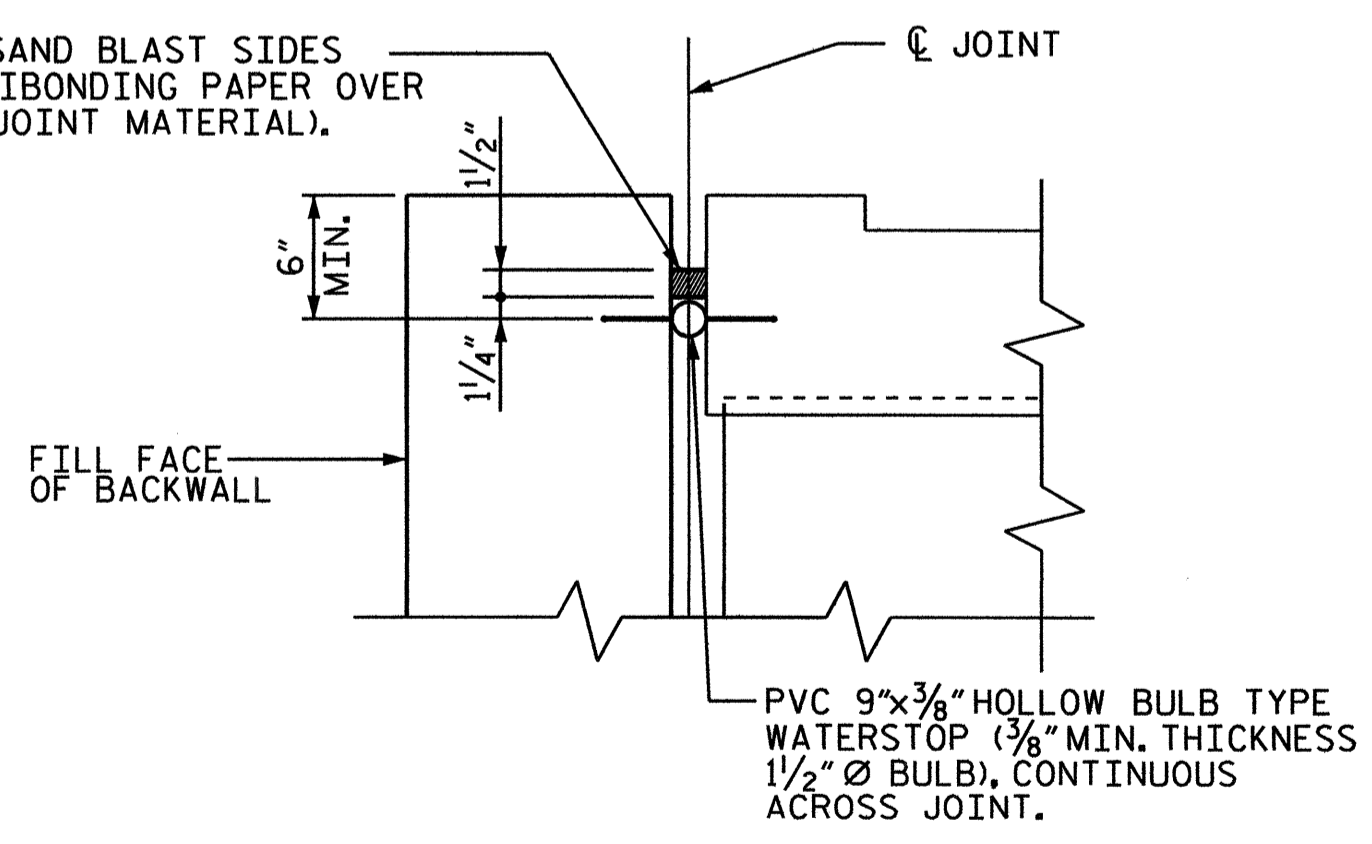
PROJECT	U-3459 - KLUMAC ROAD		
TITLE	ABUTMENT 2 WING DETAILS		
LOCATION	SALISBURY-SR 2541 (KLUMAC RD) at NCRMS		
DGN BY	RDE	RAILROAD	NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
DWN BY	JLA	VAL SEC	V-8
CHK BY	NMW	DATE	5/12
MILE POST	MP 335.2		SCALE 3/8" = 1'-0"
SHEET 38 OF 51			

0302DEL_P12

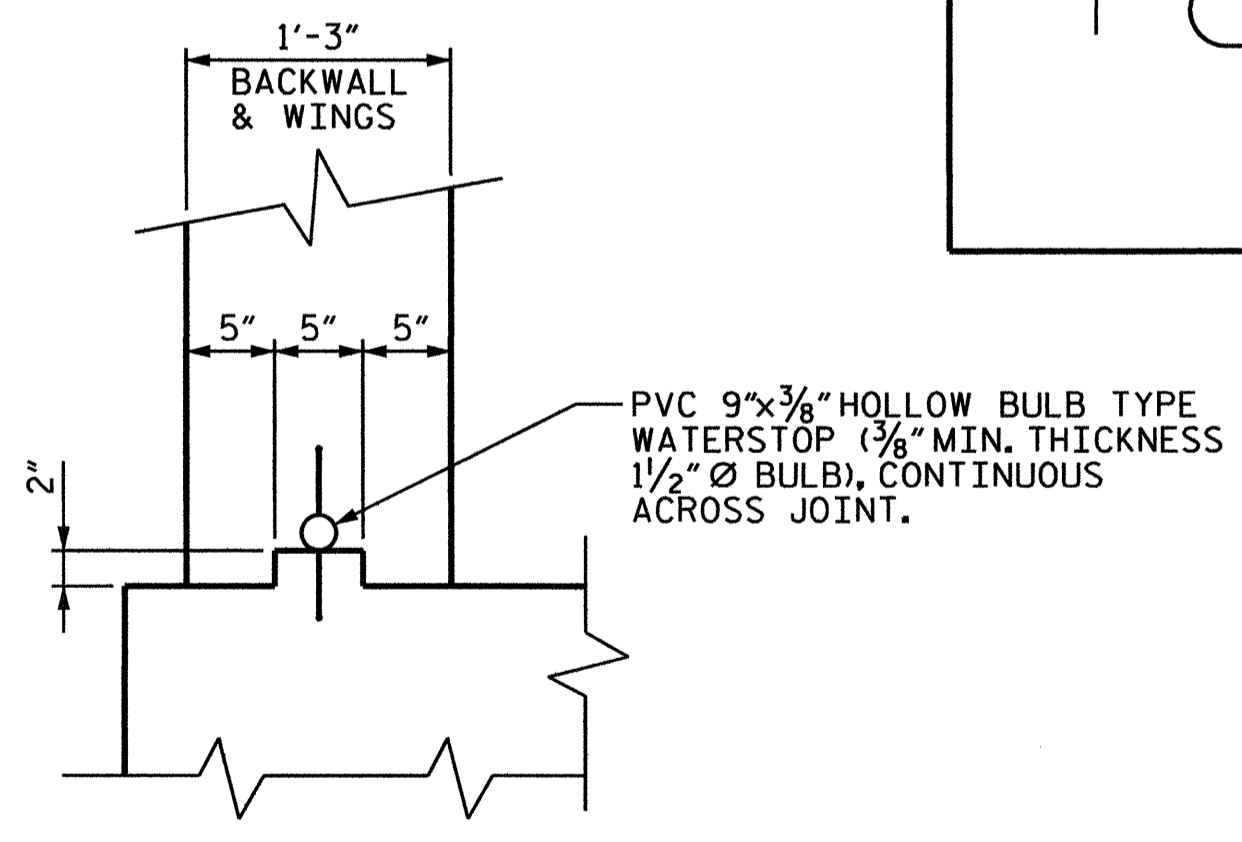


SECTION A-A

RUBBER JT. COMPOUND (SAND BLAST SIDES OF JOINT & PLACE ANTIBONDING PAPER OVER BULB BEFORE POURING JOINT MATERIAL).

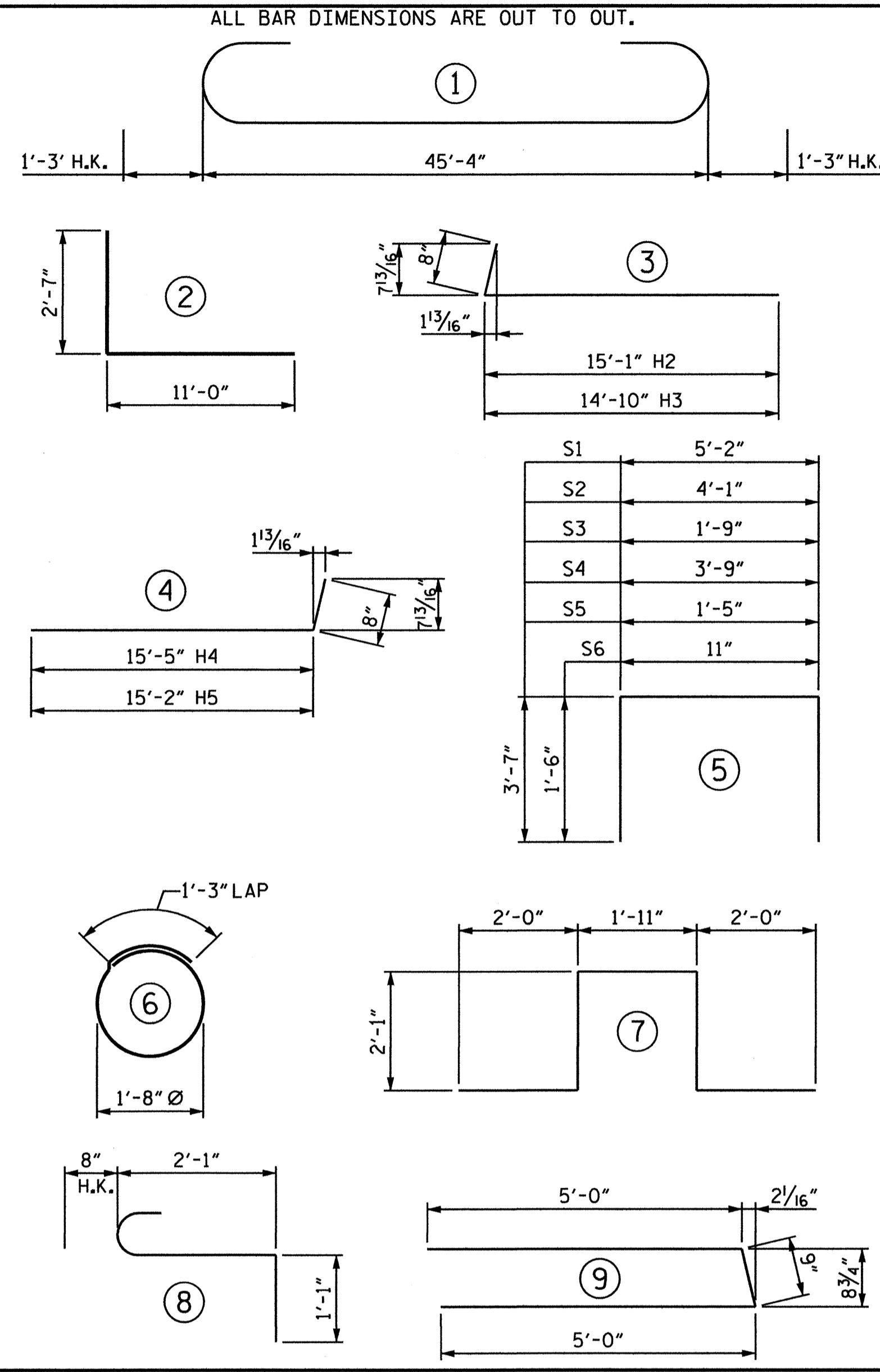


DETAIL "A"



DETAIL "B"

BAR TYPES



REINFORCING STEEL SCHEDULE FOR ABUTMENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	1	47'-10"	2,541
B2	4	#7	STR.	45'-4"	371
B3	23	#6	STR.	5'-2"	178
B4	12	#4	STR.	23'-11"	192
B5	4	#5	STR.	2'-6"	10
B6	6	#5	STR.	2'-0"	13
B7	2	#5	STR.	4'-8"	10
B8	2	#5	STR.	8'-11"	19
H1	36	#5	2	13'-7"	510
H2	12	#5	3	15'-9"	197
H3	23	#6	3	15'-6"	535
H4	23	#6	4	16'-1"	556
H5	12	#5	4	15'-10"	198
K1	12	#5	STR.	45'-4"	567
S1	74	#6	5	12'-4"	1,371
S2	1	#6	5	11'-3"	17
S3	1	#6	5	8'-11"	13
S4	1	#6	5	10'-11"	16
S5	1	#6	5	8'-7"	13
S6	70	#5	5	3'-11"	286
S7	36	#4	6	6'-6"	156
S8	4	#6	7	10'-1"	61
S9	12	#6	8	3'-10"	69
S10	4	#6	9	10'-9"	65
V1	140	#5	STR.	9'-4"	1,363
V2	38	#5	STR.	9'-2"	363
V3	46	#5	STR.	11'-3"	540
V4	73	#6	STR.	11'-3"	1,234

BILL OF MATERIAL - QUANTITIES FOR ABUTMENT 2

TOTAL REINFORCING STEEL	11,304 LBS.
CLASS AA CONCRETE	
POUR 1 (CAP & WINGS)	47.2 CU. YDS.
POUR 2 (BACKWALL, BACKWALL EXT. & WINGS)	27.8 CU. YDS.
TOTAL CLASS AA CONCRETE	75.0 CU. YDS.
HP12x53 STEEL PILES	NO. = 22 LIN. FEET = 1628

NO.	BY	DATE	REVISION

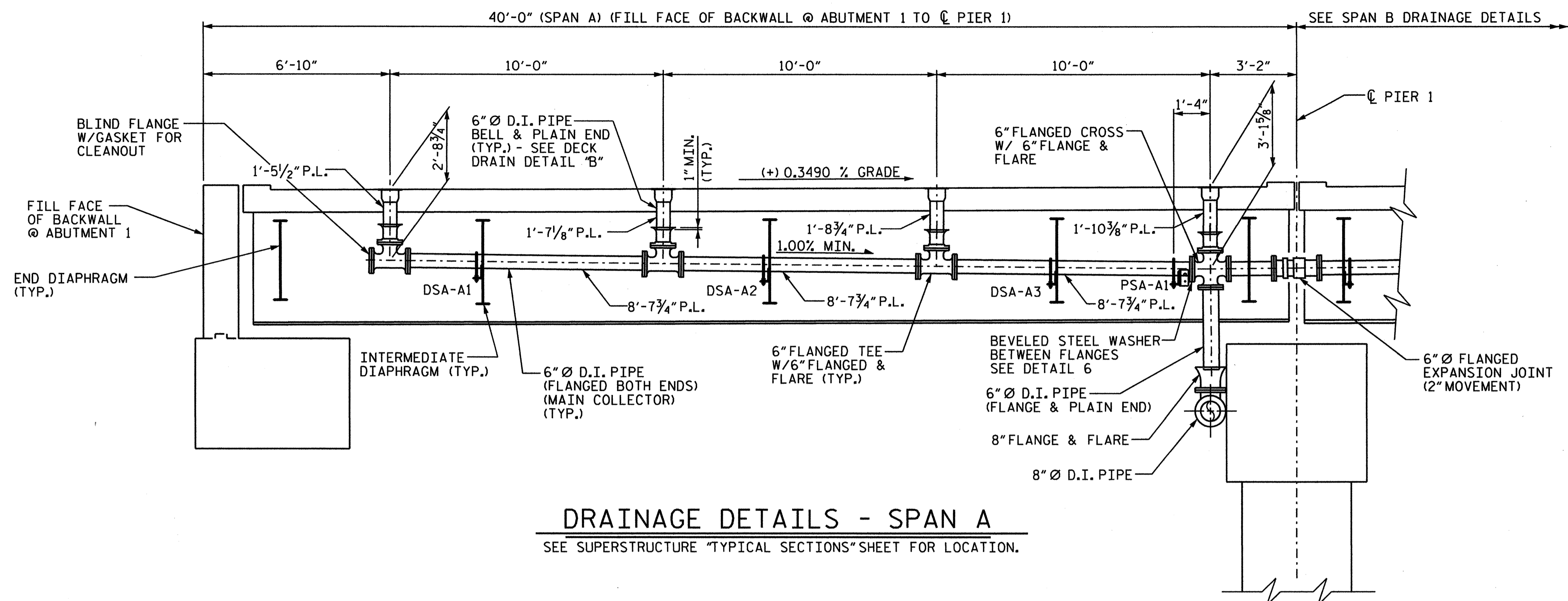


NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION
 ENGINEERING & SAFETY BRANCH
 MAIL: 1555 MAIL SERVICE CENTER RALEIGH, NC 27659-1556
 DELIVERY: 260 CAPITAL BOULEVARD RALEIGH, NC 27603
 PHONE: (919) 715-8803 FAX: (919) 715-8804

PROJECT: U-3459 - KLUMAC ROAD
 TITLE: ABUTMENT 2 DETAILS
 LOCATION: SALISBURY-SR 2541 (KLUMAC RD) at NCR RN5
 DGN BY: JLA RAILROAD: NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN MILE POST: MP 335.2
 DWN BY: JLA VAL SEC: V-8
 CHR BY: NMW DATE: 5/12 SCALE: 3/4" = 1'-0"

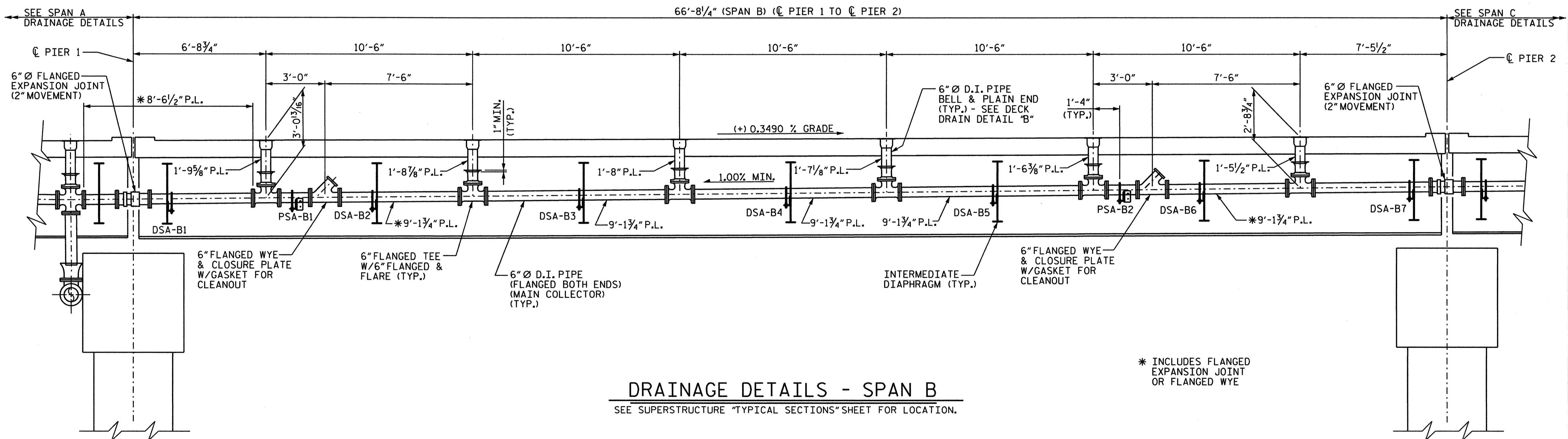
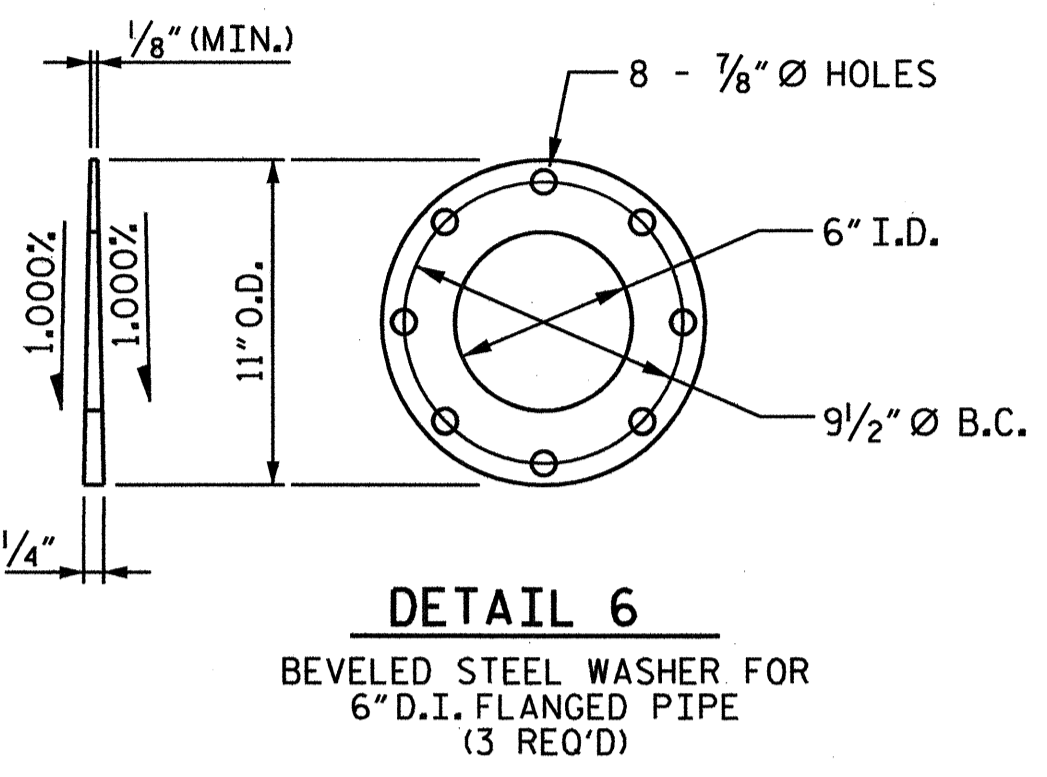
SHEET 39 OF 51

0302DEL_PT12



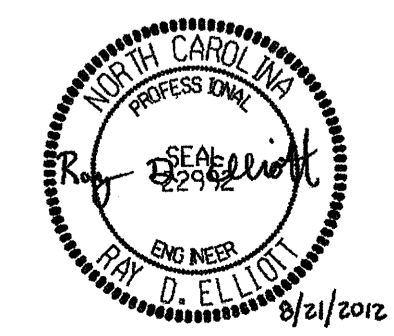
DRAINAGE DETAILS - SPAN A
SEE SUPERSTRUCTURE "TYPICAL SECTIONS" SHEET FOR LOCATION.

NOTES:
ALL HORIZONTAL DIMENSIONS ARE MEASURED ALONG THE
C OF THE DECK DRAINS.
ALL DIMENSIONS ARE SUBJECT TO ADJUSTMENT TO FIT
MEASUREMENTS TAKEN AFTER DECKS HAVE BEEN POURED.



DRAINAGE DETAILS - SPAN B
SEE SUPERSTRUCTURE "TYPICAL SECTIONS" SHEET FOR LOCATION.

NO.	BY	DATE	REVISION



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

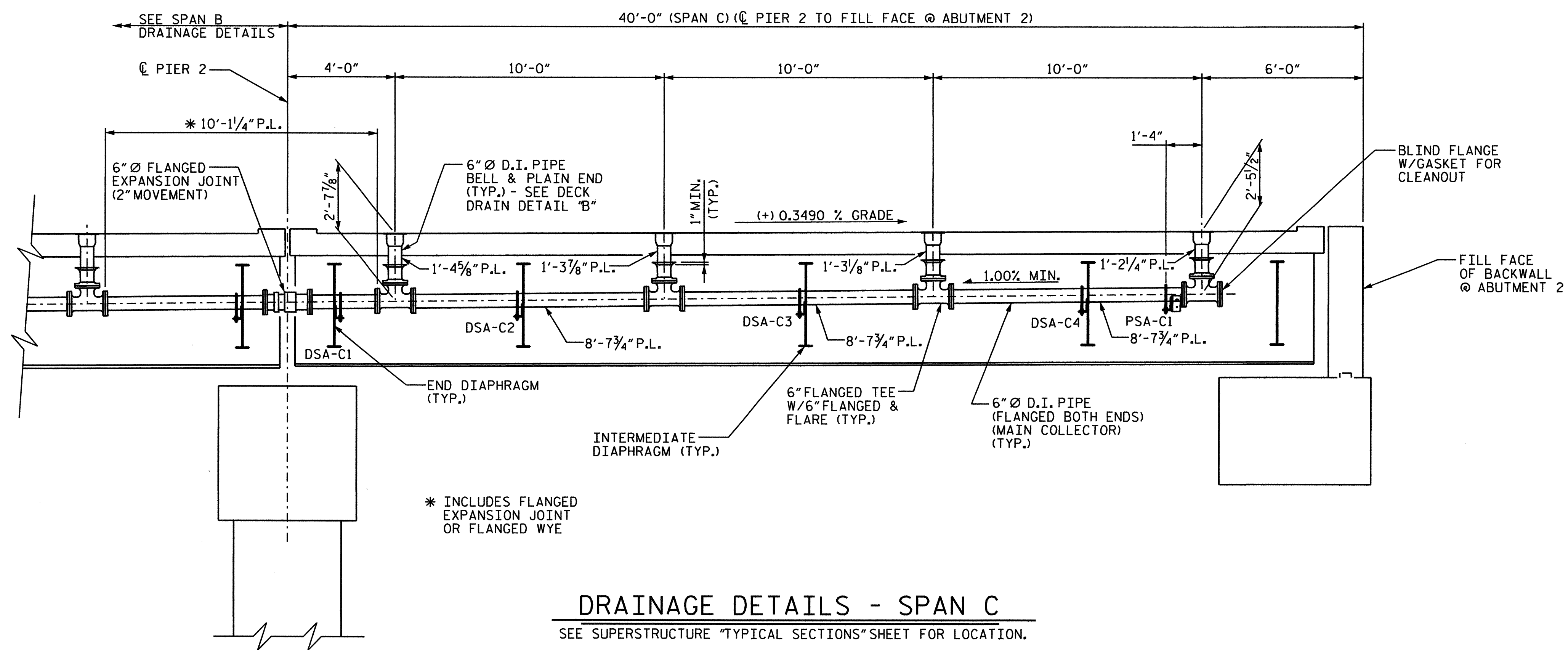
ENGINEERING & SAFETY BRANCH

MAIL: MAIL SERVICE CENTER, RALEIGH, NC 27665-6226
DELIVERY: 500 CAPITAL BOULEVARD, RALEIGH, NC 27603
PHONE: (919) 715-8801 FAX: (919) 715-8804

PROJECT	U-3459 - KLUMAC ROAD		
TITLE	STRUCTURE DRAINAGE DETAILS SPANS A & B		
LOCATION	SALISBURY-SR 2541 (KLUMAC RD) at NCRNRS		
DGN BY	CPB	RAILROAD	NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
MILE POST	MP 335.2		
DWN BY	NMW	VAL SEC	V-8
CHK BY	RTJ	DATE	5/12
SCALE	3/8" = 1'-0"		
SHEET 40 OF 51			

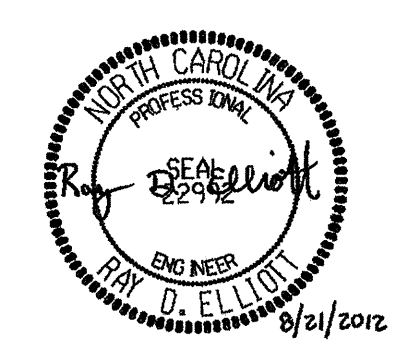
NOTES:
ALL HORIZONTAL DIMENSIONS ARE MEASURED ALONG THE
C OF THE DECK DRAINS.
ALL DIMENSIONS ARE SUBJECT TO ADJUSTMENT TO FIT
MEASUREMENTS TAKEN AFTER DECKS HAVE BEEN POURED.

0302DEL_PT12



DRAINAGE DETAILS - SPAN C
SEE SUPERSTRUCTURE "TYPICAL SECTIONS" SHEET FOR LOCATION.

NO.	BY	DATE	REVISION

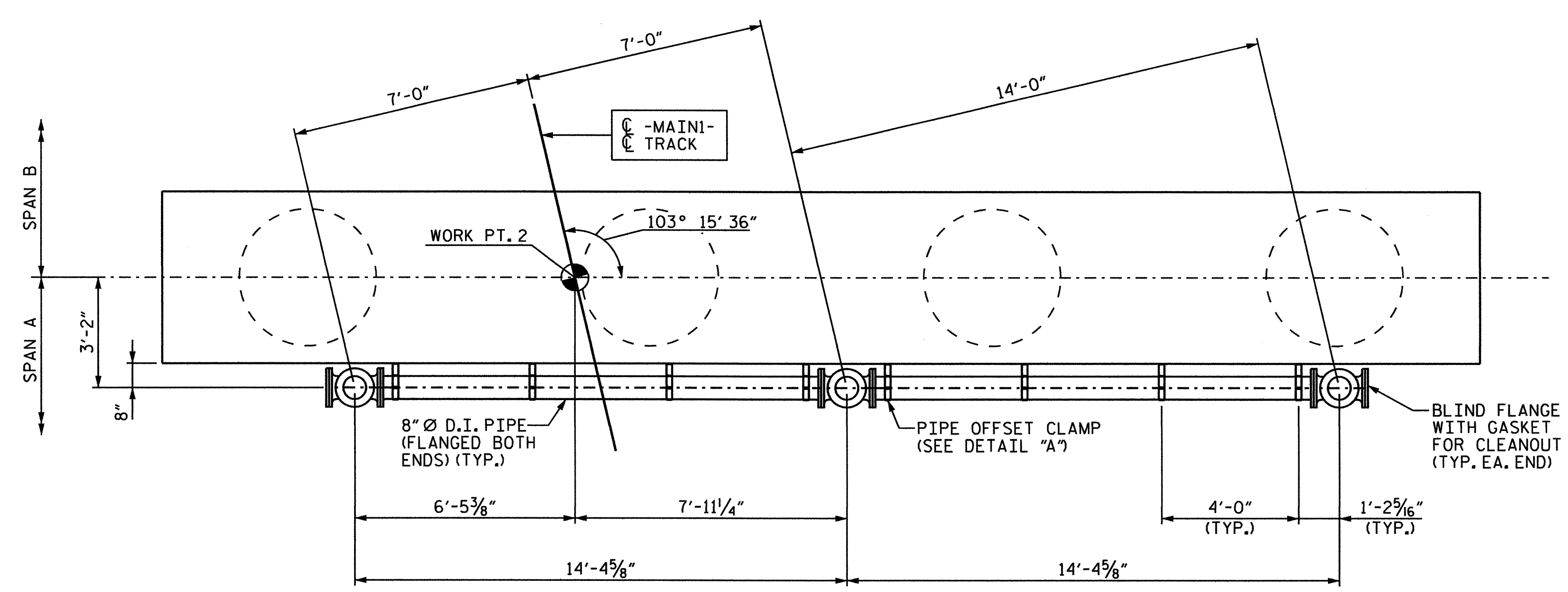


NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

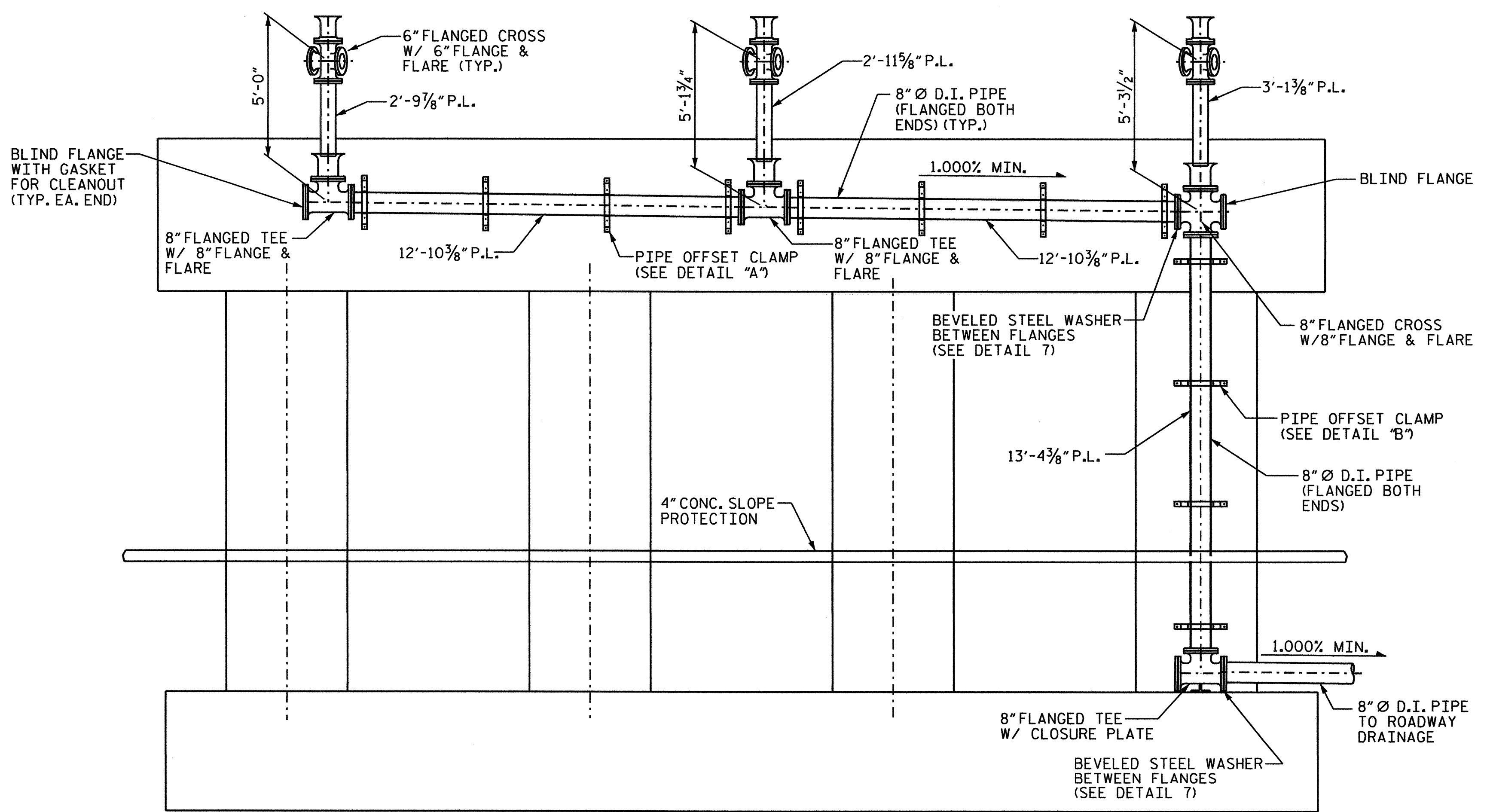
PREPARED BY:
ENGINEERING & SAFETY BRANCH

MAIL: 1256 MAIL SERVICE CENTER, RALEIGH, NC 27699-1556
DELIVERY: 500 CAPITAL BOULEVARD, RALEIGH, NC 27603
PHONE: (919) 715-8803
FAX: (919) 715-8804

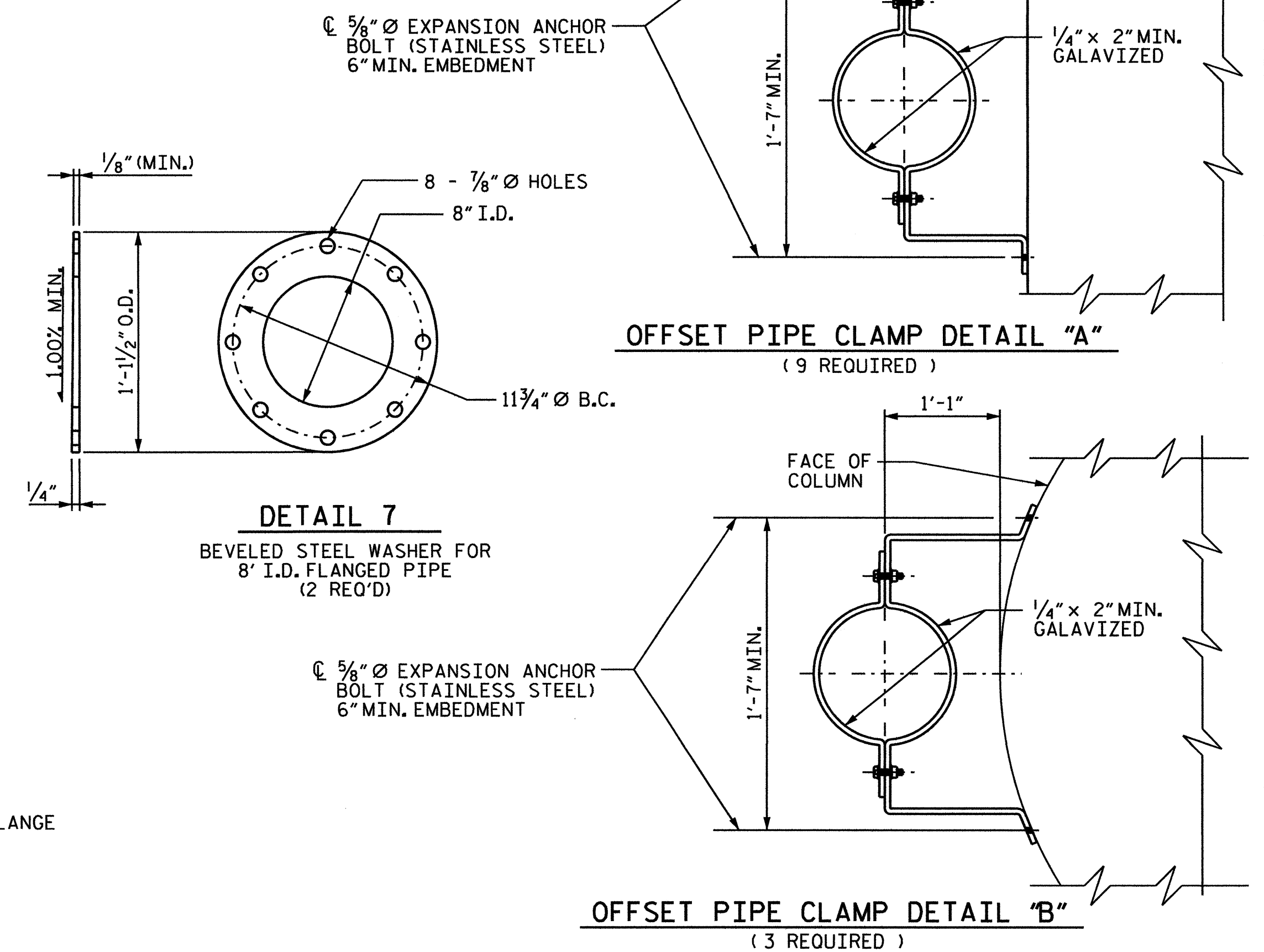
PROJECT U-3459 - KLUMAC ROAD		MILE POST MP 335.2	
TITLE STRUCTURE DRAINAGE DETAILS SPAN C			
LOCATION SALISBURY-SR 2541 (KLUMAC RD) of NCRANS			
DGN BY CPB	RAILROAD NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN	MILE POST MP 335.2	
DWN BY NMW	VAL SEC V-8	SHEET 41 OF 51	
CHK BY RTJ	DATE 5/12	SCALE 3/8" = 1'-0"	



PLAN - PIER 1



ELEVATION - PIER 1
(LOOKING FORWARD STATION)

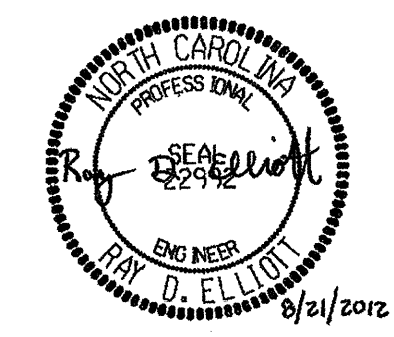


STRUCTURE DRAINAGE SYSTEM ESTIMATED QUANTITIES		
ITEM	QUANTITY	UNIT
8" I.D. DUCTILE IRON WATER PIPE, CLASS 53, (FLG. x PLAIN END)	9	FT.
8" I.D. DUCTILE IRON WATER PIPE, CLASS 53, (FLG. x FLG.)	40	FT.
8" I.D. DUCTILE IRON WATER PIPE FITTINGS, 250lb WP	910	LB.
8" I.D. BEVELED STEEL WASHERS	2	EA.
8" I.D. DUCTILE IRON BLIND FLANGES	252	LB.
8" I.D. OFFSET PIPE CLAMPS	12	EA.
6" I.D. DUCTILE IRON WATER PIPE, CLASS 53, (BELL & PLAIN END)	65	FT.
6" I.D. DUCTILE IRON WATER PIPE, CLASS 53, (FLG. x FLG.)	343	FT.
6" I.D. DUCTILE IRON WATER PIPE, CLASS 53, (FLG. x PLAIN END)	9	FT.
6" I.D. DUCTILE IRON WATER PIPE FITTINGS, 250lb WP	7,230	LB.
6" I.D. FLANGED EXPANSION JOINT (2" MOVEMENT)	6	EA.
6" I.D. BEVELED STEEL WASHERS	3	EA.
6" I.D. DUCTILE IRON BLIND FLANGES	300	LB.
SOIL PIPE GRATES, "NEENAH" 4373 SERIES OR EQUAL	42	EA.
DIAPHRAGM SUPPORT ANGLES (DSA) *	42	EA.
PIPE SUPPORT ANGLES (PSA) *	12	EA.

* INCLUDES U-BOLTS, ANGLES, NUTS, BOLTS, WASHERS AND PLATES.

\$\$\$\$\$SYTIME\$\$\$\$\$

NO.	BY	DATE	REVISION



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

ENGINEERING & SAFETY BRANCH

MAIL SERVICE CENTER RALEIGH, NC 27603
DELIVERIA 300 CAPITAL BOULEVARD RALEIGH, NC 27603
PHONE: 1919-715-8803 FAX: 1919-715-8804

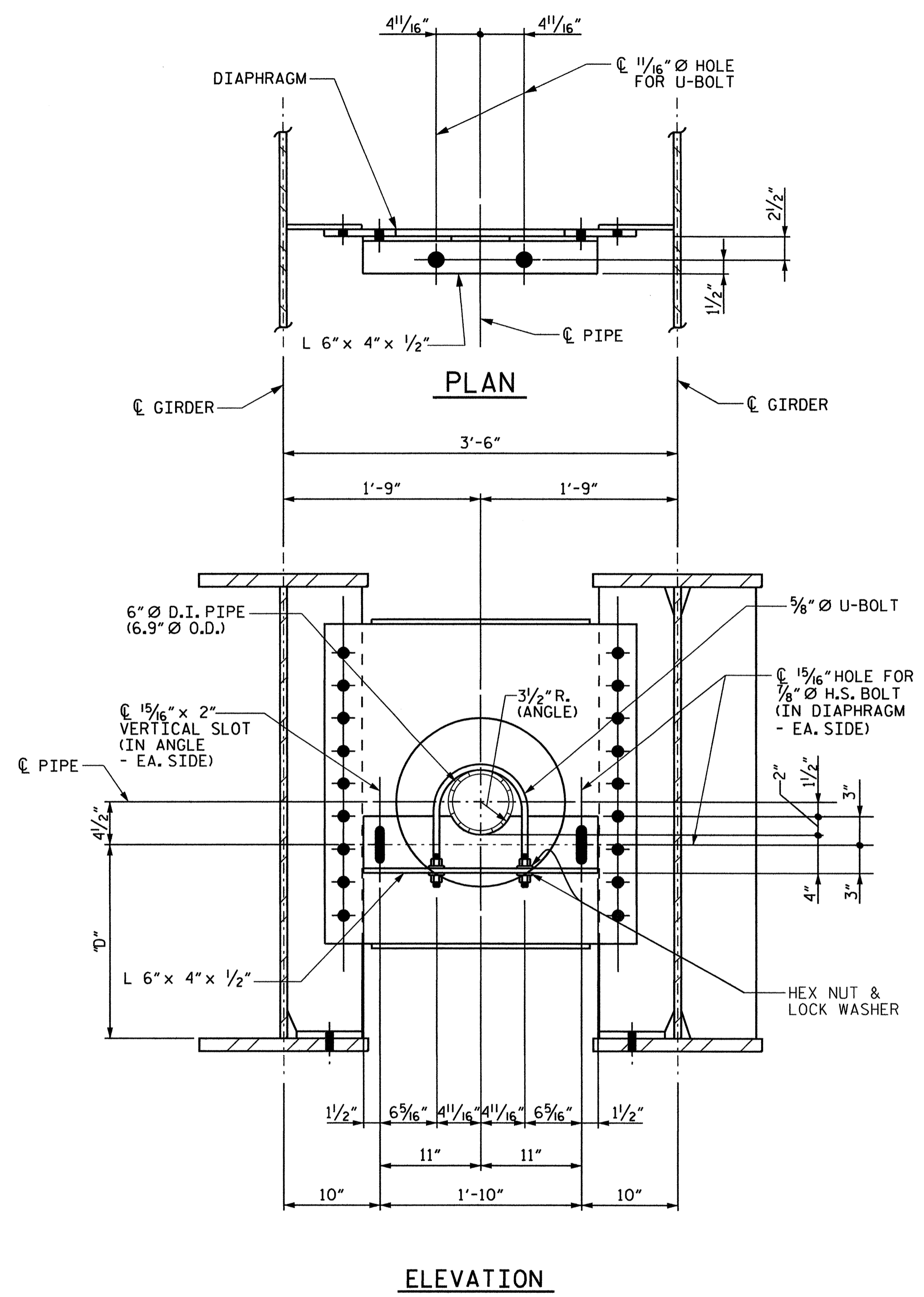
PROJECT U-3459 - KLUMAC ROAD
TITLE STRUCTURE DRAINAGE DETAILS

LOCATION SALISBURY-SR 2541 (KLUMAC RD) at NCRANS

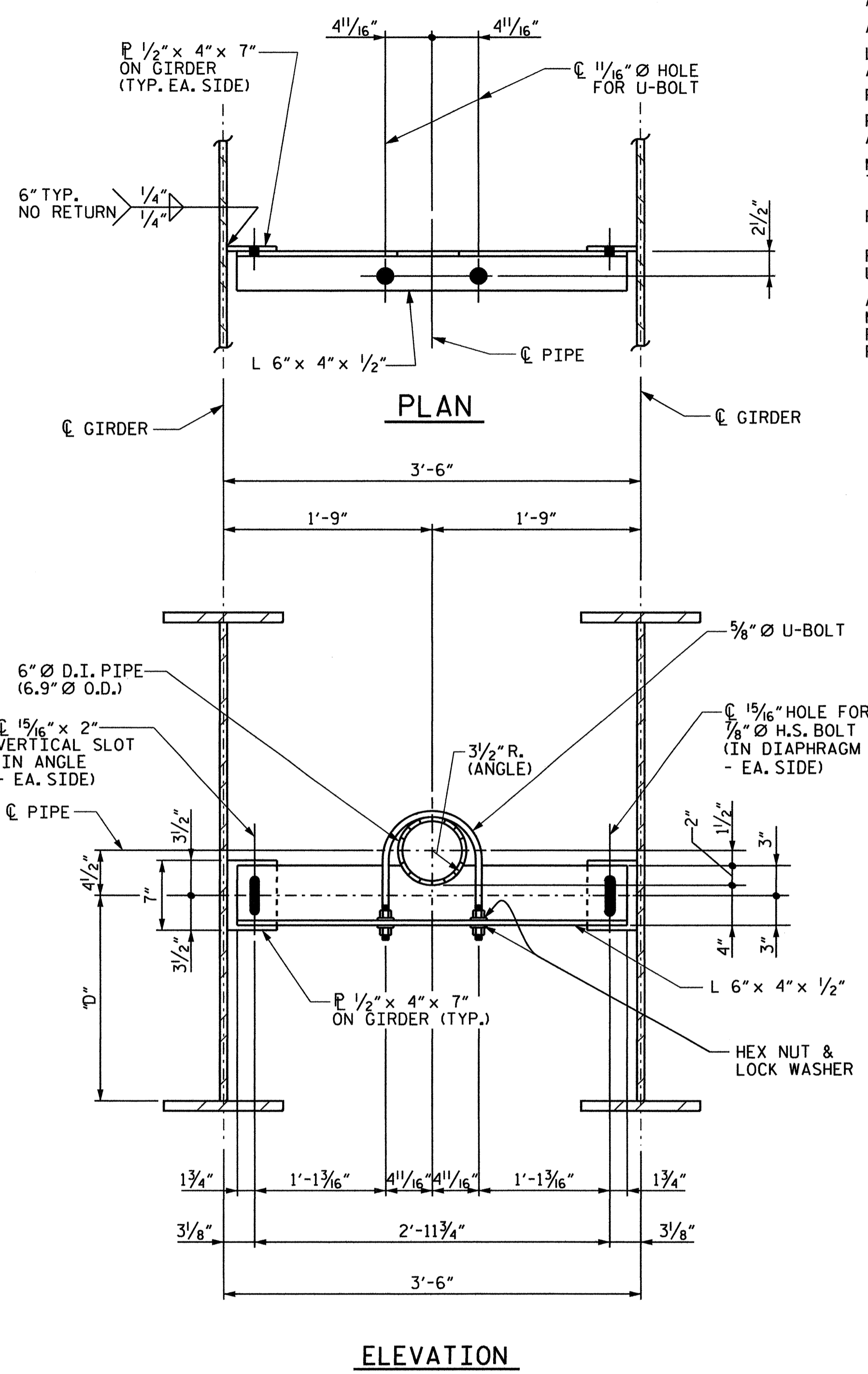
DGN BY CPB RAILROAD NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN MILE POST MP 335.2
DWN BY NMW VAL SEC V-8
CHK BY RTJ DATE 5/12 SCALE 3/8 = 1'-0"

SHEET 42 OF 51

0302DEL_PT12



DIAPHRAGM SUPPORT ANGLE - MARK "DSA-XX"

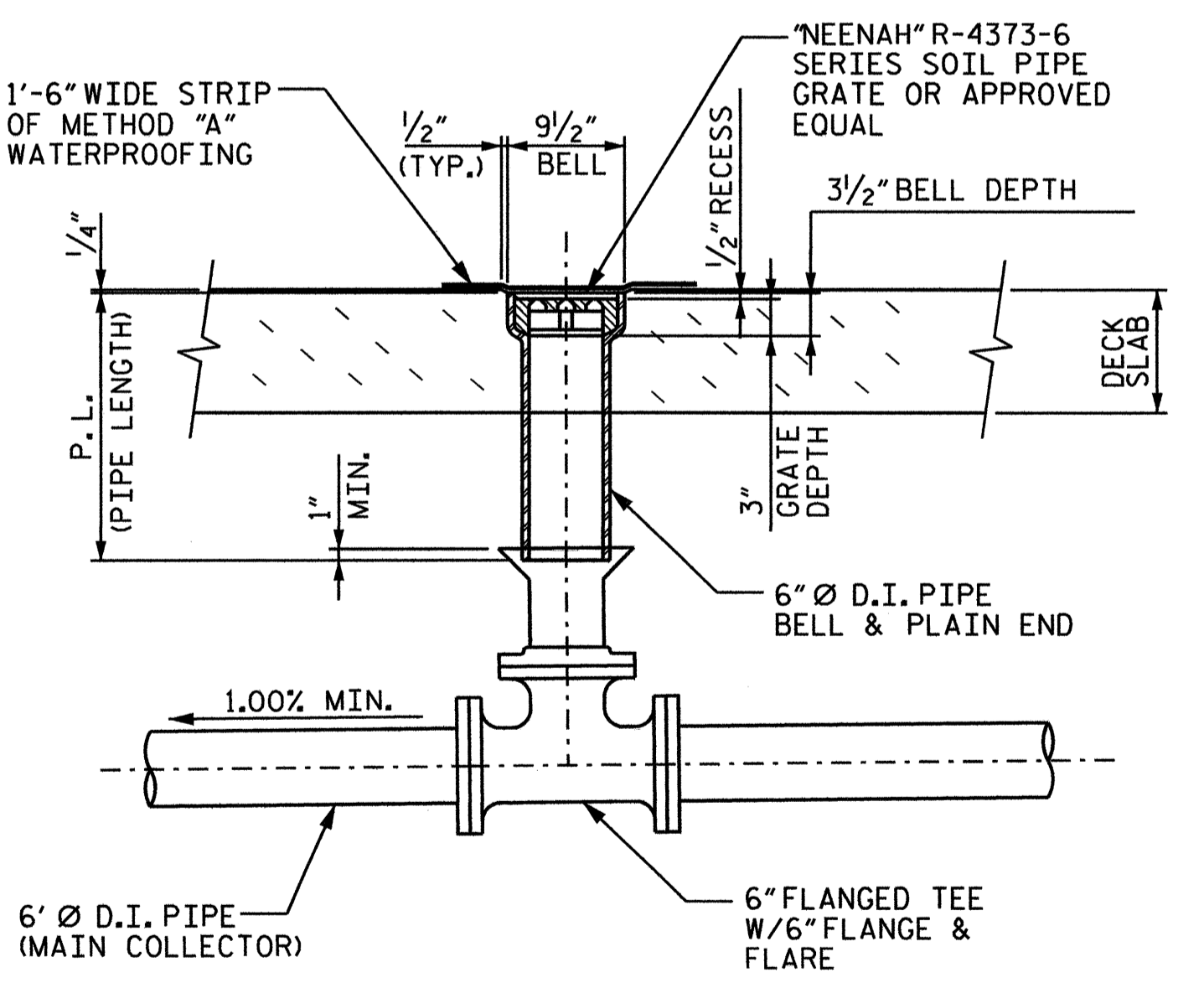


PIPE SUPPORT ANGLE - MARK "PSA-XX"

NOTES:
ALL PIPE, TEES, BELLS AND BENDS SHALL BE CLASS 53 DUCTILE IRON.
ALL BENDS TO BE SHORT RADIUS, INCLUDING FLANGE & FLARE BENDS.
LAYOUT IS BASED ON DIMENSIONS GIVEN IN THE PIPE MANUAL OF THE AMERICAN CAST IRON PIPE COMPANY.
FOR LOCATIONS AND DESIGNATIONS OF DSA & PSA, SEE FRAMING PLANS.
PIPE LENGTHS SHOWN ALLOW FOR 1/8" THICK GASKETS TO BE USED AT ALL BOLTED FLANGE CONNECTIONS.
MAKE FINAL PIPE ALIGNMENT AND TIGHTEN U-BOLTS AFTER RAILROAD TRACK HAS BEEN LAID ACROSS THE BRIDGE.
FOR STRUCTURE DRAINAGE SYSTEM, SEE SPECIAL PROVISIONS.
PROVIDE PVC OR NEOPRENE-COATED STRIPS, EPOXY-CEMENTED TO THE U-BOLT OR PIPE TO FURNISH STRAY CURRENT PROTECTION.
AT THE CONTRACTOR'S OPTION THE OUTSIDE COATING FOR D.I. PIPE MAY BE PAINTED WITH A SHOP PRIME COAT OF INORGANIC ZINC PRIMER AND A FINISH (FIELD) COATING OF ACRYLIC PAINT AS SPECIFIED FOR THE STRUCTURAL STEEL.

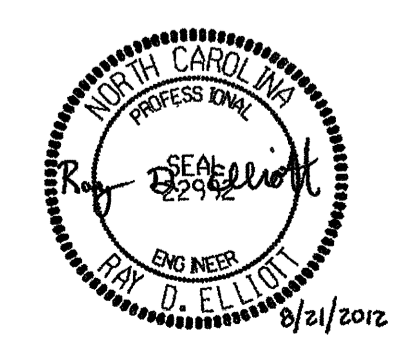
DIAPHRAGM SUPPORT ANGLE MARK "DSA-XX" LOCATIONS		
LOCATION	MARK	"D"
SPAN A	DSA-A1	1'-8 3/4"
	DSA-A2	1'-7 1/16"
	DSA-A3	1'-5 5/8"
SPAN B	DSA-B1	1'-4 3/4"
	DSA-B2	1'-5 5/16"
	DSA-B3	1'-6 7/16"
	DSA-B4	1'-7 1/4"
	DSA-B5	1'-8 1/16"
	DSA-B6	1'-8 7/8"
SPAN C	DSA-B7	1'-9 1/16"
	DSA-C1	1'-9 1/2"
	DSA-C2	1'-10"
	DSA-C3	1'-10 3/16"
	DSA-C4	1'-11 1/16"

PIPE SUPPORT ANGLE MARK "PSA-XX" LOCATIONS		
LOCATION	MARK	"D"
SPAN A	PSA-A1	1'-4 1/16"
SPAN B	PSA-B1	1'-5 1/4"
	PSA-B2	1'-8 3/16"
SPAN C	PSA-C1	1'-11 1/8"



DECK DRAIN DETAIL "B"

NO.	BY	DATE	REVISION

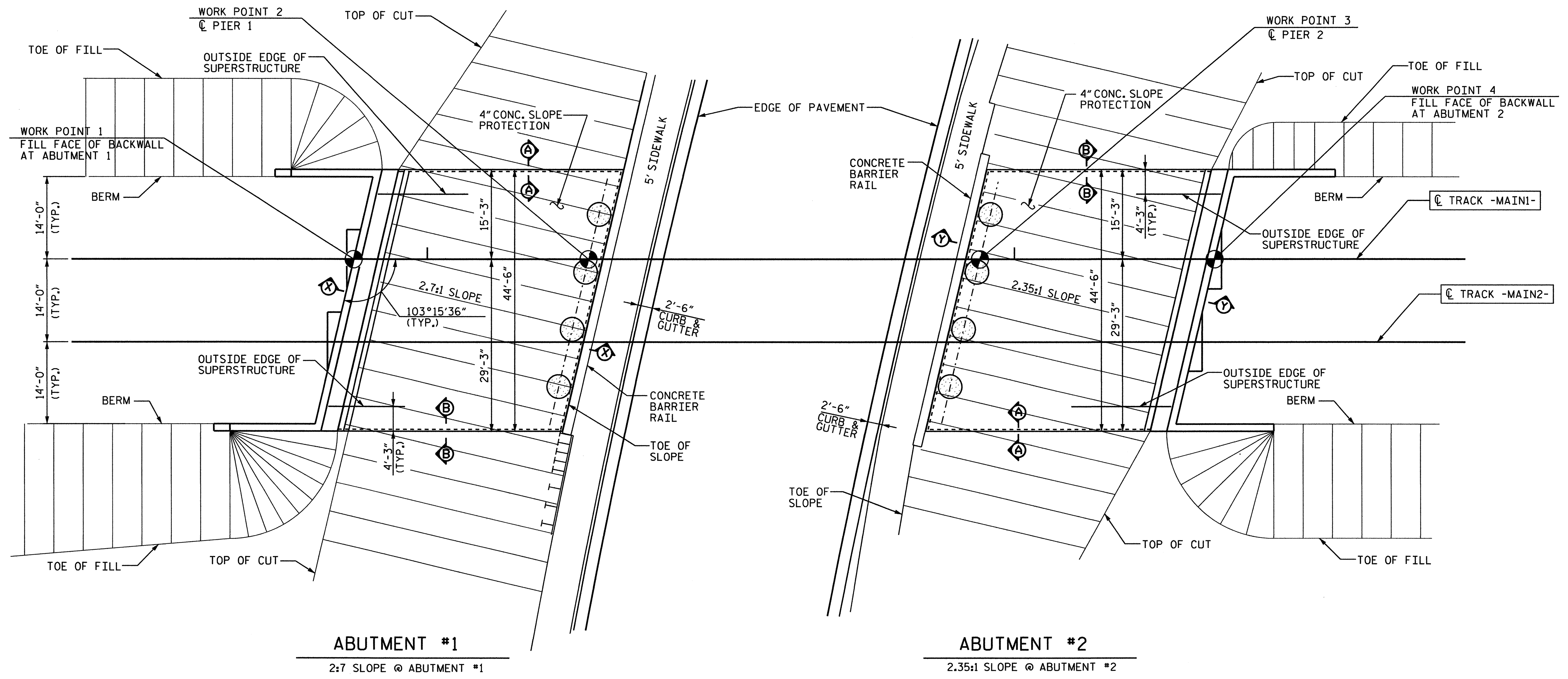


NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: **ENGINEERING & SAFETY BRANCH**
MAIL SERVICE CENTER RALEIGH, NC 27699-1956
DELIVERY: 960 CAPITAL BOULEVARD RALEIGH, NC 27603
PHONE: 1991 715-8803 FAX: 1991 715-8804

PROJECT TITLE: U-3459 - KLUMAC ROAD	
LOCATION: SALISBURY-SR 2541 (KLUMAC RD) at NCRBNS	
DGN BY: CPB	RAILROAD: NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
DWN BY: NMW	VAL SEC: V-8
CHK BY: RTJ	DATE: 5/12
SCALE: 3/4" = 1'-0"	MILE POST: MP 335.2
SHEET 43 OF 51	

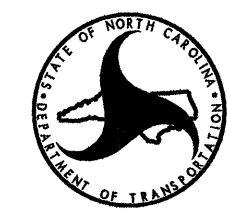
0302DEL_P12



SLOPE PROTECTION PLAN
FOR WIDTH OF BERM, SEE GENERAL DRAWING

SHEET 1 OF 2

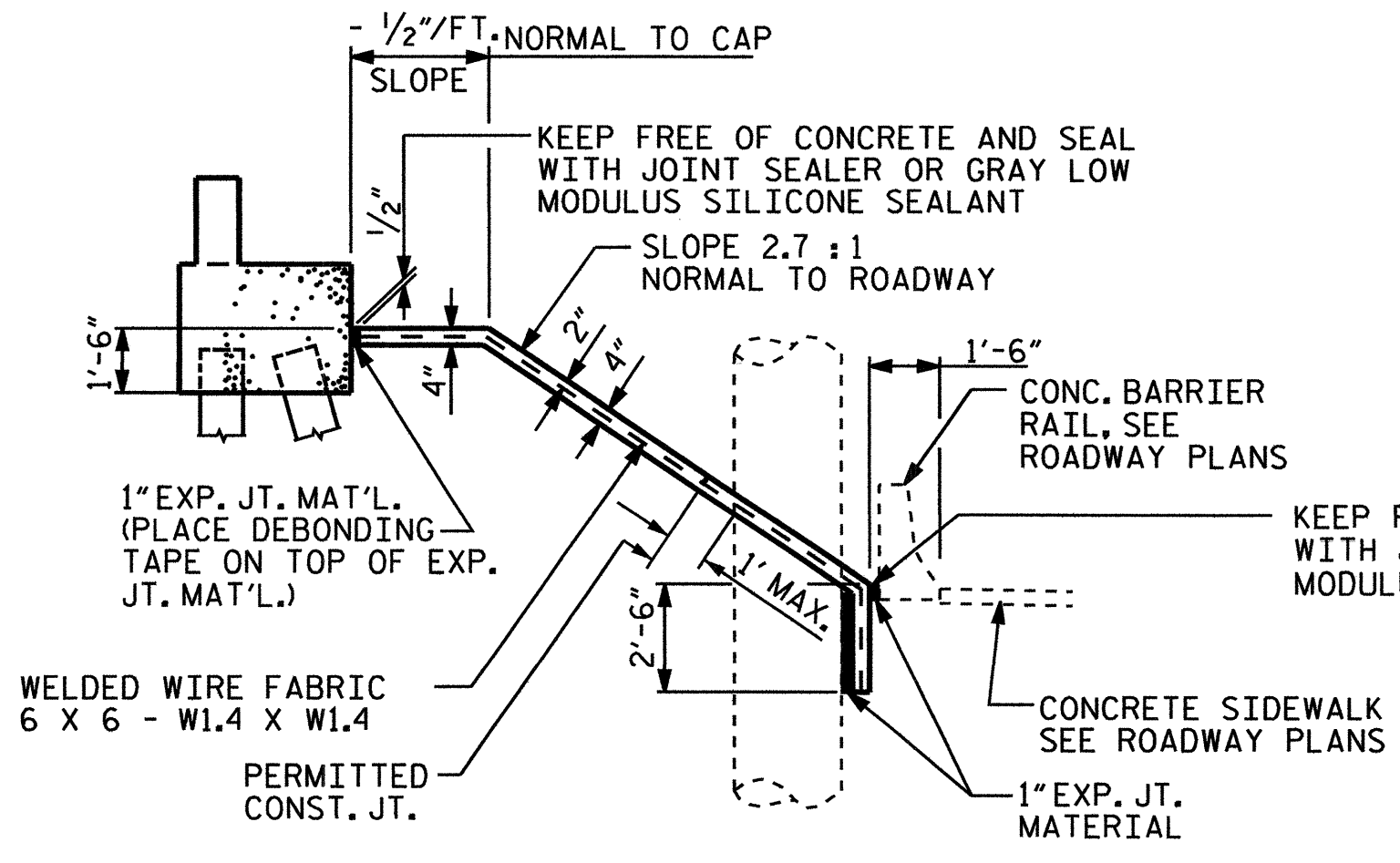
NO.	BY	DATE	REVISION



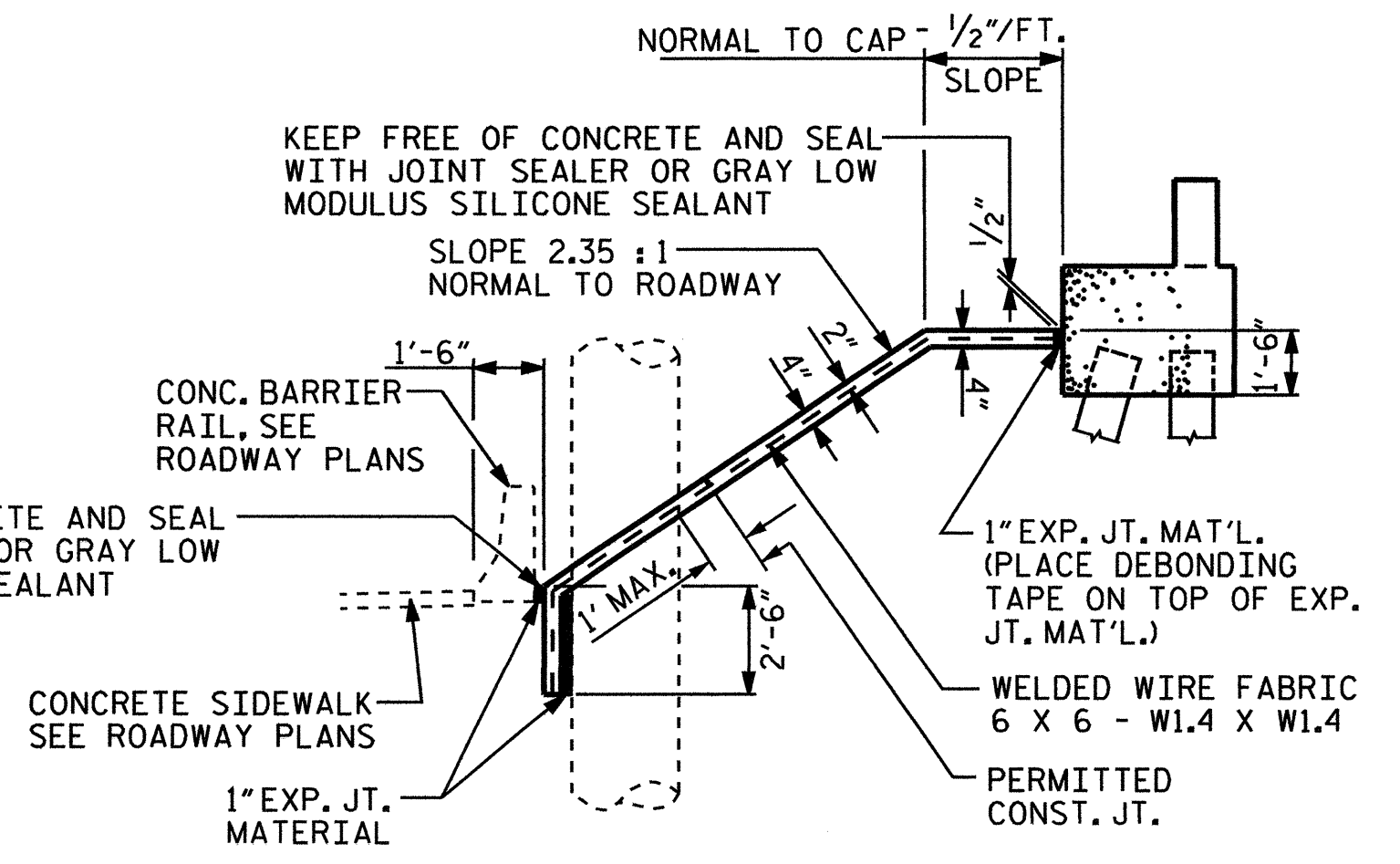
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION
PREPARED BY:
ENGINEERING & SAFETY BRANCH
MAIL: 1255 MAIL SERVICE CENTER, RALEIGH, NC 27655-1556
DELIVERY: 180 CAPITAL BOULEVARD, RALEIGH, NC 27603
PHONE: (919) 715-8803
FAX: (919) 715-8804

PROJECT TITLE		U-3459 - KLUMAC ROAD	
LOCATION		SALISBURY-SR 2541 (KLUMAC RD) at NCR#NS	
DGN BY	CPB	RAILROAD	NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
DWN BY	NMW	VAL SEC	V-8
CHK BY	RTJ	DATE	5/12
SCALE		1" = 10'-0"	
MILE POST		MP 335.2	
SHEET 44 OF 51			

0302DEL_P12



**SECTION "X-X" @ ABUTMENT #1
ALONG C ROADWAY WITH SHOULDER PIER**

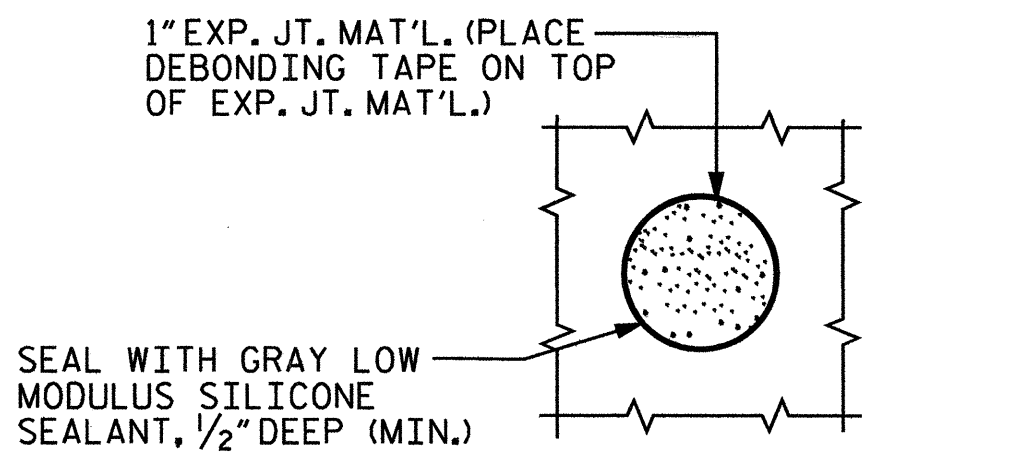


**SECTION "Y-Y" @ ABUTMENT #2
ALONG C ROADWAY WITH SHOULDER PIER**

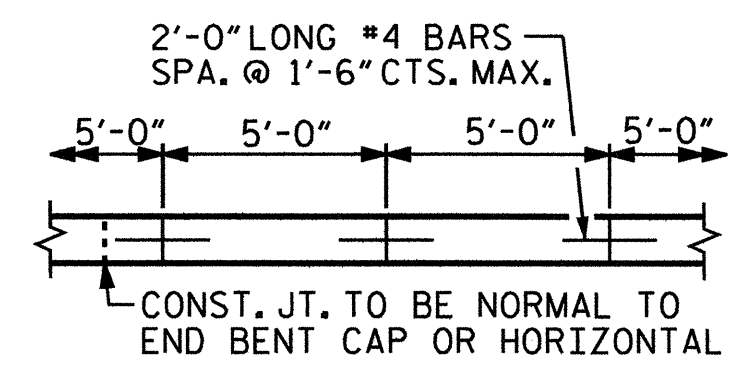
GENERAL NOTES

SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS. FOR BERM WIDTH, SEE GENERAL DRAWING.

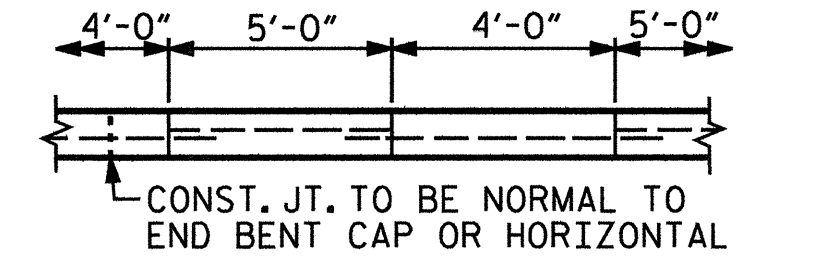
SLOPE PROTECTION SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 - W1.4 X W1.4, 60" WIDE. SLOPE PROTECTION SHALL BE POURED IN 5' STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 2'-0" LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1'-6" MAXIMUM SPACING. SLOPE PROTECTION MAY BE POURED IN ALTERNATE 4' AND 5' STRIPS AS SHOWN IN THE "OPTIONAL POURING DETAIL" WITH ADJACENT RUNS OF WELDED WIRE FABRIC LAPPING AT LEAST 6". THE COST OF THE WELDED WIRE FABRIC AND #4 BARS, IF USED, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.



**PLAN WHERE CONCRETE
SLOPE PROTECTION MUST
BE PLACED AROUND A
BENT COLUMN**



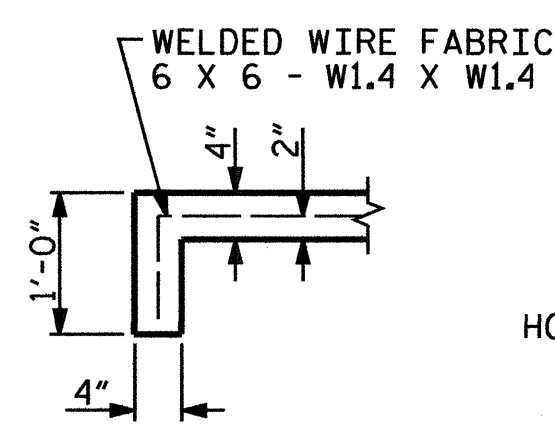
POURING DETAIL



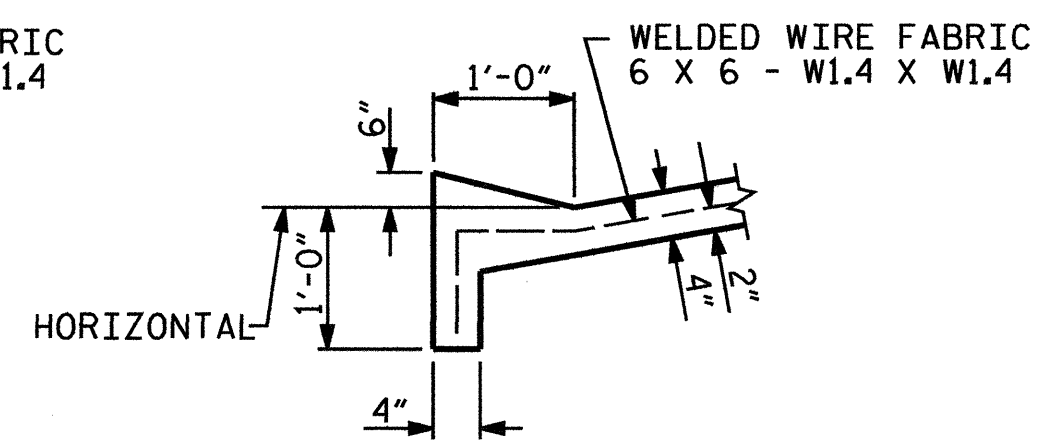
OPTIONAL POURING DETAIL

BRIDGE @ STA. 8916+54,582 -MAINI-	4" INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
ABUTMENT 1	210	420
ABUTMENT 2	215	430

* QUANTITY SHOWN IS BASED ON 5' POURS.



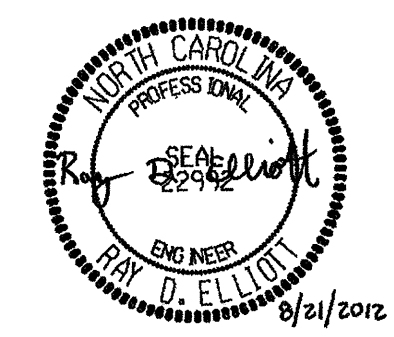
SECTION A-A



SECTION B-B

\$\$\$\$\$USERNAME\$\$\$\$\$ SYSTEMTIME\$\$\$\$\$ DGN\$\$\$\$\$

NO.	BY	DATE	REVISION



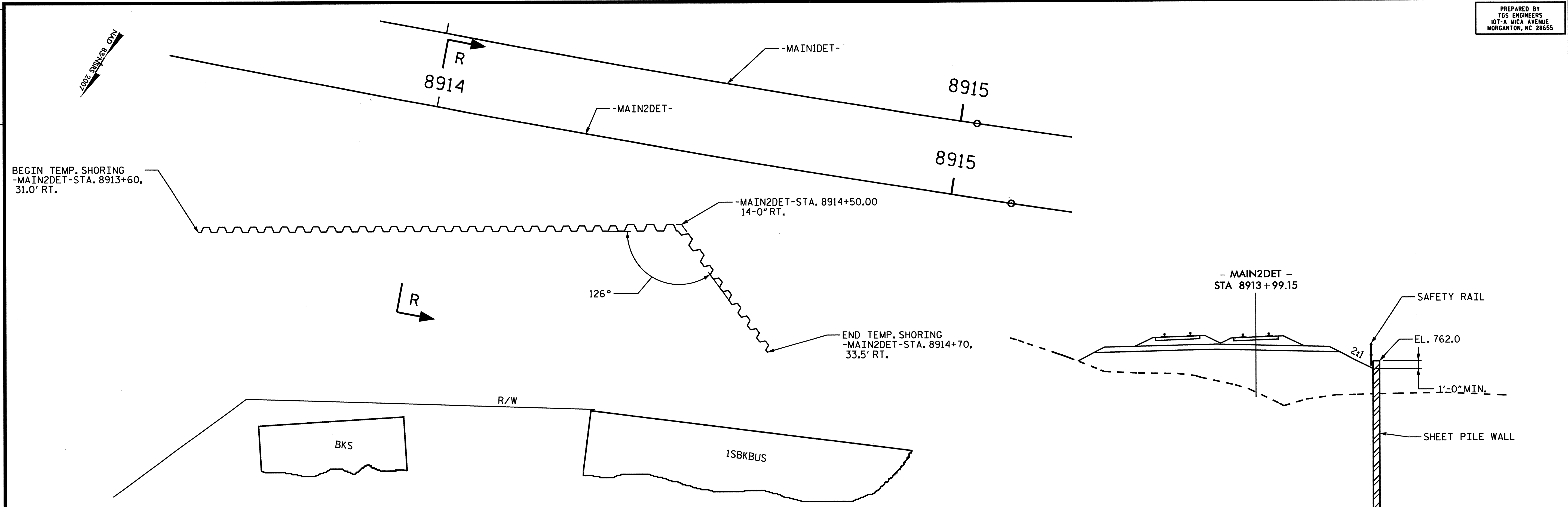
PREPARED BY: **ENGINEERING & SAFETY BRANCH**

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

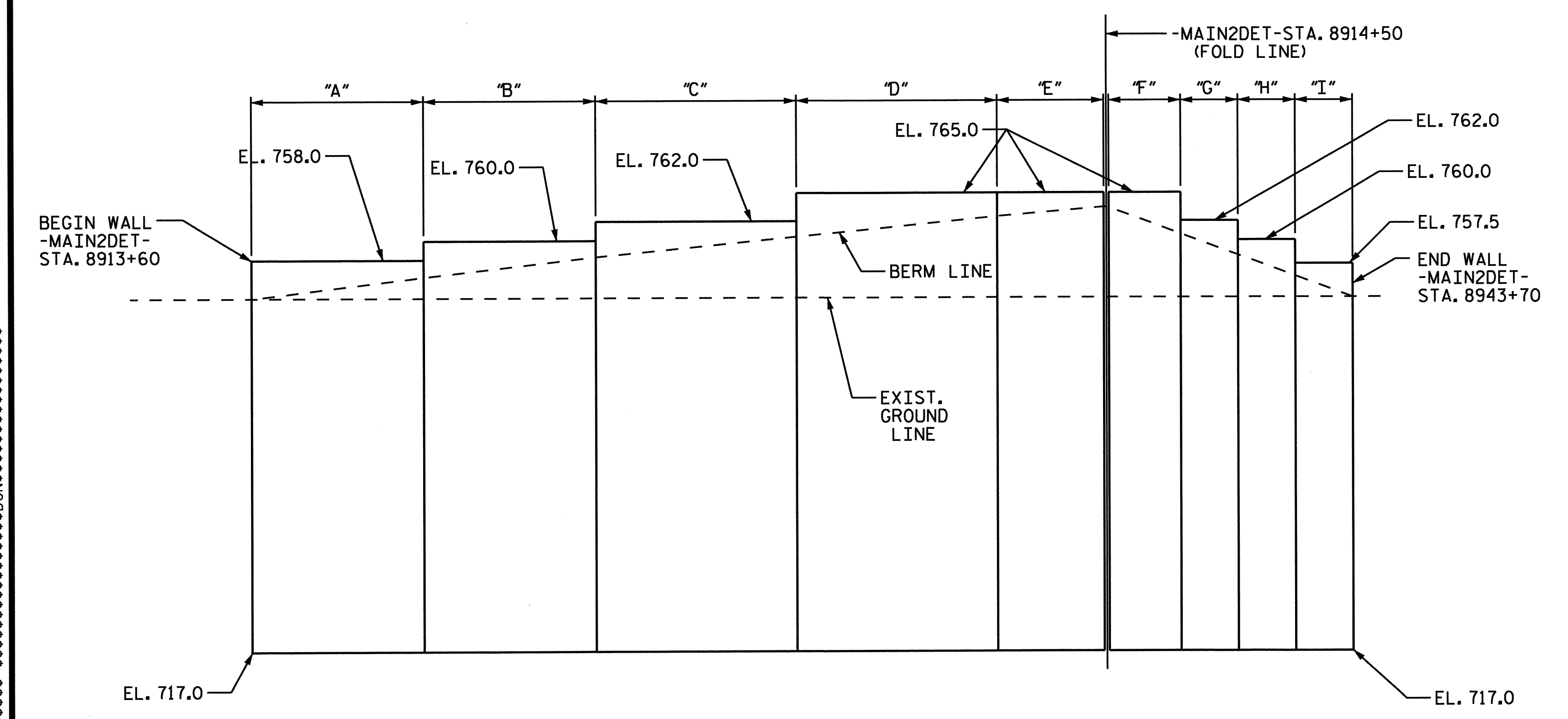
MAIL: 1935 MAIL SERVICE CENTER, RALEIGH, NC 27699-0556
DELIVERY: 800 CAPITAL BOULEVARD, RALEIGH, NC 27603
PHONE: 1-800-775-8803, FAX: 1-919-775-8804

PROJECT	U-3459 - KLUMAC ROAD		
TITLE	SLOPE PROTECTION DETAILS		
LOCATION	SALISBURY-SR 2541 (KLUMAC RD) of NCRRTS		
DGN BY	CPB	RAILROAD	NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
MILE POST	MP 335.2		
DWN BY	NMW	VAL SEC	V-8
CHK BY	RTJ	DATE	5/12
SCALE	1/4" = 1'-0"		
SHEET 45 OF 51			

0302DEL_PT2
0001ADD_PT2

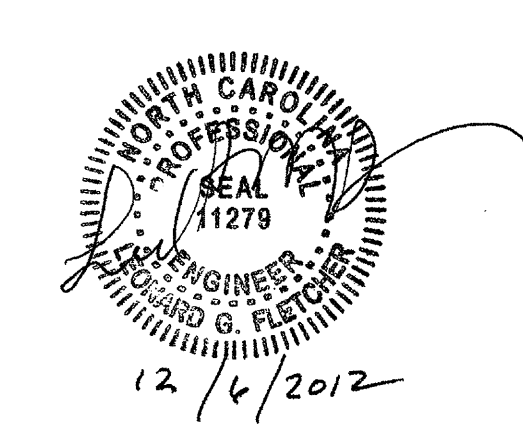


PLAN



ELEVATION

- "A" = TEMPORARY SHEET PILING PZ-35
10 PCS. @ 1'-10 5/8" = 18'-10 1/2"
- "B" = TEMPORARY SHEET PILING PZ-35
10 PCS. @ 1'-10 5/8" = 18'-10 1/2"
- "C" = TEMPORARY SHEET PILING PZ-35
12 PCS. @ 1'-10 5/8" = 22'-7 1/2"
- "D" = TEMPORARY SHEET PILING PZ-35
12 PCS. @ 1'-10 5/8" = 22'-7 1/2"
- "E" = TEMPORARY SHEET PILING PZ-35
6 PCS. @ 1'-10 5/8" = 11'-3 3/8"
- "F" = TEMPORARY SHEET PILING PZ-35
4 PCS. @ 1'-10 5/8" = 7'-6 3/8"
- "G" = TEMPORARY SHEET PILING PZ-35
4 PCS. @ 1'-10 5/8" = 7'-6 3/8"
- "H" = TEMPORARY SHEET PILING PZ-35
4 PCS. @ 1'-10 5/8" = 7'-6 3/8"
- "I" = TEMPORARY SHEET PILING PZ-35
4 PCS. @ 1'-10 5/8" = 7'-6 3/8"



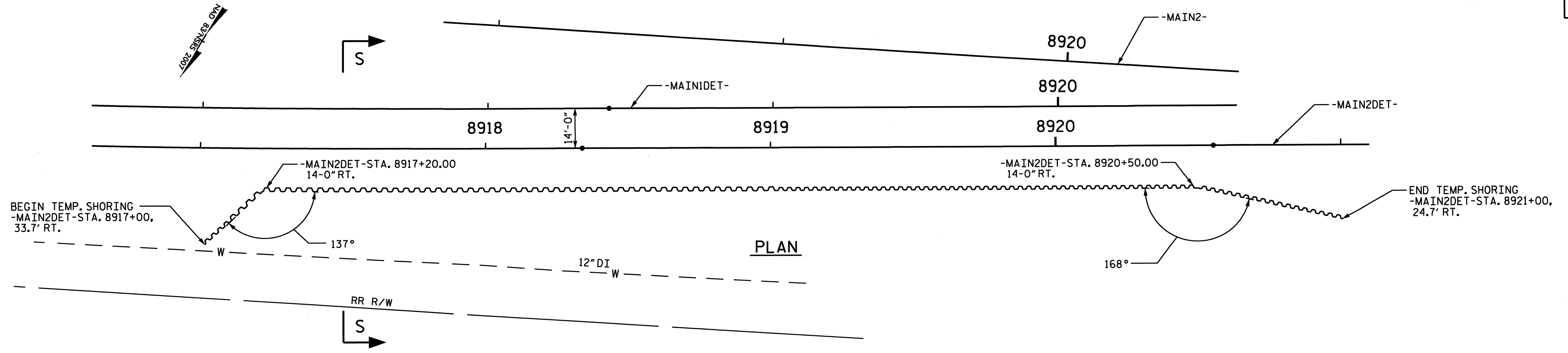
NOTES:
ALL SHORING MATERIAL SHALL BE IN "LIKE NEW" CONDITION.
MATERIAL USED FOR THE TEMPORARY SHEET PILING WALL SHALL BE ASTM A572 GRADE 50.
SAFETY RAIL SHALL MEET THE REQUIREMENTS OF AREMA 15.8.5.2. AS AN ALTERNATE, THE CONTRACTOR MAY EXTEND THE SHEET PILING WALL TO 3'-6" ABOVE THE RAILROAD EMBANKMENT.

\$\$\$\$\$SYTIME\$\$\$\$\$

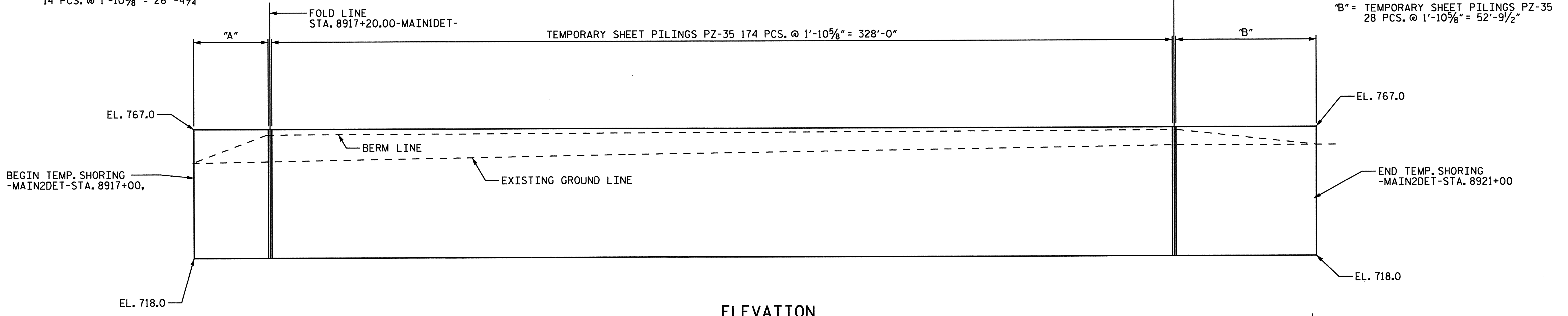
NO.	BY	DATE	REVISION
1	RTJ	12/06/12	REVISED SHORING MATERIAL NOTE.

<p>NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RAIL DIVISION</p>	<p>PROJECT U-3459 - KLUMAC ROAD</p>
	<p>TITLE TEMPORARY SHORING DETOUR TRACK SECTION NO. 1</p>
<p>PREPARED BY ENGINEERING & SAFETY BRANCH</p> <p>MAIL SERVICE CENTER RALEIGH, NC 27603</p>	<p>LOCATION SALISBURY-SR 2541 (KLUMAC RD) of NCRRTS</p> <p>DGN BY RTJ RAILROAD NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN MILE POST MP 335.2</p> <p>DWN BY VAL SEC V-8</p> <p>CHK BY DATE 8/2 SCALE 1" = 10'</p>
<p>SHEET 46 OF 51</p>	

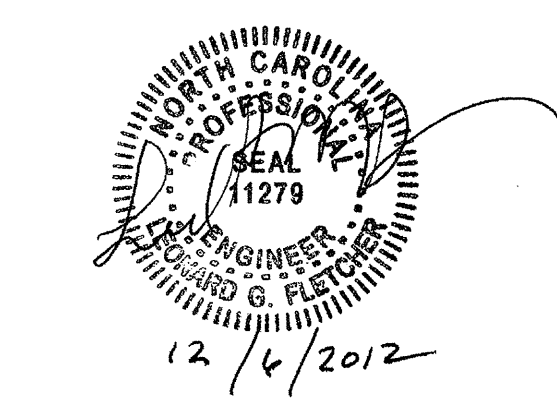
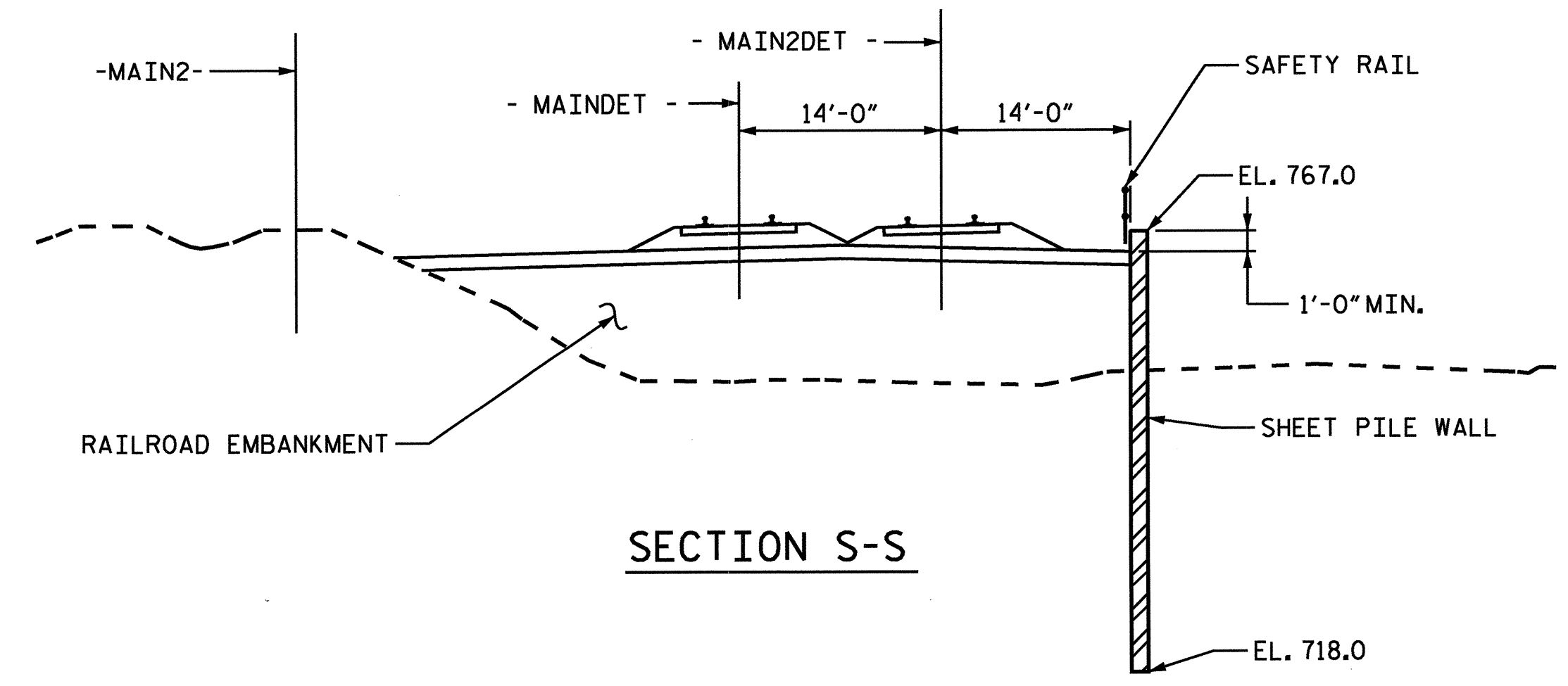
PCN
0302DEL_PT2
0001ADD_PT2



"A" = TEMPORARY SHEET PILING PZ-35
14 PCS. @ 1'-10³/₈" = 26'-4³/₄"



NOTES:
ALL SHORING MATERIAL SHALL BE IN "LIKE NEW" CONDITION.
MATERIAL USED FOR THE TEMPORARY SHEET PILING WALL SHALL BE ASTM A572 GRADE 50.
SAFETY RAIL SHALL MEET THE REQUIREMENTS OF AREMA 15.8.5.2. AS AN ALTERNATE, THE CONTRACTOR MAY EXTEND THE SHEET PILING WALL TO 3'-6" ABOVE THE RAILROAD EMBANKMENT.



\$\$\$\$\$USERNAME\$\$\$\$\$ SYSTEMTIME\$\$\$\$\$

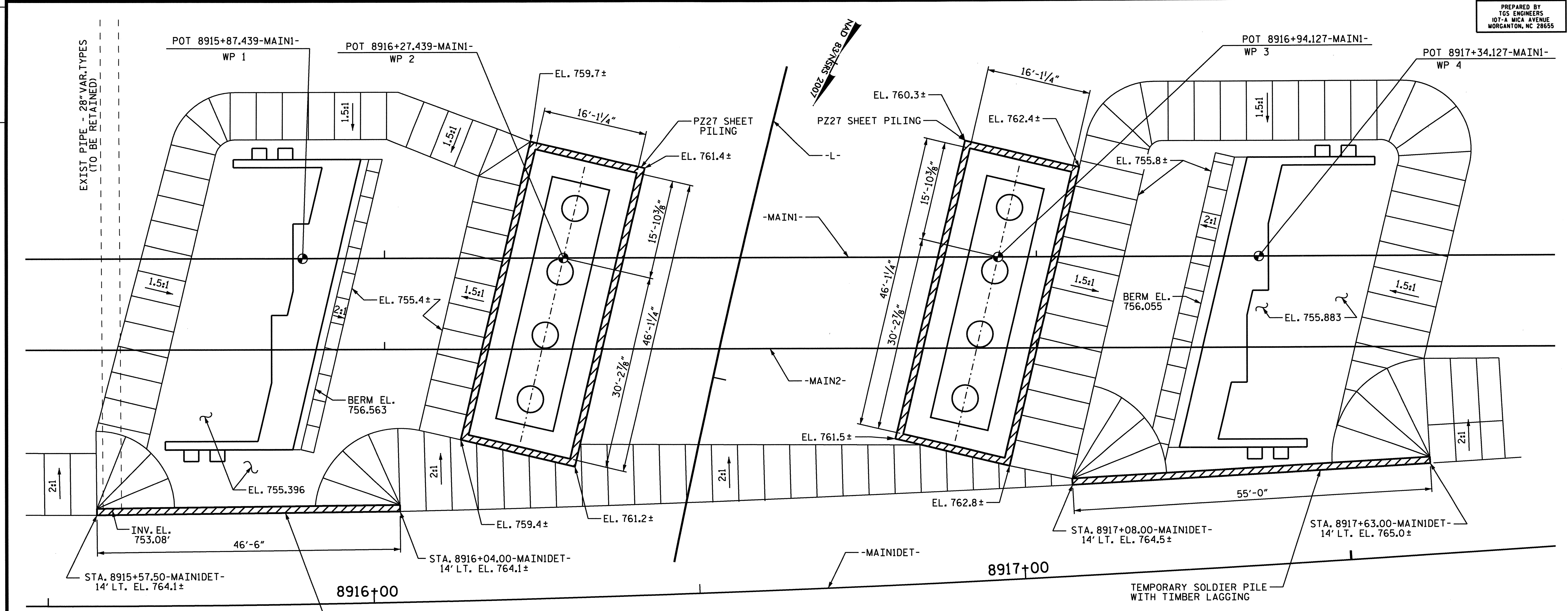
NO.	BY	DATE	REVISION
1	RTJ	12/06/12	REVISED SHORING MATERIAL NOTE.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: **ENGINEERING & SAFETY BRANCH**
1556 MAIL SERVICE CENTER RALEIGH, NC 27603
DELIVERED: 860 CAPITAL BOULEVARD RALEIGH, NC 27603
PHONE: (919) 715-8803 FAX: (919) 715-8804

PROJECT	U-3459 - KLUMAC ROAD		
TITLE	TEMPORARY SHORING DETOUR TRACK SECTION NO. 2		
LOCATION	SALISBURY-SR 2541 (KLUMAC RD) of NCR/RNS		
DGN BY	CPB	RAILROAD	NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
DWN BY	RTJ	VAL SEC	V-8
CHK BY	RDE	DATE	8/12
		SCALE	1" = 20'
		MILE POST	MP 335.2
			SHEET 47 OF 51

0302DEL_P12
0001ADD_P12



**LOCATION PLAN FOR SHORING
(BRIDGE)**

PROCEDURE FOR ABUTMENT CONSTRUCTION

1. EXCAVATE TO SLOPE LINES AS MUCH AS POSSIBLE AS INDICATED.
2. DRIVE H-PILES TO THE TIP ELEVATION INDICATED ON THE PLANS. USE PILES OF SFFICIENT LENTH TO OBTAIN A MINIMUM DISTANCE OF 42" FROM TOP OF PILE TO EXISTING GROUND. TACK WELD ANGLES TO PILES AS INDICATED. ADDITION POSITIVE PROTECTION MAY BE REQUIRED AS DIRECTED BY THE ENGINEER.
3. EXCAVATE TO BOTTOM OF CAP AS INDICATED INSTALLING LAGGING TO TOP OF PILE AS THE EXCAVATION PROGRESSES.
4. FILL VOIDS BETWEEN LAGGING AND THE RETAINED EMBANKMENT. COMPLETE GRADING TO PLAN SLOPE LINES. CONSTRUCT ABUTMENT COMPLETE.
5. BACKFILL ABUTMENT AND CONSTRUCT ROADWAY FOR NEW ALIGNMENT REMOVING LAGGING AS BACKFILLING PROGRESSES.
6. AFTER TRAIN TRAFFIC IS MOVED TO NEW ALIGNMENT, REMOVE REMAINING TIMBER LAGGING, EXTRACT SOLDIER PILES, AND GRADE TO FINAL SLOPE LINES.

PROCEDURE FOR PIER 1 CONSTRUCTION

1. AFTER TRAIN TRAFFIC HAS MOVED TO DETOUR ALIGNMENT, DRIVE SHEET PILING.
2. PRIOR TO BEGINNING EXCAVATION, IF THE TOP OF PILING IS LESS THAN 42" ABOVE EXISTING GROUND, PROVIDE A HANDRAIL AND/OR POSITIVE PROTECTION AT LEAST 42" ABOVE EXISTING GROUND SUBJECT TO APPROVAL OF THE ENGINEER.
3. EXCAVATE TO ELEVATION 758.0 AND INSTALL FRAME 1.
4. EXCAVATE TO ELEVATION 750.0 AND INSTALL FRAME 2.
5. EXCAVATE TO ELEVATION 742.0 AND INSTALL FRAME 3.
6. COMPLETE EXCAVATION AND CONSTRUCT PIER 1 COMPLETE.
7. BACKFILL TO ELEVATION 742.0 AND REMOVE FRAME 3. PORTIONS OF SUBSTRUCTURE CONCRETE WHICH WILL BE EXPOSED ABOVE FINAL GROUND LINE SHALL BE PROTECTED AGAINST DISCOLORATION OR OTHER DAMAGES. THE ENGINEER SHALL APPROVE IN ADVANCE THE METHOD OF CONCRETE PROTECTION.
8. BACKFILL TO ELEVATION 750.0 AND REMOVE FRAME 2.
9. BACKFILL TO ELEVATION 758.0 AND REMOVE FRAME 1.
10. BACKFILL INSIDE OF SHEETING TO GROUND LINES ON OUTSIDE OF SHEETING AND REMOVE SHEET PILING.

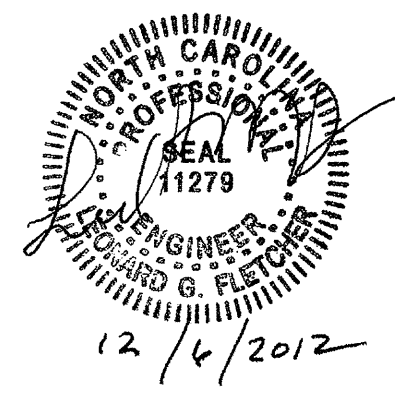
PROCEDURE FOR PIER 2 CONSTRUCTION

1. AFTER TRAIN TRAFFIC HAS MOVED TO DETOUR ALIGNMENT, DRIVE SHEET PILING.
2. PRIOR TO BEGINNING EXCAVATION, IF THE TOP OF PILING IS LESS THAN 42" ABOVE EXISTING GROUND, PROVIDE A HANDRAIL AND/OR POSITIVE PROTECTION AT LEAST 42" ABOVE EXISTING GROUND SUBJECT TO APPROVAL OF THE ENGINEER.
3. EXCAVATE TO ELEVATION 756.7 AND INSTALL FRAME 1.
4. EXCAVATE TO ELEVATION 748.7 AND INSTALL FRAME 2.
5. EXCAVATE TO ELEVATION 740.7 AND INSTALL FRAME 3.
6. COMPLETE EXCAVATION AND CONSTRUCT PIER 2 COMPLETE.
7. BACKFILL TO ELEVATION 740.7 AND REMOVE FRAME 3. PORTIONS OF SUBSTRUCTURE CONCRETE WHICH WILL BE EXPOSED ABOVE FINAL GROUND LINE SHALL BE PROTECTED AGAINST DISCOLORATION OR OTHER DAMAGES. THE ENGINEER SHALL APPROVE IN ADVANCE THE METHOD OF CONCRETE PROTECTION.
8. BACKFILL TO ELEVATION 748.7 AND REMOVE FRAME 2.
9. BACKFILL TO ELEVATION 756.7 AND REMOVE FRAME 1.
10. BACKFILL INSIDE OF SHEETING TO GROUND LINES ON OUTSIDE OF SHEETING AND REMOVE SHEET PILING.

NOTES:

THE CONTRACTOR SHALL ESTABLISH A BASELINE (OR SERIES OF MONITOR POINTS) THROUGHOUT THE STRUCTURE, FROM WHICH MEASUREMENTS ARE TO BE TAKEN TO DETECT ANY HORIZONTAL MOVEMENT OF TRACK. ESTABLISH BENCH MARK FOR USE IN DETERMINING T/R ELEVATIONS AT 10' INTERVALS THROUGHOUT THE LENGTH OF WALL. LINE AND ELEVATIONS OF TRACK SHALL BE MONITORED EVERY WORKING DAY UNTIL THE RAILROAD ENGINEER PERMITS LESS FREQUENT MONITORING BECAUSE OF LACK OF TRACK MOVEMENT.

ALL SHORING MATERIAL SHALL BE IN "LIKE NEW" CONDITION.



NO.	BY	DATE	REVISION
1	RTJ	12/06/12	REVISED SHORING MATERIAL NOTE.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: **ENGINEERING & SAFETY BRANCH**

MAIL SERVICE CENTER: 1926 MAIL SERVICE CENTER, RALEIGH, NC 27699-1956
DELIVERY: 860 CAPITAL BOULEVARD, RALEIGH, NC 27603
PHONE: (919) 715-9803
FAX: (919) 715-9804

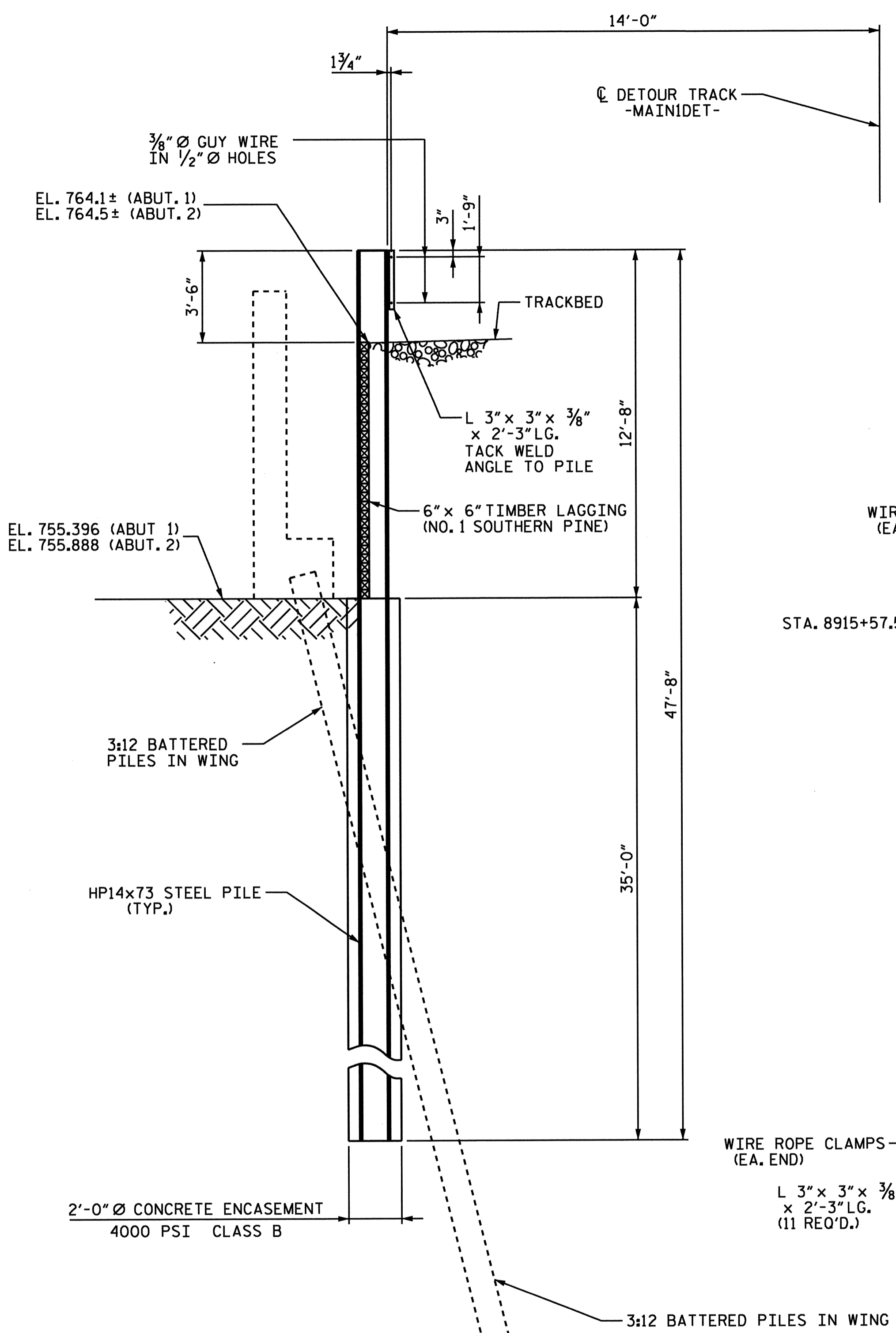
PROJECT	U-3459 - KLUMAC ROAD		
TITLE	LOCATION PLAN FOR TEMPORARY SHORING ABUTMENTS 1 AND 2, AND PIERS 1 AND 2		
LOCATION	SALISBURY-SR 2541 (KLUMAC RD) OF NCR/RNS		
DGN BY	CPB	RAILROAD	NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
DWN BY	RTJ	VAL SEC	V-8
CHK BY	RDE	DATE	8/2
MILE POST	MP 335.2		SCALE 1/8" = 1'-0"
			SHEET 48 OF 51

0302DEL_P12
0001ADD_P12

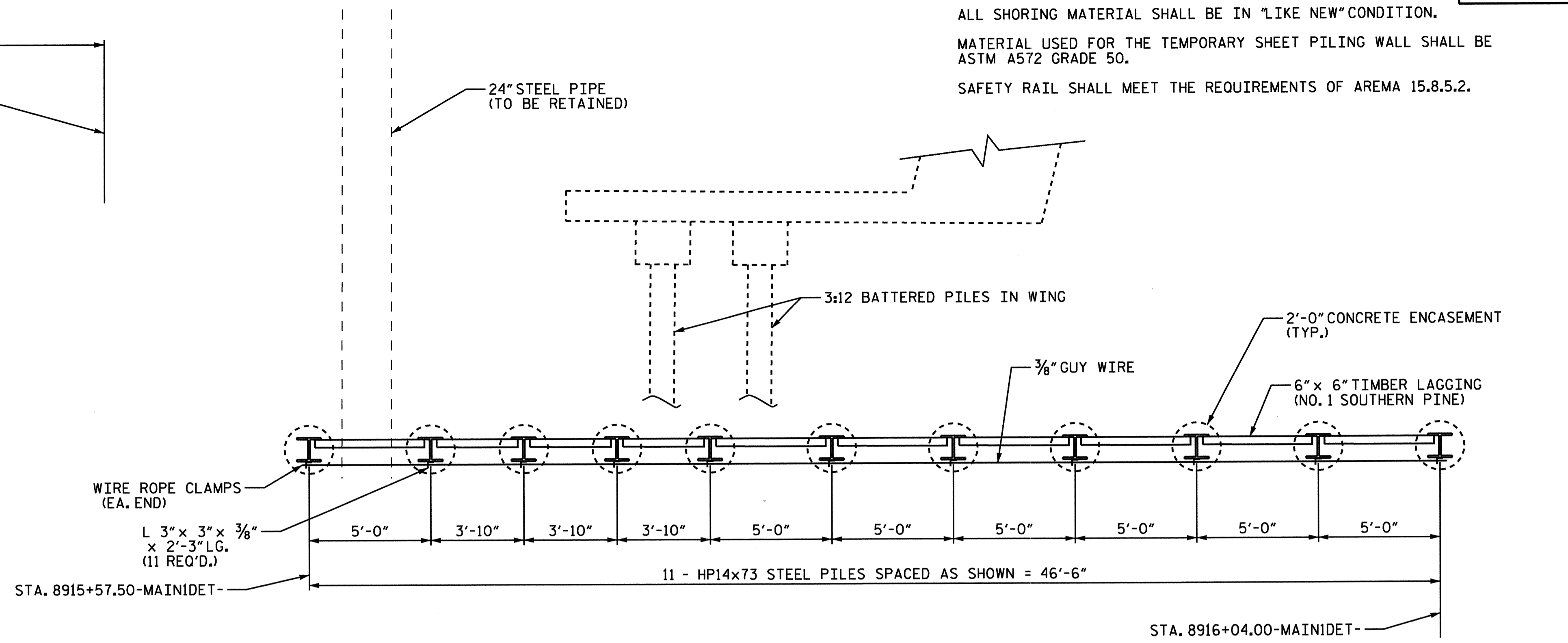
PREPARED BY
TGS ENGINEERS
107-A WICA AVENUE
MORGANTON, NC 28655

NOTES:

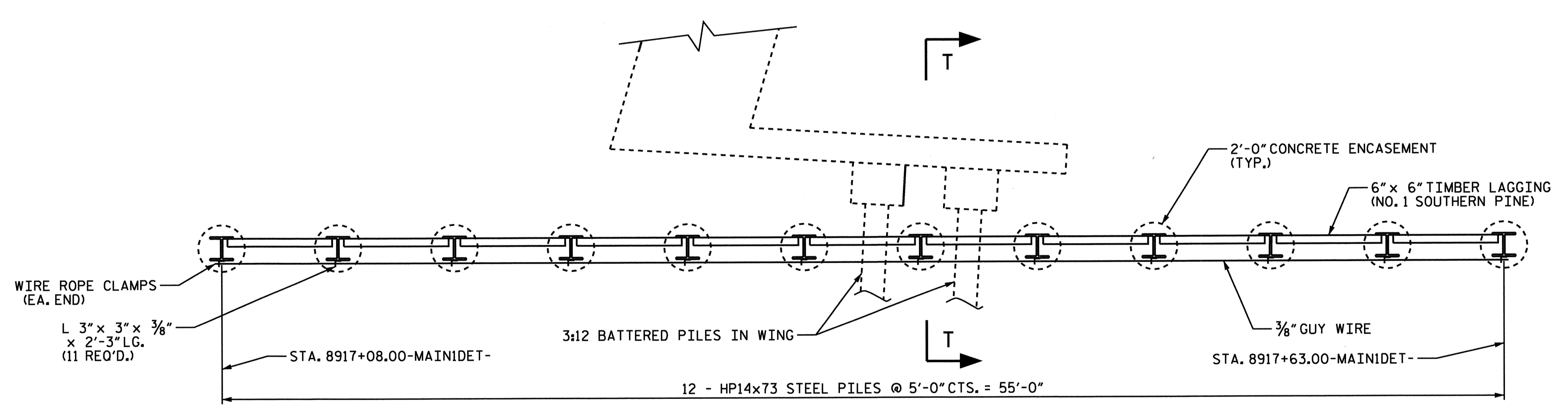
ALL SHORING MATERIAL SHALL BE IN "LIKE NEW" CONDITION.
MATERIAL USED FOR THE TEMPORARY SHEET PILING WALL SHALL BE ASTM A572 GRADE 50.
SAFETY RAIL SHALL MEET THE REQUIREMENTS OF AREMA 15.8.5.2.



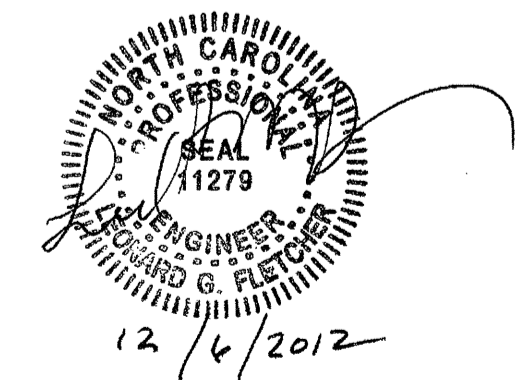
SECTION T-T



SHORING PLAN AT ABUTMENT 1



SHORING PLAN AT ABUTMENT 2



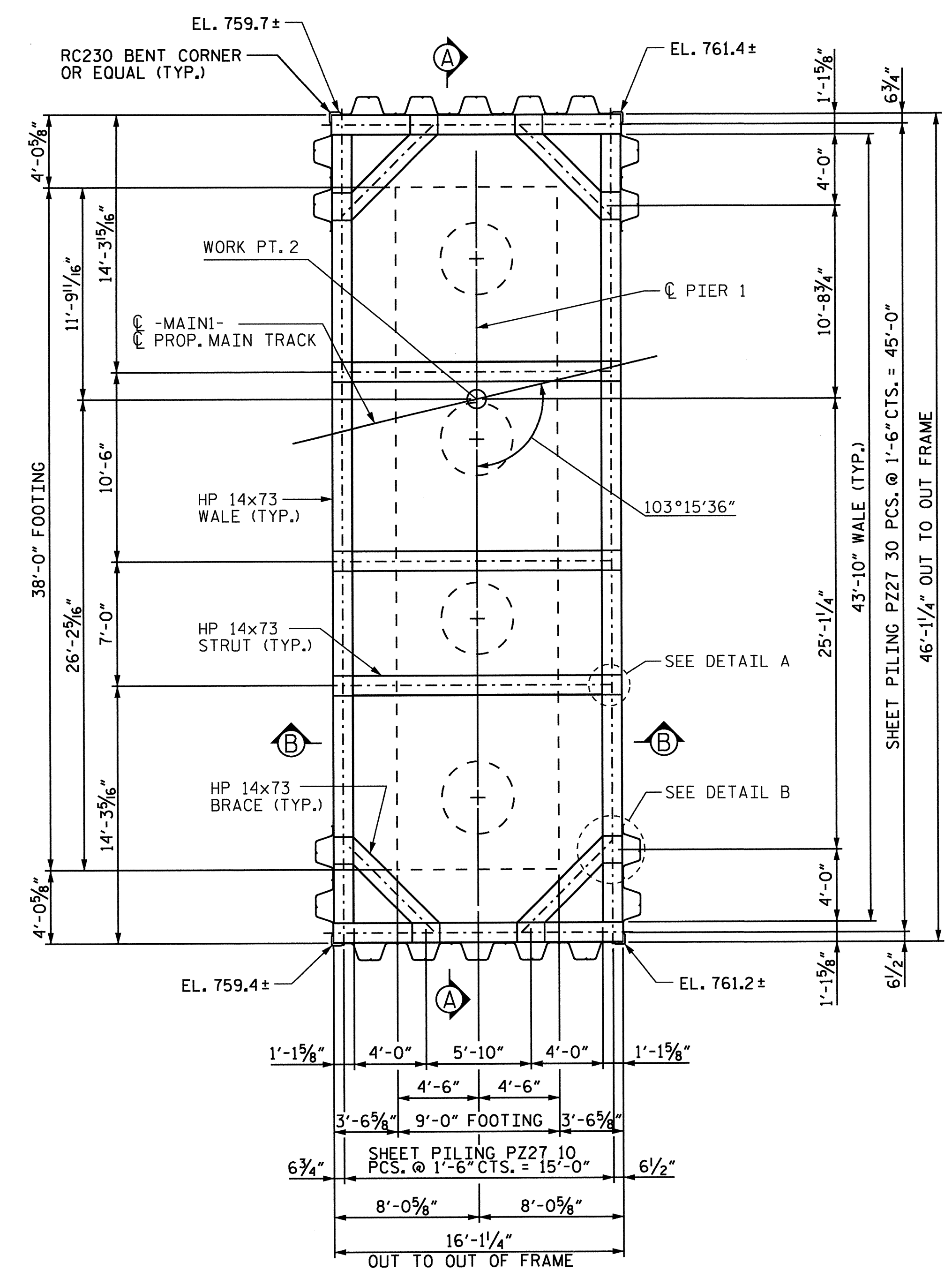
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NO.	BY	DATE	REVISION
1	RTJ	12/06/12	REVISED SHORING MATERIAL NOTE.


NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION
 PREPARED BY: **ENGINEERING & SAFETY BRANCH**
MAIL: 2505 MAIL SERVICE CENTER RALEIGH, NC 27699-1556 DELIVERY: 600 CAPITAL BOULEVARD RALEIGH, NC 27603 PHONE: 1919 715-8803 FAX: 1919 715-8804

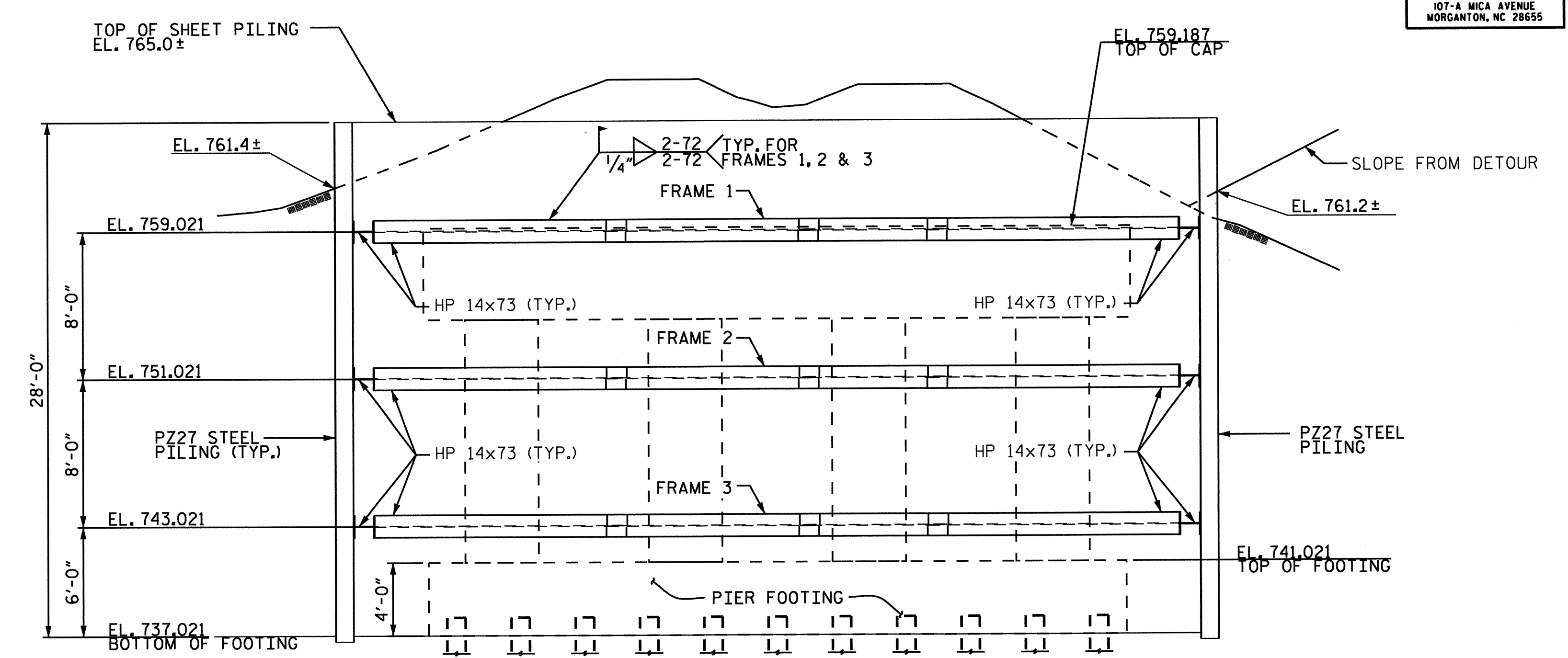
PROJECT U-3459 - KLUMAC ROAD		TITLE	
		TEMPORARY SHORING ABUTMENTS 1 AND 2	
LOCATION	SALISBURY-SR 2541 (KLUMAC RD) at NCR/RNS		MILE POST
DGN BY	CB	RAILROAD	NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
DWN BY	RTJ	VAL SEC	V-8
CHK BY	RDE	DATE	8/12
		SCALE	5/16" = 1'-0"
			SHEET 49 OF 51

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0001ADD_P12

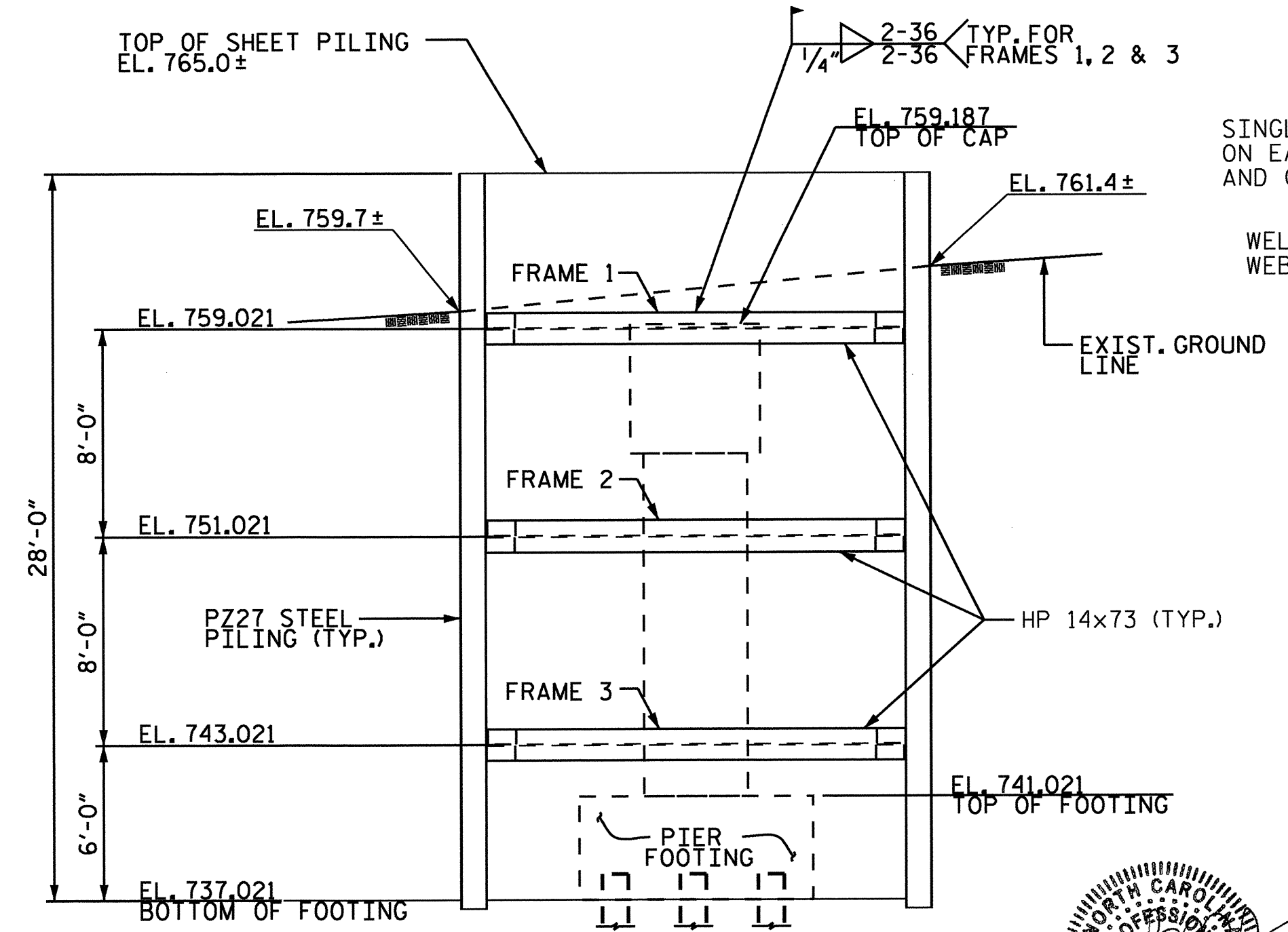


PIER 1 PLAN OF SHEETING & BRACING

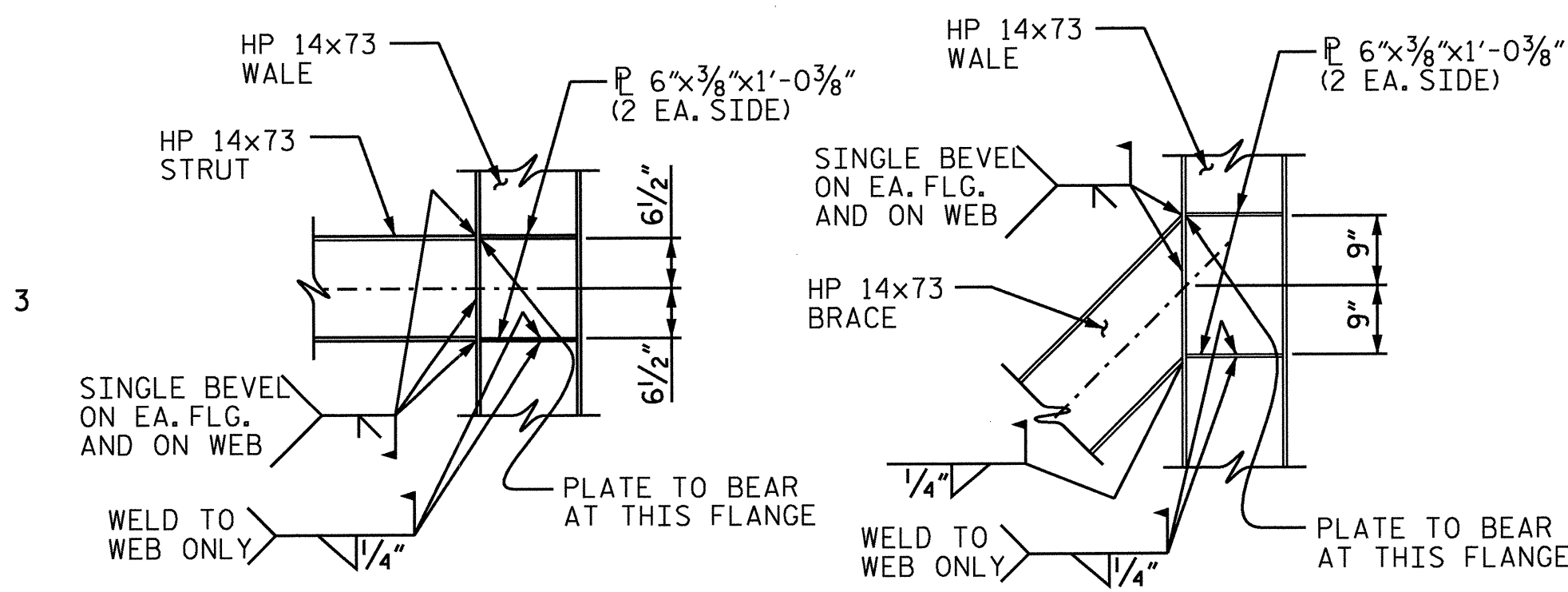
NOTES:
 IF SIGNIFICANT GROUND WATER IS ENCOUNTERED DURING CONSTRUCTION, OBTAIN APPROVAL FROM THE ENGINEER BEFORE PROCEEDING WITH EXCAVATION.
 ALL SHORING MATERIAL SHALL BE IN "LIKE NEW" CONDITION.
 MATERIAL USED FOR THE SHEET PILING SHALL BE ASTM A572 GRADE 50.
 MATERIAL USED FOR WALES, STRUTS AND CORNER BRACES SHALL BE ASTM A709 GRADE 50.



SECTION A-A

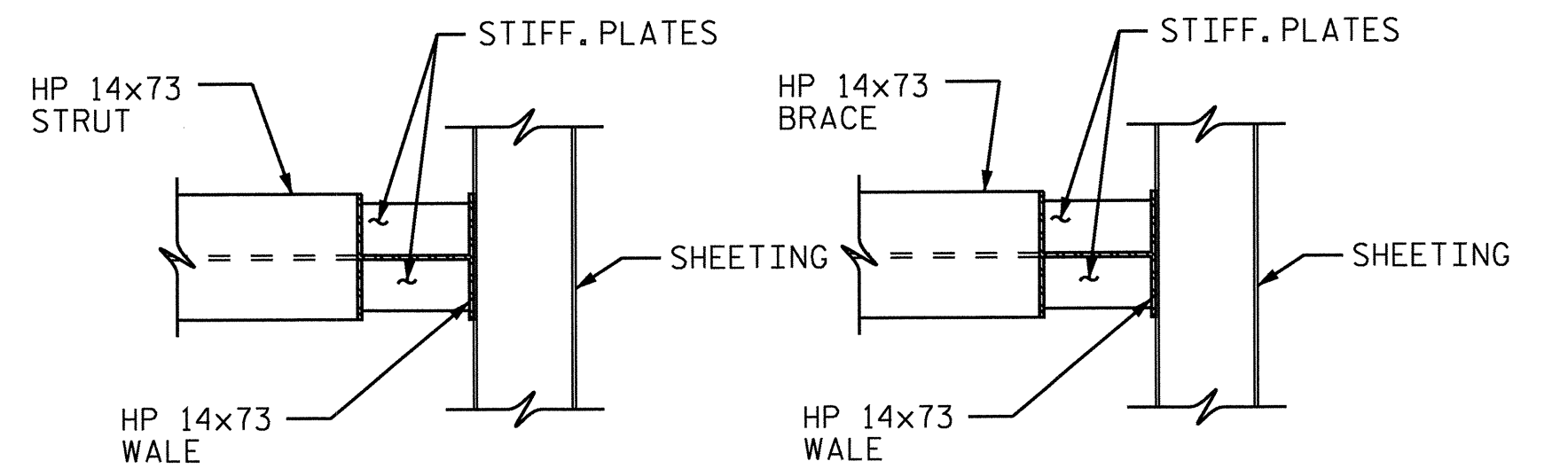


SECTION B-B



PLAN SHEETING NOT SHOWN

PLAN SHEETING NOT SHOWN



ELEVATION

ELEVATION

DETAIL A

DETAIL B



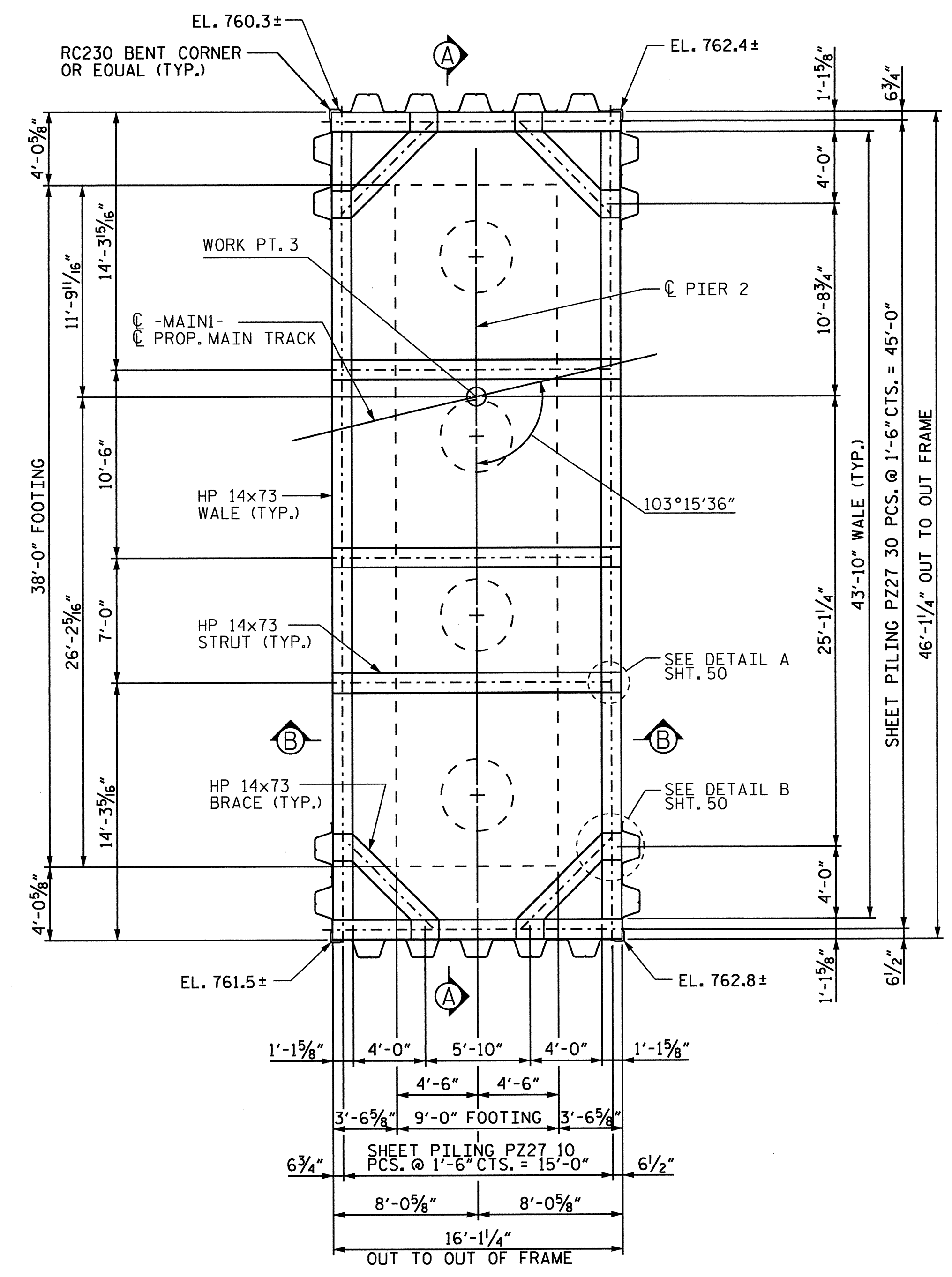
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NO.	BY	DATE	REVISION
1	RTJ	12/06/12	REVISED SHORING MATERIAL NOTE.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION
 PREPARED BY: **ENGINEERING & SAFETY BRANCH**
 MAIL: 1250 MAIL SERVICE CENTER, RALEIGH, NC 27603-1556
 DELIVERY: 950 CAPITAL BOULEVARD, RALEIGH, NC 27603
 PHONE: (919) 715-8803
 FAX: (919) 715-8804

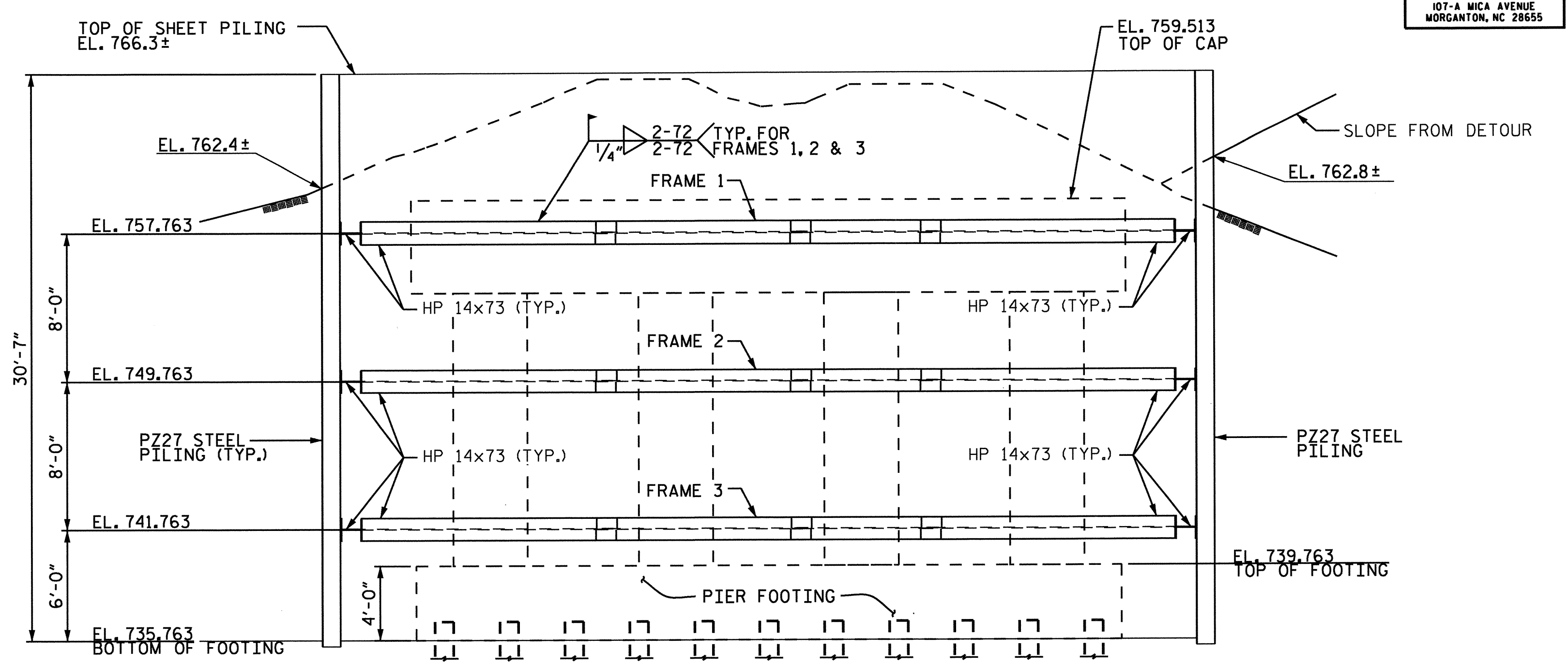
PROJECT U-3459 - KLUMAC ROAD		TITLE TEMPORARY SHORING PIER 1	
LOCATION SALISBURY-SR 2541 (KLUMAC RD) at NCR/RNS			
DGN BY CPB	RAILROAD NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN	MILE POST MP 335.2	
DWN BY JLA	VAL SEC V-8		
CHK BY RDE	DATE 8/12	SCALE 1" = 5'-0"	SHEET 50 OF 51

PKX
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0001ADD_P12

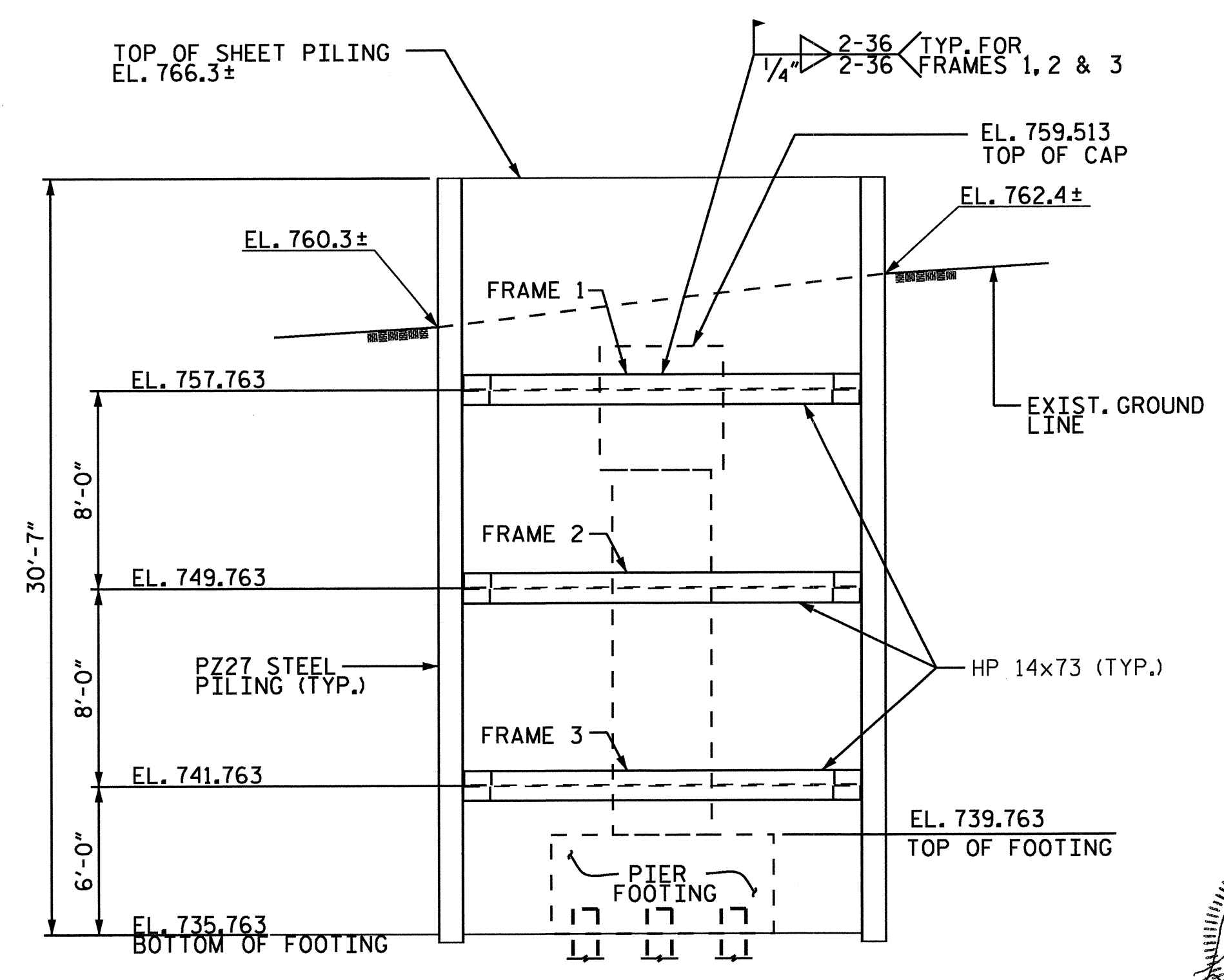


PIER 2 PLAN OF SHEETING & BRACING

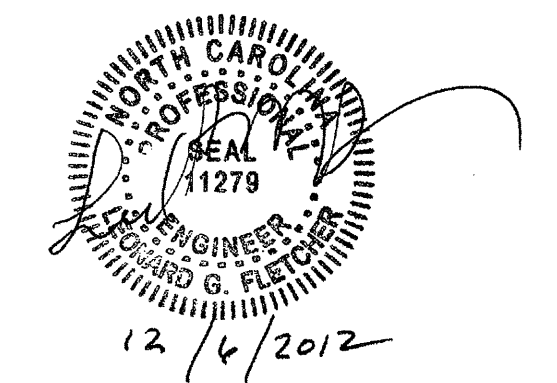
- NOTES:**
- IF SIGNIFICANT GROUND WATER IS ENCOUNTERED DURING CONSTRUCTION, OBTAIN APPROVAL FROM THE ENGINEER BEFORE PROCEEDING WITH EXCAVATION.
 - ALL SHORING MATERIAL SHALL BE IN "LIKE NEW" CONDITION.
 - MATERIAL USED FOR THE SHEET PILING SHALL BE ASTM A572 GRADE 50.
 - MATERIAL USED FOR WALES, STRUTS AND CORNER BRACES SHALL BE ASTM A709 GRADE 50.



SECTION A-A



SECTION B-B



*****SYSTEMTIME*****

NO.	BY	DATE	REVISION
1	RTJ	12/06/12	REVISED SHORING MATERIAL NOTE.

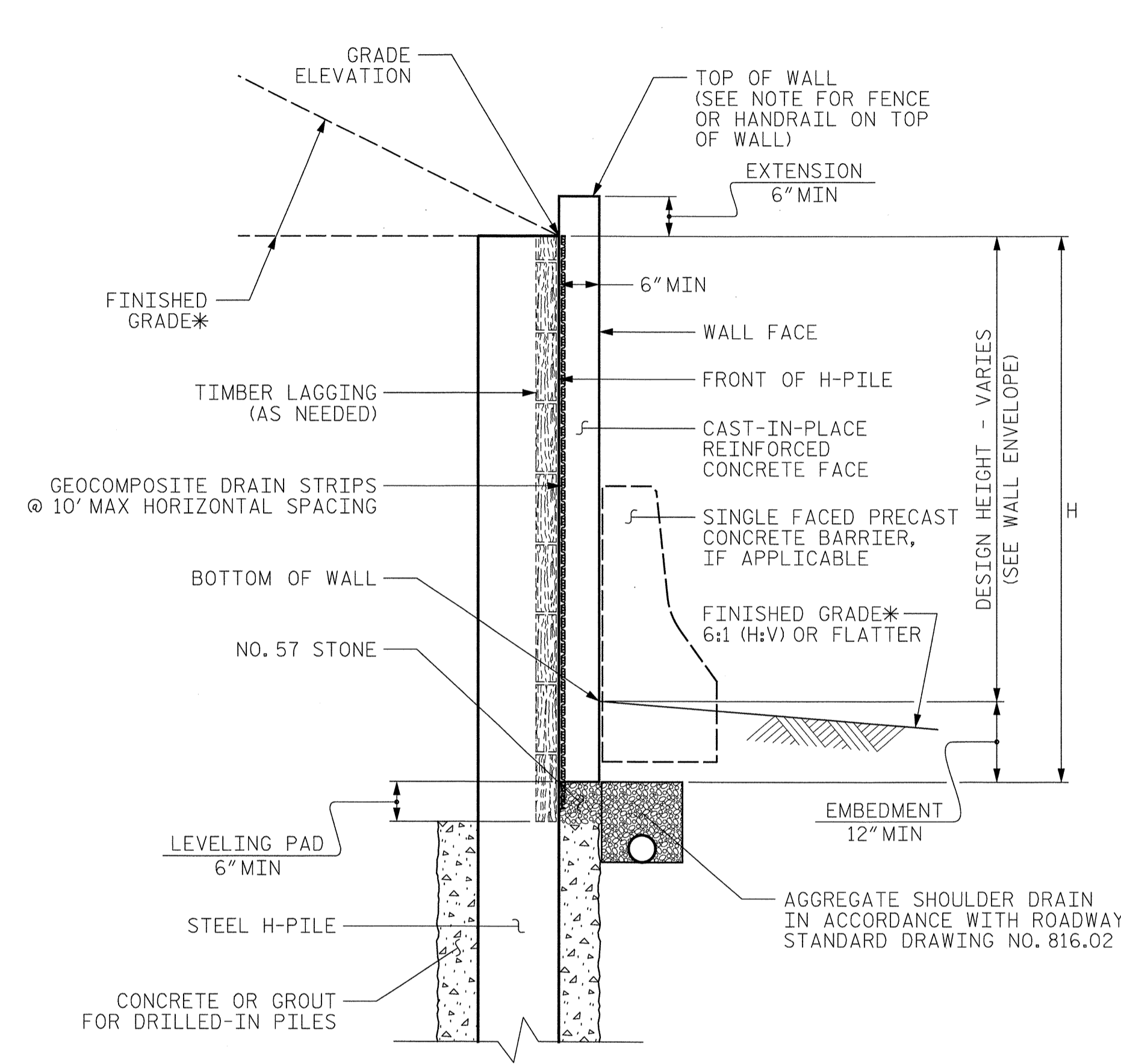
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: **ENGINEERING & SAFETY BRANCH**

MAIL: 1255 MAIL SERVICE CENTER RALEIGH, NC 27603
DELIVERY: 800 CAPITAL BOULEVARD RALEIGH, NC 27603
PHONE: (919) 715-8803
FAX: (919) 715-8804

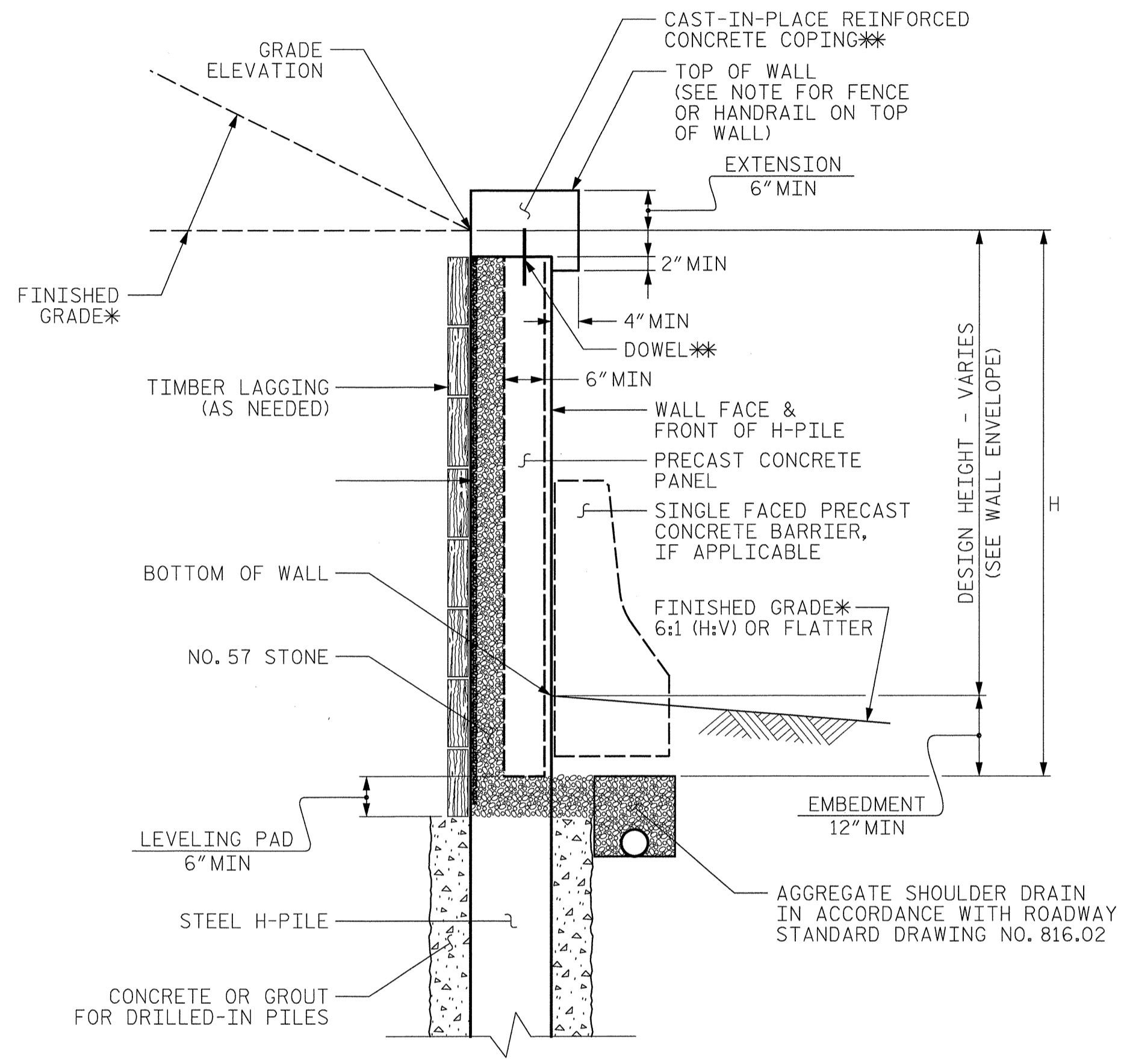
PROJECT	U-3459 - KLUMAC ROAD		
TITLE	TEMPORARY SHORING PIER 2		
LOCATION	SALISBURY SR 2541 (KLUMAC RD) OF NCRRTS		
DGN BY	CPB	RAILROAD	NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
DWN BY	JLA	VAL SEC	V-8
CHK BY	RDE	DATE	8/12
SCALE	1" = 5'-0"		
MILE POST	MP 335.2		
SHEET 51 OF 51			

0302DEL_P12



SOLDIER PILE WALL WITH CAST-IN-PLACE FACE - TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE AND DITCH DETAILS.



SOLDIER PILE WALL WITH PRECAST PANEL - TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE AND DITCH DETAILS.
 **AT THE CONTRACTOR'S OPTION, EXTEND COPING DOWN BACK OF PANELS AT LEAST 2" INSTEAD OF USING DOWELS.

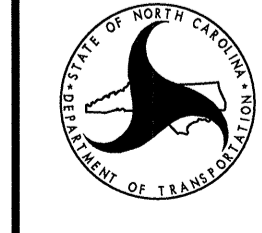
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10

11

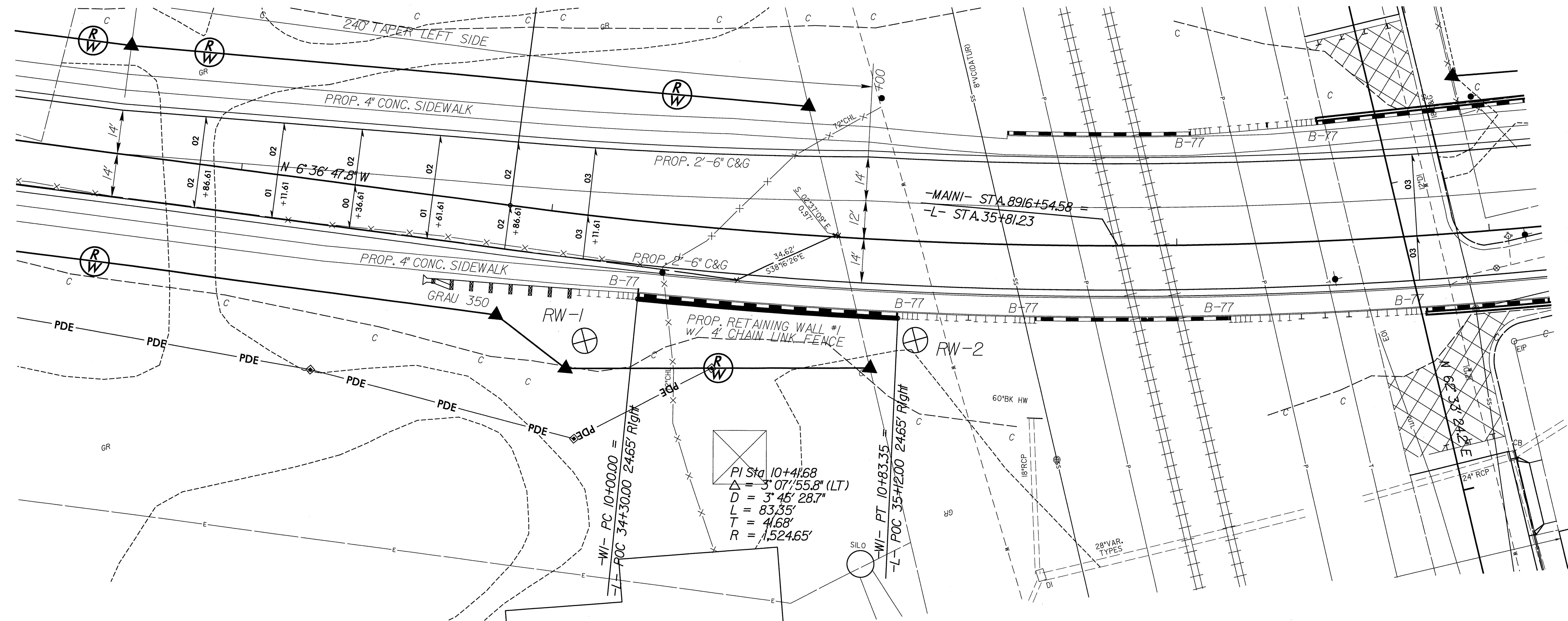
NO.	BY	DATE	REVISION



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION
 PREPARED BY: **ENGINEERING & SAFETY BRANCH**
 MAIL: 1255 MAIL SERVICE CENTER RALEIGH, NC 27689-1556
 DELIVERY: 860 CAPITAL BOULEVARD RALEIGH, NC 27603
 PHONE: (919) 715-8803
 FAX: (919) 715-8804

PROJECT U-3459 - KLUMAC ROAD		TITLE	
RETAINING WALL DETAILS			
LOCATION KLUMAC ROAD (SR 2541) IN SALISBURY, NC		RAILROAD NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN	
DGN BY RSF	VAL SEC	MILE POST	
DWN BY TAR	DATE ???	SCALE	
CHK BY JSP			
			W-1

- NOTES
- FOR SOLDIER PILE RETAINING WALLS, SEE SOLDIER PILE RETAINING WALLS PROVISION.
 - FOR SINGLE-FACED PRECAST CONCRETE BARRIER, SEE ROADWAY PLANS AND SECTION 857 OF THE STANDARD SPECIFICATIONS.
 - A FENCE IS REQUIRED ON TOP OF RETAINING WALL NO. 1. CONTRACTOR SHALL PROVIDE DETAILS FOR FENCE ATTACHMENT.
 - DRILLED-IN PILES ARE REQUIRED FOR RETAINING WALL NO. 1.
 - BEFORE BEGINNING SOLDIER PILE WALL DESIGN FOR RETAINING WALL NO. 1, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.
 - DESIGN RETAINING WALL NO. 1 FOR THE FOLLOWING:
 - MINIMUM DESIGN LIFE = 100 YEARS
 - IN-SITU ASSUMED MATERIAL PARAMETERS
 - UNIT WEIGHT, $\gamma = 120$ PCF
 - FRICTION ANGLE, $\phi = 28$ DEGREES
 - COHESION, $c = 0$ PSF



NAD 83/NSRS 2007

FOR -L- PROFILE SEE SHEET 15
 FOR -MAIN1- PROFILE SEE SHEET
 FOR -MAIN2- PROFILE SEE SHEET

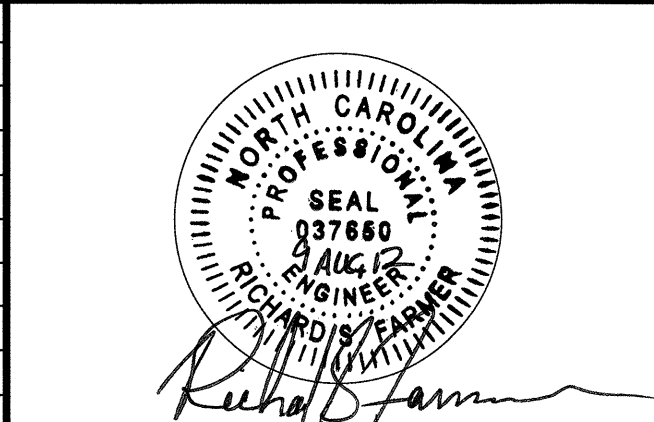
ESTIMATED QUANTITIES	
RETAINING WALL NO.	SOLDIER PILE RETAINING WALLS (SQUARE FEET)
1	658

0302DEL_P12

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Florence & Hutcheson 8/9/2012

NO.	BY	DATE	REVISION



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION
 PREPARED BY: **ENGINEERING & SAFETY BRANCH**
 MAIL: 1056 MAIL SERVICE CENTER RALEIGH, NC 27699-1556
 DELIVERY: 850 CAPITAL BOULEVARD RALEIGH, NC 27603
 PHONE: (919) 715-8803
 FAX: (919) 715-8804

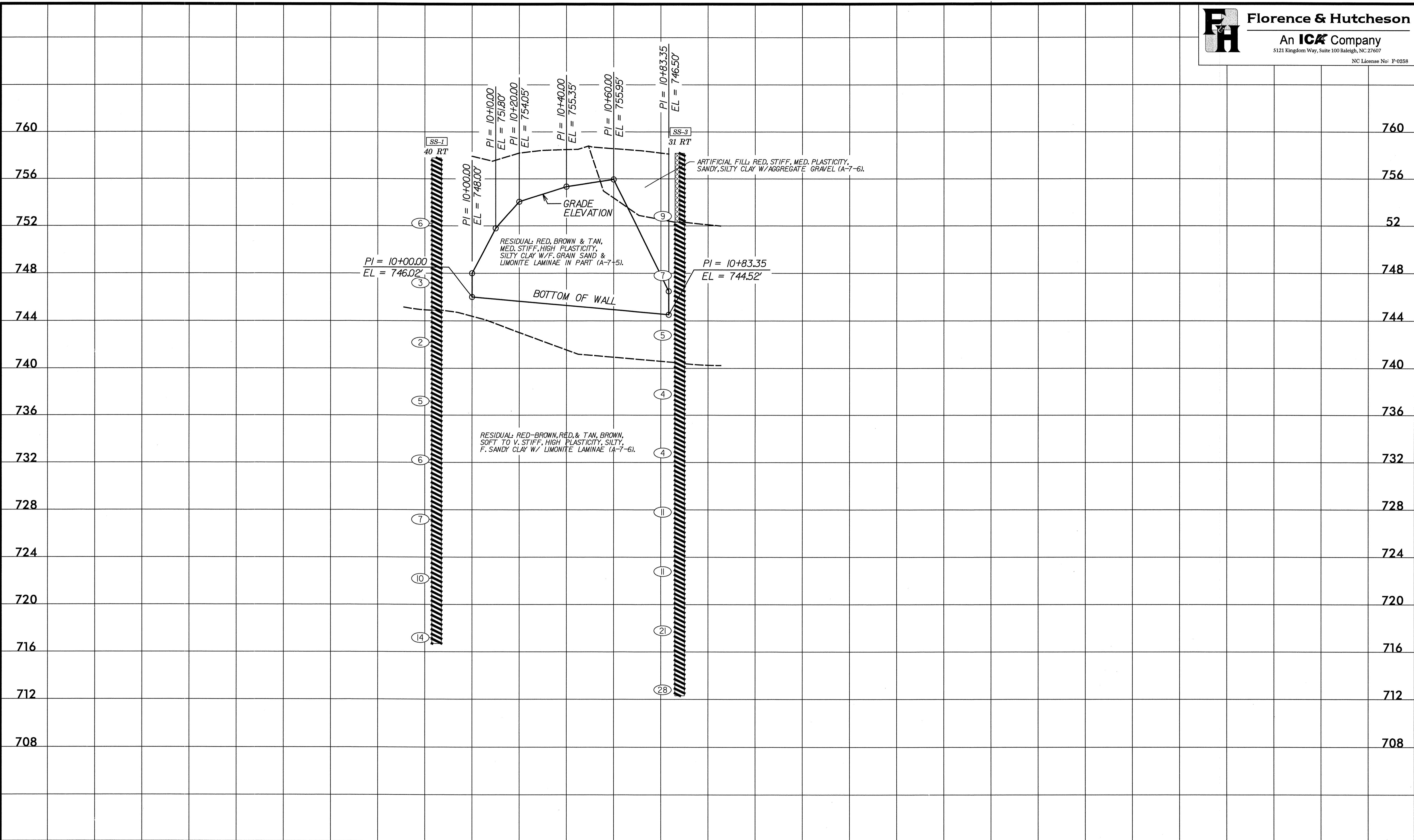
PROJECT	U-3459 - KLUMAC ROAD		
TITLE	PLAN RETAINING WALL 1		
LOCATION	KLUMAC ROAD (SR 2541) IN SALISBURY, NC		
DGN BY	RSF	RAILROAD	NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
DWN BY	TAR	VAL SEC	MILE POST
CHK BY	JSP	DATE	???
SCALE			W-2

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1/22/02

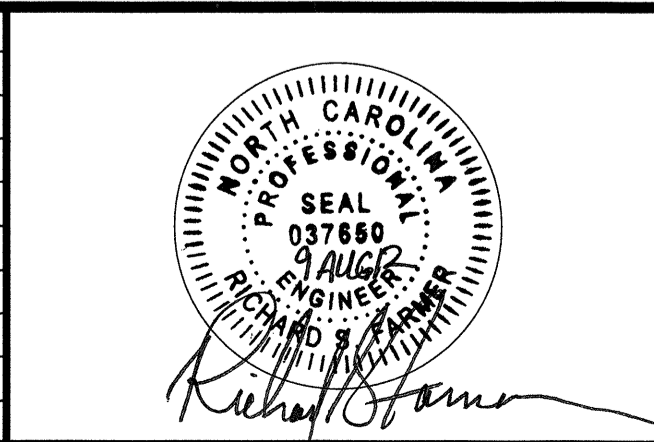
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Florence & Hutcheson 9/17/2012



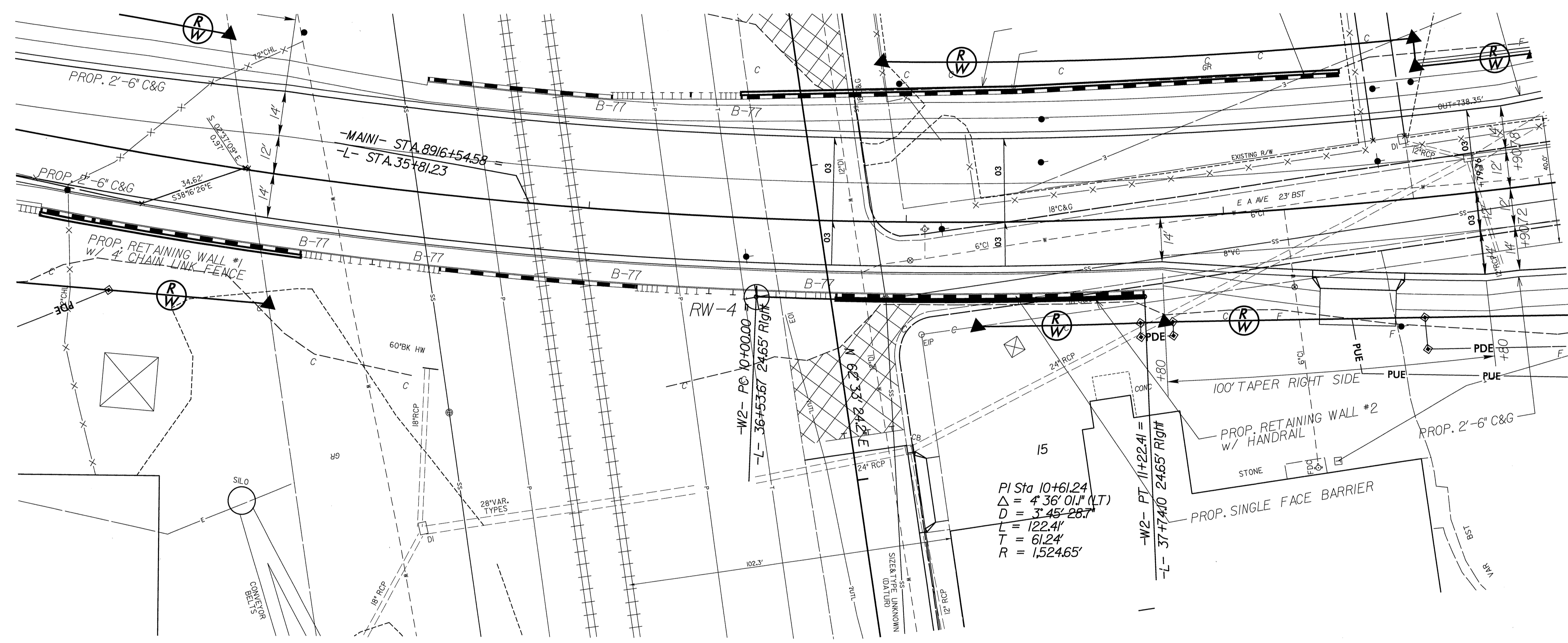
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724	724
720	720
716	716
712	712
708	708

NO.	BY	DATE	REVISION



PROJECT U-3459 - KLUMAC ROAD		TITLE	
LOCATION KLUMAC ROAD (SR 2541) IN SALISBURY, NC		PROFILE RETAINING WALL 1	
DGN BY RSF	RAILROAD NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN	MILE POST	
DWN BY TAR	VAL SEC		
CHK BY JSP	DATE ???	SCALE	W-3

- NOTES**
- FOR SOLDIER PILE RETAINING WALLS, SEE SOLDIER PILE RETAINING WALLS PROVISION.
 - FOR SINGLE-FACED PRECAST CONCRETE BARRIER, SEE ROADWAY PLANS AND SECTION 857 OF THE STANDARD SPECIFICATIONS.
 - A HANDRAIL IS REQUIRED ON TOP OF RETAINING WALL NO. 2. SEE ROADWAY PLANS FOR HANDRAIL DETAILS.
 - DRILLED-IN PILES ARE REQUIRED FOR RETAINING WALL NO. 2.
 - BEGINNING SOLDIER PILE WALL DESIGN FOR RETAINING WALL NO. 2, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.
 - DESIGN RETAINING WALL NO. 2 FOR THE FOLLOWING:
 - MINIMUM DESIGN LIFE = 100 YEARS
 - IN-SITU ASSUMED MATERIAL PARAMETERS
 - UNIT WEIGHT, $\gamma = 120$ PCF
 - FRICTION ANGLE, $\phi = 30$ DEGREES
 - COHESION, $c = 0$ PSF
 - DESIGN RETAINING WALL NO. 2 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.



NAD 83/NSRS 2007

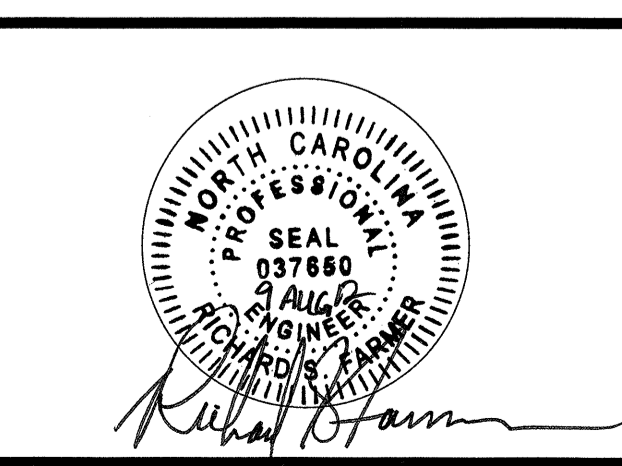
ESTIMATED QUANTITIES	
RETAINING WALL NO.	SOLDIER PILE RETAINING WALLS (SQ. FEET)
2	577

0302DEL_P12

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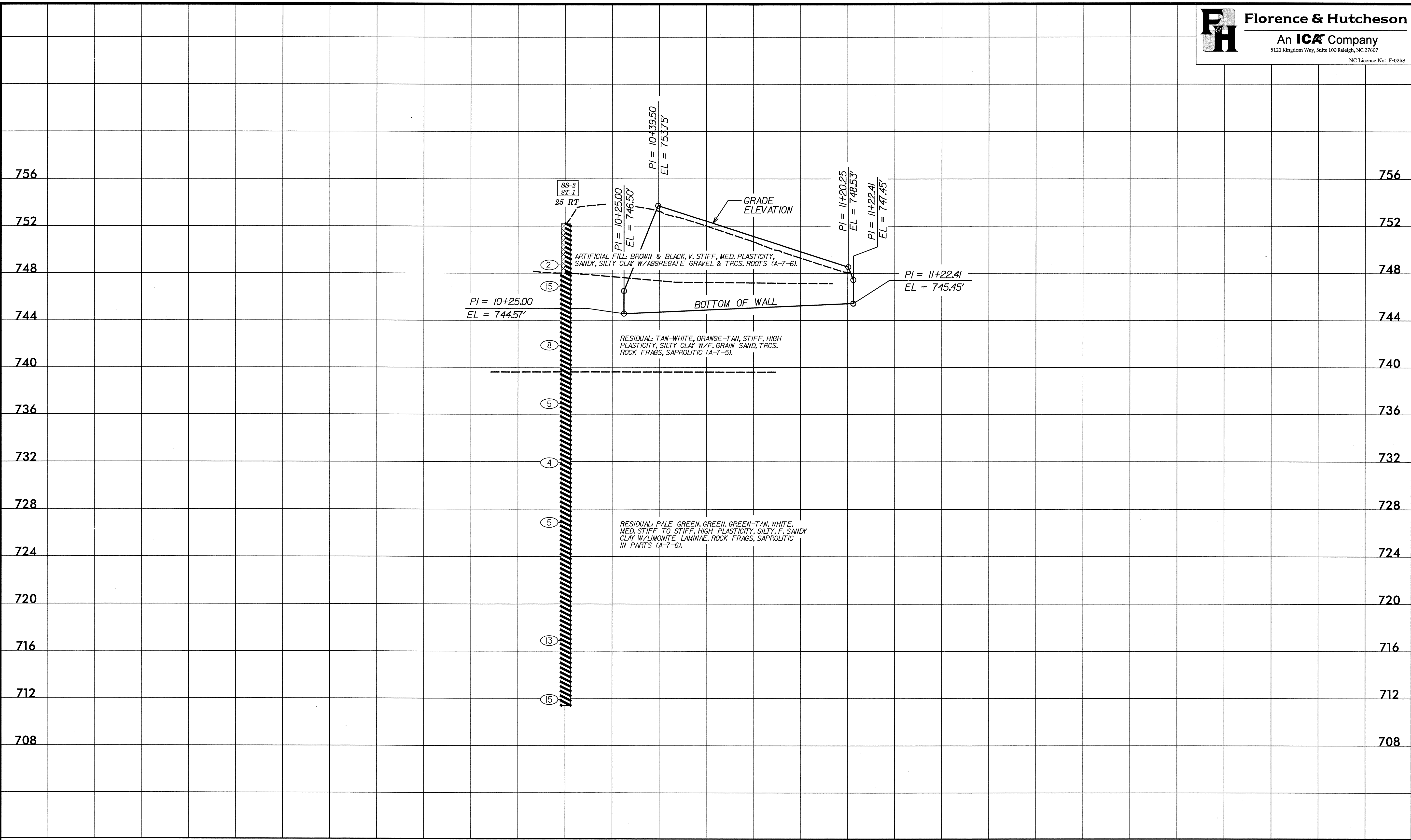
NO.	BY	DATE	REVISION



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION
 PREPARED BY: **ENGINEERING & SAFETY BRANCH**
 MAIL SERVICE CENTER, RALEIGH, NC 27699-1556
 DELIVERY: 180 CAPITAL BOULEVARD, RALEIGH, NC 27603
 PHONE: (919) 715-8803
 FAX: (919) 715-8804

PROJECT	U-3459 - KLUMAC ROAD		
TITLE	PLAN RETAINING WALL 2		
LOCATION	KLUMAC ROAD (SR 2541) IN SALISBURY, NC		
DGN BY	RSF	RAILROAD	NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
DWN BY	TAR	VAL SEC	MILE POST
CHK BY	JSP	DATE	???
SCALE			W-4

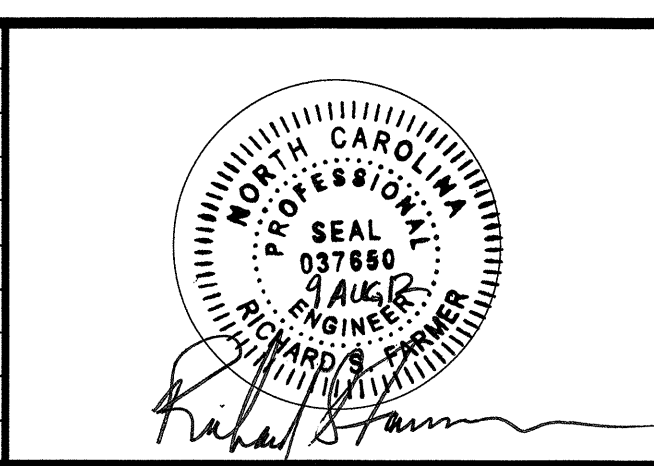
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Florence & Hutcheson 6/19/2012

NO.	BY	DATE	REVISION



PROJECT		U-3459 - KLUMAC ROAD	
TITLE		PROFILE RETAINING WALL 2	
LOCATION KLUMAC ROAD (SR 2541) IN SALISBURY, NC			
DGN BY	RSF	RAILROAD	NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
DWN BY	TAR	VAL SEC	
CHK BY	JSP	DATE	???
SCALE			W-5

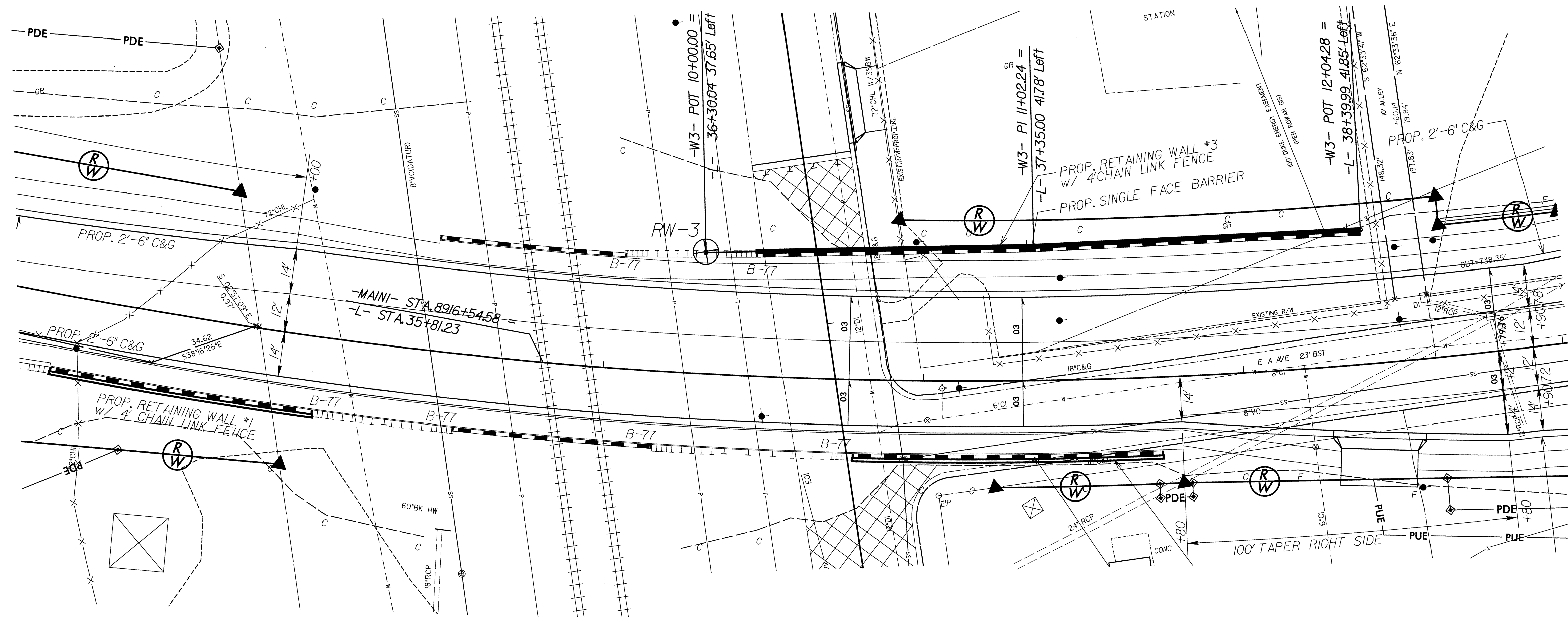
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DGN

NOTES

- FOR SOLDIER PILE RETAINING WALLS, SEE SOLDIER PILE RETAINING WALLS PROVISION.
- FOR SINGLE-FACED PRECAST CONCRETE BARRIER, SEE ROADWAY PLANS AND SECTION 857 OF THE STANDARD SPECIFICATIONS.
- A FENCE IS REQUIRED ON TOP OF RETAINING WALL NO. 3. CONTRACTOR SHALL PROVIDE DETAILS FOR FENCE ATTACHMENT.
- DRILLED-IN PILES ARE REQUIRED FOR RETAINING WALL NO. 3.
- BEFORE BEGINNING SOLDIER PILE WALL DESIGN FOR RETAINING WALL NO. 3, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.
- DESIGN RETAINING WALL NO. 3 FOR THE FOLLOWING:
 - MINIMUM DESIGN LIFE = 100 YEARS
 - IN-SITU ASSUMED MATERIAL PARAMETERS
 - UNIT WEIGHT, $\gamma = 120$ PCF
 - FRICTION ANGLE, $\phi = 28$ DEGREES
 - COHESION, $c =$ PSF

NAD 83/NSRS 2007

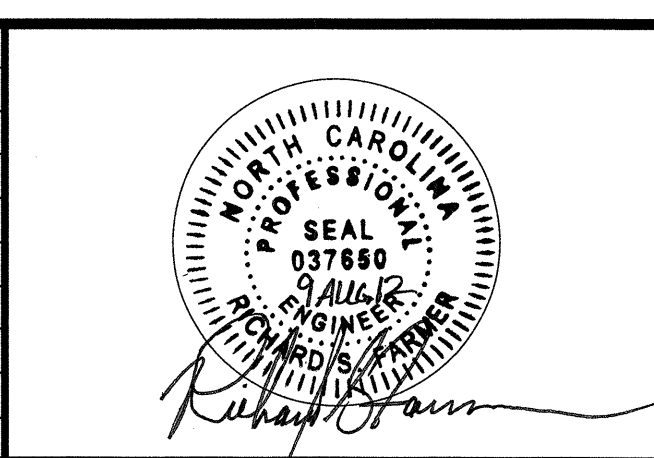


ESTIMATED QUANTITIES	
RETAINING WALL NO.	SOLDIER PILE RETAINING WALLS (SQ. FEET)
3	1571

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Florence & Hutcheson 6/19/2012

NO.	BY	DATE	REVISION



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

RAIL DIVISION

PREPARED BY: **ENGINEERING & SAFETY BRANCH**

MAIL: 1656 MAIL SERVICE CENTER RALEIGH, NC 27699-1556
 DELIVERY: 180 CAPITAL BOULEVARD RALEIGH, NC 27603
 PHONE: (919) 715-8803
 FAX: (919) 715-8804

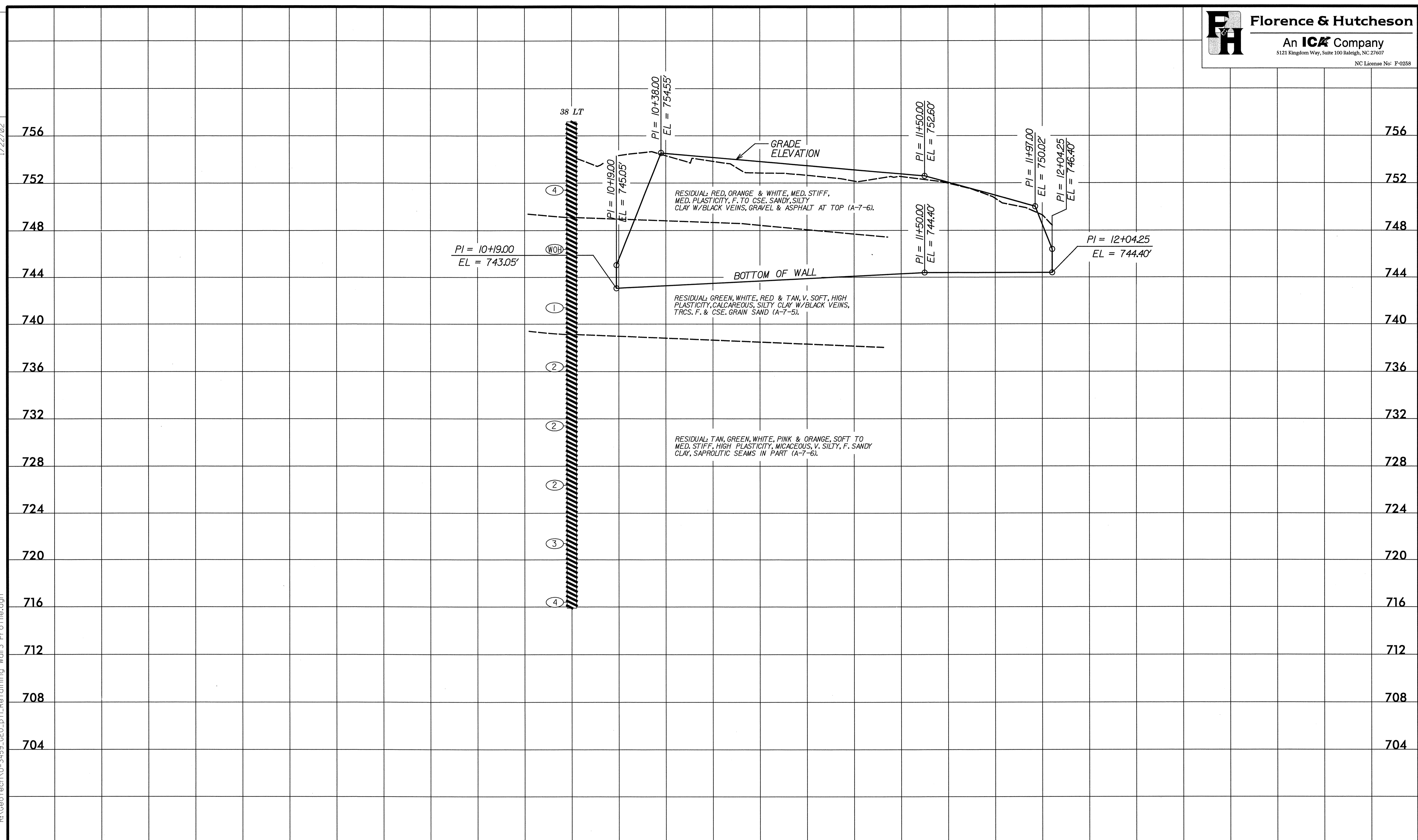
PROJECT	U-3459 - KLUMAC ROAD		
TITLE	PLAN RETAINING WALL 3		
LOCATION	KLUMAC ROAD (SR 2541) IN SALISBURY, NC		
DGN BY	RSF	RAILROAD	NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
DWN BY	TAR	VAL SEC	MILE POST
CHK BY	JSP	DATE	???
SCALE			W-6

DGN 0302DEL_P12

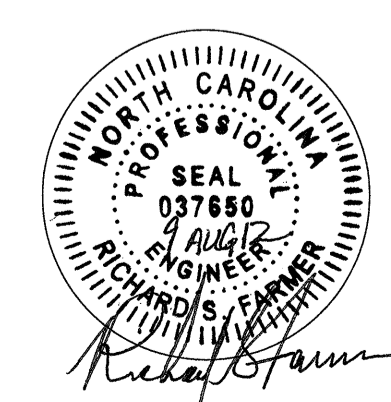
1/22/02

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Florence & Hutcheson 6/19/02



NO.	BY	DATE	REVISION



PROJECT U-3459 - KLUMAC ROAD	
TITLE PROFILE RETAINING WALL 3	
LOCATION KLUMAC ROAD (SR 2541) IN SALISBURY, NC	RAILROAD NORTH CAROLINA RAILROAD/NORFOLK SOUTHERN
DGN BY RSF	VAL SEC
DWN BY TAR	DATE ???
CHK BY JSP	SCALE
W-7	

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

JANUARY, 1990