

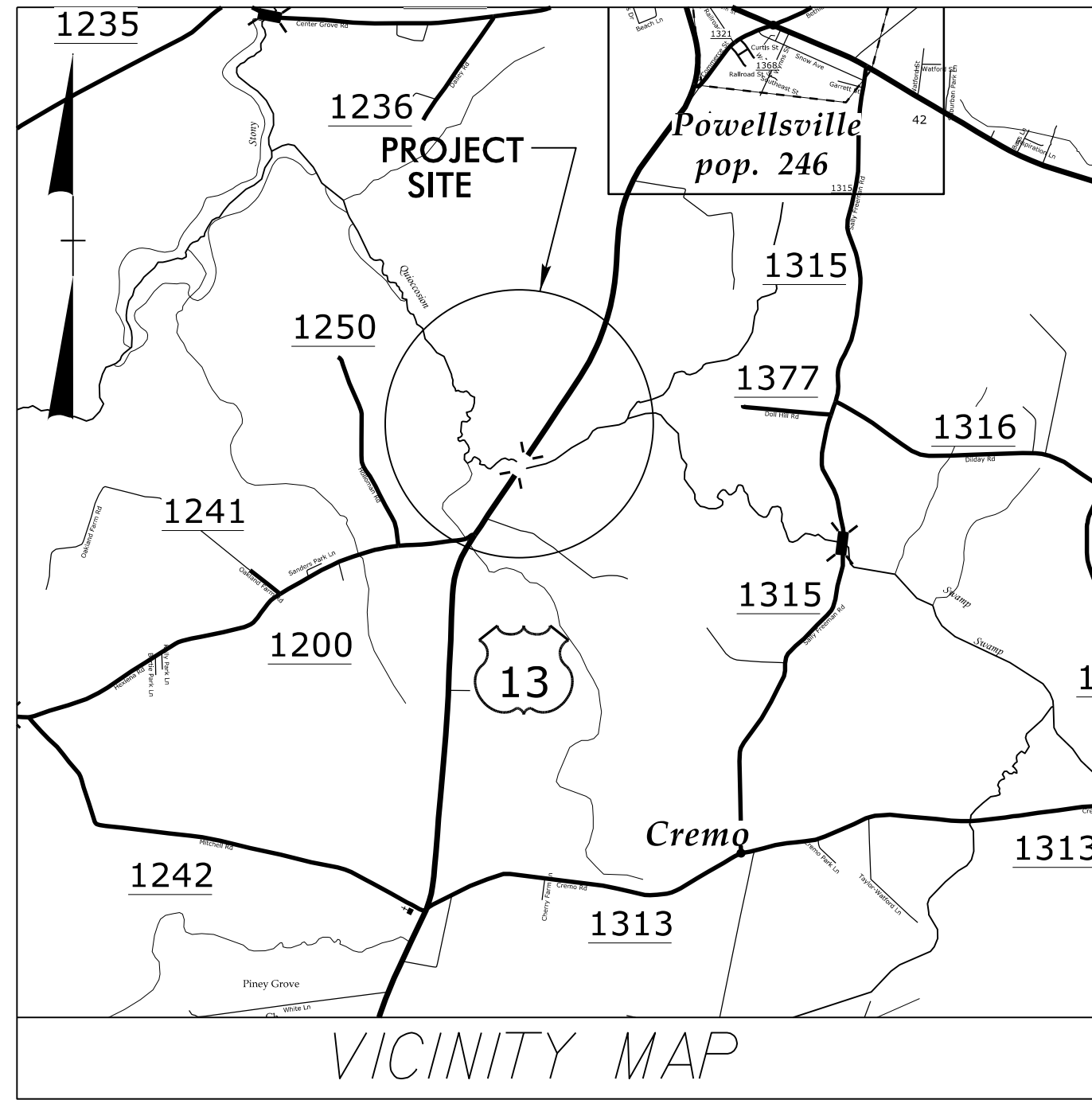
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09.08/19

See Sheet 1-A For Index of Sheets
 See Sheet 1-B For Conventional Symbols
 See Sheet 1C-1 For Survey Control Sheet



STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

BERTIE COUNTY

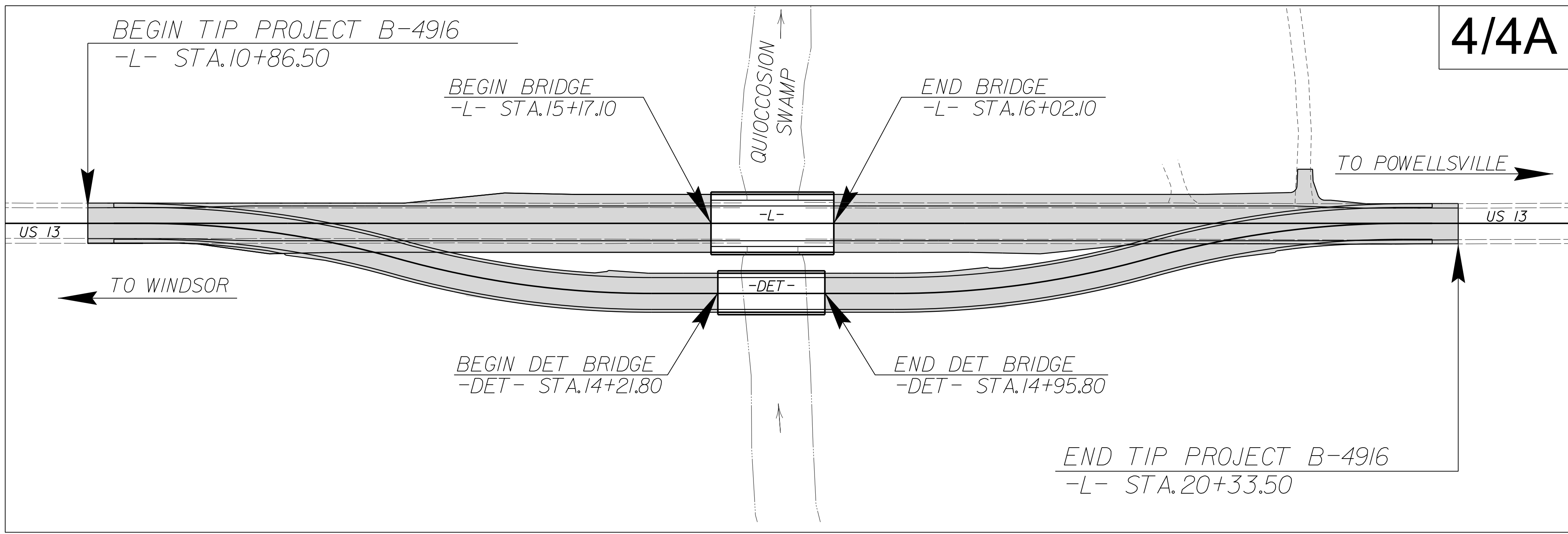
LOCATION: REPLACE BRIDGE NO. 57 OVER QUIOCCOSION SWAMP ON US 13

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4916	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
40089.1.2	BRNHS-0013(27)	P.E.	
40089.2.1		R/W & UTIL.	
40089.3.1		CONSTR.	

TIP PROJECT: B-4916

CONTRACT: C204206

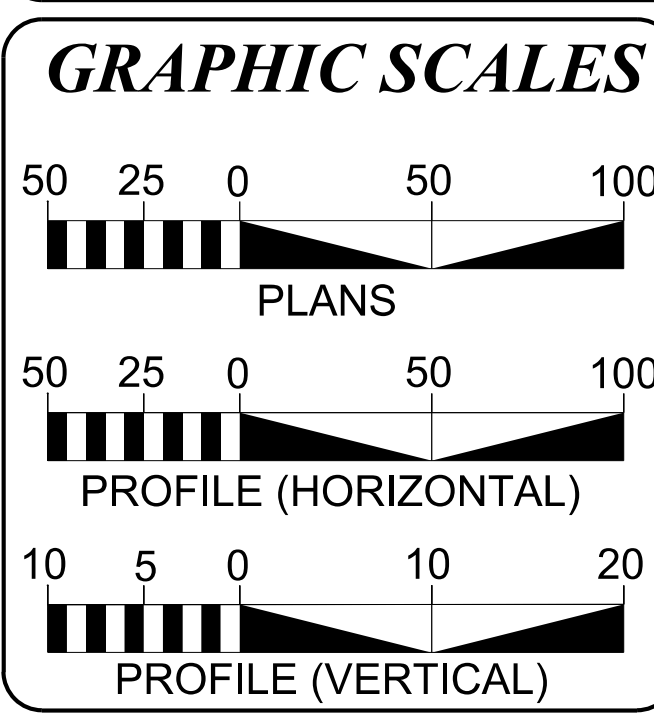


4/4A



STRUCTURE

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

ADT 2020 =	4040
ADT 2040 =	5400
K =	9 %
D =	55 %
T =	17 % *
V =	60 MPH
* TTST =	6% DUAL 11%
FUNC CLASS =	MAJOR COLLECTOR
REGIONAL TIER	

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-4916	= .163 MILES
LENGTH OF STRUCTURE TIP PROJECT B-4916	= .016 MILES
TOTAL LENGTH OF TIP PROJECT B-4916	= .179 MILES

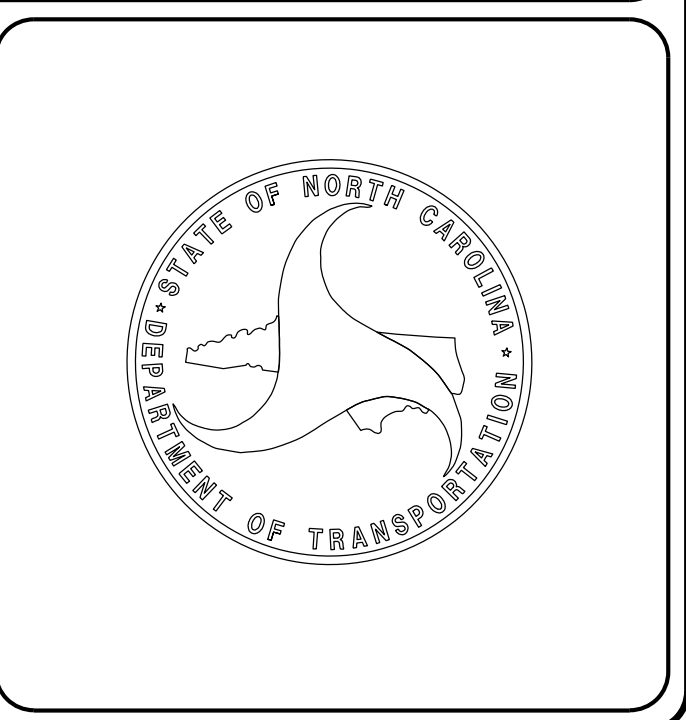
Prepared in the Office of: KCI Associates of N.C., P.A. 4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609 Phone (919) 783-9214 Fax (919) 783-9266 www.kci.com	Plans Prepared For: DIVISION OF HIGHWAYS 1000 Birch Ridge Dr. Raleigh NC, 27610
2018 STANDARD SPECIFICATIONS	ELIZABETH R. PHIPPS, P.E. PROJECT ENGINEER
RIGHT OF WAY DATE: OCT. 31, 2018	ROBERT C. LARSON, P.E. PROJECT DESIGN ENGINEER
LETTING DATE: APRIL 16, 2019	DAVID STUTTS, PE STRUCTURES MANAGEMENT UNIT
NCDOT CONTACT:	

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

STRUCTURE DESIGN ENGINEER

SIGNATURE: _____ P.E.



29-JAN-2019 12:58
 M:\2018\201801945\06 B-4916\Structures\drawings\final\B-4916_Rdy_.tsh.dgn
 \$\$\$SERVNAME\$\$\$

15+00

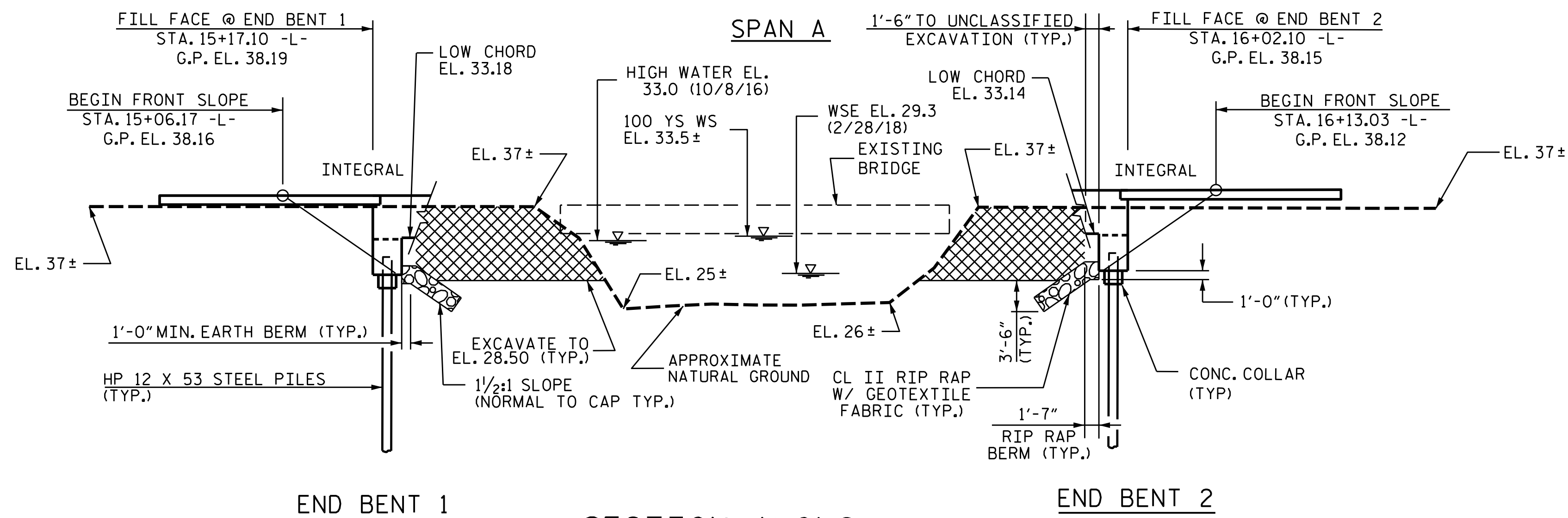
16+00

17+00

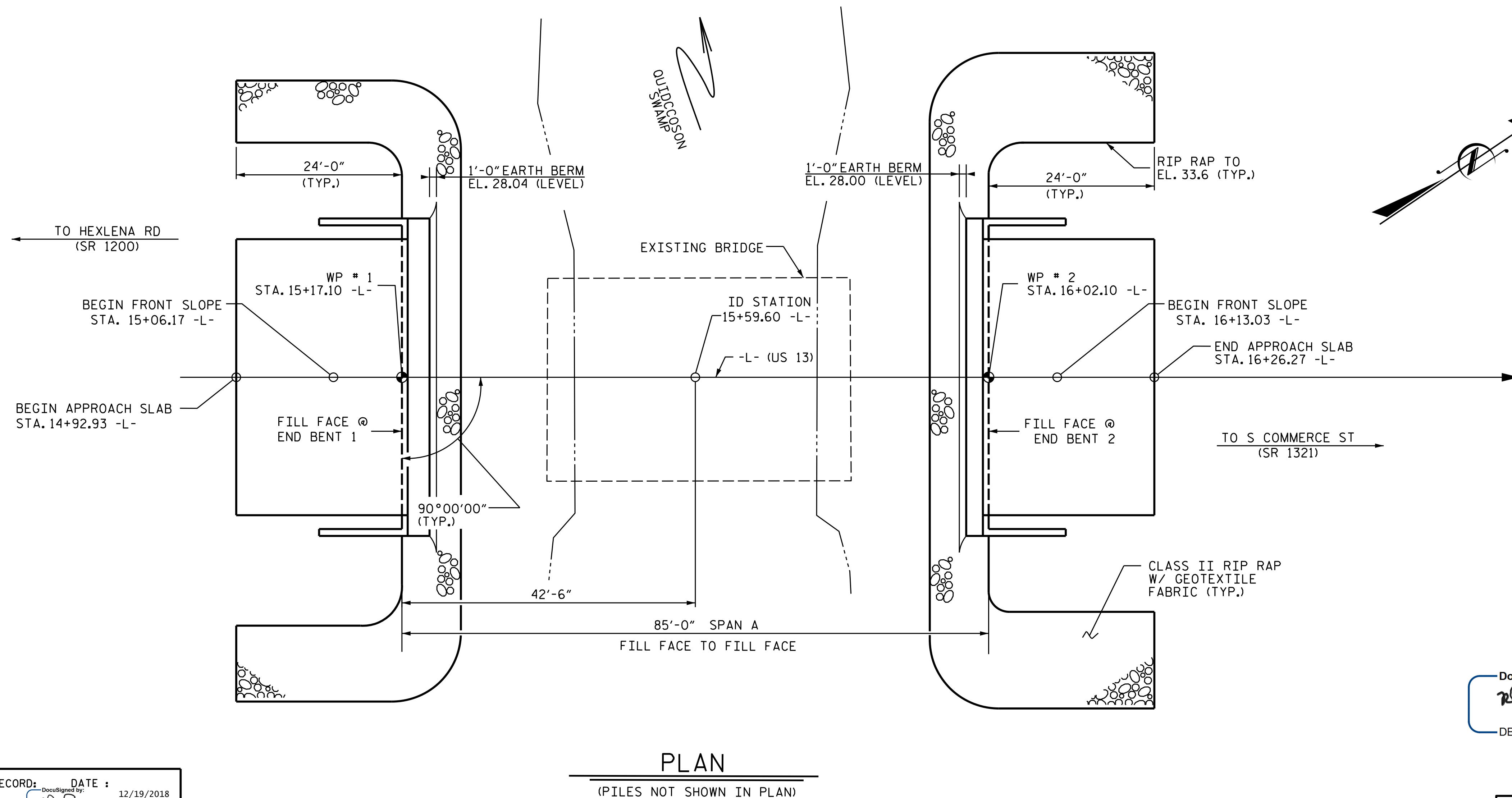
(+10.6009% (-)0.6844%

PVI = 15+60.00
EL. = 38.55
VC = 200.00 FT.

PROFILE DATA -L-



SECTION ALONG -L-



I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

BRIDGE HYDRAULIC DATA	
DESIGN DISCHARGE	= 1200 CFS
DESIGN FREQUENCY	= 50 YRS
DESIGN HW ELEVATION	= 32.6 FT
DRAINAGE AREA	= 9.6 SQ. MI.
BASE DISCHARGE	= 1689 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 33.5 FT

OVERTOPPING DATA	
OVERTOPPING DISCHARGE	= 4000 CFS
OVERTOPPING FREQUENCY	= 500+ YRS
OVERTOPPING ELEVATION*	= 36.8 FT

* SAG @ STA. 19+10 -L-

PROJECT NO. B-4916
BERTIE COUNTY
 STATION: 15+59.60 -L-

SHEET 1 OF 4 REPLACES BRIDGE NO. 57

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON US 13 OVER
 QUIOCOSIN SWAMP BETWEEN
 HEXLENA RD. (SR 1200) AND
 S. COMMERCE ST. (SR 1321)

DocuSigned by:

 DB3C8E45B06D499
 NORTH CAROLINA PROFESSIONAL SEAL 14114
 ENGINEER ROBERT C. LARSON
 12/19/2018

DESIGN ENGINEER OF RECORD: D. J. PEDERSON DATE: 12/19/2018
 DRAWN BY: D. J. PEDERSON DATE: 7/10/18
 CHECKED BY: R. C. LARSON DATE: 08/04/18

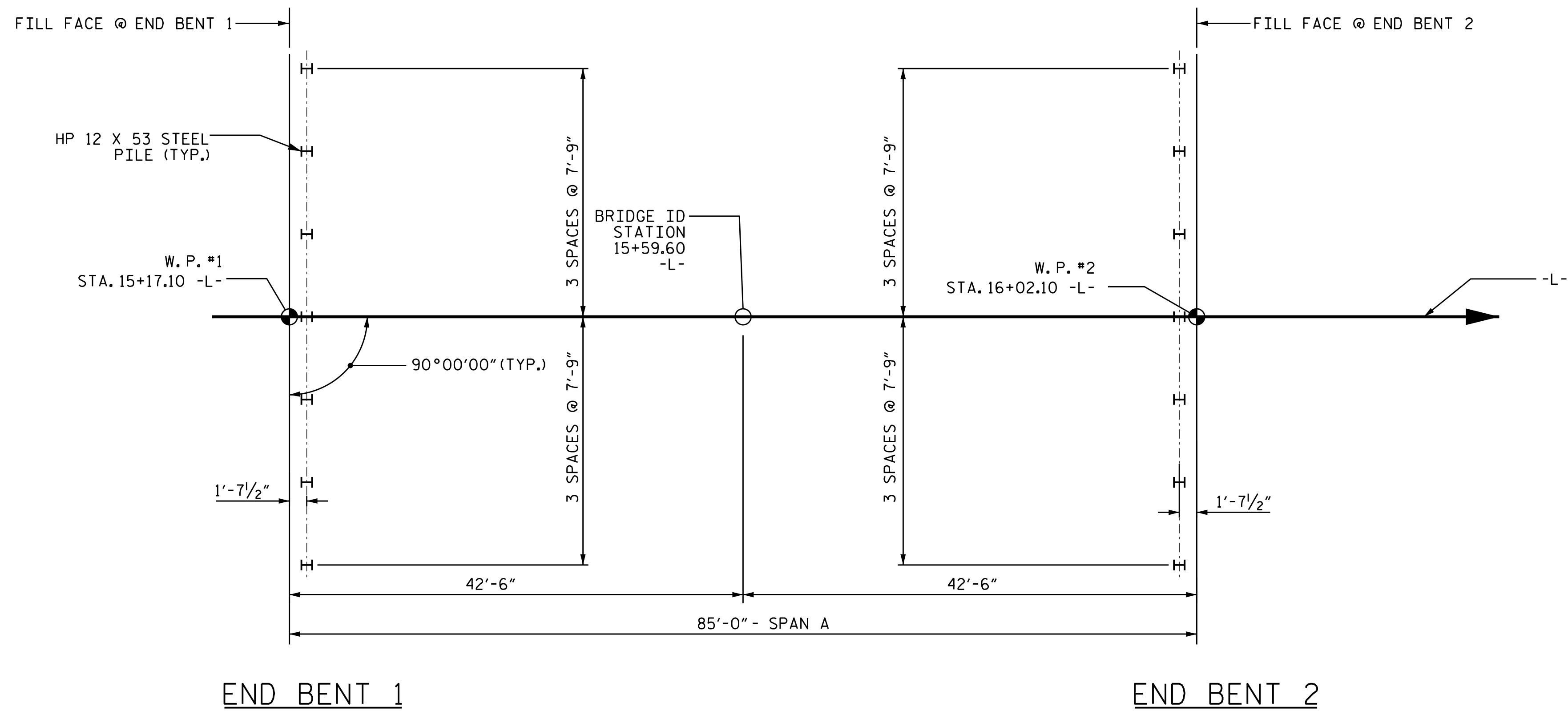
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ENGINEERS & PLANNERS & SCIENTISTS & CONSTRUCTION MANAGERS LICENSE NUMBER: C-0764
KCI Associates
 of North Carolina, P.A.
 4505 Falls of House Road, Suite 400 Raleigh, NC 27609-6270 Phone 919-785-9241

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

S-1
 TOTAL SHEETS 24

KCI JOB NO: 251801945.06



FOUNDATION LAYOUT

NOTE: ALL PILES ARE VERTICAL

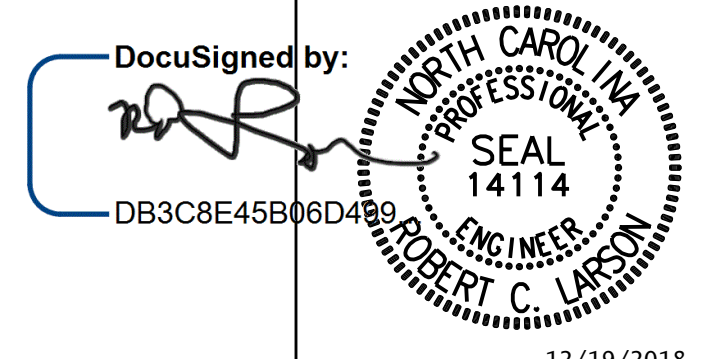
FOUNDATION NOTES

- 1) FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- 2) PILES AT END BENT 1 AND END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 110 TONS PER PILE.
- 3) DRIVE PILES AT END BENT 1 AND END BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 185 TONS PER PILE.
- 4) TESTING THE PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING, OR REDRIVING MAY BE REQUIRED. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. B-4916
BERTIE COUNTY
 STATION: 15+59.60 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON US 13 OVER
 QUIOCCOSIN SWAMP BETWEEN
 HEXLENA RD.(SR 1200) AND
 S. COMMERCE ST. (SR 1321)



DESIGN ENGINEER OF RECORD:	DATE :
<i>R.J. Flory</i>	12/19/2018
DRAWN BY :	DATE :
R. J. FLORY	08/17/18
CHECKED BY :	DATE :
R. C. LARSON	11/02/18

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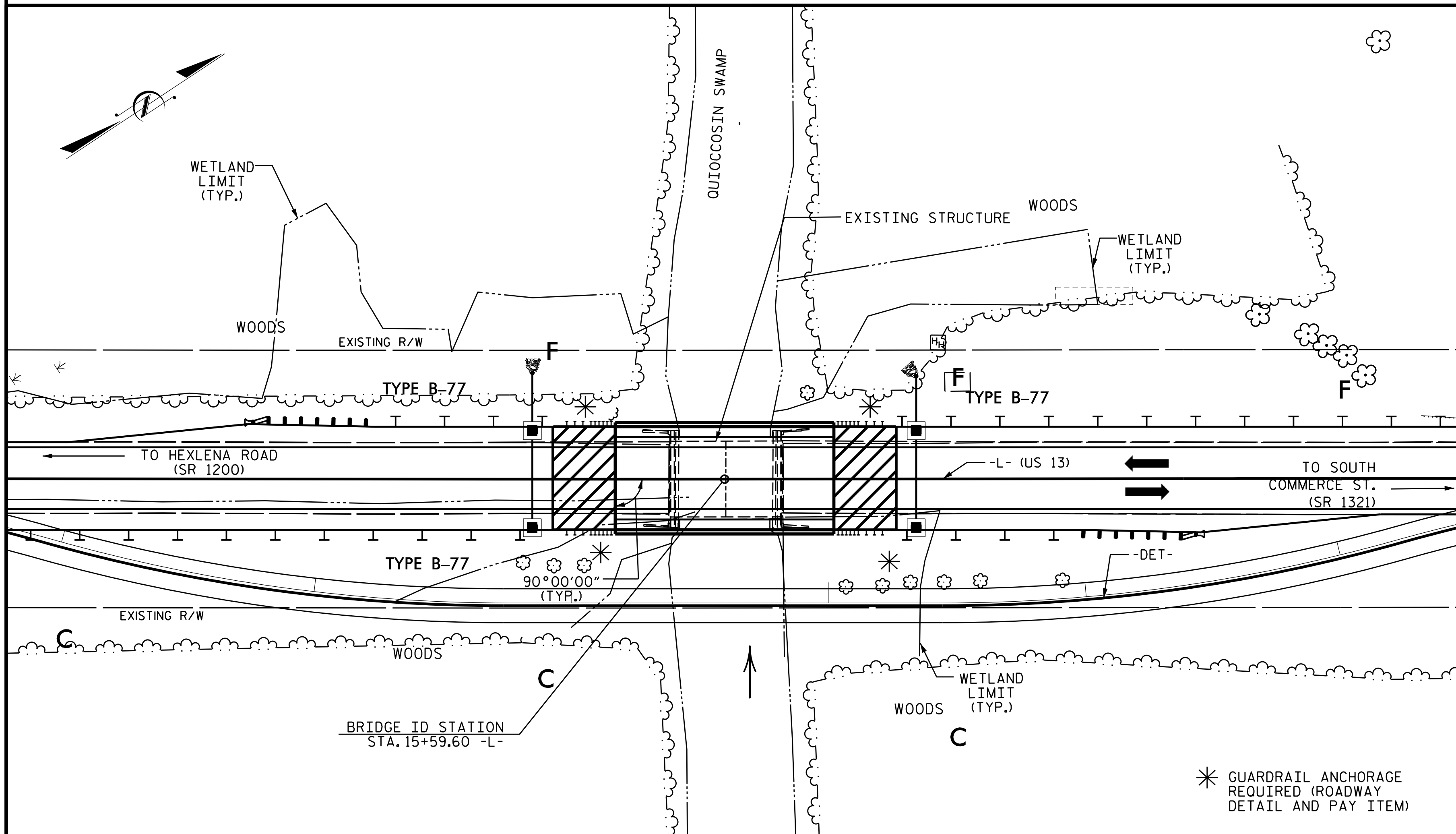


REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: 24

KCI JOB NO: 251801945.06

BENCHMARK: BM*1 RR SPIKE IN 18" OAK STATION 15+24.21 -L-, 75.7' RIGHT ELEVATION 32.14 NAVD 88



LOCATION SKETCH

NOTE: FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR SEISMIC PERFORMANCE ZONE 1.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

PRESTRESSED CONCRETE DECK PANELS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 15+59.60 -L-".

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 50 FT EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE CONTRACTOR WILL BE REQUIRED TO CONSTRUCT, MAINTAIN AND AFTERWARDS REMOVE A TEMPORARY STRUCTURE AT STATION 15+59.60 -L- FOR USE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE. FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE, SEE SPECIAL PROVISIONS.

THE BRIDGE RAILS ON THE TEMPORARY STRUCTURE SHALL BE DESIGNED FOR THE LRFD TEST LEVEL 3 (TL-3) CRASH TEST CRITERIA. FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE, SEE SPECIAL PROVISIONS.

THE EXISTING STRUCTURE CONSISTING OF 2 @ 21'-3" CONTINUOUS STEEL BEAM SPANS WITH 29'-6" CLEAR ROADWAY REINFORCED CONCRETE DECK ON STEEL PILE BENT AND CONCRETE CAP ON TIMBER PILE END BENTS WITH STEEL CRUTCH BENTS AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 420-2 OF THE STANDARD SPECIFICATIONS.

THE STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES."

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE BOTTOM OF CAP ELEVATIONS ARE AT OR NEAR THE EXISTING WATER SURFACE. THE COST OF ANY DEWATERING REQUIRED TO CONSTRUCT THE END BENTS IS TO BE INCLUDED IN THE VARIOUS PAY ITEMS.

TOTAL BILL OF MATERIAL

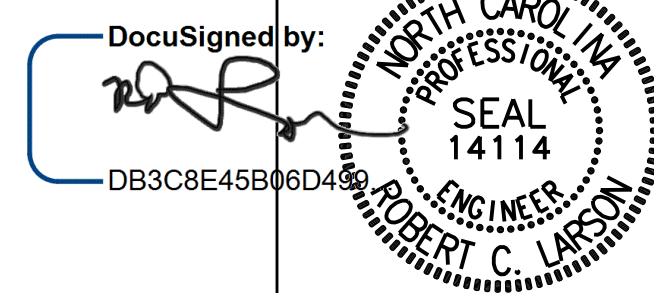
	CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY STRUCTURE @ STA. 15+59.60 -L-	REMOVAL OF EXISTING STRUCTURE @ STA. 15+59.60 -L-	ASBESTOS ASSESSMENT	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION @ STA. 15+59.60 -L-	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS STA. 15+59.60 -L-	REINFORCING STEEL	45" PRESTRESSED CONCRETE GIRDERS	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES	PILE REDRIVES	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS		
	LUMP SUM	LUMP SUM	LUMP SUM	EACH	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	EACH	LIN. FT.	EACH	LIN. FT.	TON	SQ. YDS.	LUMP SUM	
SUPERSTRUCTURE						3676	4860				5	415.42			166.67				LUMP SUM	
END BENT 1								34.0		4764		7	7	490	4		170	190		
END BENT 2								34.0		4764		7	7	490	4		170	190		
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	1	LUMP SUM	3676	4860	68.0	LUMP SUM	9528	5	415.42	14	14	980	8	166.67	340	380	LUMP SUM

PROJECT NO. B-4916
BERTIE COUNTY
 STATION: 15+59.60 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON US 13 OVER
 QUIOCCOSIN SWAMP BETWEEN
 HEXLENA RD. (SR 1200) AND
 S. COMMERCE ST. (SR 1321)



DESIGN ENGINEER OF RECORD: R.C. LARSON DATE: 12/19/2018
 DRAWN BY: R.J. FLORY DATE: 08/25/18
 CHECKED BY: R.C. LARSON DATE: 11/02/18

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 4505 Falls of House Road, Suite 400 Raleigh, NC 27609-6270 Phone 919-785-9244

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S- 3
1			3			TOTAL SHEETS 24
2			4			

KCI JOB NO: 251801945.06

LOAD FACTORS:

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

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE						SERVICE III LIMIT STATE						COMMENT NUMBER						
						MOMENT			SHEAR			MOMENT												
						LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ_{LL})		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.22	--	1.75	0.793	1.50	A	E	40.9	0.908	1.22	A	I	7.6	0.80	0.718	1.28	A	I	40.9		
	HL-93 (OPERATING)	N/A		1.61	--	1.35	0.793	1.94	A	E	40.9	0.908	1.61	A	I	7.6	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.59	57.24	1.75	0.793	2.00	A	E	40.9	0.908	1.59	A	I	7.6	0.80	0.718	1.72	A	I	40.9		
	HS-20 (OPERATING)	36.000		2.09	75.24	1.35	0.793	2.60	A	E	40.9	0.908	2.09	A	I	7.6	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.96	53.46	1.40	0.793	5.77	A	E	40.9	0.908	4.99	A	I	7.6	0.80	0.718	3.96	A	I	40.9	
		SNGARBS2	20.000		2.92	58.40	1.40	0.793	4.25	A	E	40.9	0.908	3.50	A	I	7.6	0.80	0.718	2.92	A	I	40.9	
		SNAGRIS2	22.000		2.75	60.50	1.40	0.793	4.00	A	E	40.9	0.908	3.23	A	I	7.6	0.80	0.718	2.75	A	I	40.9	
		SNCOTTS3	27.250		1.97	53.68	1.40	0.793	2.87	A	E	40.9	0.908	2.44	A	I	7.6	0.80	0.718	1.97	A	I	40.9	
		SNAGGRS4	34.925		1.63	56.92	1.40	0.793	2.38	A	E	40.9	0.908	1.99	A	I	7.6	0.80	0.718	1.63	A	I	40.9	
		SNS5A	35.550		1.60	56.88	1.40	0.793	2.33	A	E	40.9	0.908	2.01	A	I	7.6	0.80	0.718	1.60	A	I	40.9	
		SNS6A	39.950		1.46	58.32	1.40	0.793	2.13	A	E	40.9	0.908	1.81	A	I	7.6	0.80	0.718	1.46	A	I	40.9	
	SNS7B	42.000		1.39	58.38	1.40	0.793	2.03	A	E	40.9	0.908	1.78	A	I	7.6	0.80	0.718	1.39	A	I	40.9		
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.78	58.74	1.40	0.793	2.59	A	E	40.9	0.908	2.19	A	I	7.6	0.80	0.718	1.78	A	I	40.9	
		TNT4A	33.075		1.78	58.87	1.40	0.793	2.60	A	E	40.9	0.908	2.14	A	I	7.6	0.80	0.718	1.78	A	I	40.9	
		TNT6A	41.600		1.45	60.32	1.40	0.793	2.12	A	E	40.9	0.908	1.89	A	I	7.6	0.80	0.718	1.45	A	I	40.9	
		TNT7A	42.000		1.46	61.32	1.40	0.793	2.13	A	E	40.9	0.908	1.83	A	I	7.6	0.80	0.718	1.46	A	I	40.9	
		TNT7B	42.000		1.50	63.00	1.40	0.793	2.19	A	E	40.9	0.908	1.73	A	I	7.6	0.80	0.718	1.50	A	I	40.9	
		TNAGRIT4	43.000		1.43	61.49	1.40	0.793	2.09	A	E	40.9	0.908	1.68	A	I	7.6	0.80	0.718	1.43	A	I	40.9	
TNAGT5A		45.000		1.35	60.75	1.40	0.793	1.97	A	E	40.9	0.908	1.66	A	I	7.6	0.80	0.718	1.35	A	I	40.9		
TNAGT5B	45.000		③	1.34	60.30	1.40	0.793	1.95	A	E	40.9	0.908	1.60	A	I	7.6	0.80	0.718	1.34	A	I	40.9		

NOTES:

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

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

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

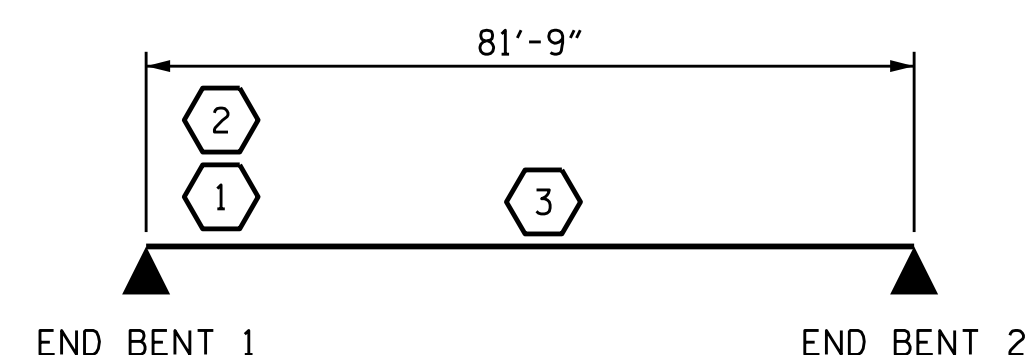
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
E - EXTERIOR GIRDER

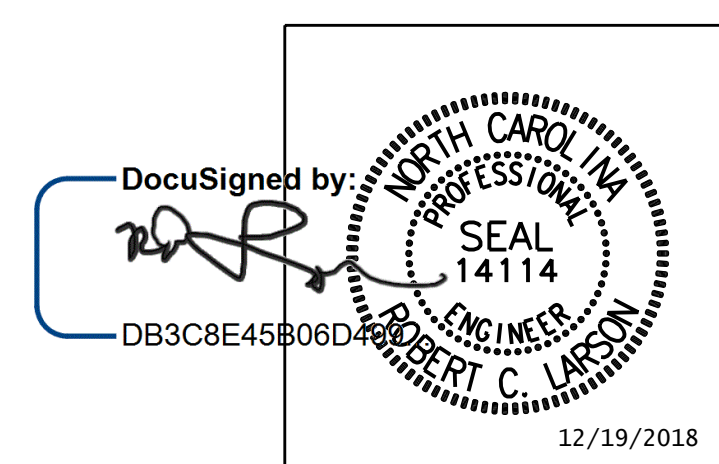


LRFR SUMMARY

PROJECT NO. B-4916
BERTIE COUNTY
 STATION: 15+59.60 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 LRFR SUMMARY FOR
 PRESTRESSED
 CONCRETE GIRDERS
 (NON-INTERSTATE TRAFFIC)



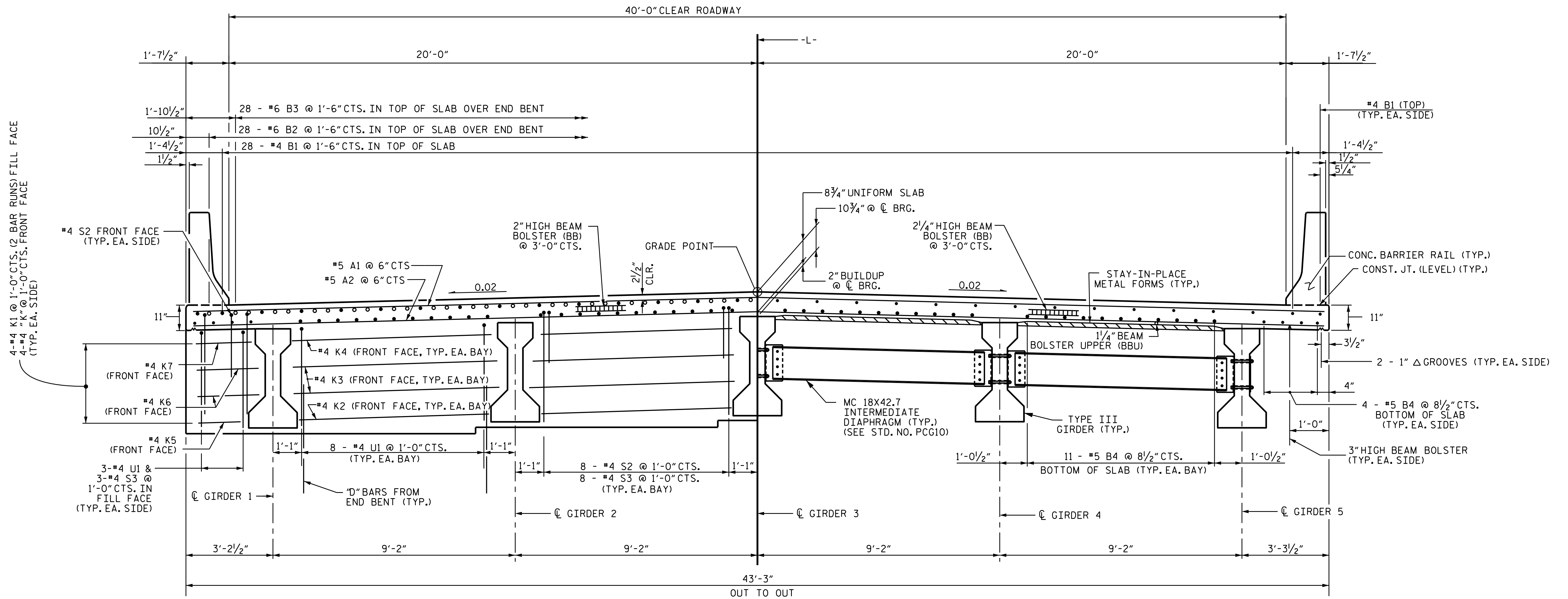
DESIGN ENGINEER OF RECORD: <i>[Signature]</i> DATE: 12/19/2018
ASSEMBLED BY: R. C. LARSON DATE: 10/19/18
CHECKED BY: K. SU DATE: 11/01/18
DRAWN BY: MAA 1/08 REV. 11/2/08RR MAA/GM
CHECKED BY: GM/DI 2/08 REV. 10/1/11 MAA/GM
REV. 12/17 MAA/THC

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			24

STD. NO. LRFR1



TYPICAL HALF SECTION
AT INTEGRAL END DIAPHRAGM
(END BENTS 1 & 2)

TYPICAL HALF SECTION AT
INTERMEDIATE DIAPHRAGM

TYPICAL SECTION

- INDICATES CONTINUOUS REINFORCING
- INDICATES ADDITIONAL REINFORCING AT END BENT

NOTES

PROVIDE 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF 'A' BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF 'A' BARS A CLEAR DISTANCE OF 2 1/2" ABOVE THE TOP OF THE REMOVABLE FORM.

LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

PREVIOUSLY CAST CONCRETE SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE SPAN.

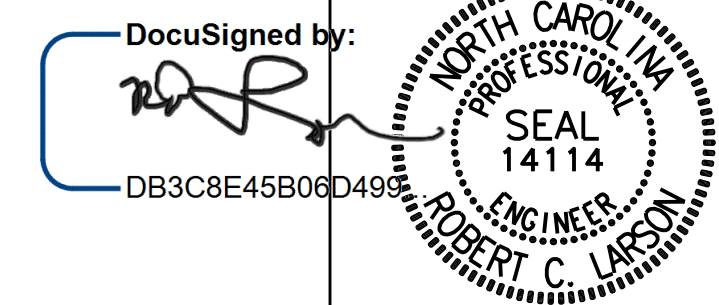
SEE STD NO. CBR1 FOR ADDITIONAL REINFORCING STEEL EMBEDDED IN SLAB.

PROJECT NO. B-4916
BERTIE COUNTY
 STATION: 15+59.60 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 TYPICAL SECTION



DocuSigned by:
 DB3C8E45B06D498

12/19/2018

DESIGN ENGINEER OF RECORD: [Signature] DATE: 12/19/2018
 DRAWN BY: D. J. PEDERSEN DATE: 08/02/18
 CHECKED BY: R. C. LARSON DATE: 08/18/18

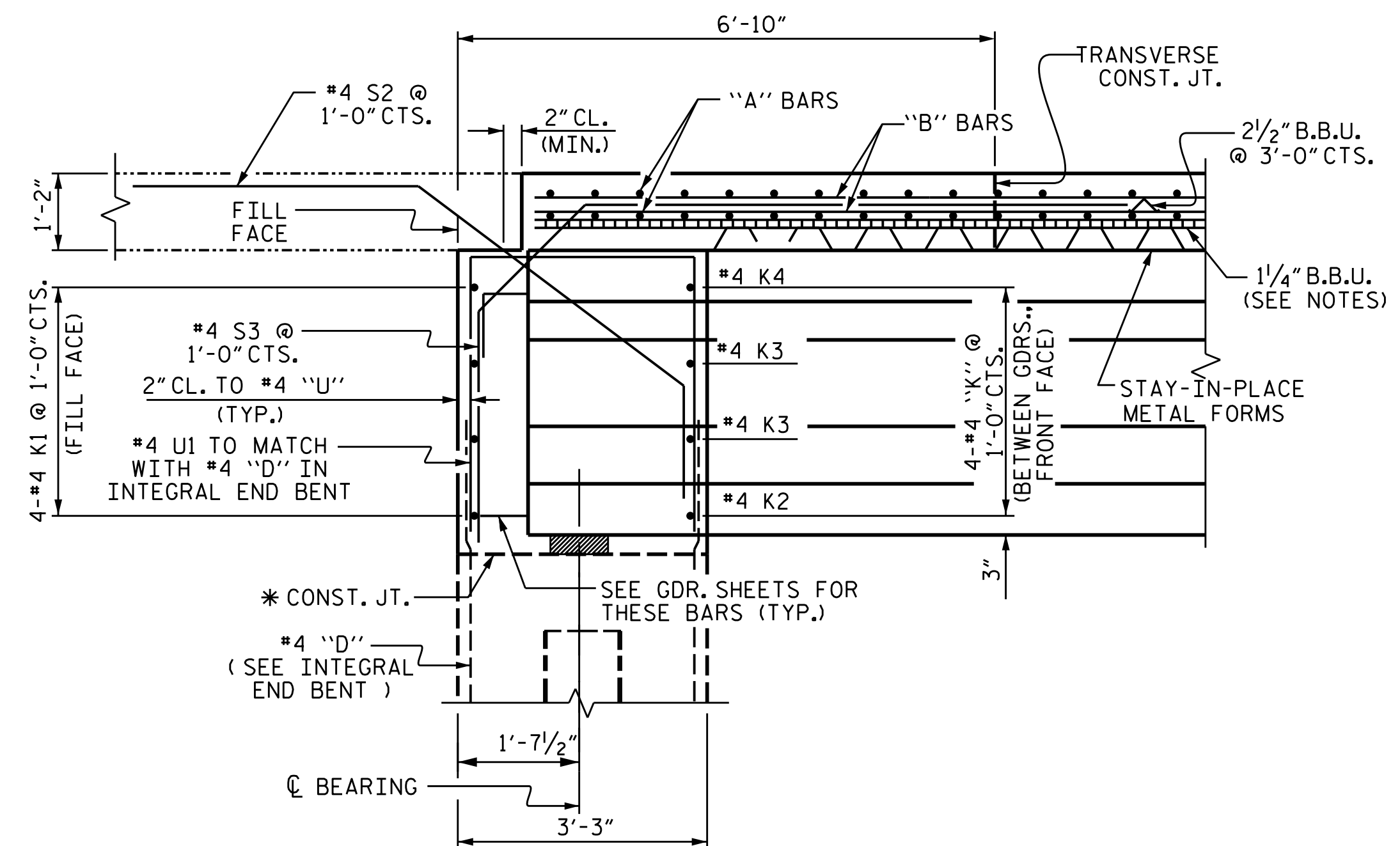
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ENGINEERS & PLANNERS & SCIENTISTS & CONSTRUCTION MANAGERS LICENSE NUMBER: C-0784
KCI Associates
 of North Carolina, P.A.
 4505 Falls of House Road, Suite 400 Raleigh, NC 27609-6270 Phone: 919-785-9244

REVISIONS		SHEET NO.	
NO.	BY:	DATE:	S-5
1			TOTAL SHEETS 24
2			

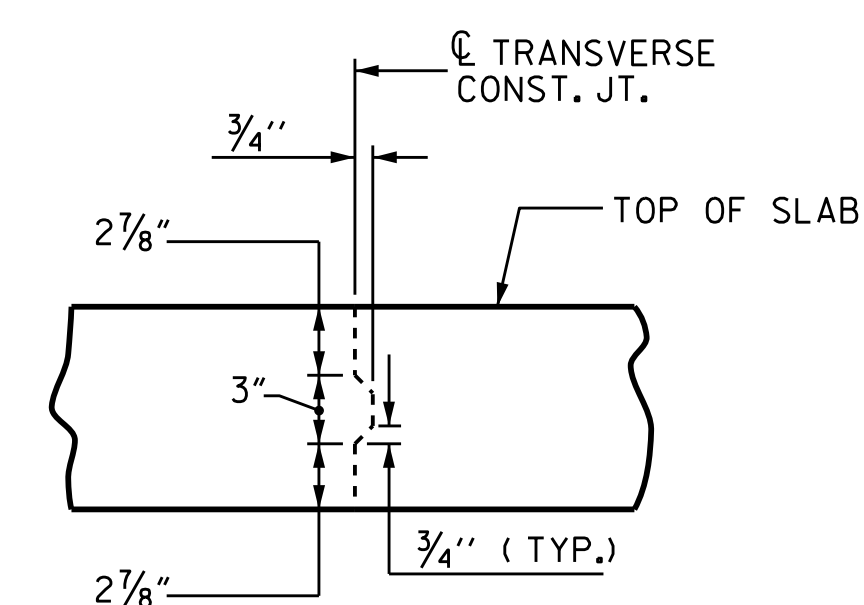
KCI JOB NO: 251801945.06

KCI JOB NO: 251801945.06



* THE TOP SURFACE OF THE END BENT CAP AND WINGS, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4\".

SECTION THRU INTEGRAL END BENT



TRANSVERSE CONSTRUCTION JOINT DETAIL

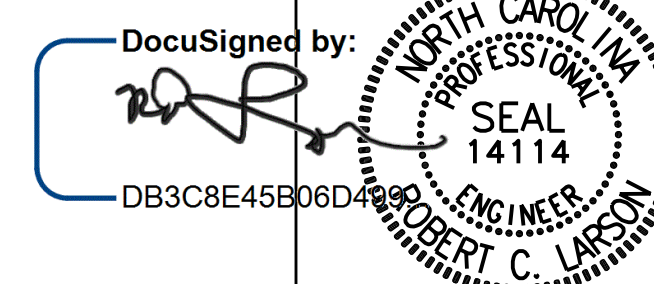
NOTE: REINFORCING STEEL IN SLAB NOT SHOWN. LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT

PROJECT NO. B-4916
BERTIE COUNTY
 STATION: 15+59.60 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 TYPICAL SECTION**



DocuSigned by:

 DB3C8E45B06D1890

12/19/2018

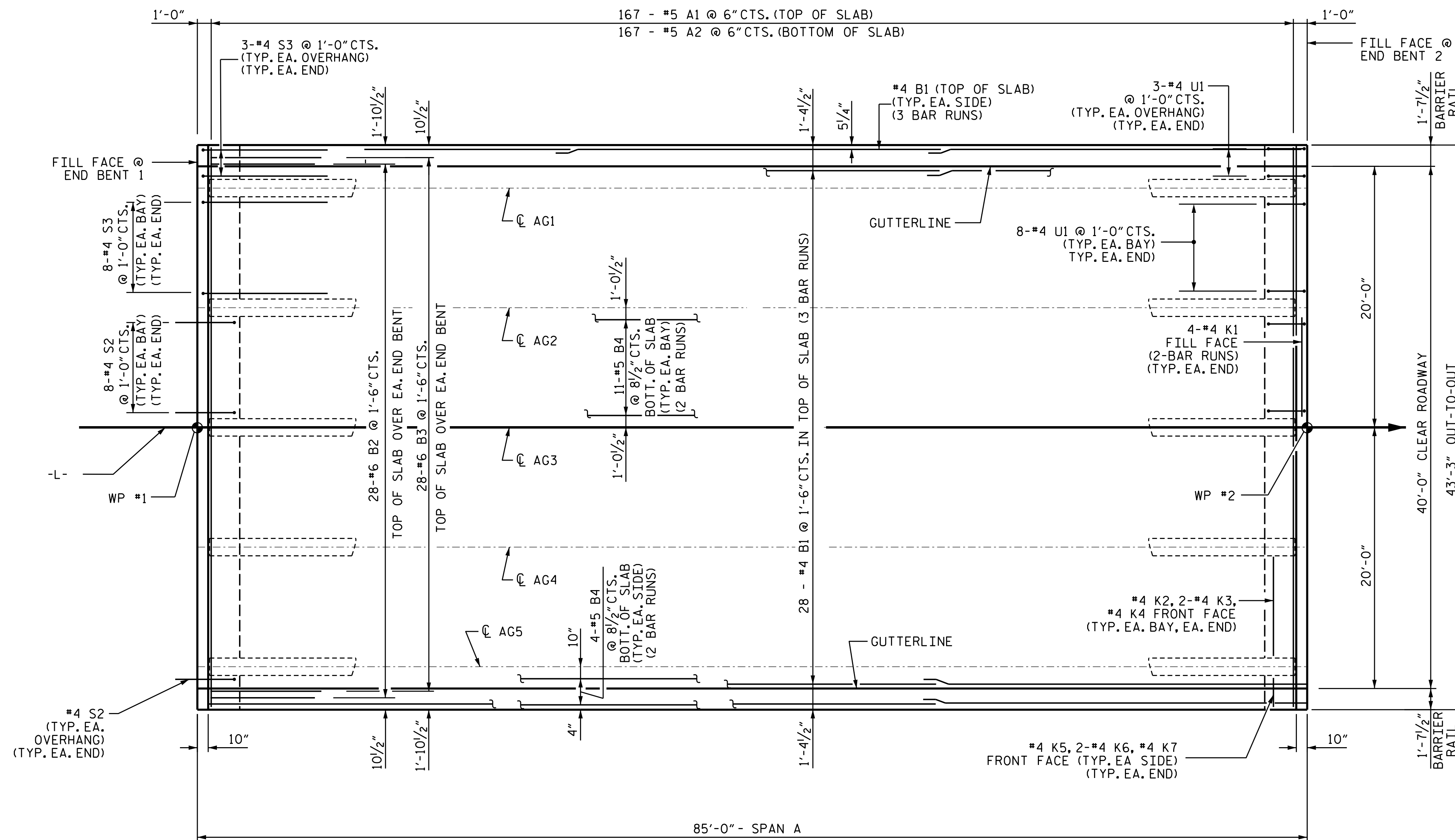
DESIGN ENGINEER OF RECORD: R. J. FLORY DATE: 12/19/2018
 DRAWN BY: R. J. FLORY DATE: 8/20/18
 CHECKED BY: R. C. LARSON DATE: 8/22/18

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REVISIONS		SHEET NO.	
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2		4	

TOTAL SHEETS: 24



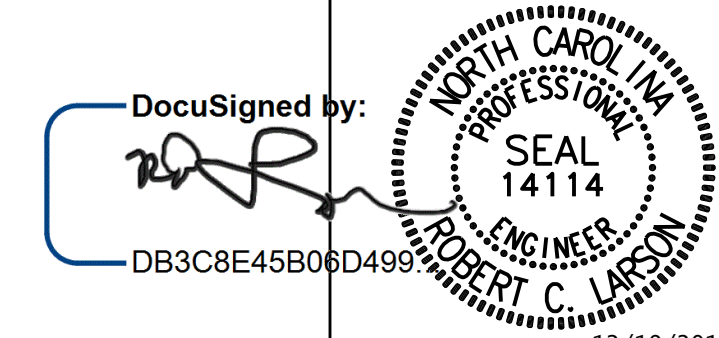
PLAN - SPAN A

SEE SUPERSTRUCTURE BILL OF MATERIAL FOR REINFORCING SPLICE LENGTHS.

PROJECT NO. B-4916
BERTIE COUNTY
 STATION: 15+59.60 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 PLAN OF SPAN A**



DocuSigned by:

[Signature]

DB3C8E45B06D499

12/19/2018

DESIGN ENGINEER OF RECORD:	DATE :
<i>[Signature]</i>	12/19/2018
DRAWN BY :	DATE :
R. C. LARSON	08/06/18
CHECKED BY :	DATE :
R. A. PRUETT	11/08/18

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

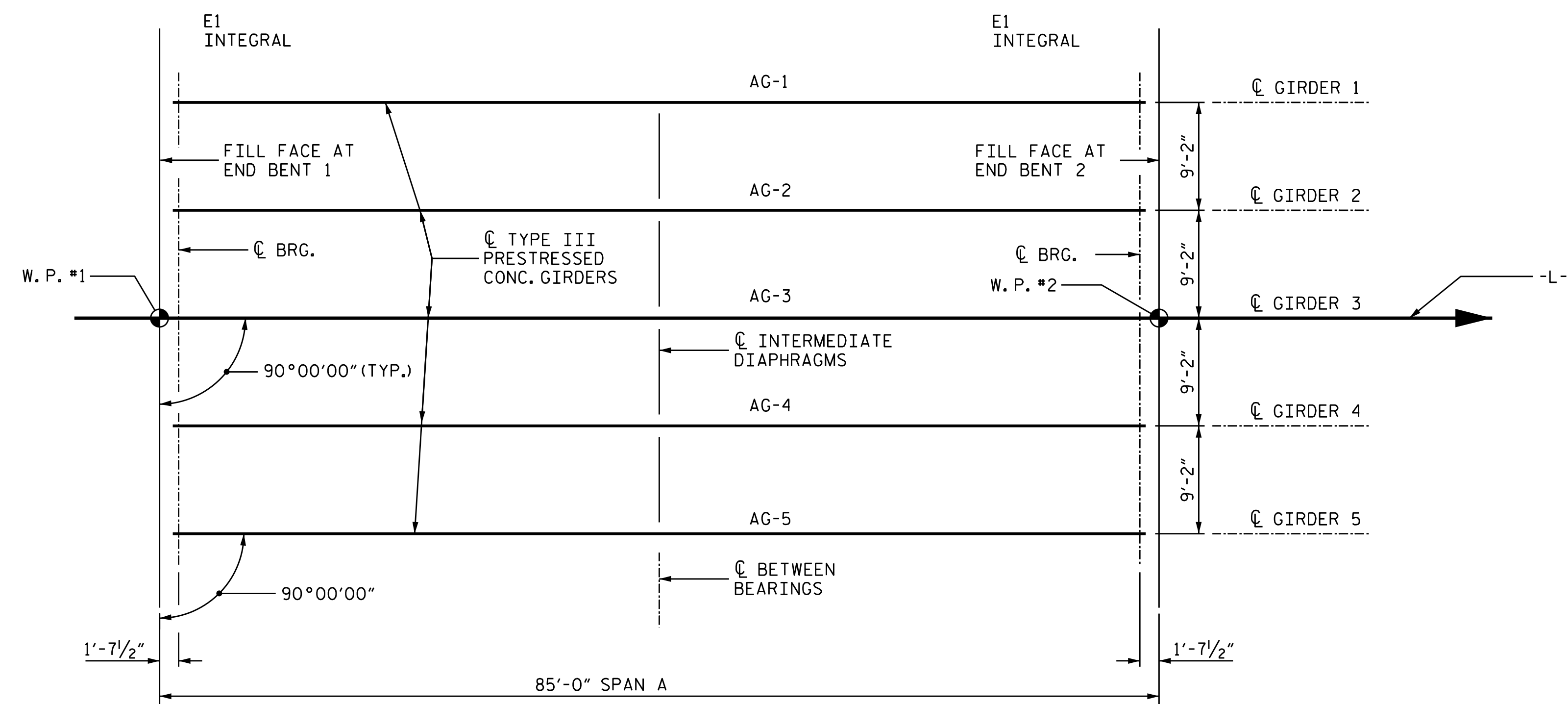


REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: 24

KCI JOB NO: 251801945.06

KCI JOB NO: 251801945.06

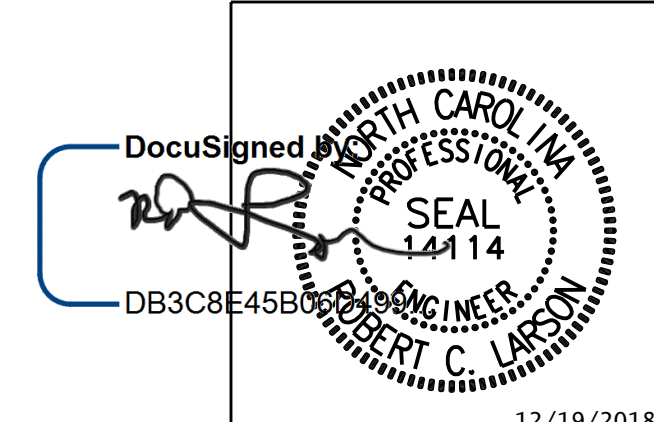


GIRDER LAYOUT

PROJECT NO. B-4916
BERTIE COUNTY
 STATION: 15+59.60 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 GIRDER LAYOUT**



DESIGN ENGINEER OF RECORD: R.C. LARSON DATE: 12/19/2018
 DRAWN BY: R.J. FLORY DATE: 08/07/18
 CHECKED BY: R.C. LARSON DATE: 08/17/18

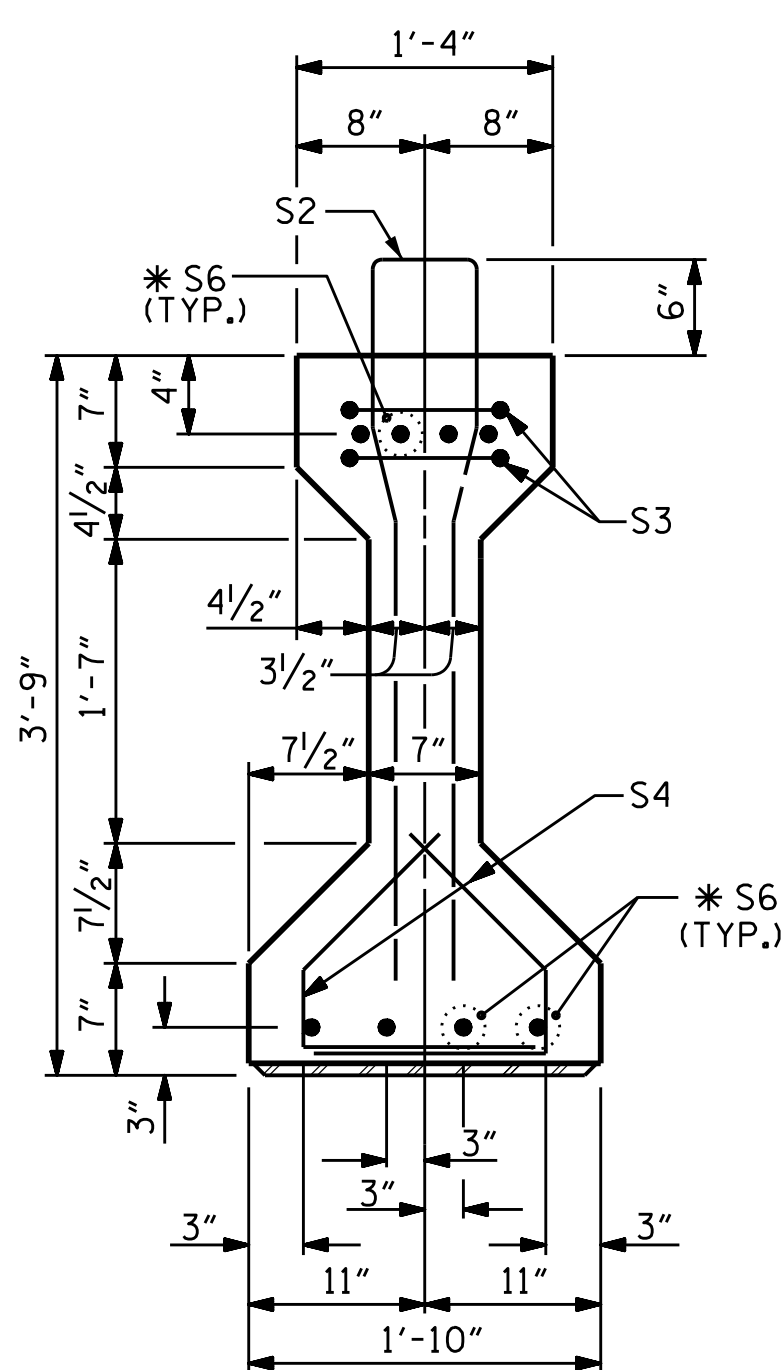
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2			4

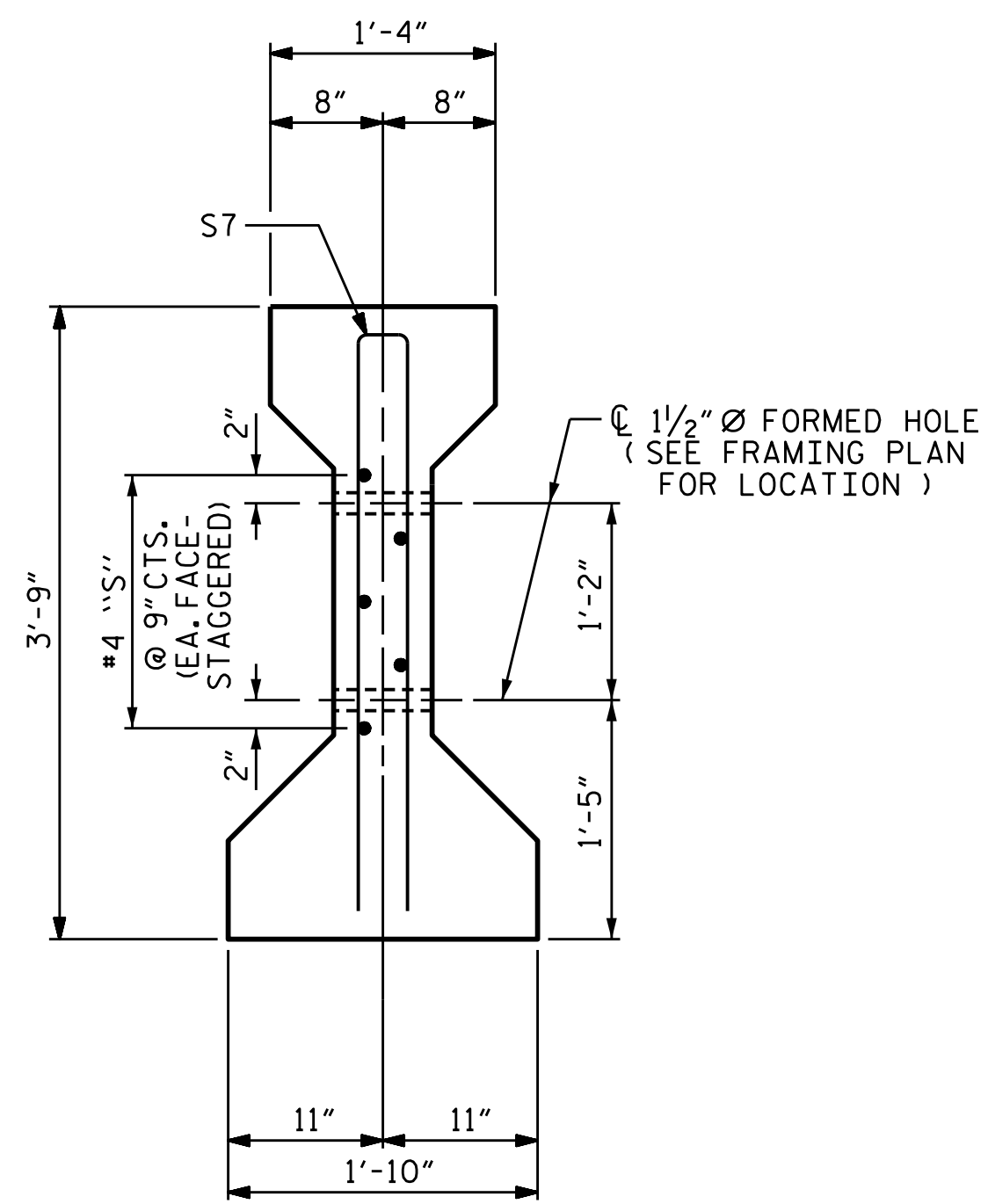
12/19/2018

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TOTAL SHEETS: 24

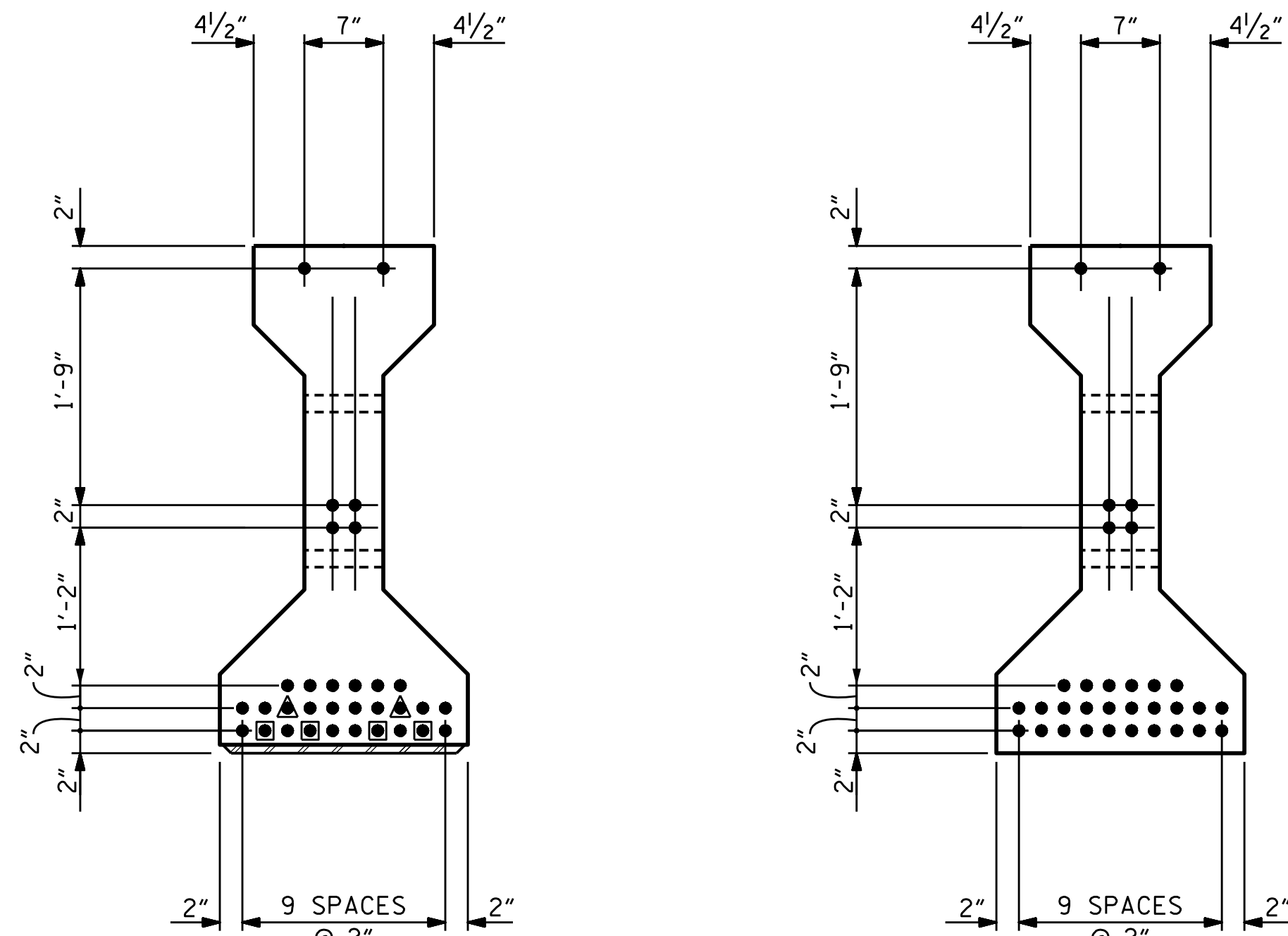


SECTION A-A



SECTION B-B

(S1 BARS NOT SHOWN)

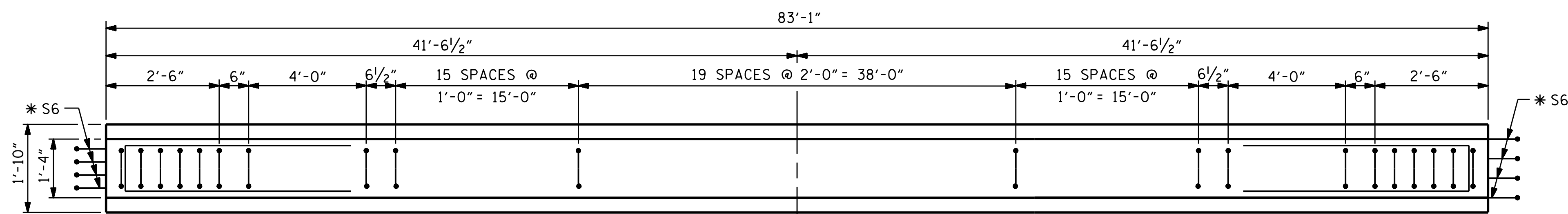


AT END OF GIRDER

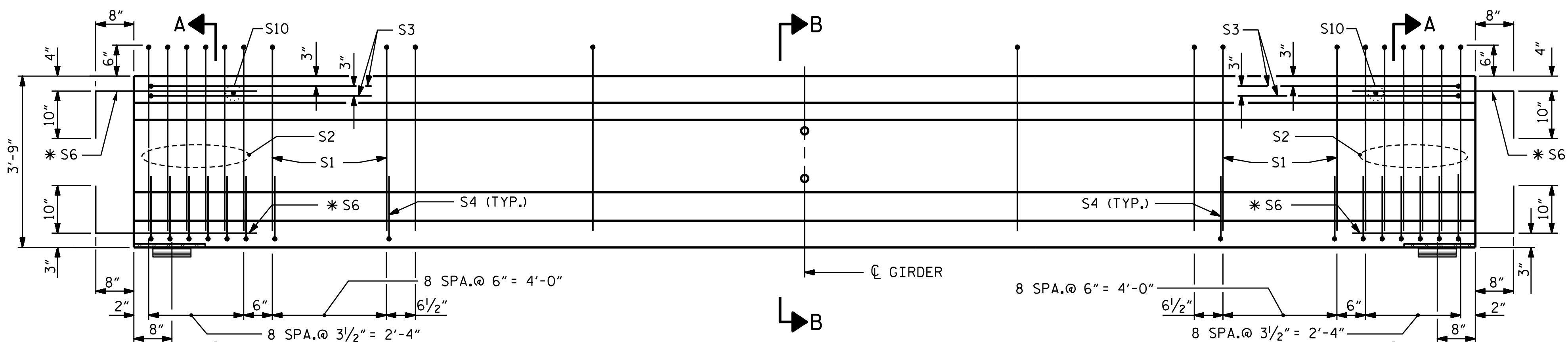
AT CL OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

- ▲ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 4'-0" FROM END OF GIRDER. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
- ▣ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 8'-0" FROM END OF GIRDER. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

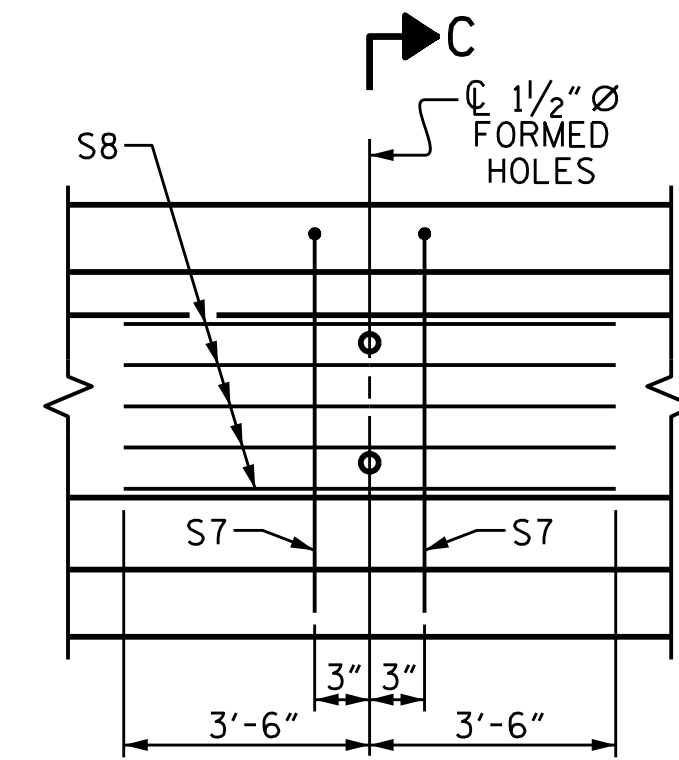


PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS (FOR ALL EXTERIOR GIRDERS AND INTERIOR GIRDERS WITH 70° ≤ SKEW ≤ 110°)

0.6" Ø L. R. GRADE 270 STRANDS

AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

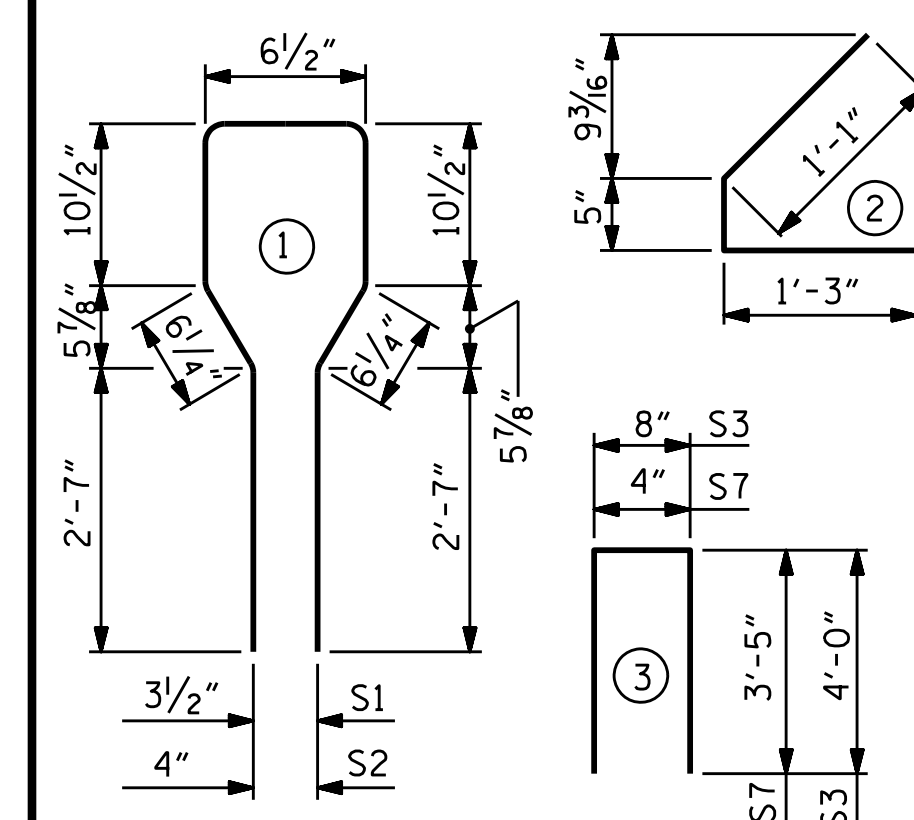
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	68	#4	1	8'-6"	386
S2	18	#6	1	8'-6"	230
S3	4	#4	3	8'-8"	23
S4	72	#4	2	2'-9"	132
*S6	16	#5	STR	3'-8"	61
S7	2	#5	3	7'-2"	15
S8	5	#4	STR	7'-0"	23
S10	2	#3	STR	1'-0"	1

* NOTE: S6 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

REINFORCING STEEL	8000 PSI CONCRETE	0.6" Ø L. R. STRANDS
LB.	C.Y.	No.
871	12.0	32

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
5	83'-1"	415'-5"

PROJECT NO. B-4916

BERTIE COUNTY

STATION: 15+59.60 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

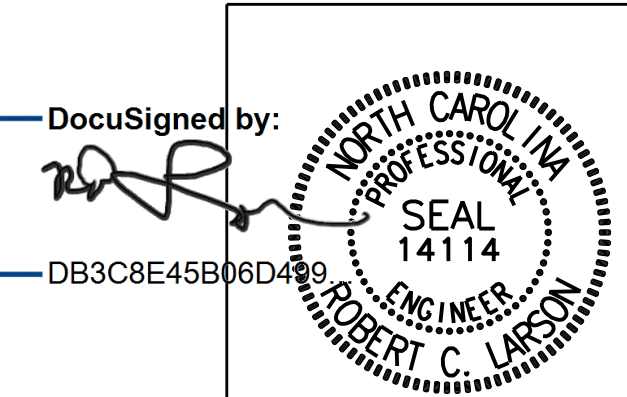
STANDARD
AASHTO TYPE III
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD

ASSEMBLED BY : D. J. PEDERSEN DATE : 07/23/18
CHECKED BY : K. SU DATE : 08/21/18

DRAWN BY : ELR 8/91 REV. 10/1/11 MAA/GM
CHECKED BY : GRP 8/91 REV. 1/15 MAA/TMG
REV. 12/17 MAA/THC

DESIGN ENGINEER OF RECORD DATE : 12/19/2018

DOCUMENT NOT CONSIDERED FINAL
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2			4			24

STD. NO. PCG5 (Sht. 2)

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL SHALL BE GRADE 60.

EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

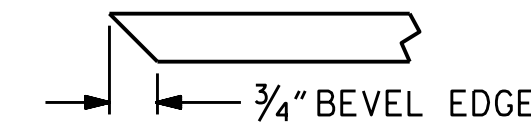
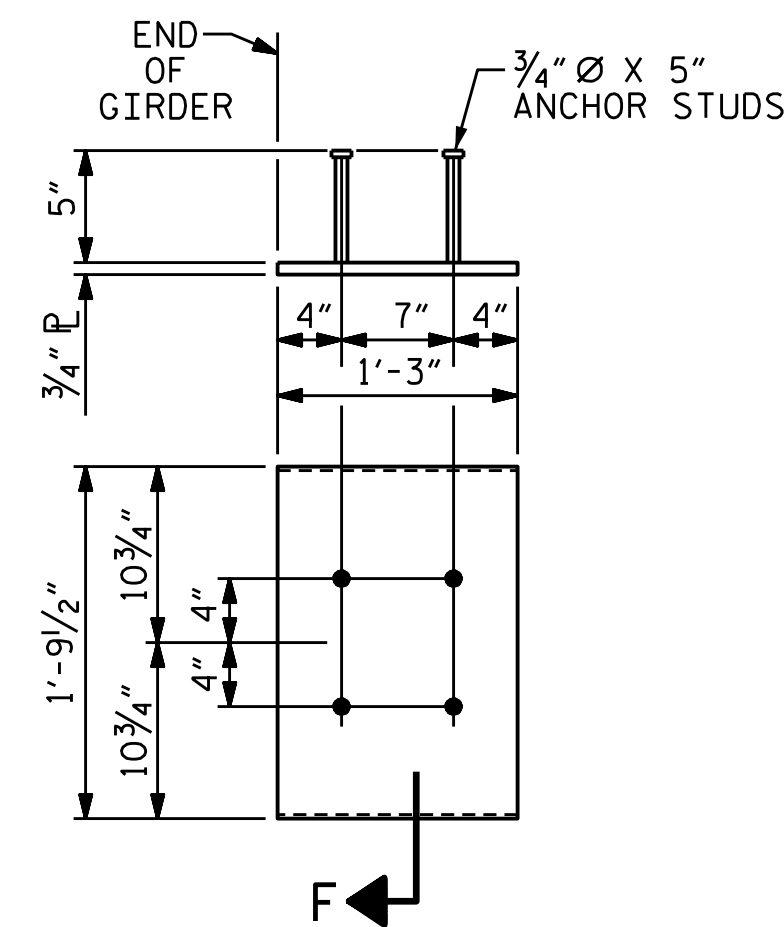
ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6400 PSI.

DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".



SECTION "F"

(SEE NOTES)

EMBEDDED PLATE "B-1" DETAILS FOR AASHTO TYPE III GIRDER

(2 REQ'D PER GIRDER)

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

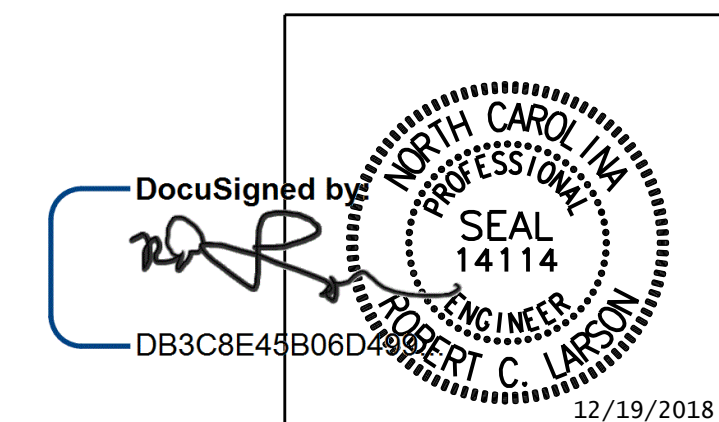
0.6" Ø LOW RELAXATION	SPAN A (INTERIOR)											SPAN A (EXTERIOR)										
	TENTH POINTS																					
CAMBER (GIRDER ALONE IN PLACE)	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	0.000	0.071	0.134	0.183	0.214	0.225	0.214	0.183	0.134	0.071	0.000	0.000	0.071	0.134	0.183	0.214	0.225	0.214	0.183	0.134	0.071	0.000
FINAL CAMBER	0	1/4"	7/16"	5/8"	11/16"	3/4"	11/16"	5/8"	7/16"	1/4"	0	0	5/16"	3/8"	1/2"	5/8"	3/4"	5/8"	3/4"	5/8"	3/8"	0

* INCLUDES FUTURE WEARING SURFACE
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

PROJECT NO. B-4916
BERTIE COUNTY
 STATION: 15+59.60 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 PRESTRESSED CONCRETE GIRDER
 CONTINUOUS FOR LIVE LOAD
 DETAILS



DESIGN ENGINEER OF RECORD: <u>R. C. LARSON</u> DATE: 12/19/2018
ASSEMBLED BY: R. C. LARSON DATE: 08/23/18
CHECKED BY: K. SU DATE: 10/24/18
DRAWN BY: ELR 11/91 REV. 1/15 MAA/TMG
CHECKED BY: GRP 11/91 REV. 2/15 MAA/TMG
REV. 12/17 MAA/THC

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 of North Carolina, P.A.
 4505 Falls of Neuse Road, Suite 400, Raleigh, NC 27609-4270 Phone 919-783-9201

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STD. NO. PCG9

STRUCTURAL STEEL NOTES

ALL INTERMEDIATE DIAPHRAGM STEEL AND CONNECTOR PLATES SHALL BE AASHTO M270 GRADE 50 OR APPROVED EQUAL.

TENSION ON THE ASTM A325 BOLTS THROUGH THE CHANNEL MEMBER SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

TENSION ON THE ASTM A449 BOLTS THROUGH THE GIRDER WEB SHALL BE SNUG TIGHTENED FOLLOWED BY AN ADDITIONAL 1/4 TURN.

THE PLATES, BENT PLATES, CHANNELS, AND ANGLES SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

FOR METALLIZATION, APPLY A THERMAL SPRAYED COATING WITH A SEAL COAT TO ALL STEEL DIAPHRAGM SURFACES IN ACCORDANCE WITH THE DEPARTMENTS THERMAL SPRAYED COATINGS (METALLIZATION) PROGRAM. THERMAL SPRAYED COATINGS SPECIAL PROVISION AND SECTION 442 OF THE STANDARD SPECIFICATIONS.

GALVANIZE THE HIGH STRENGTH BOLTS, NUTS, WASHERS AND DIRECT TENSION INDICATORS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

USE AN ASTM F436 HARDENED WASHER WITH STANDARD AND SLOTTED HOLES UNDER EACH BOLT HEAD AND NUT.

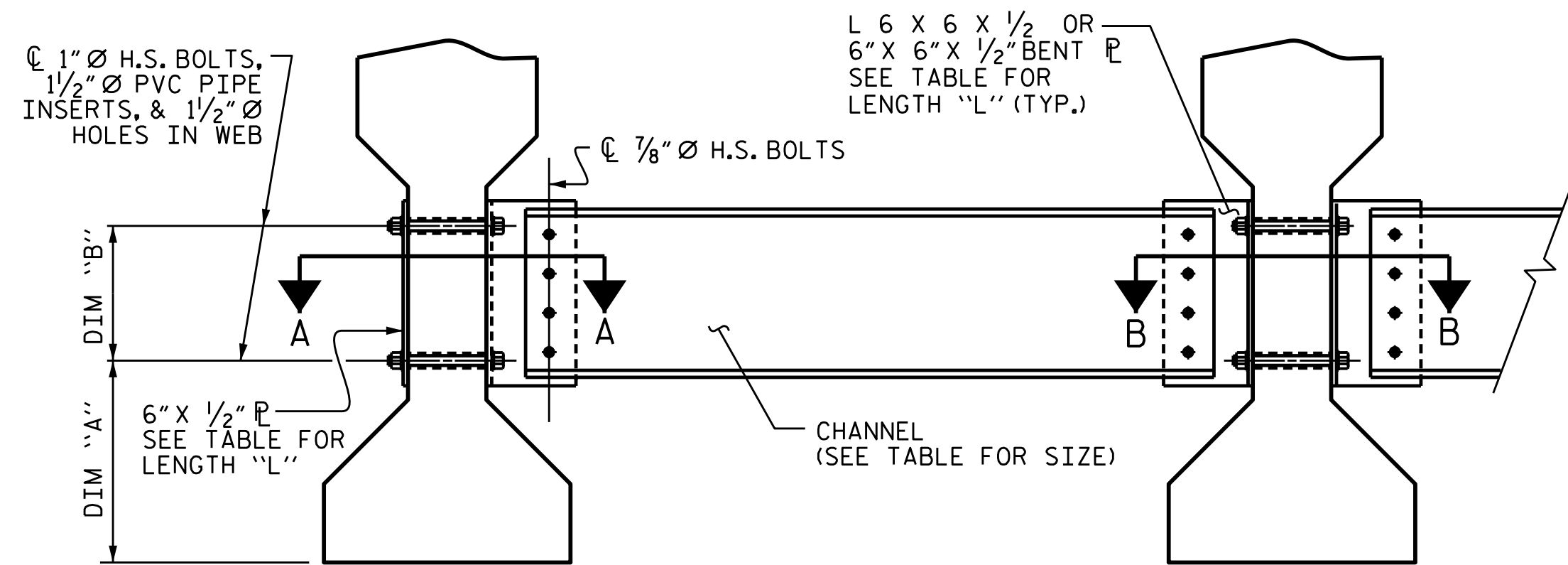
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

INTERMEDIATE DIAPHRAGM ASSEMBLY SHALL COMPLY WITH SECTION 1072 OF THE STANDARD SPECIFICATIONS.

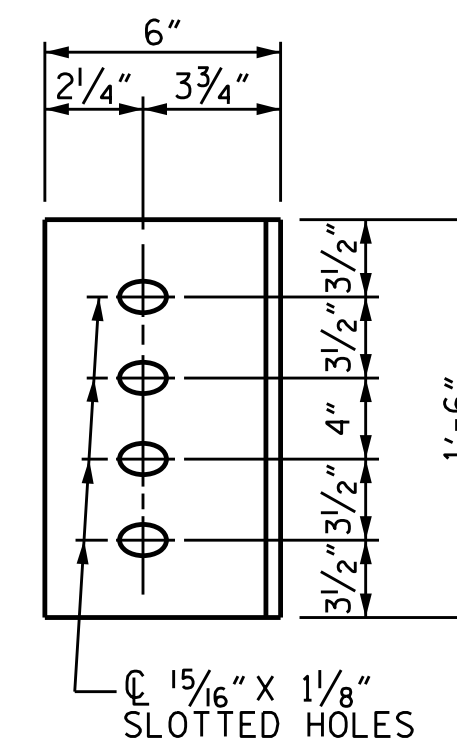
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

IN THE EXTERIOR BAYS, PLACE TEMPORARY STRUTS BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE STEEL DIAPHRAGMS. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED.

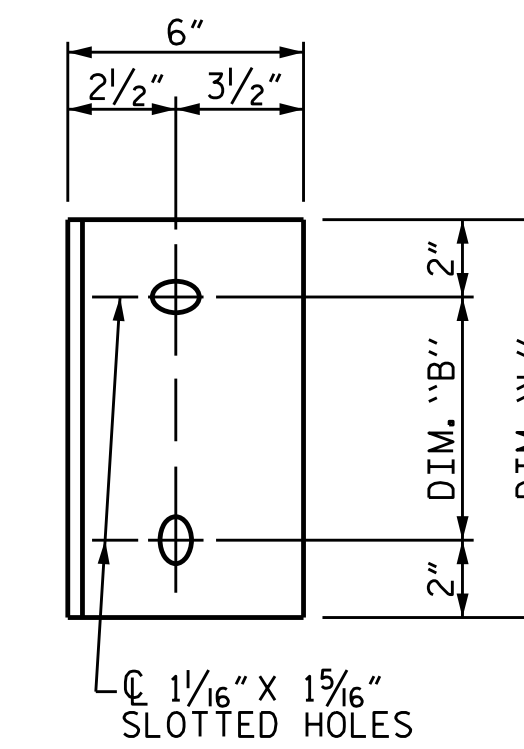
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.



EXTERIOR GIRDER **INTERIOR GIRDER**
PART SECTION AT INTERMEDIATE DIAPHRAGM
 (TYPE III OR TYPE IV GIRDER SHOWN)



DIAPHRAGM FACE
 (TYPE III OR TYPE IV GDR.)



WEB FACE

CONNECTOR PLATE DETAILS

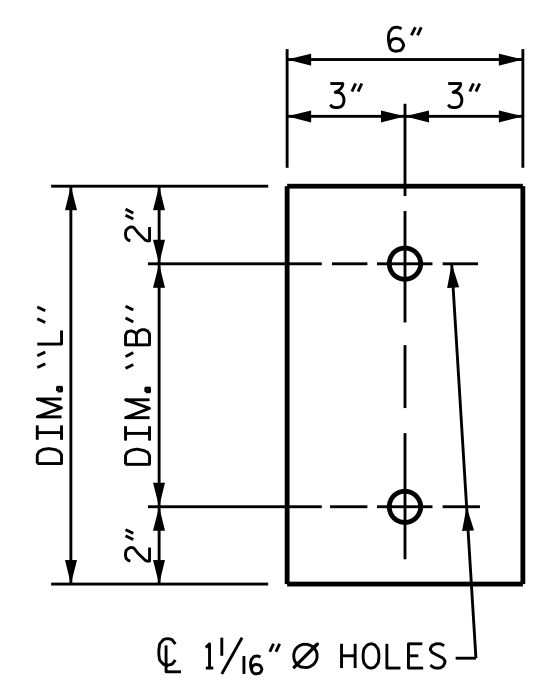
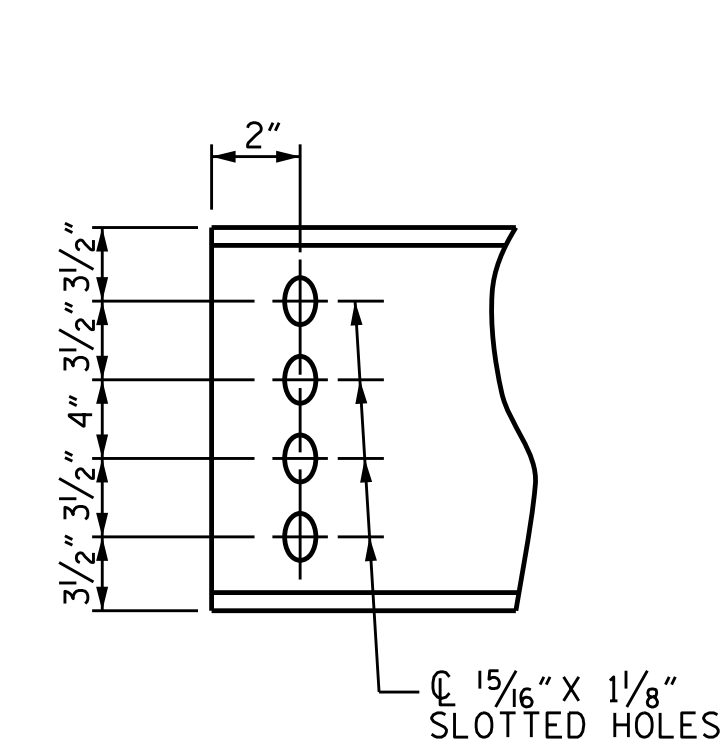
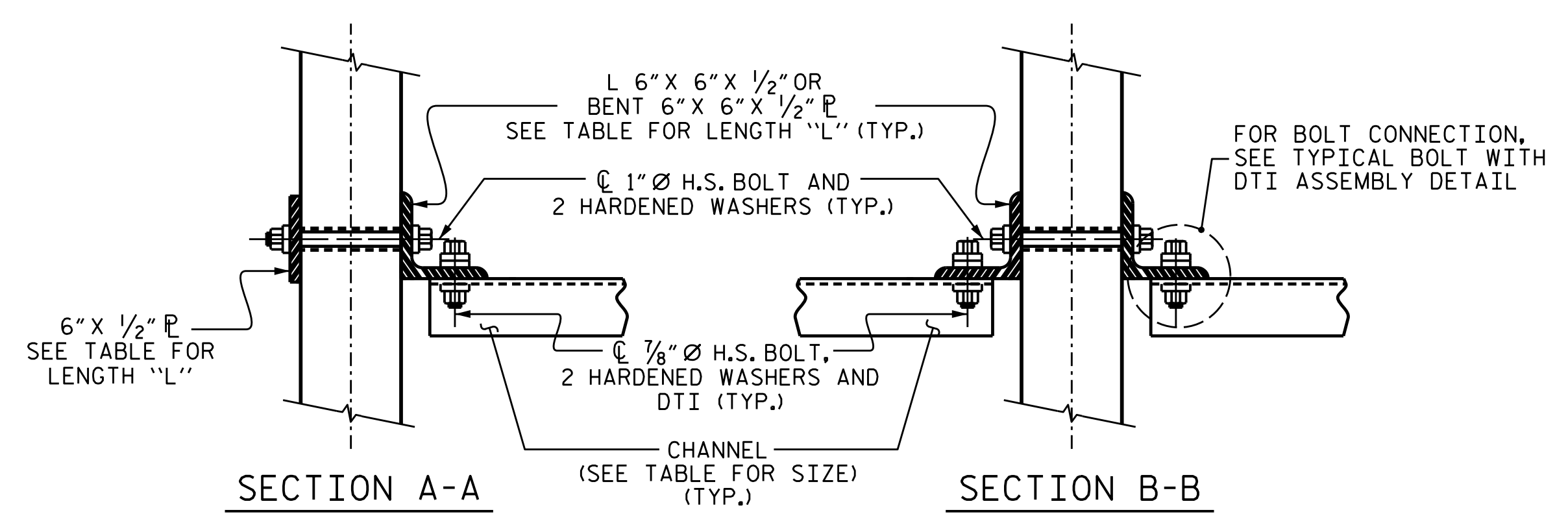


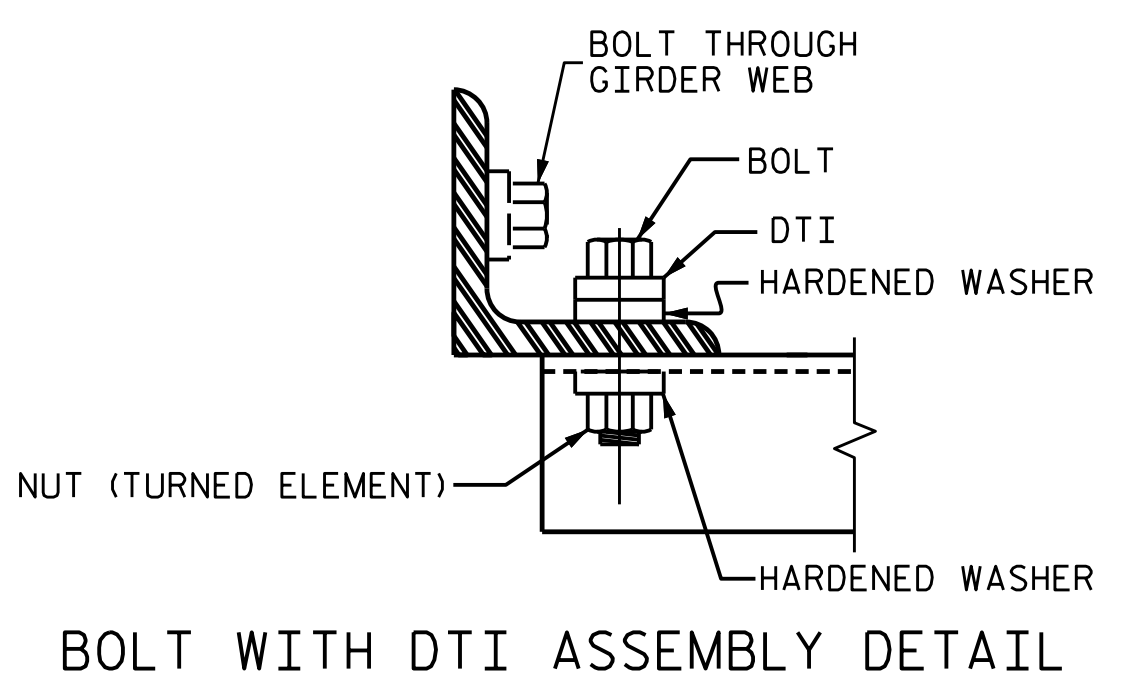
PLATE DETAILS



CHANNEL END
 (TYPE III OR TYPE IV GDR.)



CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

TABLE

GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
III	MC 18 x 42.7	1'-5"	1'-2"	1'-6"

PROJECT NO. B-4916
BERTIE COUNTY
 STATION: 15+59.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
STANDARD INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE II, III, & IV PRESTRESSED CONCRETE GIRDERS

DocuSigned by:

 DB3C8E45B06D499
 12/19/2018

DESIGN ENGINEER OF RECORD	DATE: 12/19/2018
ASSEMBLED BY: K. SU	DATE: 08/06/18
CHECKED BY: R. C. LARSON	DATE: 08/20/18
DRAWN BY: TLA 6/05	REV. 5/1/06RRR KMM/GM
CHECKED BY: VC 6/05	REV. 10/1/18 MAA/GM
	REV. 12/17 MAA/THC

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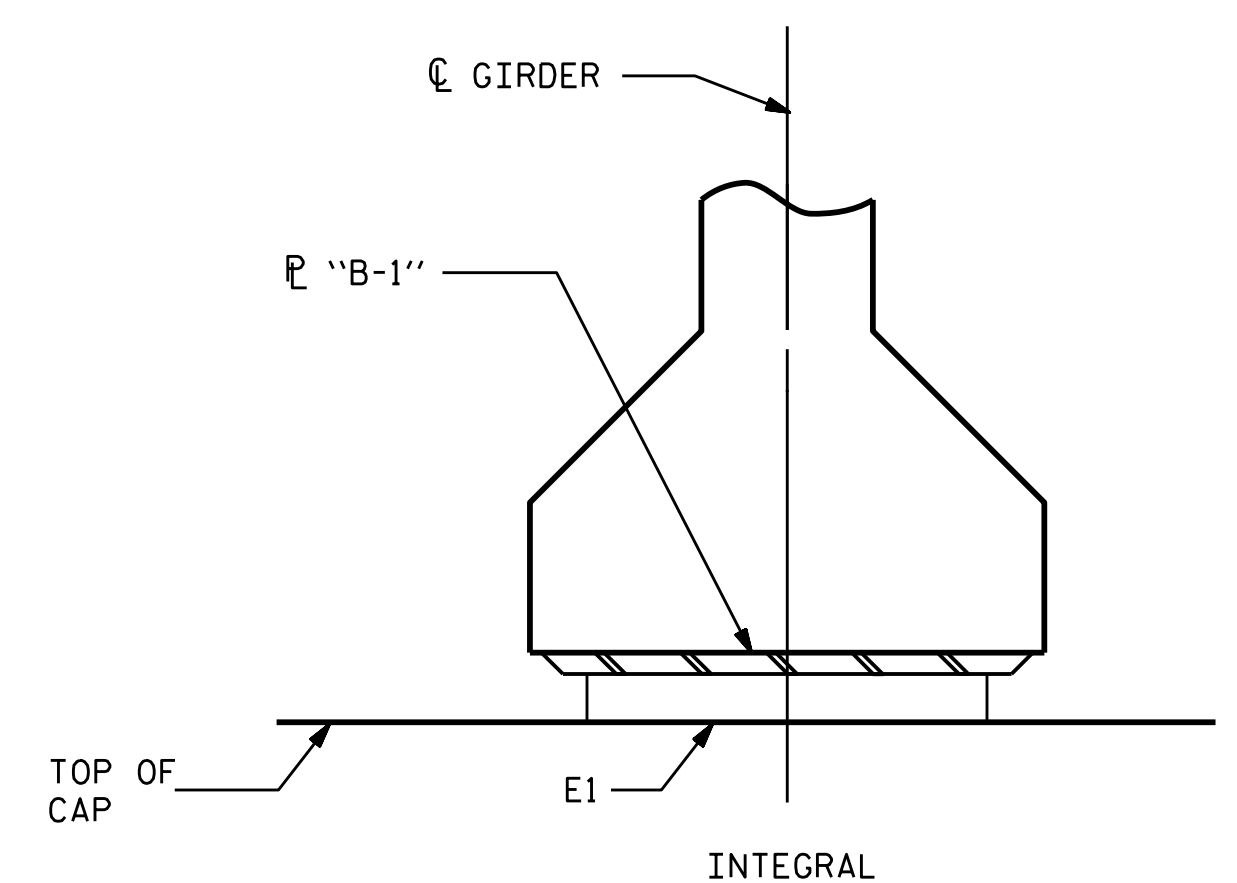
ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS LICENSE NUMBER: C-074
KCI Associates of North Carolina, P.A.
 400 Falls of Neuse Road, Suite 400, Raleigh, NC 27609-0270 Phone: 919-783-9201

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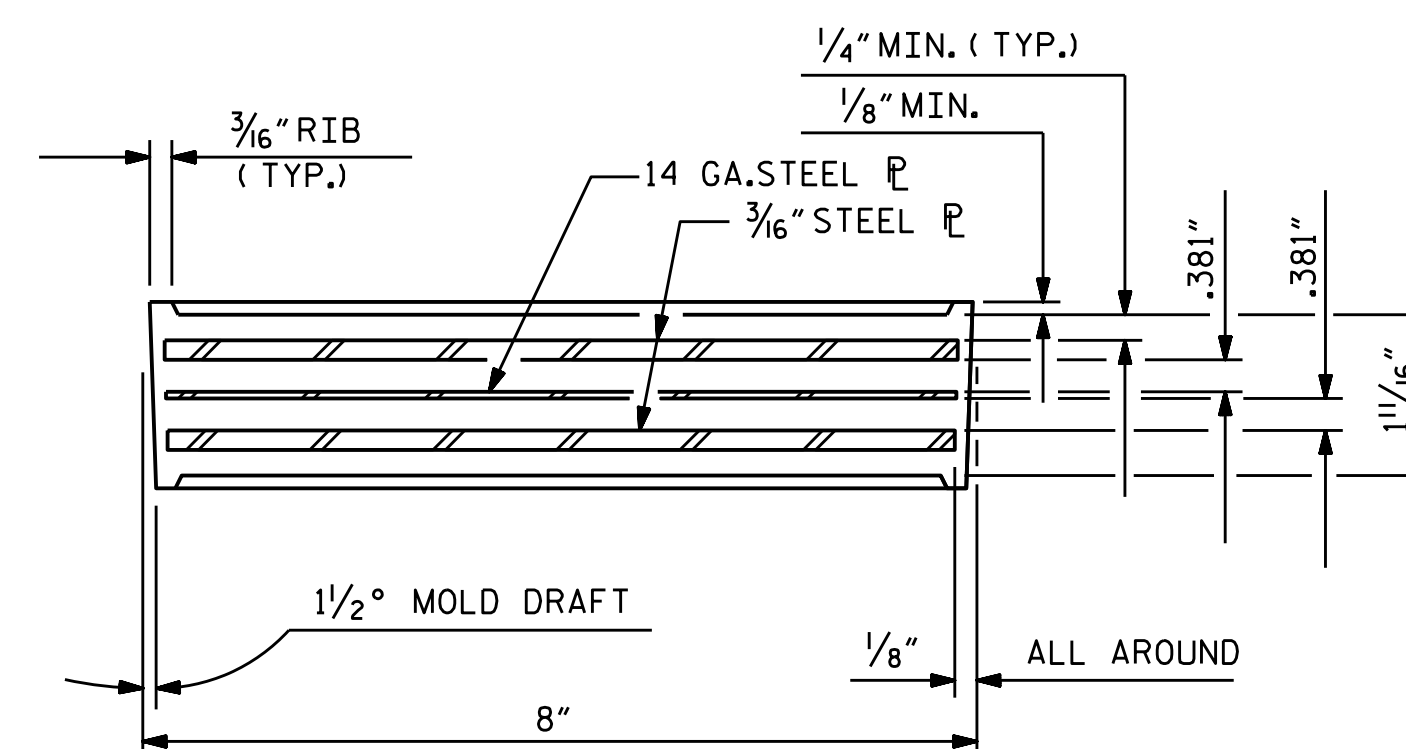
NOTES

THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

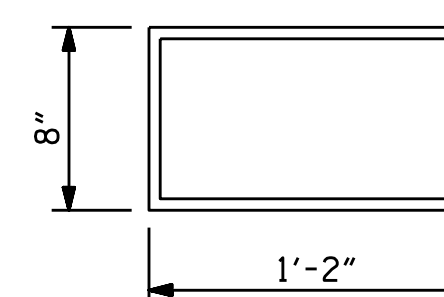


SECTION @ INTEGRAL END BENT



TYPICAL SECTION OF ELASTOMERIC BEARINGS

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE II	145 k

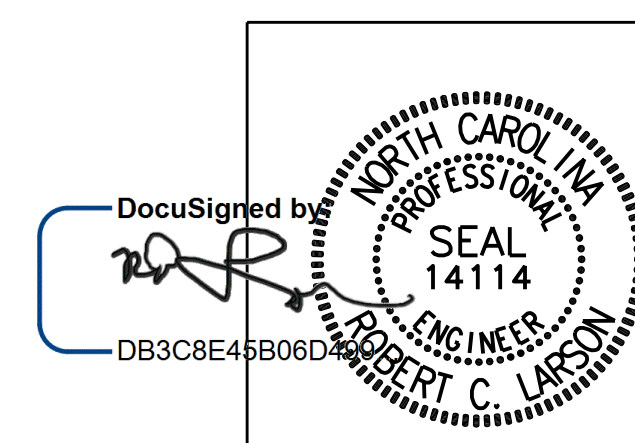


E1 (10 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

TYPE II

PROJECT NO. B-4916
BERTIE COUNTY
 STATION: 15+59.60 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 ELASTOMERIC BEARING
 DETAILS
 PRESTRESSED CONCRETE GIRDER
 SUPERSTRUCTURE

DESIGN ENGINEER OF RECORD:	<i>Robert C. Larson</i>	DATE:	12/19/2018
ASSEMBLED BY:	R. C. LARSON	DATE:	08/20/18
CHECKED BY:	R. A. PRUETT	DATE:	11/08/18
DRAWN BY:	WJH 8/89	REV. 6/13	AAC/MAA
CHECKED BY:	CRK 8/89	REV. 1/15	MAA/TMG
		REV. 12/17	MAA/THC

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ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS
KCI Associates
 of North Carolina, P.A.
4025 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6270 Phone 919 783-9244

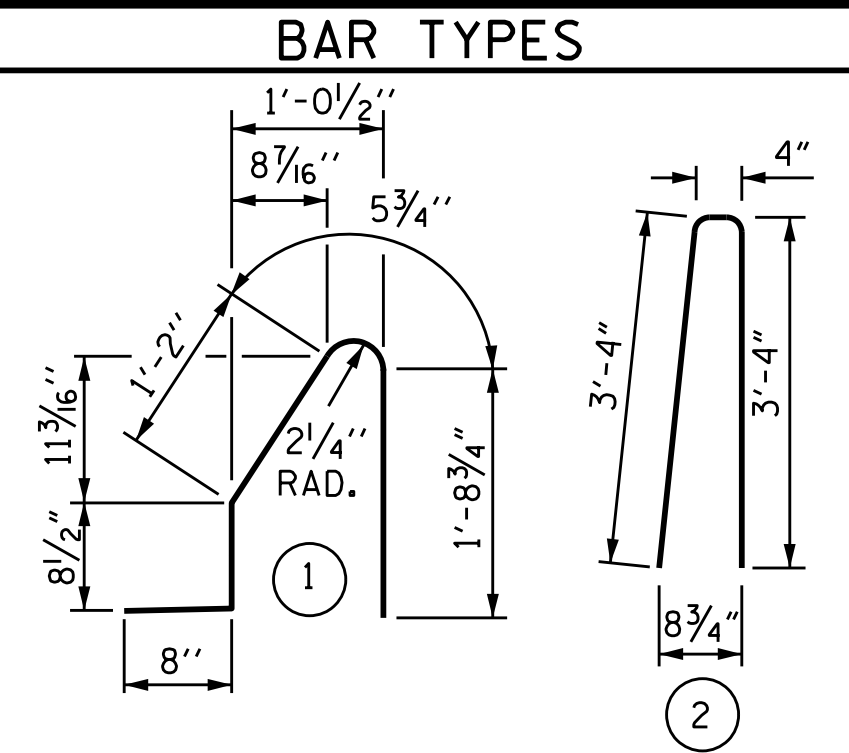
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			24
2			4			24

NOTES

THE BARRIER RAIL IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

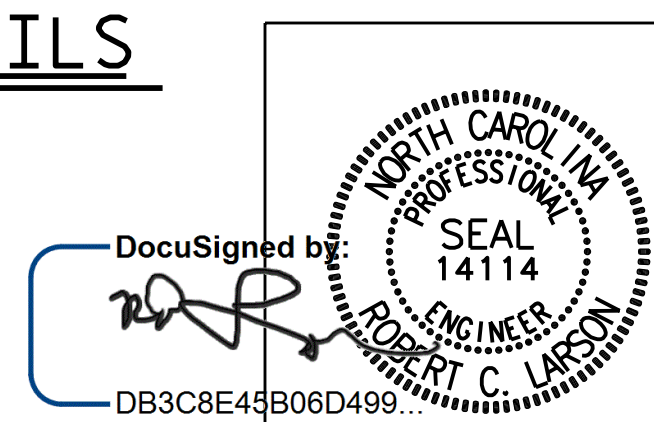
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
* S1	168 #5	1	4'-9"	832
* S2	168 #5	2	7'-0"	1227
* B1	66 #5	STR	27'-5"	1887

* EPOXY COATED REINFORCING STEEL	3946 LBS.
CLASS AA CONCRETE	22.7 CU. YDS.
CONCRETE BARRIER RAIL	166.67 LIN. FT.

PROJECT NO. B-4916
BERTIE COUNTY
 STATION: 15+59.60 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD CONCRETE BARRIER RAIL



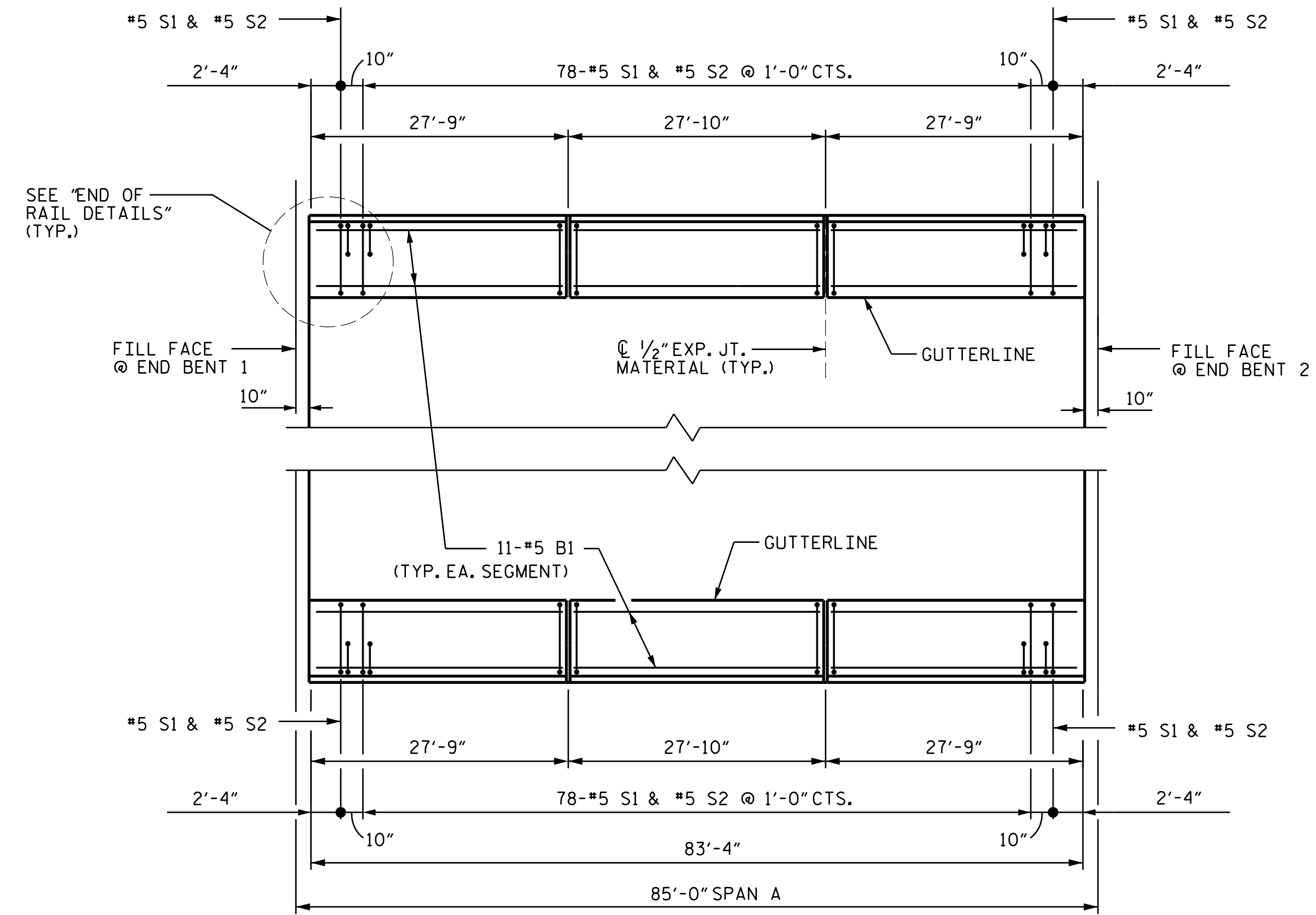
DocuSigned by
 RCL
 DB3C8E48B06D499

12/19/2018

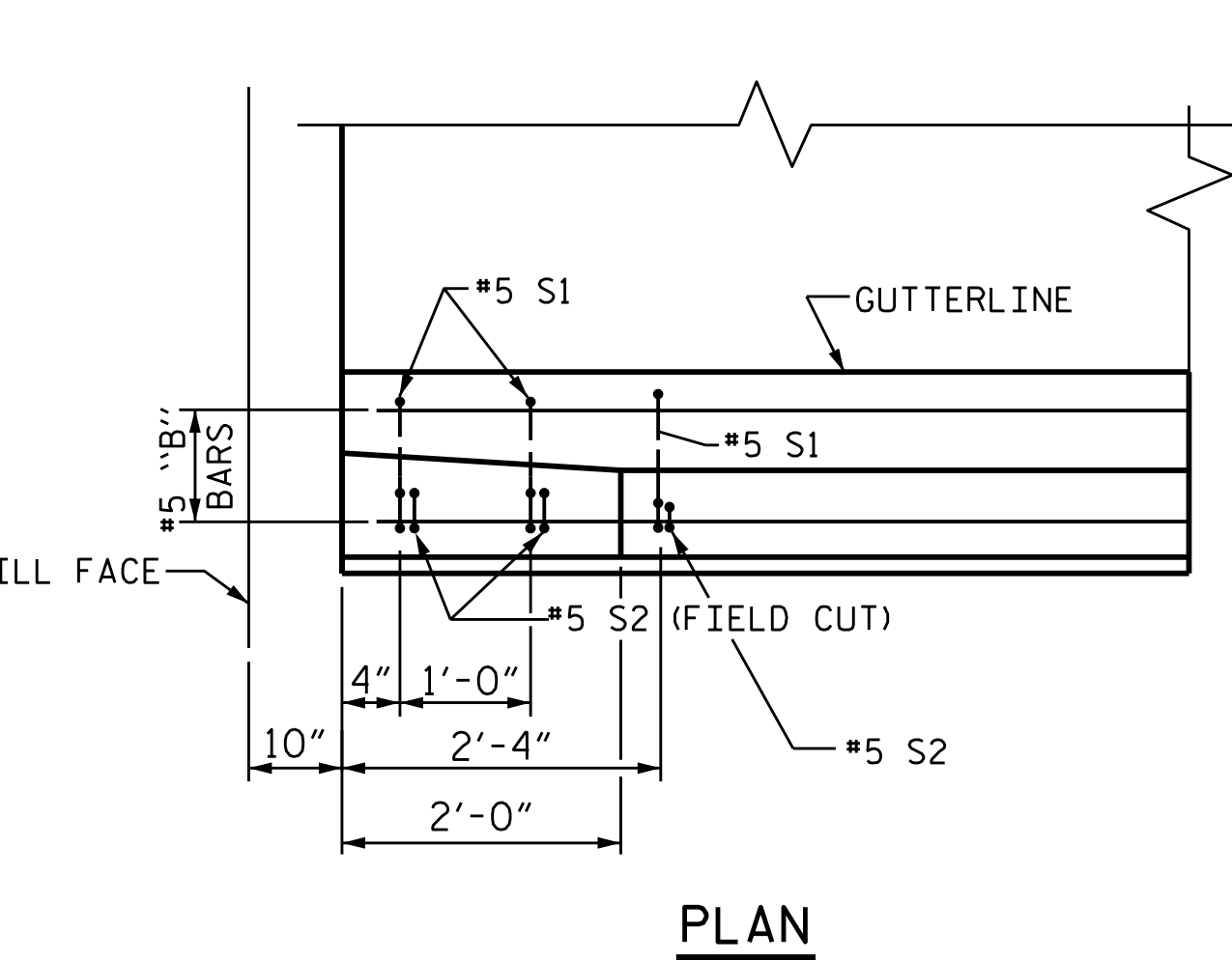
REVISIONS		SHEET NO.	
NO.	DATE	NO.	DATE
1		3	
2		4	

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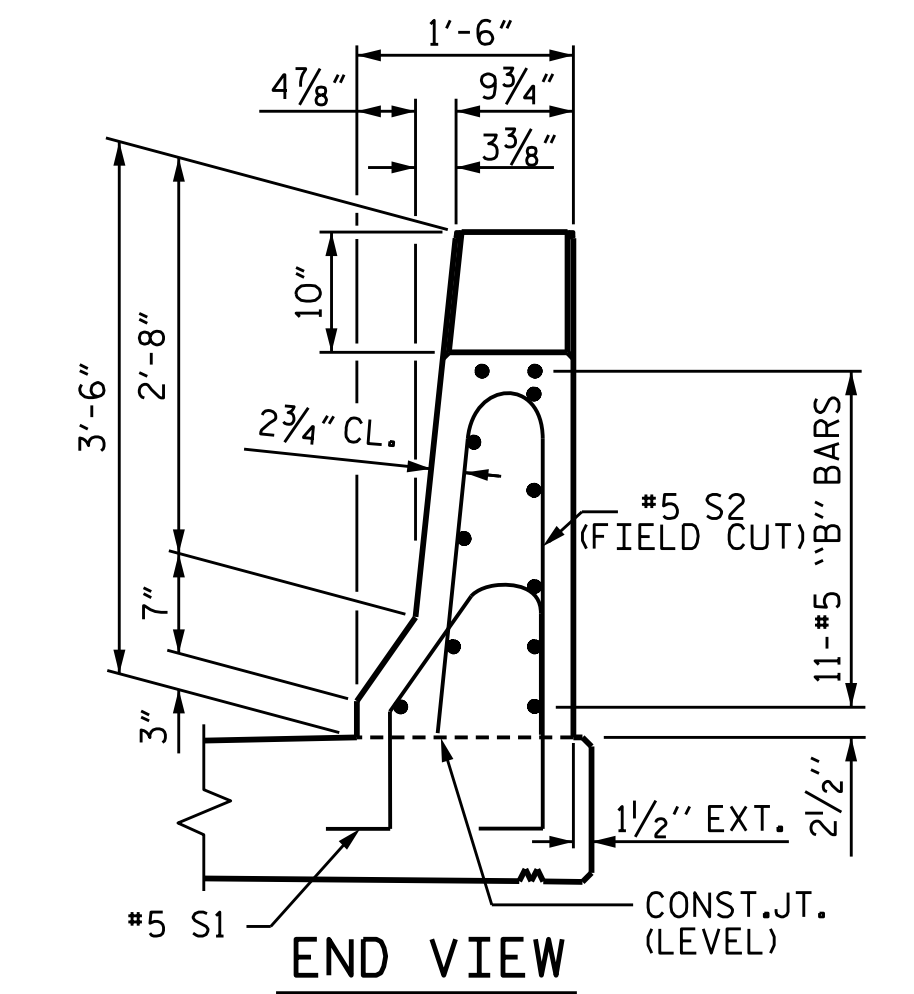
KCI Associates of North Carolina, P.A.
 4005 Falls of House Road, Suite 400 Raleigh, NC 27609-6270 Phone 919-785-9241



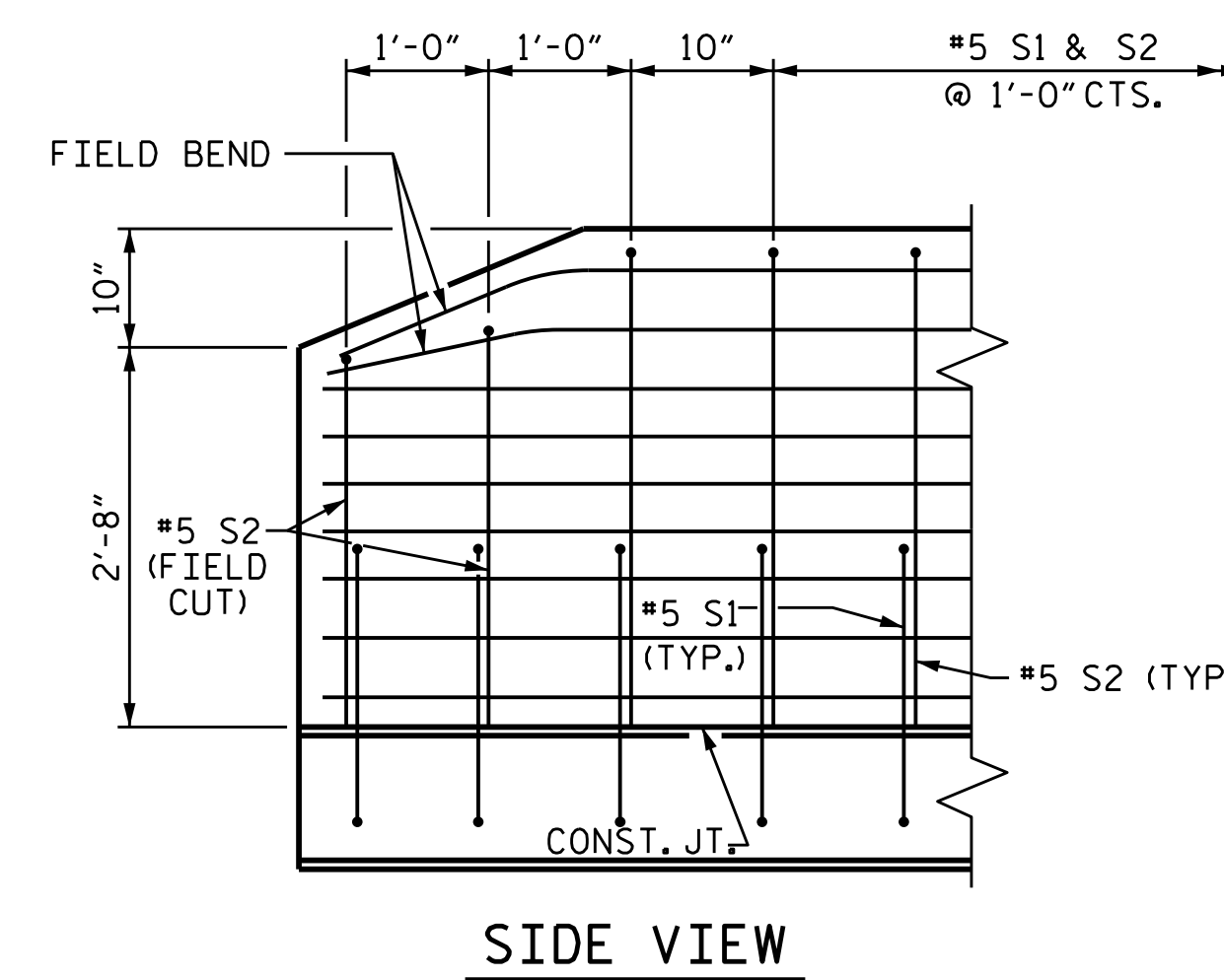
PLAN



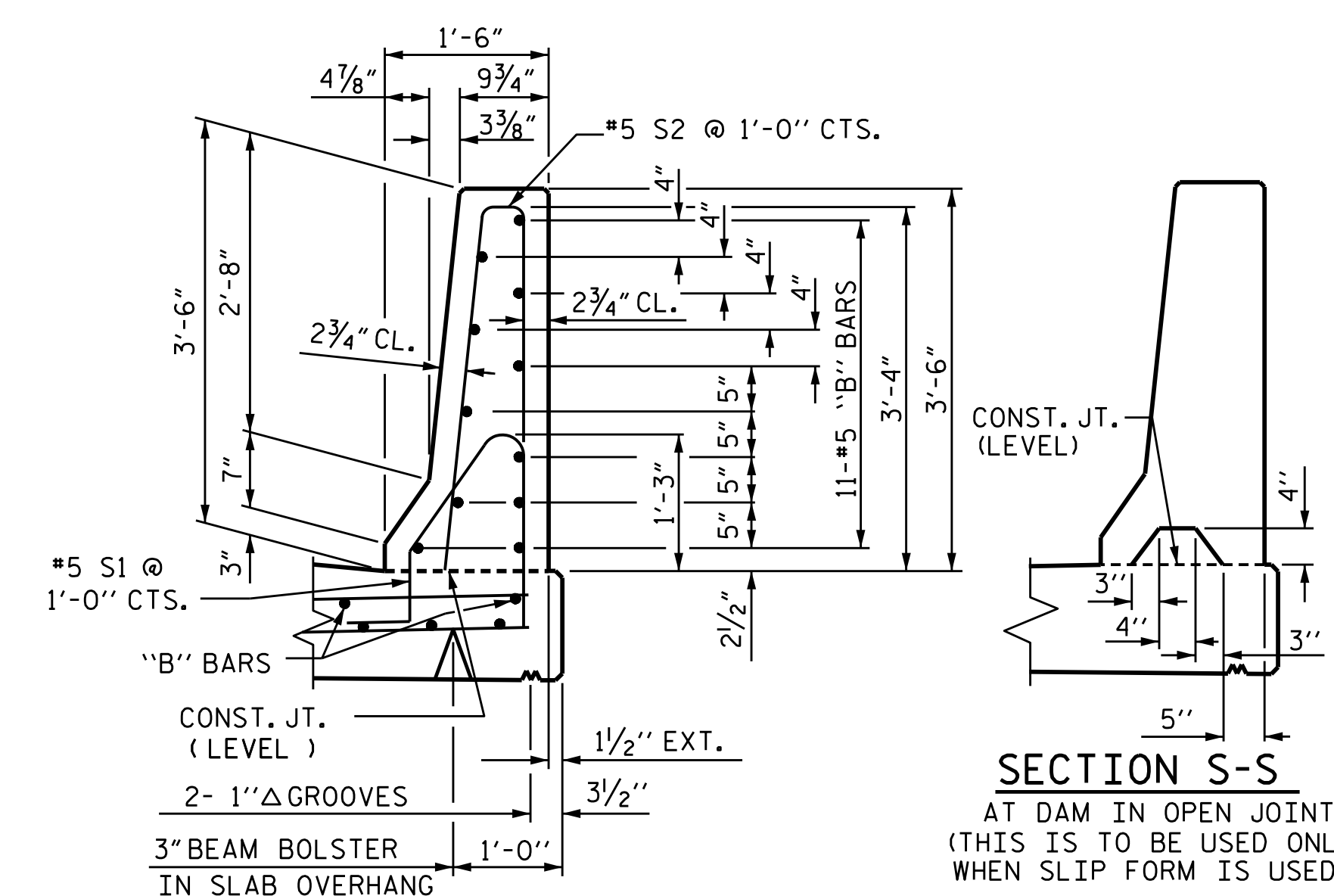
PLAN



END VIEW



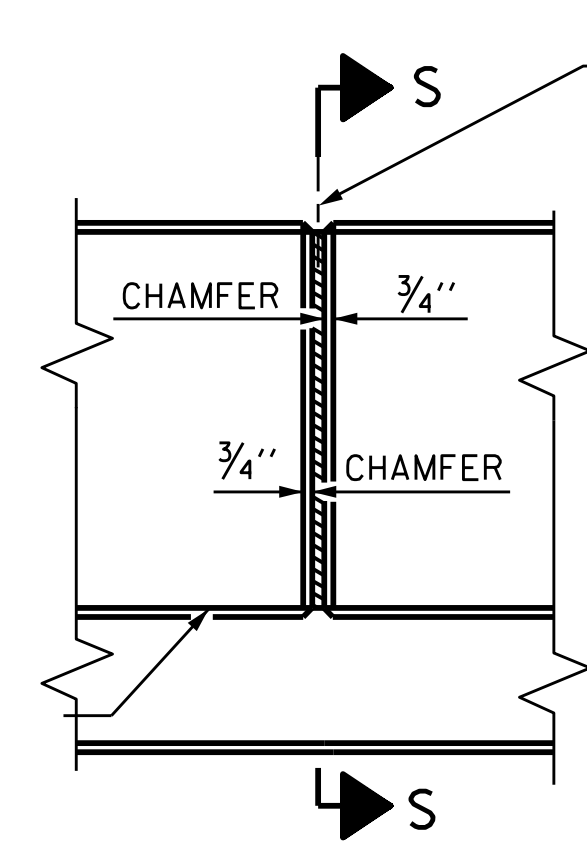
SIDE VIEW



SECTION THRU RAIL

SECTION S-S

AT DAM IN OPEN JOINT (THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



ELEVATION AT EXPANSION JOINTS
 BARRIER RAIL DETAILS

1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS. (NOTE: OMIT EXP. JT. MAT'L. WHEN SLIP FORM IS USED.)

KCI JOB NO: 251801945.06

DESIGN ENGINEER OF RECORD:	DATE:
R.J. FLORY	12/19/2018
CHECKED BY:	DATE:
R. C. LARSON	09/05/18
DRAWN BY:	REV. DATE:
ARB	5/87
SJD	9/87
REV. DATE:	MAA/GM
7/12	MAA/GM
6/13	MAA/THC
12/17	

NOTES

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

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

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

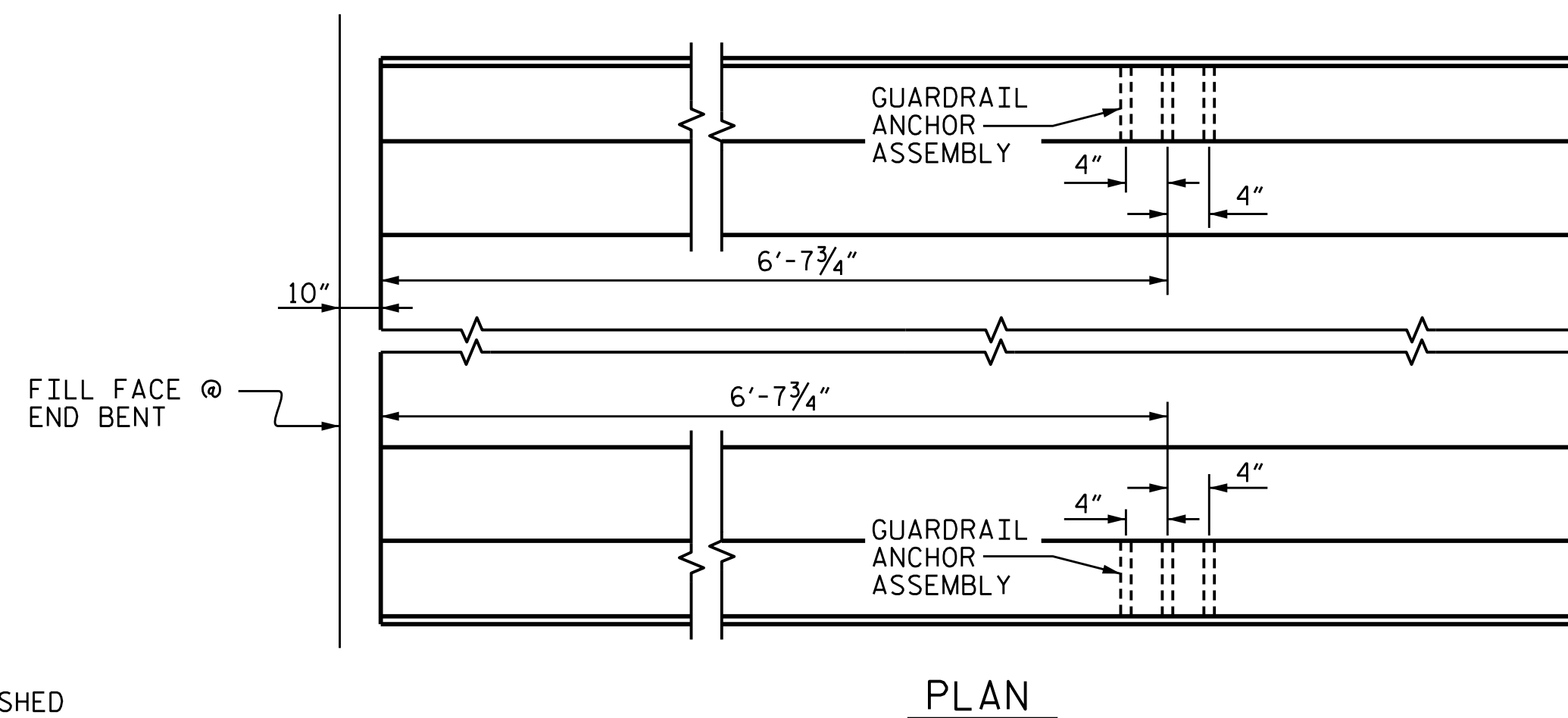
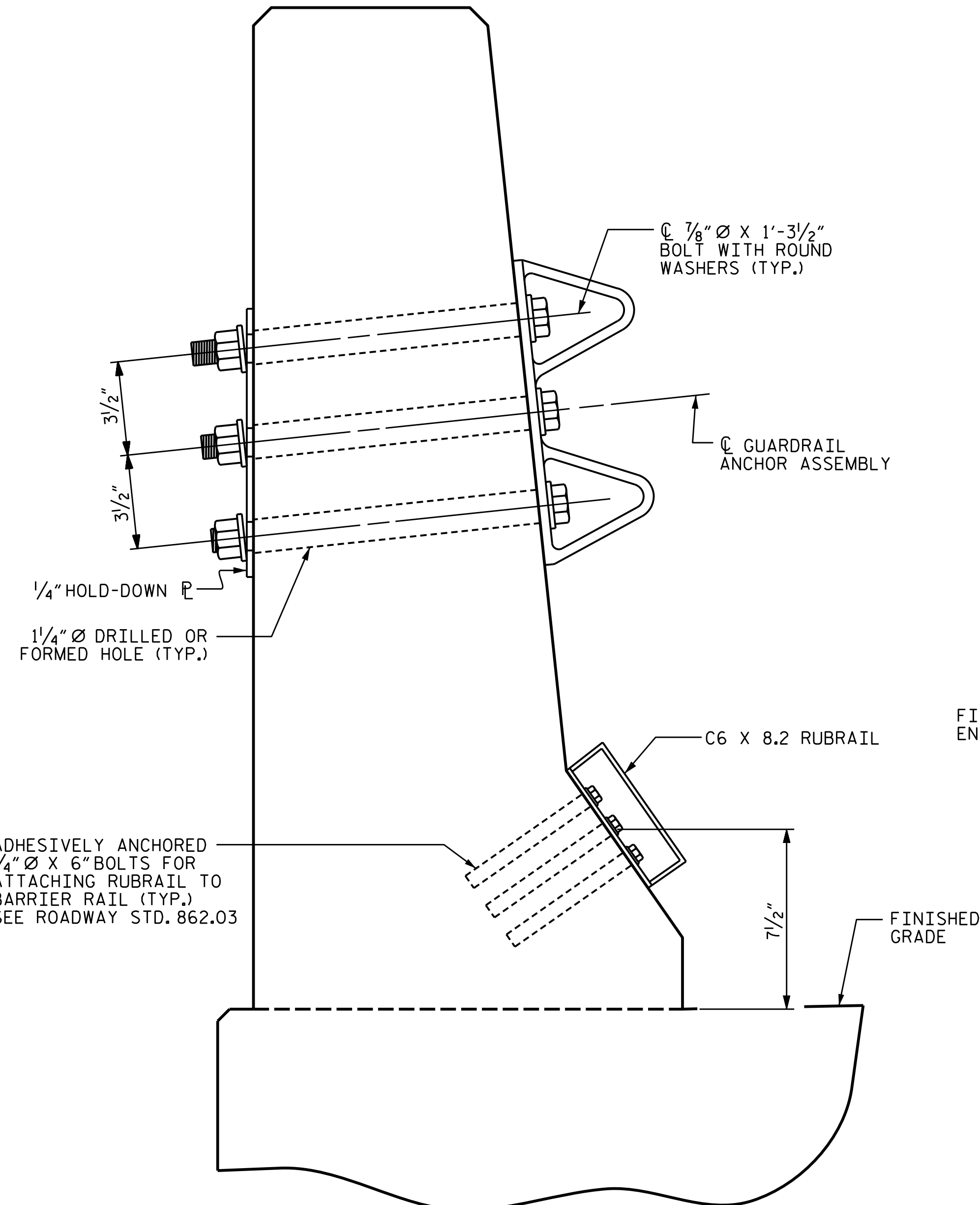
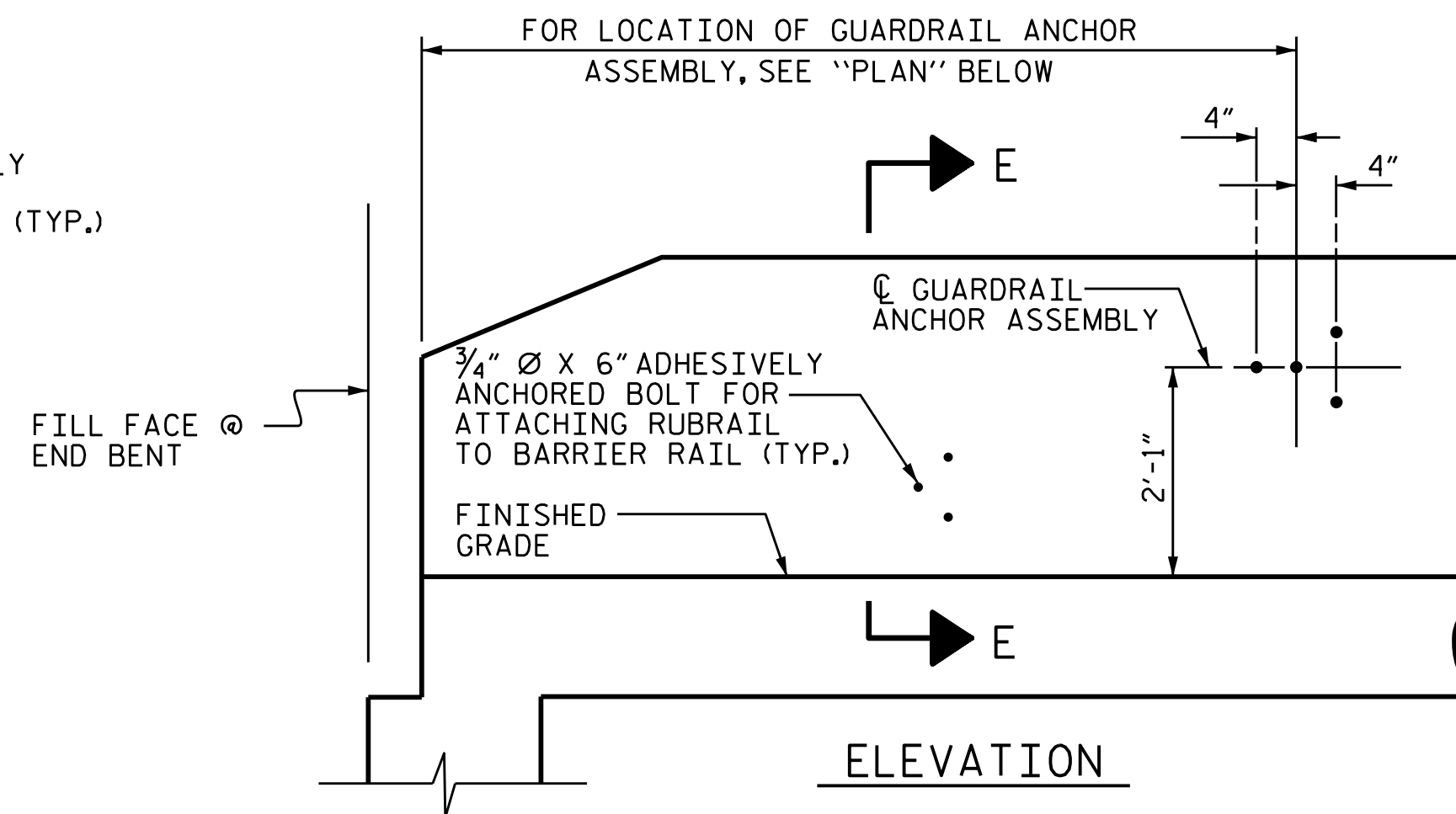
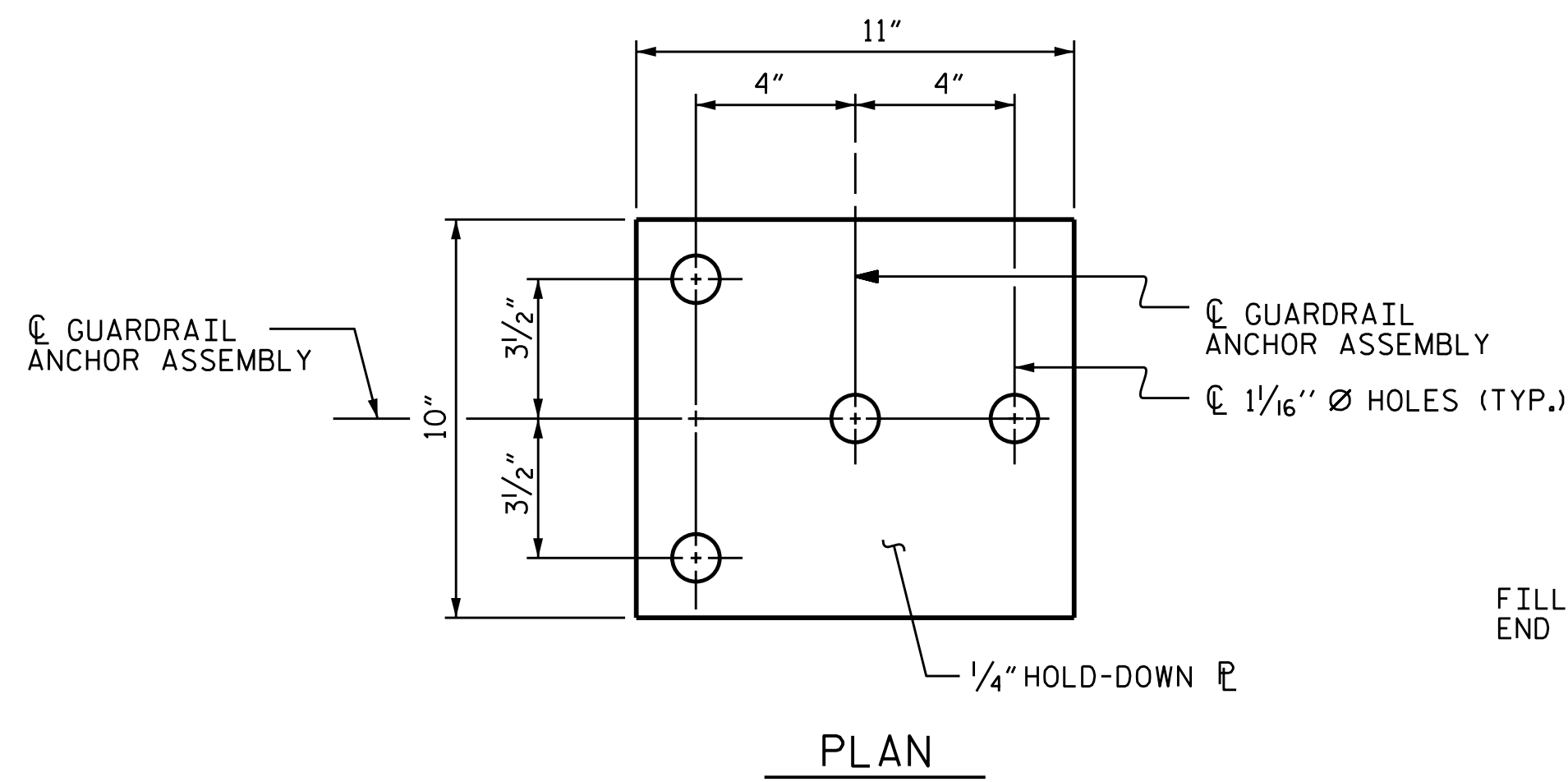
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

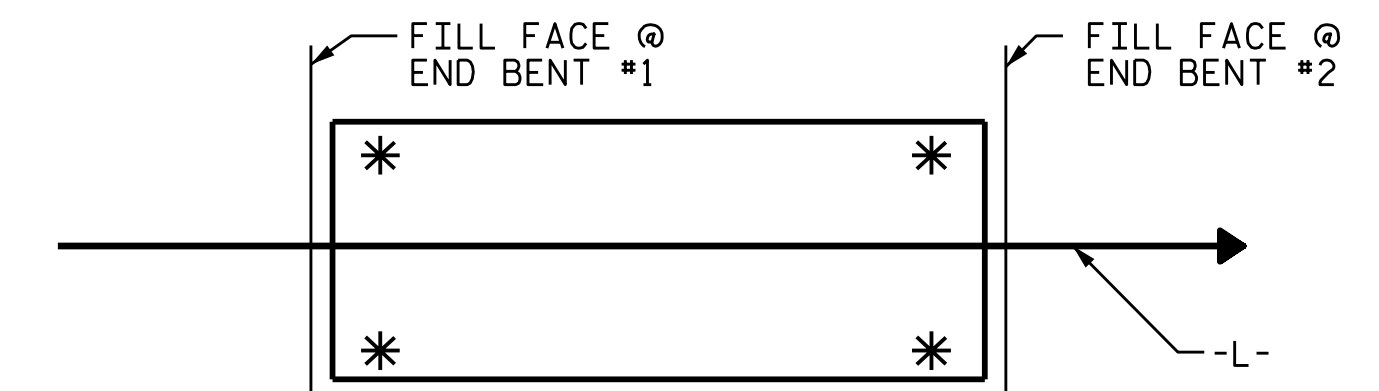
THE 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.



LOCATION OF ANCHORS FOR GUARDRAIL

END BENT #1 SHOWN, END BENT #2 SIMILAR.

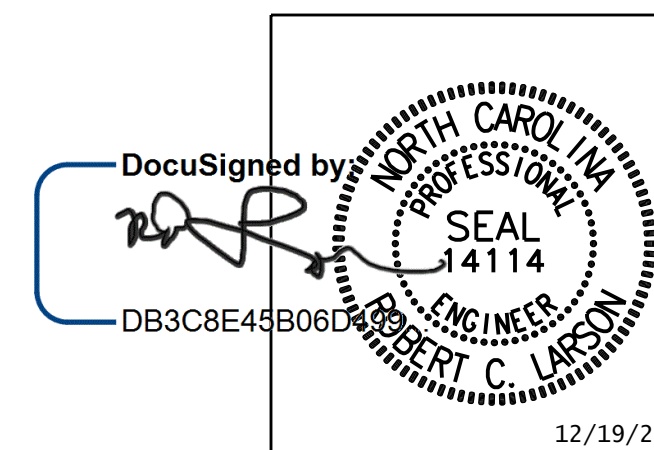


SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-4916
BERTIE COUNTY
 STATION: 15+59.60 -L-

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



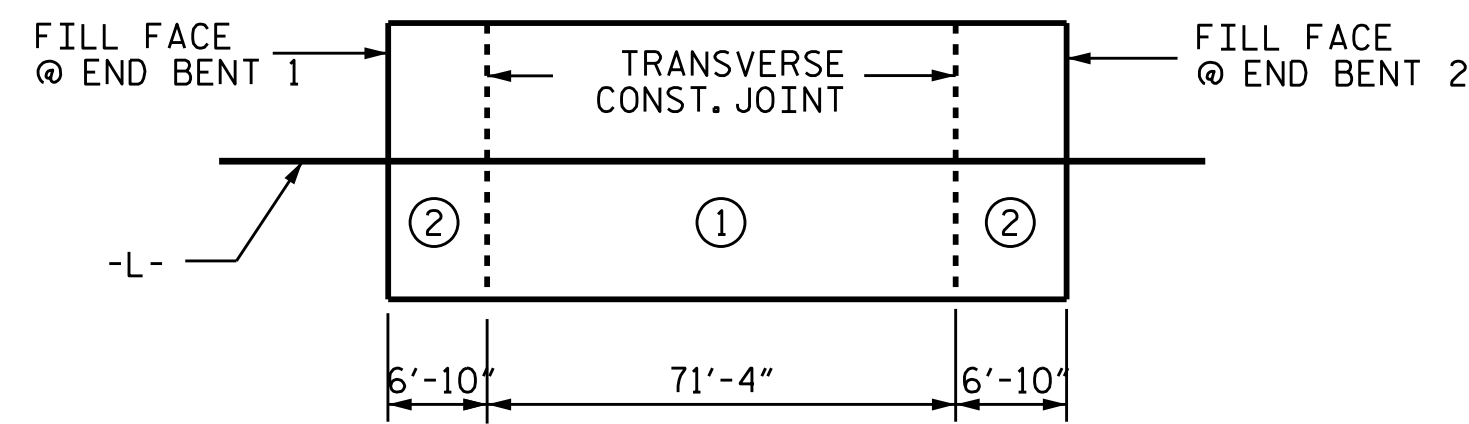
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NO.	BY:	DATE:	S-14
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2505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6270 Phone (919) 785-9244

KCI JOB NO: 251801945.06

DESIGN ENGINEER OF RECORD:	DATE:
<i>R. C. Larson</i>	12/19/2018
DRAWN BY: R. J. FLORY	DATE: 08/20/18
CHECKED BY: R. C. LARSON	DATE: 08/21/18
DRAWN BY: TLA 5/06	REV. 7/12 MAA/GM
CHECKED BY: GM 5/06	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC

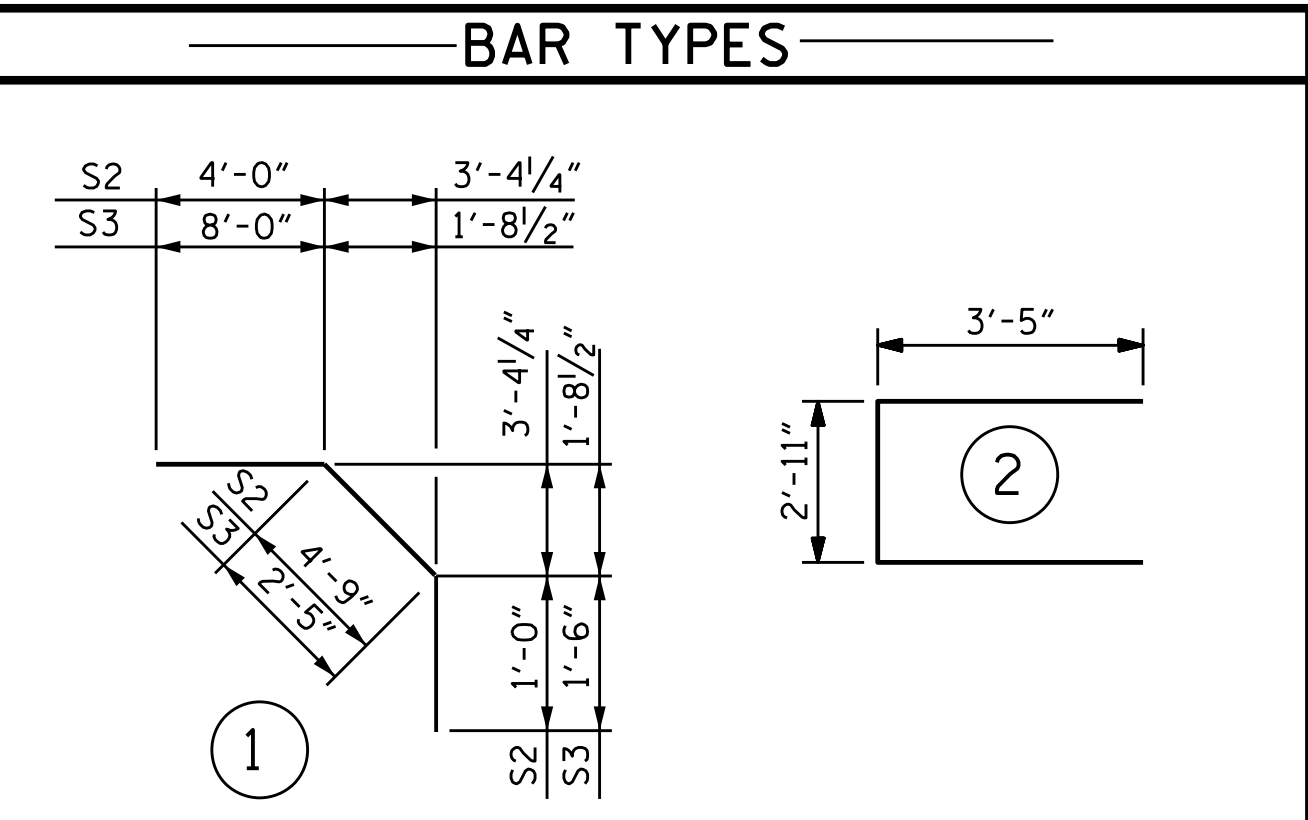


DECK POURING SEQUENCE

② INDICATES POUR SEQUENCE

POUR 2 CAN NOT BE STARTED UNTIL POUR 1 HAS REACHED A COMPRESSIVE STRENGTH OF 3000 psi.

BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	167	5	STR.	42'-11"	7475
A2	167	5	STR.	42'-11"	7475
* B1	90	4	STR.	29'-0"	1743
* B2	56	6	STR.	17'-0"	1430
* B3	56	6	STR.	18'-0"	1514
B4	104	5	STR.	42'-7"	4619
K1	16	4	STR.	22'-4"	239
K2	8	4	STR.	7'-0"	37
K3	16	4	STR.	8'-3"	88
K4	8	4	STR.	7'-6"	40
K5	4	4	STR.	2'-2"	6
K6	8	4	STR.	2'-10"	15
K7	4	4	STR.	2'-5"	6
* S2	68	4	1	9'-9"	443
* S3	76	4	1	11'-11"	605
U1	76	4	2	9'-9"	495
REINFORCING STEEL				13020	
EPOXY COATED REINFORCING STEEL				13210	



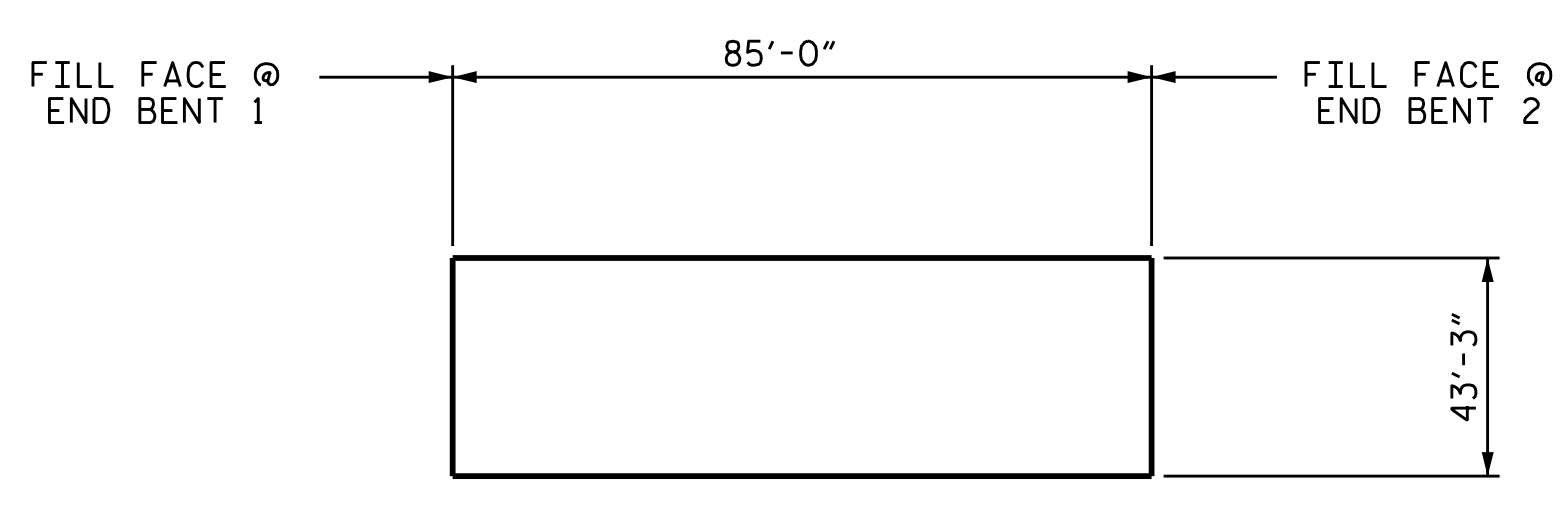
ALL BAR DIMENSIONS ARE OUT TO OUT

SUPERSTRUCTURE BILL OF MATERIAL			
	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
POUR 1	94.9		
POUR 2	53.8		
TOTALS**	148.7	13020	13210

* EPOXY COATED REINFORCING STEEL ** QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

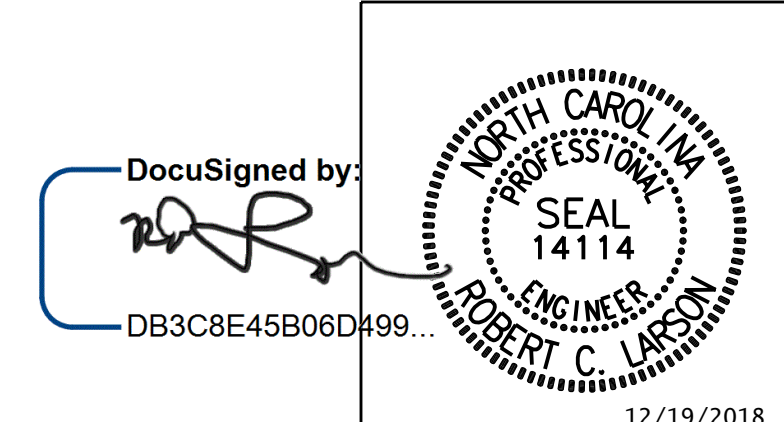
GROOVING BRIDGE FLOORS	
APPROACH SLABS	1789 SQ.FT.
BRIDGE DECK	3071 SQ.FT.
TOTAL	4860 SQ.FT.

SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS					
BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH 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"			



LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB (SQ. FT. = 3676)

PROJECT NO. B-4916
 BERTIE COUNTY
 STATION: 15+59.60 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE BILL OF MATERIAL

KCI JOB NO: 251801945.06

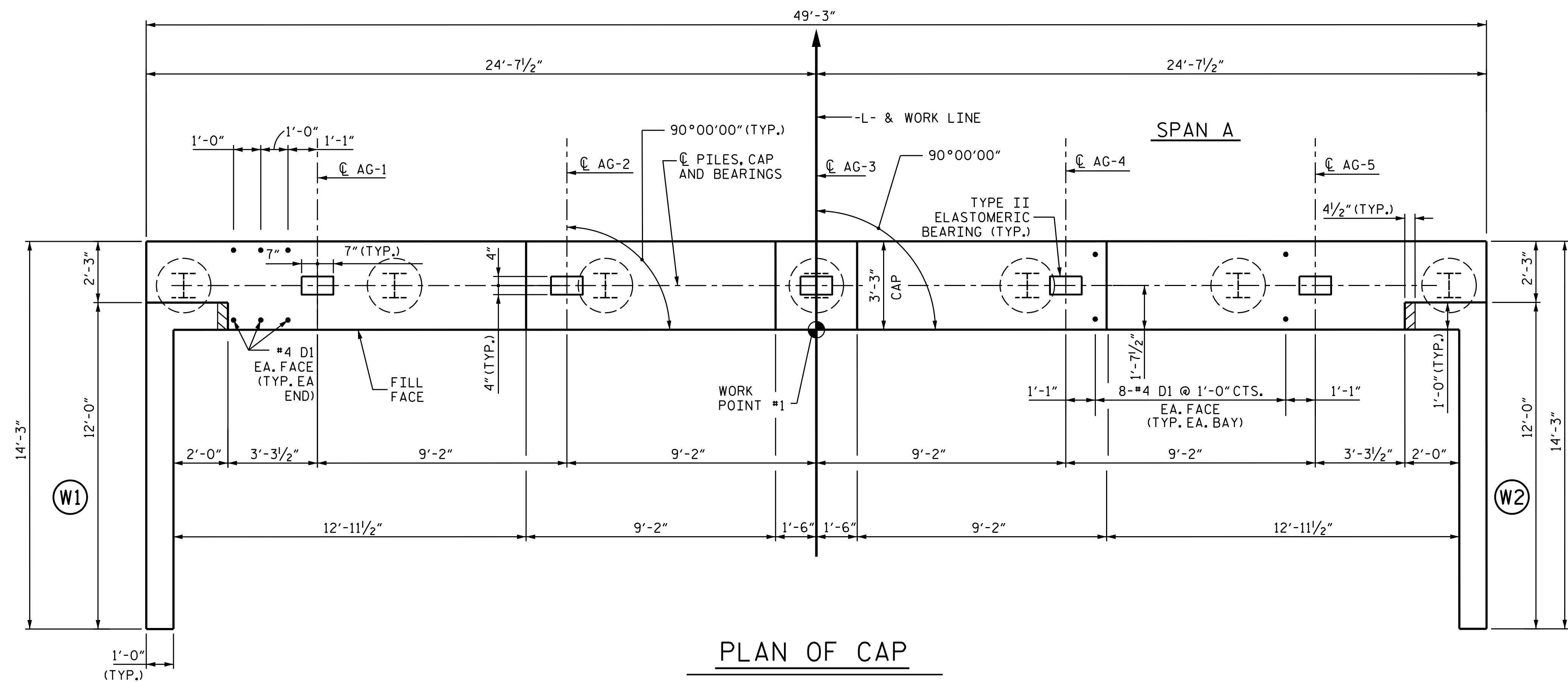
DESIGN ENGINEER OF RECORD	DocuSigned by:	DATE: 12/19/2018
DRAWN BY: R. C. LARSON	DATE: 08/20/18	
CHECKED BY: R. A. PRUETT	DATE: 11/09/18	

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ENGINEERS & PLANNERS & SCIENTISTS & CONSTRUCTION MANAGERS LICENSE NUMBER: C-0764
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 4505 Falls of House Road, Suite 400 Raleigh, NC 27609-6270 Phone: 919-785-9241

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

TOTAL SHEETS: 24



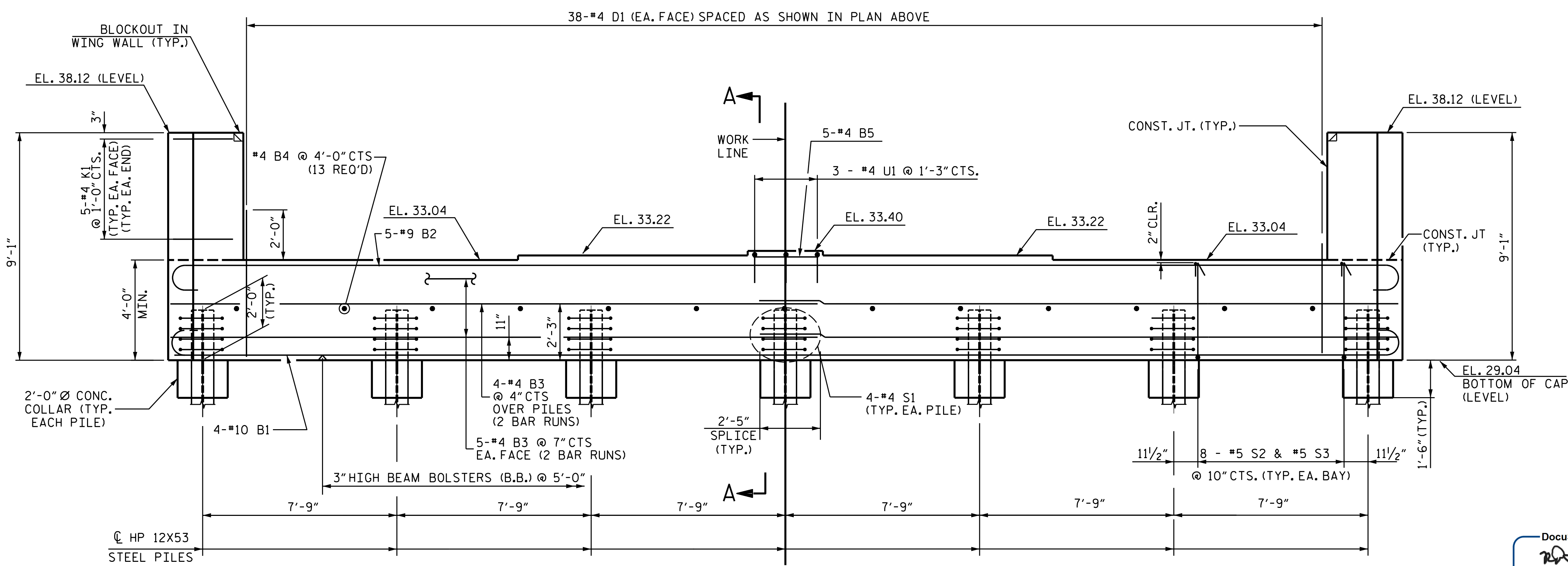
PLAN OF CAP

NOTES

THE TOP SURFACE OF THE END BENT CAP AND WINGS (POUR 1) EXCEPT THE BEARING AREAS AND THE AREA OUTSIDE OF THE SUPERSTRUCTURE SHALL BE RAKED TO A DEPTH OF 1/4"

FOR "TEMPORARY DRAINAGE AT END BENT", SEE END BENT 2.

FOR SECTION A-A SEE SHEET 3 of 3.



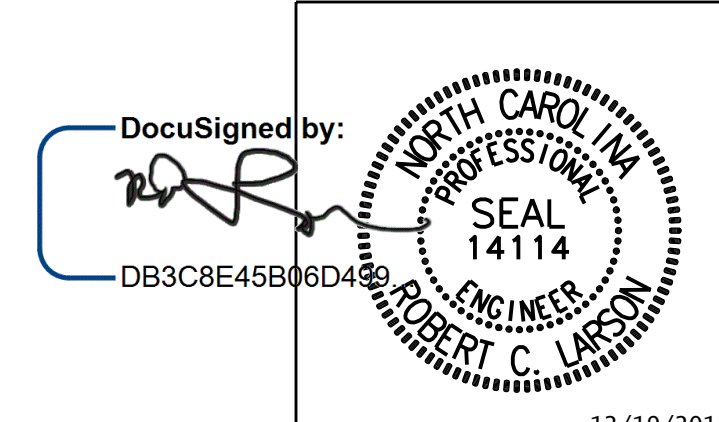
ELEVATION

PROJECT NO. B-4916
 BERTIE COUNTY
 STATION: 15+59.60 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 1**



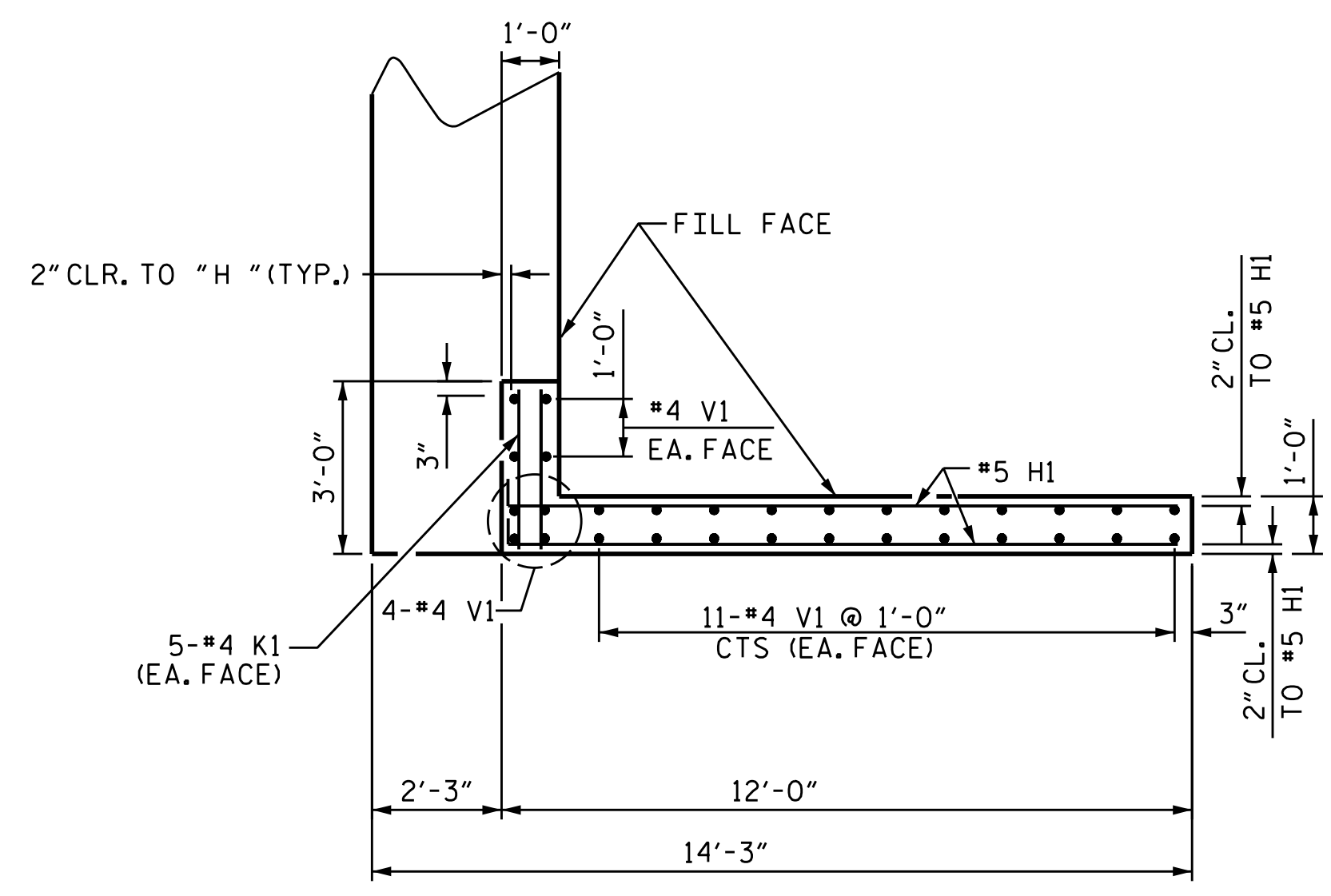
DESIGN ENGINEER OF RECORD: DATE: 12/19/2018
 DRAWN BY: R. J. FLORY DATE: 08/17/18
 CHECKED BY: R. C. LARSON DATE: 08/20/18

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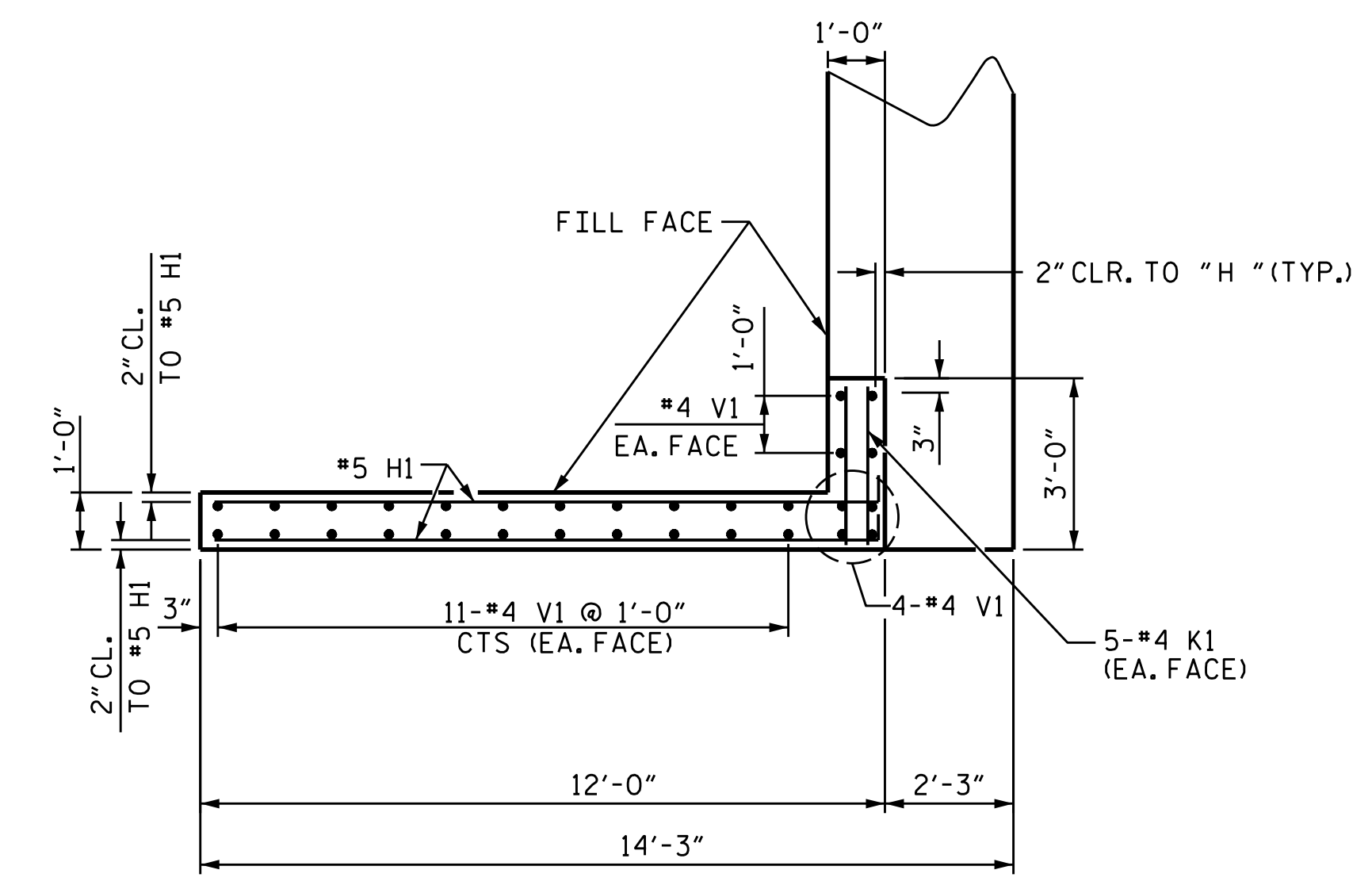
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TOTAL SHEETS: 24

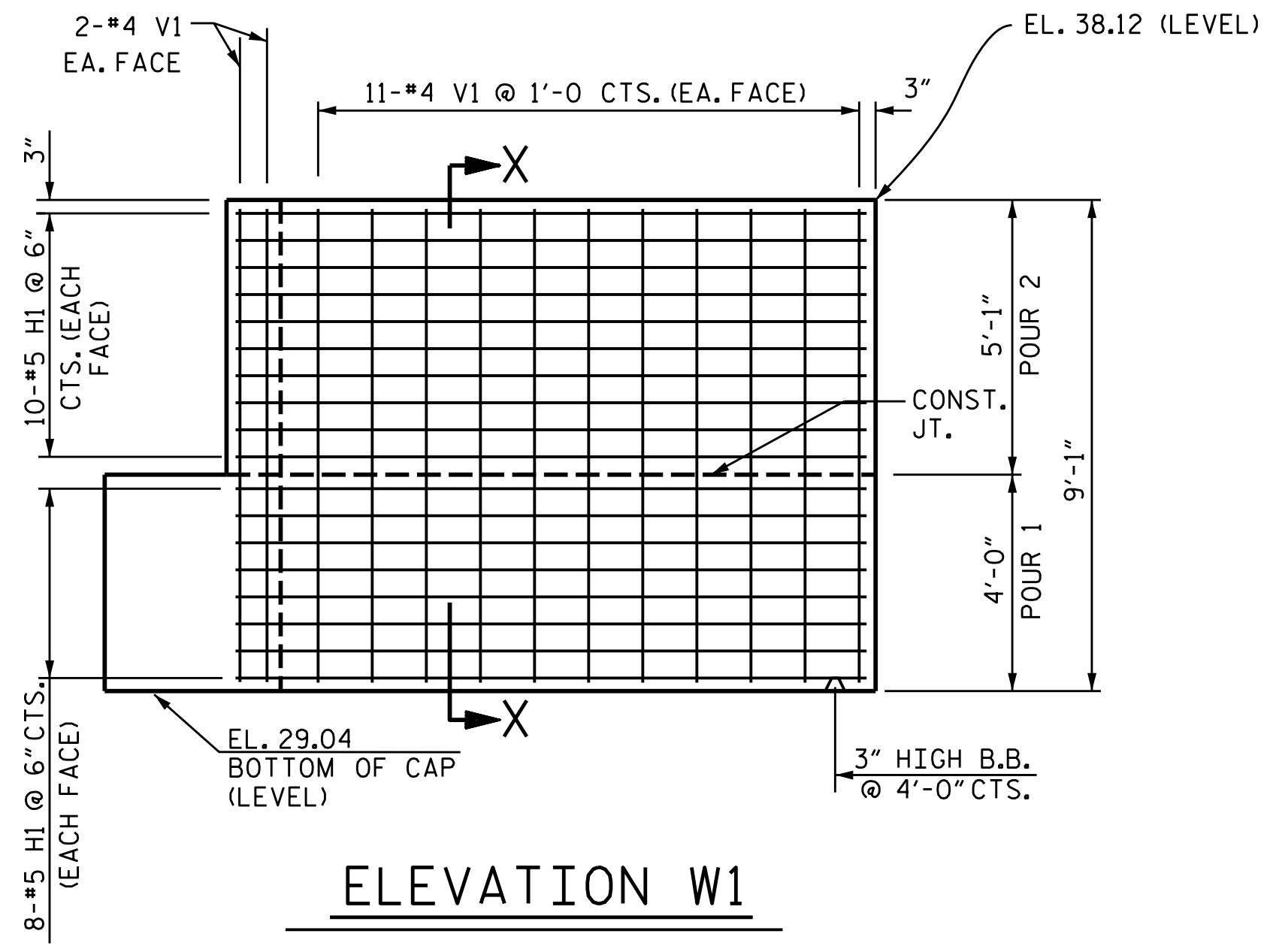
KCI JOB NO: 251801945.06



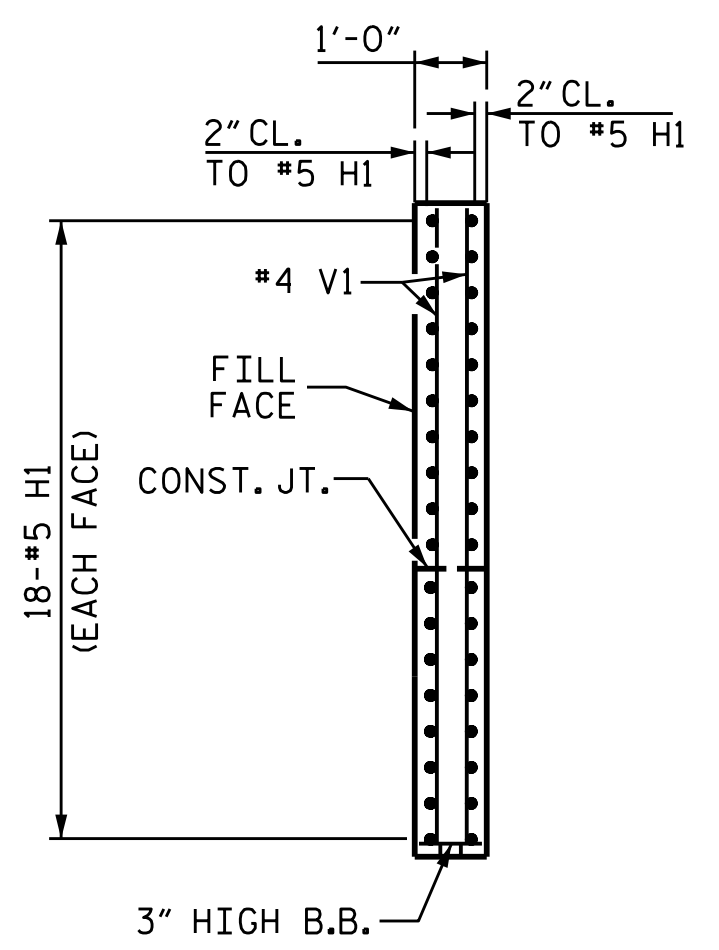
PLAN W1



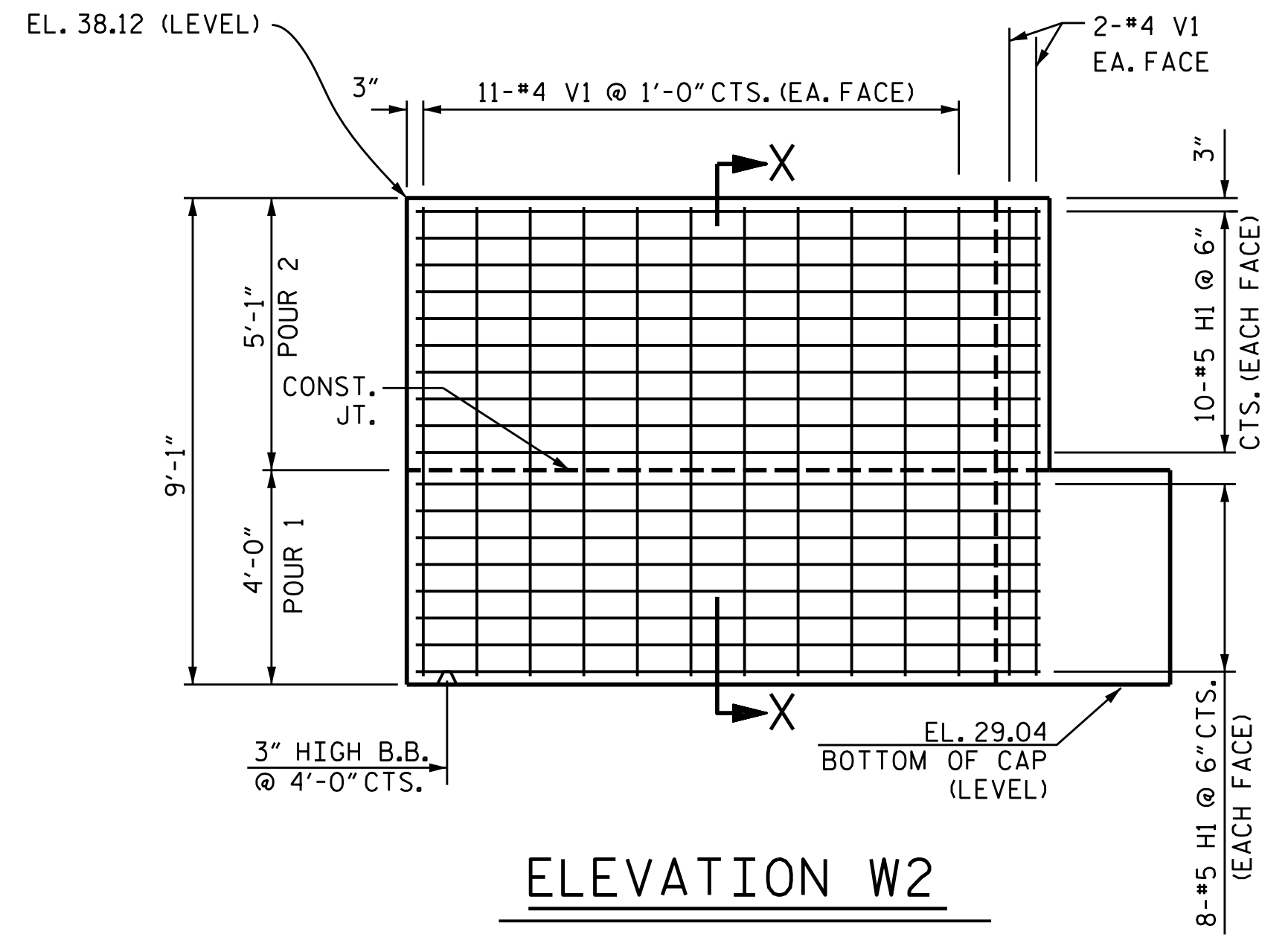
PLAN W2



ELEVATION W1



SECTION X-X



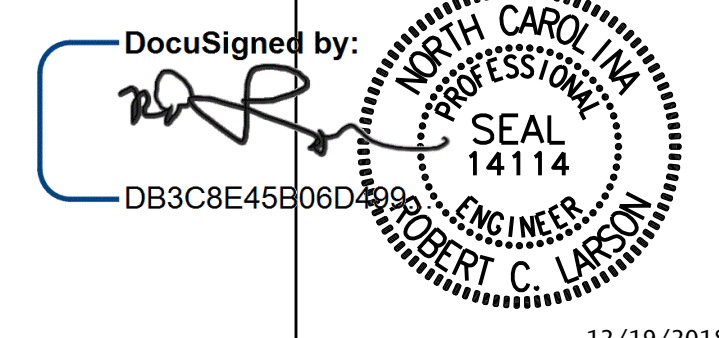
ELEVATION W2

PROJECT NO. B-4916
 BERTIE COUNTY
 STATION: 15+59.60 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 1**



DESIGN ENGINEER OF RECORD: DATE: 12/19/2018
 DRAWN BY: K. SU DATE: 08/20/18
 CHECKED BY: R. C. LARSON DATE: 08/23/18

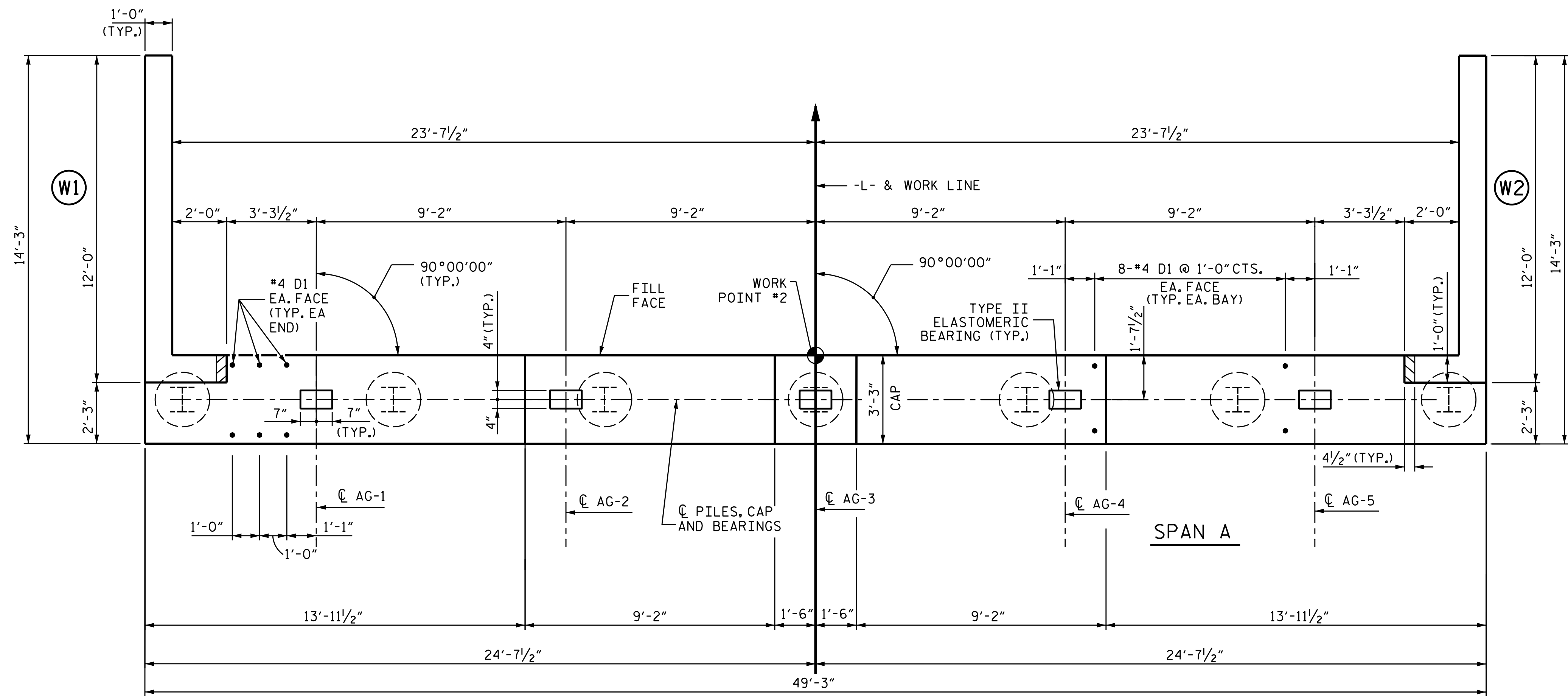
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KCI Associates
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 4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6270 Phone (919) 785-9241

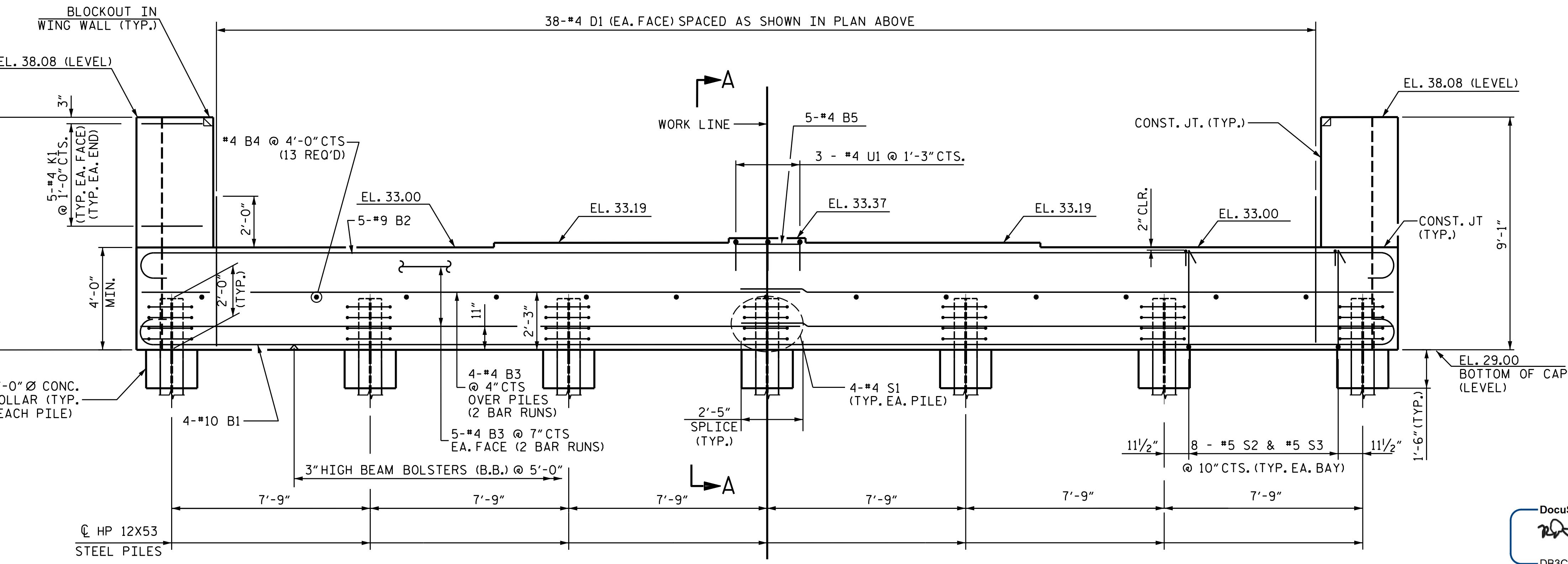
REVISIONS		SHEET NO.	
NO.	DATE	NO.	DATE
1		3	
2		4	

TOTAL SHEETS: 24

KCI JOB NO: 251801945.06



PLAN OF CAP



ELEVATION

NOTES

THE TOP SURFACE OF THE END BENT CAP AND WINGS (POUR 1) EXCEPT THE BEARING AREAS AND THE AREA OUTSIDE OF THE SUPERSTRUCTURE SHALL BE RAKED TO A DEPTH OF 1/4"

FOR 'BLOCKOUT IN WING WALL', AND 'PILE SPLICE DETAILS', SEE END BENT 1.

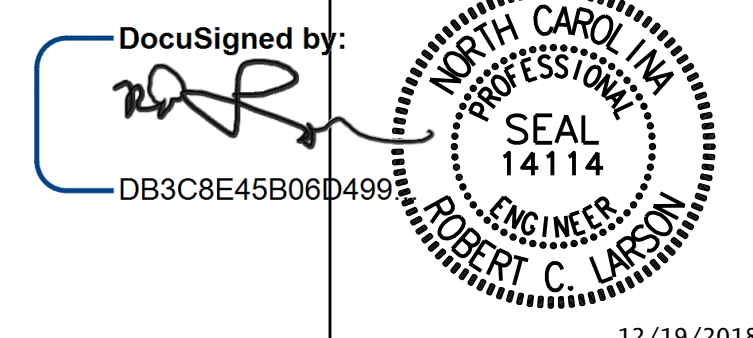
FOR SECTION A-A SEE SHEET 3 OF 3.

PROJECT NO. B-4916
 BERTIE COUNTY
 STATION: 15+59.60 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 2



DESIGN ENGINEER OF RECORD: DATE: 12/19/2018
 DRAWN BY: R. J. FLORY DATE: 08/17/18
 CHECKED BY: R. C. LARSON DATE: 08/20/18

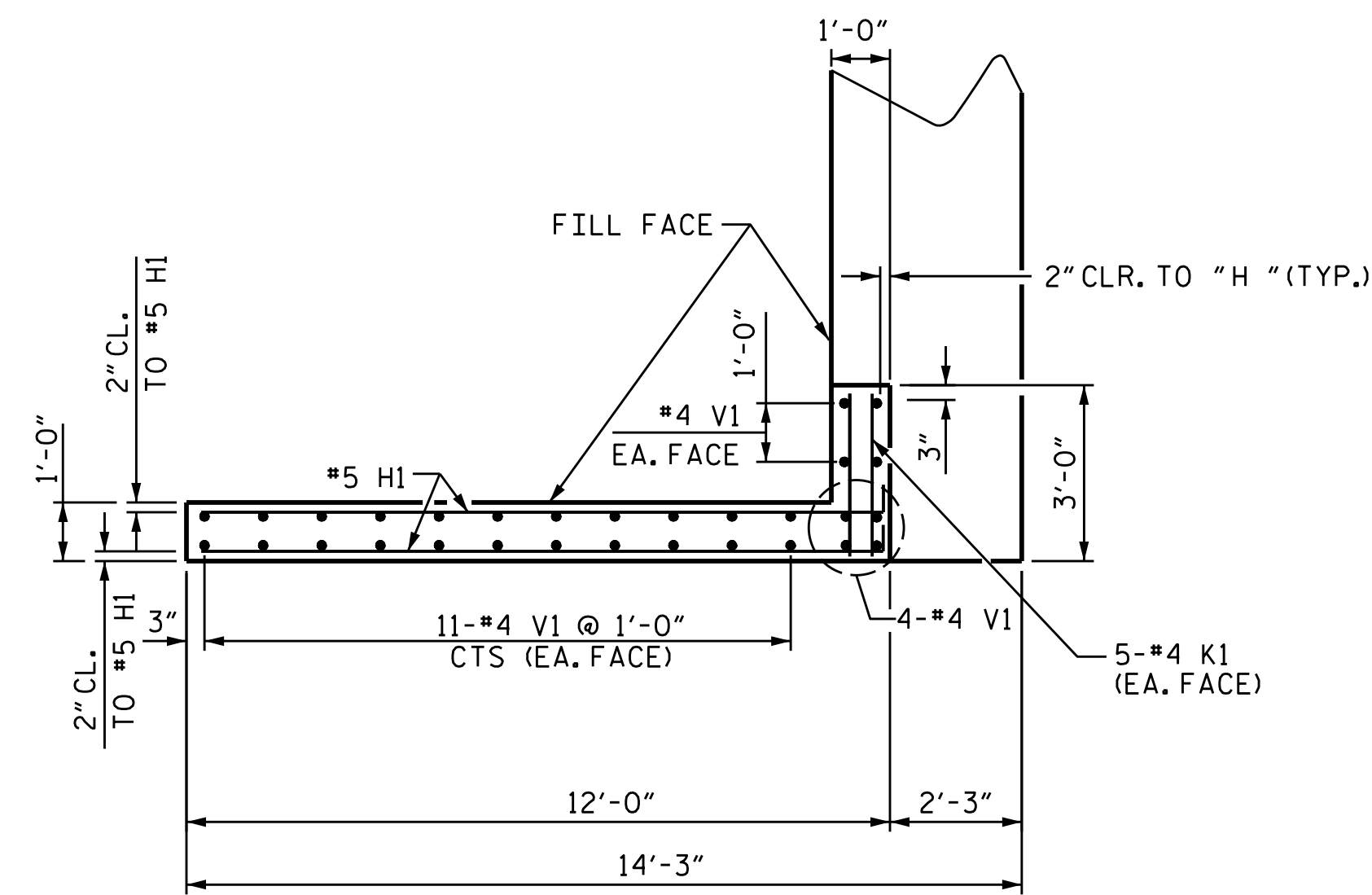
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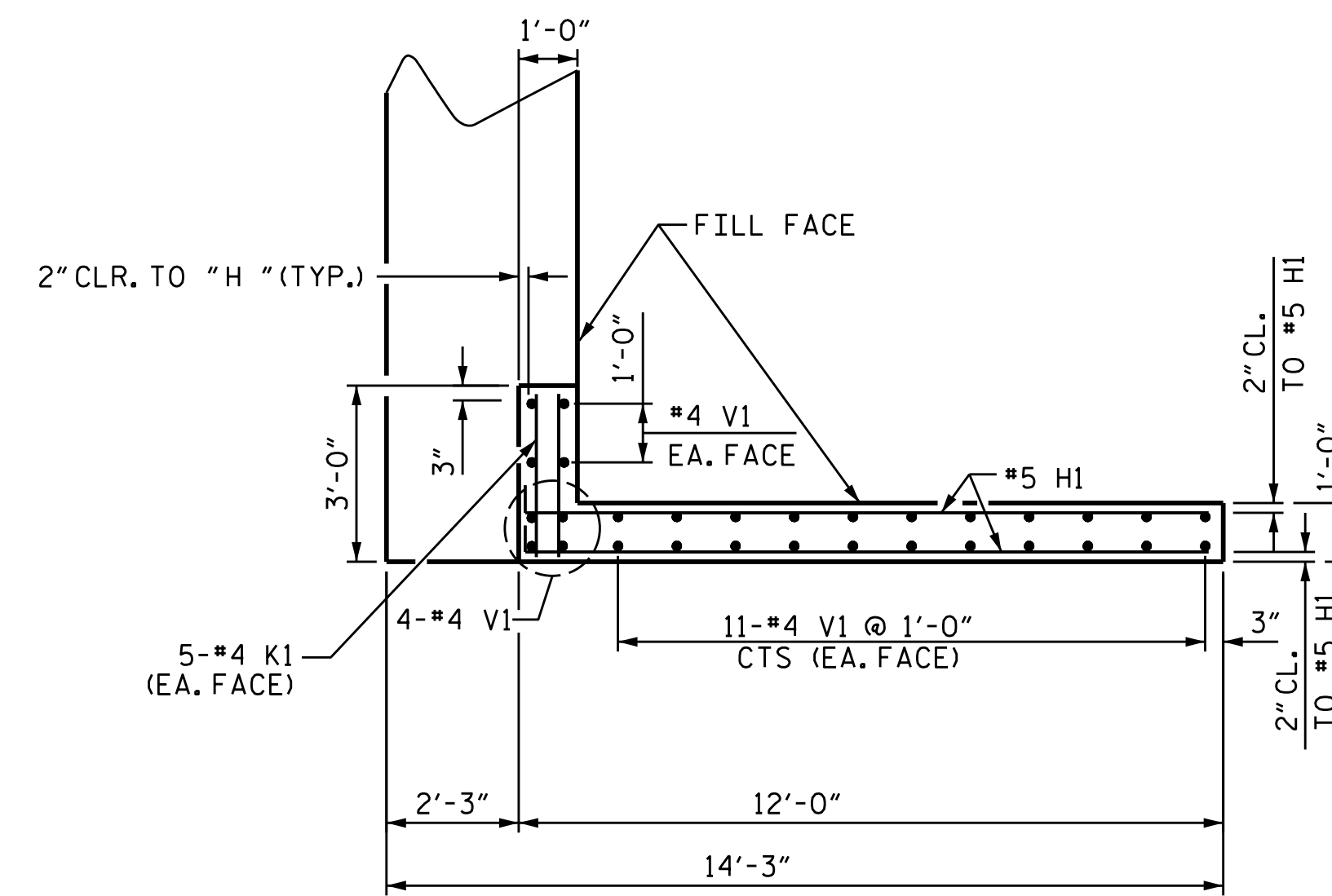
REVISIONS		SHEET NO.	
NO.	DATE	NO.	DATE
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TOTAL SHEETS: 24

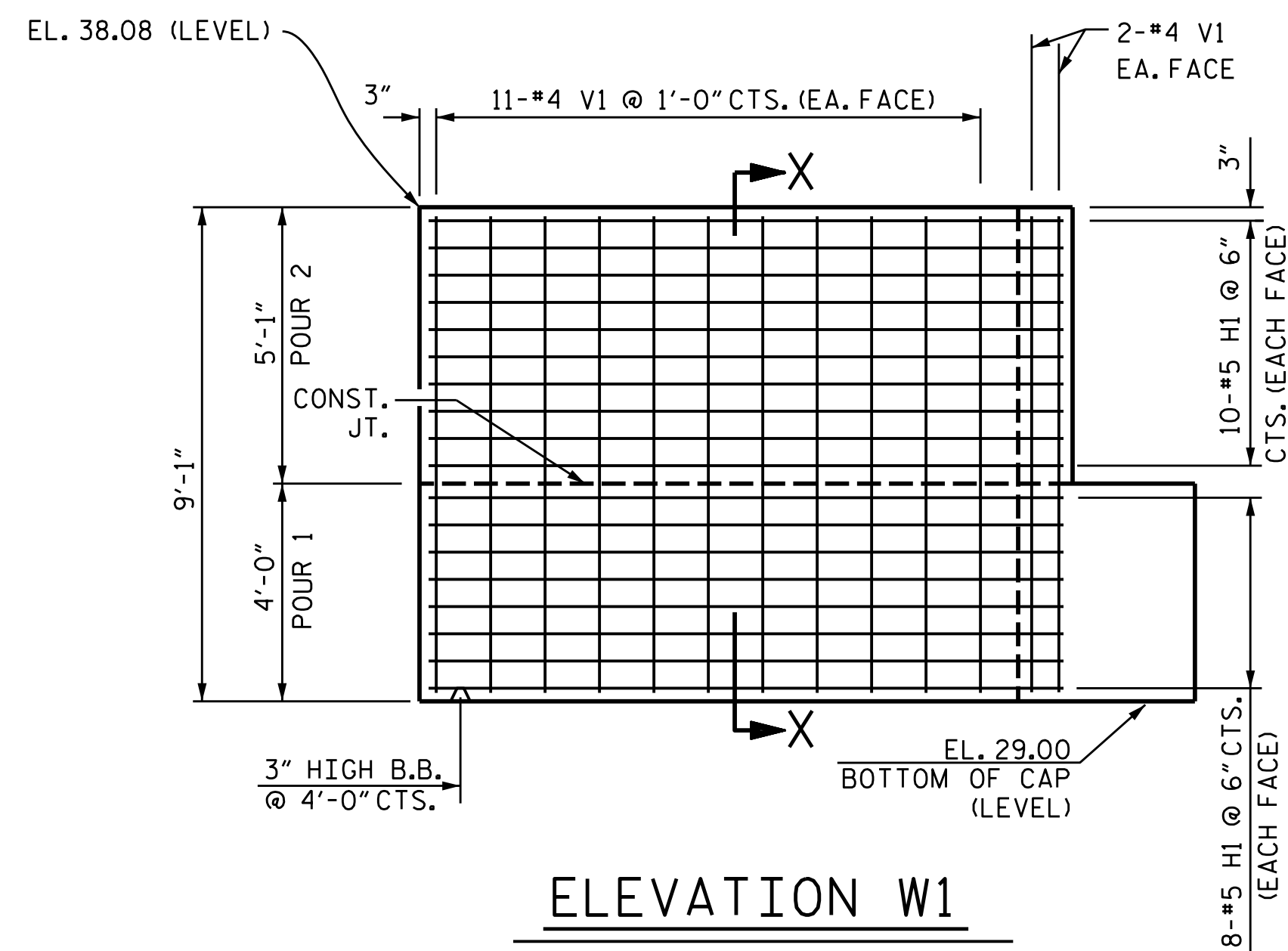
KCI JOB NO: 251801945.06



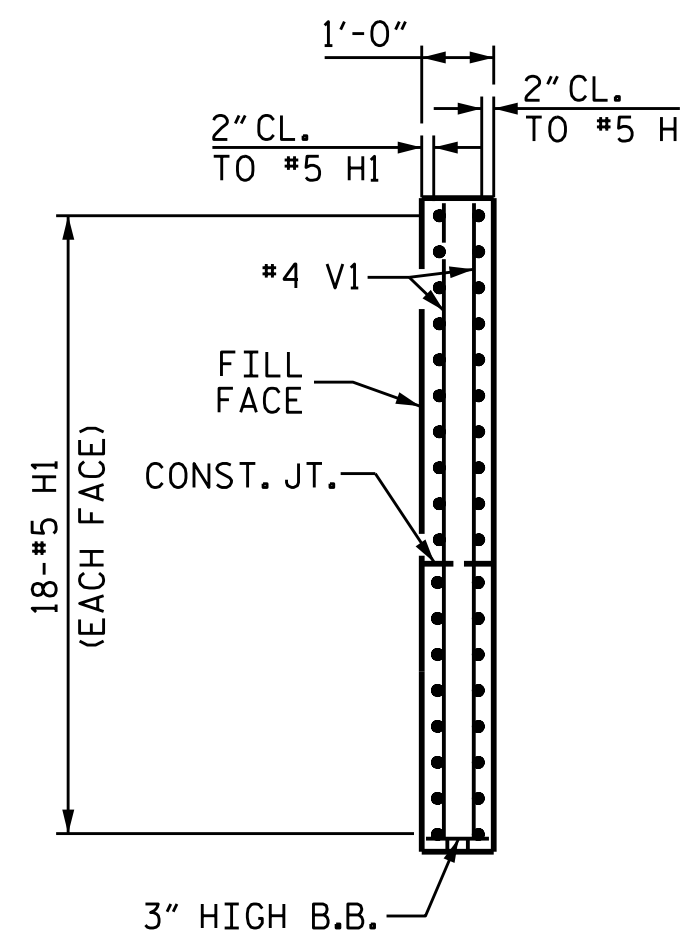
PLAN W1



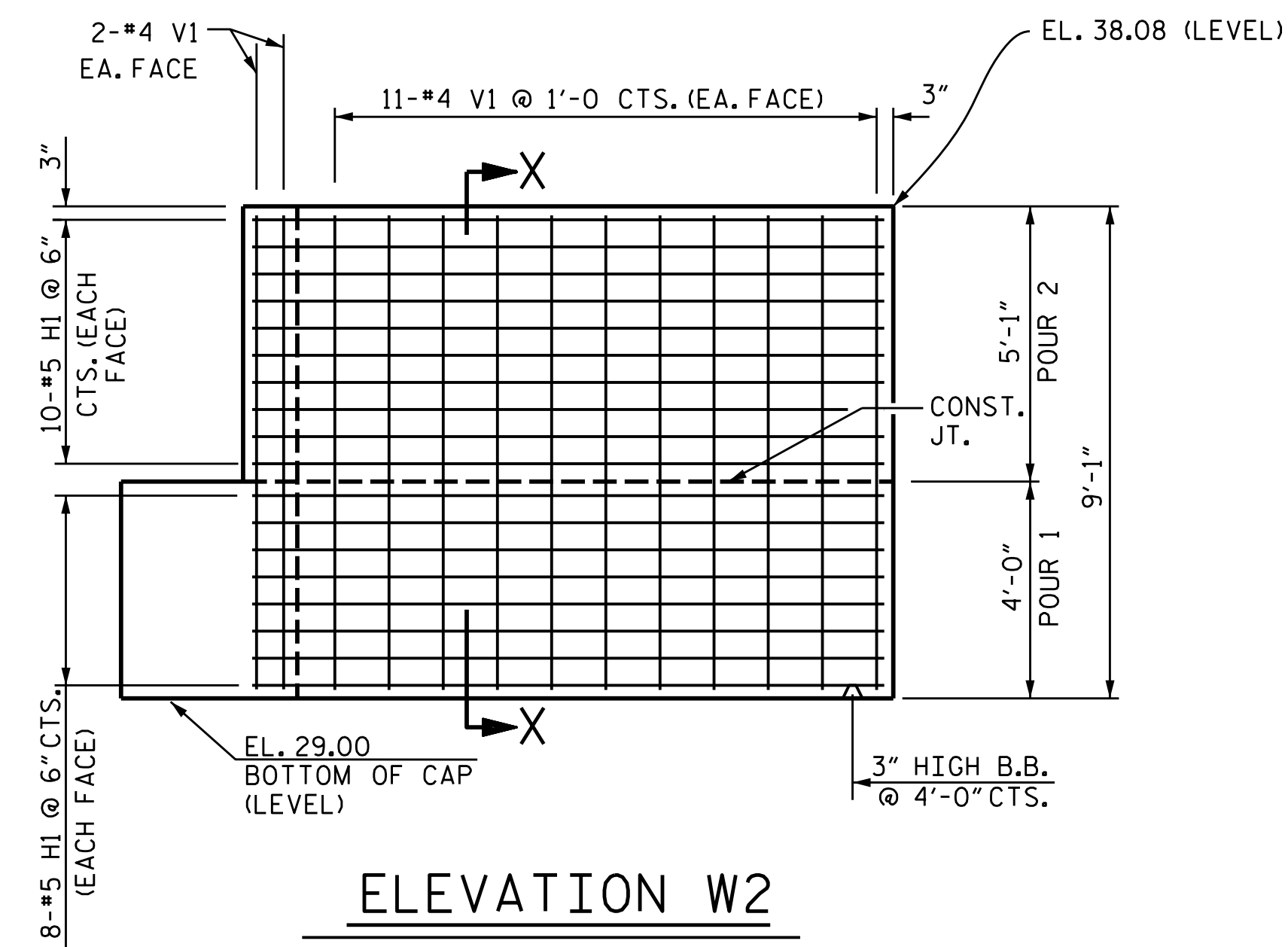
PLAN W2



ELEVATION W1



SECTION X-X



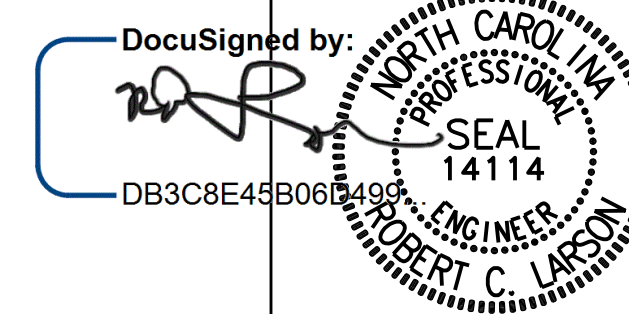
ELEVATION W2

PROJECT NO. B-4916
 BERTIE COUNTY
 STATION: 15+59.60 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 2



DESIGN ENGINEER OF RECORD: DATE: 12/19/2018
 DRAWN BY: K. SU DATE: 08/23/18
 CHECKED BY: R. C. LARSON DATE: 08/23/18

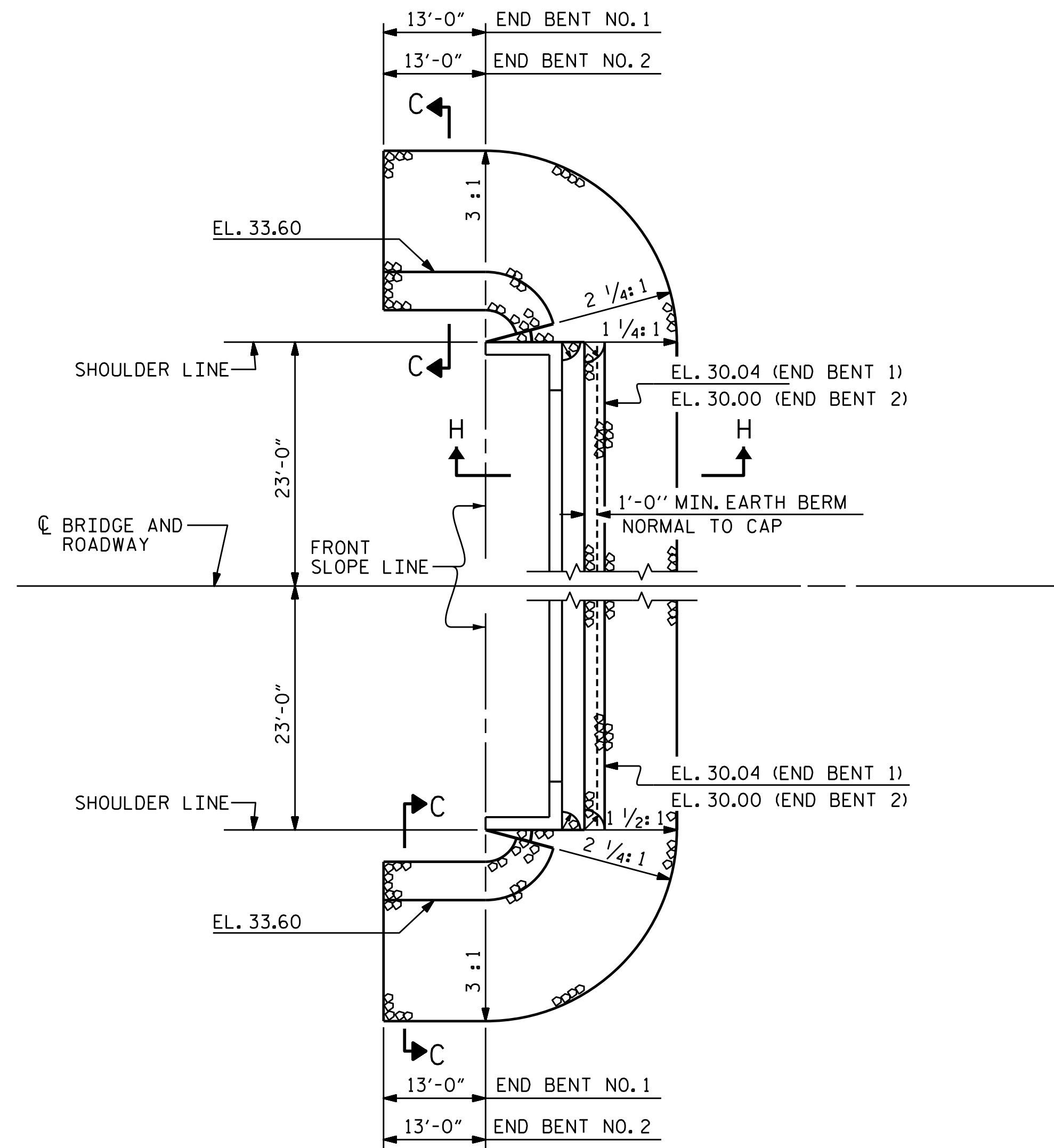
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REVISIONS		SHEET NO.	
NO.	BY:	DATE:	S- 20
1			TOTAL SHEETS 24
2			

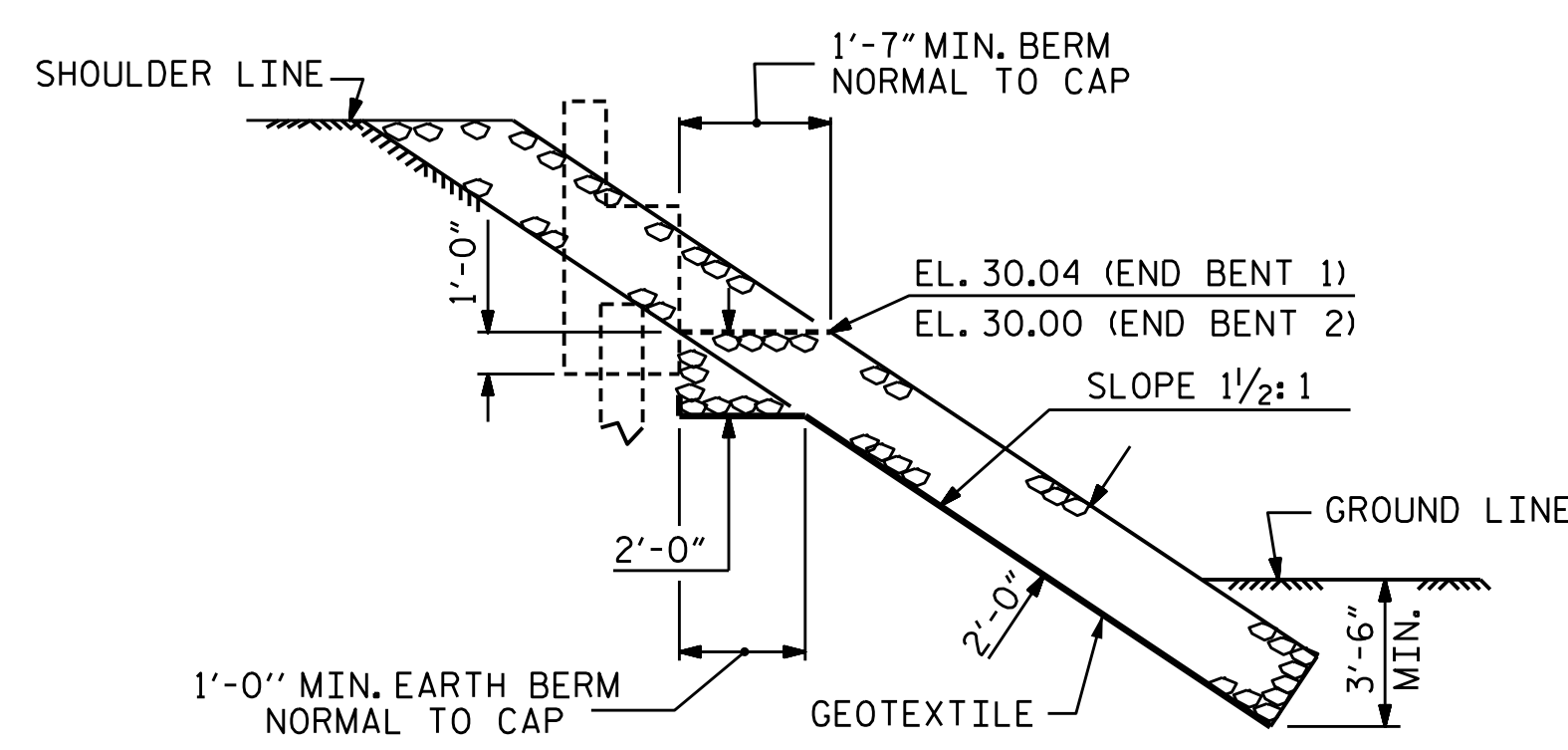
KCI JOB NO: 251801945.06

NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

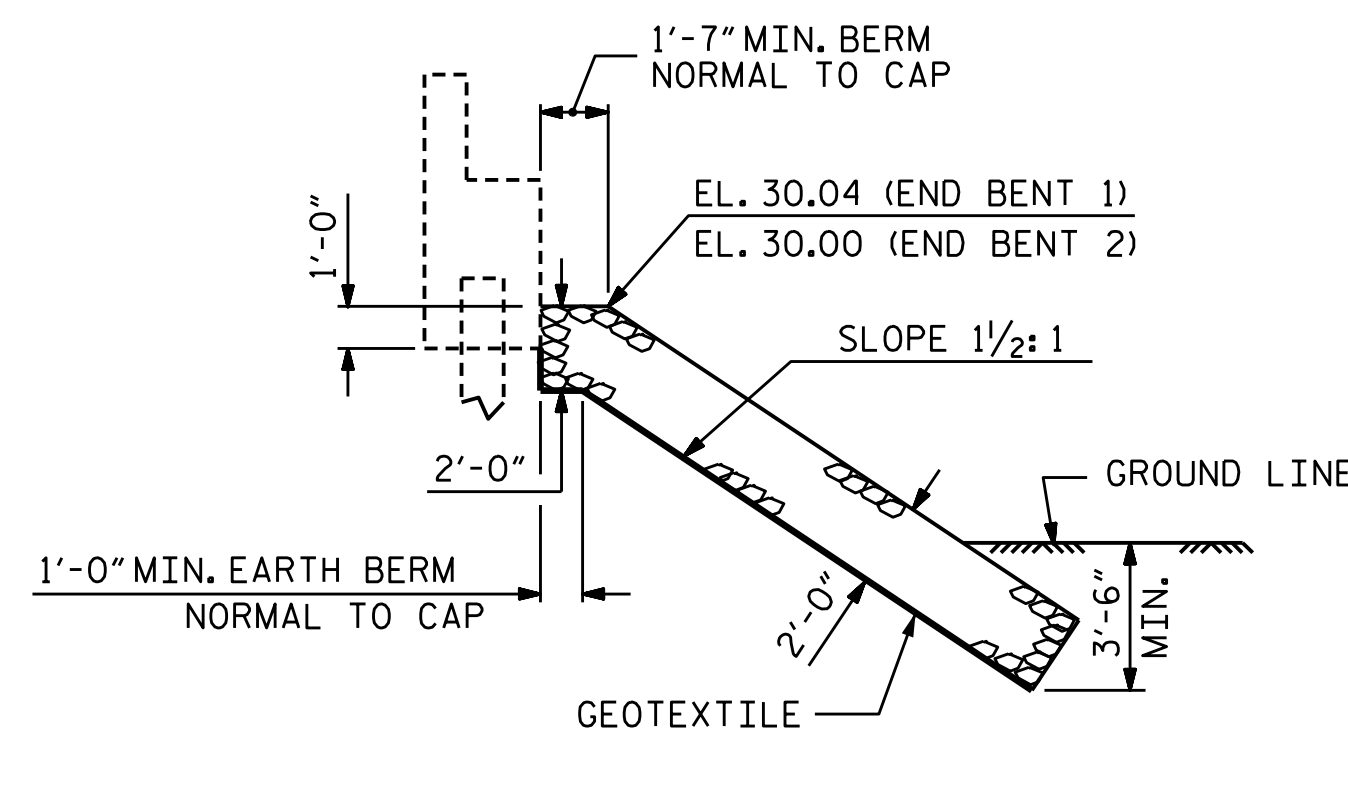


SHOULDER RIP RAP IS HIGHER THAN BERM RIP RAP

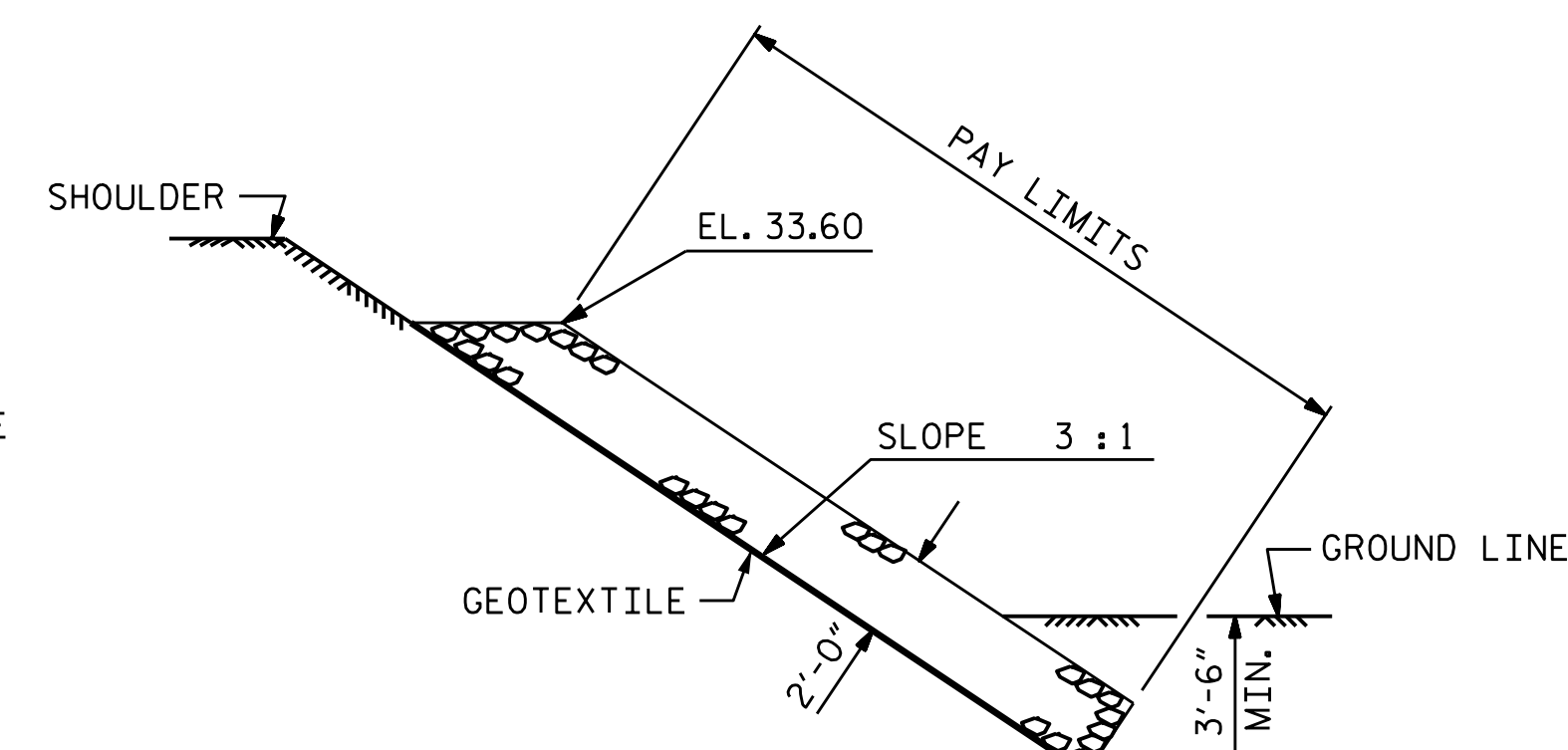
ESTIMATED QUANTITIES		
BRIDGE @ STA. 15+59.60 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	170	190
END BENT 2	170	190



SECTION H-H



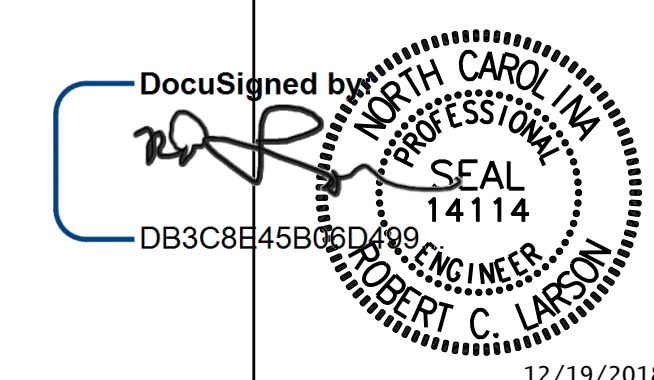
SECTION C-C
BERM RIP RAPPED



SECTION C-C

PROJECT NO. B-4916
BERTIE COUNTY
STATION: 15+59.60 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
RIP RAP DETAILS

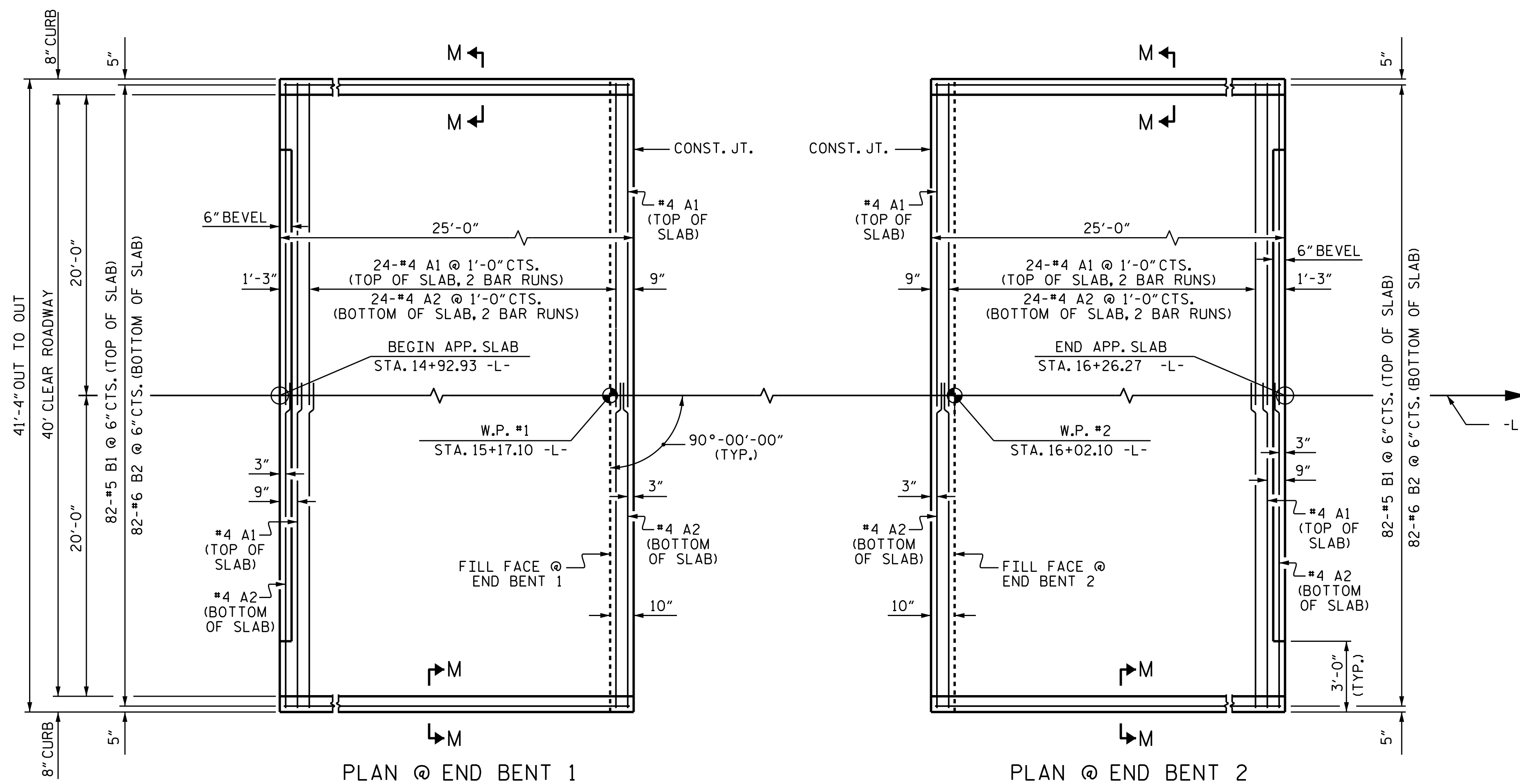


DESIGN ENGINEER OF RECORD: <u>R. C. LARSON</u>	DATE: 12/19/2018
ASSEMBLED BY: R. C. LARSON	DATE: 08/24/18
CHECKED BY: K. SU	DATE: 11/02/18
DRAWN BY: REK 1/84	REV. 10/1/11 MAA/GM
CHECKED BY: RDU 1/84	REV. 12/21/11 MAA/GM
	REV. 12/17 MAA/THC

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400 Falls of Neuse Road, Suite 400, Raleigh, NC 27609-5270 Phone 919-783-9201

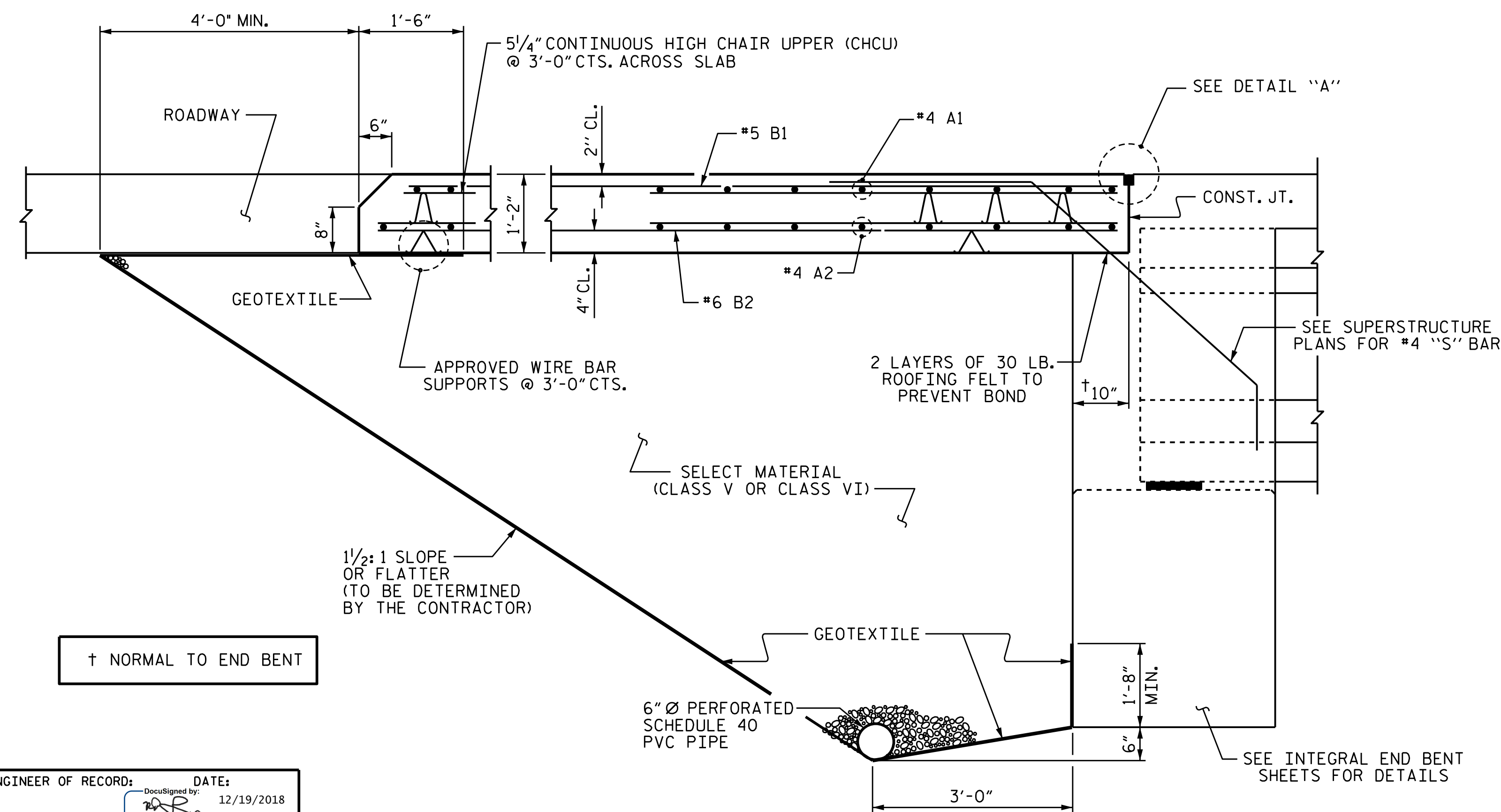
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			24



PLAN @ END BENT 1

PLAN @ END BENT 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION THRU SLAB

(TYPE I - STANDARD APPROACH FILL)

NOTES

APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 6" Ø DRAINAGE PIPE, AND SELECT MATERIAL, SEE ROADWAY PLANS.

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

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

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

FOR THE 6" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

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

THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.

AT THE CONTRACTORS OPTION, "TYPE A - ALTERNATE APPROACH FILL" IN LIEU OF "TYPE I - STANDARD APPROACH FILL" MAY BE CONSTRUCTED AT NO ADDITIONAL COST TO THE DEPARTMENT. SEE SHEET 2 OF 2 FOR DETAILS AND NOTES.

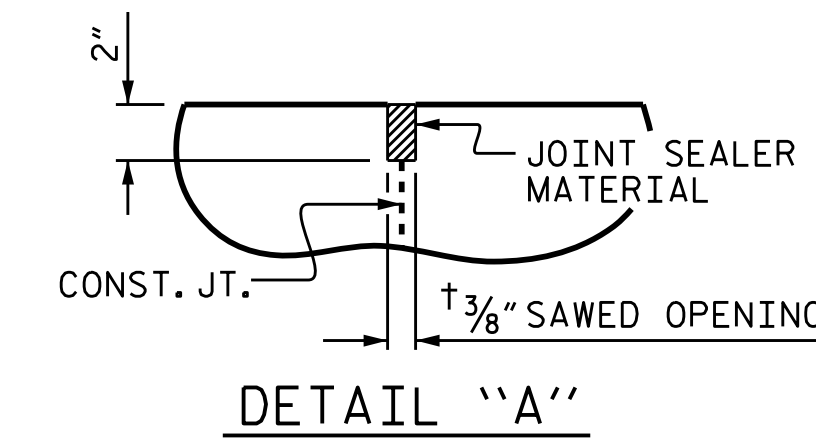
BILL OF MATERIAL

FOR ONE APPROACH SLAB (2 REQ'D)

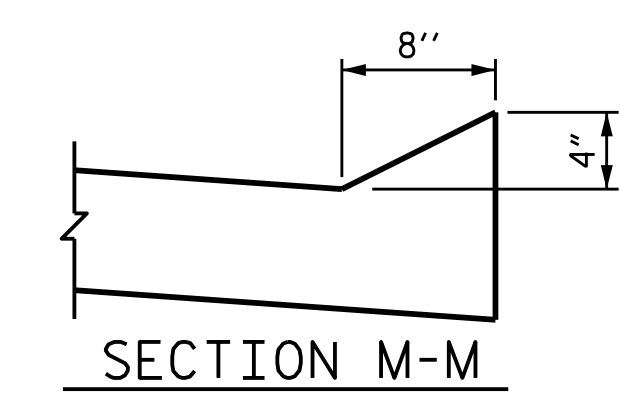
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	52	#4	STR	21'-6"	747
A2	52	#4	STR	21'-5"	744
*B1	82	#5	STR	24'-2"	2067
B2	82	#6	STR	24'-8"	3038
REINFORCING STEEL				LBS.	3782
*EPOXY COATED REINFORCING STEEL				LBS.	2814
CLASS AA CONCRETE				C. Y.	44.5

SPLICE LENGTHS

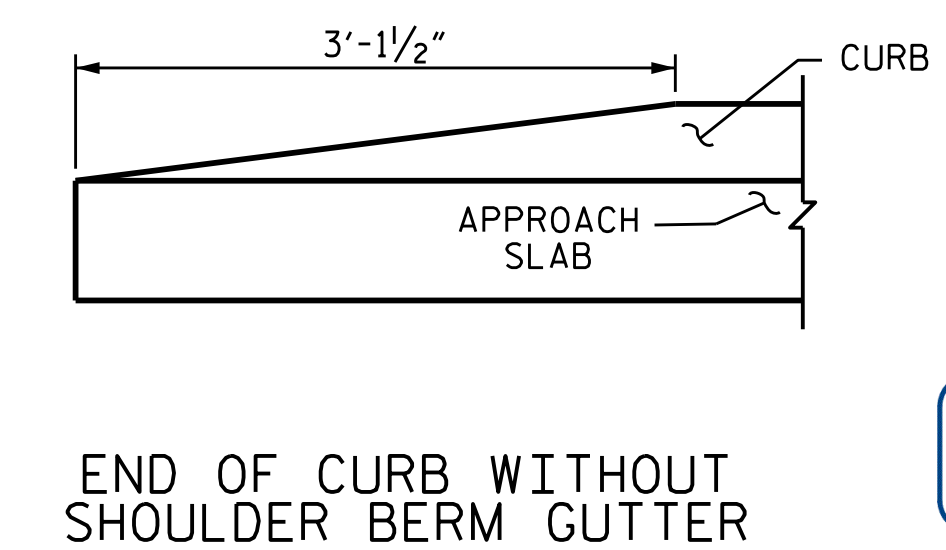
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"



DETAIL "A"



SECTION M-M

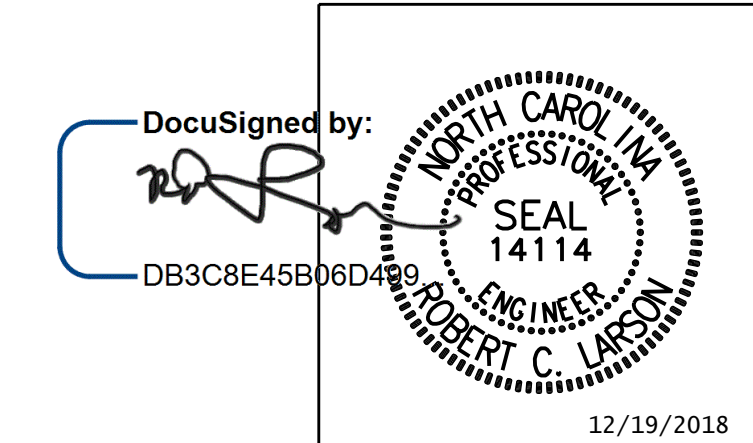


END OF CURB WITHOUT SHOULDER BERM GUTTER

PROJECT NO. B-4916
 BERTIE COUNTY
 STATION: 15+59.60 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR INTEGRAL ABUTMENT
 WITH FLEXIBLE PAVEMENT



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			24
2			4			24

DESIGN ENGINEER OF RECORD:	DATE:
ASSEMBLED BY : D. J. PEDERSEN	DATE: 08/13/18
CHECKED BY : R. C. LARSON	DATE: 08/21/18
DRAWN BY : TLA 10/05	REV. 12/21/11 MAA/GM
CHECKED BY : GM 5/06	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED



STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

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

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST $\frac{5}{16}$ " 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 $\frac{1}{16}$ " INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990

STD. NO. SN