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TIP PROJECT: B-5398

CONTRACT: 203827

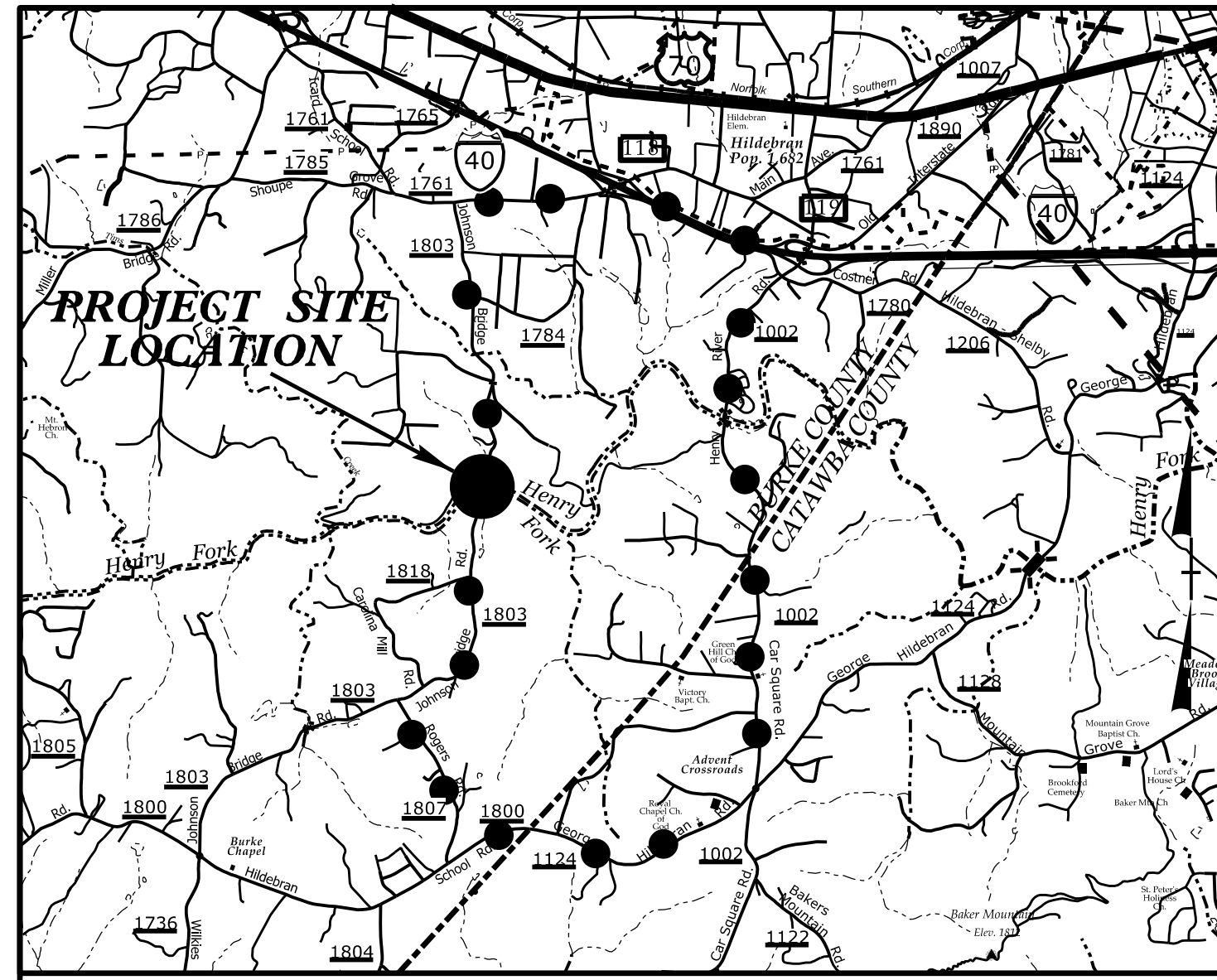
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BURKE COUNTY

**LOCATION: BRIDGE NO. 21 OVER HENRY FORK RIVER
ON SR 1803 (JOHNSON BRIDGE ROAD)**

TYPE OF WORK: GRADING, PAVING, DRAINAGE & STRUCTURE

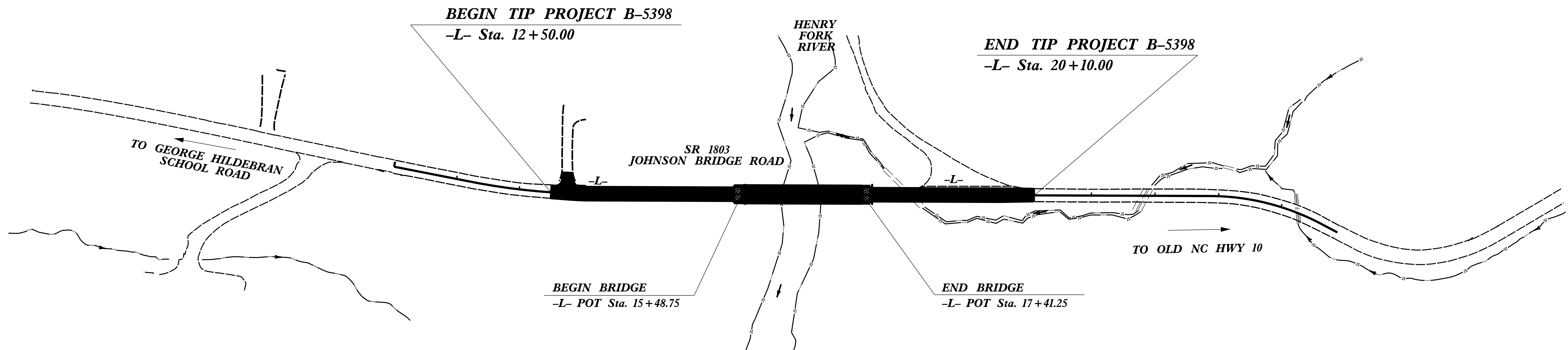
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5398		
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
46113.1.1	BRZ-1803(1)	P.E.	
46113.2.1	BRZ-1803(1)	R / W & UTIL.	
46113.3.1	BRZ-1803(1)	CONST.	



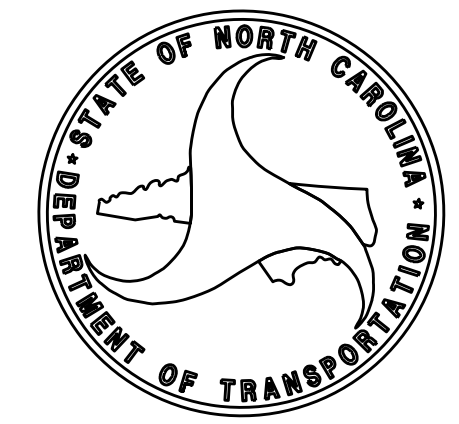
VICINITY MAP

●●●●● OFF-SITE DETOUR ROUTE

N.T.S.



STRUCTURE



DESIGN DATA

ADT 2016 =	2,755
ADT 2036 =	3,015
K =	10 %
D =	55 %
T =	8 % *
V =	50 MPH
* TTST =	1% DUAL 7%
FUNC CLASS =	RURAL MINOR COLLECTOR
	SUB-REGIONAL TIER

PROJECT LENGTH

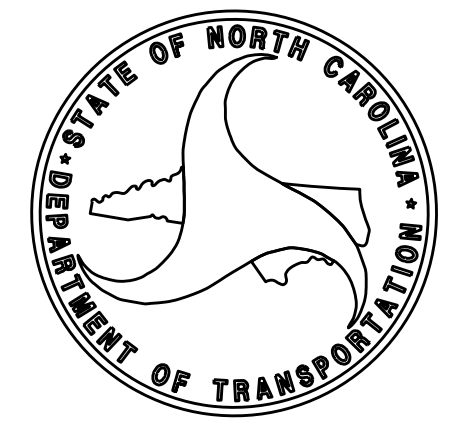
LENGTH ROADWAY TIP PROJECT B-5398 =	0.108 mi.
LENGTH STRUCTURE TIP PROJECT B-5398 =	0.036 mi.
TOTAL LENGTH TIP PROJECT B-5398 =	0.144 mi.

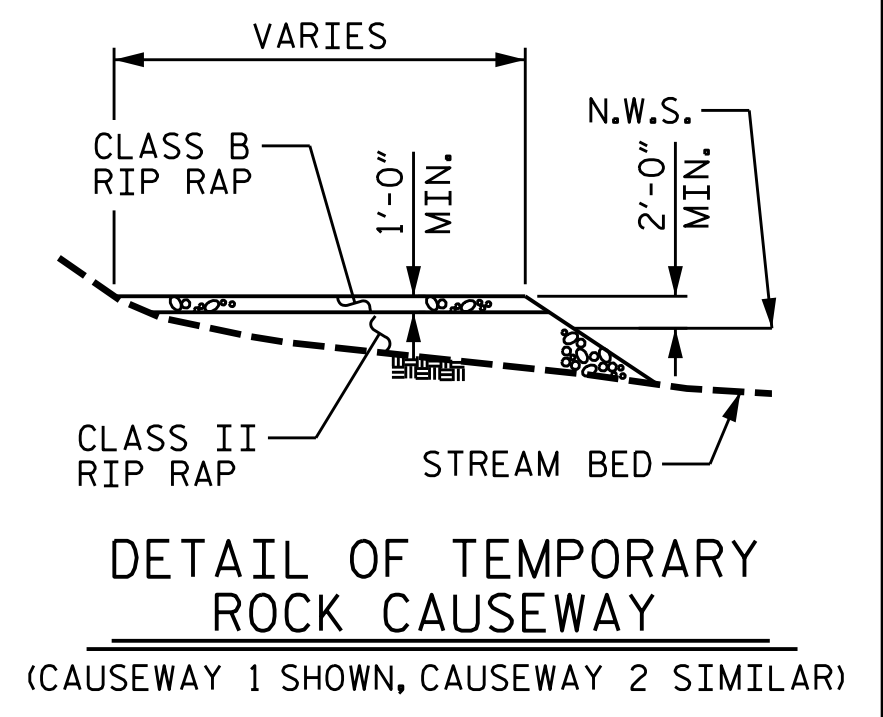
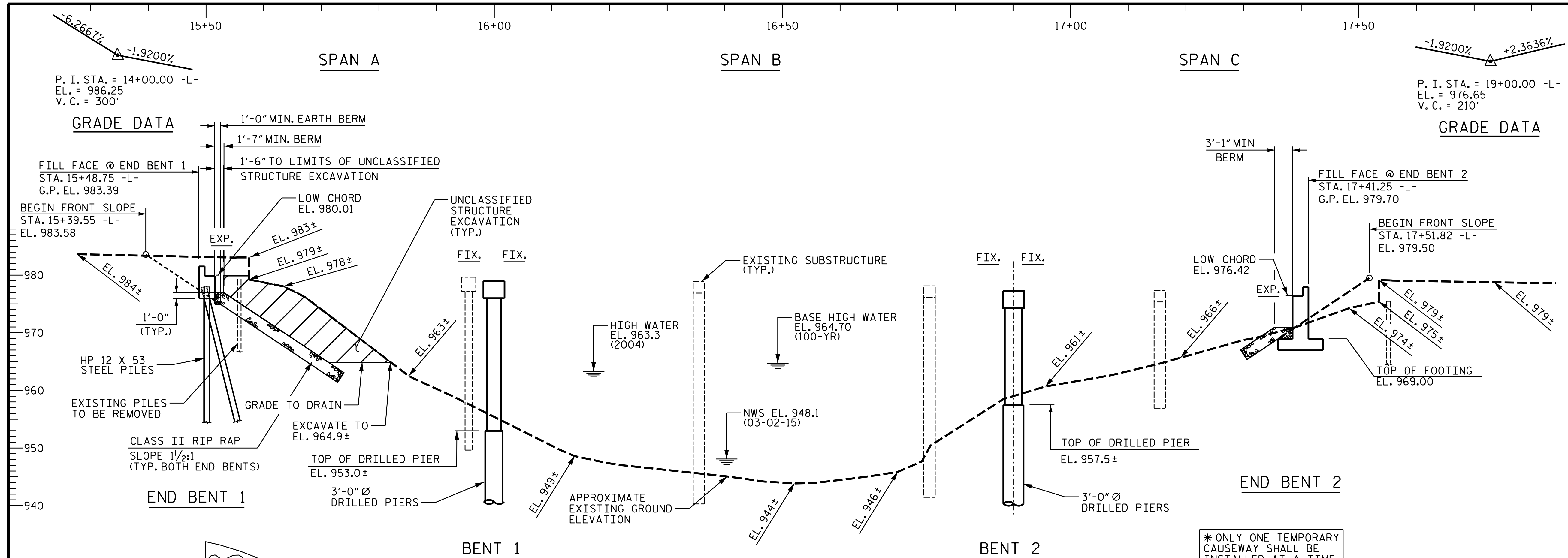
ms consultants, inc.
950 Main Campus Drive
Suite 430
Raleigh, NC 27606
NC License Number - C-3239

2012 STANDARD SPECIFICATIONS

LETTING DATE:
DECEMBER 20, 2016

PLANS PREPARED FOR:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr.
Raleigh, NC 27610





I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. B-5398
BURKE COUNTY
 STATION: 16+45.00 -L-
 SHEET 1 OF 3 REPLACES BRIDGE NO. 21

DocuSigned by:
 Lisa M. Samples
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 10/14/2016

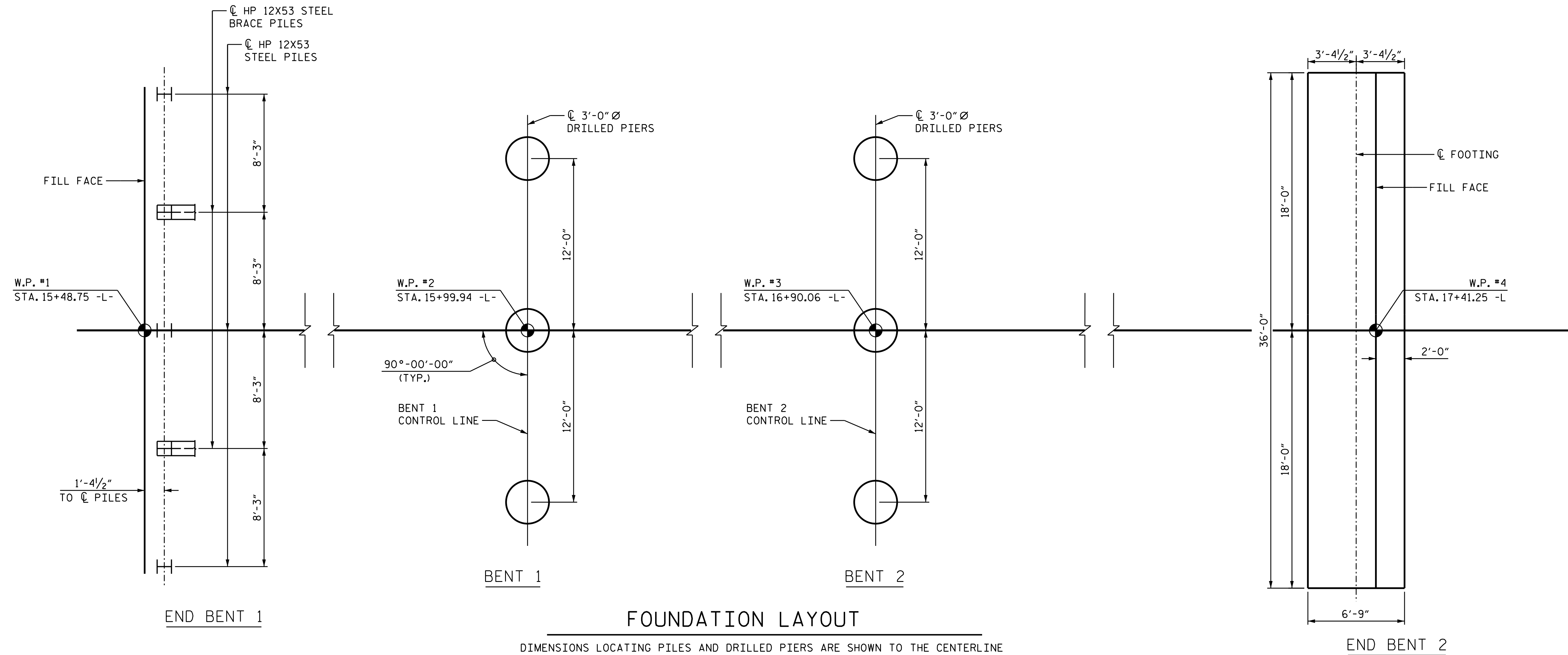


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 NC License Number : C-3239

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
GENERAL DRAWING					
FOR BRIDGE ON SR 1803 OVER HENRY FORK RIVER BETWEEN SR 1818 & SR 1808					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-01
					TOTAL SHEETS 24

DRAWN BY : J.M. KEPICH DATE : 02/16
 CHECKED BY : L.M. SAMPLES DATE : 04/16
 DESIGN ENGINEER OF RECORD : L.M. SAMPLES DATE : 05/16



FOUNDATION LAYOUT
 DIMENSIONS LOCATING PILES AND DRILLED PIERS ARE SHOWN TO THE CENTERLINE
 BRACE PILES AT END BENT 1 ARE BATTERED 3:12

FOUNDATION NOTES

FOR PILES, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 450 OF THE STANDARD SPECIFICATIONS. PILES AT END BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 95 TONS PER PILE. DRIVE PILES AT END BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 160 TONS PER PILE. FOR DRILLED PIERS, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 411 OF THE STANDARD SPECIFICATIONS. DRILLED PIERS AT BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 375 TONS PER PILE. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 30 TSF. DRILLED PIERS AT BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 390 TONS PER PILE. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 30 TSF. INSTALL DRILLED PIERS AT BENT NO.1 TO A TIP ELEVATION NO HIGHER THAN 931 FT AND WITH THE REQUIRED TIP RESISTANCE. INSTALL DRILL PIERS AT BENT NO. 2 TO A TIP ELEVATION NO HIGHER THAN 948 FT AND WITH THE REQUIRED TIP RESISTANCE. THE SCOUR CRITICAL ELEVATION FOR BENT NO.1 IS ELEVATION 948 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE PROBLEMS DURING THE LIFE OF THE STRUCTURE. THE SCOUR CRITICAL ELEVATION FOR BENT NO.2 IS ELEVATION 954 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE PROBLEMS DURING THE LIFE OF THE STRUCTURE. SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS. FOR SID INSPECTIONS, SEE SECTION 411 OF THE STANDARD SPECIFICATION..

CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. FOR CSL TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS. DO NOT USE SLURRY CONSTRUCTION FOR DRILLED PIERS AT BENT NO.1 AND BENT NO.2. THE SPREAD FOOTINGS AT END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 10 TSF. CHECK FIELD CONDITIONS FOR THE REQUIRED RESISTANCE OF 25 TSF JUST BEFORE PLACING CONCRETE.

PROJECT NO. B-5398
BURKE COUNTY
 STATION: 16+45.00 -L-
 SHEET 2 OF 3

DocuSigned by:
 Lisa M. Samples
 5863D099A9B449C...
 10/14/2016



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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

FOUNDATION LAYOUT
 FOR BRIDGE ON SR 1803
 OVER HENRY FORK RIVER
 BETWEEN SR 1818 & SR 1808

DRAWN BY :	J.M. KEPICH	DATE :	02/16
CHECKED BY :	L.M. SAMPLES	DATE :	04/16
DESIGN ENGINEER OF RECORD :	L.M. SAMPLES	DATE :	05/16

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TOTAL SHEETS 24

TOTAL BILL OF MATERIAL

	CONSTRUCTION MAINTENANCE & REMOVAL OF TEMPORARY ACCESS	REMOVAL OF EXISTING STRUCTURE	FOUNDATION EXCAVATION FOR END BENT	3'-0" DIA. DRILLED PIERS IN SOIL	3'-0" DIA. DRILLED PIERS NOT IN SOIL	SID INSPECTIONS	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	HP12X53 STEEL PILES	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 2'-9" PRESTRESSED CONCRETE BOX BEAMS	ASBESTOS ASSESSMENT		
	LUMP SUM	LUMP SUM		LN. FT.	LN. FT.	EACH	EACH	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	LBS.	NO.	LN. FT.	LN. FT.	TONS	SQ. YDS.	LUMP SUM	NO.	LN. FT.	LUMP SUM
SUPERSTRUCTURE										LUMP SUM				380				LUMP SUM	30	1900	
END BENT NO. 1								LUMP SUM	23.8		3342		5	150		203	226				
BENT NO. 1				31	35				25.7		12202	2368									
BENT NO. 2					28.5				22.3		9214	1388									
END BENT NO. 2			LUMP SUM						50.0		5714				172	192					
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	31	63.5	1	1	LUMP SUM	121.8	LUMP SUM	30472	3756	5	150	380	375	418	LUMP SUM	30	1900	LUMP SUM

NOTES:

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- THIS BRIDGE IS LOCATED IN SEISMIC 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.
- FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.
- THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.
- AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 16+45.00 -L-.

THE EXISTING 5 SPAN STRUCTURE CONSISTING OF TWO END SPAN LENGTHS OF 40'-2" AND THREE INTERIOR SPAN LENGTHS OF 40'-0" WITH REINFORCED CONCRETE DECK AND ASPHALT OVERLAY SUPPORTED ON 4 LINES OF STEEL BEAMS SPACED AT 7'-0" CTS. WITH A 22'-0" CLEAR ROADWAY ON VARIOUS SUBSTRUCTURES INCLUDING REINFORCED CONCRETE POST AND BEAM BENTS WITH DRILLED PIERS OR TIMBER PILES AND REINFORCED CONCRETE END BENTS SUPPORTED ON TIMBER PILES SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. 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.

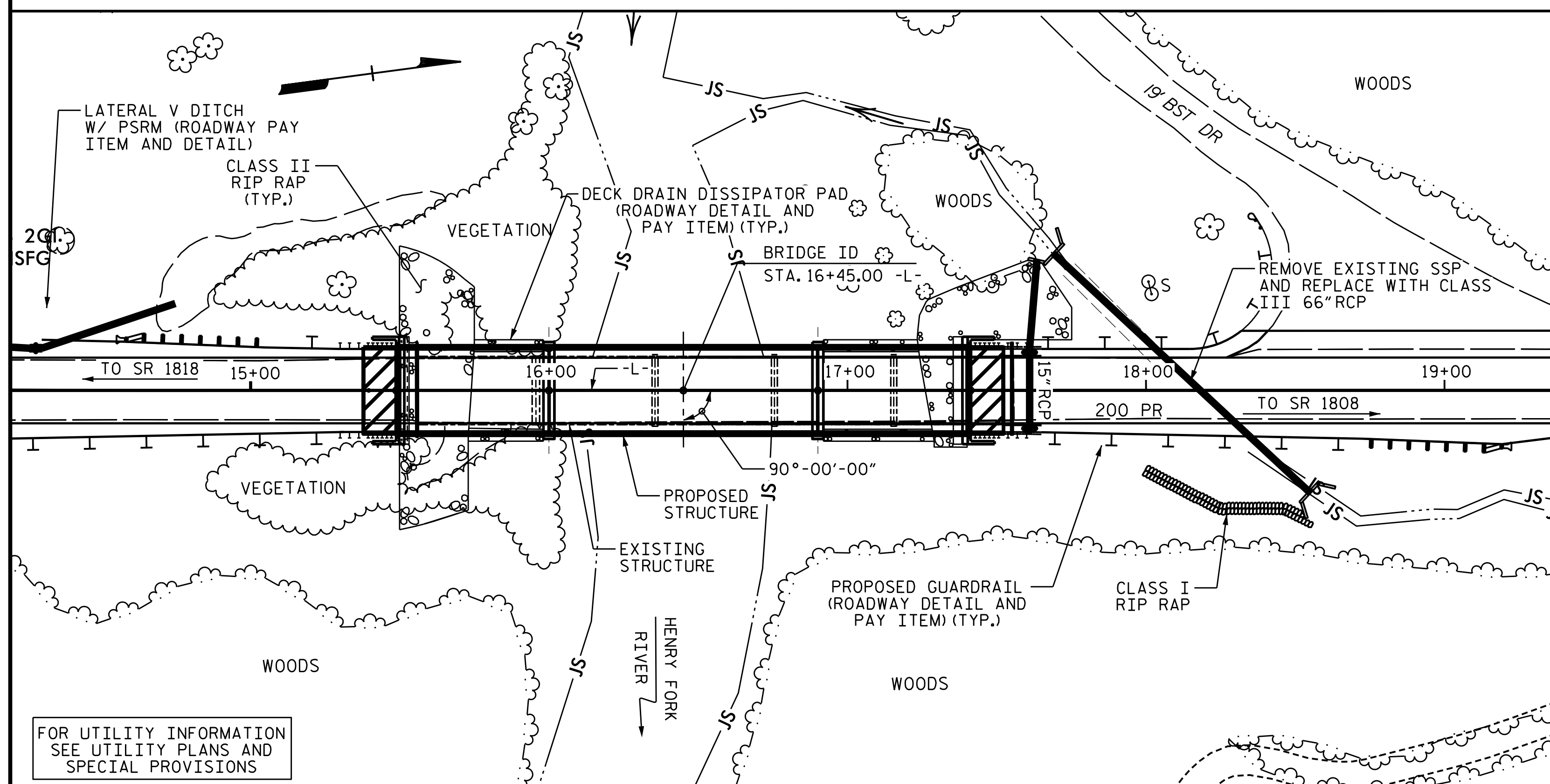
REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.

BM. #1 - MARKED BOLT (WESTERN MOST) ON FIRE HYDRANT BOTTOM FLANGE, 18.83' LT. OF -L- STA. 11+93, EL. 998.94



LOCATION SKETCH

HYDRAULIC DATA

DESIGN DISCHARGE	= 8,300 C.F.S.
FREQUENCY OF DESIGN DISCHARGE	= 25 YRS.
DESIGN HIGH WATER ELEVATION	= 962.70
DRAINAGE AREA	= 74.5 SQ. MI.
BASE DISCHARGE (Q100)	= 11,000 C.F.S.
BASE HIGH WATER ELEVATION	= 964.70

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 40,000 C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	= 500+ YRS.
OVERTOPPING FLOOD ELEVATION	= 977.8 @ STA. 18+89.1 -L-

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 COST RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 16+45.00 -L-"

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-01 SHALL BE EXCAVATED FOR A DISTANCE OF 43 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.

PROJECT NO. B-5398
BURKE COUNTY
 STATION: 16+45.00 -L-

SHEET 3 OF 3

DocuSigned by:
 Lisa M. Samples
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 10/14/2016



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON SR 1803
 OVER HENRY FORK RIVER
 BETWEEN SR 1818 & SR 1808

DRAWN BY : J.M. KEPICH DATE : 02/16
 CHECKED BY : L.M. SAMPLES DATE : 04/16
 DESIGN ENGINEER OF RECORD : L.M. SAMPLES DATE : 05/16

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-03
1			3			TOTAL SHEETS 24
2			4			

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.109	--	1.75	0.272	1.47	B	EL	44.25	0.493	1.26	B	EL	4.425	0.80	0.272	1.11	B	EL	44.25		
	HL-93(Opr)	N/A	--	1.633	--	1.35	0.272	1.9	B	EL	44.25	0.493	1.63	B	EL	4.425	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.507	54.255	1.75	0.272	1.99	B	EL	44.25	0.493	1.65	B	EL	4.425	0.80	0.272	1.51	B	EL	44.25		
	HS-20(Opr)	36.000	--	2.14	77.039	1.35	0.272	2.59	B	EL	44.25	0.493	2.14	B	EL	4.425	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.519	47.501	1.4	0.272	5.82	B	EL	44.25	0.493	5.05	B	EL	4.425	0.80	0.272	3.52	B	EL	44.25	
		SNGARBS2	20.000	--	2.572	51.43	1.4	0.272	4.25	B	EL	44.25	0.493	3.55	B	EL	4.425	0.80	0.272	2.57	B	EL	44.25	
		SNAGRIS2	22.000	--	2.415	53.122	1.4	0.272	4	B	EL	44.25	0.493	3.27	B	EL	4.425	0.80	0.272	2.41	B	EL	44.25	
		SNCOTTS3	27.250	--	1.749	47.674	1.4	0.272	2.89	B	EL	44.25	0.493	2.52	B	EL	4.425	0.80	0.272	1.75	B	EL	44.25	
		SNAGGRS4	34.925	--	1.443	50.381	1.4	0.272	2.39	B	EL	44.25	0.493	2.06	B	EL	4.425	0.80	0.272	1.44	B	EL	44.25	
		SNS5A	35.550	--	1.412	50.195	1.4	0.272	2.34	B	EL	44.25	0.493	2.07	B	EL	4.425	0.80	0.272	1.41	B	EL	44.25	
		SNS6A	39.950	--	1.287	51.435	1.4	0.272	2.13	B	EL	44.25	0.493	1.88	B	EL	4.425	0.80	0.272	1.29	B	EL	44.25	
	SNS7B	42.000	--	1.226	51.483	1.4	0.272	2.03	B	EL	44.25	0.493	1.83	B	EL	4.425	0.80	0.272	1.23	B	EL	44.25		
	TTST	TNAGRIT3	33.000	--	1.568	51.733	1.4	0.272	2.59	B	EL	44.25	0.493	2.24	B	EL	4.425	0.80	0.272	1.57	B	EL	44.25	
		TNT4A	33.075	--	1.572	52.007	1.4	0.272	2.6	B	EL	44.25	0.493	2.2	B	EL	4.425	0.80	0.272	1.57	B	EL	44.25	
		TNT6A	41.600	--	1.278	53.17	1.4	0.272	2.11	B	EL	44.25	0.493	1.92	B	EL	4.425	0.80	0.272	1.28	B	EL	44.25	
		TNT7A	42.000	--	1.281	53.782	1.4	0.272	2.12	B	EL	44.25	0.493	1.89	B	EL	4.425	0.80	0.272	1.28	B	EL	44.25	
		TNT7B	42.000	--	1.315	55.229	1.4	0.272	2.18	B	EL	44.25	0.493	1.79	B	EL	4.425	0.80	0.272	1.31	B	EL	44.25	
		TNAGRIT4	43.000	--	1.258	54.101	1.4	0.272	2.08	B	EL	44.25	0.493	1.74	B	EL	4.425	0.80	0.272	1.26	B	EL	44.25	
TNAGT5A		45.000	--	1.19	53.537	1.4	0.272	1.97	B	EL	44.25	0.493	1.71	B	EL	4.425	0.80	0.272	1.19	B	EL	44.25		
TNAGT5B	45.000	3	1.178	53.027	1.4	0.272	1.95	B	EL	44.25	0.493	1.66	B	EL	4.425	0.80	0.272	1.18	B	EL	44.25			

LOAD FACTORS:

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

NOTES:

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

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

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

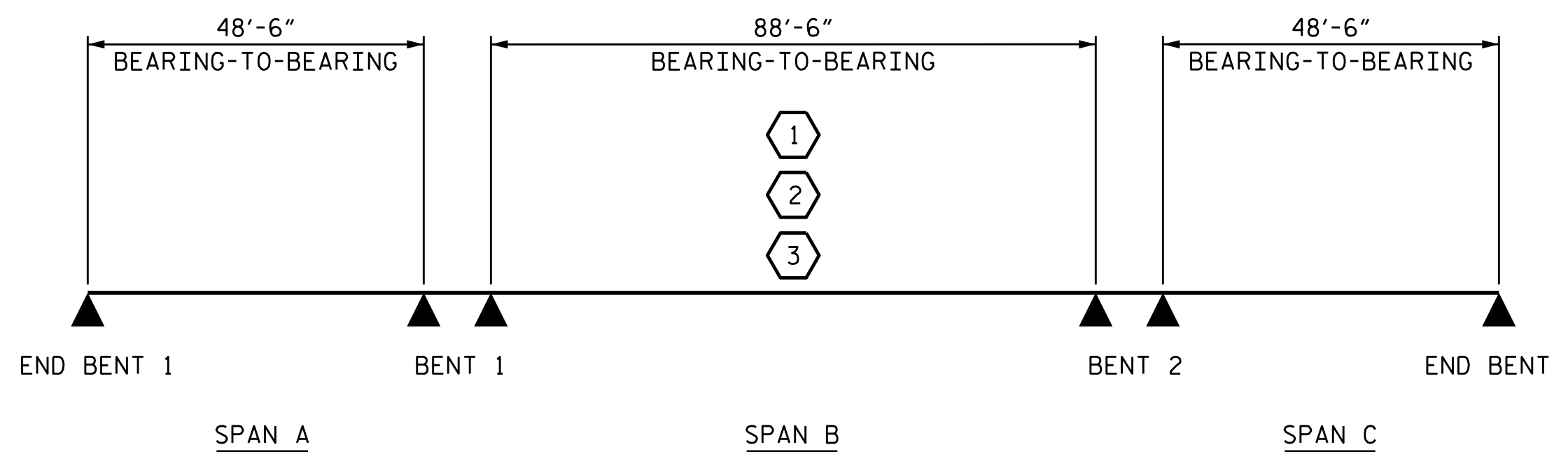
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING ***

*** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

PROJECT NO. B-5398
BURKE COUNTY
STATION: 16+45.00 -L-

ASSEMBLED BY : J.M. KEPICH DATE : 02/16
CHECKED BY : L.M. SAMPLES DATE : 04/16

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

DESIGN ENGINEER OF RECORD : L.M. SAMPLES DATE : 05/16



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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
LRFR SUMMARY FOR
PRESTRESSED
CONCRETE GIRDERS
(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-04
1			3			TOTAL SHEETS
2			4			24

NOTES

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

ALL REINFORCING STEEL CAST WITH THE BOX BEAM SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BOX BEAMS.

FLAME CUTTING OF THE TRANSVERSE POST-TENSIONING STRAND IS NOT ALLOWED.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF BOX BEAM SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT. THE 2 1/2" Ø DOWEL HOLES AT EXPANSION ENDS OF BOX BEAM SECTIONS SHALL BE FILLED WITH JOINT SEALER MATERIAL TO 1/2" ABOVE THE TOP OF DOWELS AND THEN FILLED WITH GROUT.

THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE SL LOW MODULUS SILICONE SEALANT. THE 2" Ø BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4,000 PSI FOR SPANS A AND C AND 6,000 PSI FOR SPAN B.

ALL REINFORCING STEEL IN VERTICAL CONCRETE BARRIER RAILS SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE BOX BEAM UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.

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

THE LOCATION OF THE VOID DRAINS MAY BE SHIFTED SLIGHTLY WHERE NECESSARY TO CLEAR PRESTRESSING STRANDS OR TRANSVERSE REINFORCING STEEL.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

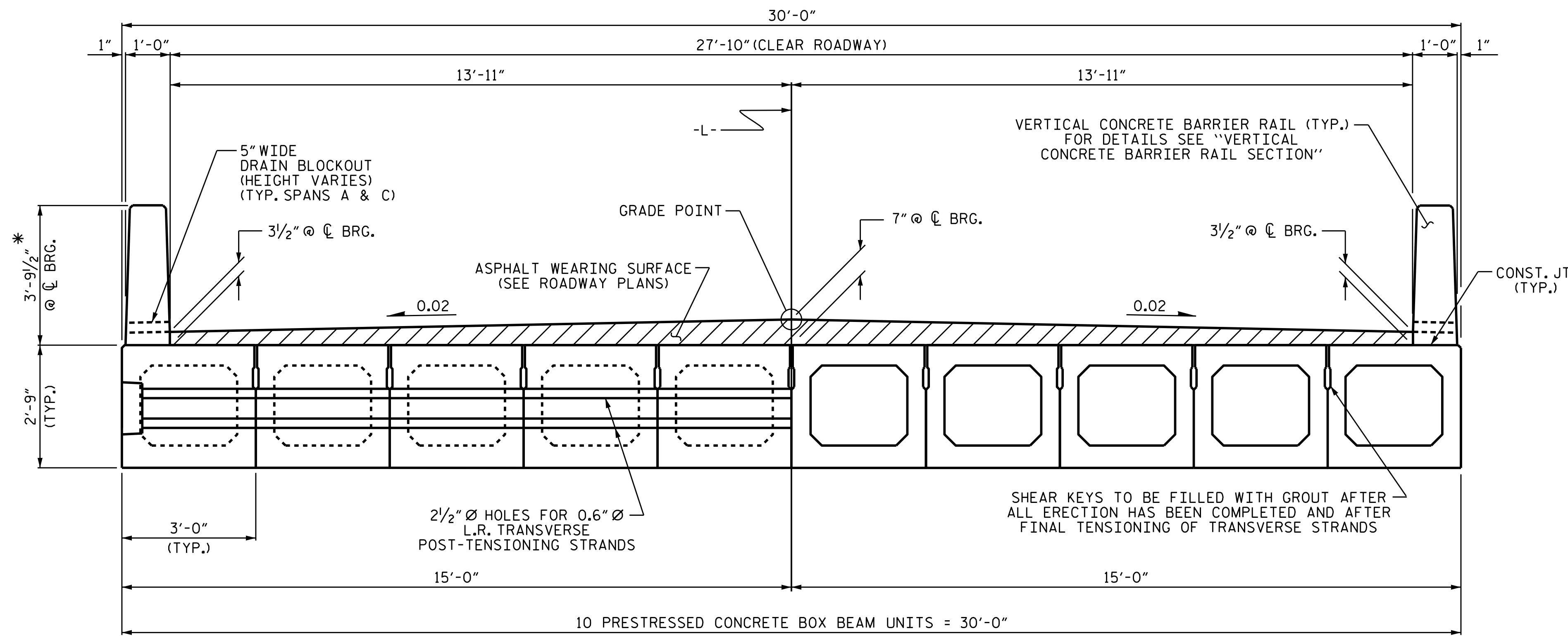
THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.

APPLY EPOXY PROTECTIVE COATING TO EXTERIOR FACE OF THE EXTERIOR BOX BEAM UNITS THAT REQUIRE DRAINS IN THE VERTICAL BARRIER RAIL.

THE DRAIN OPENING AT THE GUTTERLINE SHALL BE 4"x5". THE HEIGHT OF THE BLOCKOUT IN THE VERTICAL CONCRETE BARRIER RAIL SHALL EXTEND FROM THE TOP OF THE BOX BEAM UNIT TO THE TOP OF THE DRAIN OPENING.

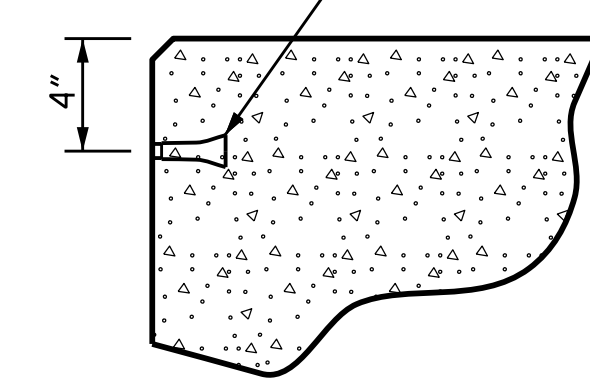


HALF SECTION AT INTERMEDIATE DIAPHRAGMS HALF SECTION THROUGH VOIDS

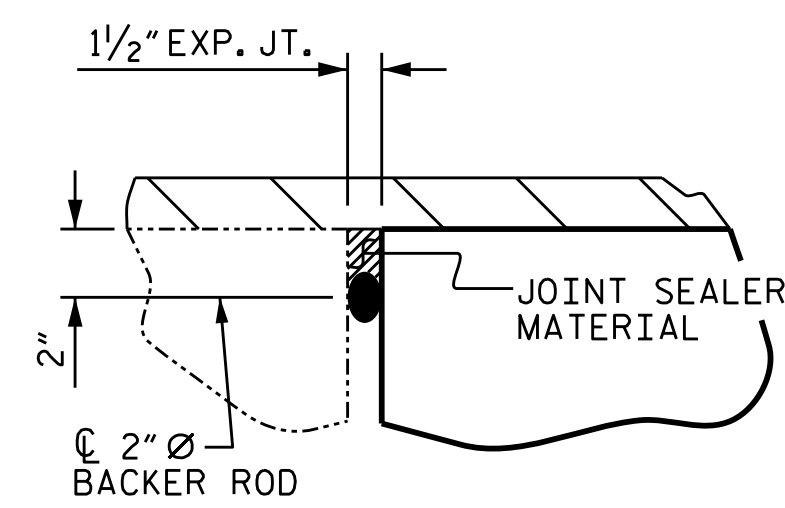
TYPICAL SECTION

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

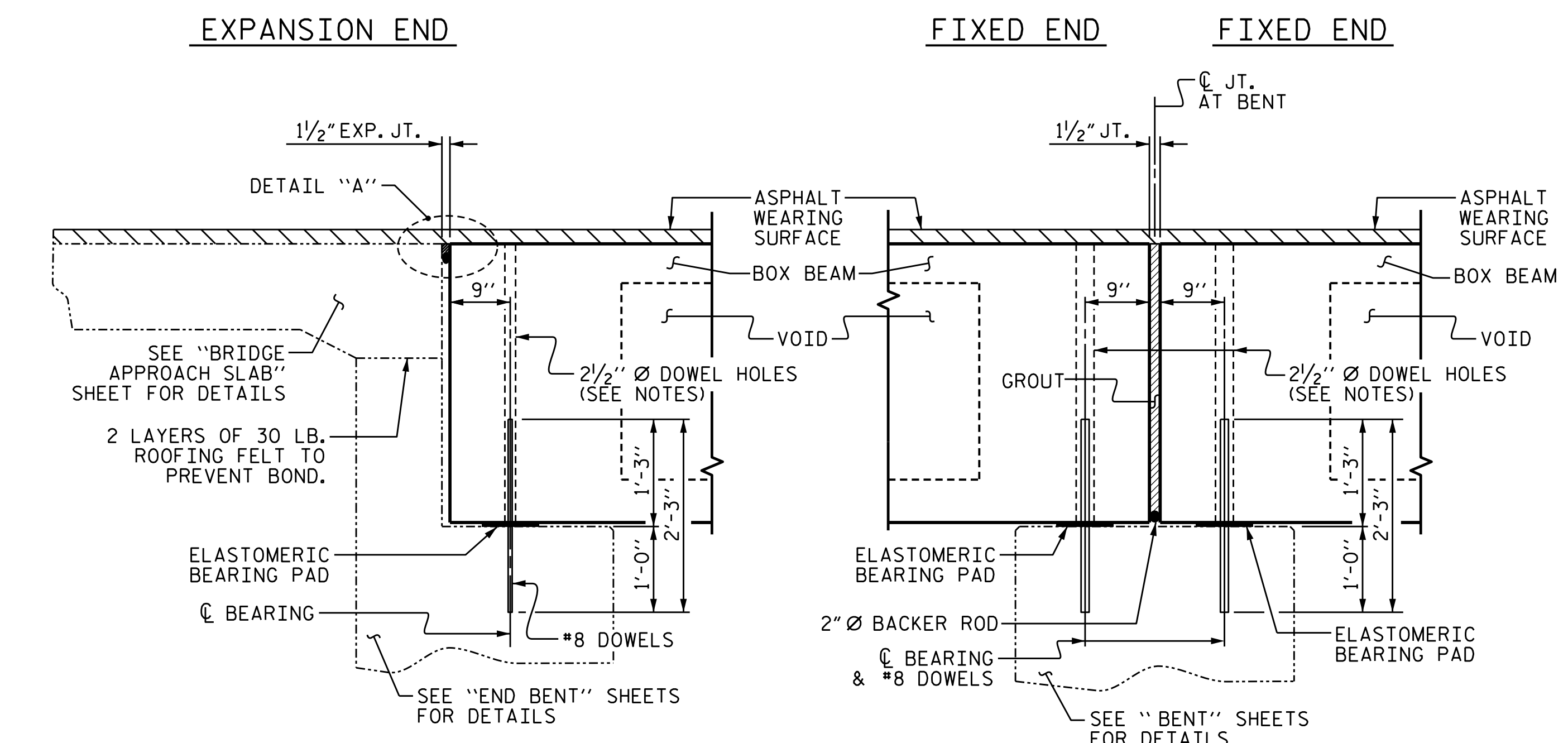
PERMITTED THREADED INSERT CAST IN OUTSIDE FACE OF EXTERIOR UNIT AND RECESSED 3/8" SIZE TO BE DETERMINED BY CONTRACTOR.



THREADED INSERT DETAIL



DETAIL "A"



SECTION AT END BENT

SECTION AT BENT

PROJECT NO. B-5398
BURKE COUNTY
 STATION: 16+45.00 -L-

SHEET 1 OF 7

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

DocuSigned by:
 Lisa M. Samples
 6663D099A9B449C...
 7/4/2016

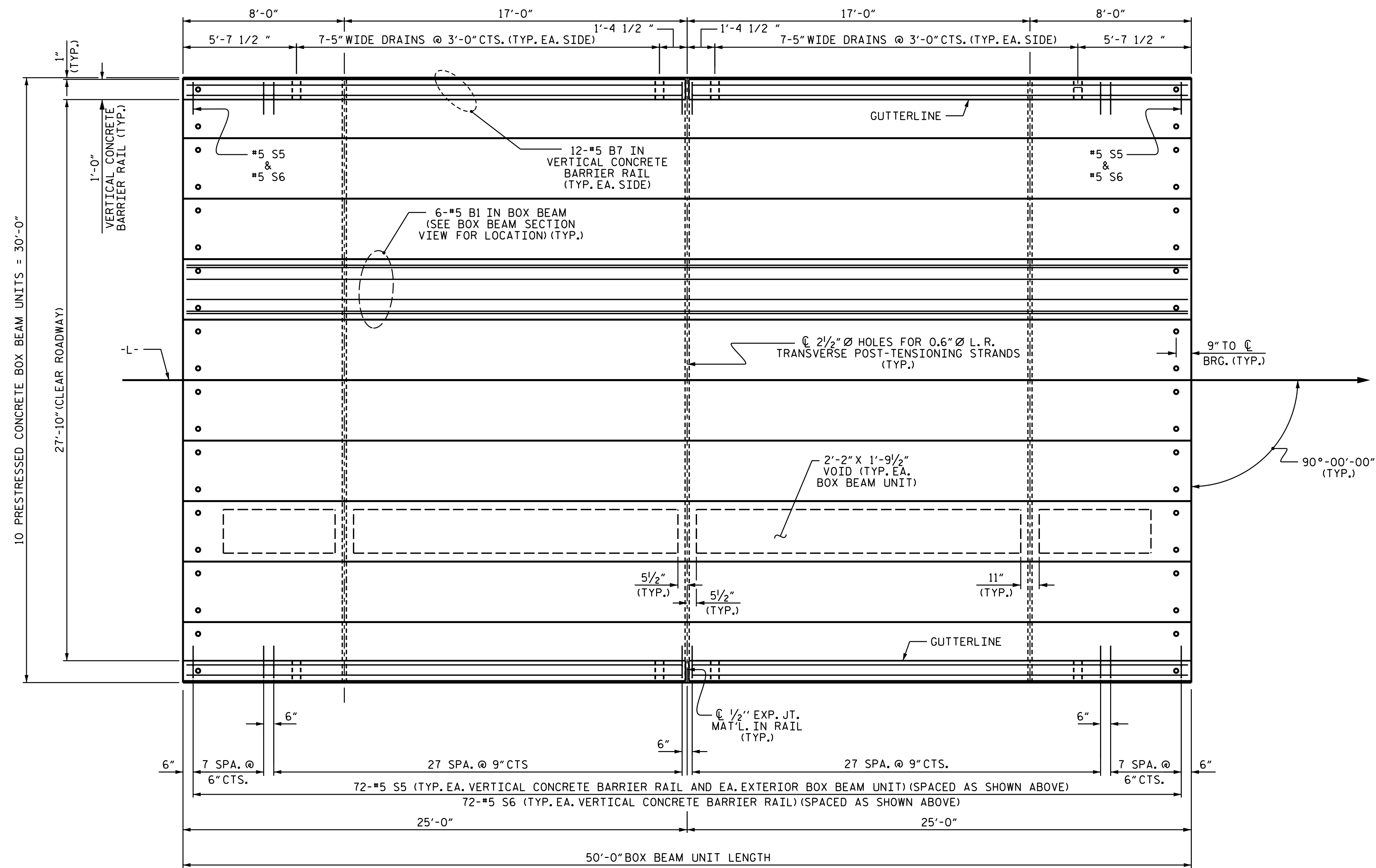


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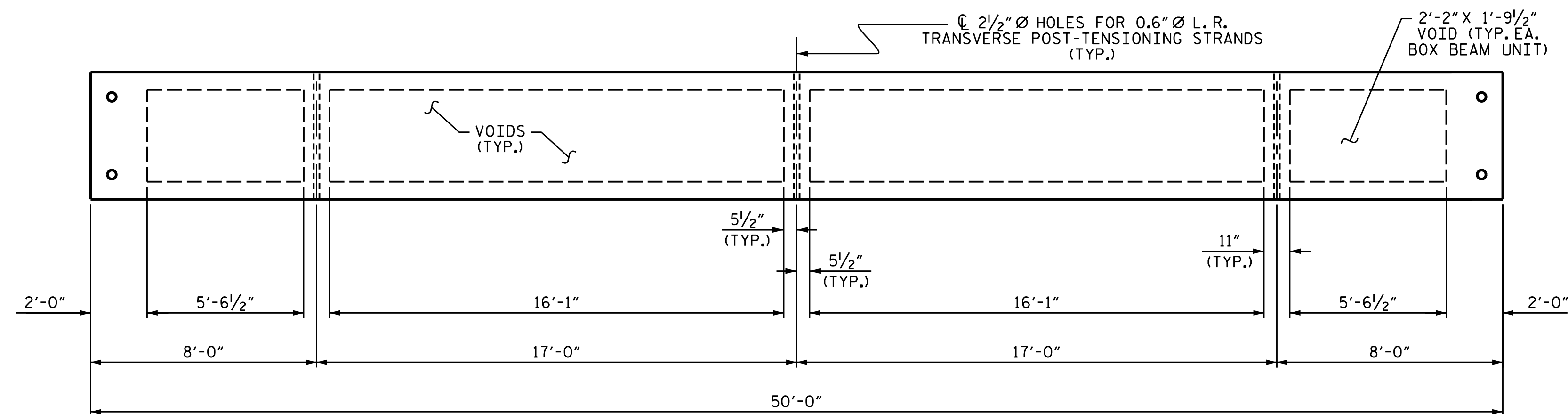
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-05
1			3			TOTAL SHEETS
2			4			24

ASSEMBLED BY : J.M. KEPICH	DATE : 02/16	
CHECKED BY : L.M. SAMPLES	DATE : 04/16	
DRAWN BY : TLA 5/05	REV. 6/13	MAA/GM
CHECKED BY : GM 6/05	REV. 8/14	MAA/GM
	REV. 1/15	RWW/TMG
DESIGN ENGINEER OF RECORD : L.M. SAMPLES DATE : 05/16		



PLAN OF UNIT



DIAPHRAGM AND VOID LAYOUT

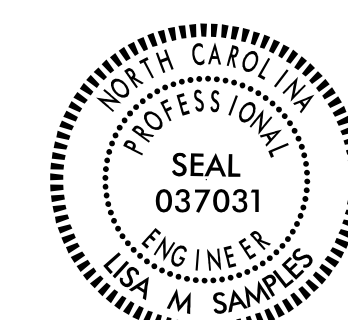
PROJECT NO. B-5398

BURKE COUNTY

STATION: 16+45.00 -L-

SHEET 2 OF 7

DocuSigned by:
Lisa M. Samples
5663D09A9B449C...
7/4/2016



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 50' UNIT
27'-10" CLEAR ROADWAY
SPANS A & C
90° SKEW

REVISIONS

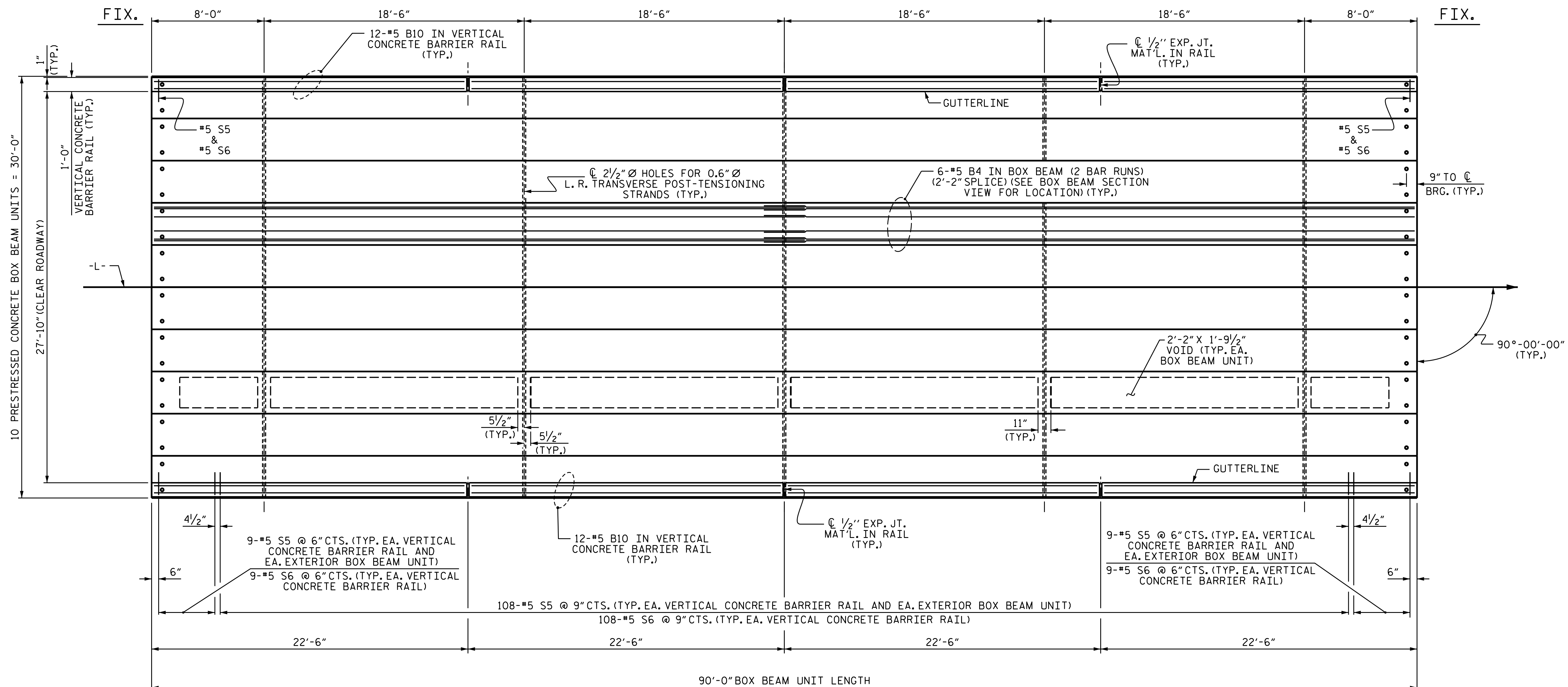
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-06
2			4			TOTAL SHEETS 24

DRAWN BY : J.M. KEPICH DATE : 02/16
CHECKED BY : L.M. SAMPLES DATE : 04/16
DESIGN ENGINEER OF RECORD : L.M. SAMPLES DATE : 05/16

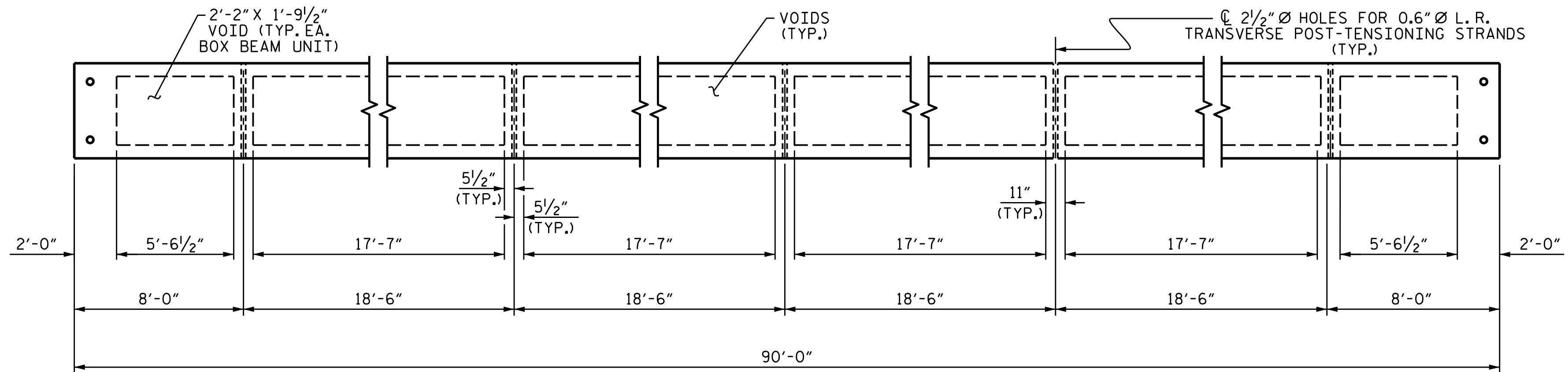


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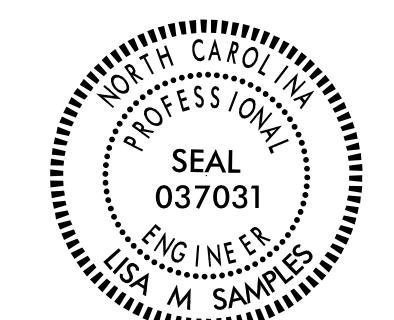
PLAN OF UNIT



DIAPHRAGM AND VOID LAYOUT

PROJECT NO. B-5398
BURKE COUNTY
 STATION: 16+45.00 -L-
 SHEET 3 OF 7

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 Lisa M. Samples
 5663D099A8B449C...
 7/4/2016



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PLAN OF 90'-0" UNIT
 27'-10" CLEAR ROADWAY
 SPAN B
 90° SKEW

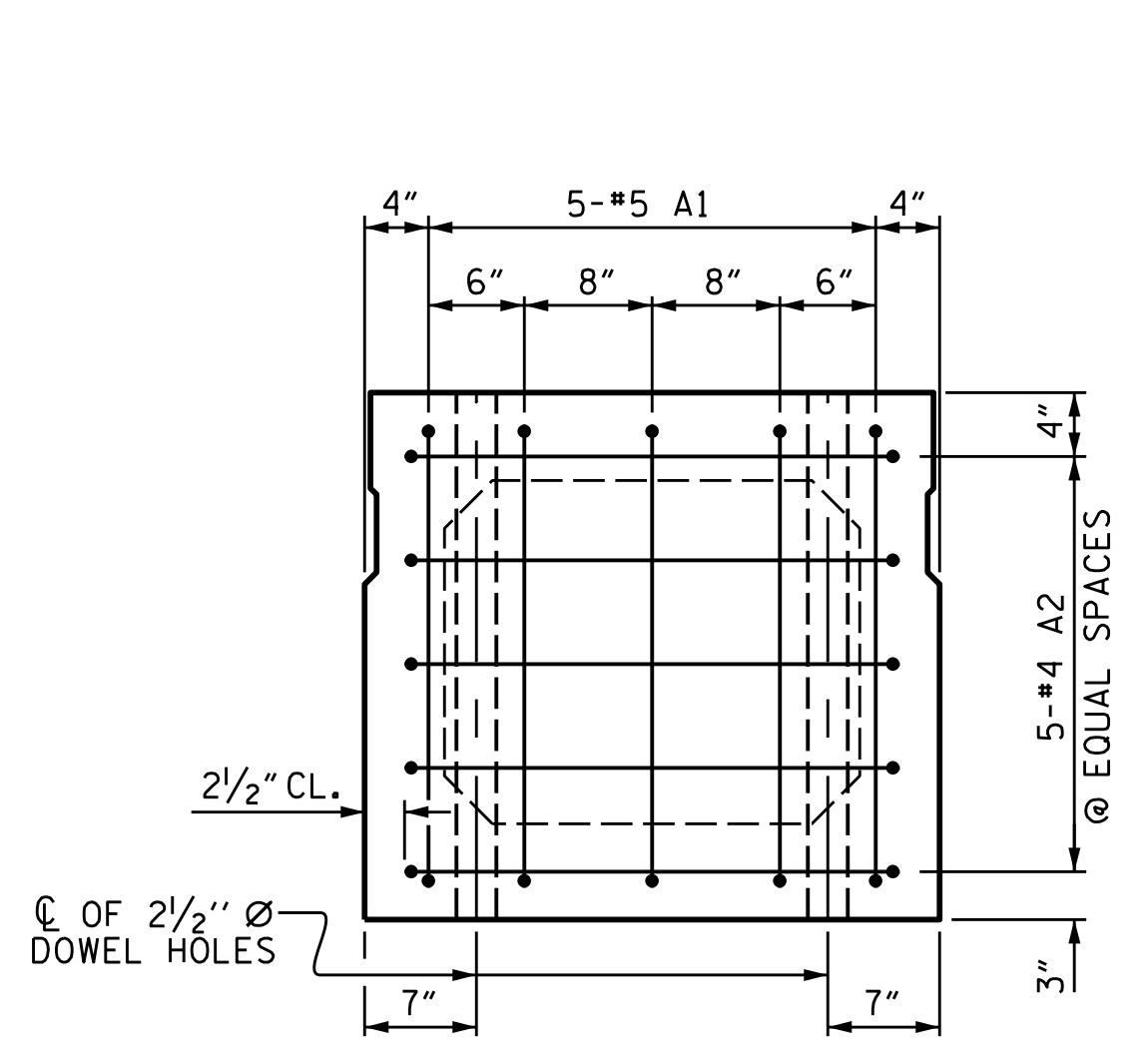
ASSEMBLED BY : J.M. KEPICH DATE : 02/16
 CHECKED BY : L.M. SAMPLES DATE : 04/16
 DRAWN BY : DGE 08/10 REV. 8/14 MAA/TMG
 CHECKED BY : TMG 11/11

DESIGN ENGINEER OF RECORD : L.M. SAMPLES DATE : 05/16

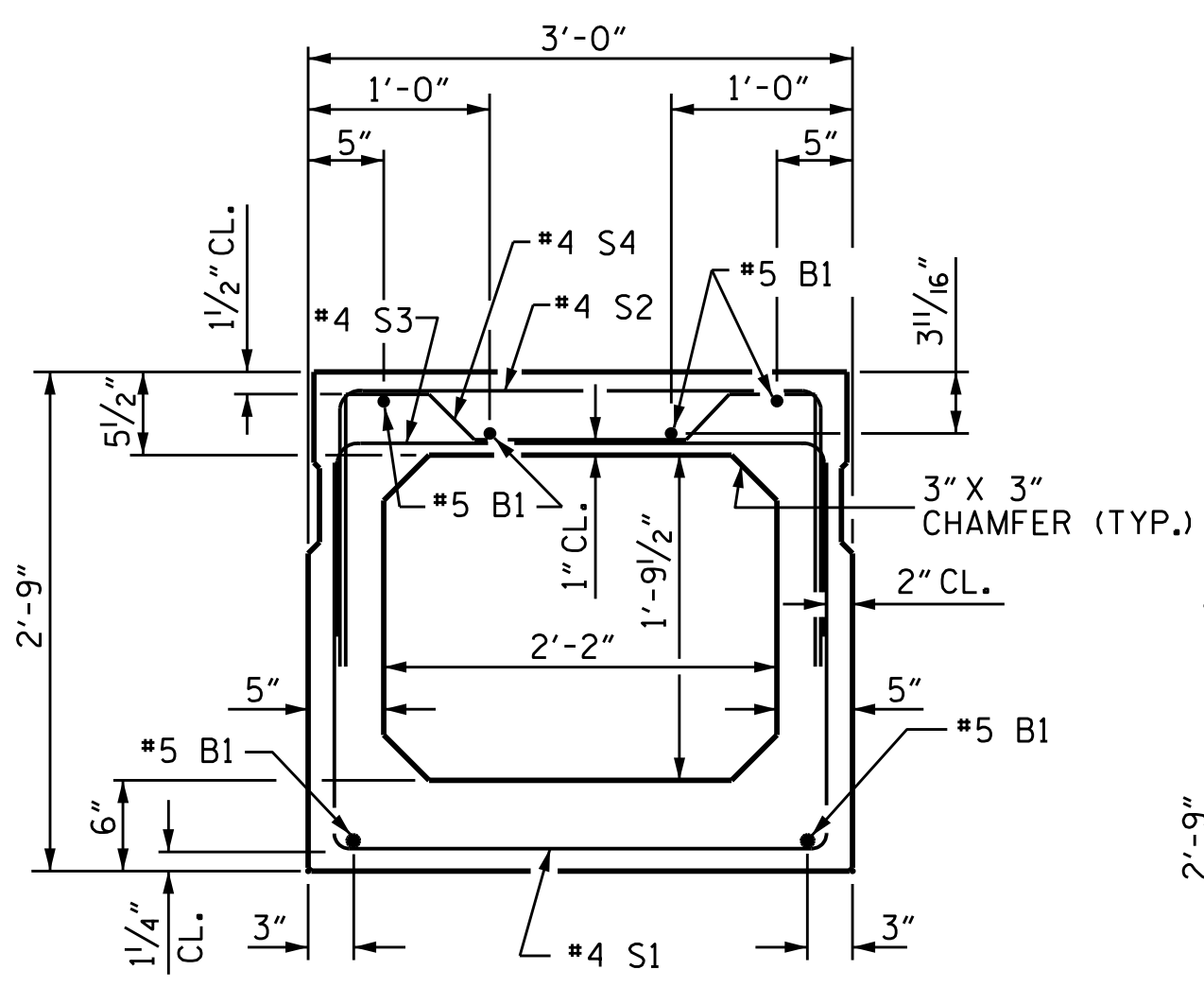
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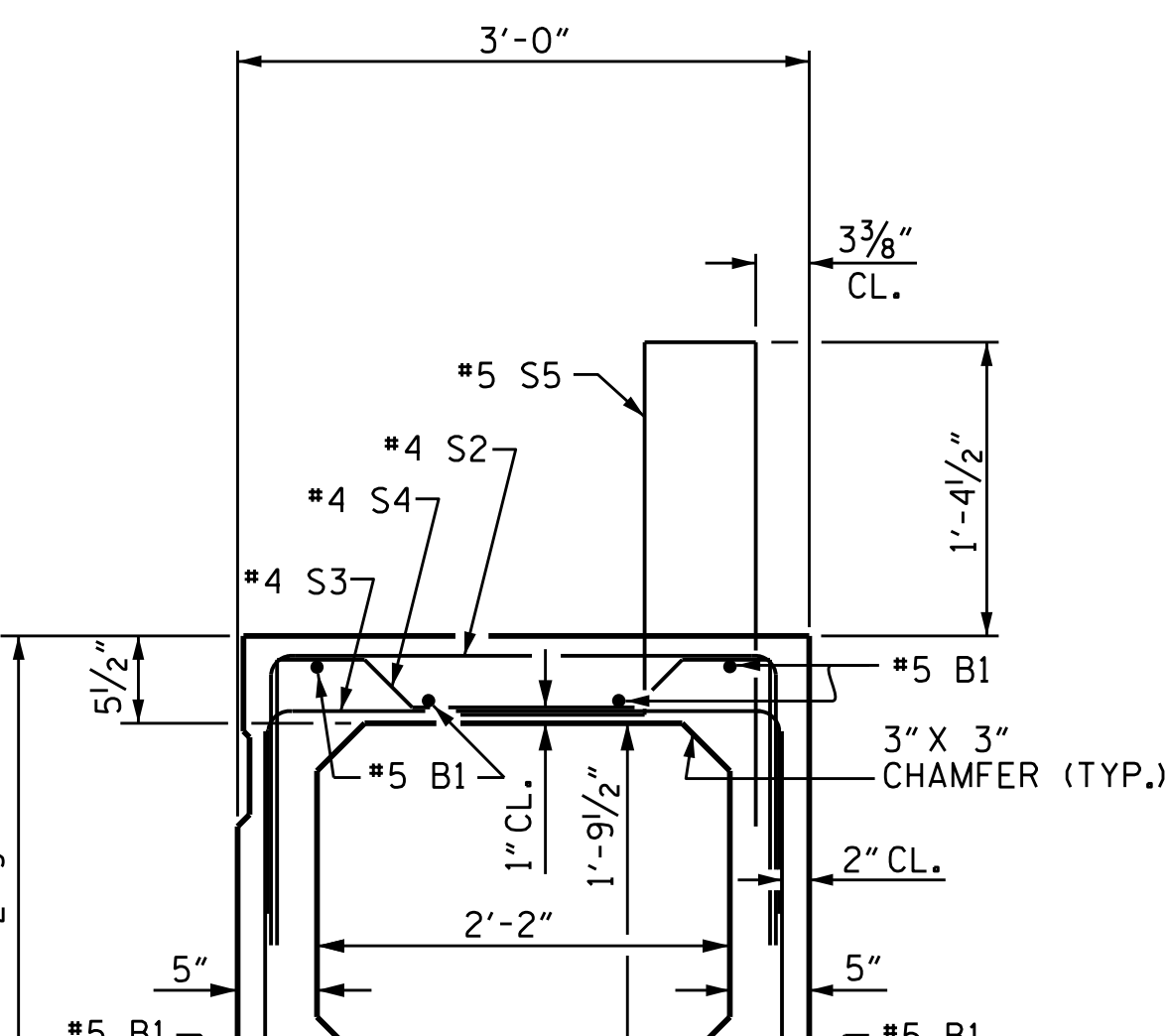
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-07
1			3			TOTAL SHEETS
2			4			24



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

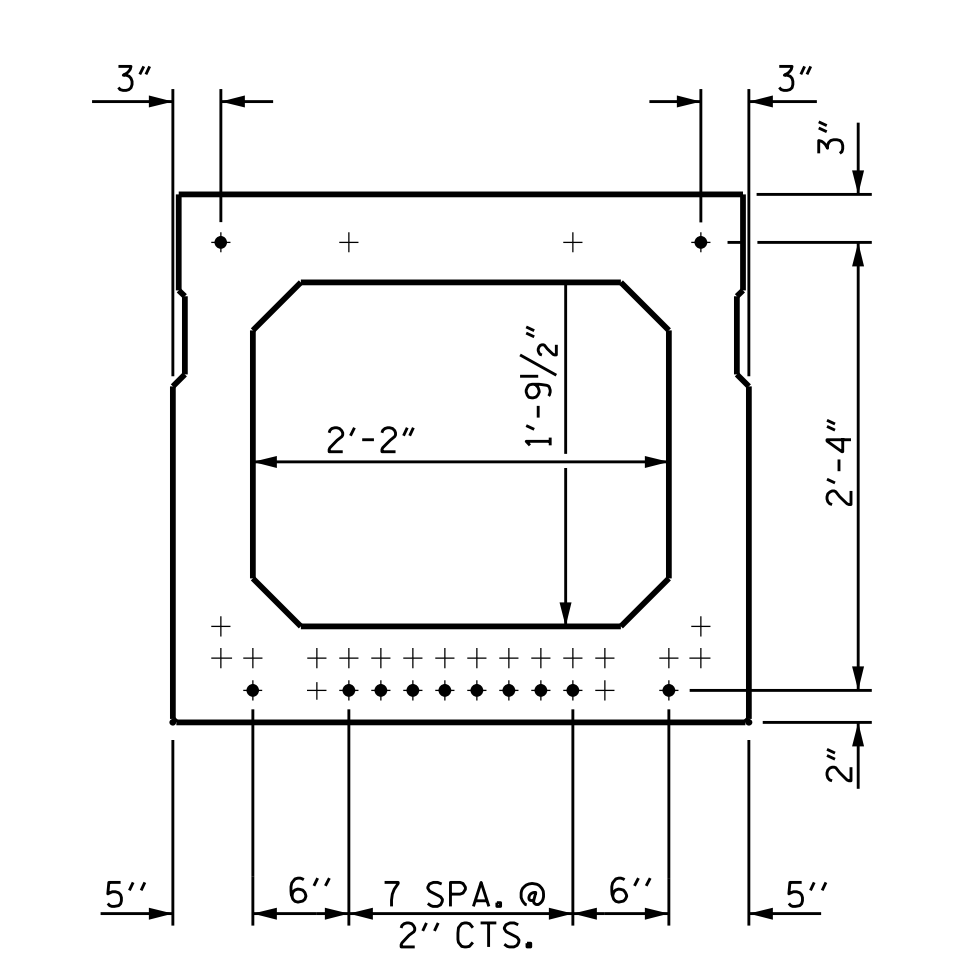


INTERIOR BOX BEAM SECTION
 (STRAND LAYOUT NOT SHOWN)



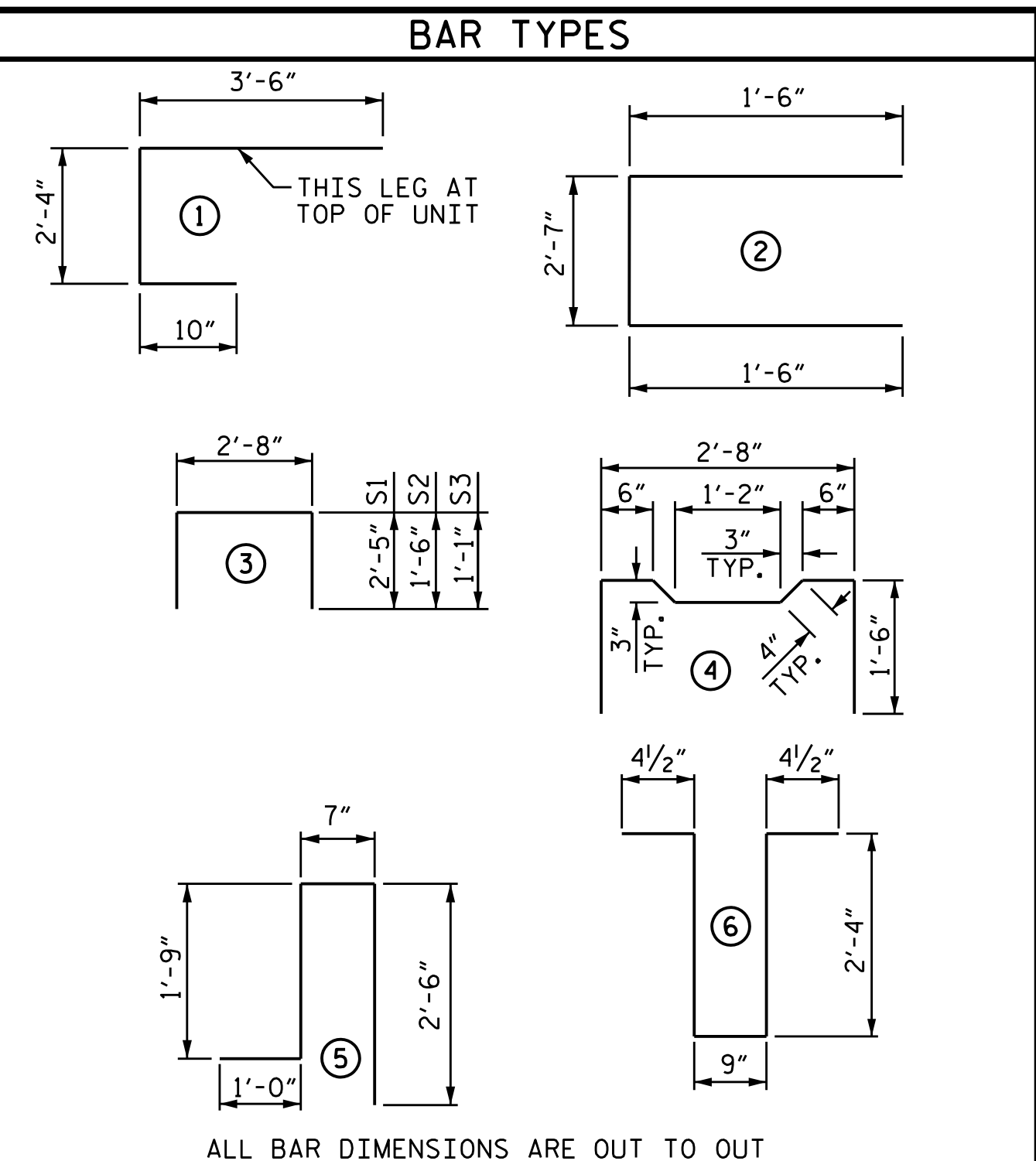
EXTERIOR BOX BEAM SECTION
 (STRAND LAYOUT NOT SHOWN)

0.6" Ø LOW RELAXATION STRAND LAYOUT



TYPICAL STRAND LOCATION
 (12 STRANDS REQUIRED)
DEBONDING LEGEND

● FULLY BONDED STRANDS

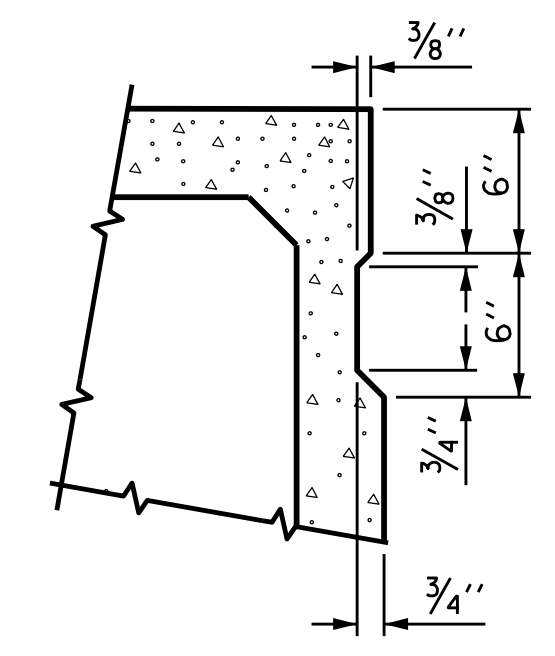


ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE BOX BEAM SECTION

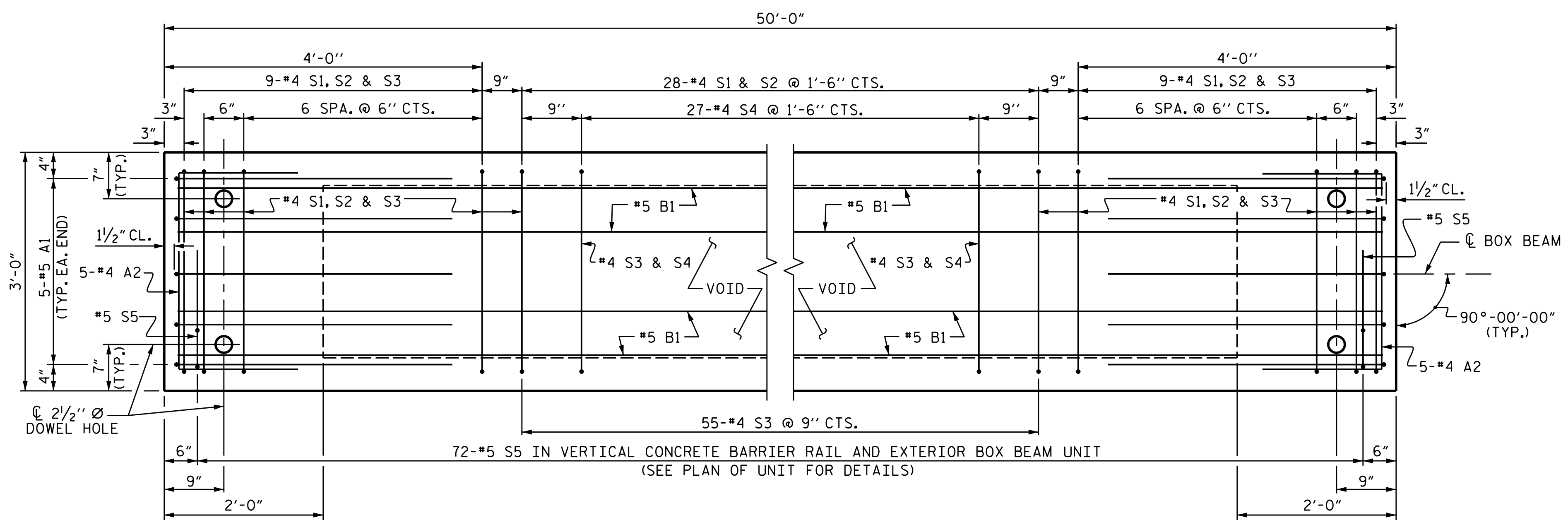
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
A1	10	#5	1	6'-8"	70	6'-8"	70
A2	40	#4	2	5'-7"	149	5'-7"	149
B1	6	#5	STR	49'-8"	311	49'-8"	311
K1	9	#4	6	6'-2"	37	6'-2"	37
K2	6	#4	STR	2'-7"	10	2'-7"	10
S1	46	#4	3	7'-6"	230	7'-6"	230
S2	46	#4	3	5'-8"	174	5'-8"	174
S3	73	#4	3	4'-10"	236	4'-10"	286
S4	27	#4	4	5'-10"	105	5'-10"	105
* S5	72	#5	5	5'-10"	438	--	--
REINFORCING STEEL				1322	LBS.	1322	LBS.
* EPOXY COATED REINF. STEEL				438	LBS.		
5000 P.S.I. CONCRETE				9.2	CU. YDS.	9.1	CU. YDS.
0.6" Ø L.R. STRANDS				No. 12		No. 12	

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



SHEAR KEY DETAIL

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



PLAN OF BOX BEAM

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

PROJECT NO. B-5398
BURKE COUNTY
 STATION: 16+45.00 -L-
 SHEET 4 OF 7

DocuSigned by:
Lisa M. Samples
 5683D096A9B449C...
 7/4/2016



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

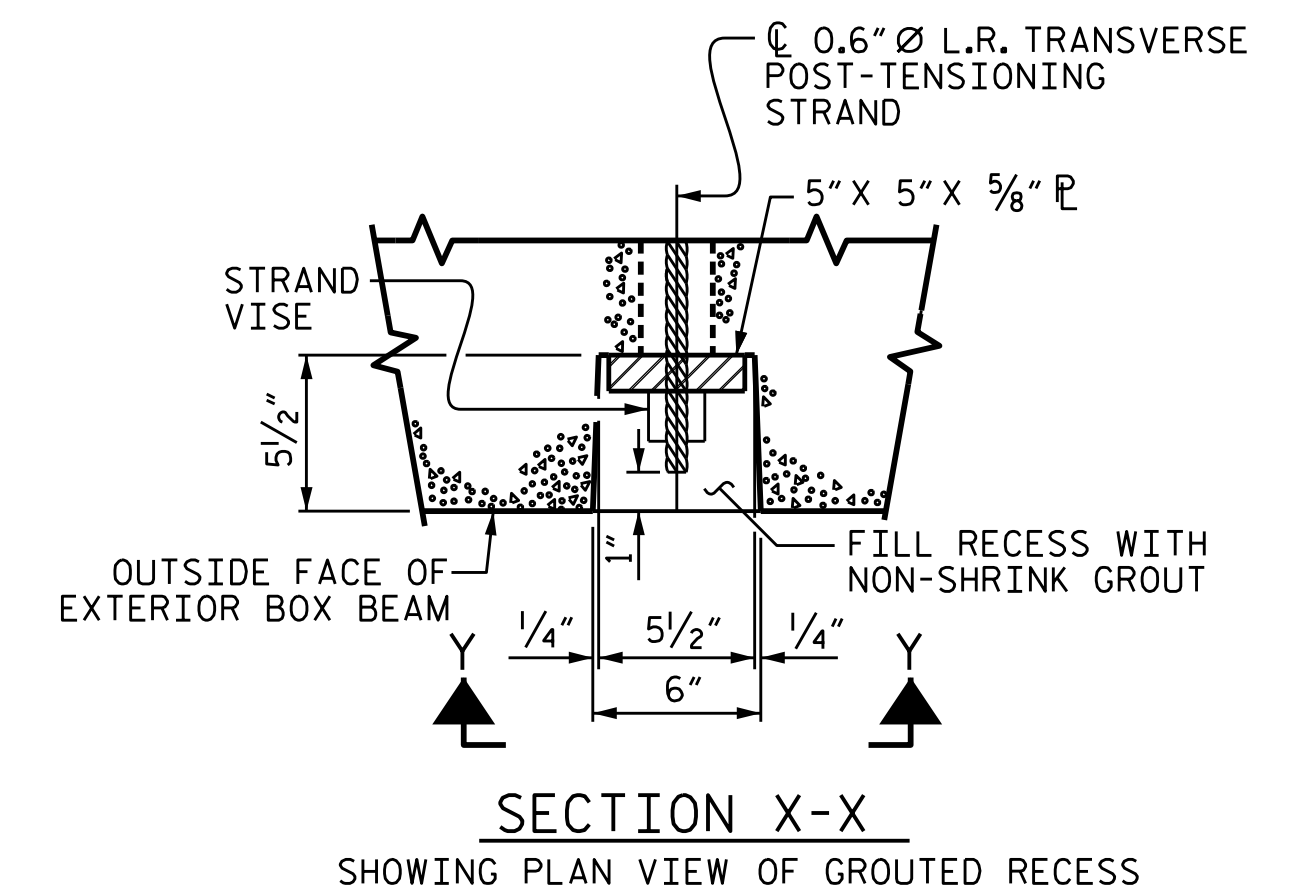
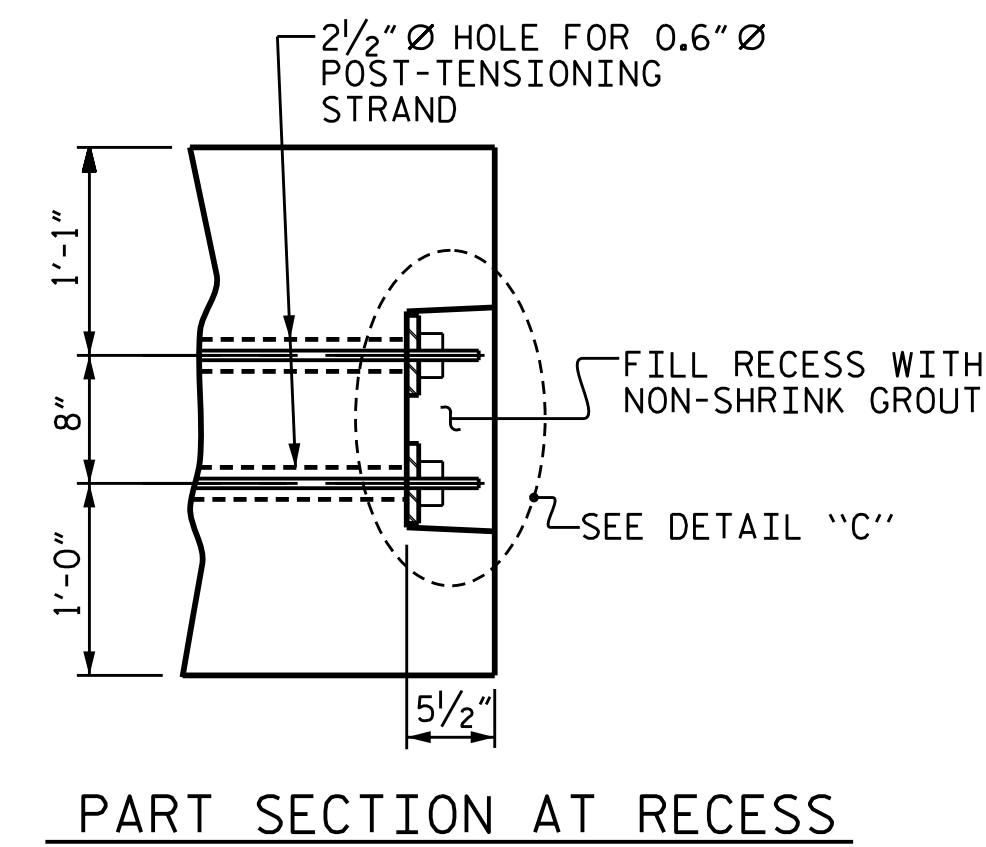
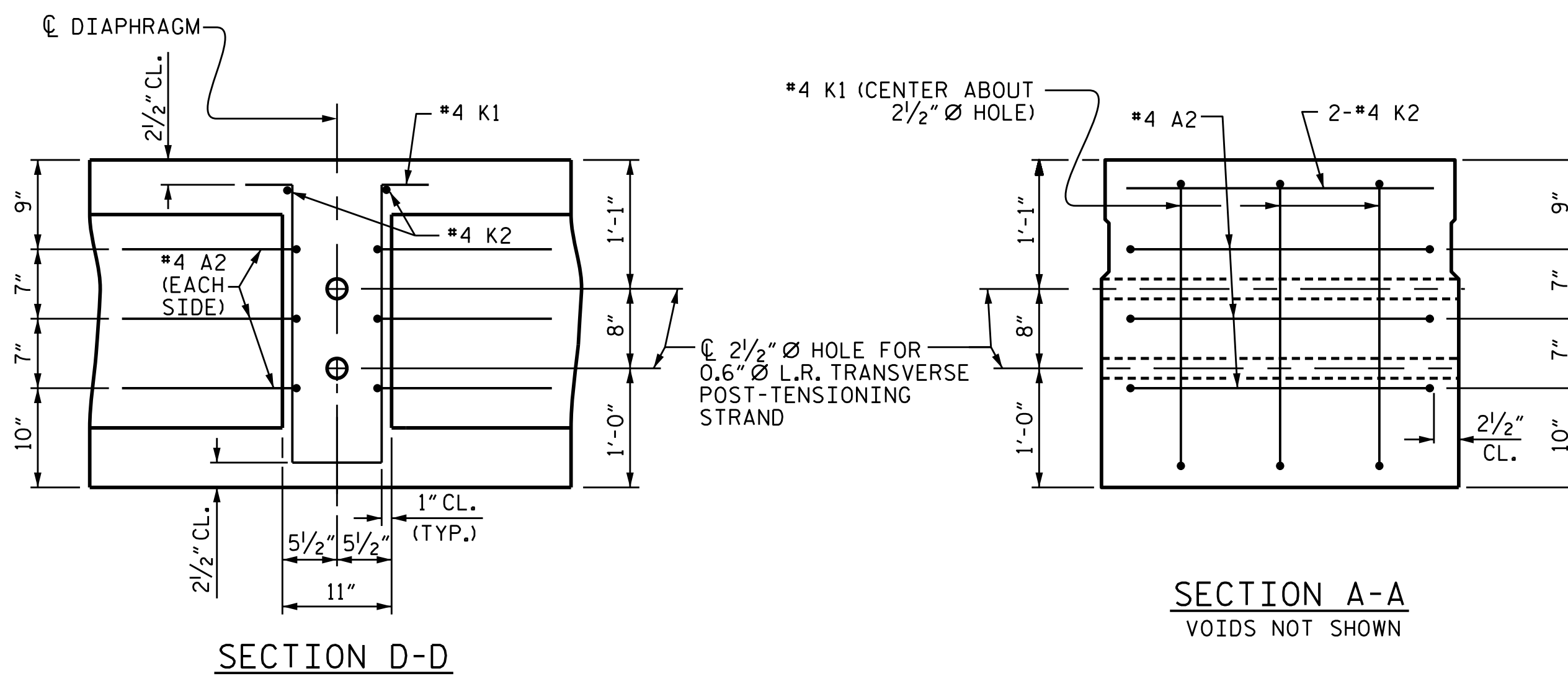
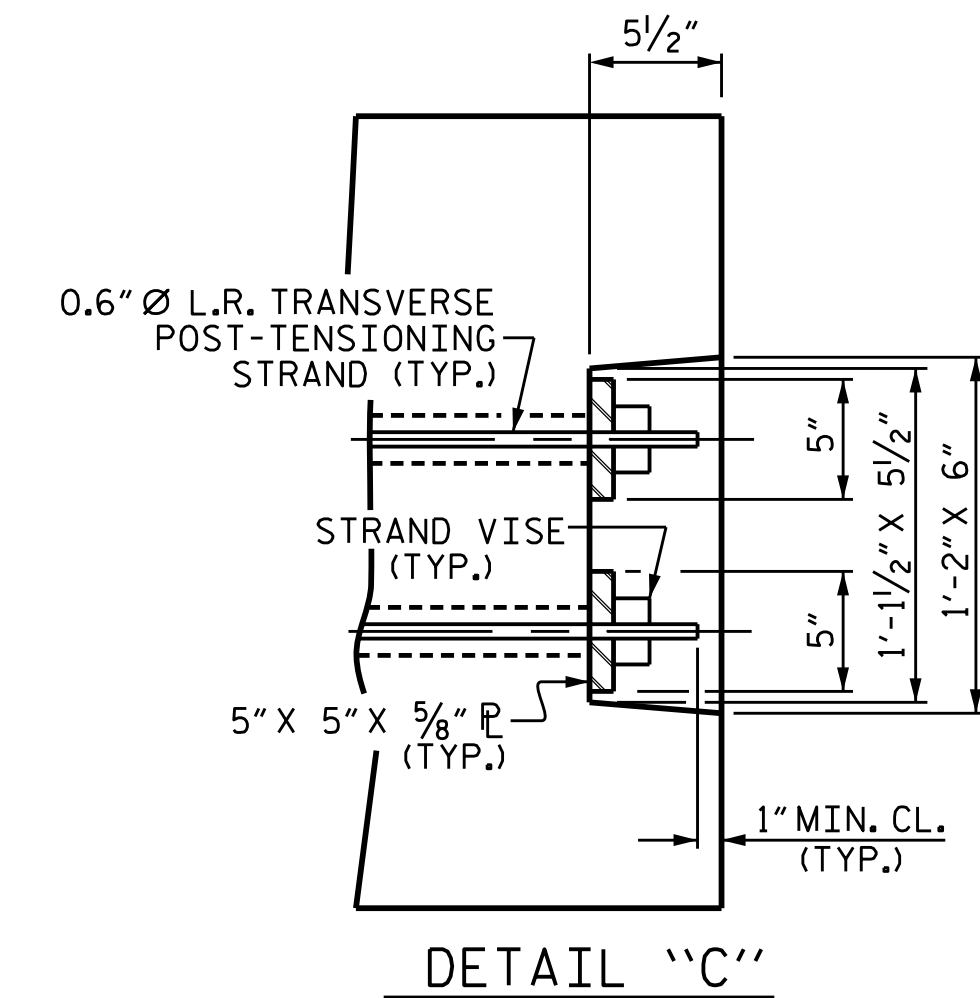
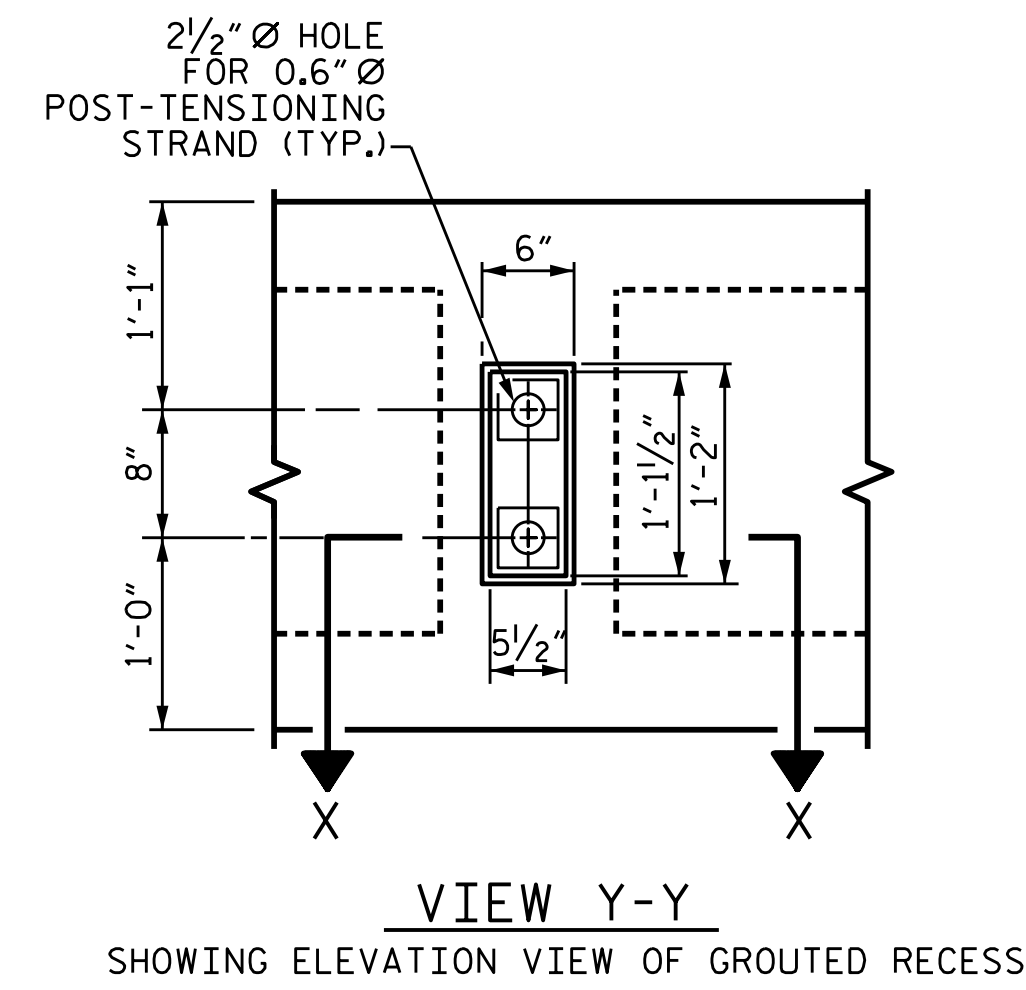
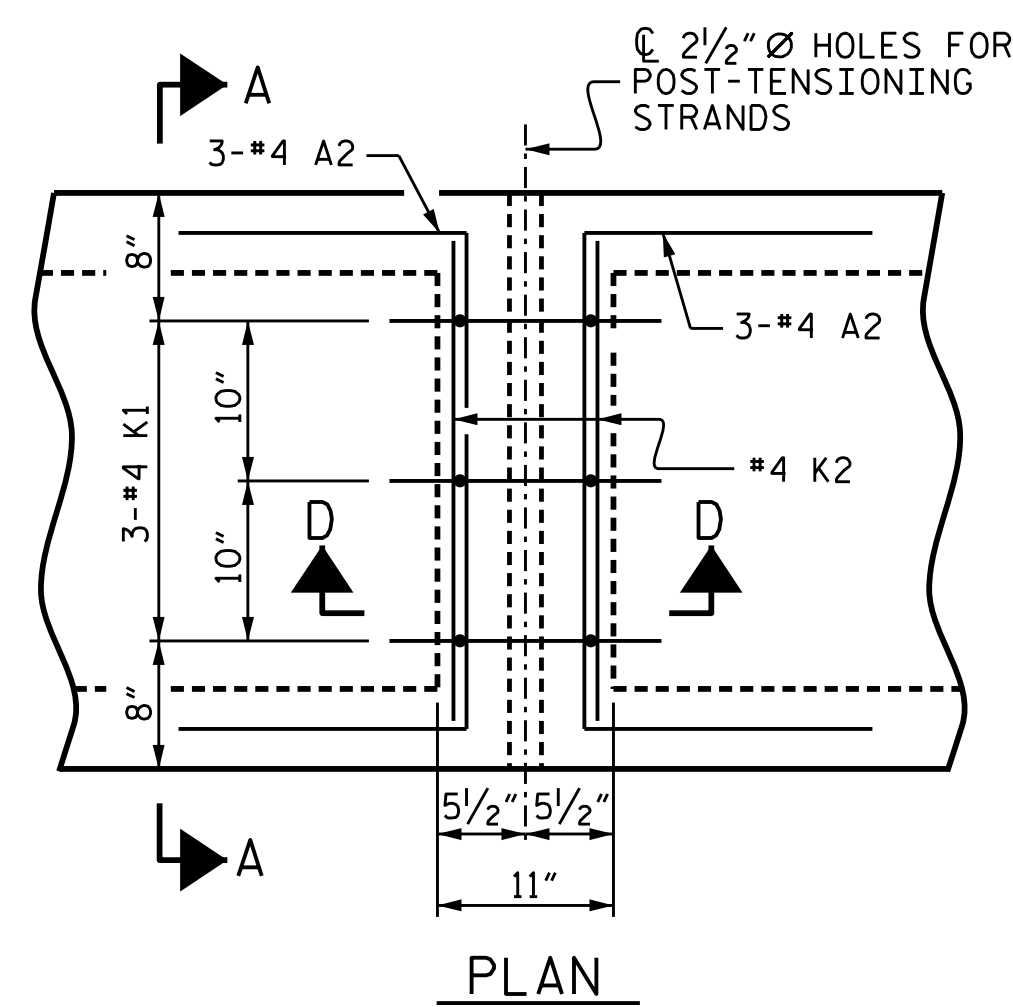
DRAWN BY : J.M. KEPICH DATE : 02/16
 CHECKED BY : L.M. SAMPLES DATE : 04/16
 DESIGN ENGINEER OF RECORD : L.M. SAMPLES DATE : 05/16

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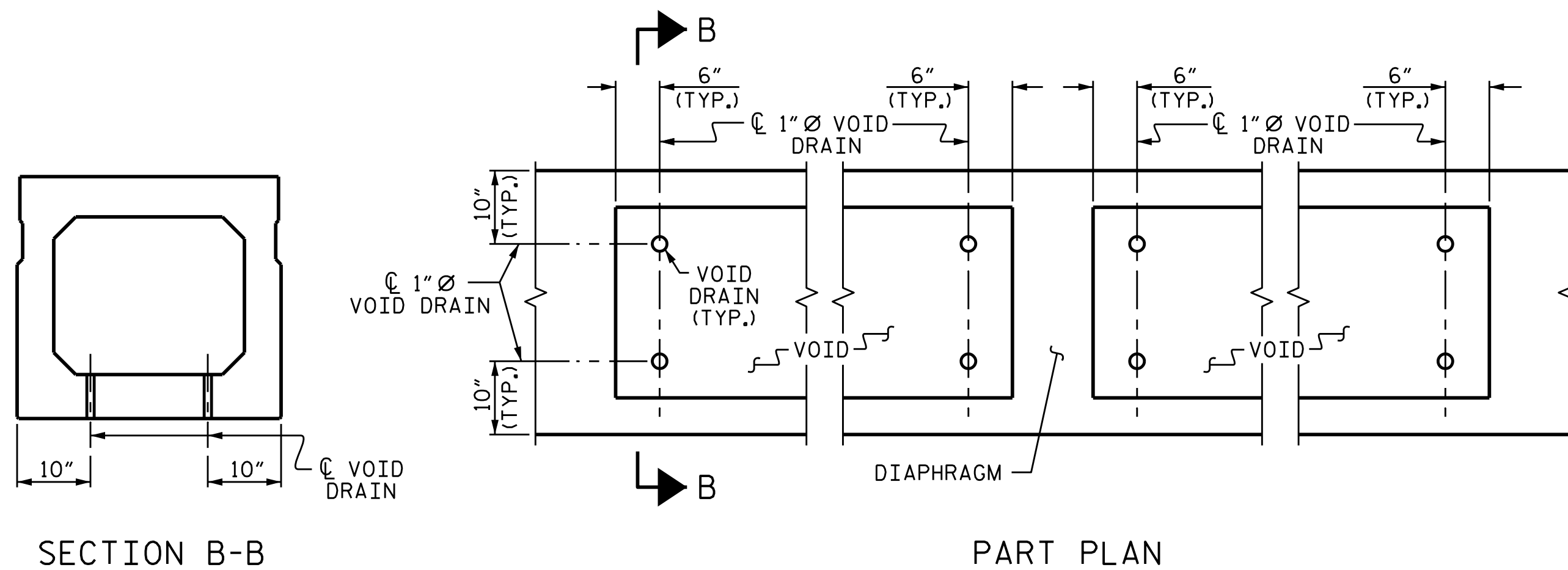
SHEET NO. S-08
 TOTAL SHEETS 24



DOUBLE DIAPHRAGM DETAILS

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

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



VOID DRAIN DETAILS

(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)

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

** INCLUDES FUTURE WEARING SURFACE

DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" x 2'-9"
50' BOX BEAM UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1/2" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1/8" ↓
FINAL CAMBER	3/8" ↑

** INCLUDES FUTURE WEARING SURFACE

PROJECT NO. B-5398

BURKE COUNTY

STATION: 16+45.00 -L-

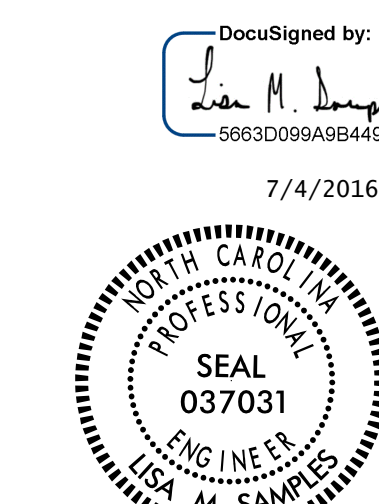
SHEET 6 OF 7

ASSEMBLED BY : J.M. KEPICH DATE : 02/16
 CHECKED BY : L.M. SAMPLES DATE : 04/16
 DRAWN BY : DGE 10/11 REV. 8/14 MAA/TMG
 CHECKED BY : TMG 11/11

DESIGN ENGINEER OF RECORD : L.M. SAMPLES DATE : 05/16



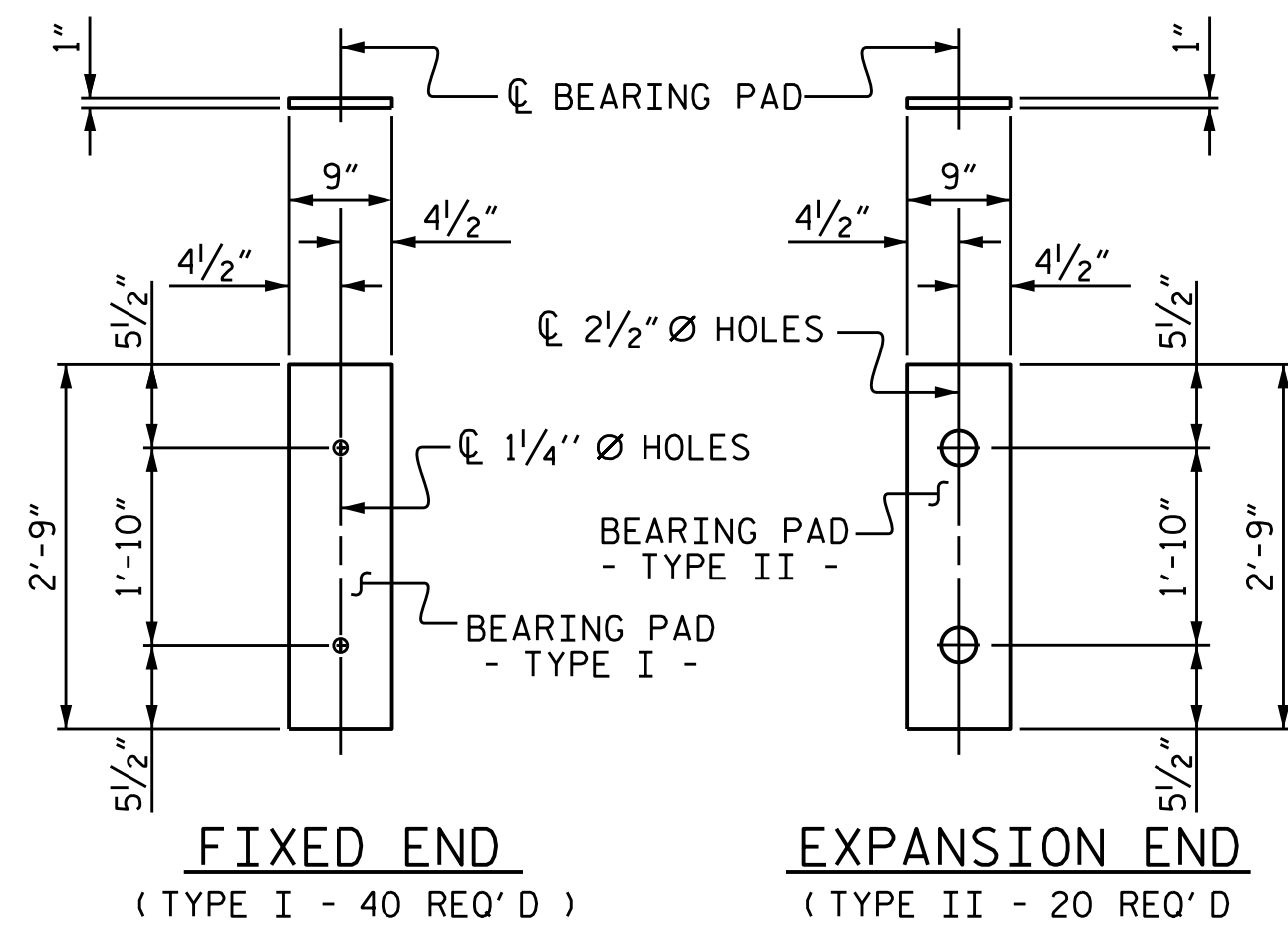
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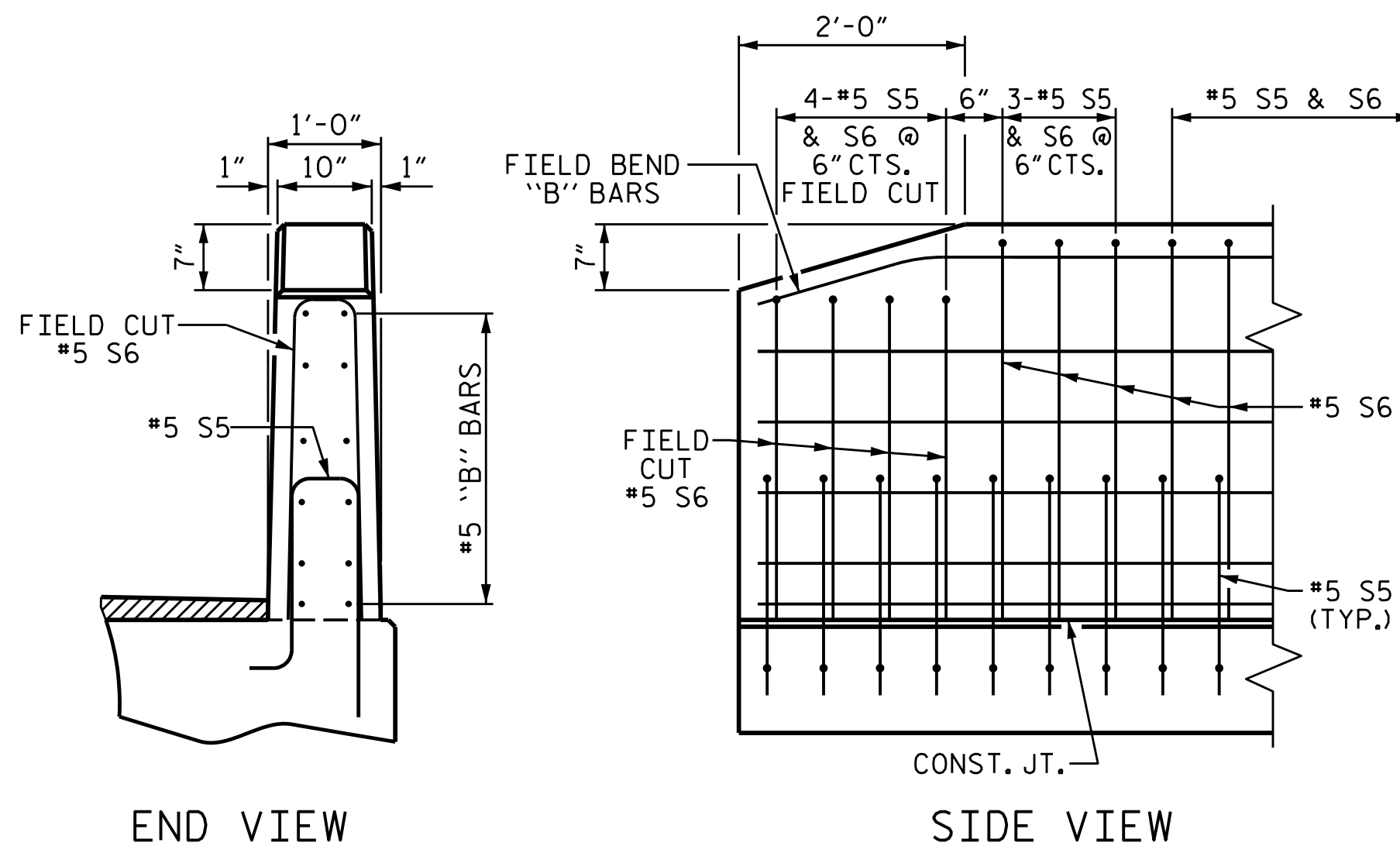
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS 24
2			4			

STD.NO.33PCBB5_90S



ELASTOMERIC BEARING DETAILS

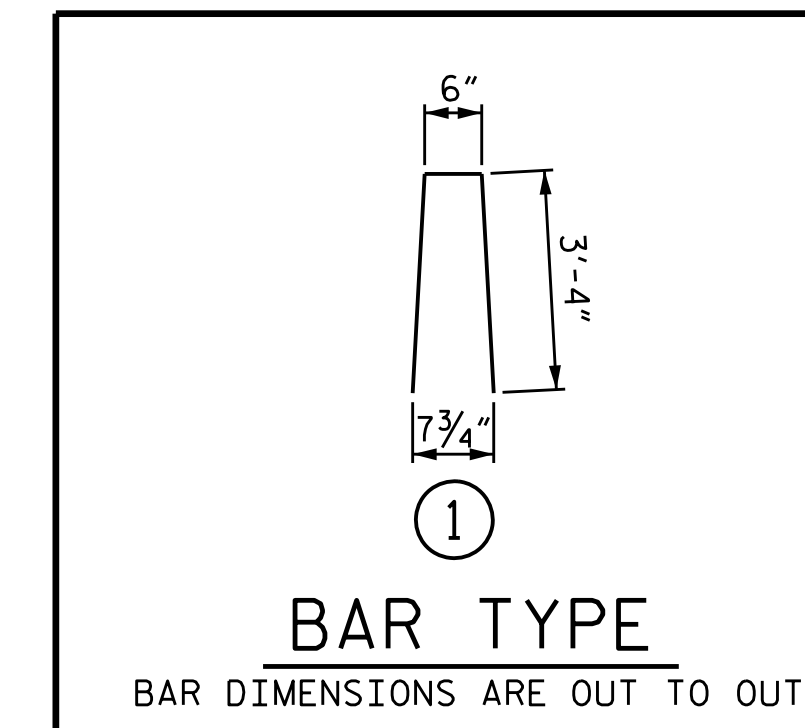
ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.



END OF RAIL DETAILS

BOX BEAM UNITS REQUIRED

SPANS A & C	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR B.B.	4	50'-0"	200'-0"
INTERIOR B.B.	16	50'-0"	800'-0"
SPAN B			
EXTERIOR B.B.	2	90'-0"	180'-0"
INTERIOR B.B.	8	90'-0"	720'-0"
TOTAL	30		1900'-0"

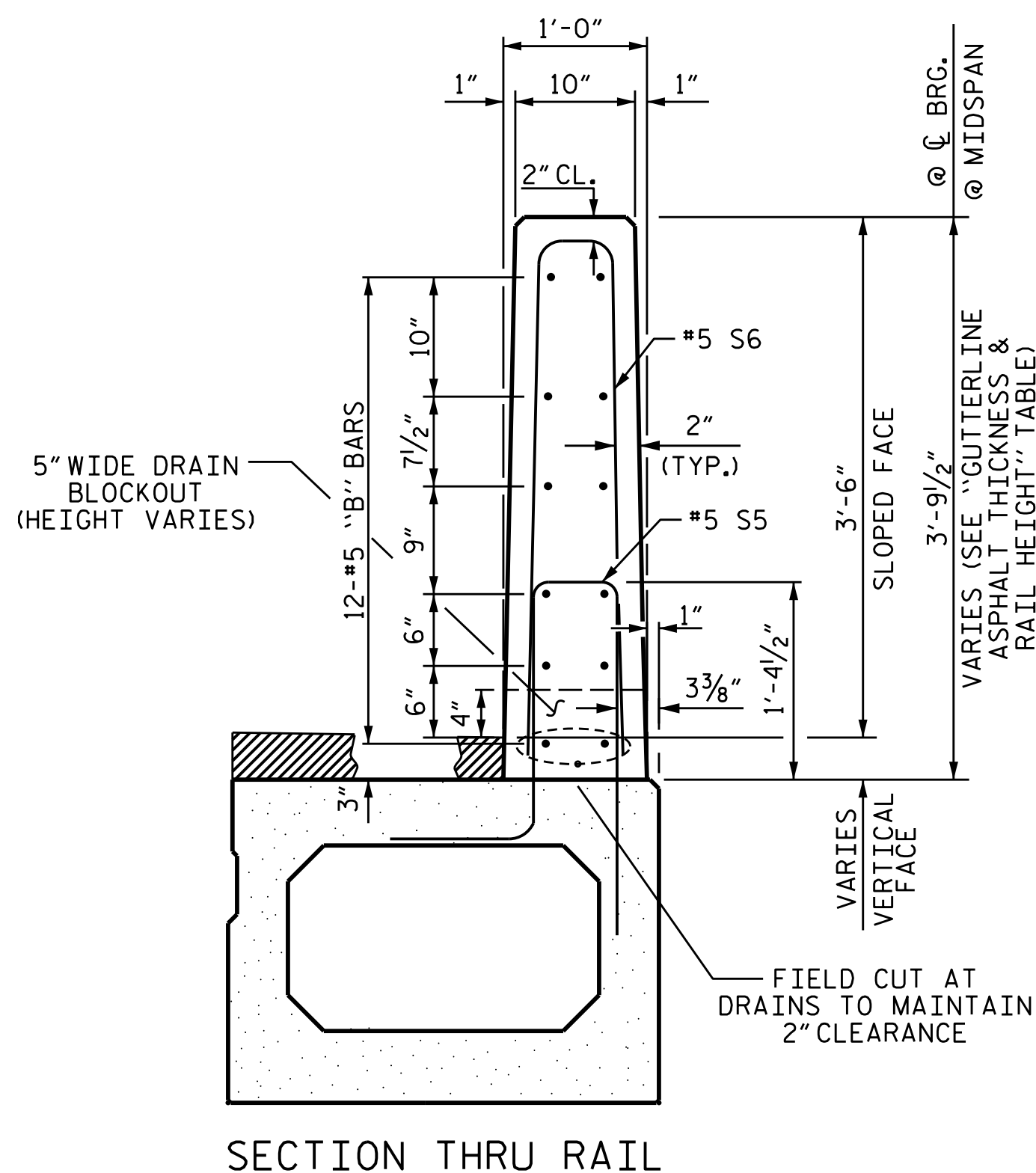


BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

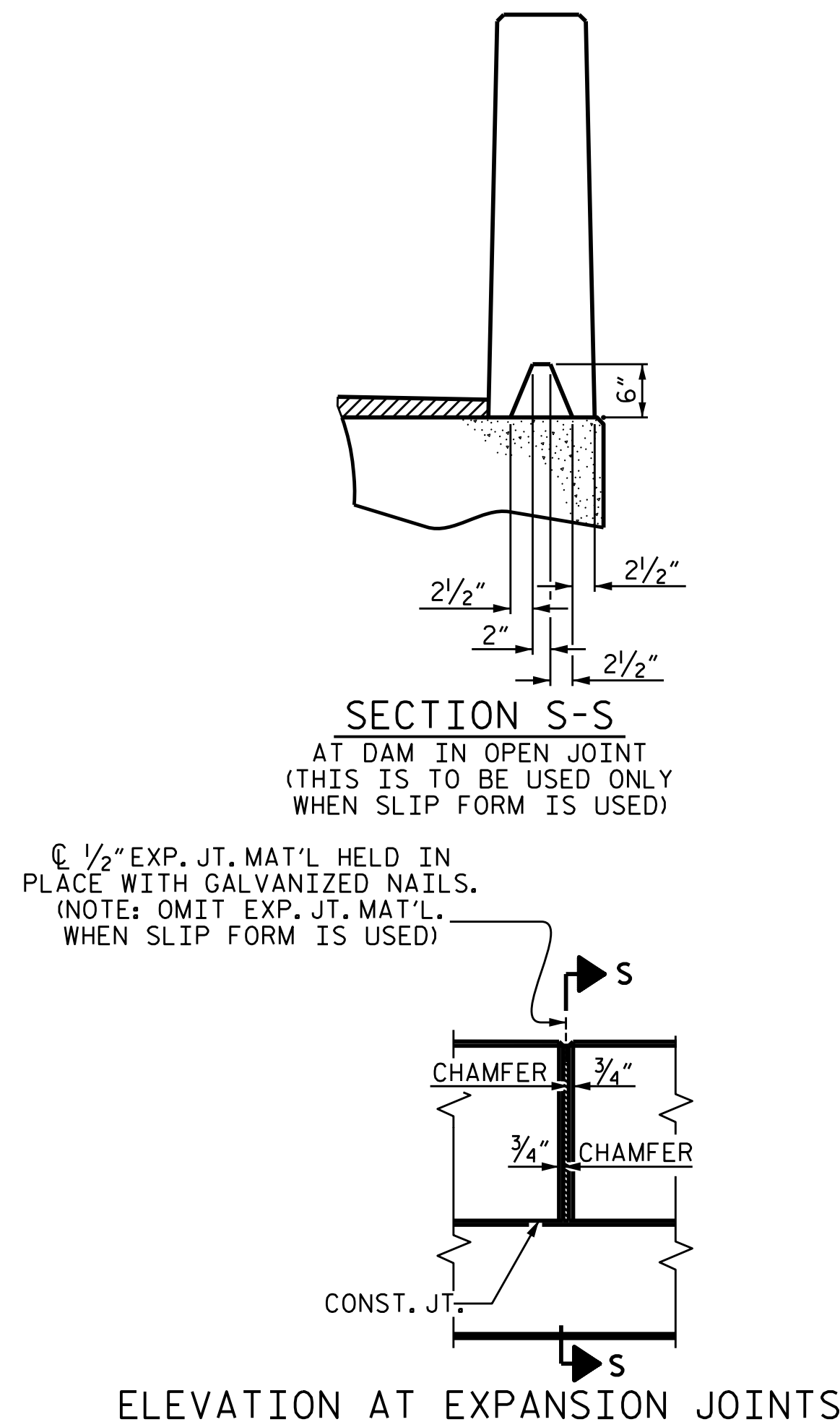
BAR	BARS PER PAIR OF EXTERIOR UNITS	SIZE	TYPE	LENGTH	WEIGHT
90' UNIT					
*B10	96	#5	STR	22'-1"	2211
*S6	252	#5	1	7'-2"	1884
50' UNIT					
*B7	96	#5	STR	24'-7"	2461
*S6	288	#5	1	7'-2"	2153
*EPOXY COATED REINFORCING STEEL			LBS.		8709
CLASS AA CONCRETE			CU.YDS.		49.2
TOTAL VERTICAL CONCRETE BARRIER RAIL			LN. FT.		380.0

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT

	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
90' UNITS	1/2"	3'-7 1/2"
50' UNITS	3/8"	3'-9 1/8"

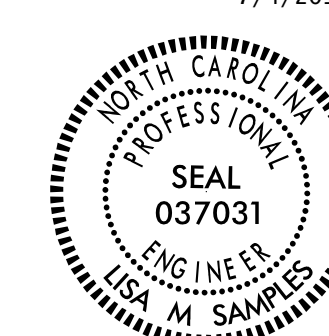


VERTICAL CONCRETE BARRIER RAIL DETAILS



PROJECT NO. B-5398
BURKE COUNTY
STATION: 16+45.00 -L-
SHEET 7 OF 7

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5663D099A9B449C...



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 2'-9"
PRESTRESSED CONCRETE
BOX BEAM UNIT

ASSEMBLED BY : J.M. KEPICH DATE : 02/16
CHECKED BY : L.M. SAMPLES DATE : 04/16
DRAWN BY : DGE 10/11 REV. 4/14 MAA/TMG
CHECKED BY : TMG 11/11
DESIGN ENGINEER OF RECORD : L.M. SAMPLES DATE : 05/16



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1			3			TOTAL SHEETS 24
2			4			

NOTES

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

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

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

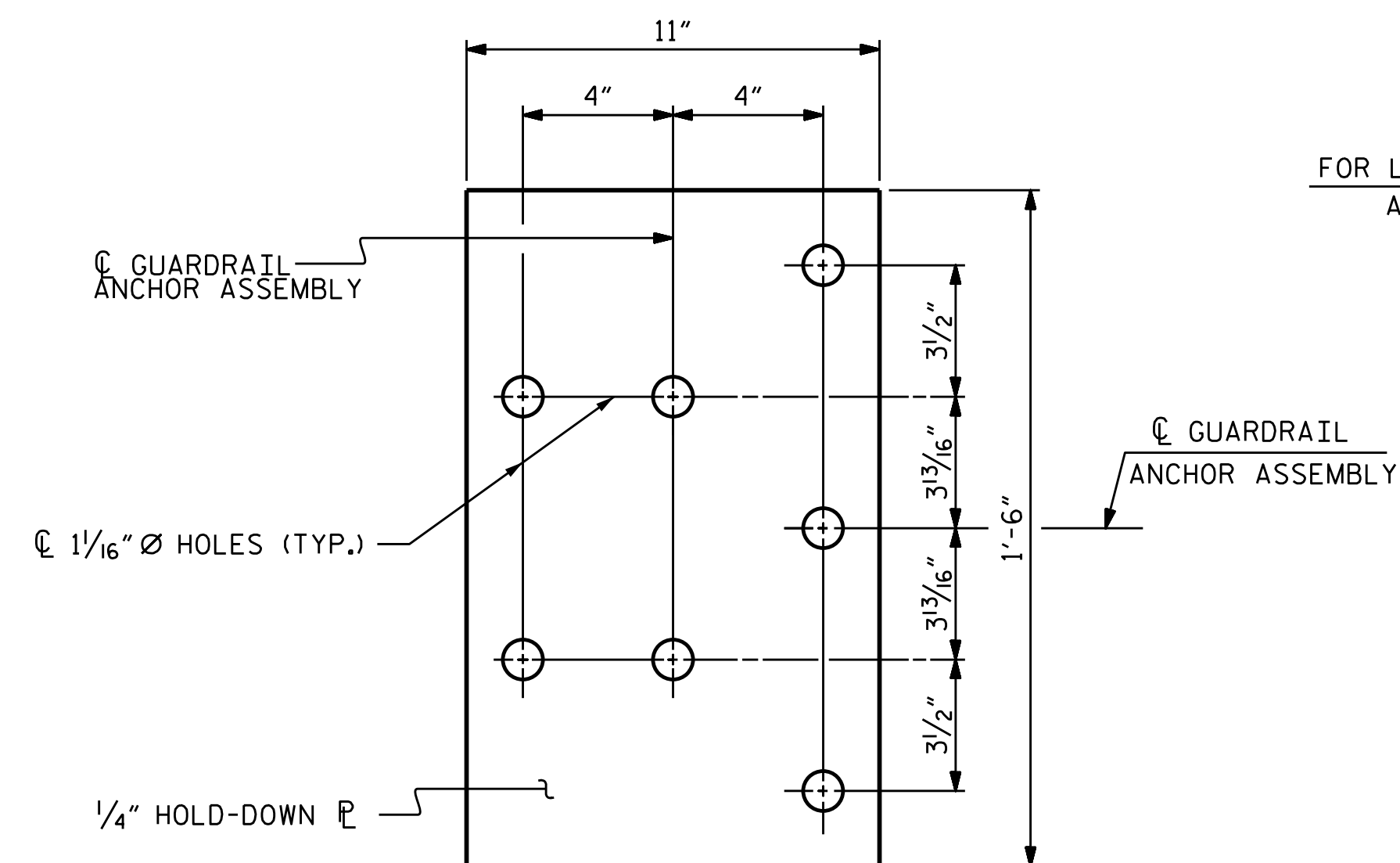
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

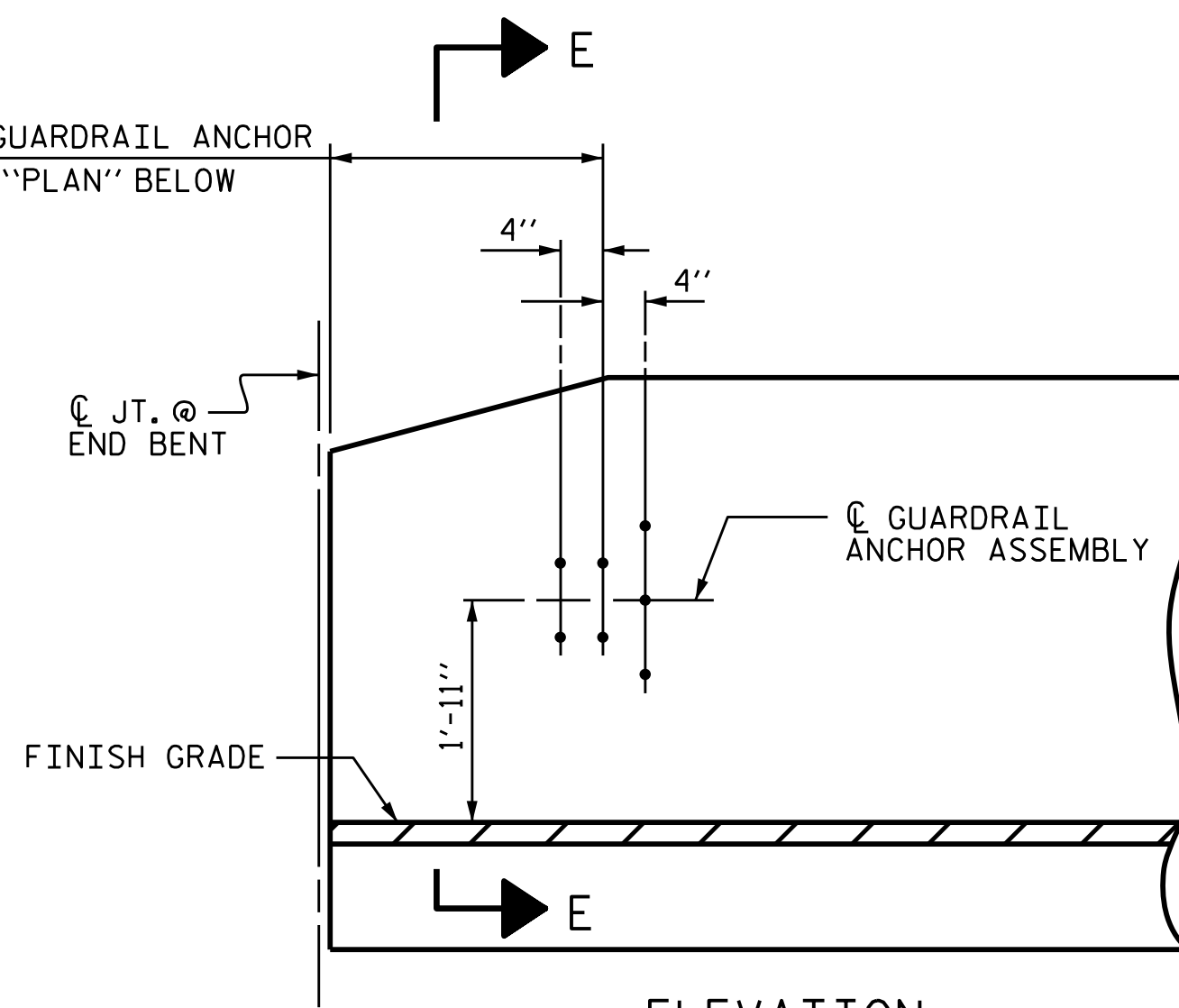
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

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

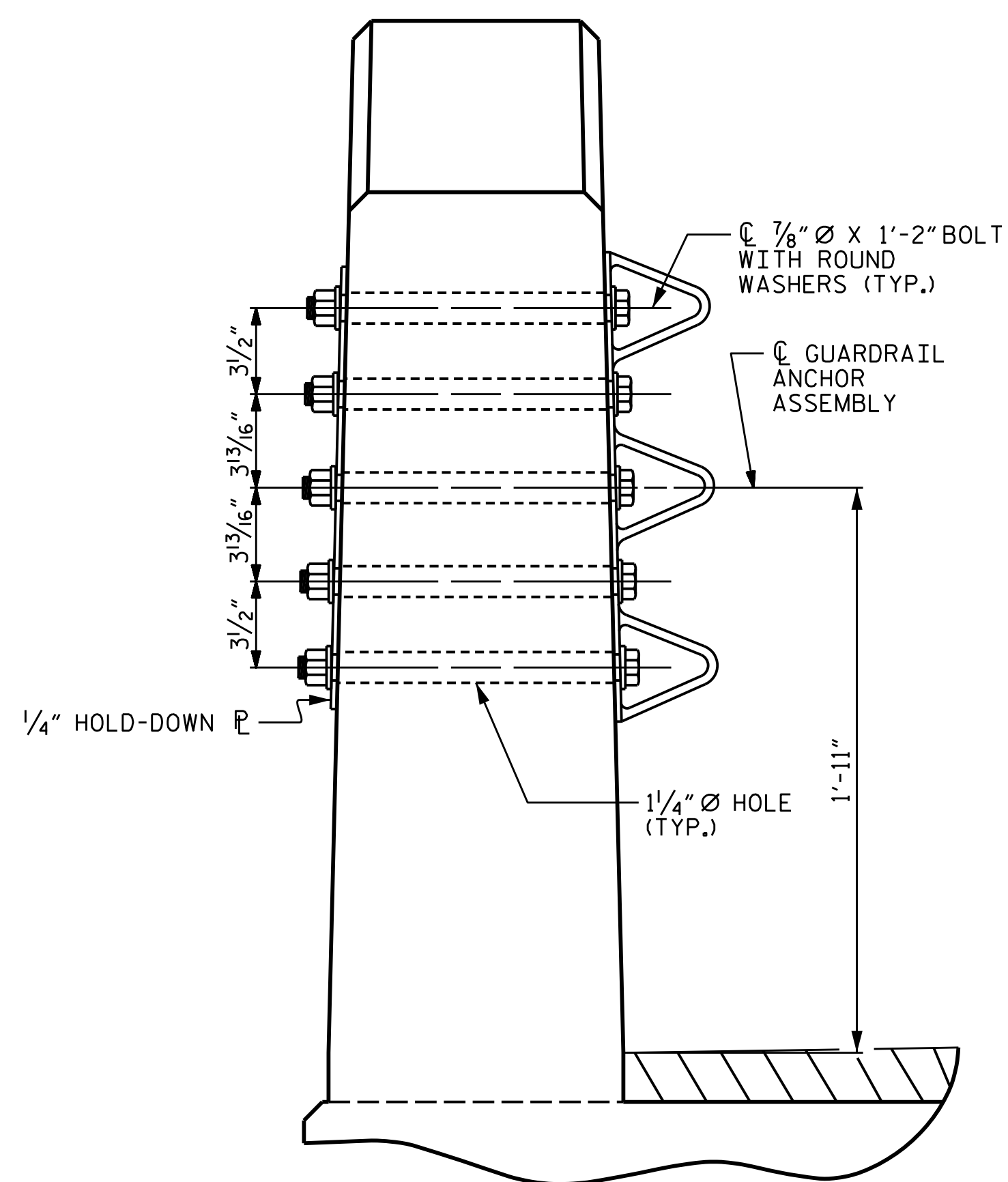


PLAN

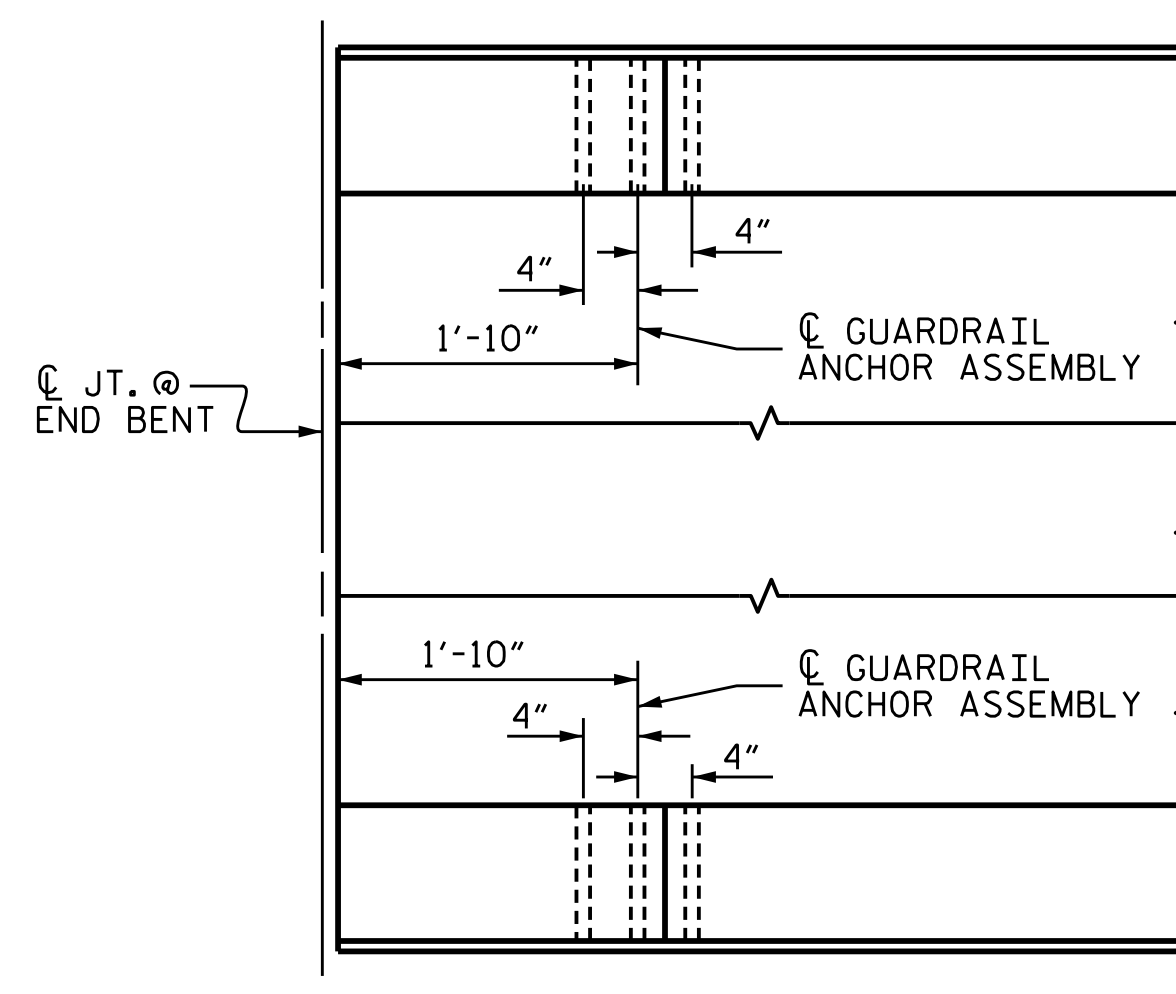
FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW



ELEVATION



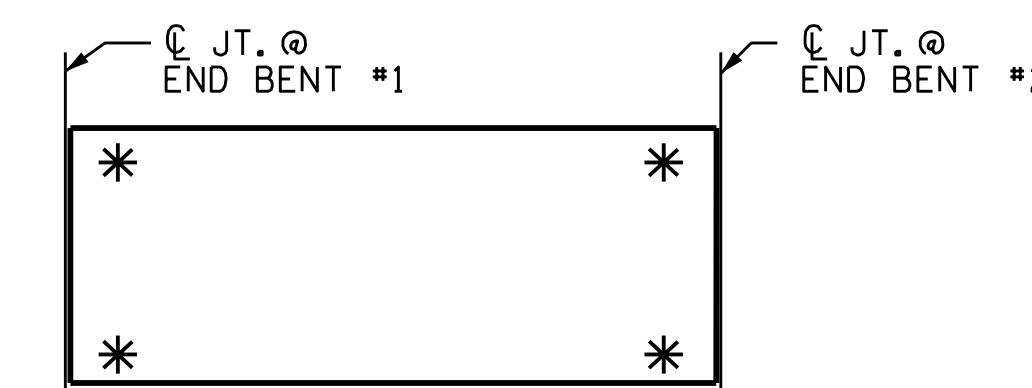
SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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



SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-5398
BURKE COUNTY
 STATION: 16+45.00 -L-

ASSEMBLED BY : J.M. KEPICH DATE : 02/16
 CHECKED BY : L.M. SAMPLES DATE : 04/16

DRAWN BY : MAA 5/10 REV. 12/5/11 MAA/GM
 CHECKED BY : GM 5/10 REV. 6/13 MAA/GM
 REV. 1/15 MAA/GM

DESIGN ENGINEER OF RECORD : L.M. SAMPLES DATE : 05/16



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 Suite 430
 Raleigh, NC 27606
 NC License Number : C-3239

DocuSigned by:
 Lisa M. Samples
 5663D099A8B449C...
 7/4/2016



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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS 24
2			4			

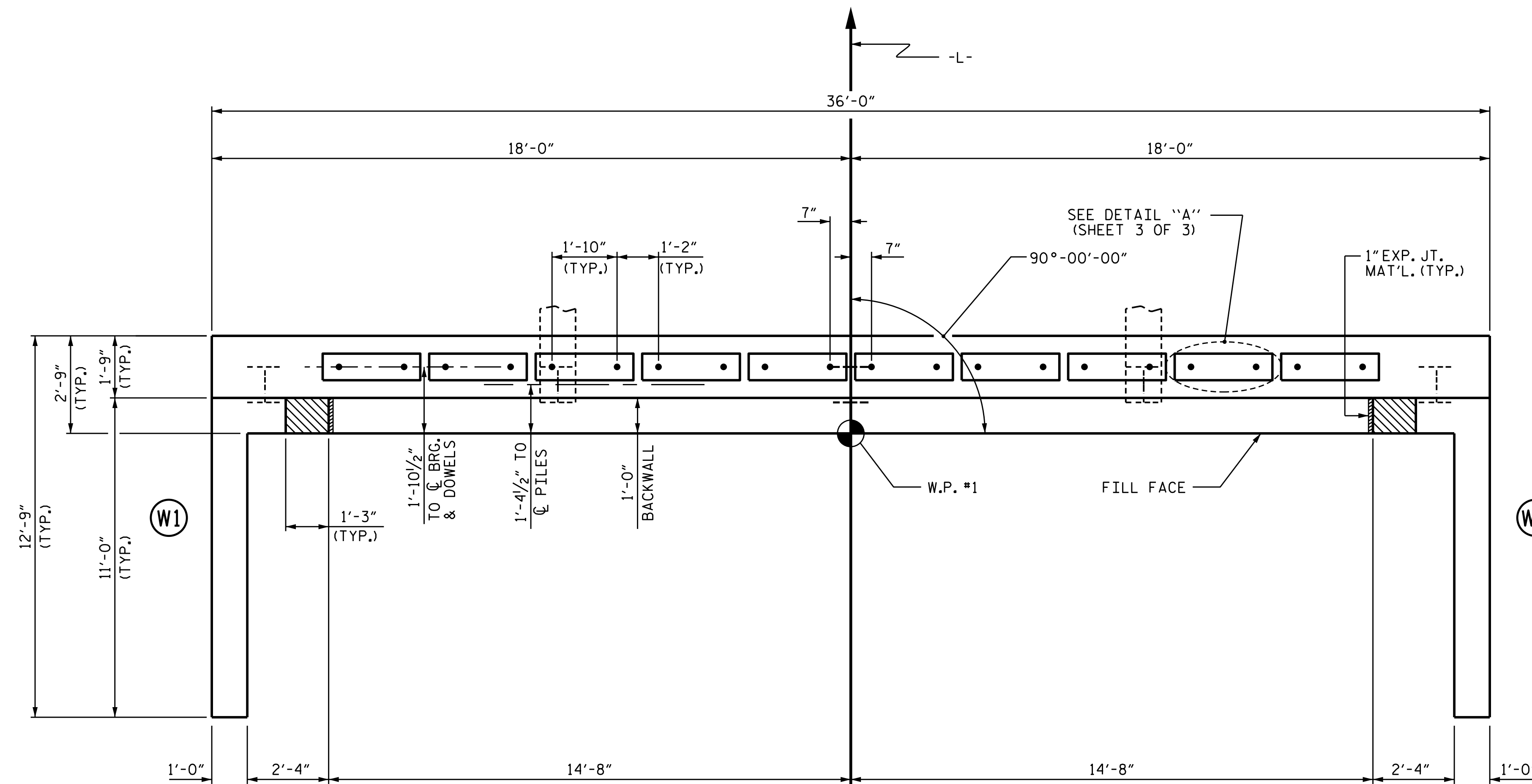
NOTES

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

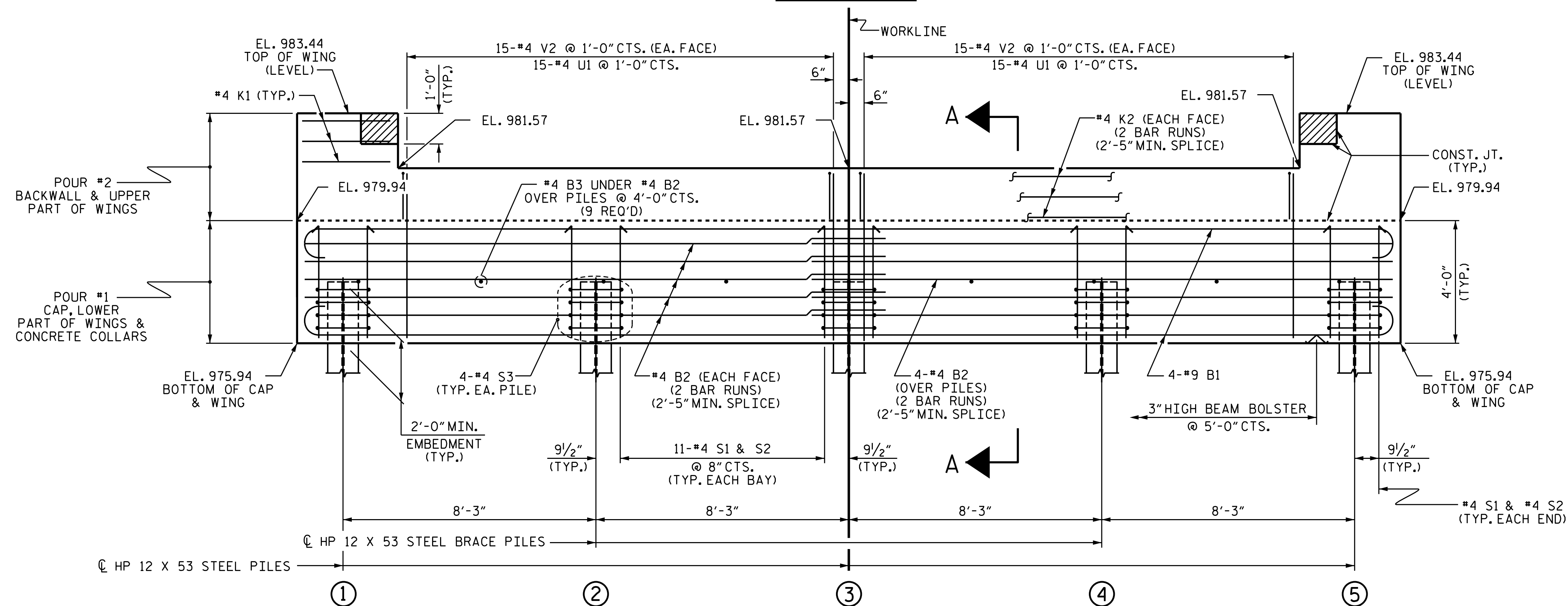
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

FOR WING DETAILS, SEE SHEET 2 OF 3.



PLAN



ELEVATION

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

PROJECT NO. B-5398

BURKE COUNTY

STATION: 16+45.00 -L-

SHEET 1 OF 3

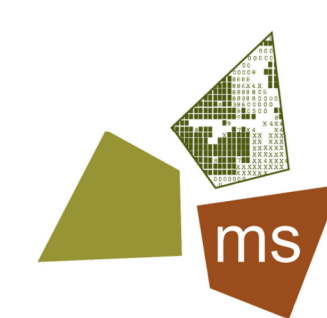
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE

END BENT No. 1

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7/4/2016



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REVISIONS

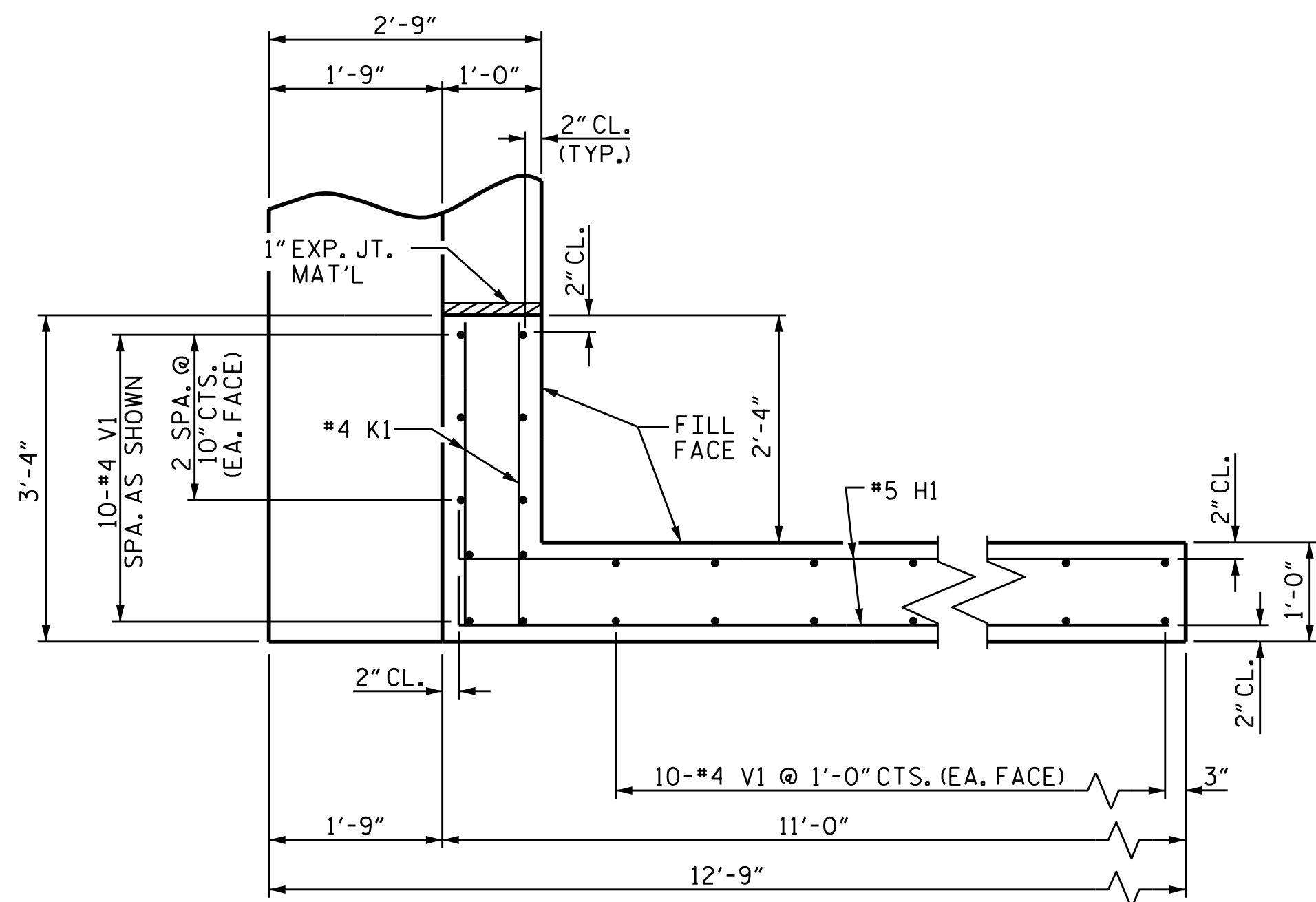
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-13

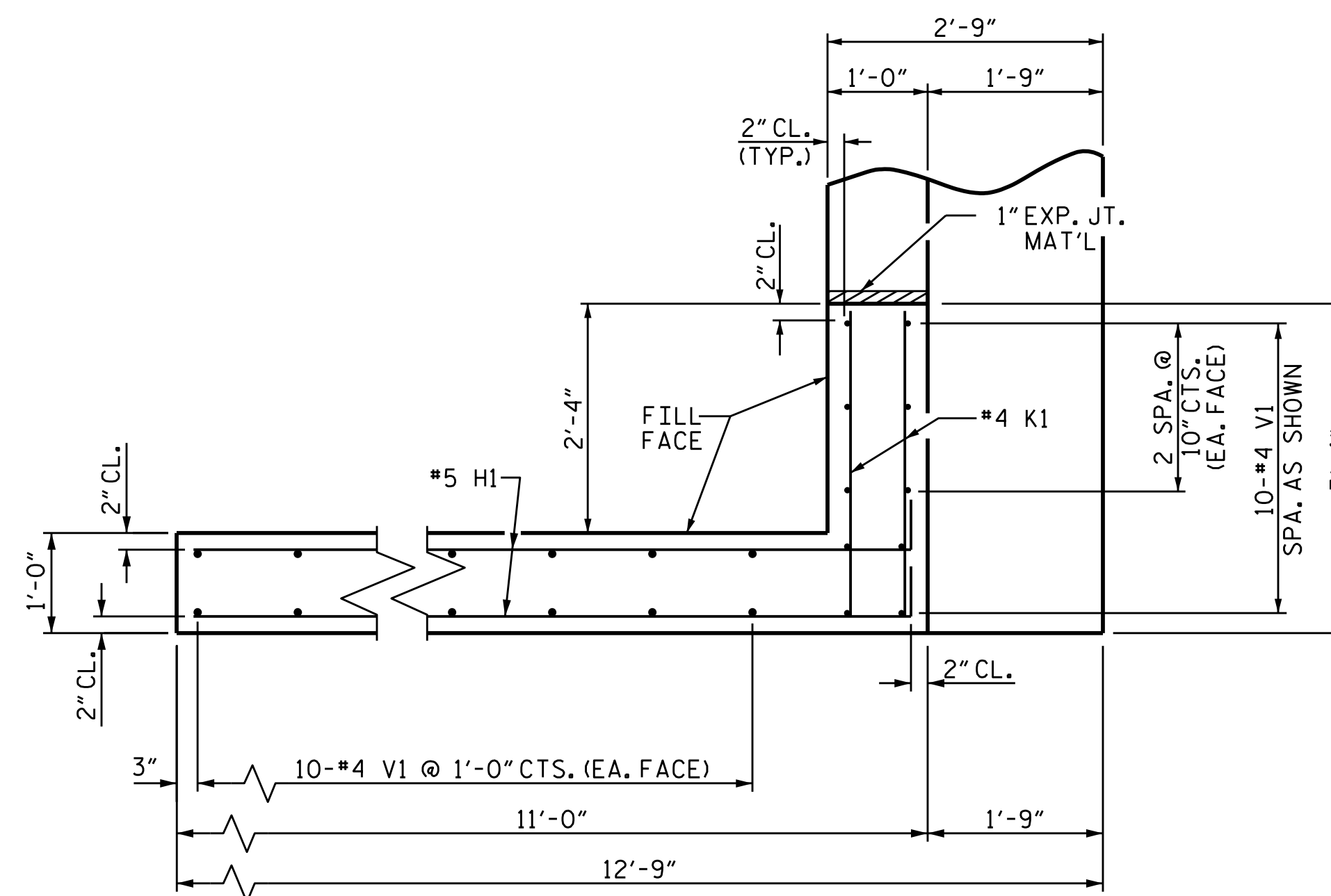
TOTAL SHEETS 24

ASSEMBLED BY : J.M. KEPICH DATE : 02/16
 CHECKED BY : L.M. SAMPLES DATE : 04/16
 DRAWN BY : WJH 12/11 REV. 4/15 MAA/TMG
 CHECKED BY : AAC 12/11

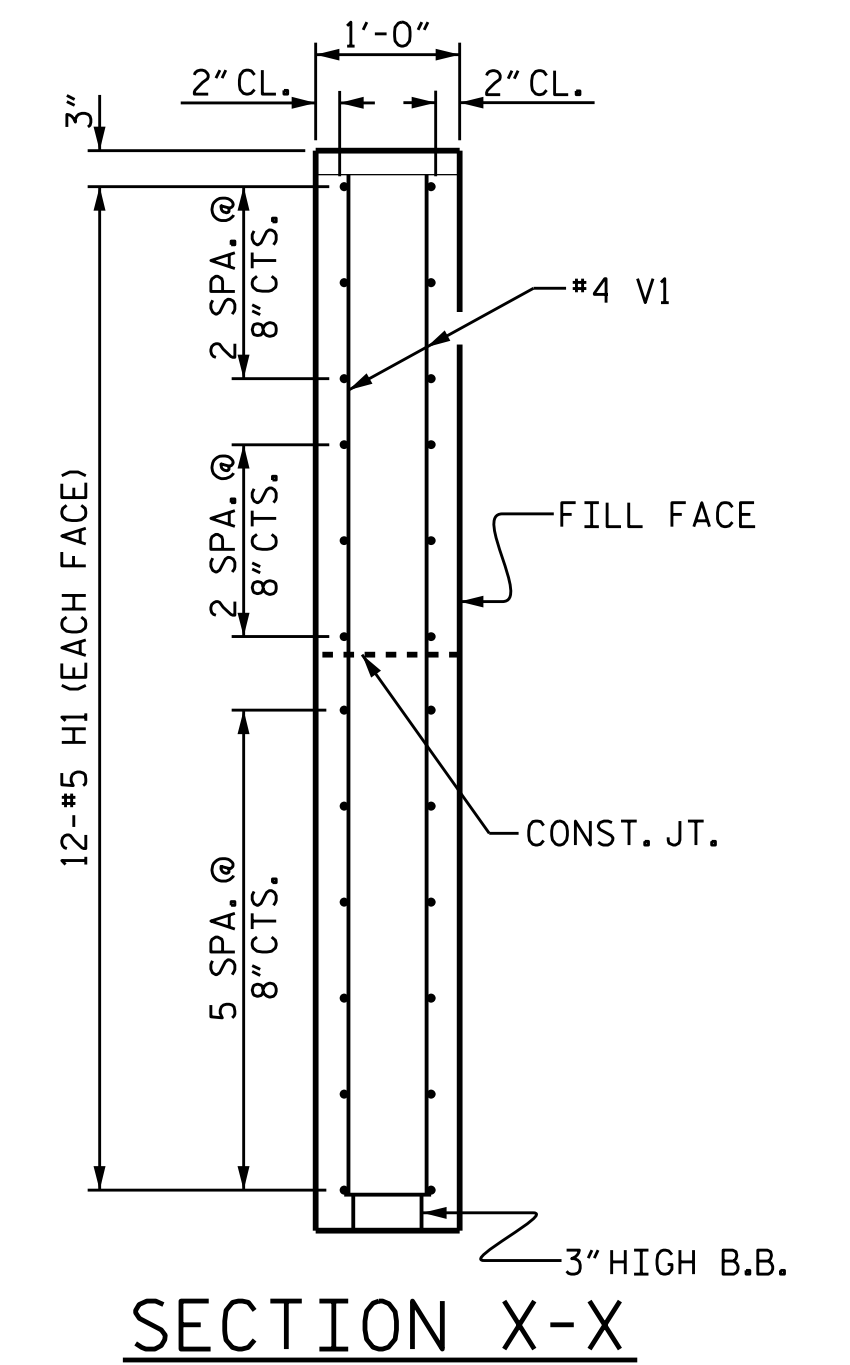
DESIGN ENGINEER OF RECORD : L.M. SAMPLES DATE : 05/16



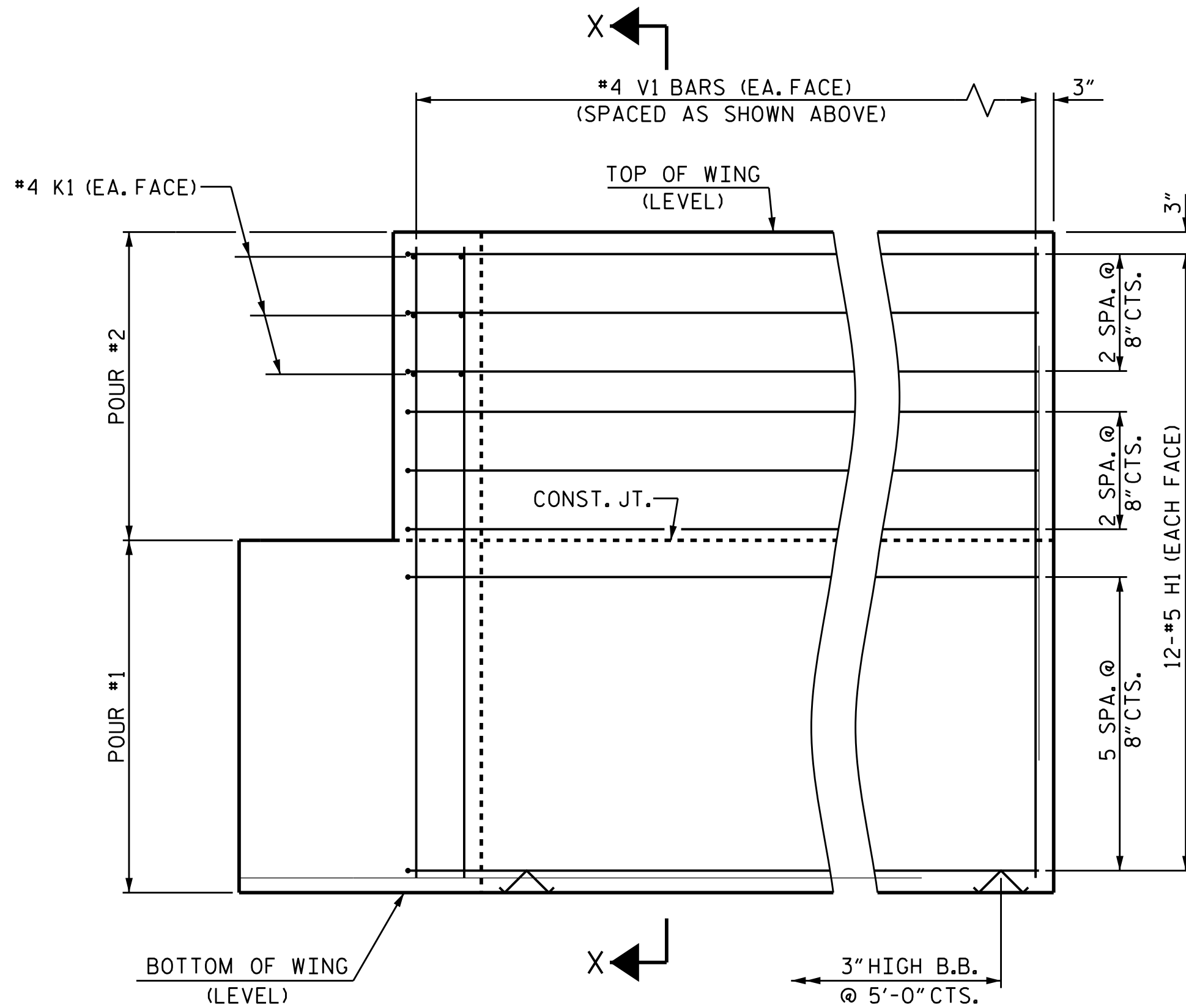
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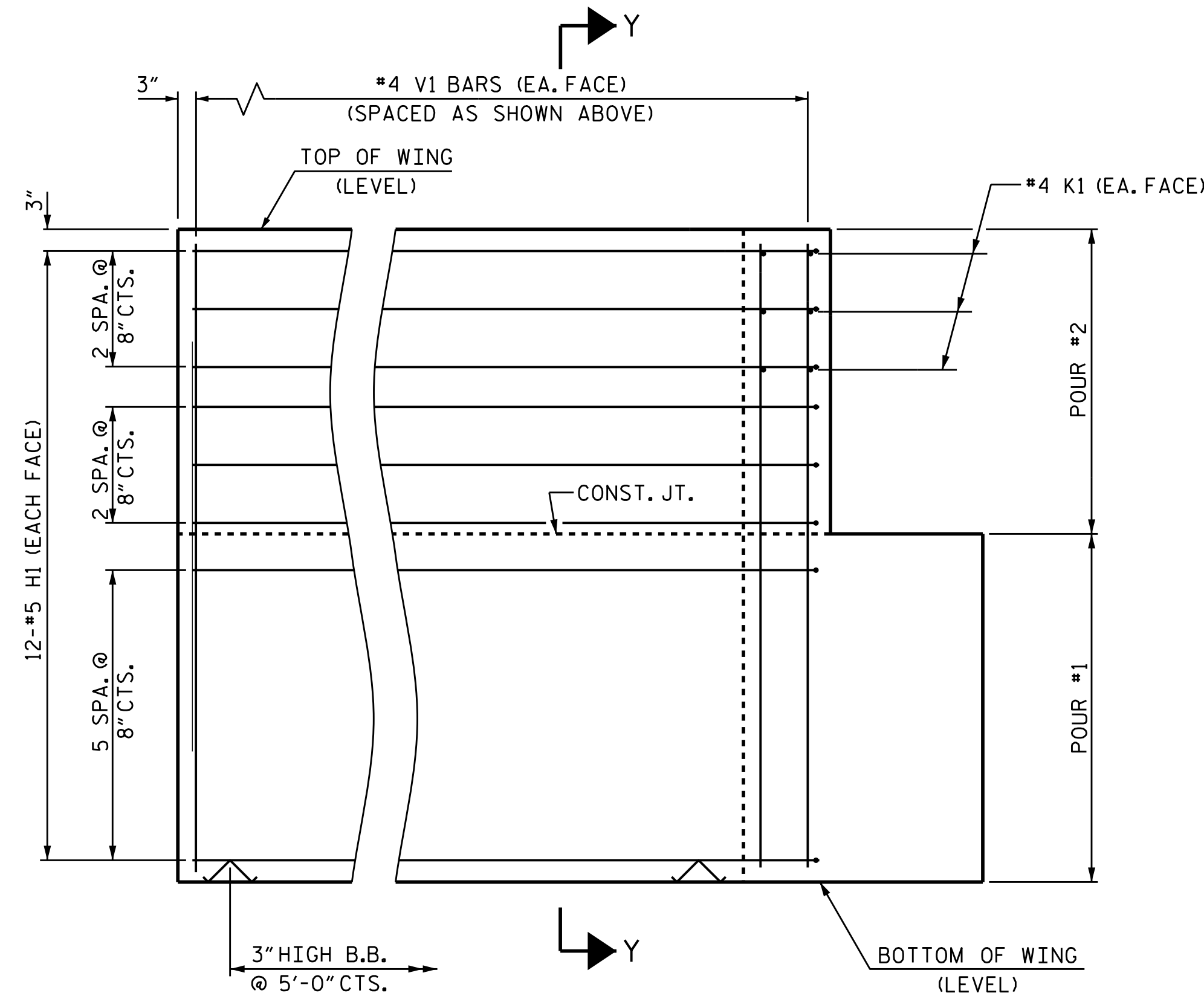
PLAN OF WING (W2)



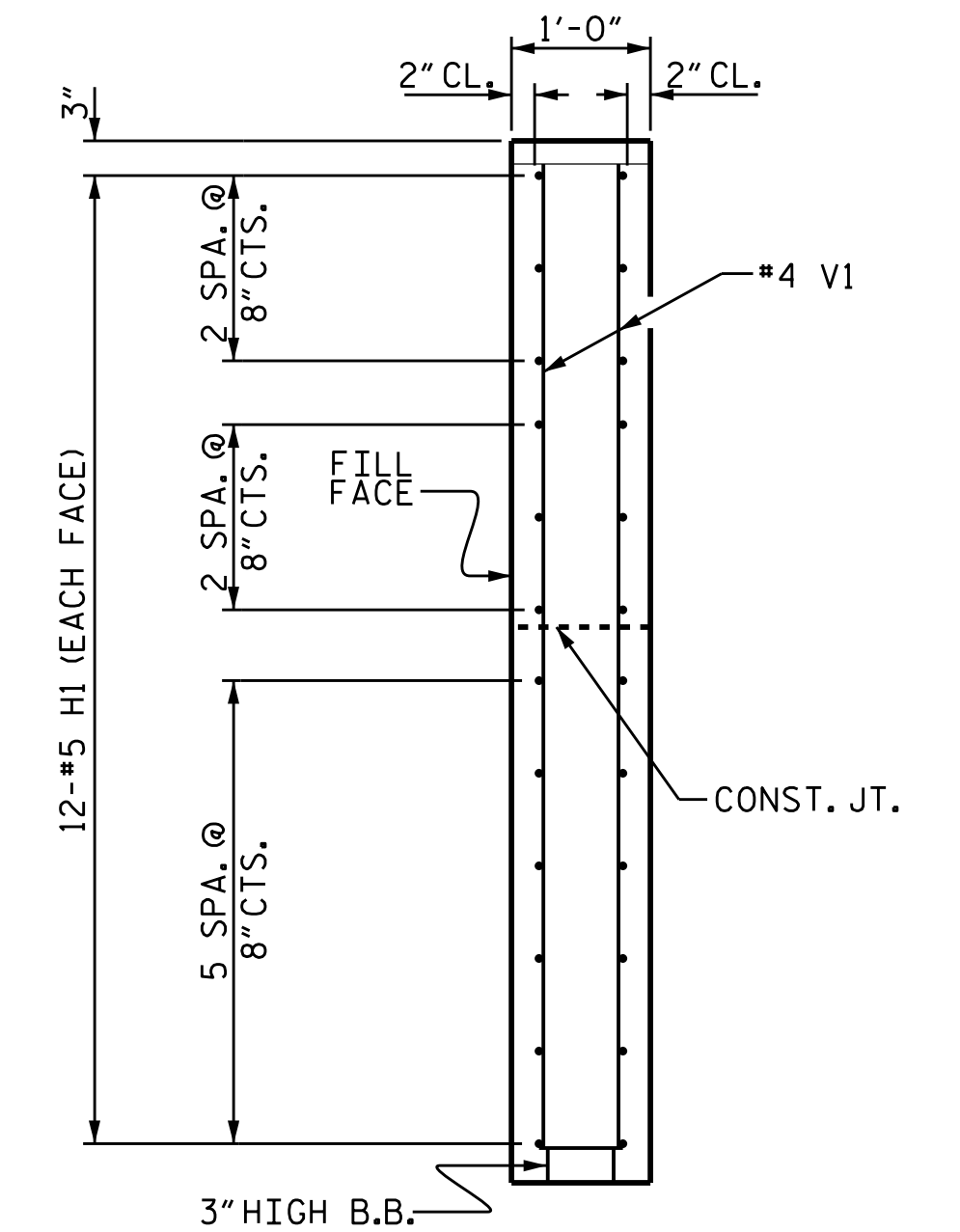
SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION Y-Y

PROJECT NO. B-5398

BURKE COUNTY

STATION: 16+45.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

END BENT No. 1
WING DETAILS

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS 24
2			4			

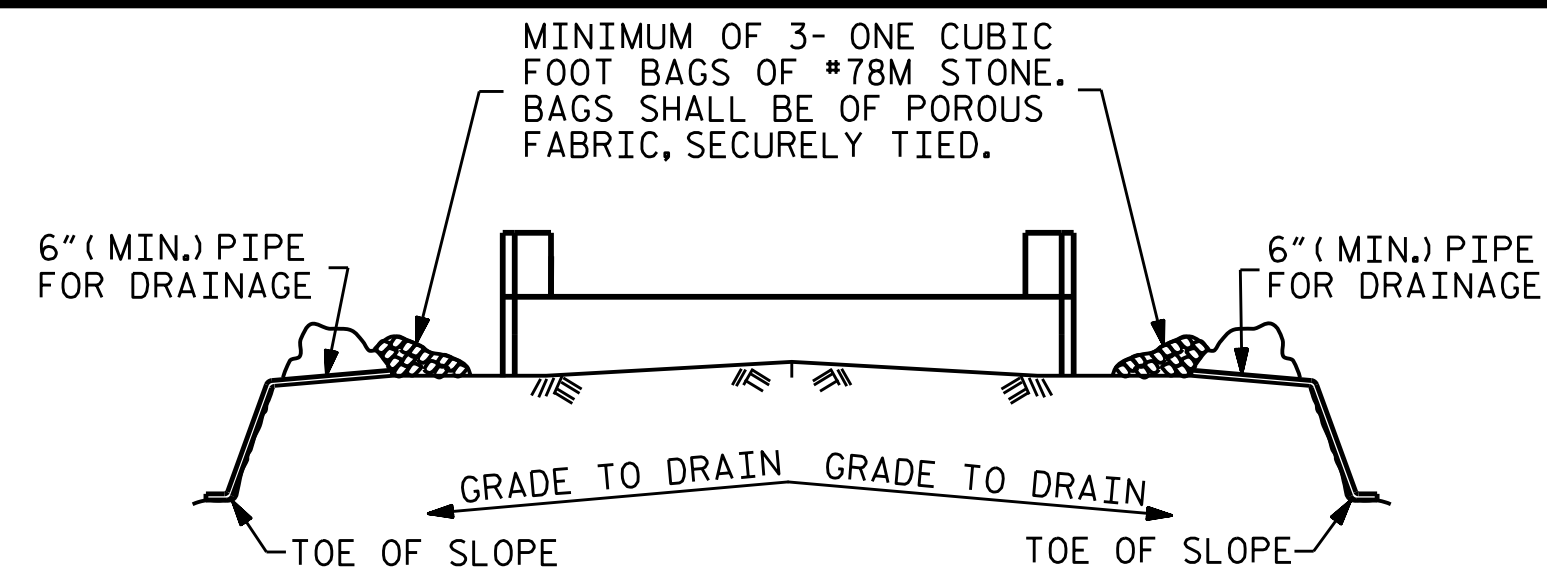
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ASSEMBLED BY : J.M. KEPICH DATE : 02/16
CHECKED BY : L.M. SAMPLES DATE : 04/16

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

DESIGN ENGINEER OF RECORD : L.M. SAMPLES DATE : 05/16

WING DETAILS

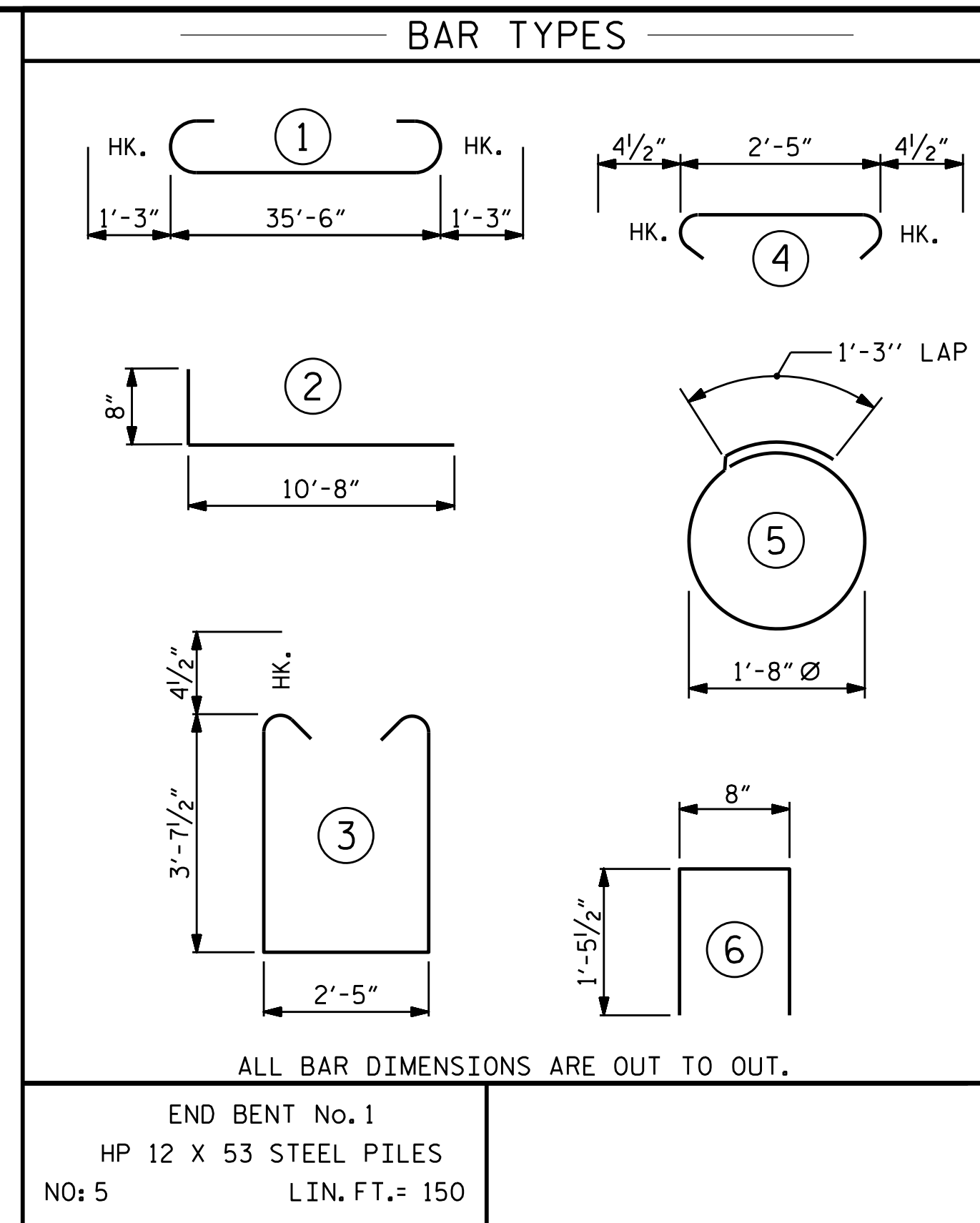
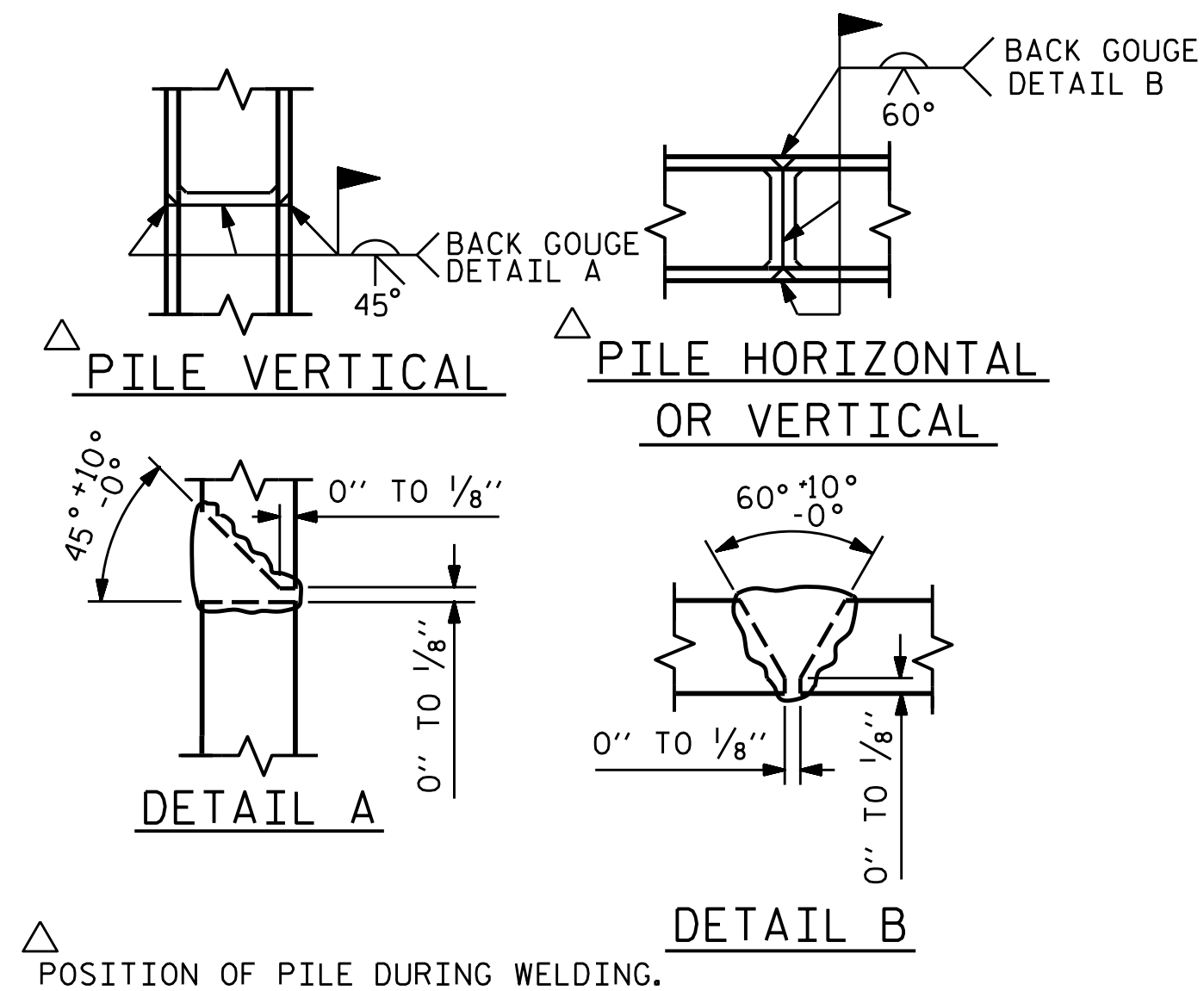
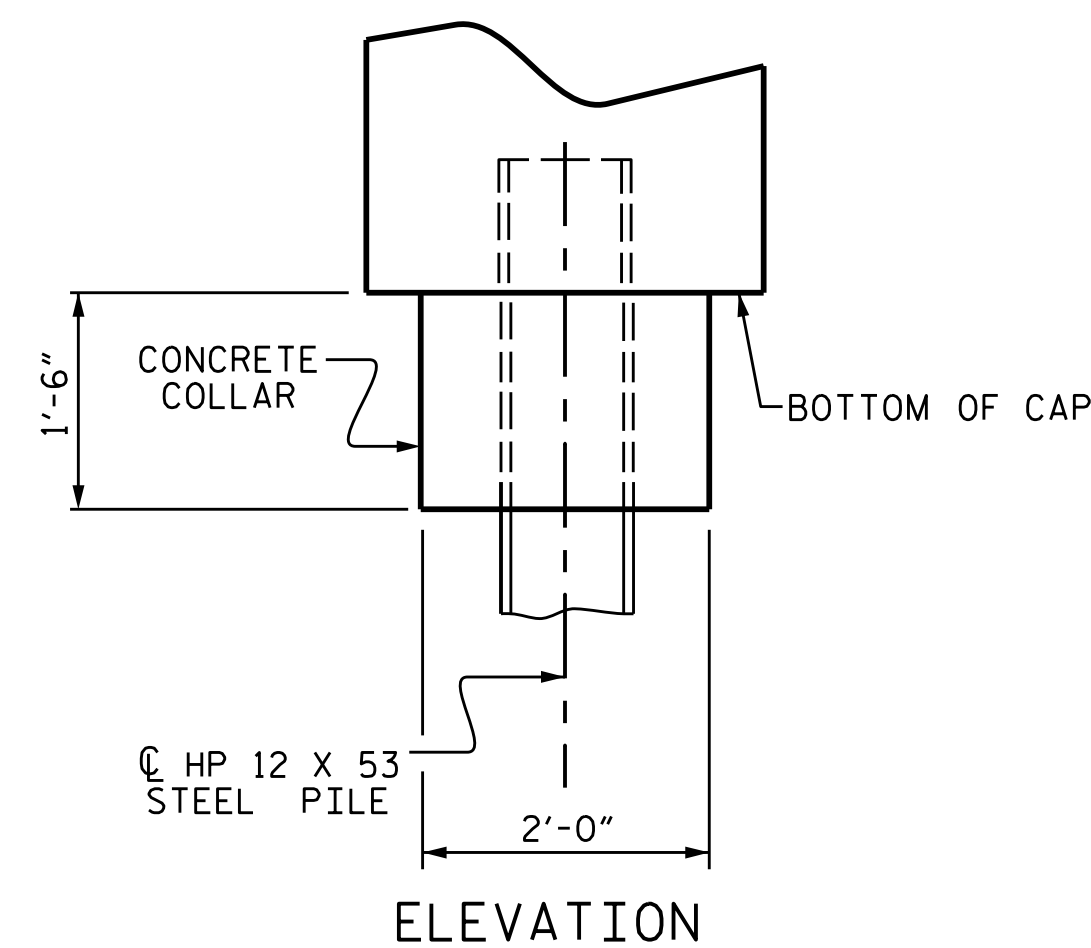
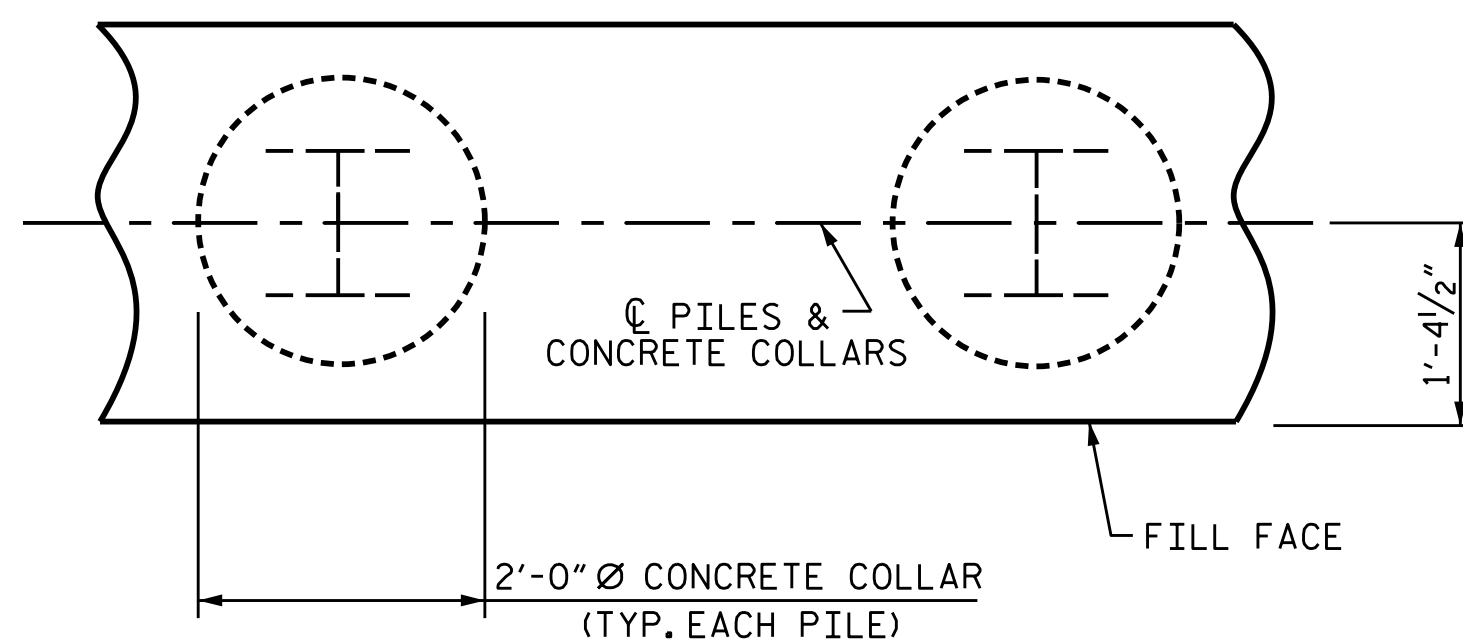
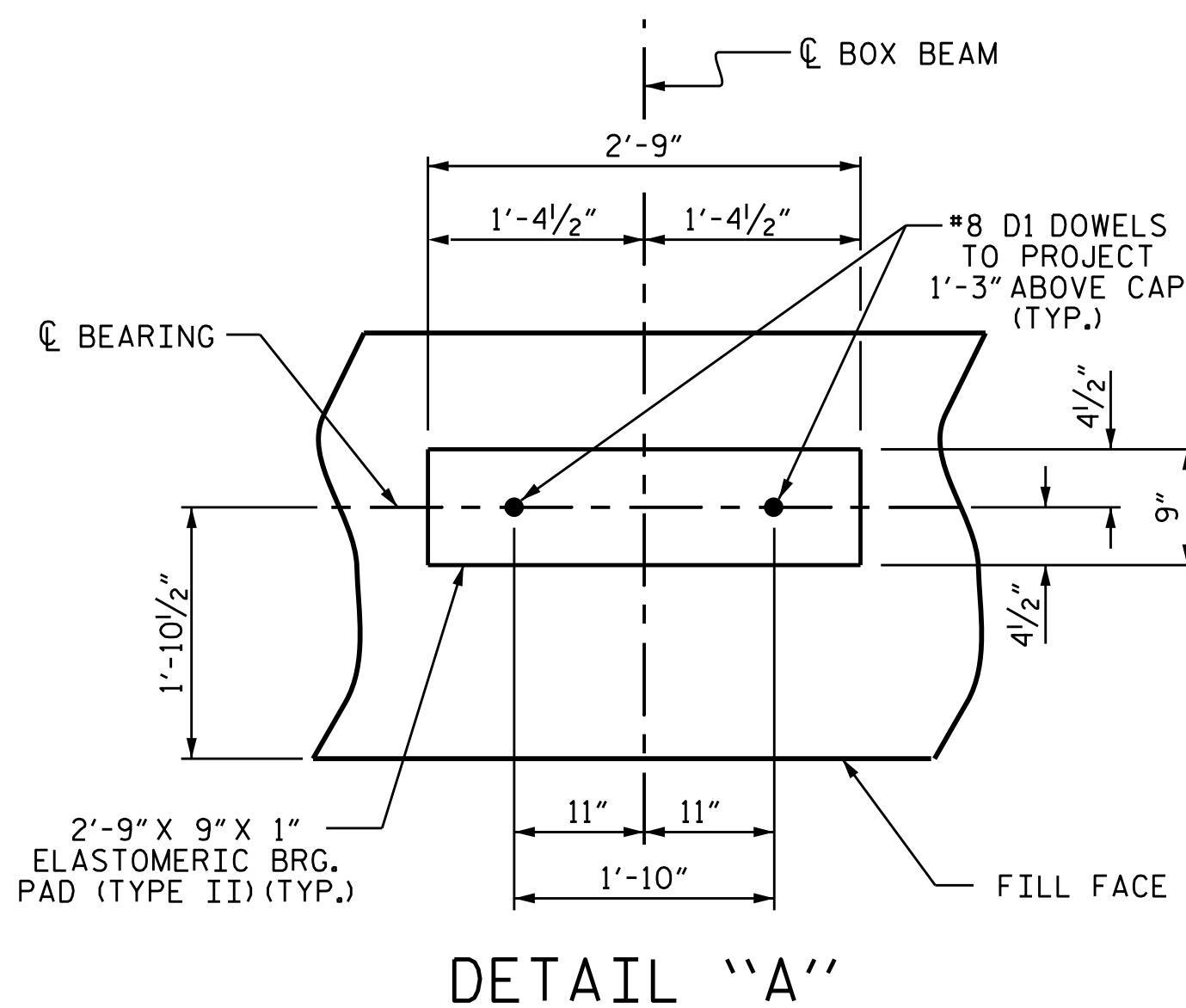


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

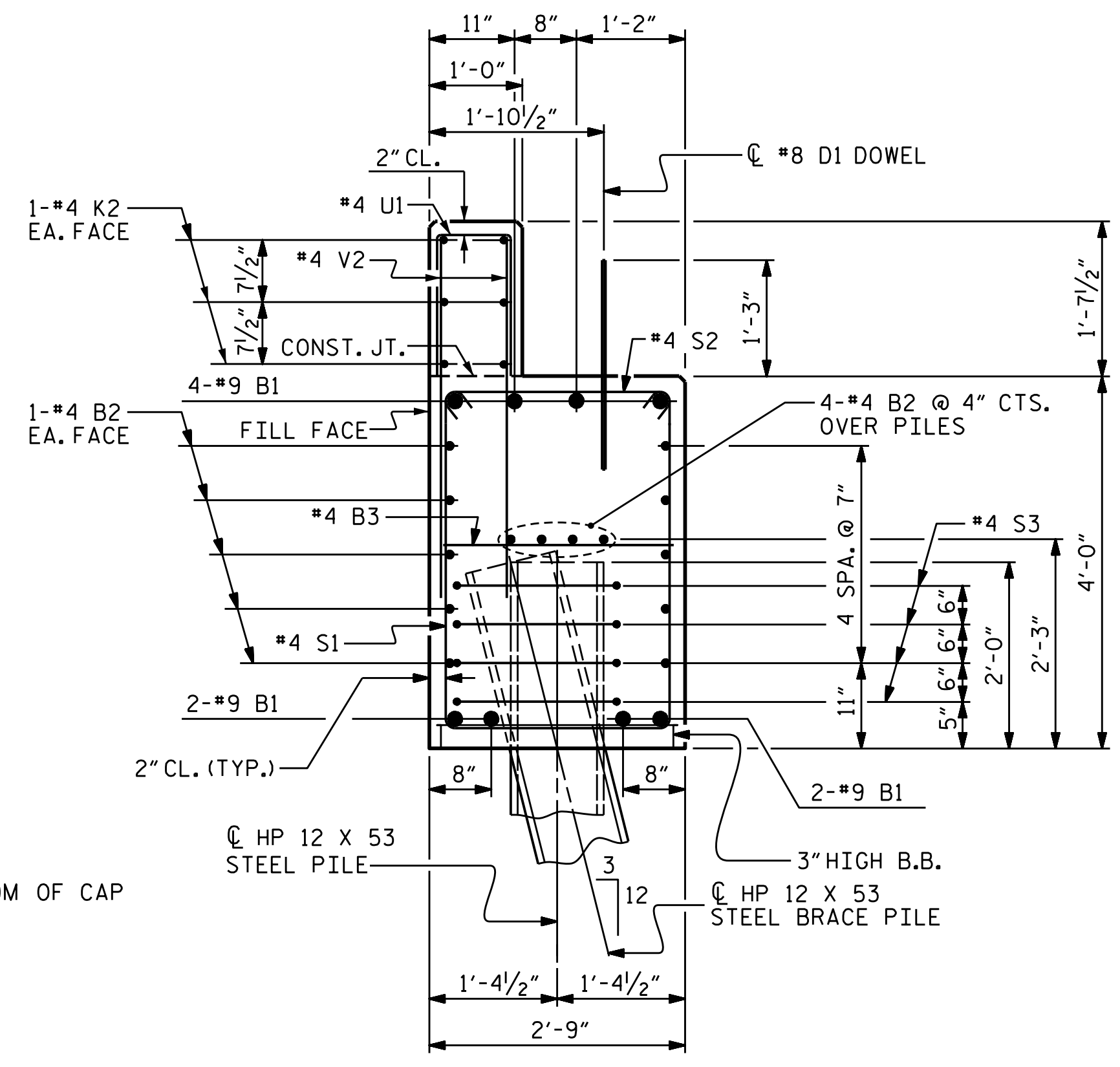
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

TEMPORARY DRAINAGE AT END BENT



BILL OF MATERIAL FOR ONE END BENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		38'-0"	1034
B2	28	#4	STR	19'-1"	357
B3	9	#4	STR	2'-5"	15
D1	20	#8	STR	2'-3"	120
H1	48	#5		11'-4"	567
K1	12	#4	STR	2'-11"	23
K2	12	#4	STR	19'-1"	153
S1	46	#4	3	10'-5"	320
S2	46	#4	4	3'-2"	97
S3	20	#4	5	6'-6"	87
U1	30	#4	6	3'-7"	72
V1	60	#4	STR	7'-2"	287
V2	60	#4	STR	5'-3"	210
REINFORCING STEEL (FOR ONE END BENT)					3342 LBS.
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)					
POUR #1	CAP, LOWER PART OF WINGS & COLLARS				18.5 C.Y.
POUR #2	BACKWALL & UPPER PART OF WINGS				5.2 C.Y.
TOTAL CLASS A CONCRETE					23.8 C.Y.



PROJECT NO. B-5398

BURKE COUNTY

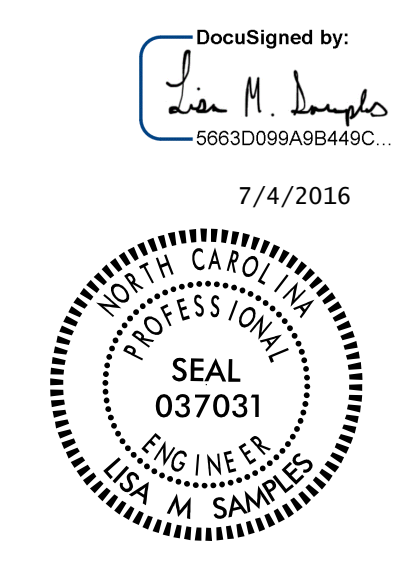
STATION: 16+45.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1
DETAILS



ASSEMBLED BY : J.M. KEPICH	DATE : 02/16
CHECKED BY : L.M. SAMPLES	DATE : 04/16
DRAWN BY : WJH 12/11	REV. 4/15
CHECKED BY : AAC 12/11	MAA/TMG
DESIGN ENGINEER OF RECORD : L.M. SAMPLES DATE : 05/16	

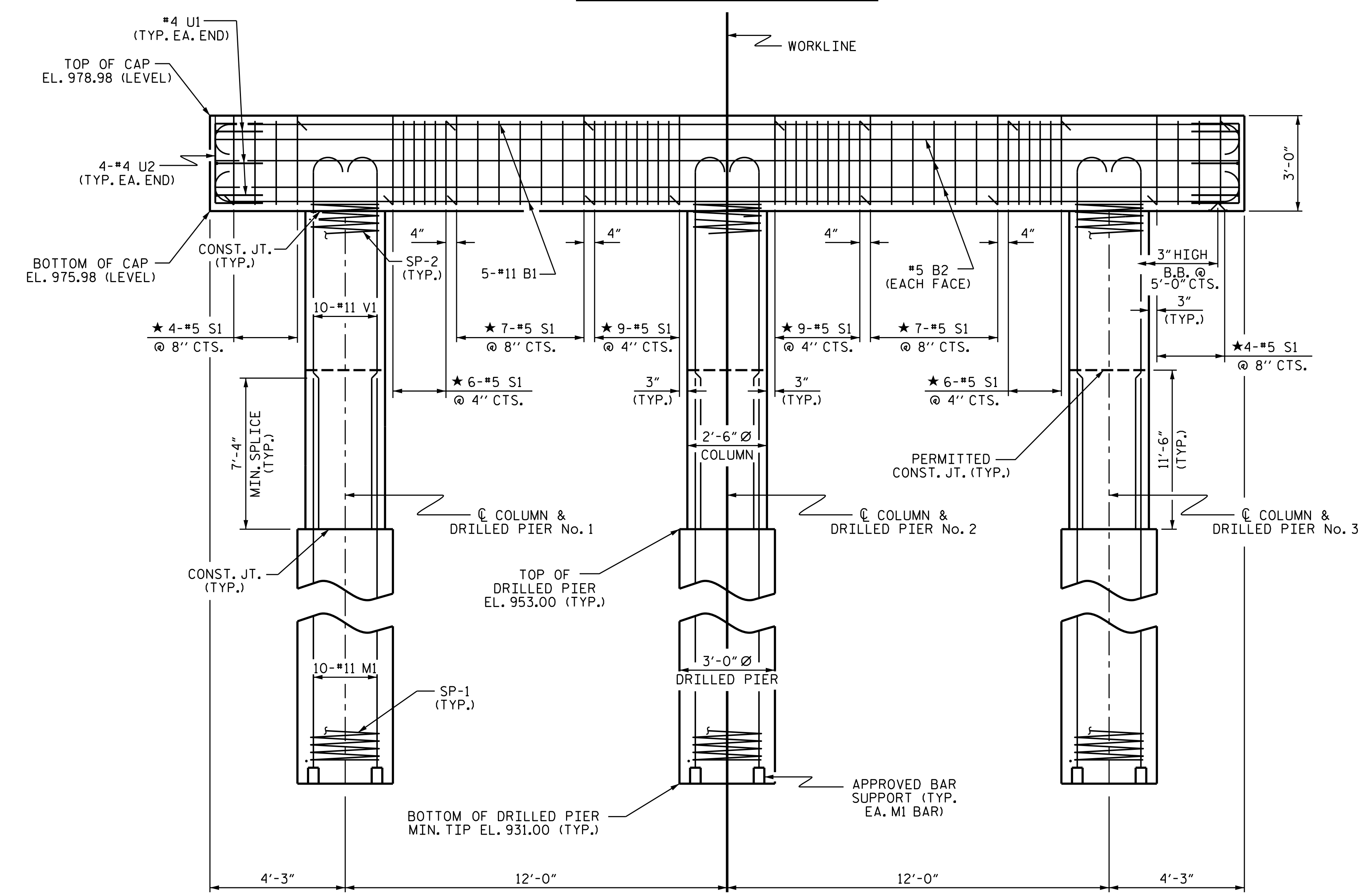
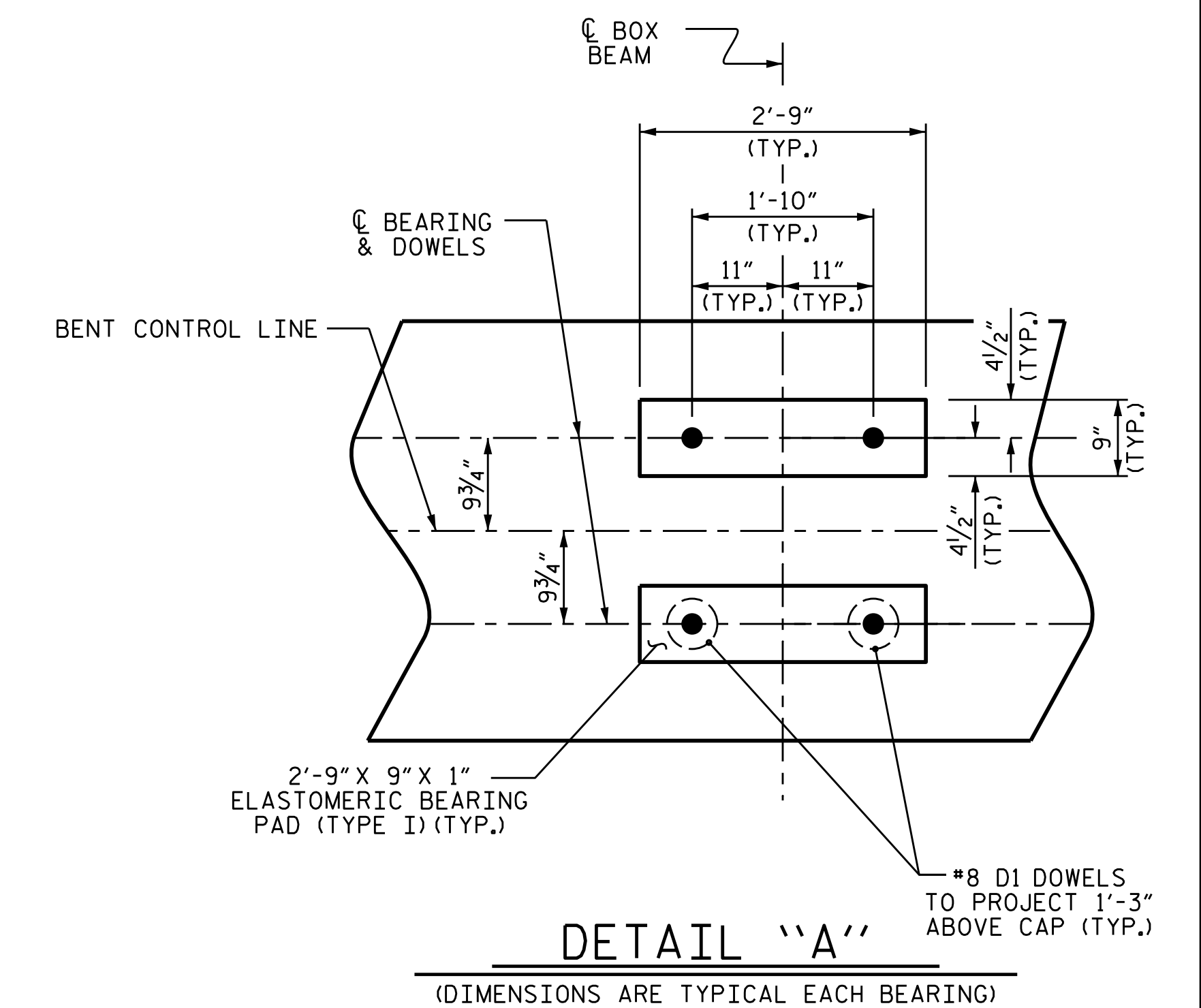
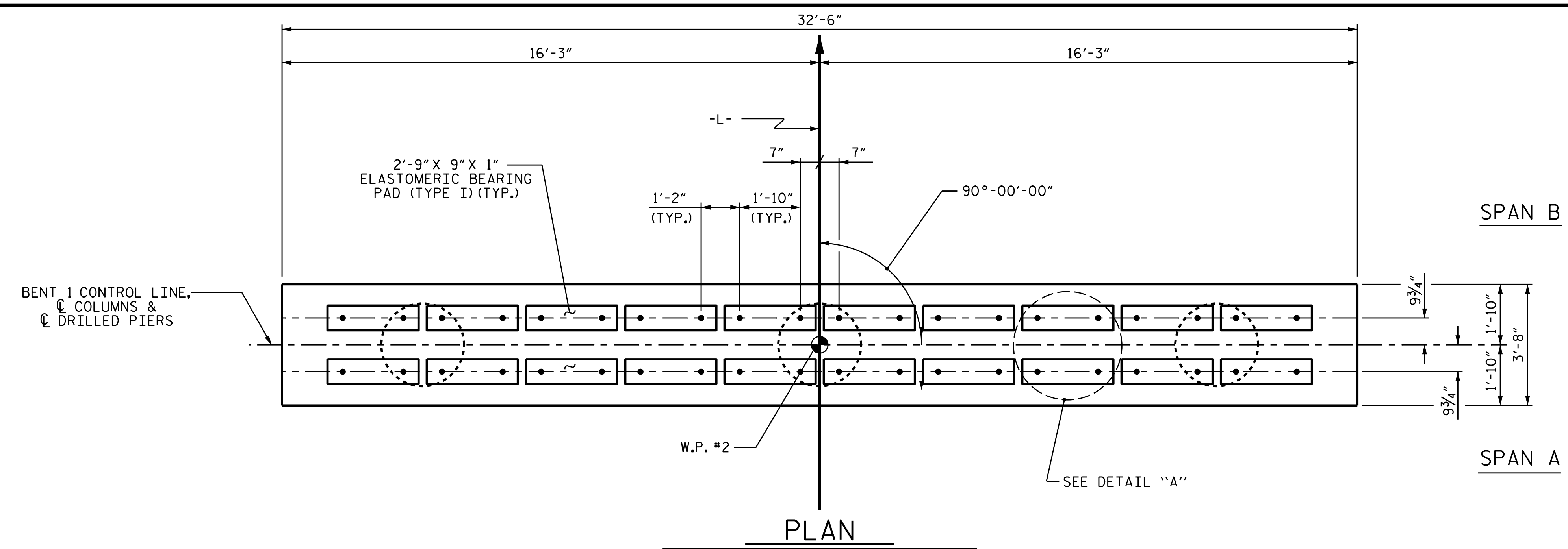
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REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					24

NOTES:

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
- HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
- FOR DRILLED PIERS, SEE SPECIAL PROVISIONS AND SECTION 411 OF THE STANDARD SPECIFICATIONS.
- ALL STEEL IN THE DRILLED PIER IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."
- ★ INVERT ALTERNATIVE STIRRUPS.
- THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIER IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FOOT BELOW THE GROUND LINE.
- THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.



ELEVATION

DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER UNLESS OTHERWISE NOTED.

PROJECT NO. B-5398
BURKE COUNTY
 STATION: 16+45.00 -L-
 SHEET 1 OF 2

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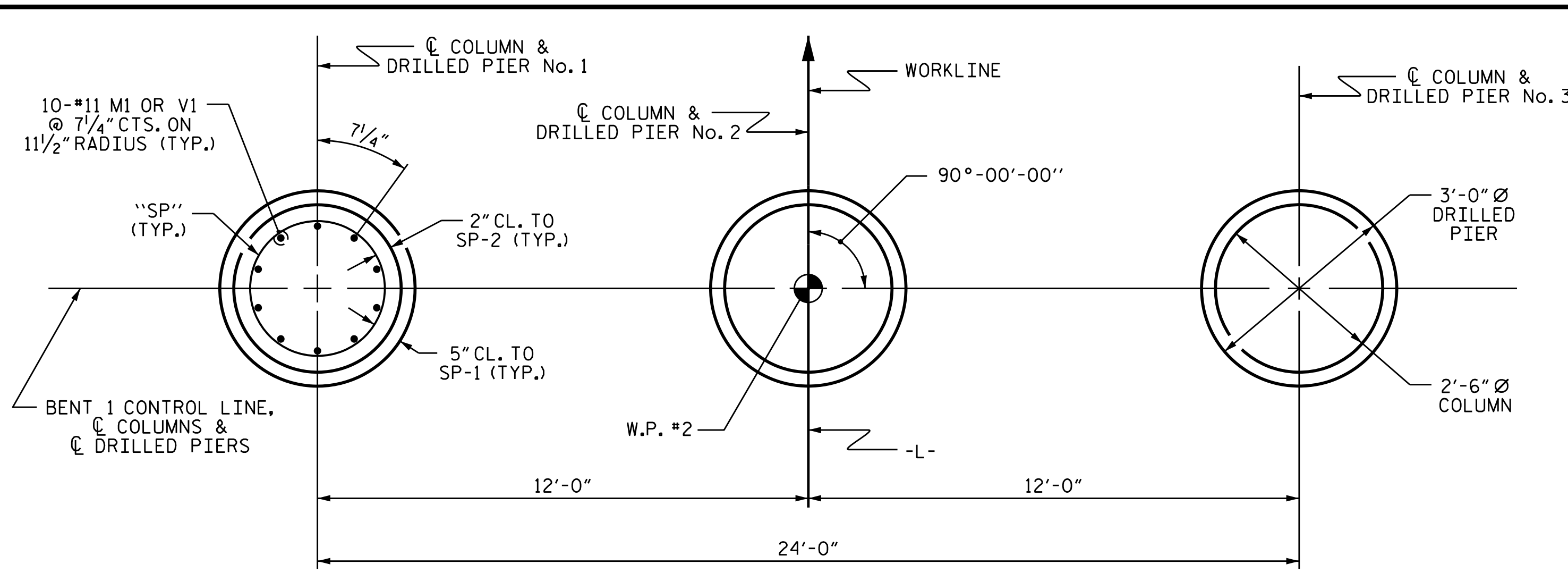


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
SUBSTRUCTURE
BENT No. 1

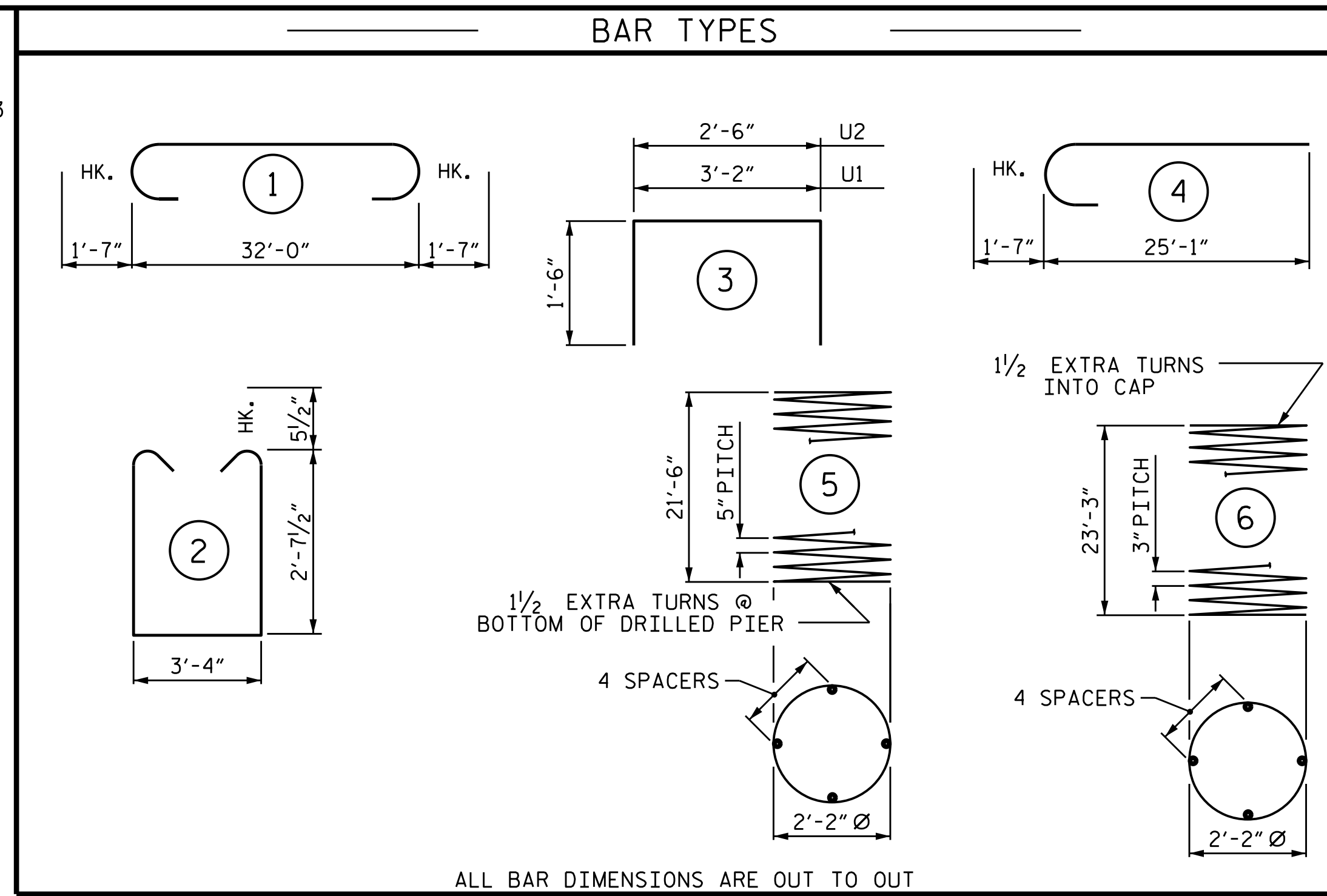
DRAWN BY : J.M. KEPICH DATE : 02/16
 CHECKED BY : L.M. SAMPLES DATE : 04/16
 DESIGN ENGINEER OF RECORD : L.M. SAMPLES DATE : 05/16

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			24

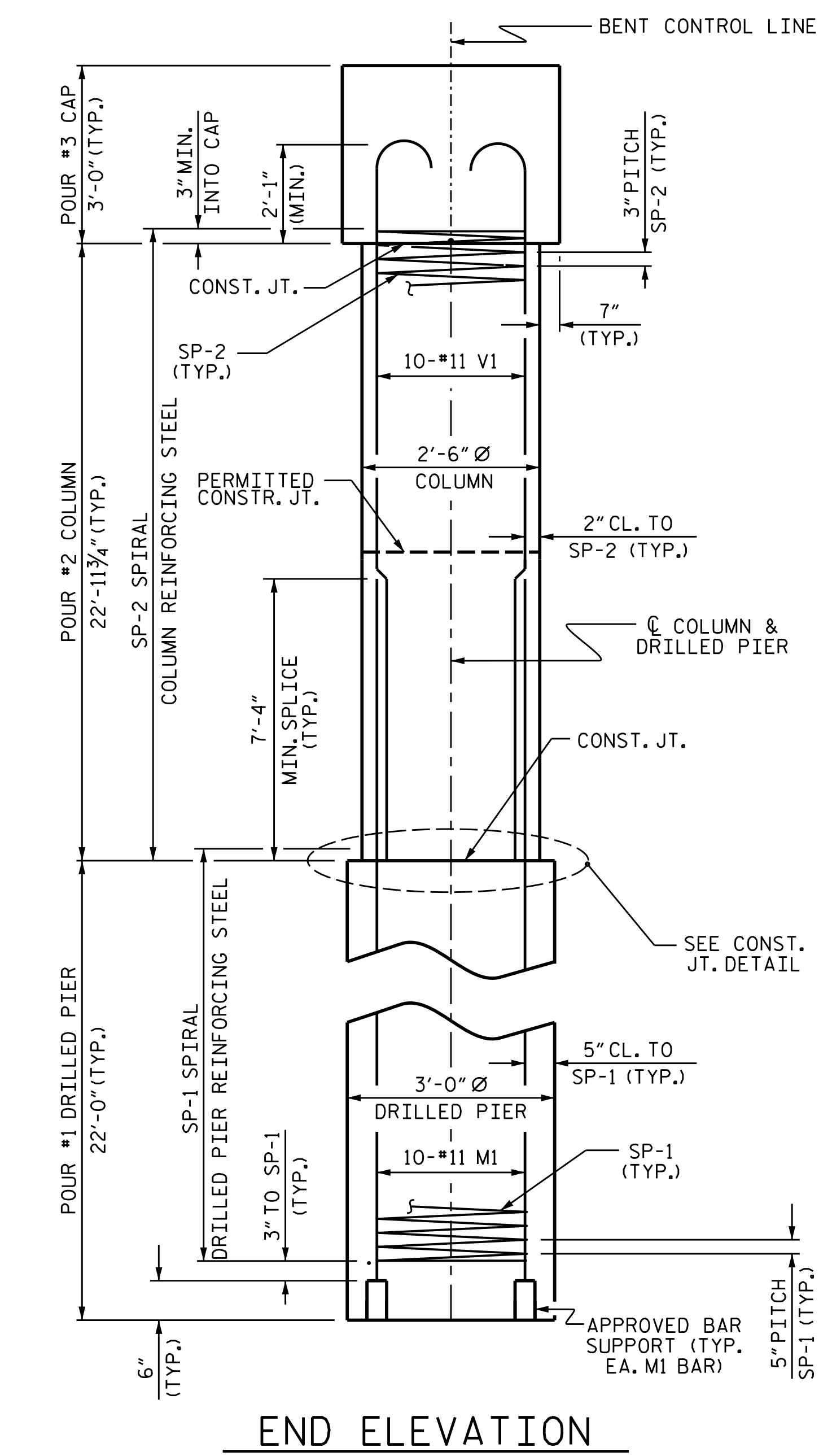


PLAN OF DRILLED PIERS & COLUMNS

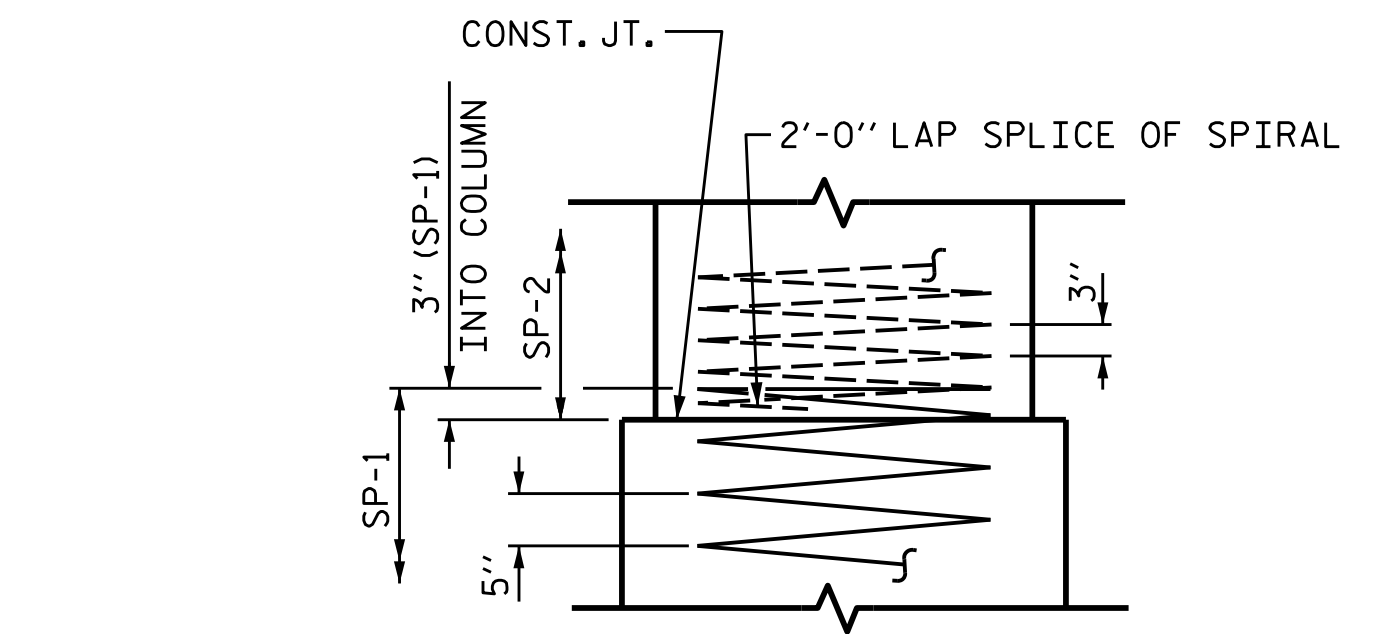


ALL BAR DIMENSIONS ARE OUT TO OUT

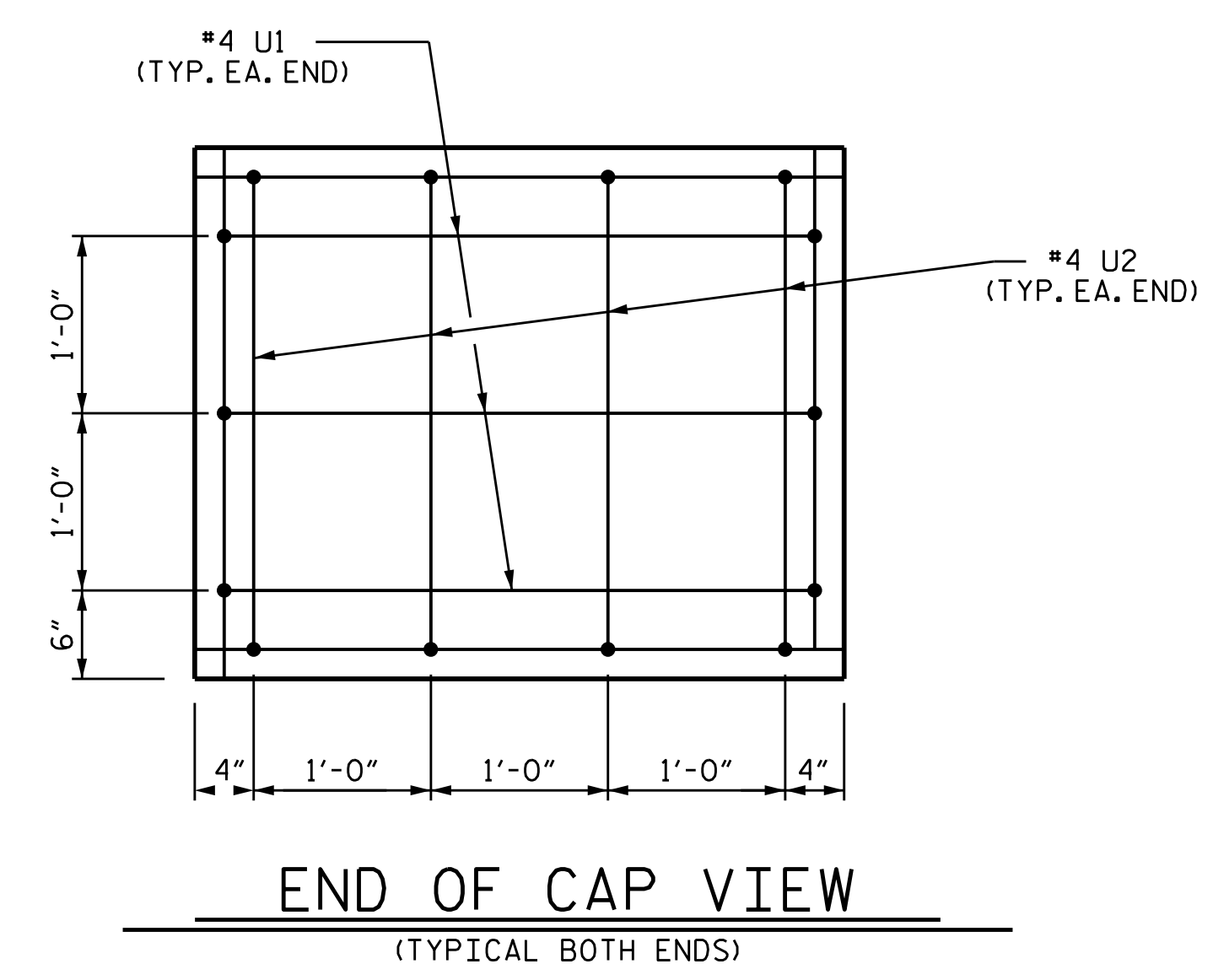
BILL OF MATERIAL					
BENT 1					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	1	35'-2"	1868
B2	6	#5	STR	32'-2"	201
D1	40	#8	STR	2'-3"	240
M1	30	#11	STR	31'-10"	5074
S1	52	#5	2	9'-6"	515
U1	6	#4	3	6'-2"	25
U2	8	#4	3	5'-6"	29
V1	30	#11	4	26'-8"	4250
REINFORCING STEEL (FOR BENT 1)					12,202 LBS.
SP-1	3	*	5	353'-6"	1106
SP-2	3	**	6	630'-10"	1264
SPIRAL COLUMN REINFORCING STEEL (FOR BENT 1)					2370 LBS.
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR					
** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR					
CLASS A CONCRETE BREAKDOWN (FOR BENT 1)					
POUR #2 (COLUMNS)					12.5 C.Y.
POUR #3 (CAP)					13.2 C.Y.
TOTAL CLASS A CONCRETE					25.7 C.Y.
DRILLED PIERS: (FOR BENT 1)					
DRILLED PIER CONCRETE					
POUR #1 (DRILLED PIER)					17.3 C.Y.
3'-0" Ø DRILLED PIER NOT IN SOIL					35 LIN. FT.
3'-0" Ø DRILLED PIER IN SOIL					31 LIN. FT.
CSL TUBES					282 LIN. FT.



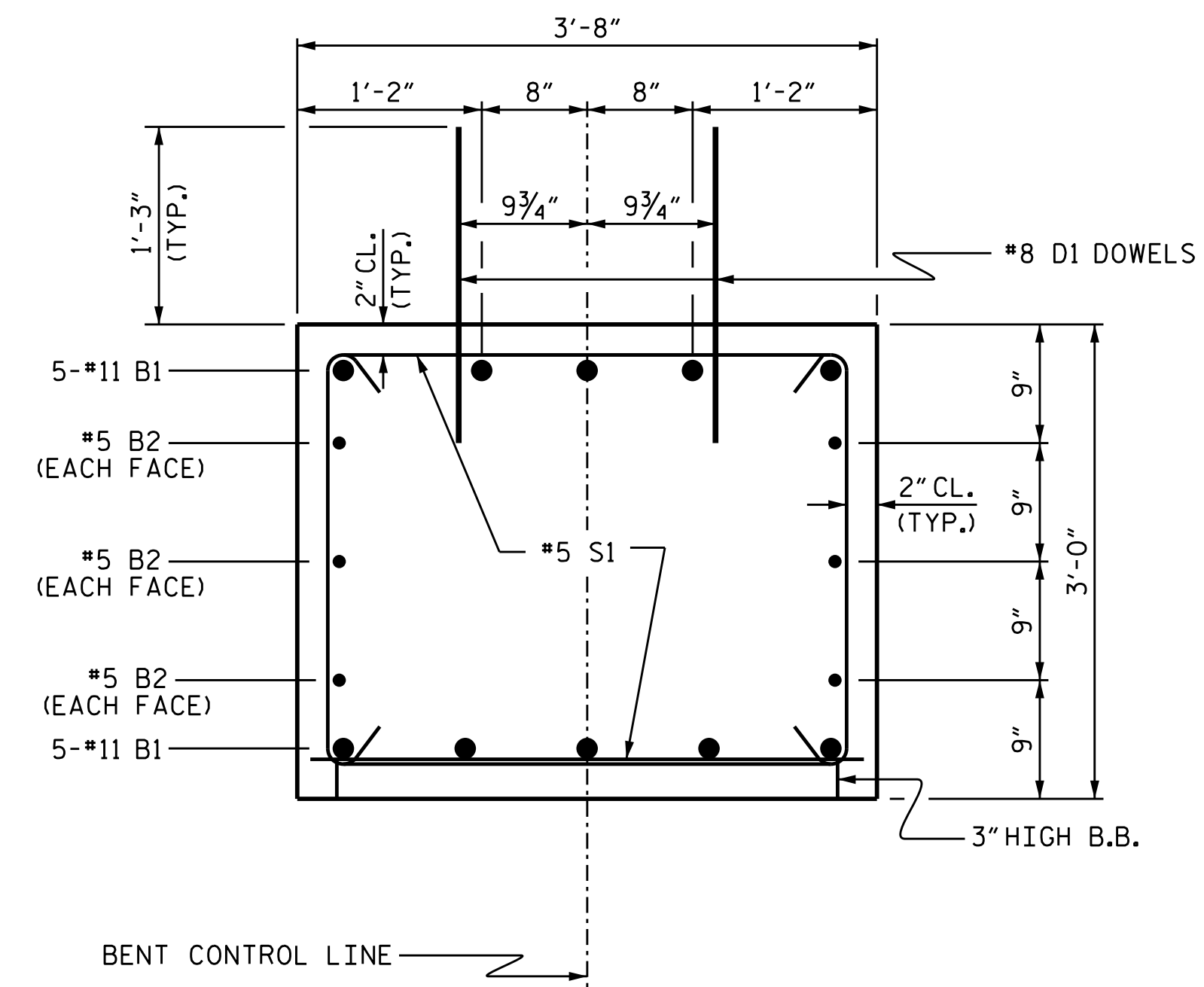
END ELEVATION



CONSTRUCTION JOINT DETAIL



END OF CAP VIEW (TYPICAL BOTH ENDS)



SECTION THRU CAP

DRAWN BY: J.M. KEPICH DATE: 02/16
 CHECKED BY: L.M. SAMPLES DATE: 04/16
 DESIGN ENGINEER OF RECORD: L.M. SAMPLES DATE: 05/16

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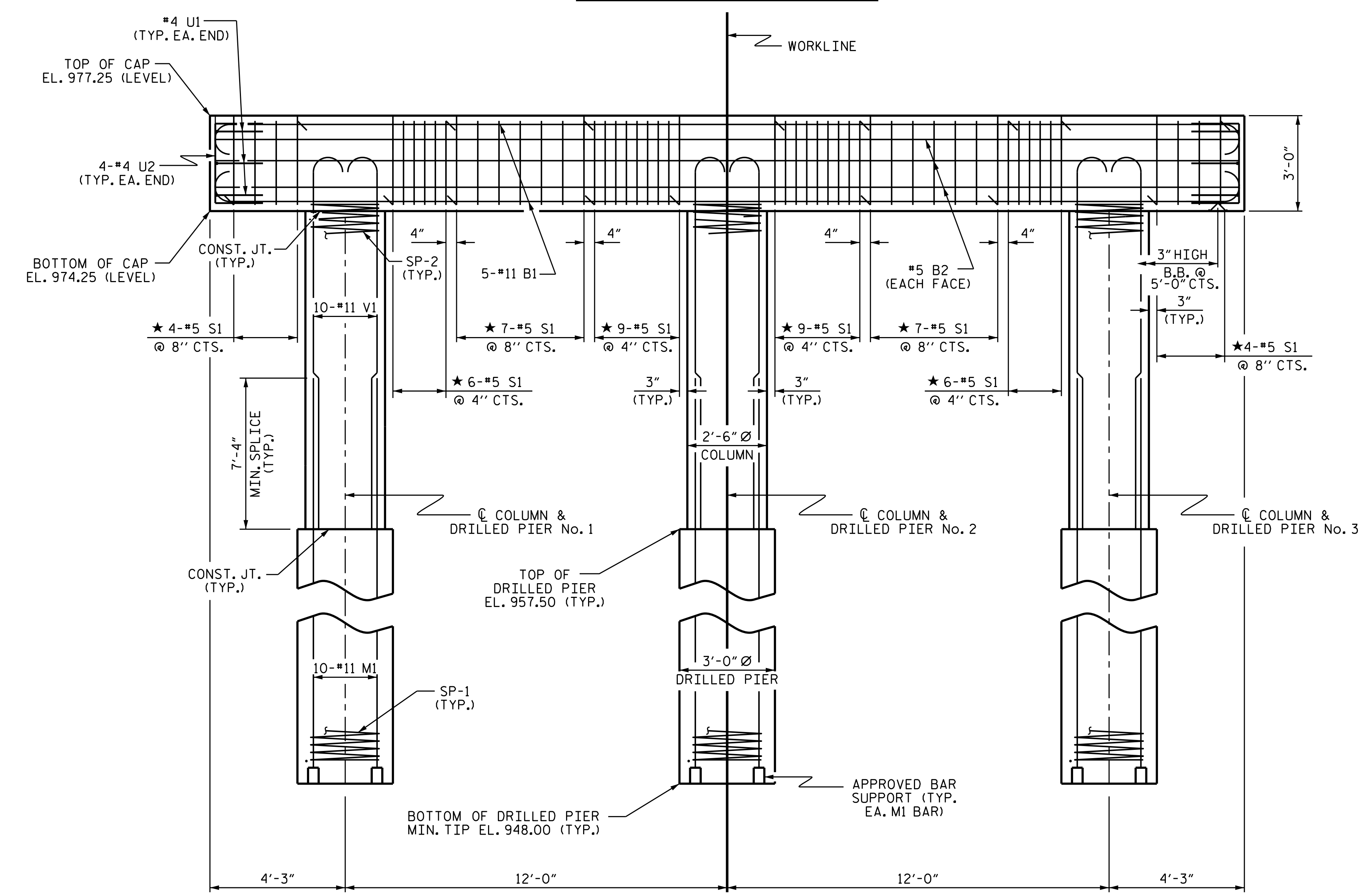
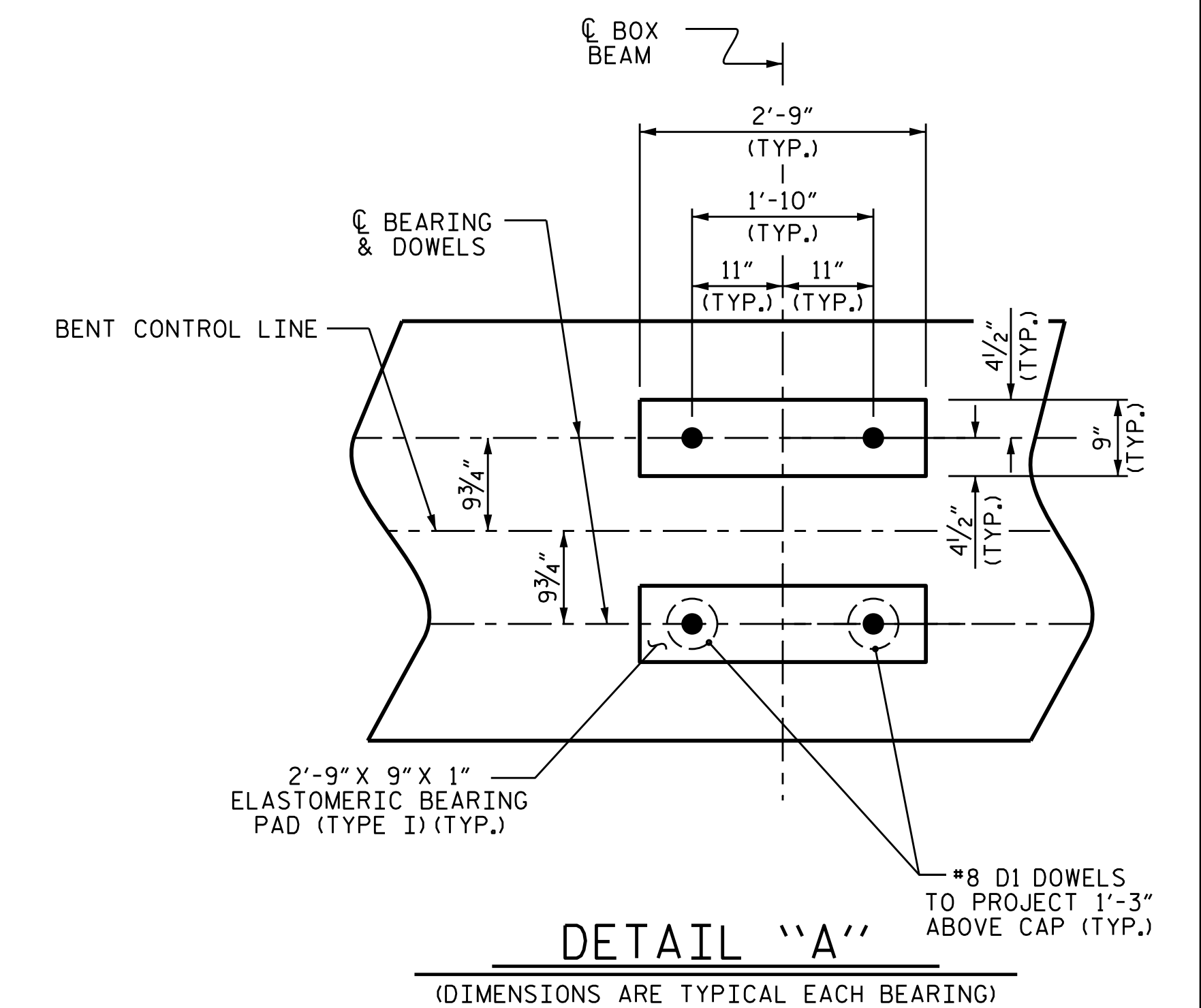
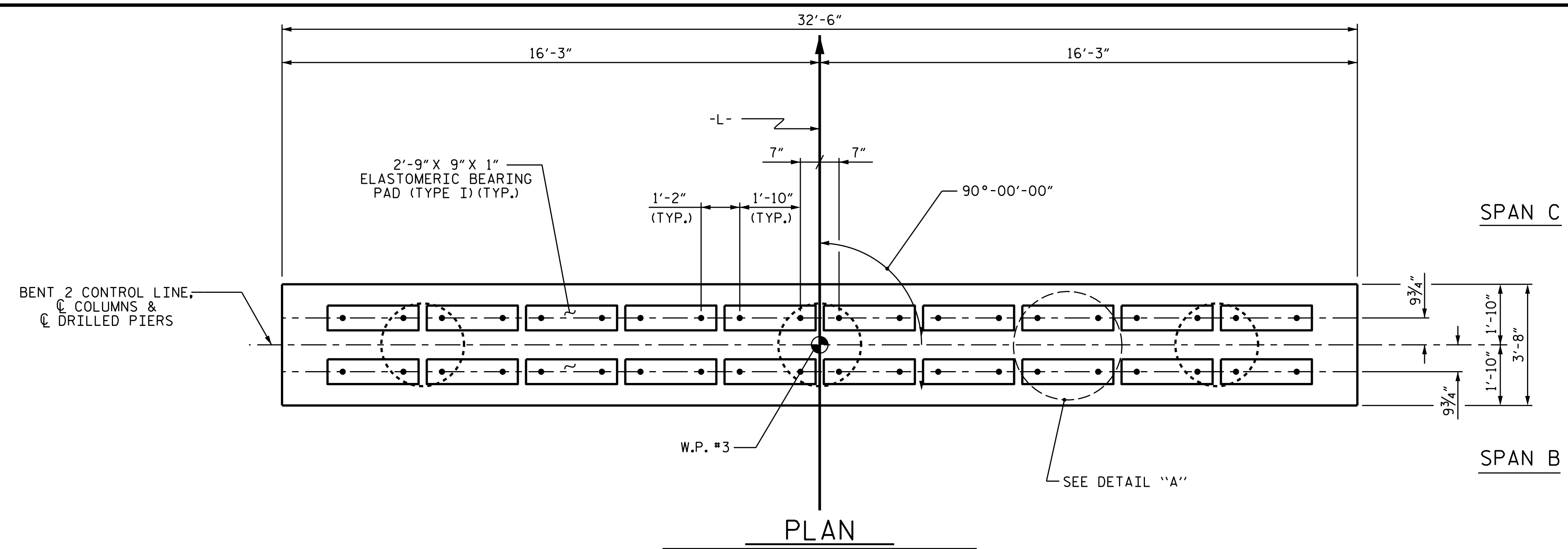
PROJECT NO. B-5398
 BURKE COUNTY
 STATION: 16+45.00 -L-
 SHEET 2 OF 2

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

SHEET NO. S-17
 TOTAL SHEETS 24

NOTES:

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
- HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
- FOR DRILLED PIERS, SEE SPECIAL PROVISIONS AND SECTION 411 OF THE STANDARD SPECIFICATIONS.
- ALL STEEL IN THE DRILLED PIER IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."
- * INVERT ALTERNATIVE STIRRUPS.
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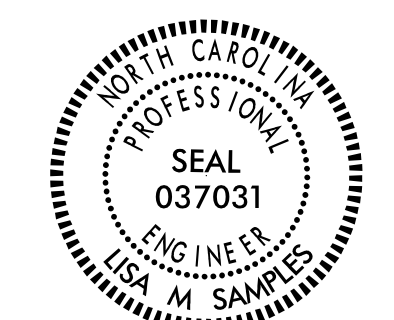
DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER UNLESS OTHERWISE NOTED.

PROJECT NO. B-5398
BURKE COUNTY
 STATION: 16+45.00 -L-
 SHEET 1 OF 2

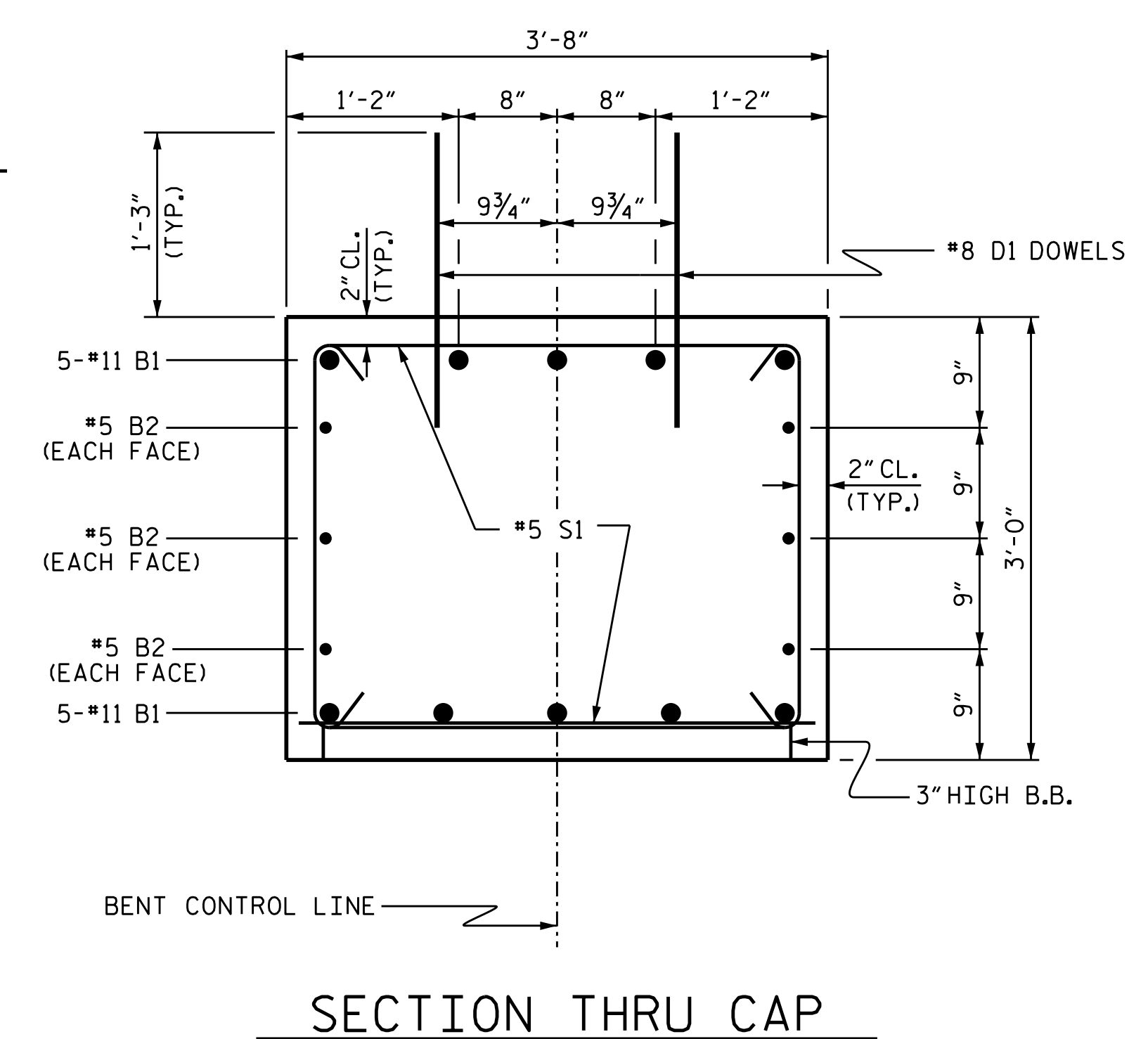
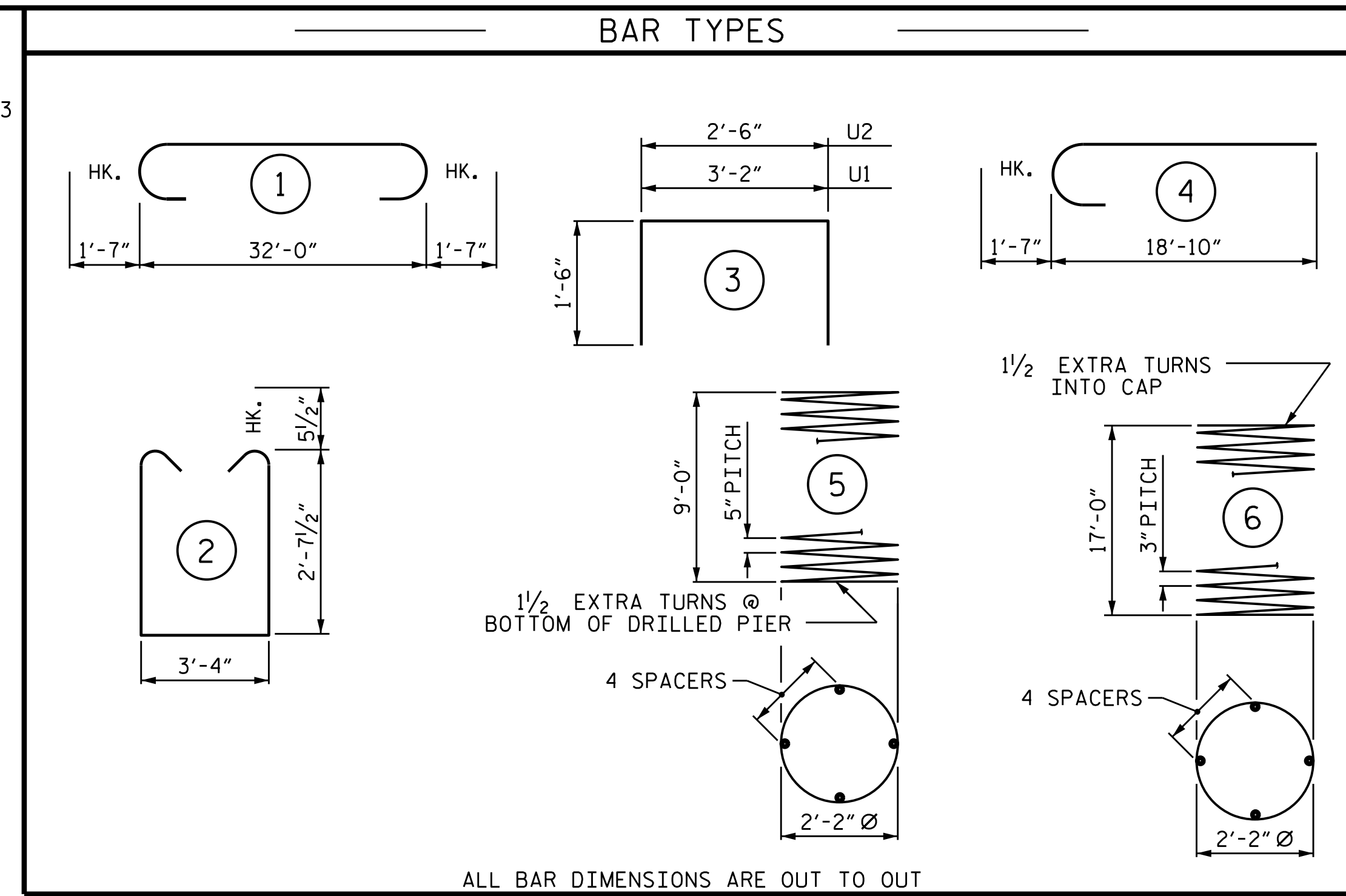
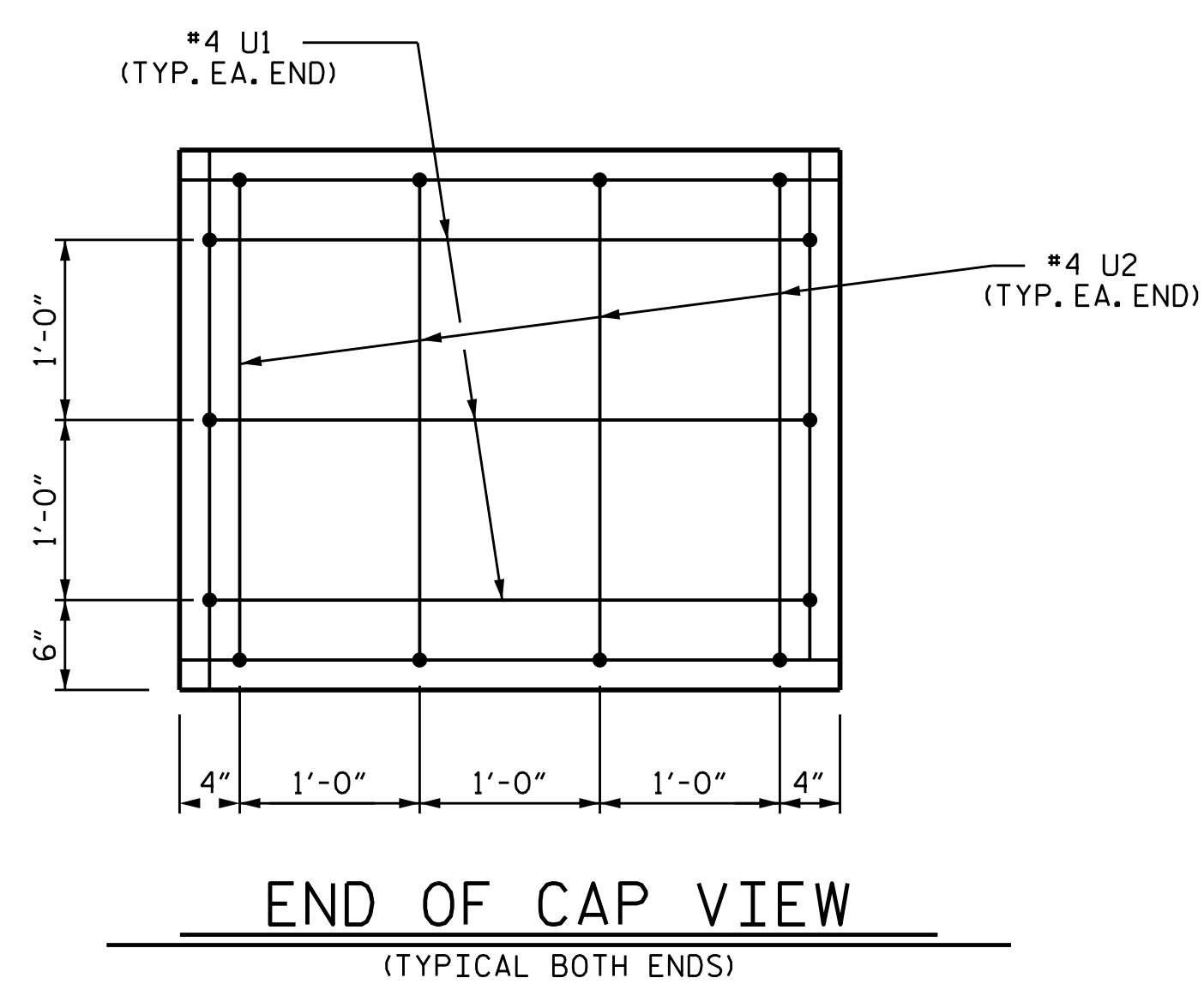
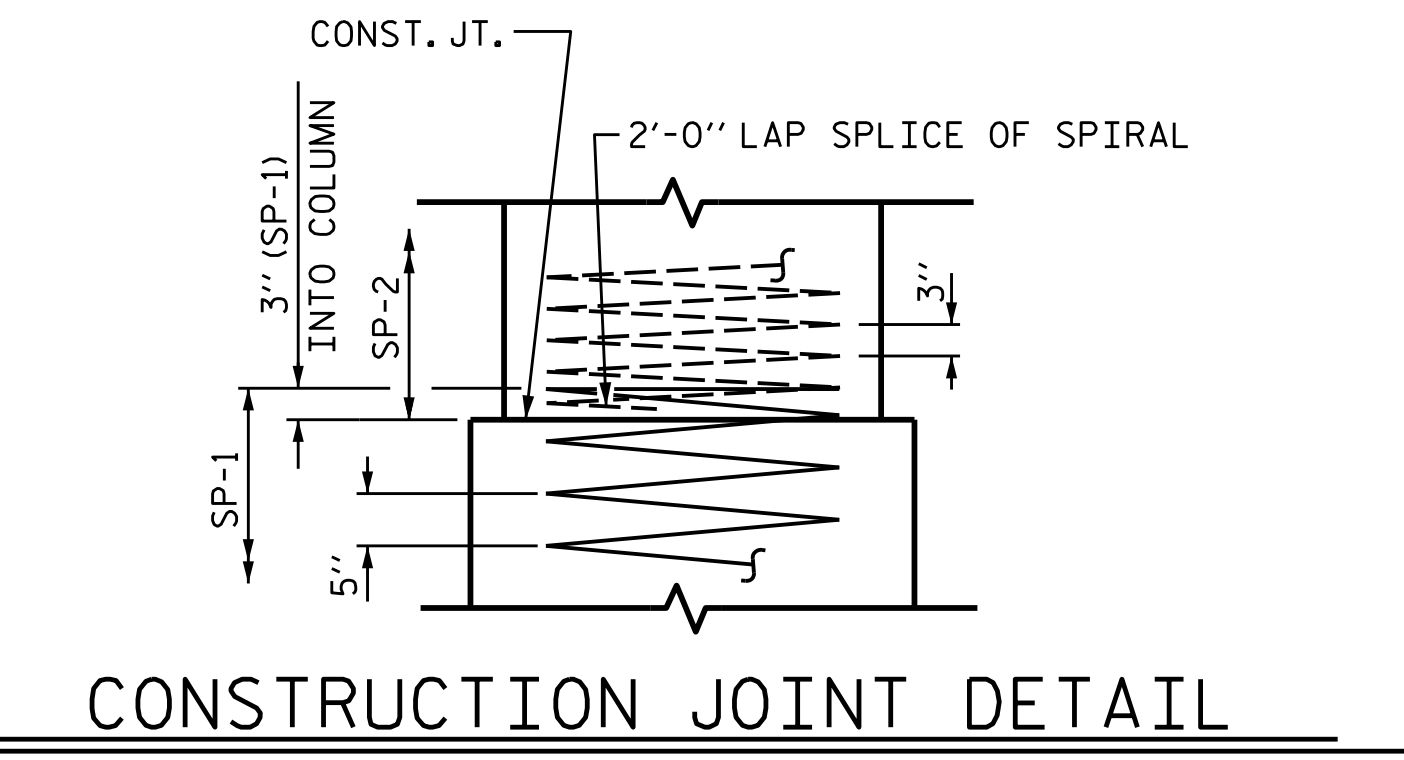
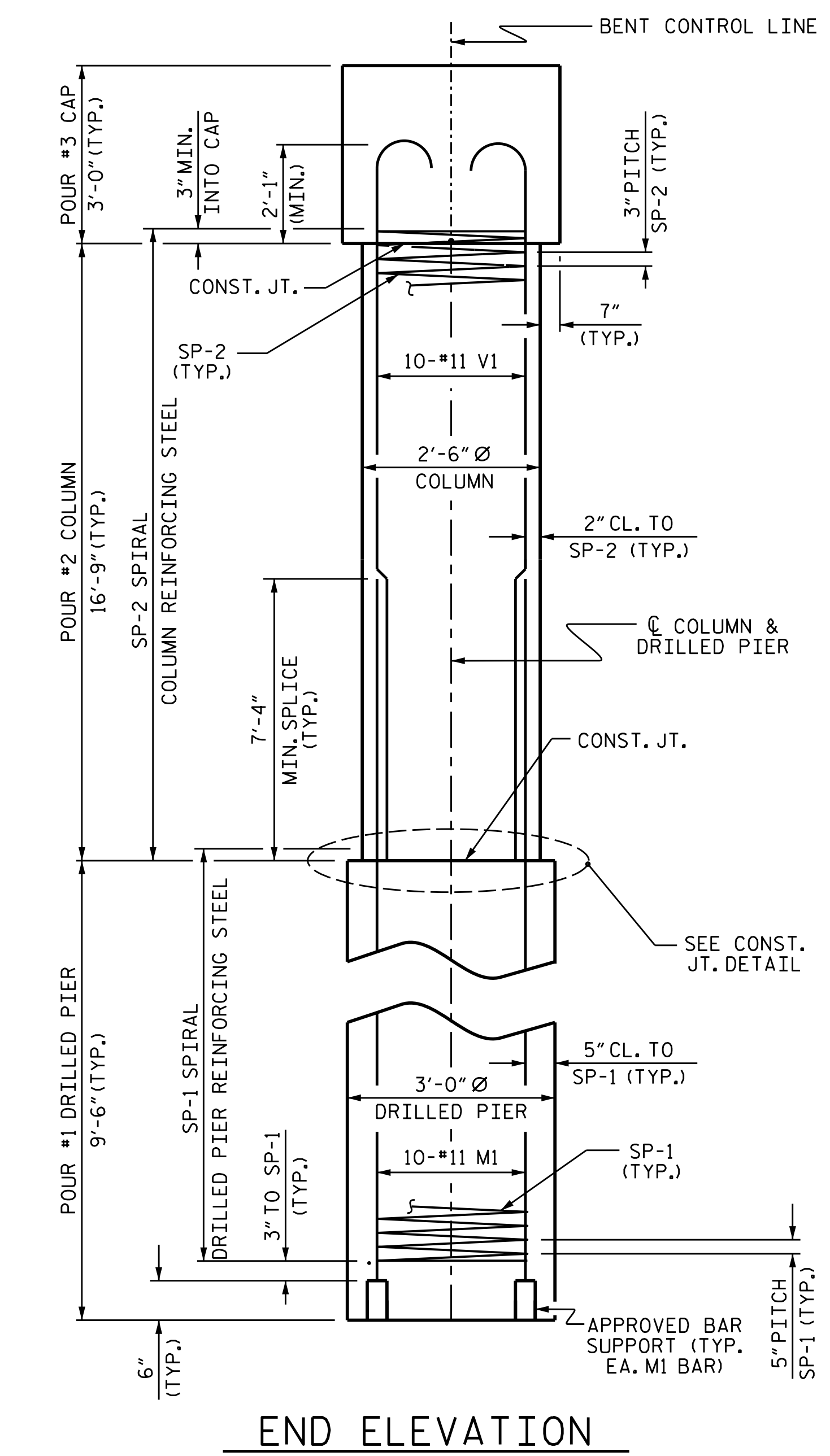
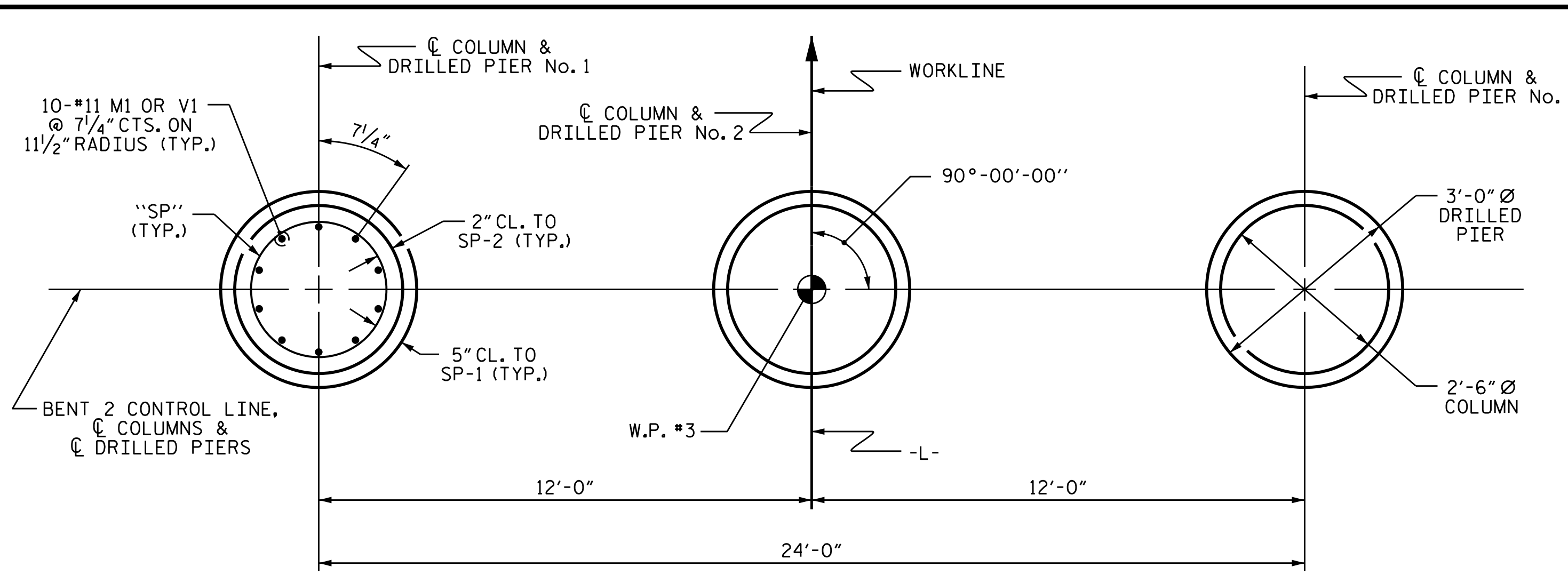
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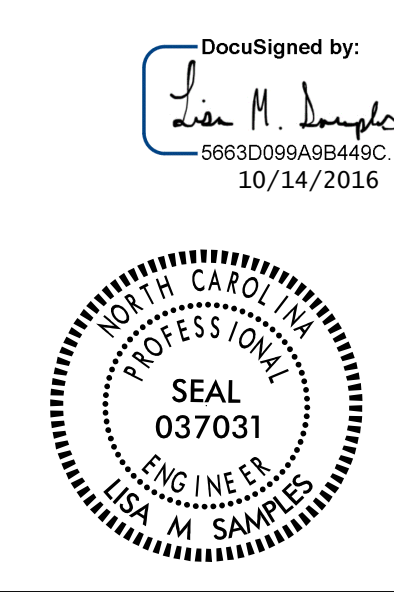


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
BENT No. 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-18
					TOTAL SHEETS 24



BILL OF MATERIAL					
BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	1	35'-2"	1868
B2	6	#5	STR	32'-2"	201
D1	40	#8	STR	2'-3"	240
M1	30	#11	STR	19'-4"	3082
S1	52	#5	2	9'-6"	515
U1	6	#4	3	6'-2"	25
U2	8	#4	3	5'-6"	29
V1	30	#11	4	20'-5"	3254
REINFORCING STEEL (FOR BENT 2)					9214 LBS.
SP-1	3	*	5	153'-10"	481
SP-2	3	**	6	464'-4"	931
SPIRAL COLUMN REINFORCING STEEL (FOR BENT 2)					1412 LBS.
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR					
** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR					
CLASS A CONCRETE BREAKDOWN (FOR BENT 2)					
POUR #2 (COLUMNS)					9.1 C.Y.
POUR #3 (CAP)					13.2 C.Y.
TOTAL CLASS A CONCRETE					22.3 C.Y.
DRILLED PIERS: (FOR BENT 2)					
DRILLED PIER CONCRETE					
POUR #1 (DRILLED PIERS)					7.5 C.Y.
3'-0" Ø DRILLED PIER NOT IN SOIL					28.50 LIN. FT.
3'-0" Ø DRILLED PIER IN SOIL					0 LIN. FT.
CSL TUBES					132.00 LIN. FT.

PROJECT NO. B-5398
 BURKE COUNTY
 STATION: 16+45.00 -L-
 SHEET 2 OF 2



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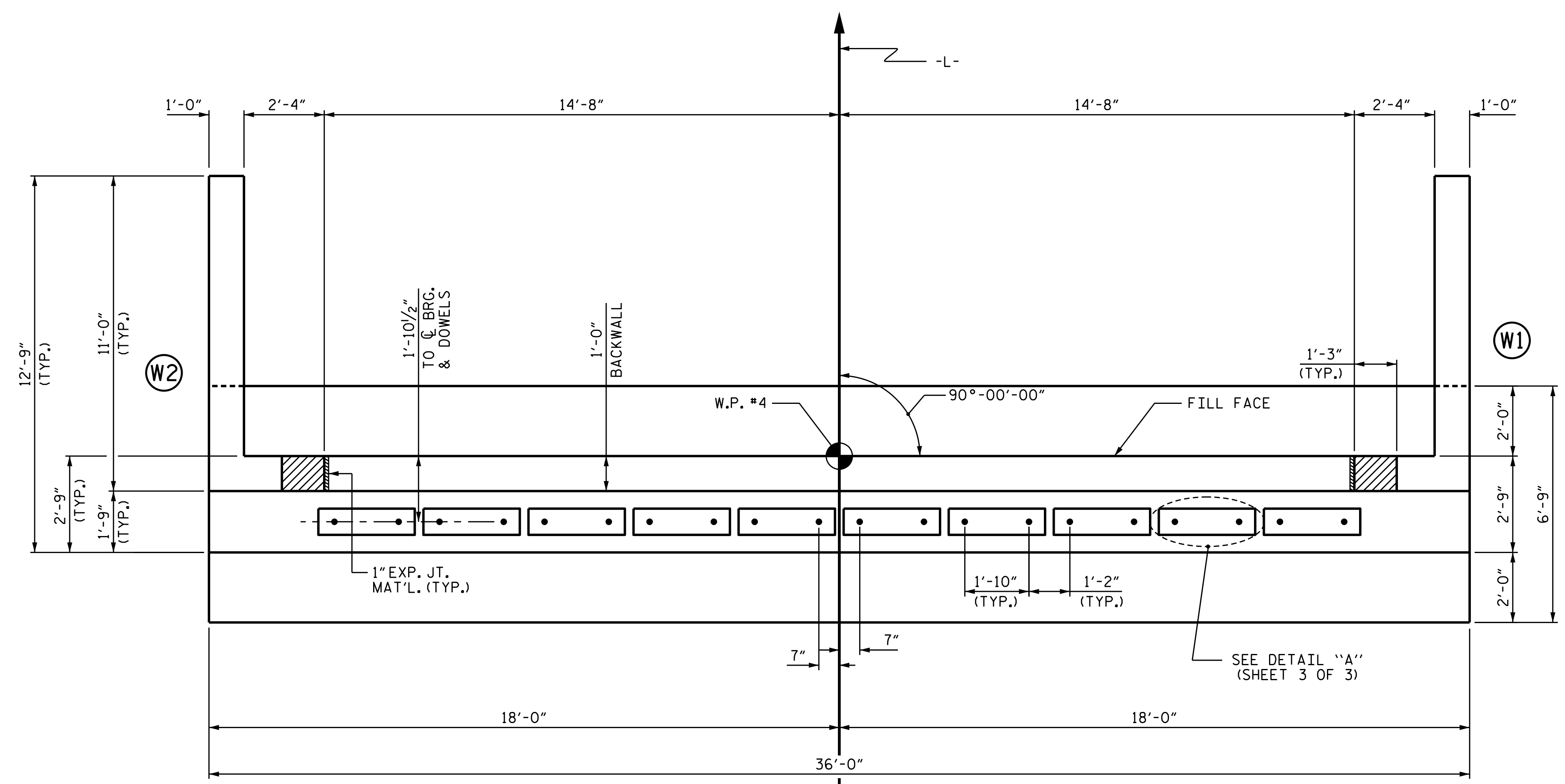
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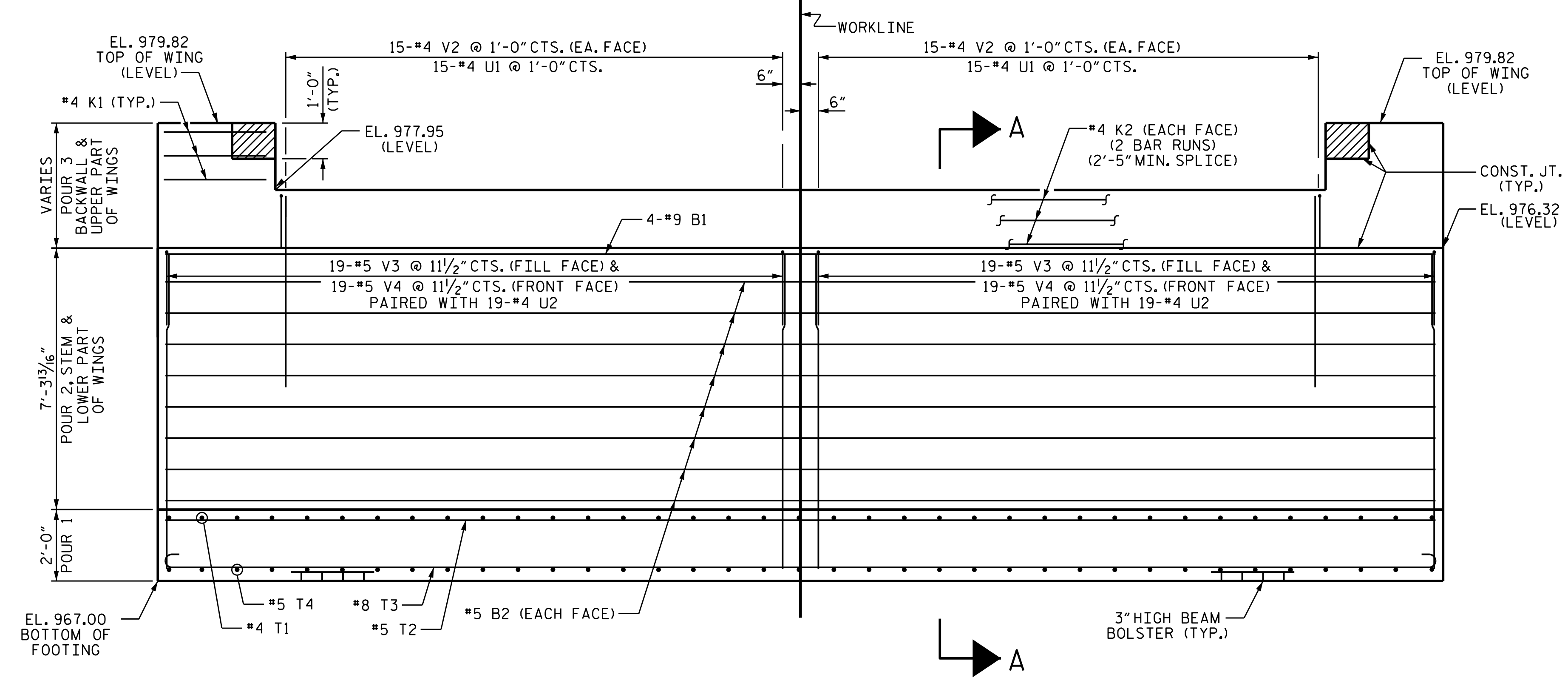
SHEET NO. S-19
 TOTAL SHEETS 24

NOTES

U-BARS IN STEM MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
 THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.
 FOR WING DETAILS, SEE SHEET 2 OF 3.



PLAN

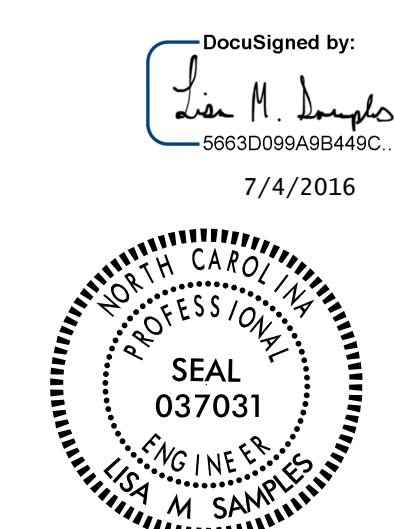


ELEVATION

WINGS NOT SHOWN FOR CLARITY. FOR SECTION A-A, SEE SHEET 3 OF 3.

PROJECT NO. B-5398
BURKE COUNTY
 STATION: 16+45.00 -L-
 SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT No. 2

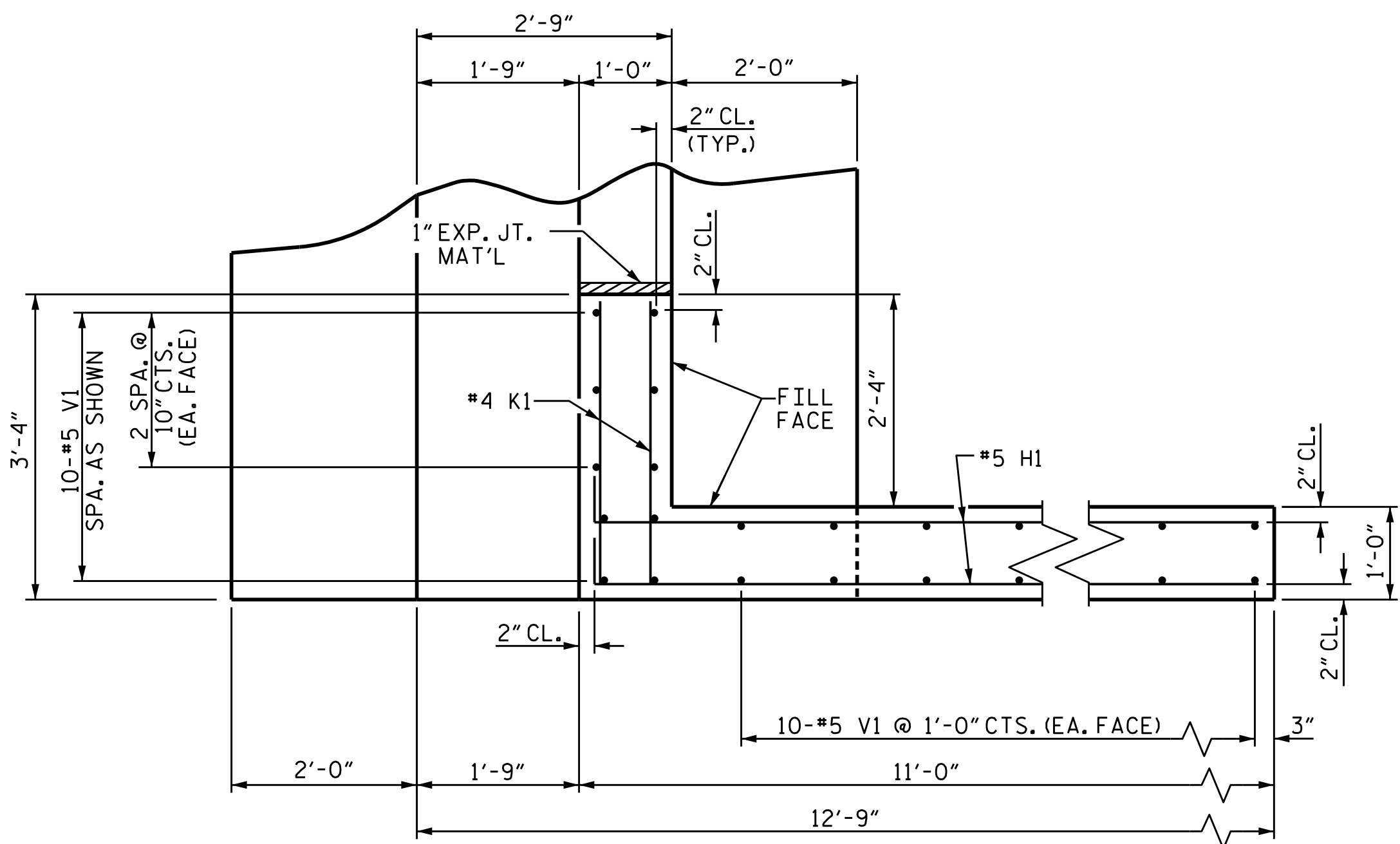


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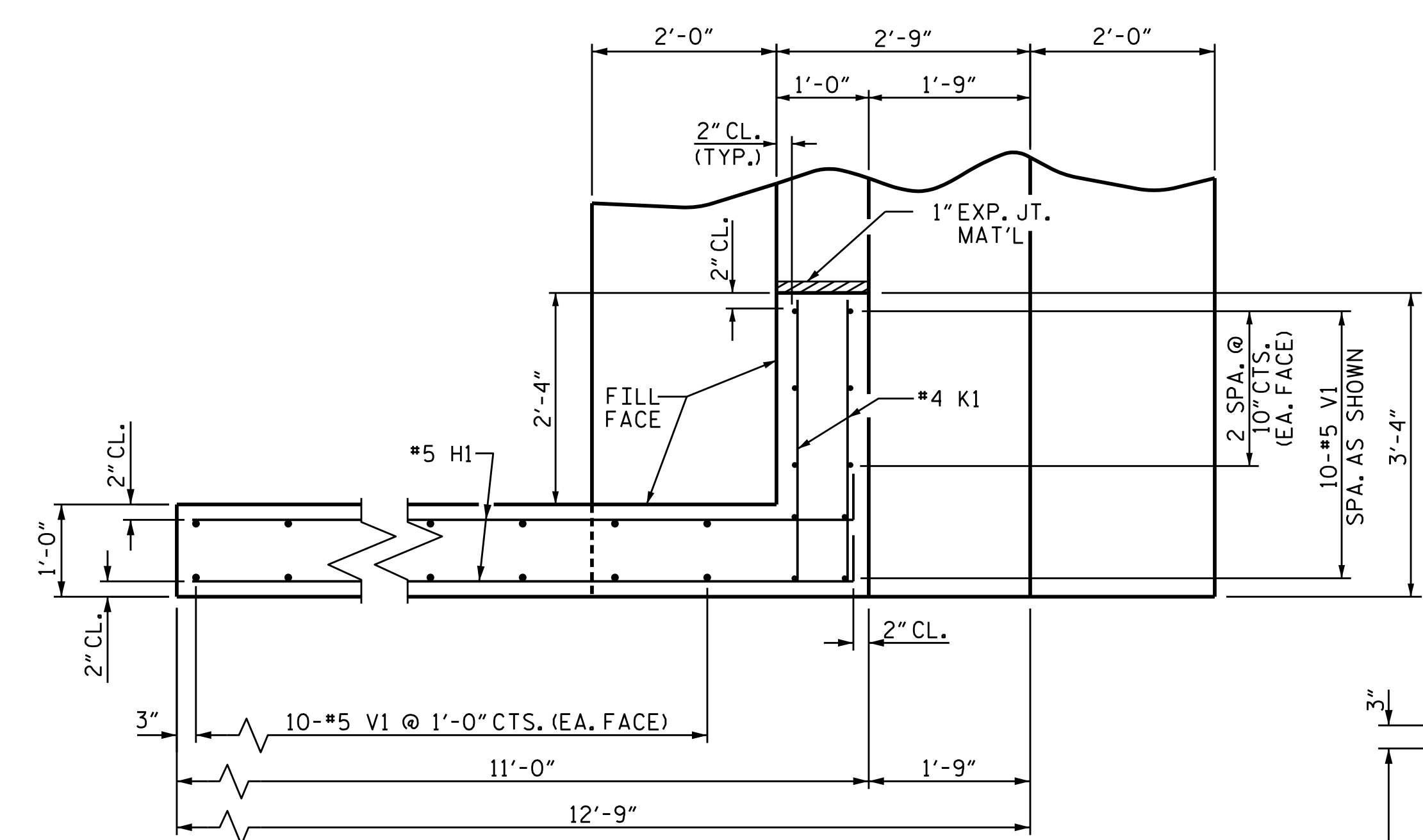
DRAWN BY : J.M. KEPICH DATE : 02/16
 CHECKED BY : L.M. SAMPLES DATE : 04/16
 DESIGN ENGINEER OF RECORD : L.M. SAMPLES DATE : 05/16

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			24

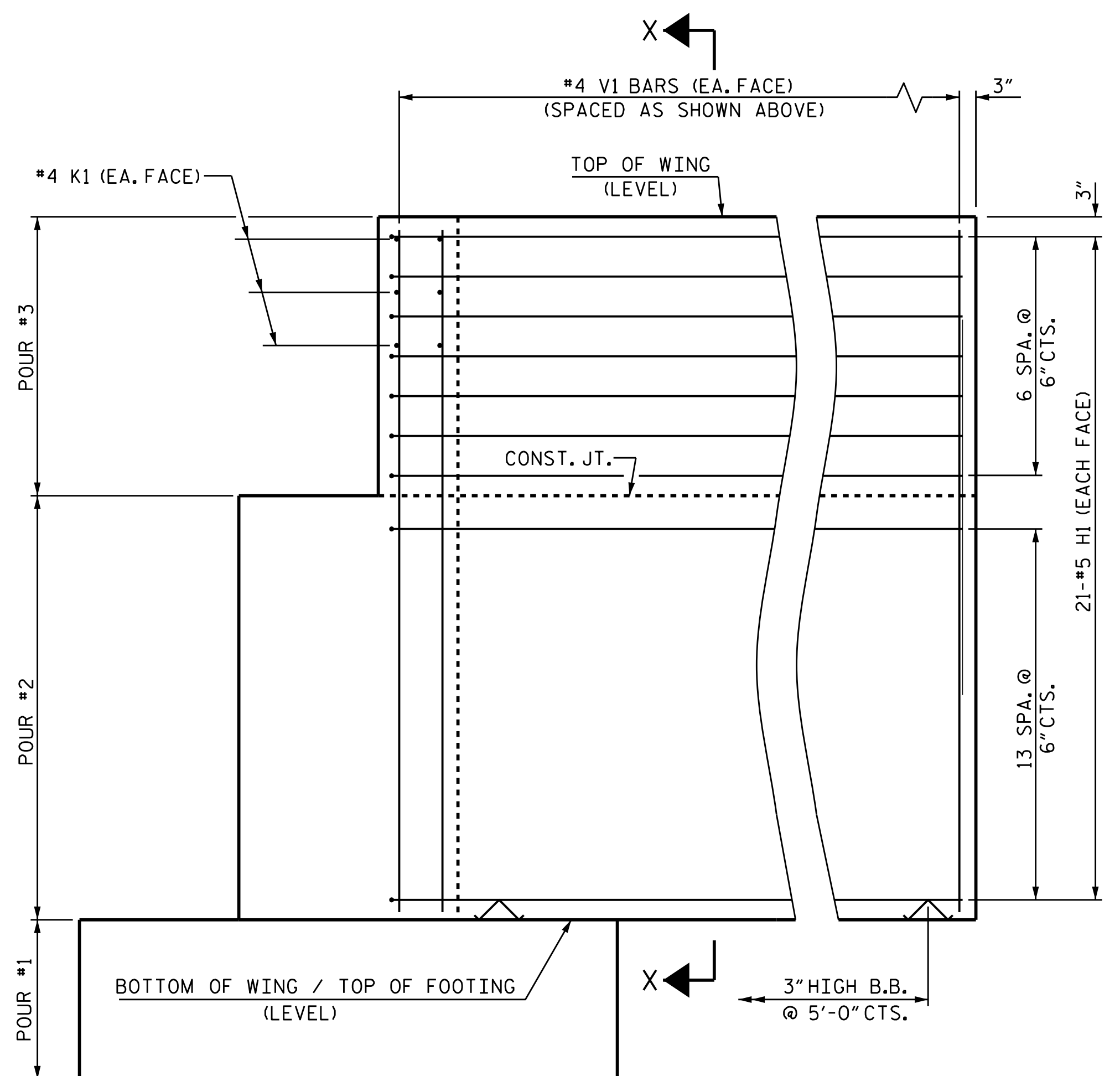
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



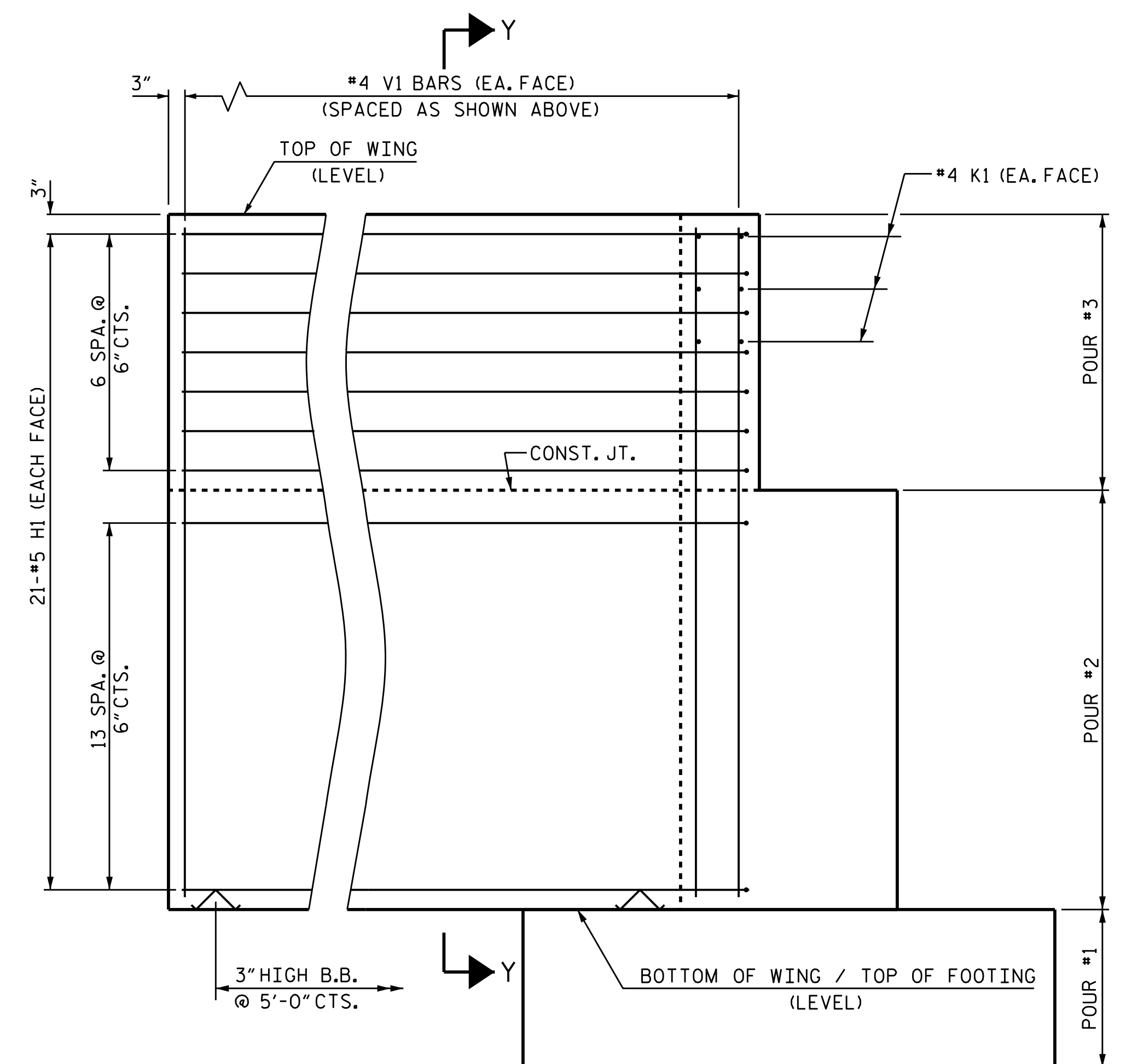
PLAN OF WING (W1)



PLAN OF WING (W2)

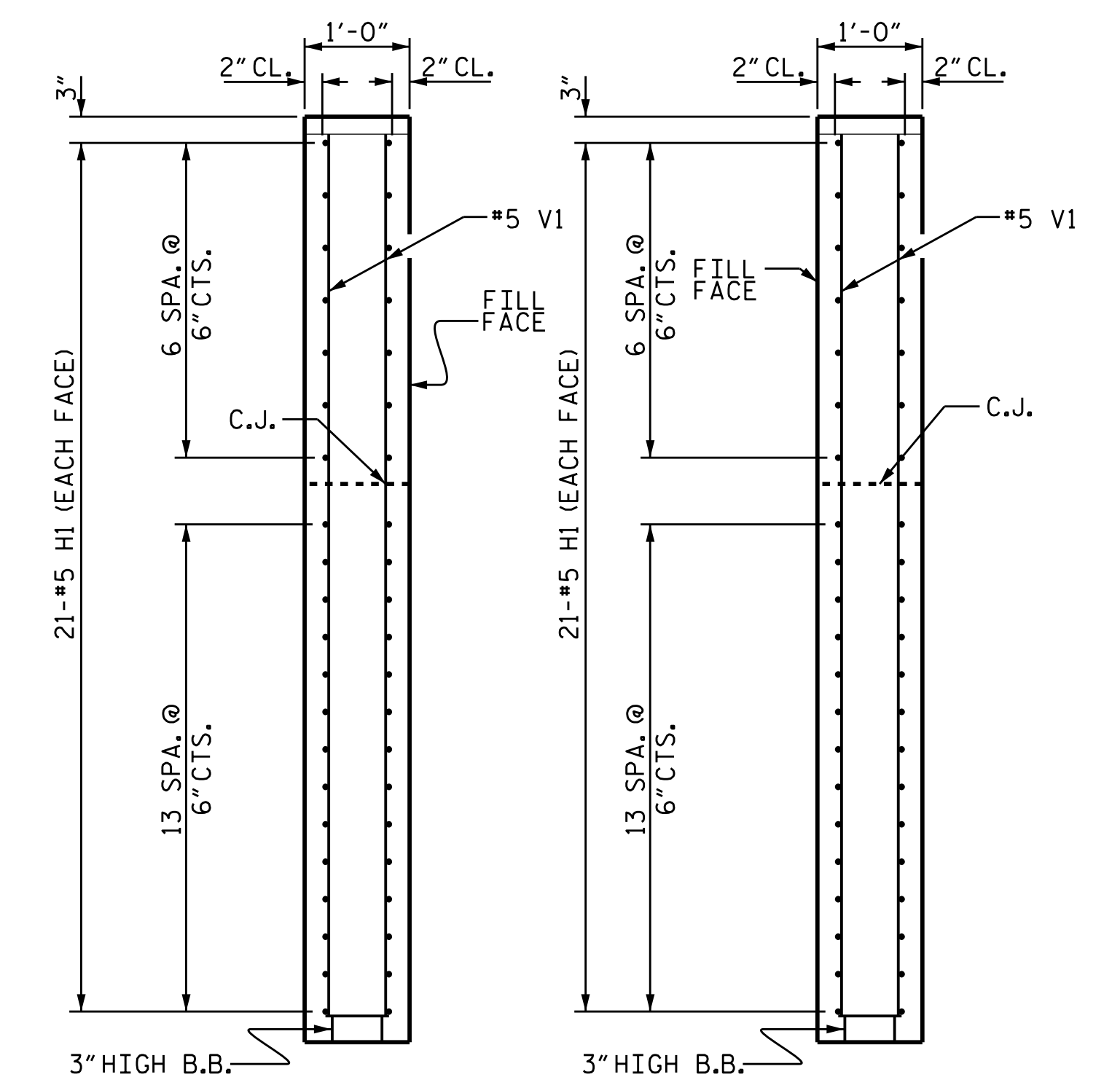


ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

WING DETAILS



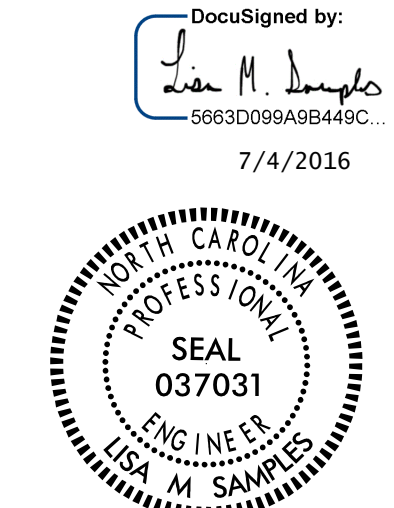
SECTION X-X

SECTION Y-Y

PROJECT NO. B-5398
 BURKE COUNTY
 STATION: 16+45.00 -L-
 SHEET 2 OF 3

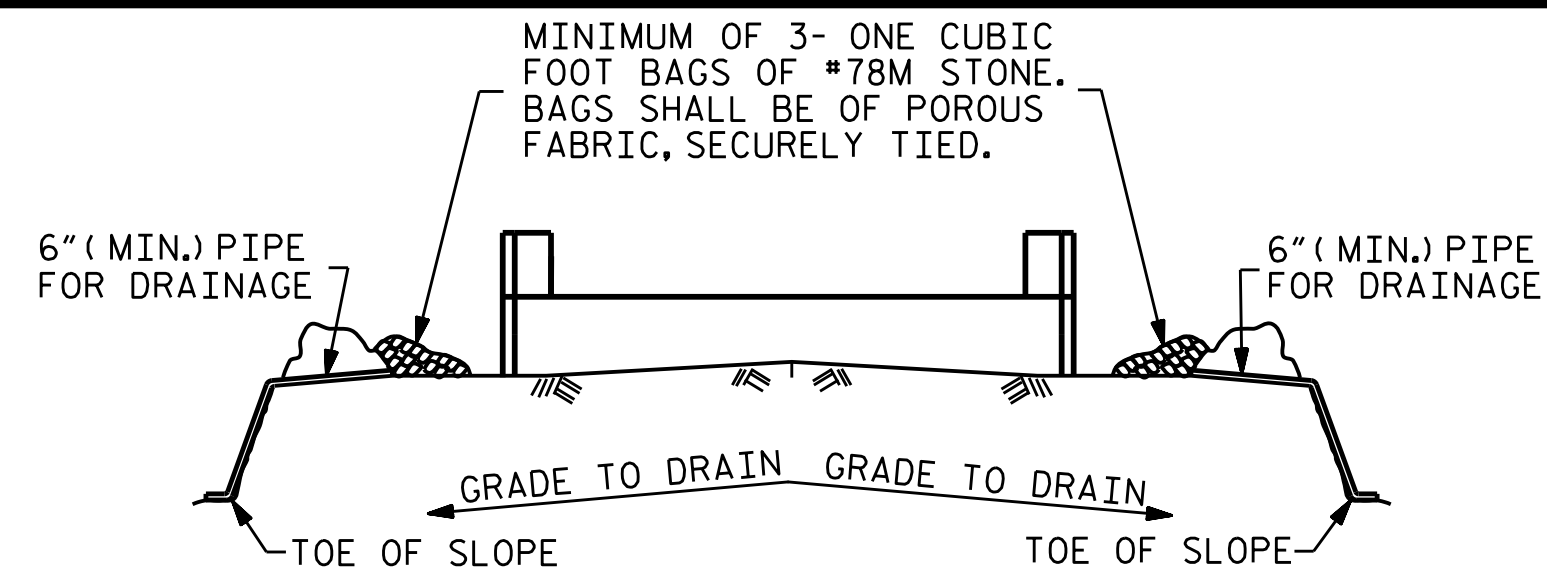
DRAWN BY : J.M. KEPICH DATE : 02/16
 CHECKED BY : L.M. SAMPLES DATE : 04/16
 DESIGN ENGINEER OF RECORD : L.M. SAMPLES DATE : 05/16

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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUBSTRUCTURE END BENT No. 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-21
					TOTAL SHEETS 24

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

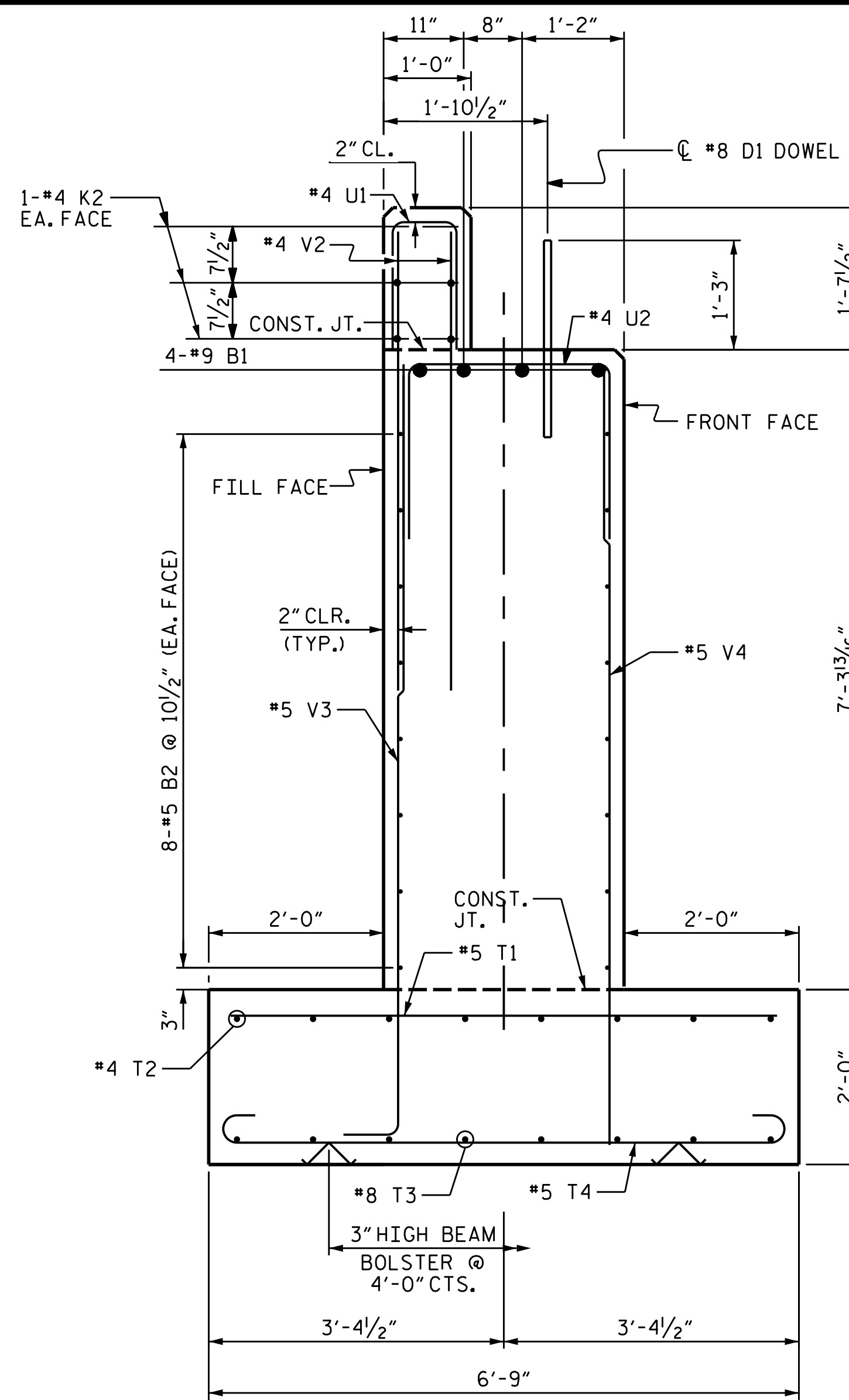
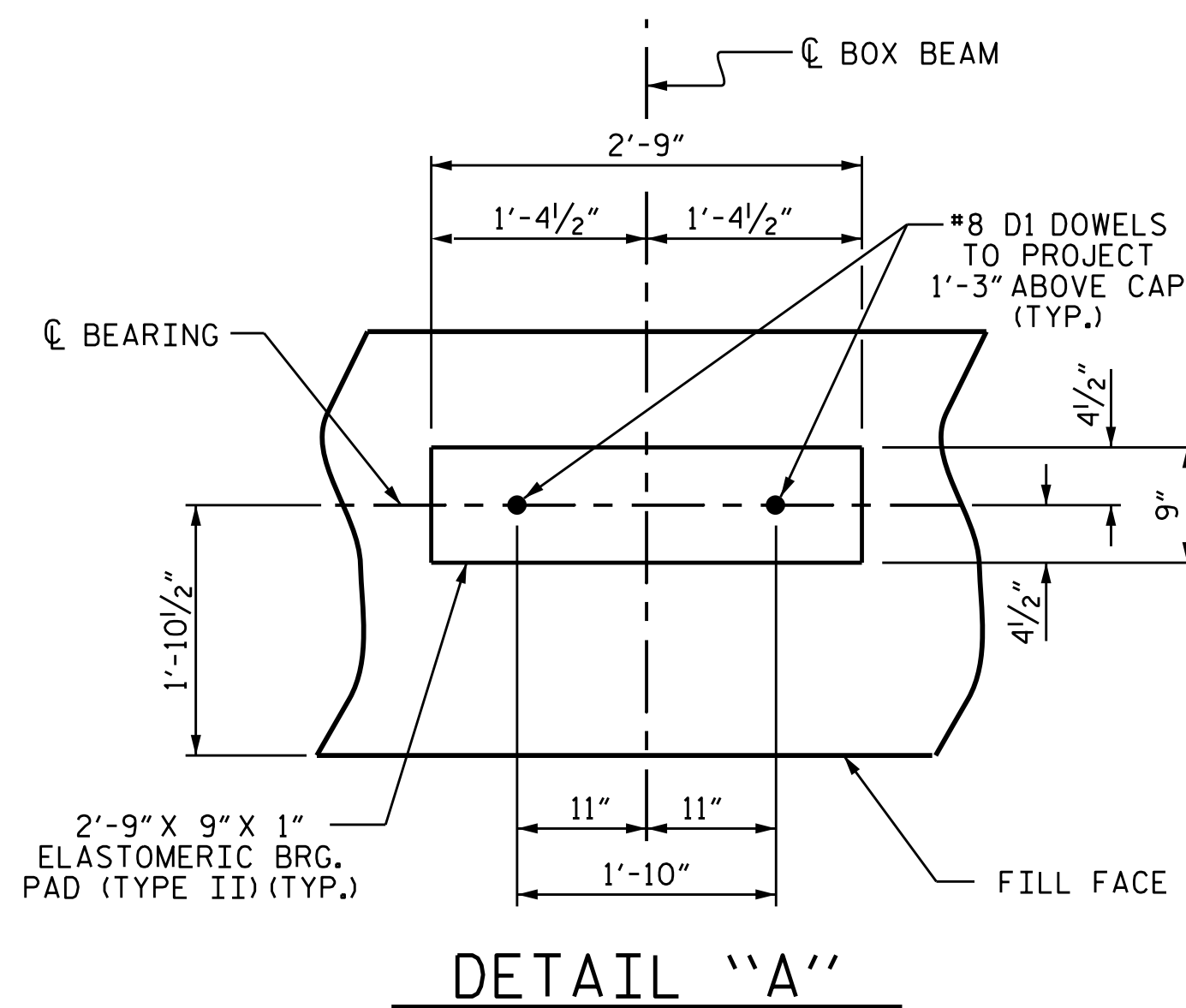


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

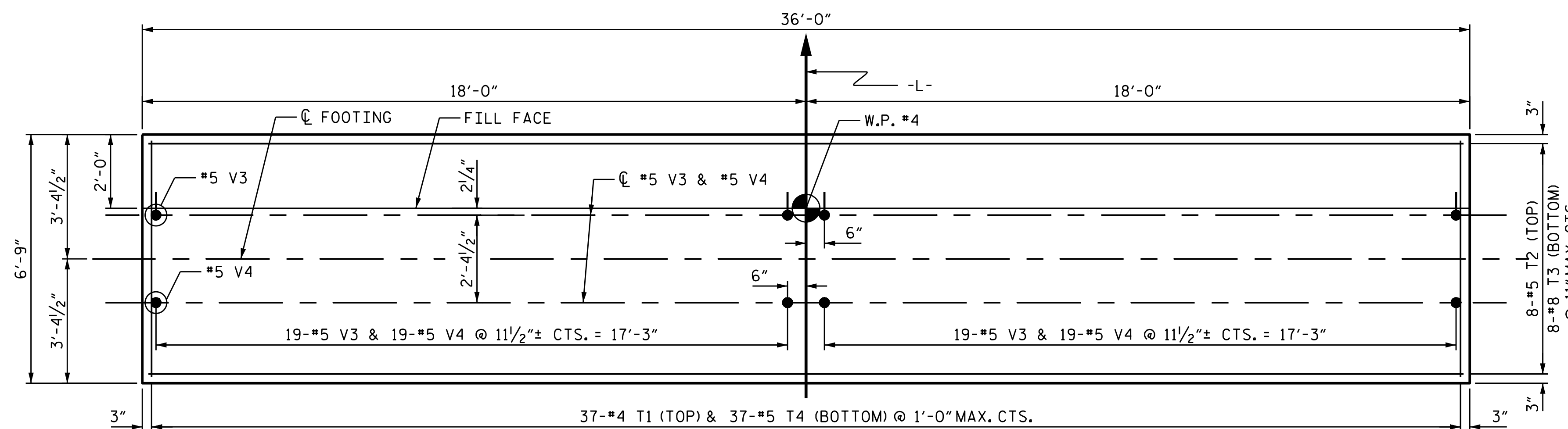
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

TEMPORARY DRAINAGE AT END BENT

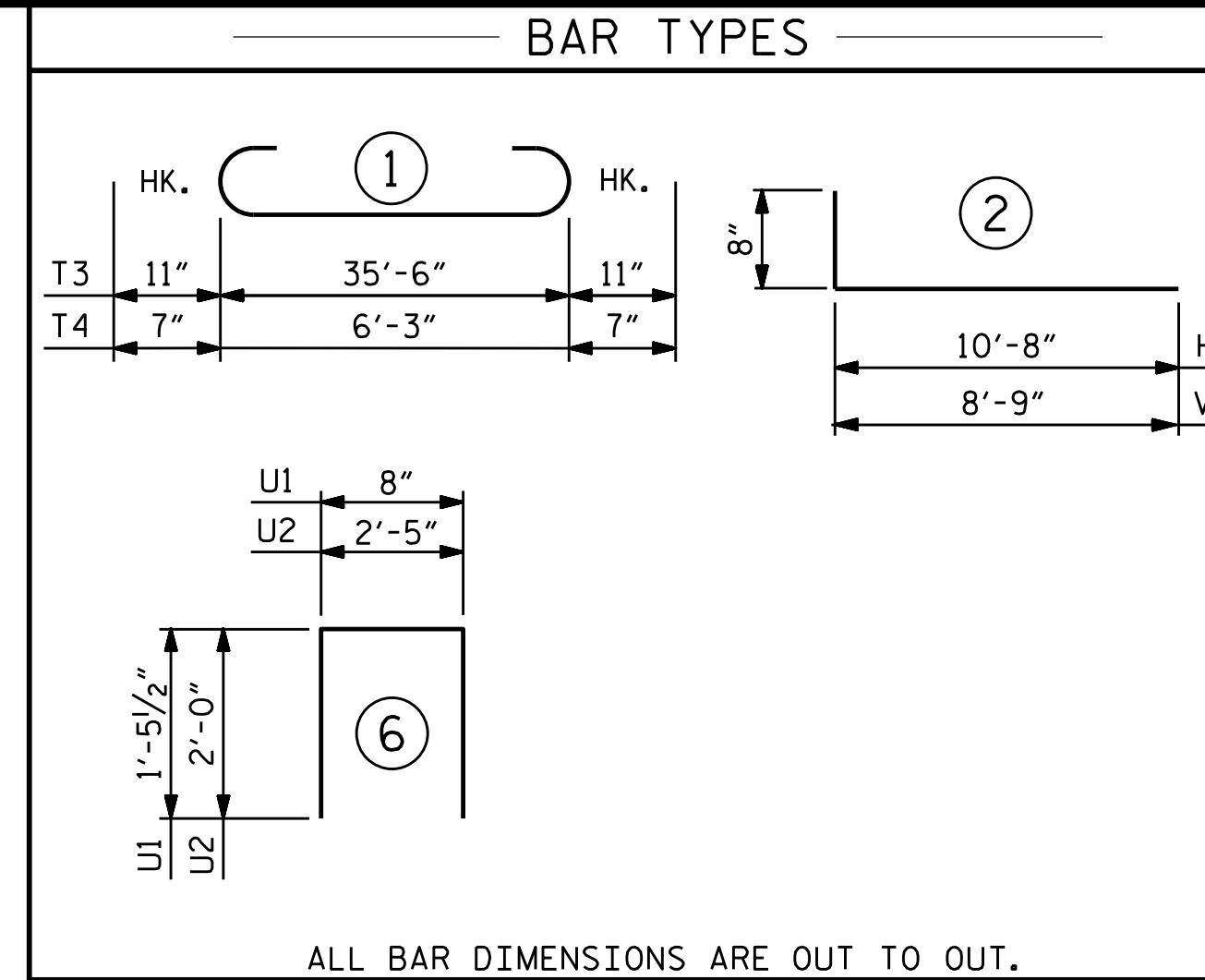


SECTION A-A



PLAN OF FOOTING

(END BENT No. 2)



BILL OF MATERIAL FOR END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#9	STR	35'-6"	483
B2	16	#5	STR	35'-6"	592
D1	20	#8	STR	2'-3"	120
H1	84	#5	2	11'-4"	993
K1	12	#4	STR	2'-11"	23
K2	12	#4	STR	19'-1"	153
T1	37	#4	STR	6'-3"	154
T2	8	#5	STR	35'-6"	296
T3	8	#8	1	37'-4"	797
T4	37	#5	1	7'-5"	286
U1	30	#4	6	3'-7"	72
U2	38	#4	6	6'-5"	163
V1	60	#5	STR	10'-5"	652
V2	60	#4	STR	5'-3"	210
V3	38	#5	2	9'-5"	373
V4	38	#5	STR	8'-9"	347

REINFORCING STEEL (FOR END BENT 2) 5714 LBS.

CLASS A CONCRETE BREAKDOWN (FOR END BENT 2)

POUR #1	FOOTING	18.0 C.Y.
POUR #2	STEM & LOWER PART OF WINGS	26.8 C.Y.
POUR #3	BACKWALL & UPPER PART OF WINGS	5.2 C.Y.
TOTAL CLASS A CONCRETE		50.0 C.Y.

FOUNDATION EXCAVATION LUMP SUM

PROJECT NO. B-5398
BURKE COUNTY
STATION: 16+45.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENT No. 2

DocuSigned by:
Lisa M. Samples
6663D099A9B449C.
10/14/2016



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Suite 430
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NC License Number : C-3239

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REVISIONS

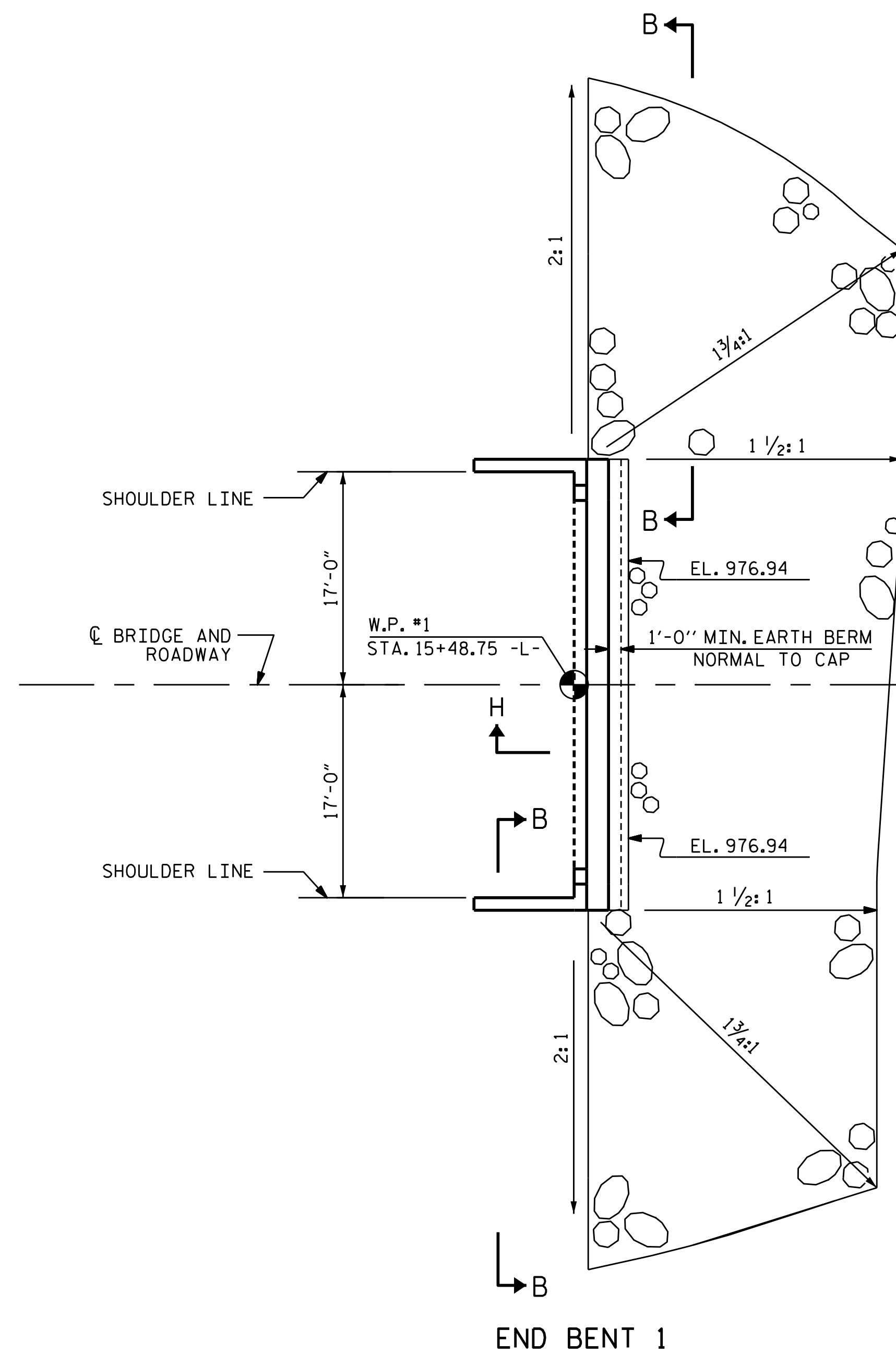
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-22
TOTAL SHEETS 24

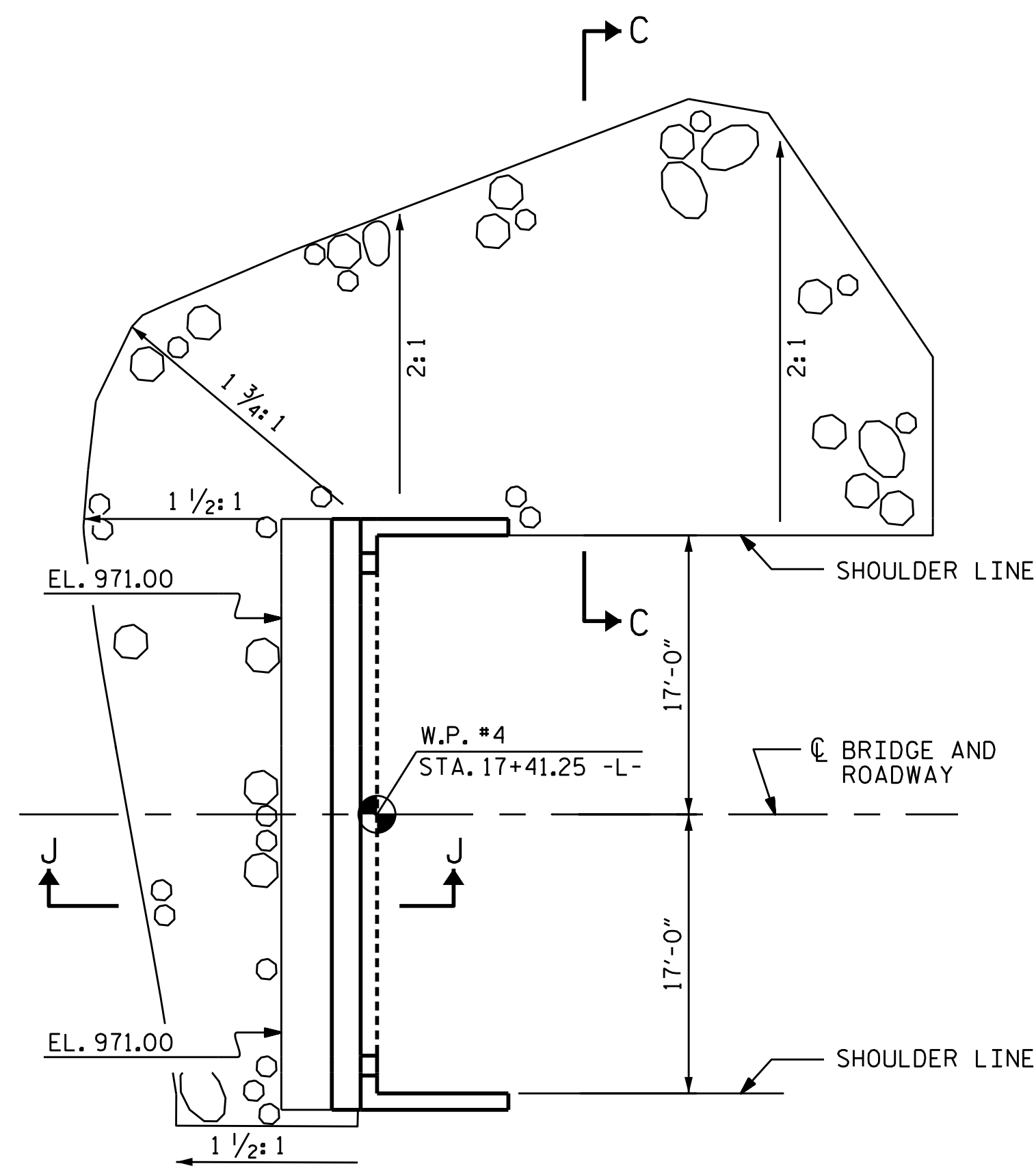
DRAWN BY : J.M. KEPICH DATE : 02/16
CHECKED BY : L.M. SAMPLES DATE : 04/16
DESIGN ENGINEER OF RECORD : L.M. SAMPLES DATE : 05/16

NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

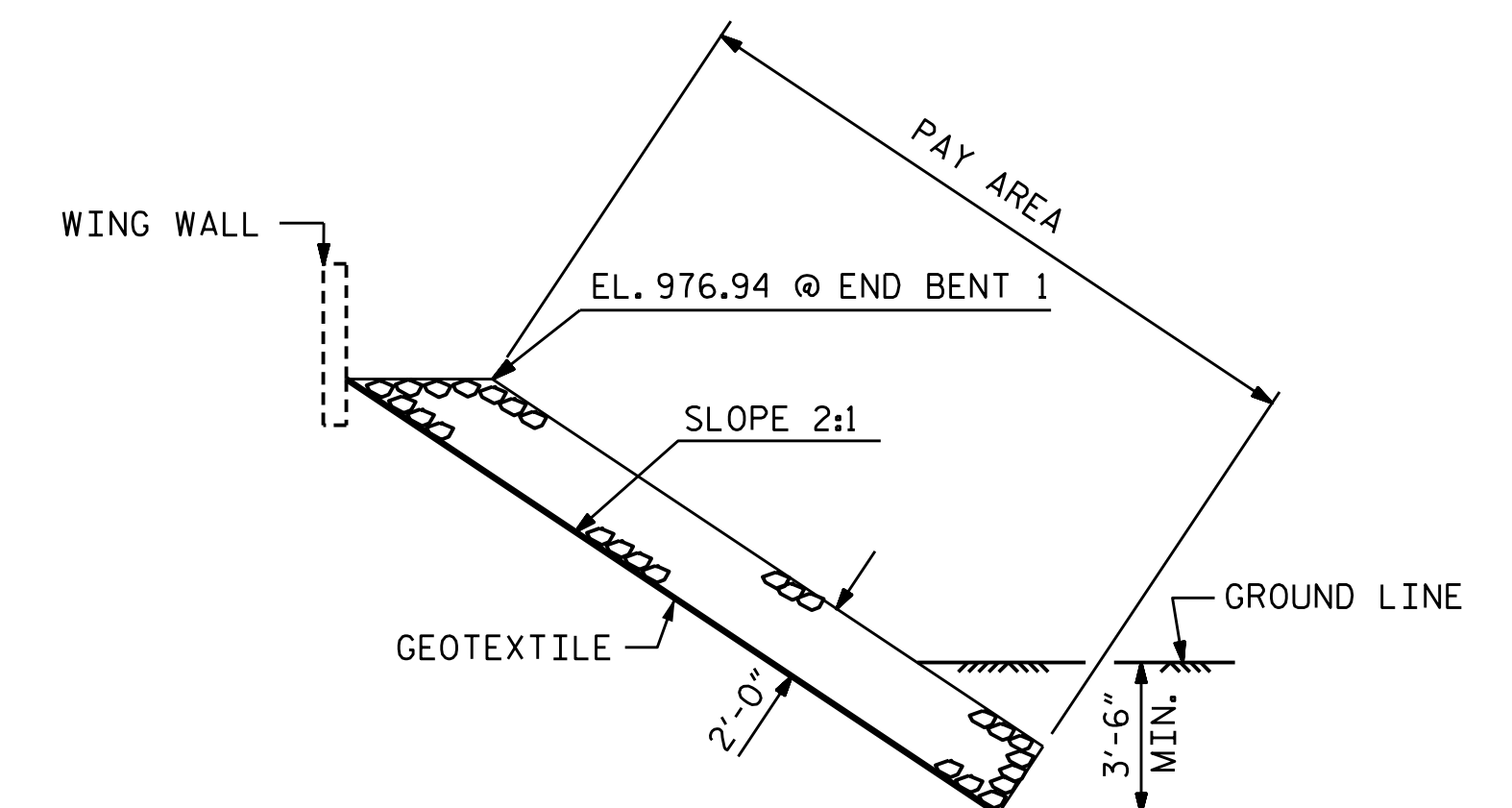
ESTIMATED QUANTITIES		
BRIDGE @ STA. 16+45.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	203	226
END BENT 2	172	192
TOTAL	375	418



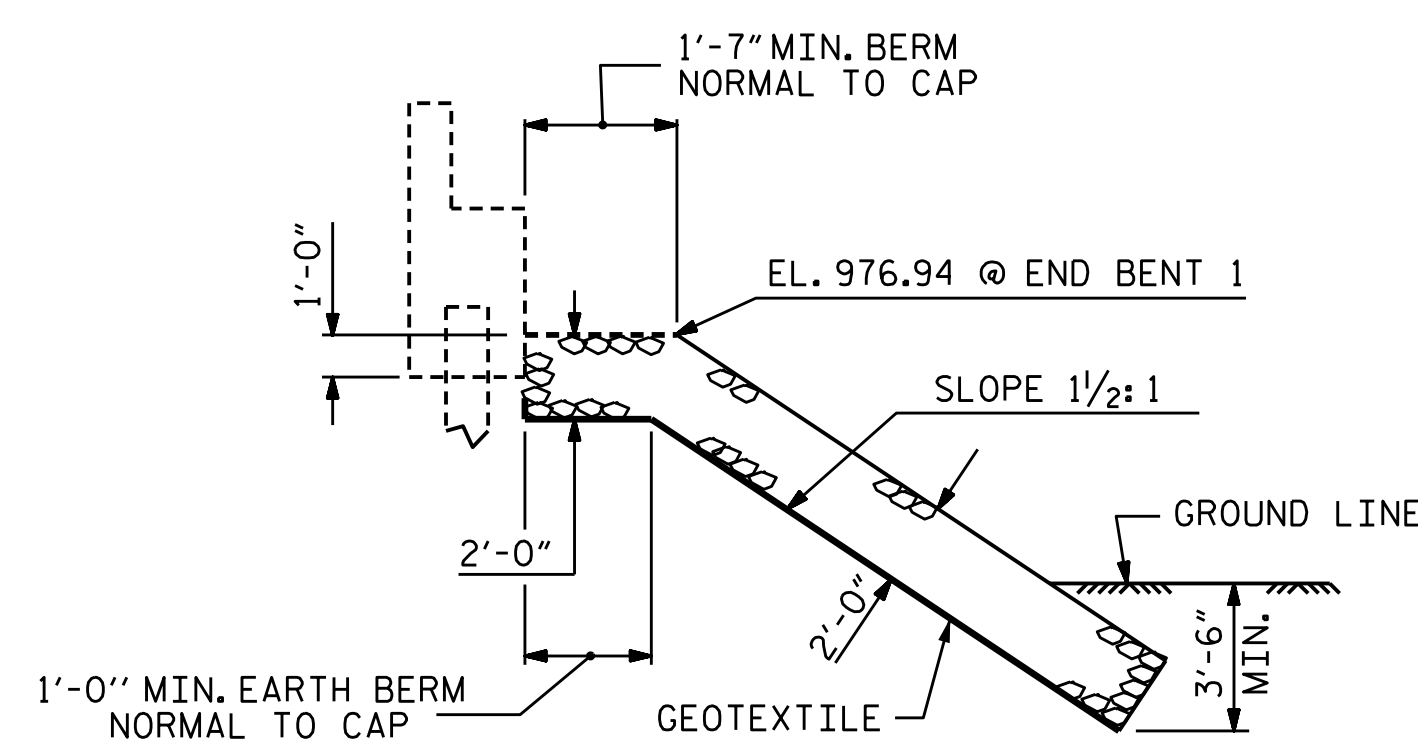
END BENT 1



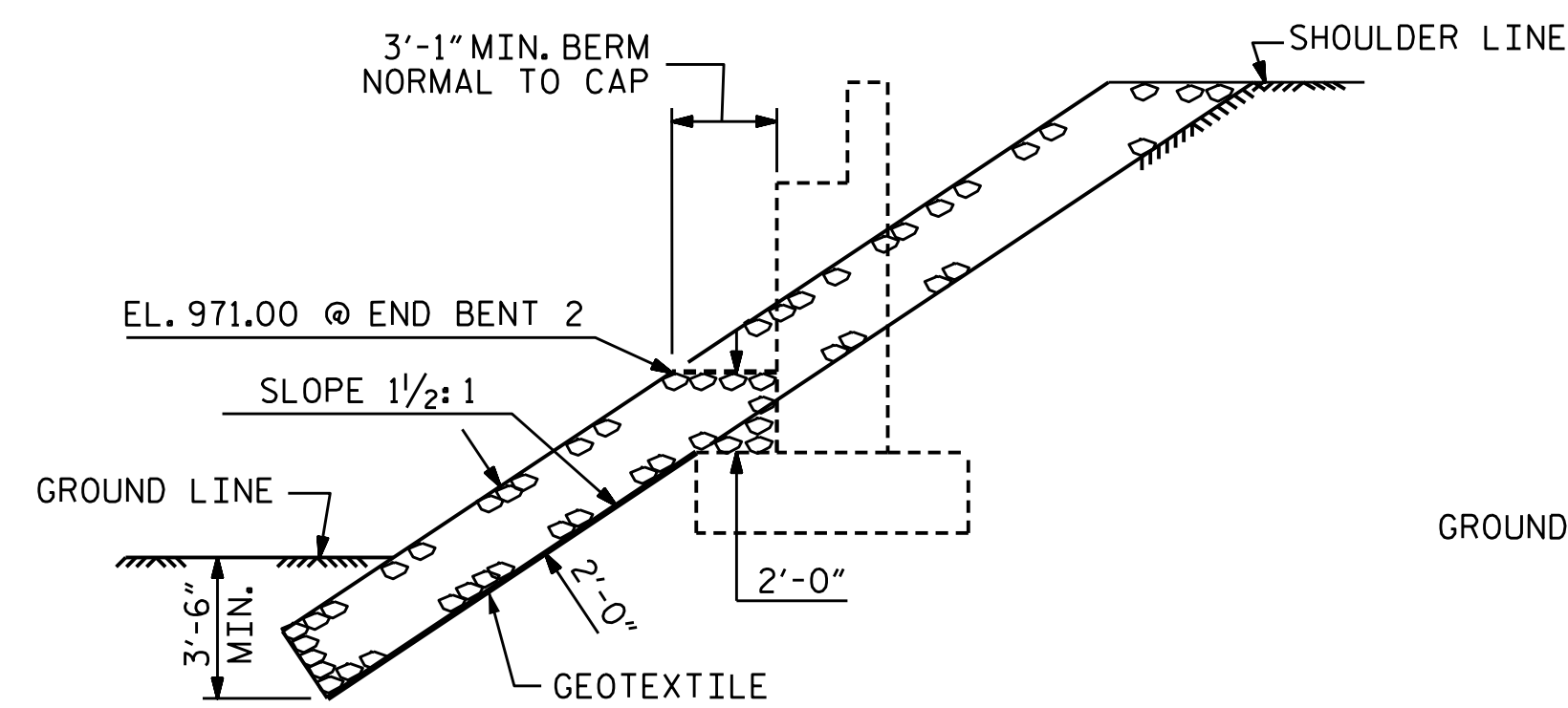
END BENT 2



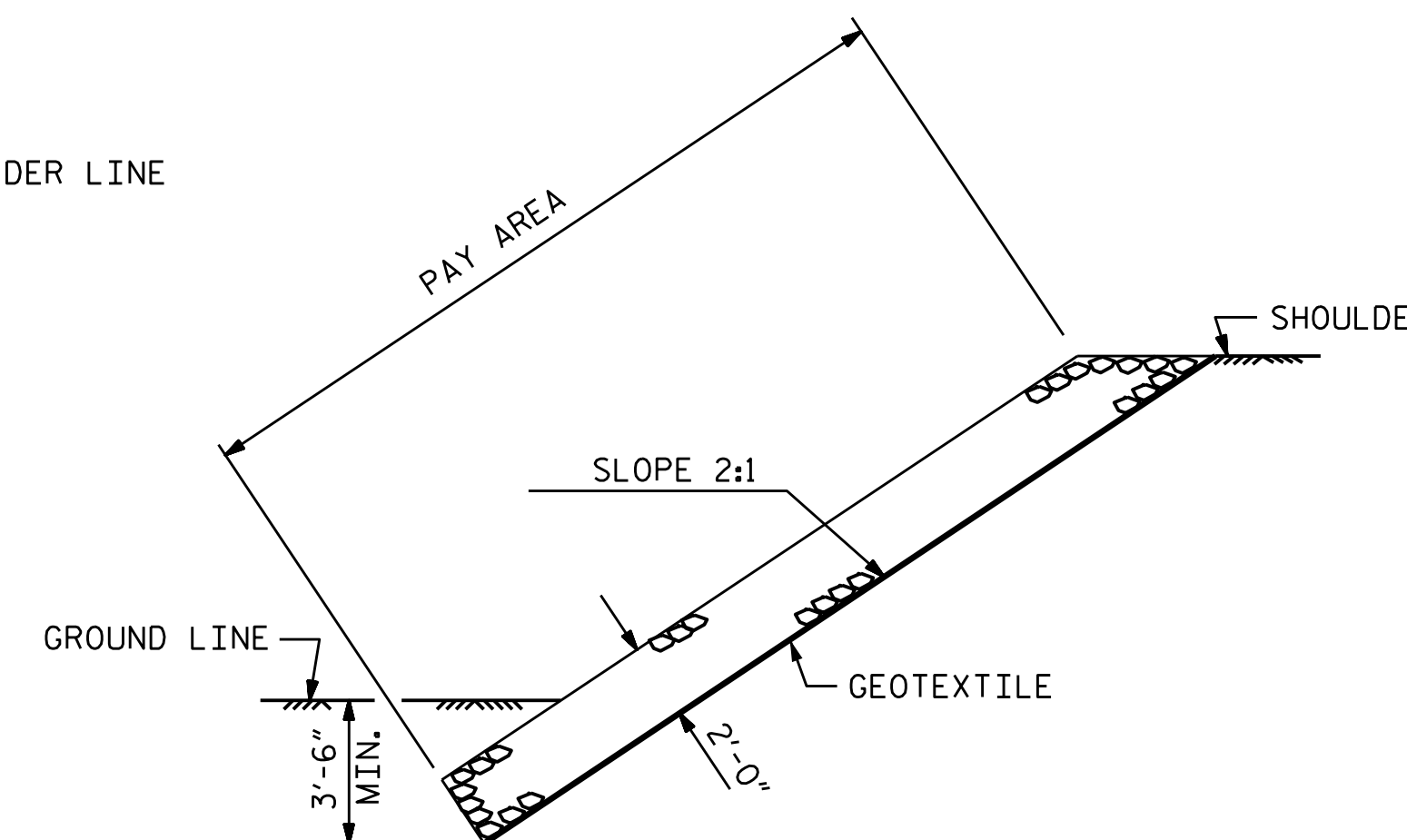
SECTION B-B



SECTION H-H



SECTION J-J



SECTION C-C

PROJECT NO. B-5398
BURKE COUNTY
STATION: 16+45.00 -L-

DocuSigned by:
Lisa M. Samples
5663D099A9B440C
10/14/2016



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD					
= RIP RAP DETAILS =					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

ASSEMBLED BY : J.M. KEPICH DATE : 02/16
CHECKED BY : L.M. SAMPLES DATE : 04/16

DRAWN BY : REK 1/84 REV. 5/1/06R TLA/GM
CHECKED BY : RDU 1/84 REV. 10/1/11 MSA/GM
REV. 12/21/11 MAA/GM

DESIGN ENGINEER OF RECORD : L.M. SAMPLES DATE : 05/16



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NC License Number : C-3239

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SIGNATURES COMPLETED

SHEET NO.	
S-23	TOTAL SHEETS 24

BILL OF MATERIAL						
APPROACH SLAB AT EB #1						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	13	#4	STR	28'-10"	250	
A2	13	#4	STR	28'-10"	250	
*B1	58	#5	STR	11'-2"	676	
B2	58	#6	STR	11'-8"	1016	
REINFORCING STEEL					LBS.	1266
* EPOXY COATED REINFORCING STEEL					LBS.	926
CLASS AA CONCRETE					C. Y.	15.4
APPROACH SLAB AT EB #2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	13	#4	STR	28'-10"	250	
A2	13	#4	STR	28'-10"	250	
*B1	58	#5	STR	11'-2"	676	
B2	58	#6	STR	11'-8"	1016	
REINFORCING STEEL					LBS.	1266
* EPOXY COATED REINFORCING STEEL					LBS.	926
CLASS AA CONCRETE					C. Y.	15.4

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4"Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.

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

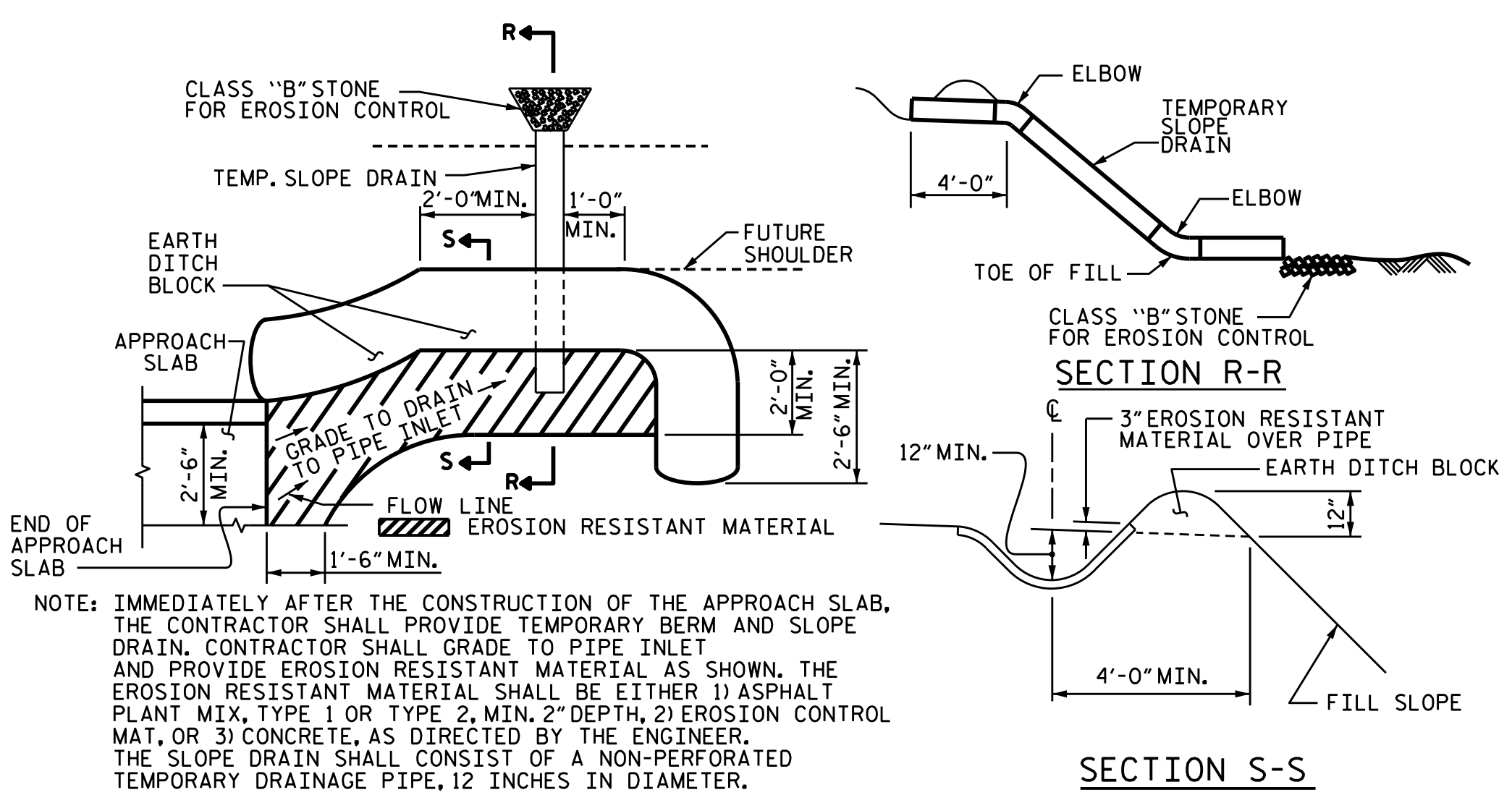
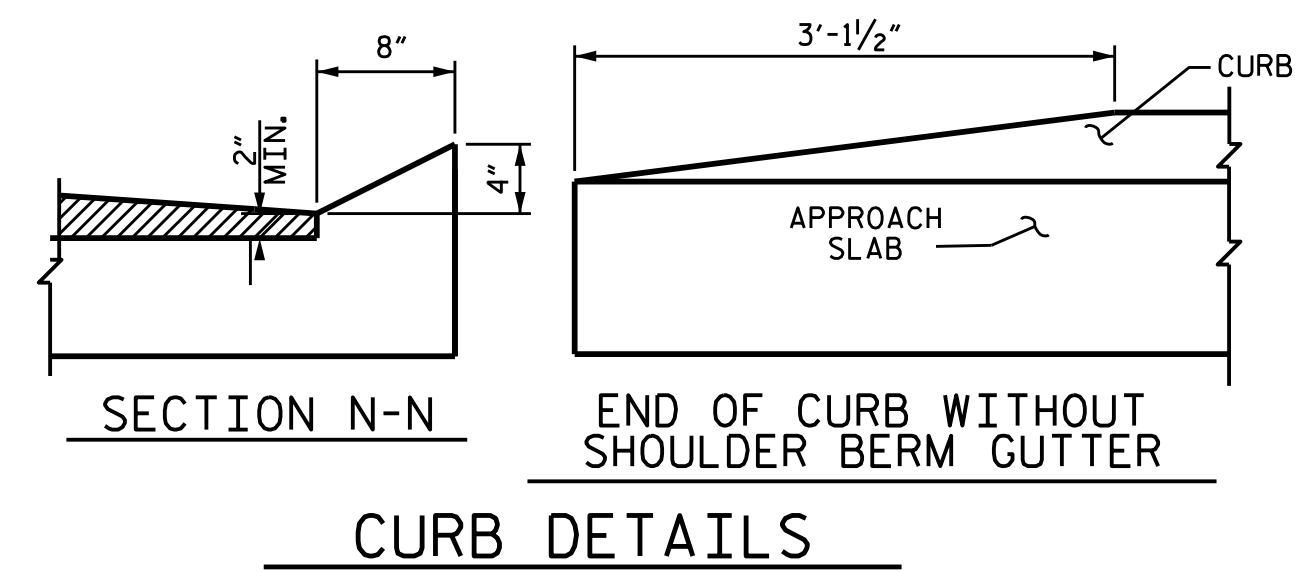
#78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

#78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

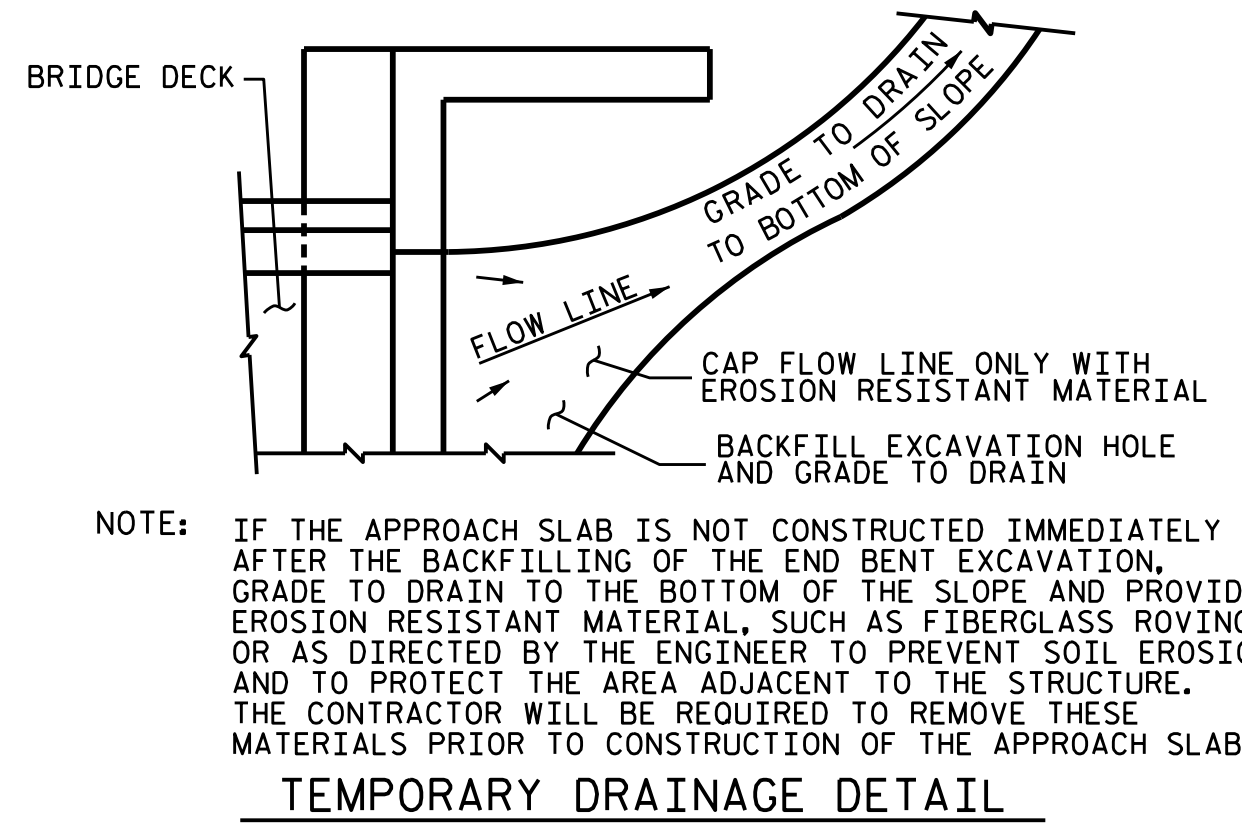
FOR THE 4"Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

ARE 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.

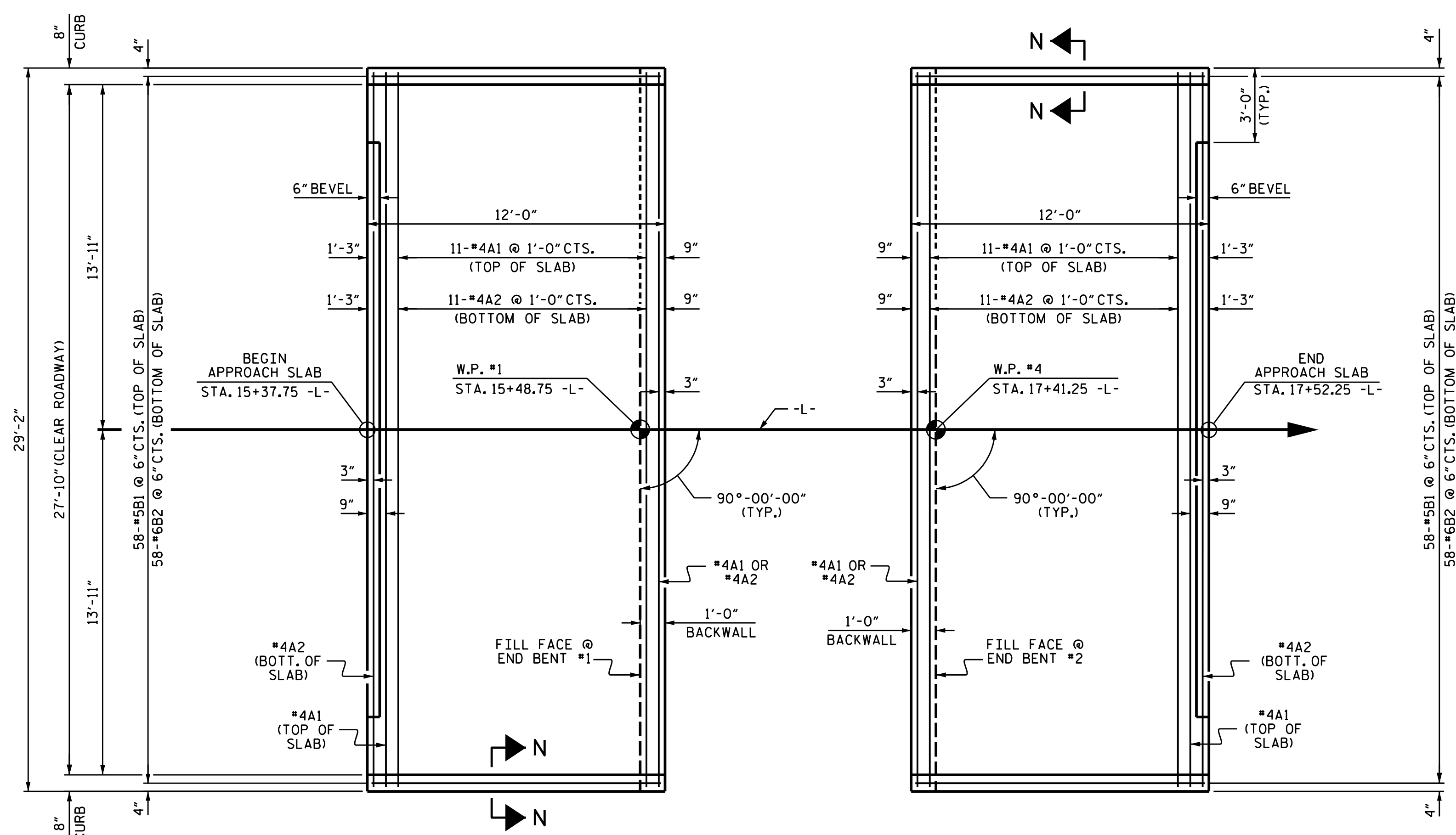
APPROACH SLAB GROOVING IS NOT REQUIRED.



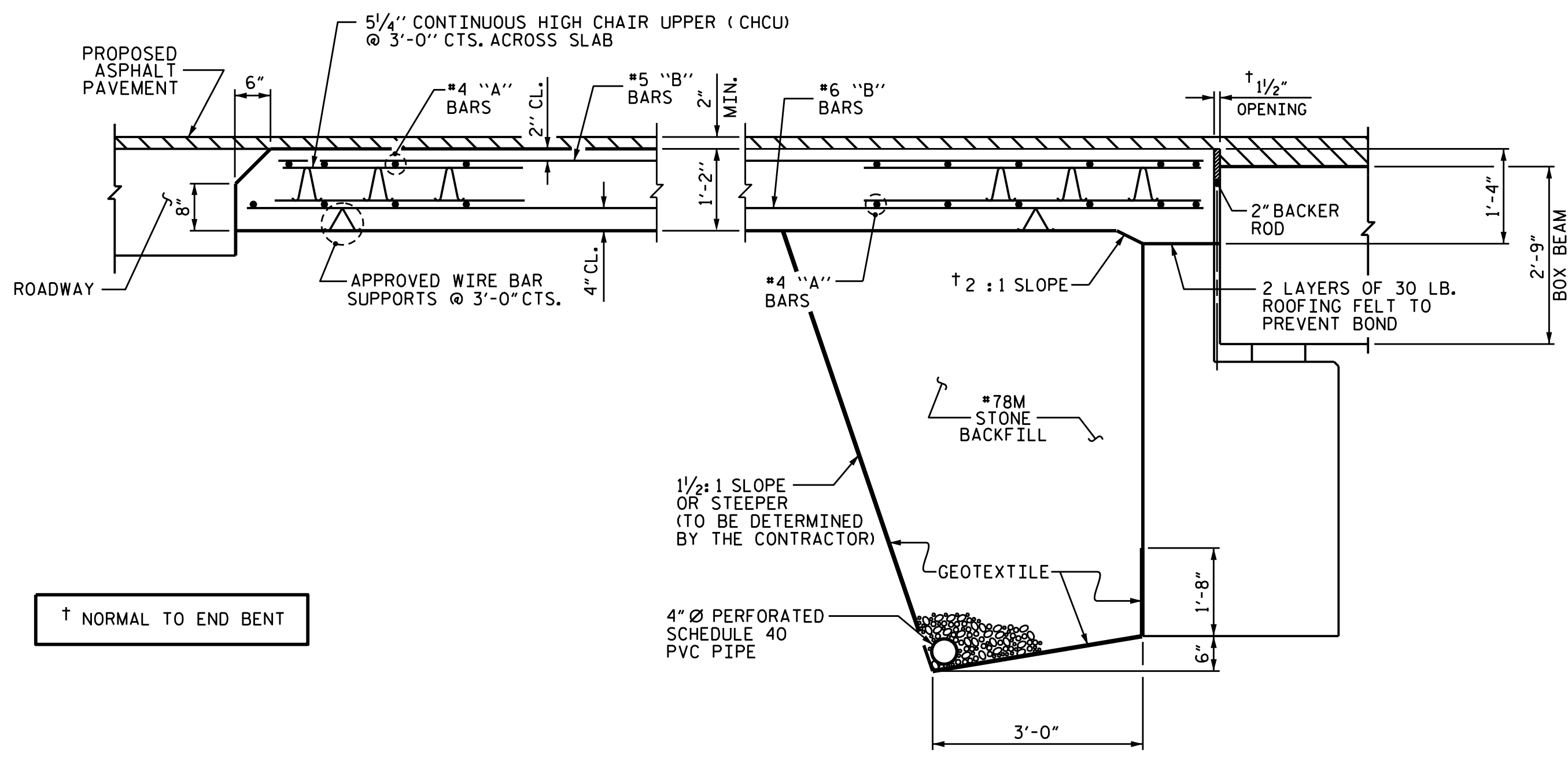
PLAN VIEW
TEMPORARY BERM AND SLOPE DRAIN DETAILS
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



TEMPORARY DRAINAGE DETAIL



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



SECTION THRU SLAB

PROJECT NO. B-5398
BURKE COUNTY
STATION: 16+45.00 -L-

DocuSigned by:
Lisa M. Samples
5663D099A9B449C...
7/4/2016



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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD BRIDGE APPROACH SLAB BOX BEAM UNIT (SUB-REGIONAL TIER) 90° SKEW					
REVISIONS			SHEET NO.		
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 24

ASSEMBLED BY : J.M. KEPICH DATE : 02/16
CHECKED BY : L.M. SAMPLES DATE : 04/16
DRAWN BY : MAA 11/11
CHECKED BY : AAC 11/11

DESIGN ENGINEER OF RECORD : L.M. SAMPLES DATE : 05/16

*****SYSTEM*****
*****DCN*****
*****USERNAME*****

STD.NO.BAS-BB_30_90S

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