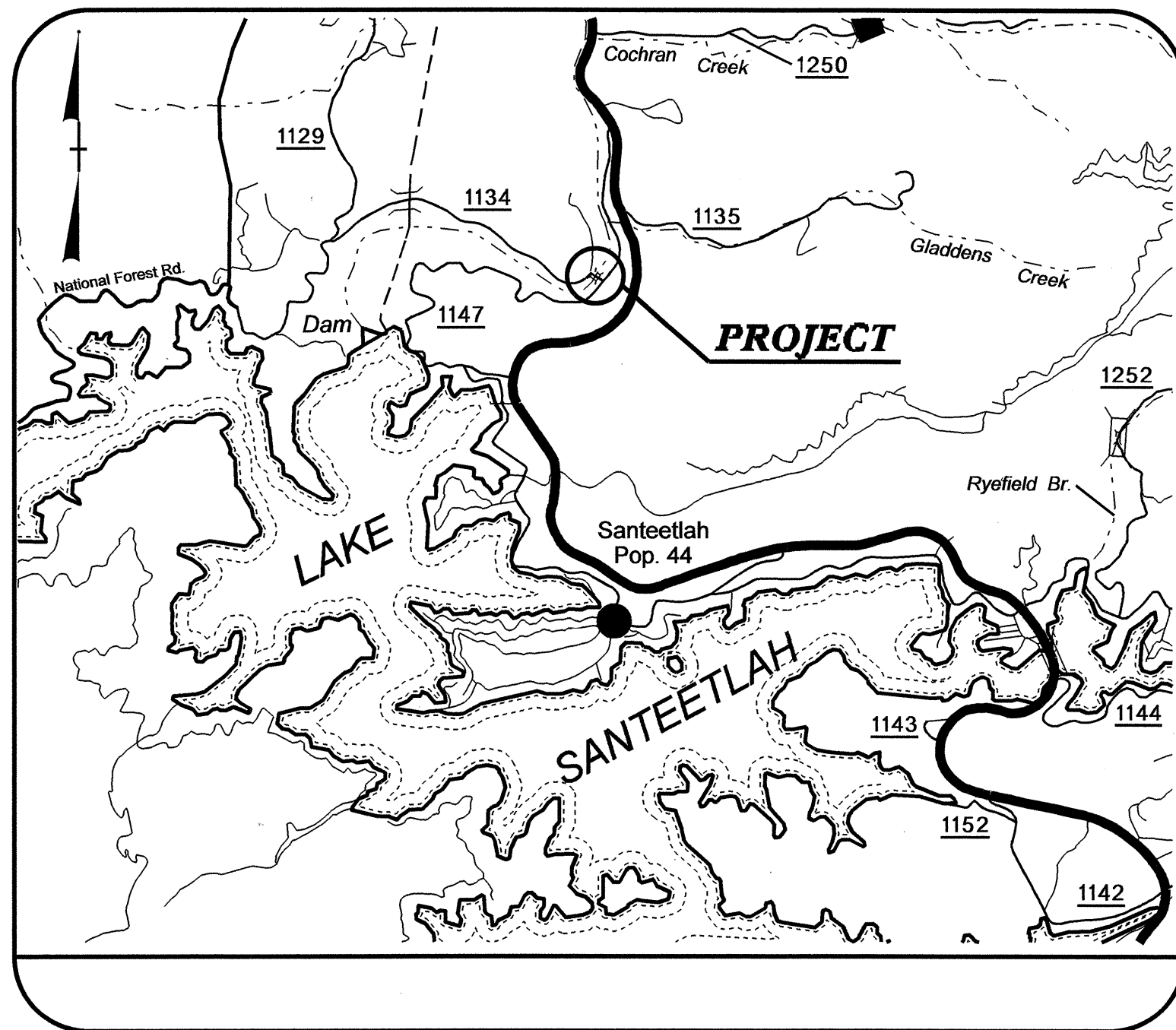


CONTRACT: C202428 TIP PROJECT: B-3335

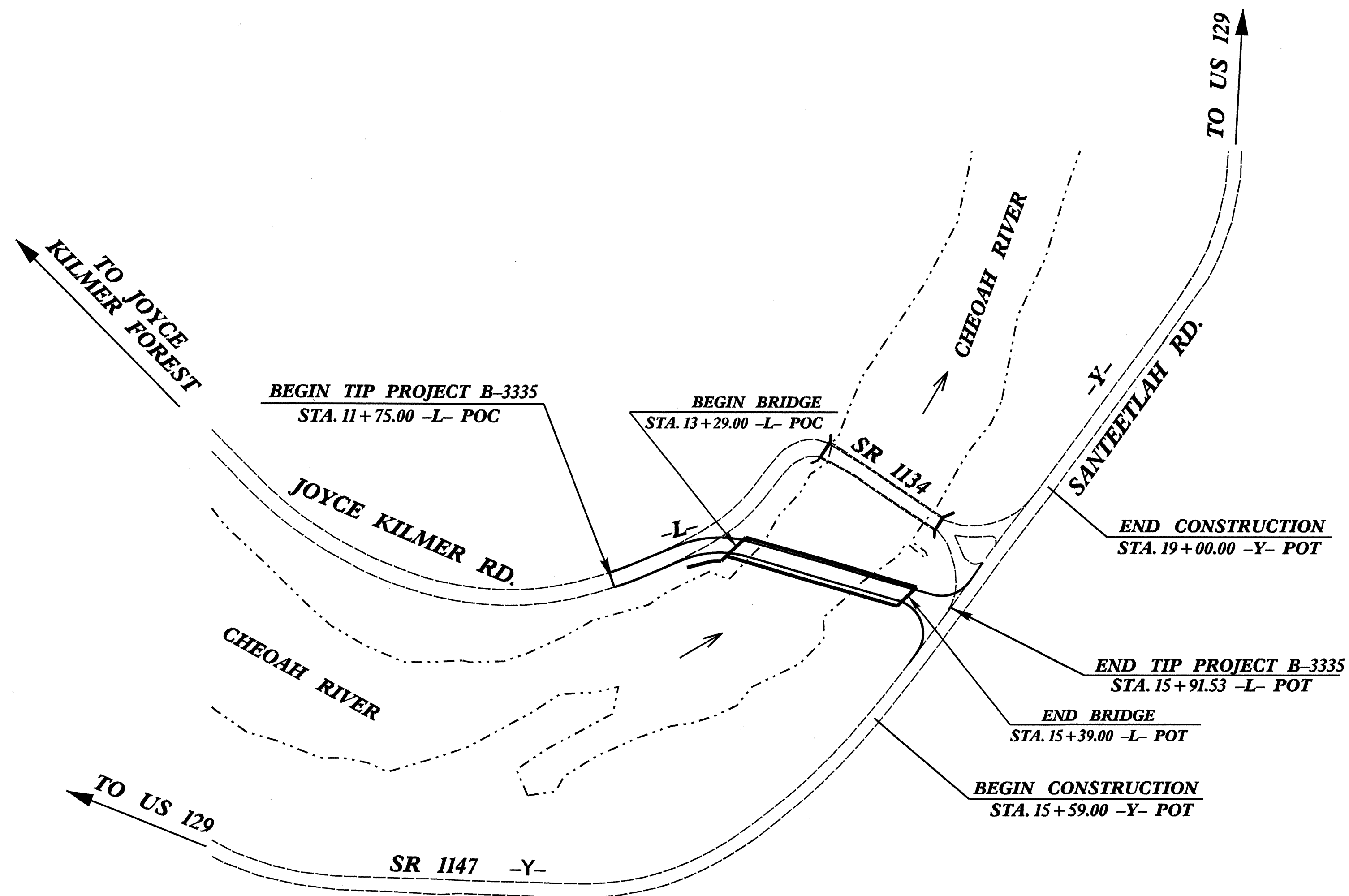
STRUCTURES



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
GRAHAM COUNTY

LOCATION: BRIDGE NO. 70 OVER CHEOAH RIVER ON SR 1134
TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE, RETAINING WALL

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3335		
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
32998.1.2	BRZ-1134(1)	PE	
32998.3.1	BRZ-1134(2)	ROW & UTIL.	
32998.2.2	BRZ-1134(4)	CONST.	



DESIGN DATA

ADT 2010	=	175
ADT 2030	=	250
DHV	=	20 %
D	=	65 %
T	=	3 % *
V	=	20 MPH
* TTST 1% DUAL 2%		
FUN. CLASS	=	LOCAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3335	=	0.039 MI
LENGTH STRUCTURE TIP PROJECT B-3335	=	0.040 MI
TOTAL LENGTH TIP PROJECT B-3335	=	0.079 MI

Prepared In the Office of:

DIVISION OF HIGHWAYS

2006 STANDARD SPECIFICATIONS

<p>LETTING DATE :</p> <p style="text-align: center;">JUNE 15, 2010</p>	<p style="text-align: center;">J. C. FRYE, P.E. <small>PROJECT ENGINEER</small></p> <hr/> <p style="text-align: center;">T. H. FANG, P.E. <small>PROJECT DESIGN ENGINEER</small></p>
--	--

STRUCTURE DESIGN UNIT
1000 BIRCH RIDGE DR.
RALEIGH, N.C. 27610

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED

DIVISION ADMINISTRATOR

DATE

(-)-0.4000% (+)-2.9600%

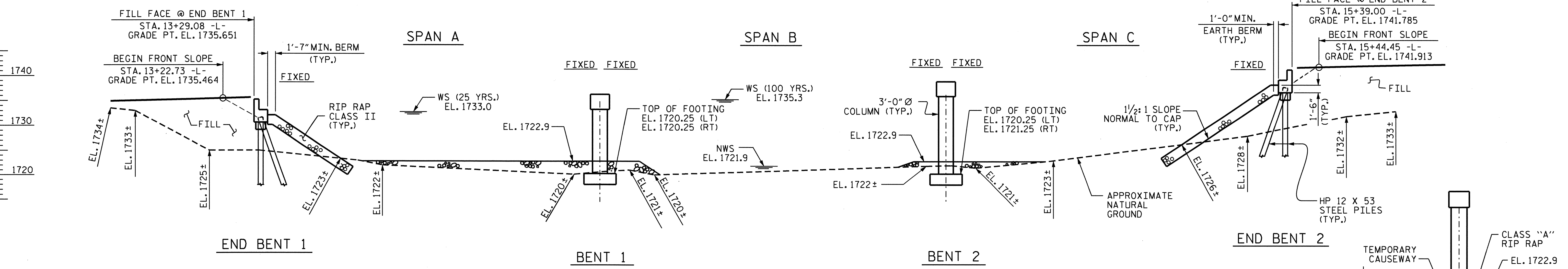
PI = 12+75.00
EL = 1734.05
VC = 100'

GRADE DATA

(+)-2.9600% (+)-1.4447%

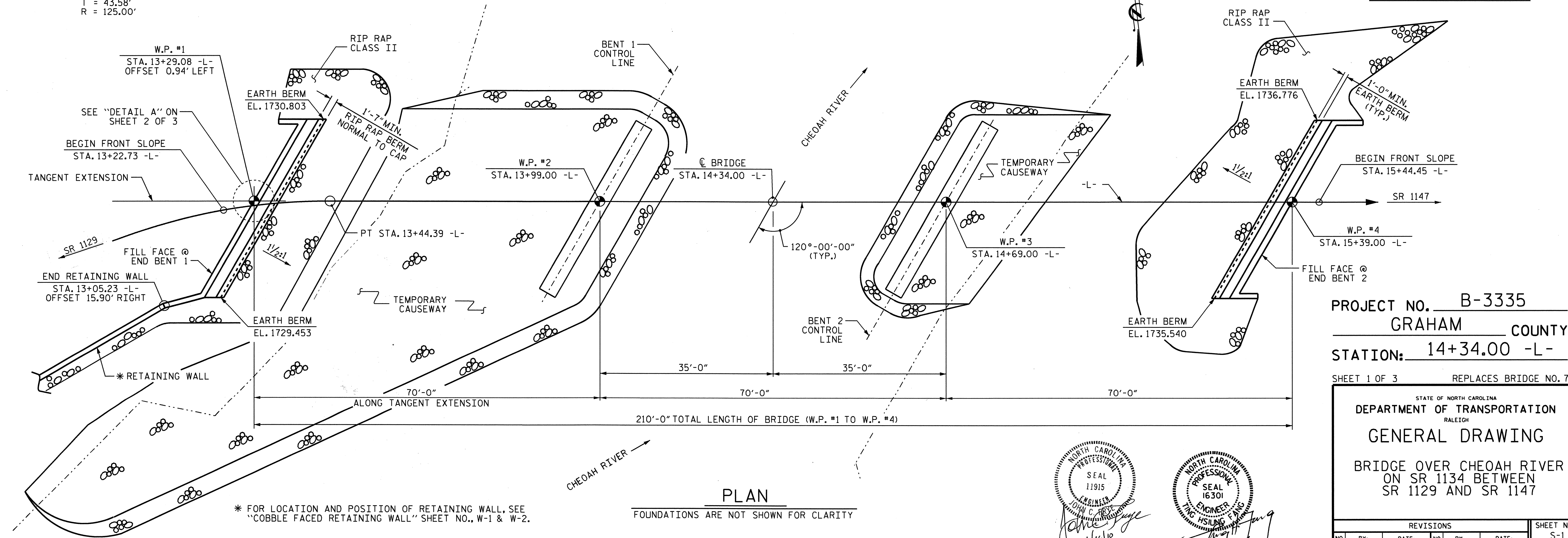
PI = 15+50.00
EL = 1742.19'
VC = 80'

GRADE DATA



HORIZONTAL CURVE DATA -L-

P.I. STA. = 13+04.10 -L-
Δ = 38°-26'-37.9" (RT)
D = 45°-50'-11.8"
L = 83.87'
T = 43.58'
R = 125.00'

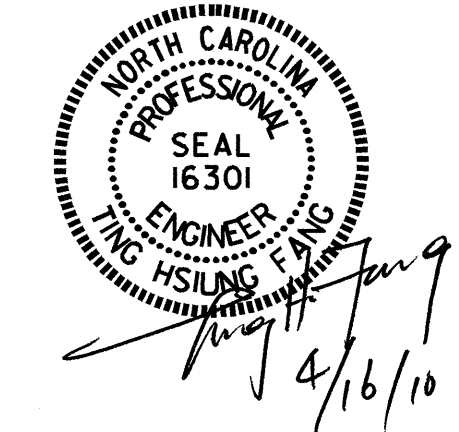
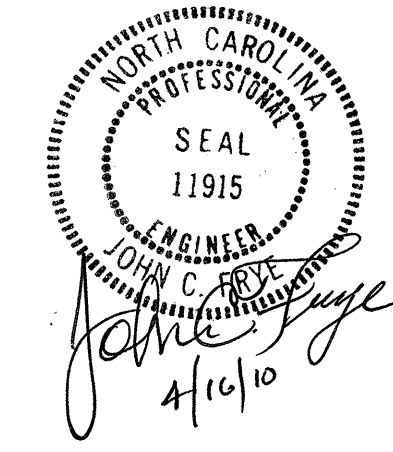


* FOR LOCATION AND POSITION OF RETAINING WALL, SEE "COBBLE FACED RETAINING WALL" SHEET NO., W-1 & W-2.

PROJECT NO. B-3335
GRAHAM COUNTY
STATION: 14+34.00 -L-

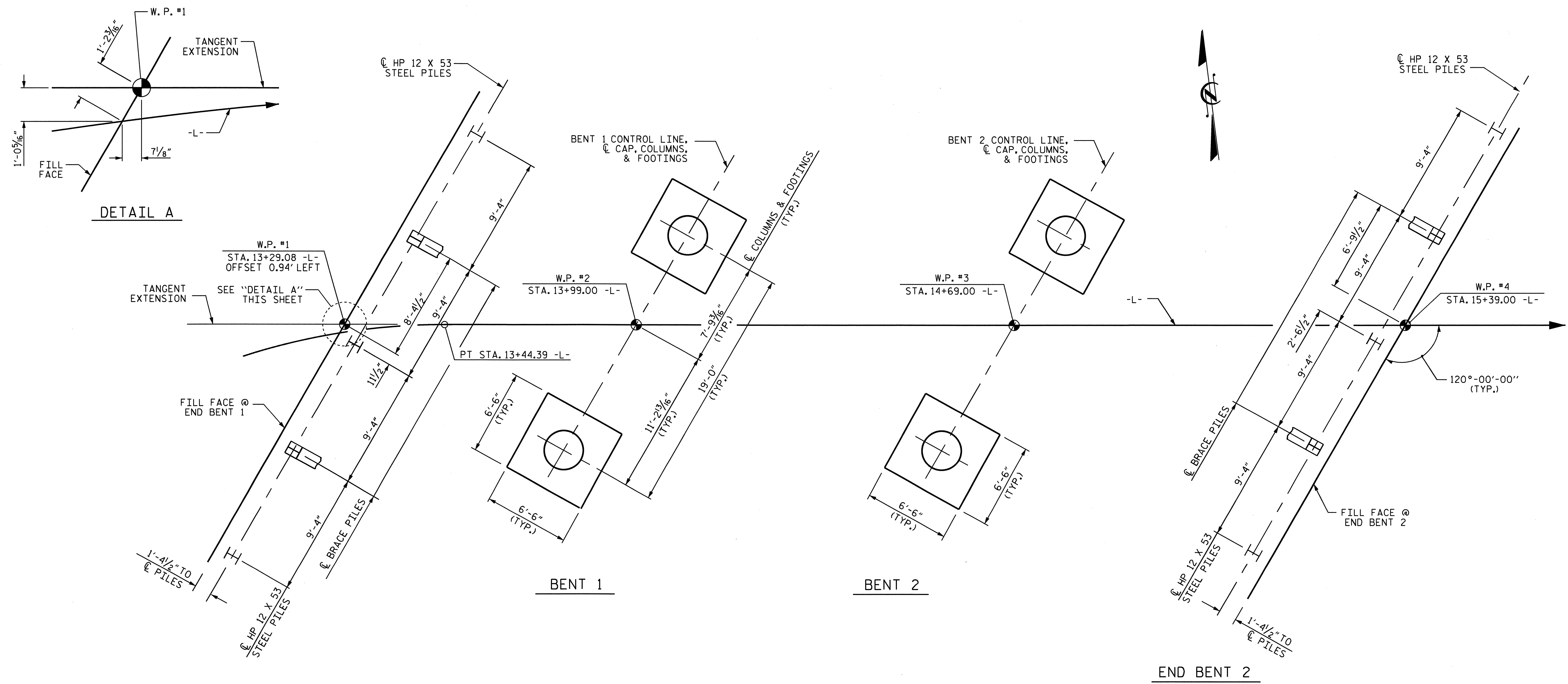
SHEET 1 OF 3 REPLACES BRIDGE NO. 70

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWING
BRIDGE OVER CHEOAH RIVER
ON SR 1134 BETWEEN
SR 1129 AND SR 1147



DRAWN BY: HARISH SHAH DATE: 10-09
CHECKED BY: Q.T. NGUYEN DATE: 10-09

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



DETAIL A

END BENT 1

BENT 1

BENT 2

END BENT 2

FOUNDATION LAYOUT

DIMENSIONS LOCATING FOOTINGS & PILES ARE SHOWN TO THE CENTERLINE

NOTES:

THE SCOUR CRITICAL ELEVATION FOR BENTS 1 & 2 ARE THE BOTTOM OF FOOTING ELEVATION. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

THE SPREAD FOOTINGS AT BENTS 1 & 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 15 TSF. CHECK FIELD CONDITIONS FOR THE REQUIRED RESISTANCE OF 33 TSF JUST BEFORE PLACING CONCRETE.

THE TOP OF FOOTING ELEVATIONS HAVE BEEN ESTABLISHED BASED ON THE BEST INFORMATION AVAILABLE. TO PROVIDE SCOUR PROTECTION, THE SPREAD FOOTING EXCAVATIONS SHALL BE SUCH THAT THE TOPS OF THE FOOTINGS SHALL BE NO HIGHER THAN THE RIVERBED ROCKLINE, UNLESS APPROVED BY THE ENGINEER.

KEY THE ENTIRE THICKNESS OF THE SPREAD FOOTINGS INTO ROCK. IF THE EXCAVATION IS DEEPER THAN THE FOOTING THICKNESS, ONLY THE FOOTING THICKNESS IS REQUIRED TO BE KEYED.

THE CONTRACTOR IS ALLOWED TO LOWER THE FOOTING ELEVATION IF REQUIRED TO CONTROL BLASTING. THE COLUMN LONGITUDINAL AND SPIRAL REINFORCEMENT HAVE BEEN DETAILED FOR 3 FEET OF ADDITIONAL COLUMN HEIGHT. IF THE FOOTING NEEDS TO BE LOWERED MORE THAN 3 FEET, THE ADDITIONAL COLUMN LONGITUDINAL AND SPIRAL REINFORCEMENT SHALL BE AT THE CONTRACTOR'S EXPENSE.

THE HOLE FOR THE FOUNDATION EXCAVATION, REGARDLESS OF EXCAVATION METHOD, SHALL BE COMPLETELY FILLED TO THE RIVERBED ROCKLINE WITH CLASS A CONCRETE. THIS ADDITIONAL CONCRETE SHALL BE CONSIDERED INCIDENTAL TO THE FOUNDATION EXCAVATION.

FOR PILES, SEE SPECIAL PROVISIONS.

PILES AT END BENTS 1 & 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 95 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 158.5 TONS PER PILE.

PILE EXCAVATION IS REQUIRED TO INSTALL PILES AT END BENT 1. EXCAVATE HOLES AT PILE LOCATIONS TO ELEVATION 1715.0 FT. AFTER PLACING PILES IN HOLES, DRIVE PILES TO THE REQUIRED DRIVING RESISTANCE. FOR PILE EXCAVATION, SEE PILES SPECIAL PROVISIONS.

STEEL PILE POINTS ARE REQUIRED FOR STEEL PILES AT END BENT 2.

FOR BLASTING ADJACENT TO HIGHWAY STRUCTURES, SEE ROCK BLASTING PROVISION, IF APPLICABLE, OR ARTICLE 410-11 OF THE STANDARD SPECIFICATIONS.



PROJECT NO. B-3335
GRAHAM COUNTY
 STATION: 14+34.00 -L-

SHEET 2 OF 3
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 BRIDGE OVER CHEOAH RIVER
 ON SR 1134 BETWEEN
 SR 1129 AND SR 1147

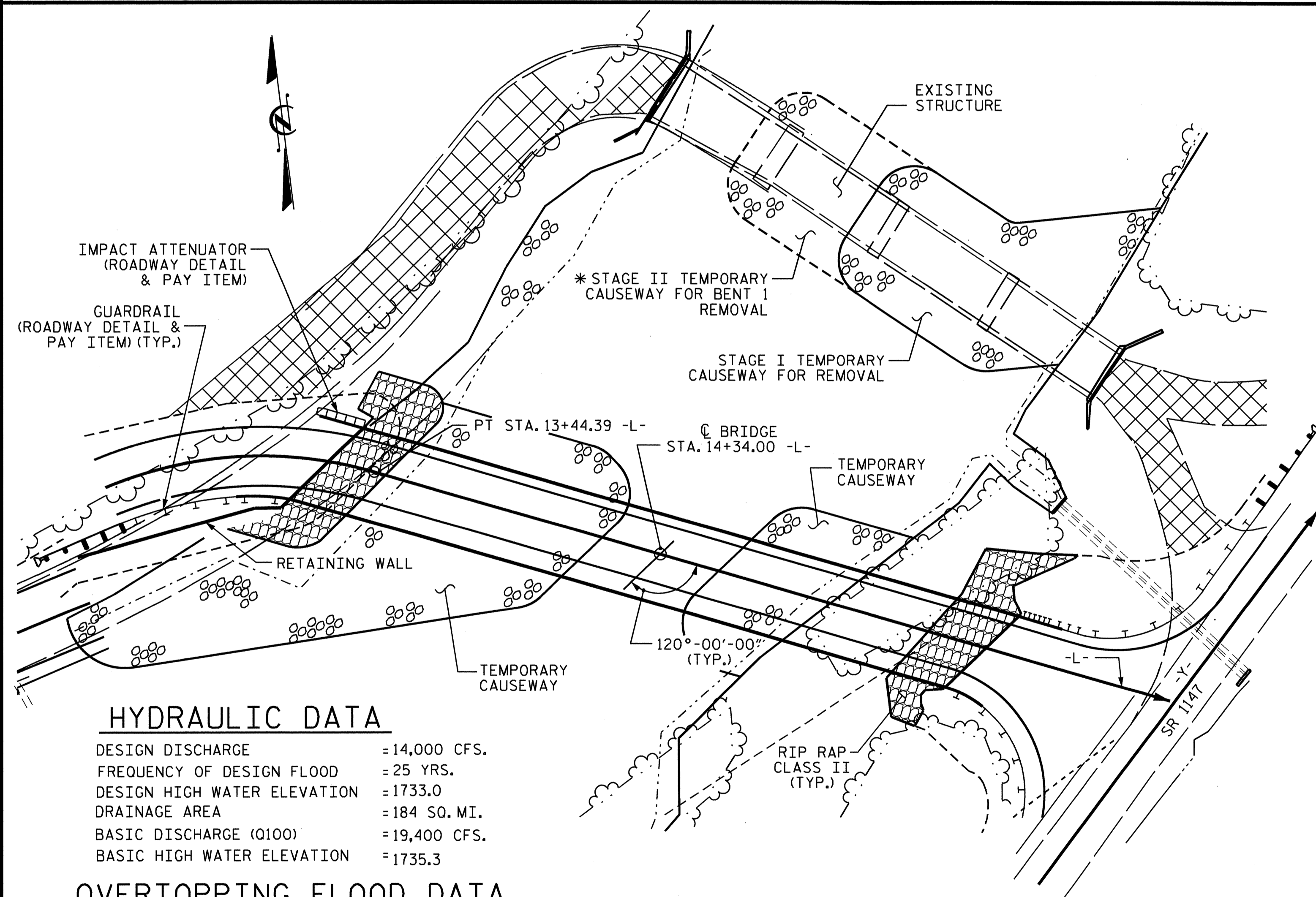
DRAWN BY: HARISH SHAH DATE: 10/09
 CHECKED BY: Q.T. NGUYEN DATE: 10/09

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

TOTAL BILL OF MATERIAL

	CONST. MAINT. & REMOVAL OF TEMP. ACCESS	REMOVAL OF EXISTING STRUCTURE	FOUNDATION EXCAVATION	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	CLASS A CONCRETE	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	HP 12 X 53 STEEL PILES	STEEL PILE POINTS	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLABS		
	LUMP SUM	LUMP SUM	LUMP SUM	LN. FT.	LN. FT.	CU. YD.	LBS.	LBS.	NO.	LN. FT.	EA.	LN. FT.	TON	SO. YDS.	LUMP SUM	NO.	LN. FT.
SUPERSTRUCTURE											414.8				LUMP SUM	30	2071.15
END BENT 1				20.0	25.0	17.2	2,691		5	100			190	210			
BENT 1			LUMP SUM			33.3	5,395	661									
BENT 2			LUMP SUM			34.1	5,524	733									
END BENT 2						16.8	2,660		5	113	5		240	265			
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	20.0	25.0	101.4	16,270	1,394	10	213	5	414.8	430	475	LUMP SUM	30	2071.15

BM 2: EL. 1733.88, -L- STA. 14+02 149'LT., CHISELED "X" ON NW CORNER OF CONC. HW



HYDRAULIC DATA

DESIGN DISCHARGE	= 14,000 CFS.
FREQUENCY OF DESIGN FLOOD	= 25 YRS.
DESIGN HIGH WATER ELEVATION	= 1733.0
DRAINAGE AREA	= 184 SQ. MI.
BASIC DISCHARGE (Q100)	= 19,400 CFS.
BASIC HIGH WATER ELEVATION	= 1735.3

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 19,400 CFS.
FREQUENCY OF OVERTOPPING FLOOD	= 100 YRS. ±
OVERTOPPING FLOOD ELEVATION	= 1735.3

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

* CONSTRUCT STAGE II CAUSEWAY, REMOVE BENT 1 AND REMOVE STAGE II CAUSEWAY WITHIN 48 HOURS.

DRAWN BY : HARISH SHAH DATE : 10/09
 CHECKED BY : Q.T. NGUYEN DATE : 10/09

28-APR-2010 08:51
 K:\TIP\Projects-B\B3335\Structures\Final plans\b3335.ed.gdn
 ttang

NOTES

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.
 FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
 FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.
 THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
 THE 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.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.
 ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.
 FOR CURING CONCRETE, SEE SPECIAL PROVISIONS.
 FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
 FOR VERTICAL CONCRETE BARRIER RAIL, SEE SPECIAL PROVISIONS.
 FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
 FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
 FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
 FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE AT STATION 14+34.00 -L-, SEE SPECIAL PROVISIONS.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, "EVALUATING SCOUR AT BRIDGES", MAY, 2001.
 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.

FOR REMOVAL OF EXISTING STRUCTURE, SEE THE BIOLOGICAL ASSESSMENT/BIOLOGICAL EVALUATION CONTAINED IN THE PERMITS FOR THIS PROJECT.

IN AS MUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 14+34.00 -L-."

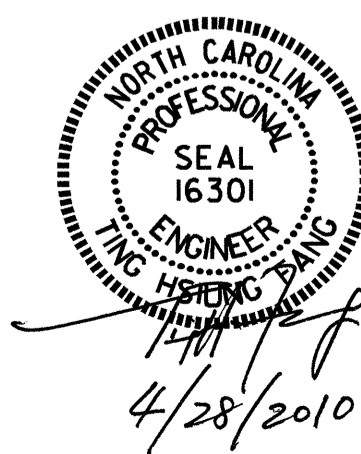
AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 14+34.00 -L-.

AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING STRUCTURE CONSISTING OF 8 SPANS: 2 @ 20'-6", 4 @ 20'-0", & 2 @ 20'-6"; 17'-6" CLEAR ROADWAY WIDTH AND A NEW TIMBER FLOOR ON CONT. STEEL FLOOR BEAM SYSTEM; SUBSTRUCTURE CONSISTING OF YOUNG MASONRY ABUTMENTS AND BENTS ON CONCRETE SILLS, CRUTCHED TIMBER POSTS ON YOUNG MASONRY FOOTINGS, AND LOCATED 150 FEET DOWNSTREAM OF THE PROPOSED STRUCTURE SITE SHALL BE REMOVED EXCEPT THE EAST ABUTMENT IS TO REMAIN IN PLACE. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

PROJECT NO. B-3335
GRAHAM COUNTY
 STATION: 14+34.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE OVER CHEOAH RIVER
 ON SR 1134 BETWEEN
 SR 1129 AND SR 1147



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

LOAD FACTORS:

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

	YEAR	ADTT
CURRENT	2010	3
FUTURE	2030	5

NOTES:

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

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

COMMENTS:

-
-
-
-

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

2 DESIGN LOAD RATING (HS-20)

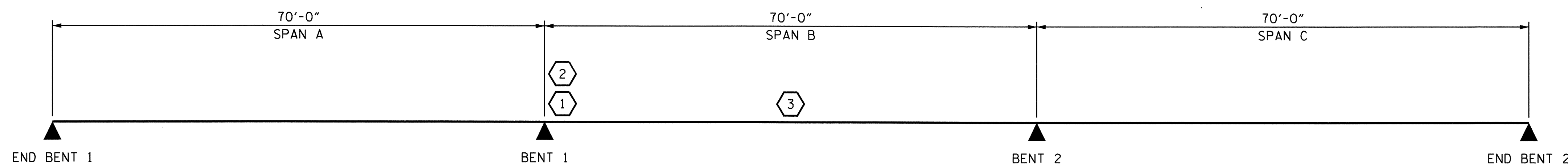
3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

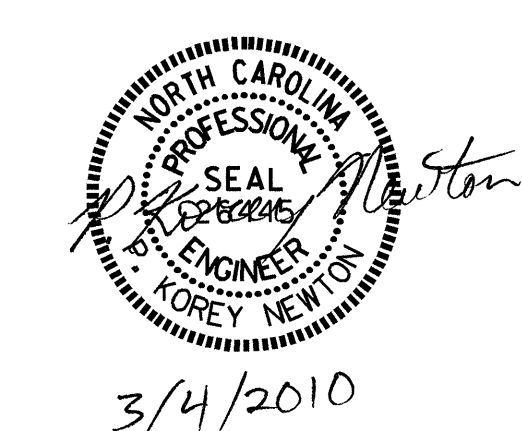
I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER

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	1.003	--	1.75	0.248	1.18	B	EL	34.35	0.655	1	B	EL	34.35	0.80	0.248	1.03	B	EL	34.35				
	HL-93 (OPERATING)	N/A	--	1.301	--	1.35	0.248	1.53	B	EL	34.35	0.655	1.3	B	EL	34.35	N/A	--	--	--	--	--				
	HS-20 (INVENTORY)	36.000	2	1.259	45.312	1.75	0.248	1.54	B	EL	34.35	0.655	1.26	B	EL	34.35	0.80	0.248	1.34	B	EL	34.35				
	HS-20 (OPERATING)	36.000	--	1.632	58.738	1.35	0.248	1.99	B	EL	34.35	0.655	1.63	B	EL	34.35	N/A	--	--	--	--	--				
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500	--	2.989	40.356	1.40	0.248	4.28	B	EL	34.35	0.655	3.74	B	EL	34.35	0.80	0.248	2.99	B	EL	34.35			
		SNGARBS2	20.000	--	2.243	44.85	1.40	0.248	3.21	B	EL	34.35	0.655	2.66	B	EL	34.35	0.80	0.248	2.24	B	EL	34.35			
		SNAGRIS2	22.000	--	2.13	46.859	1.40	0.248	3.05	B	EL	34.35	0.655	2.47	B	EL	34.35	0.80	0.248	2.13	B	EL	34.35			
		SNCOTTS3	27.250	--	1.488	40.548	1.40	0.248	2.13	B	EL	34.35	0.655	1.87	B	EL	34.35	0.80	0.248	1.49	B	EL	34.35			
		SNAGGRS4	34.925	--	1.249	43.627	1.40	0.248	1.79	B	EL	34.35	0.655	1.55	B	EL	34.35	0.80	0.248	1.25	B	EL	34.35			
		SNS5A	35.550	--	1.221	43.412	1.40	0.248	1.75	B	EL	34.35	0.655	1.57	B	EL	34.35	0.80	0.248	1.22	B	EL	34.35			
		SNS6A	39.950	--	1.123	44.856	1.40	0.248	1.61	B	EL	34.35	0.655	1.43	B	EL	34.35	0.80	0.248	1.12	B	EL	34.35			
	SNS7B	42.000	--	1.069	44.912	1.40	0.248	1.53	B	EL	34.35	0.655	1.41	B	EL	34.35	0.80	0.248	1.07	B	EL	34.35				
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000	--	1.37	45.206	1.40	0.248	1.96	B	EL	34.35	0.655	1.71	B	EL	34.35	0.80	0.248	1.37	B	EL	34.35			
		TNT4A	33.075	--	1.377	45.53	1.40	0.248	1.97	B	EL	34.35	0.655	1.66	B	EL	34.35	0.80	0.248	1.38	B	EL	34.35			
		TNT6A	41.600	--	1.128	46.917	1.40	0.248	1.62	B	EL	34.35	0.655	1.5	B	EL	34.35	0.80	0.248	1.13	B	EL	34.35			
		TNT7A	42.000	--	1.135	47.656	1.40	0.248	1.63	B	EL	34.35	0.655	1.47	B	EL	34.35	0.80	0.248	1.13	B	EL	34.35			
		TNT7B	42.000	--	1.177	49.428	1.40	0.248	1.69	B	EL	34.35	0.655	1.38	B	EL	34.35	0.80	0.248	1.18	B	EL	34.35			
		TNAGRIT4	43.000	--	1.117	48.044	1.40	0.248	1.6	B	EL	34.35	0.655	1.33	B	EL	34.35	0.80	0.248	1.12	B	EL	34.35			
TNAGT5A		45.000	--	1.052	47.359	1.40	0.248	1.51	B	EL	34.35	0.655	1.32	B	EL	34.35	0.80	0.248	1.05	B	EL	34.35				
TNAGT5B	45.000	3	1.039	46.745	1.40	0.248	1.49	B	EL	34.35	0.655	1.27	B	EL	34.35	0.80	0.248	1.04	B	EL	34.35					



LRFR SUMMARY

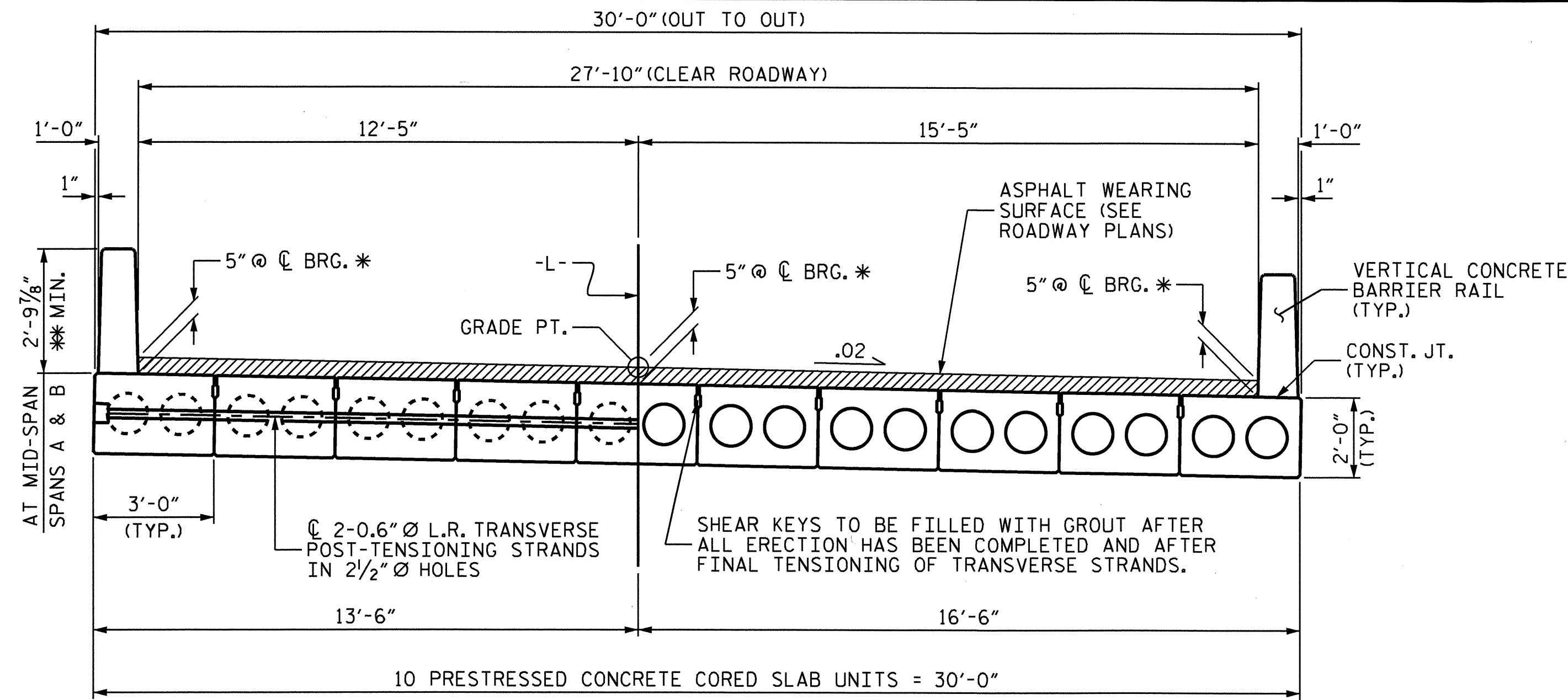
PROJECT NO. B-3335
GRAHAM COUNTY
 STATION: 14+34.00 -L-



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

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

ASSEMBLED BY : P. K. NEWTON DATE : 12/22/09
 CHECKED BY : J. A. YANNACCONE DATE : 12/22/09
 DRAWN BY : MAA 1/08 REV. 11/12/08RR MAA/GM
 CHECKED BY : GM/DI 2/08

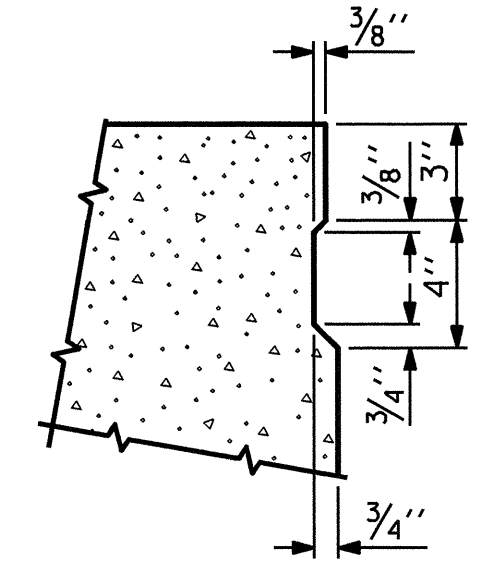


TYPICAL SECTION

THE MINIMUM HEIGHT OF THE BARRIER RAIL IS SHOWN. THE HEIGHT OF THE BARRIER RAIL VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE.

*** ASPHALT WEARING SURFACE THICKNESS TABLE**
 BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS.

SPAN	LOCATION	LEFT GUTTER	GRADE PT.	RIGHT GUTTER
A	CL BEARINGS	5"	5"	5"
	MID-SPAN	1 7/8"	1 7/8"	1 7/8"
B	CL BEARINGS	5"	5"	5"
	MID-SPAN	1 7/8"	1 7/8"	1 7/8"
C	CL BEARINGS	5"	5"	5"
	MID-SPAN	2 1/2"	2 1/4"	2 1/8"

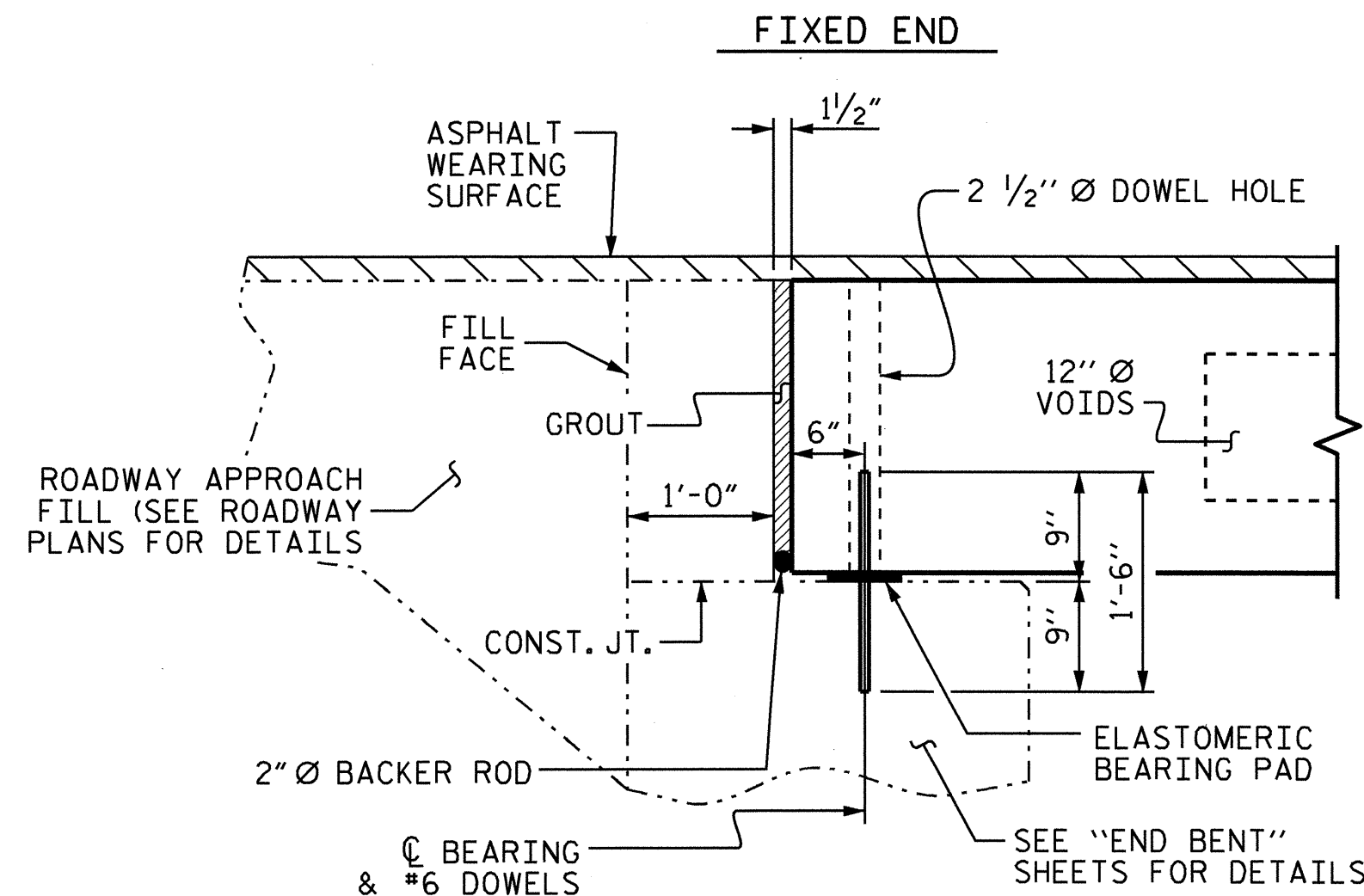


SHEAR KEY DETAIL

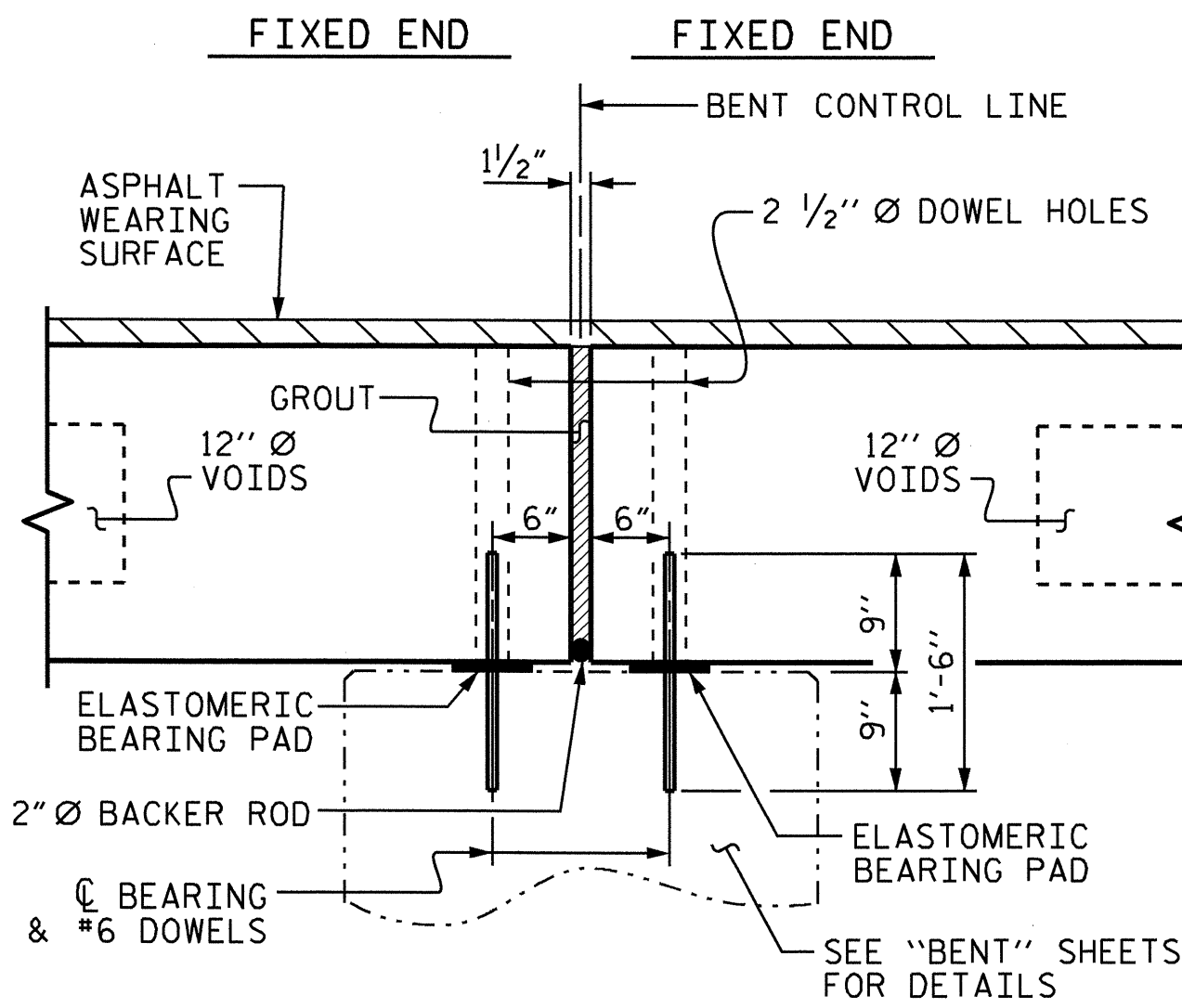
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLAB UNITS.

RAIL HEIGHT TABLE
 BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS.

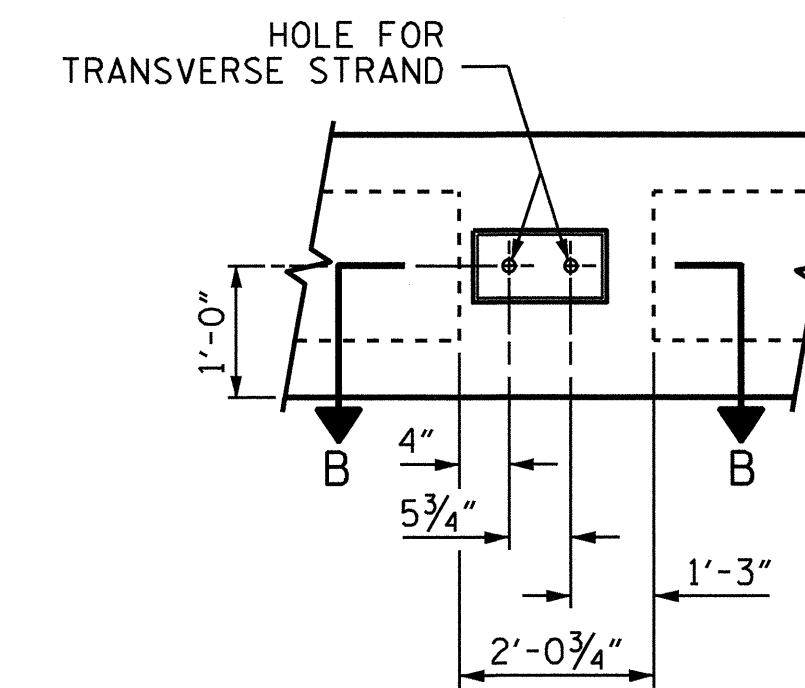
SPAN	** AT CL BEARINGS	** AT MID-SPAN LEFT GUTTER	** AT MID-SPAN RIGHT GUTTER
A	3'-1"	2'-9 7/8"	2'-9 7/8"
B	3'-1"	2'-9 7/8"	2'-9 7/8"
C	3'-1"	2'-10 1/2"	2'-10 1/8"



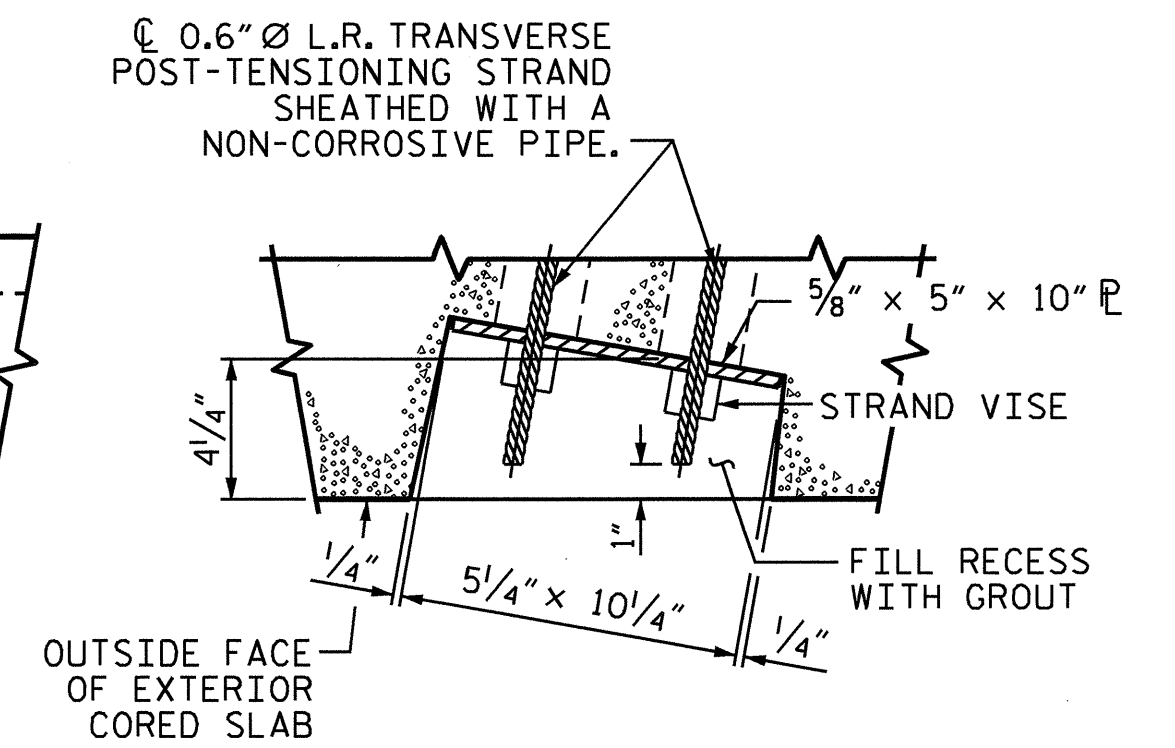
SECTION AT END BENT



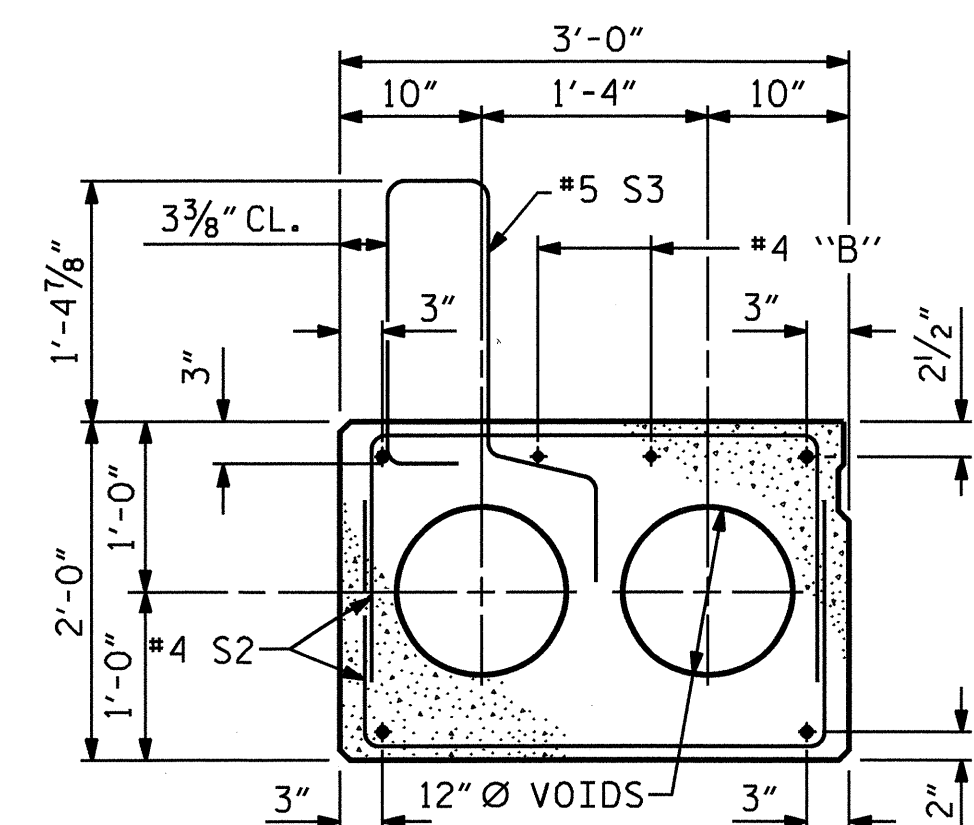
SECTION AT BENT



ELEVATION VIEW

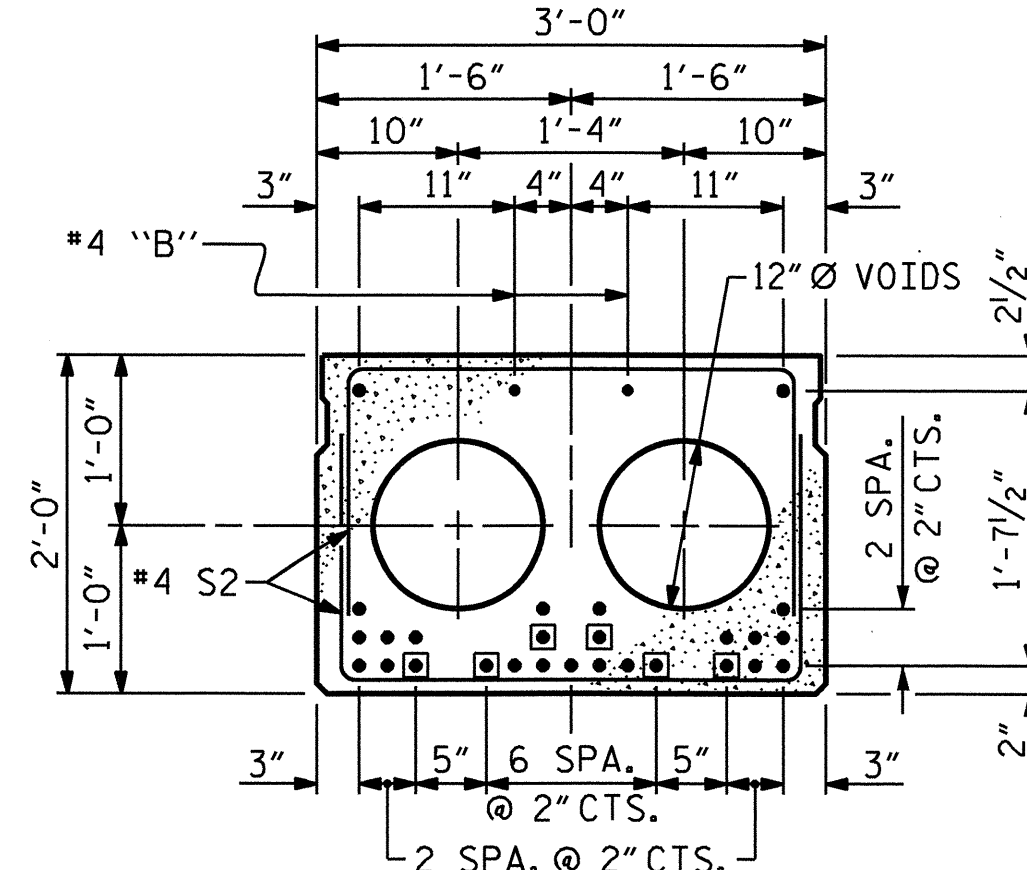


GROUTED RECESS AT END OF POST-TENSIONED STRAND-CORED SLABS



EXTERIOR SLAB SECTION

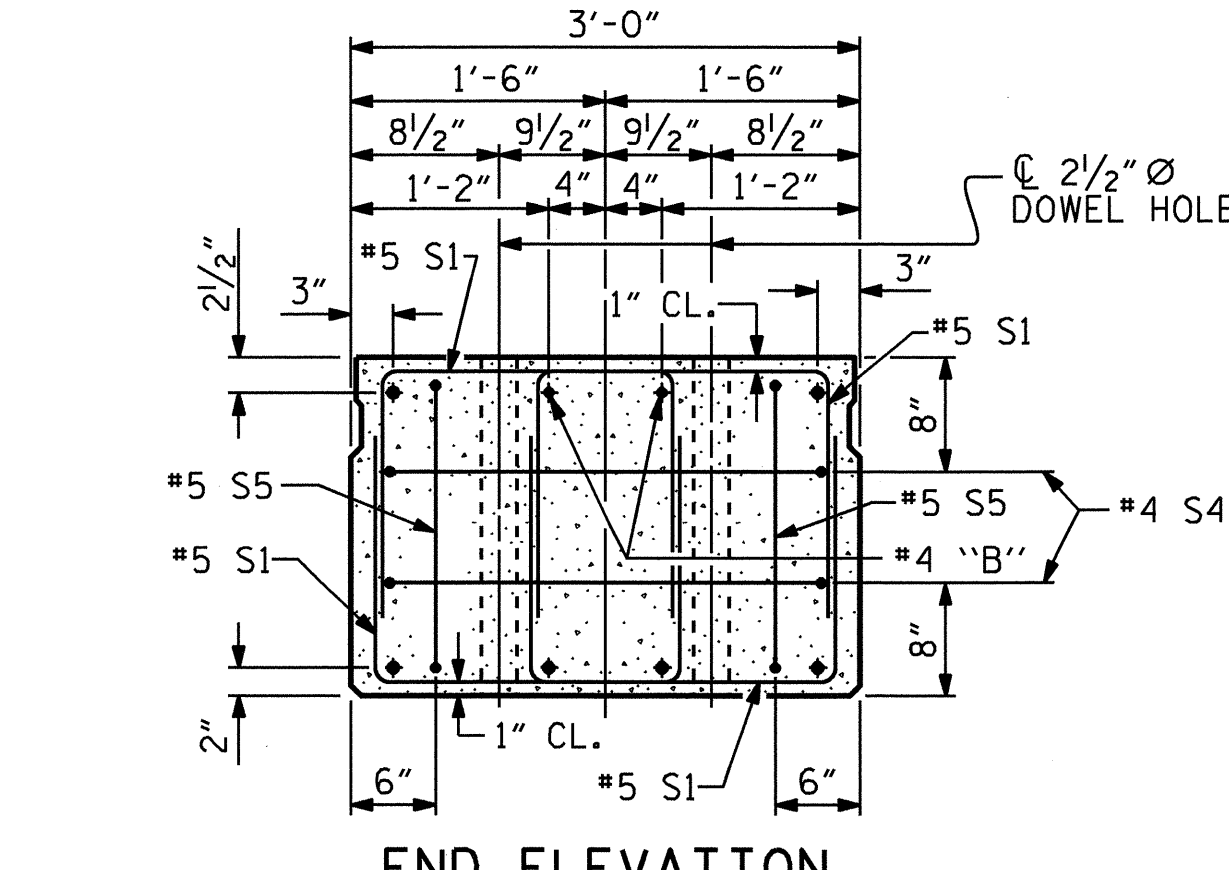
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



INTERIOR SLAB SECTION

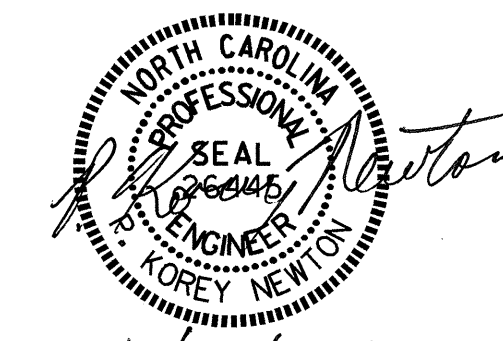
0.6\"/>

(27 STRANDS)
 BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM END OF CORED SLAB UNIT, SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.



END ELEVATION

SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB SECTION SHOWN-EXTERIOR SLAB SECTION SIMILAR EXCEPT SHEAR KEY LOCATION.



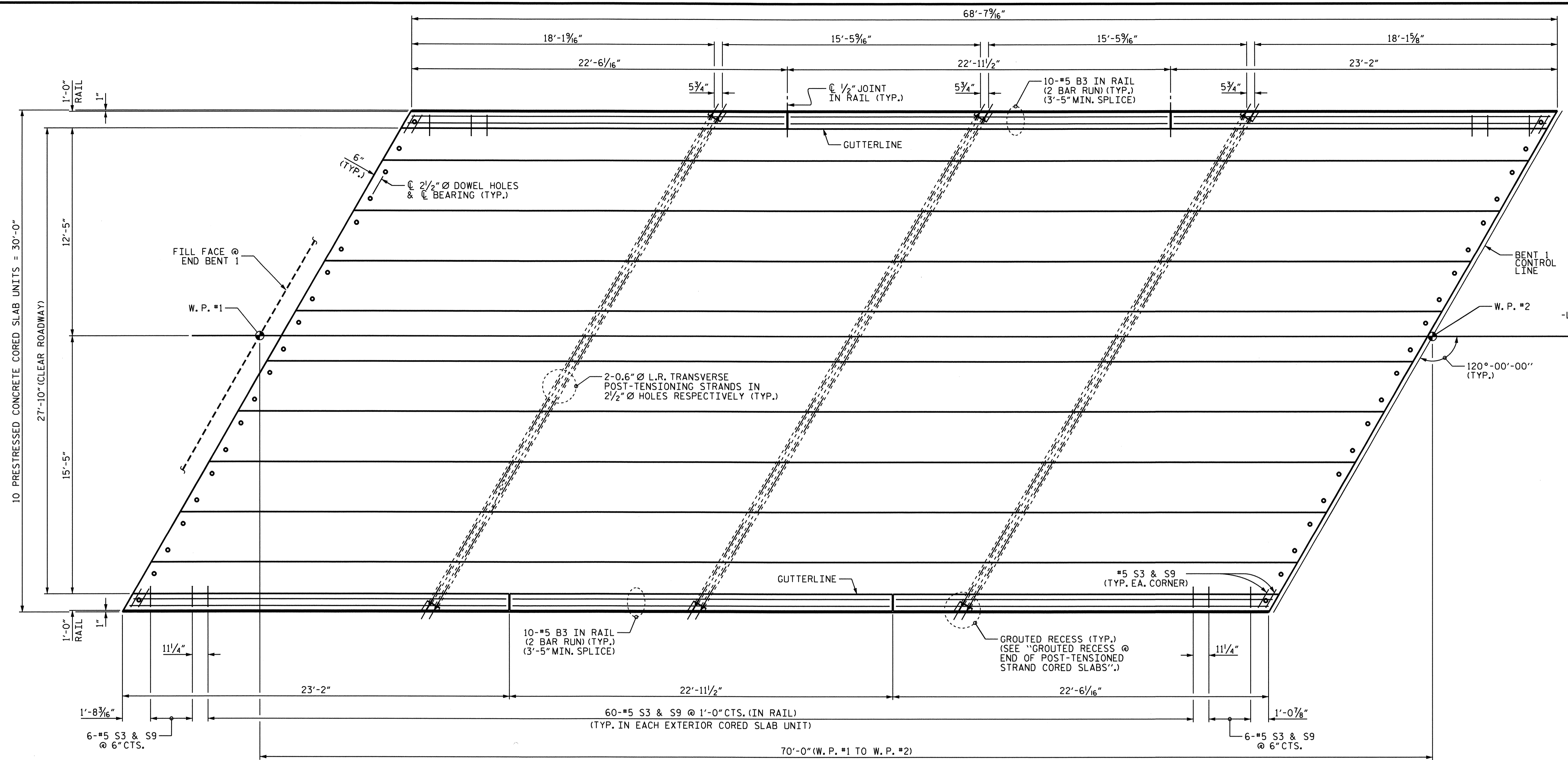
PROJECT NO. B-3335
GRAHAM COUNTY
 STATION: 14+34.00 -L-

SHEET 1 OF 5

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD 3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLAB UNIT					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

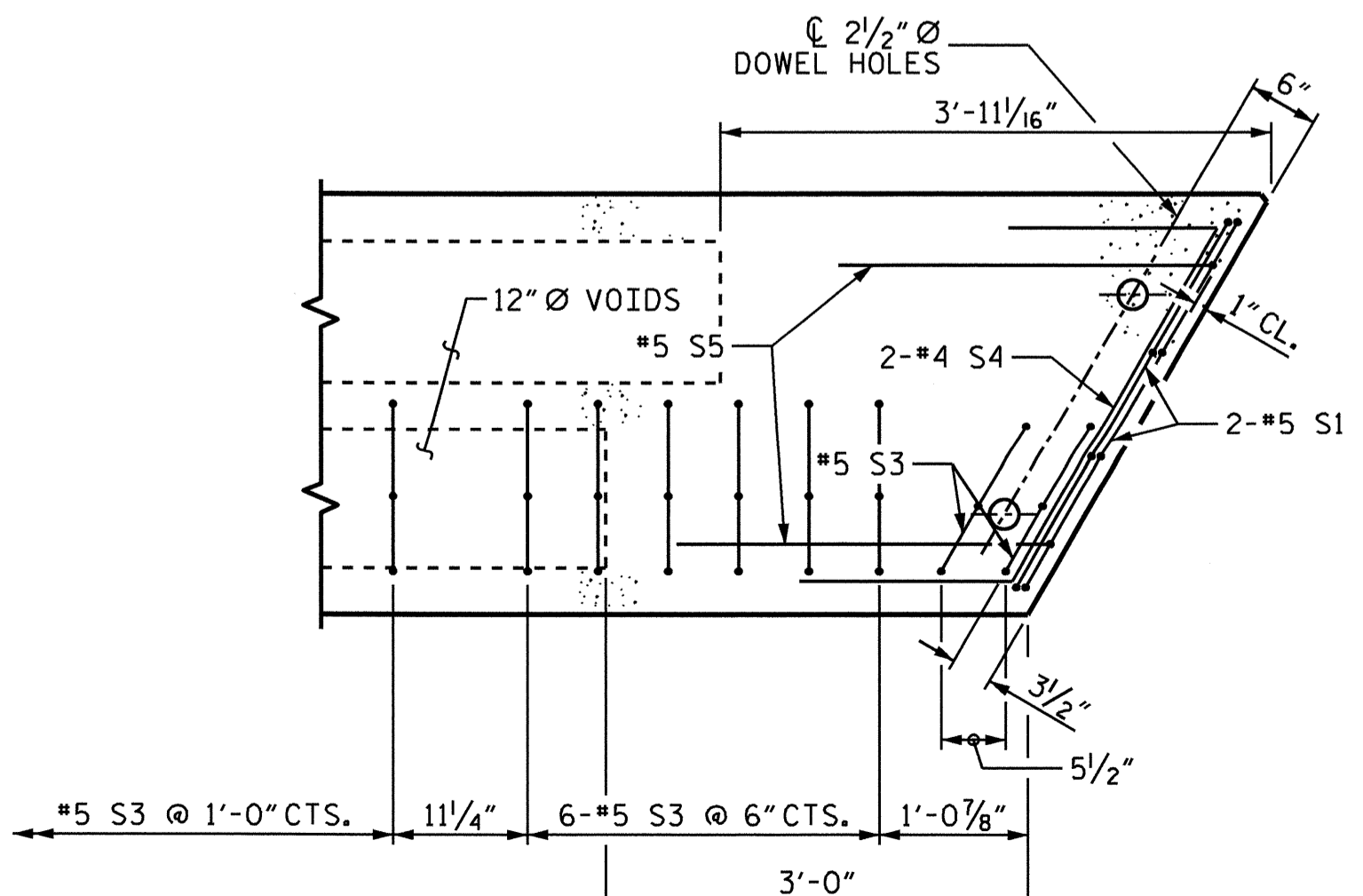
SHEET NO.	
S-5	TOTAL SHEETS 22

ASSEMBLED BY : P. K. NEWTON DATE : 1/7/10
 CHECKED BY : T. H. FANG DATE : 2/16/10
 DRAWN BY : MAA 3/09
 CHECKED BY : GM 3/09



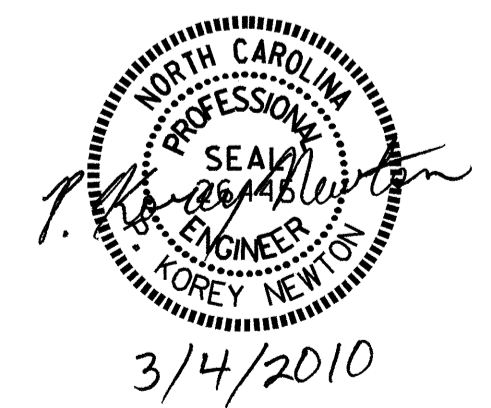
PLAN OF SPAN A

#5 S9 BARS NOT SHOWN FOR CLARITY



PART PLAN-EXTERIOR SECTION

NOTE: EXTERIOR SECTION SHOWN-INTERIOR SECTION SIMILAR EXCEPT OMIT S3 BARS.

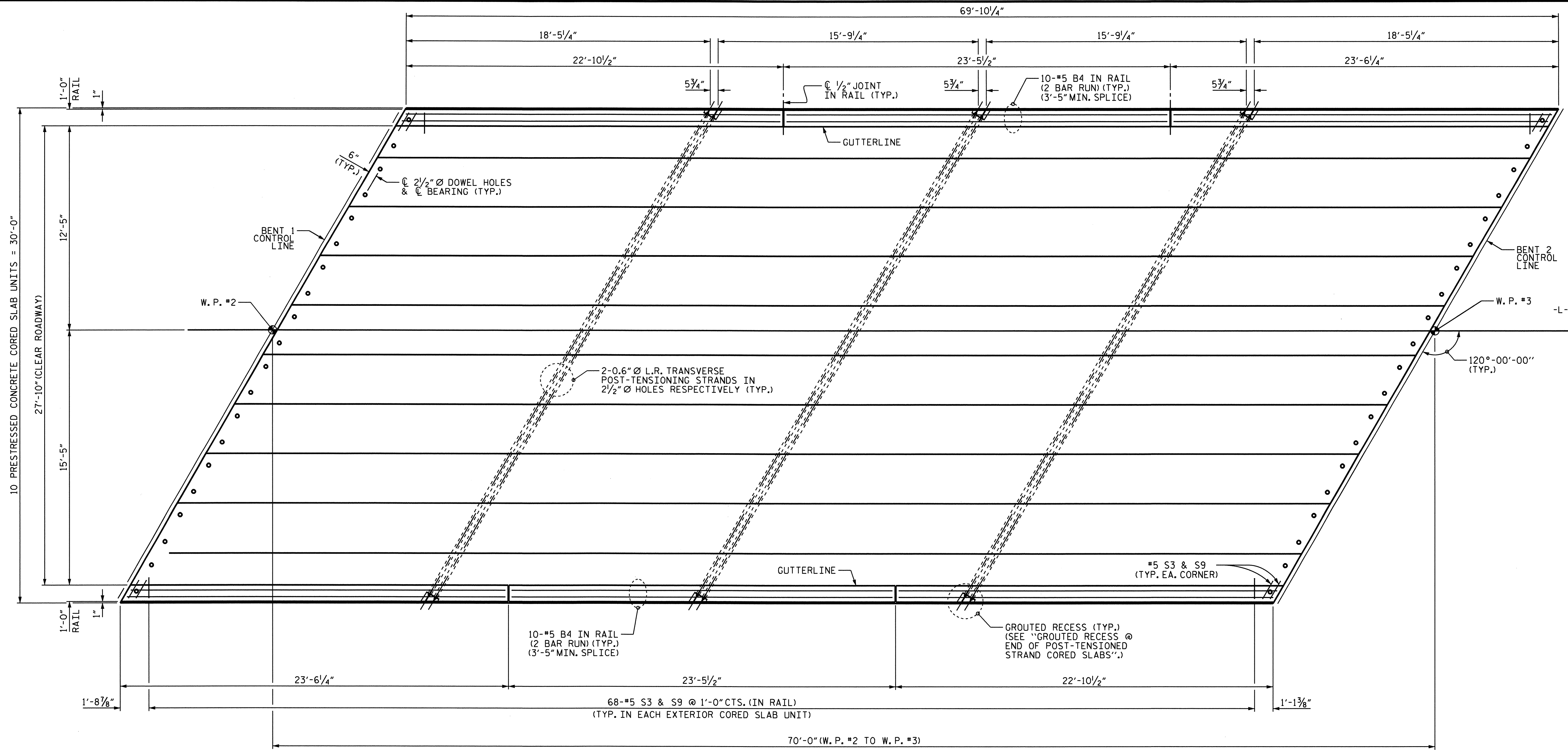


PROJECT NO. B-3335
GRAHAM COUNTY
 STATION: 14+34.00 -L-
 SHEET 2 OF 5

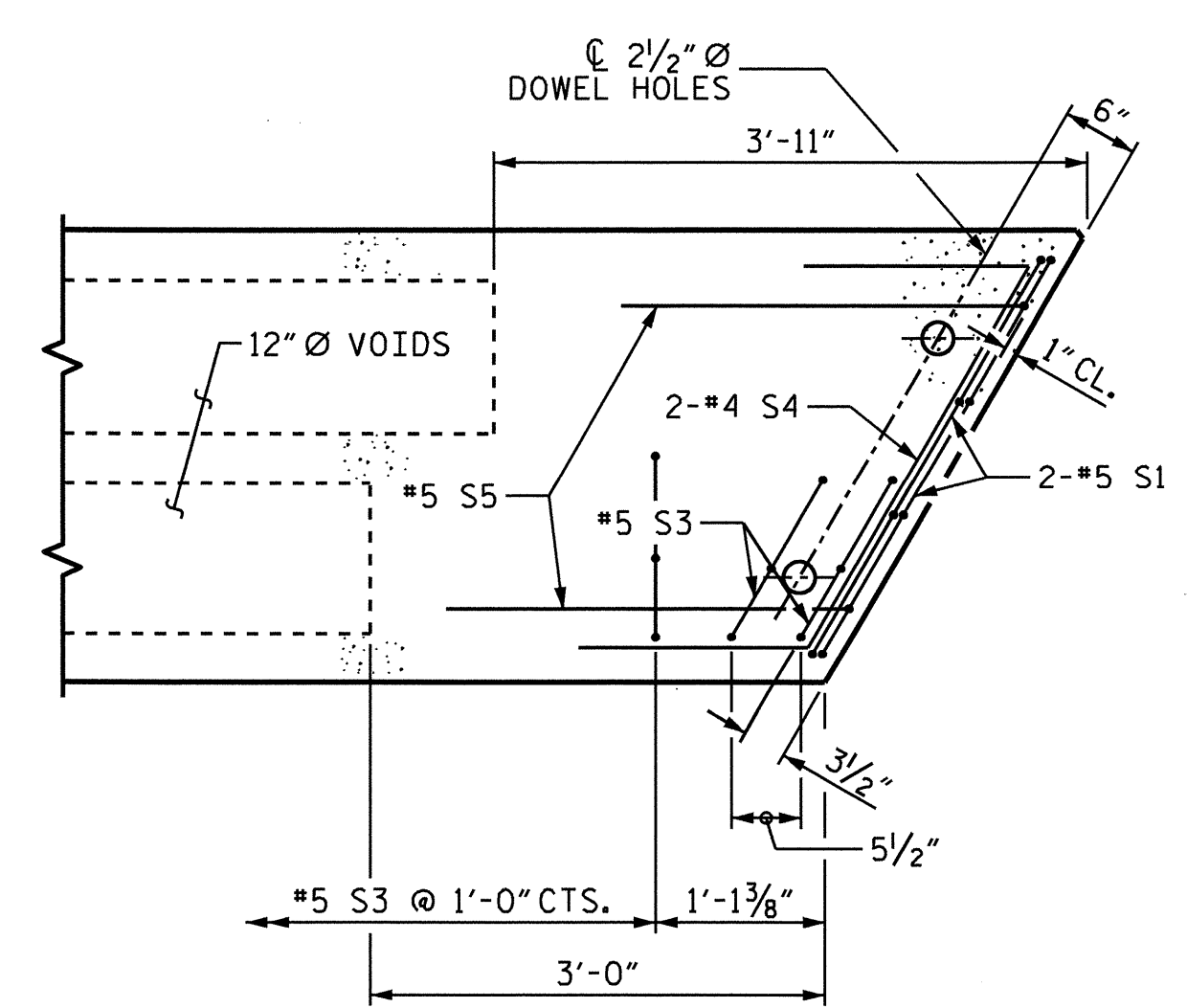
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-6
SUPERSTRUCTURE						TOTAL SHEETS 22
PLAN OF SPAN A						
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

DRAWN BY : P. K. NEWTON DATE : 1/7/10
 CHECKED BY : T. H. FANG DATE : 2/16/10

04-MAR-2010 13:59
 D:\Structures\Final plans\b3335.sd.cs.dgn
 kpnewton



PLAN OF SPAN B
 *5 S9 BARS NOT SHOWN FOR CLARITY



PART PLAN-EXTERIOR SECTION

NOTE: EXTERIOR SECTION SHOWN-INTERIOR SECTION SIMILAR EXCEPT OMIT S3 BARS.

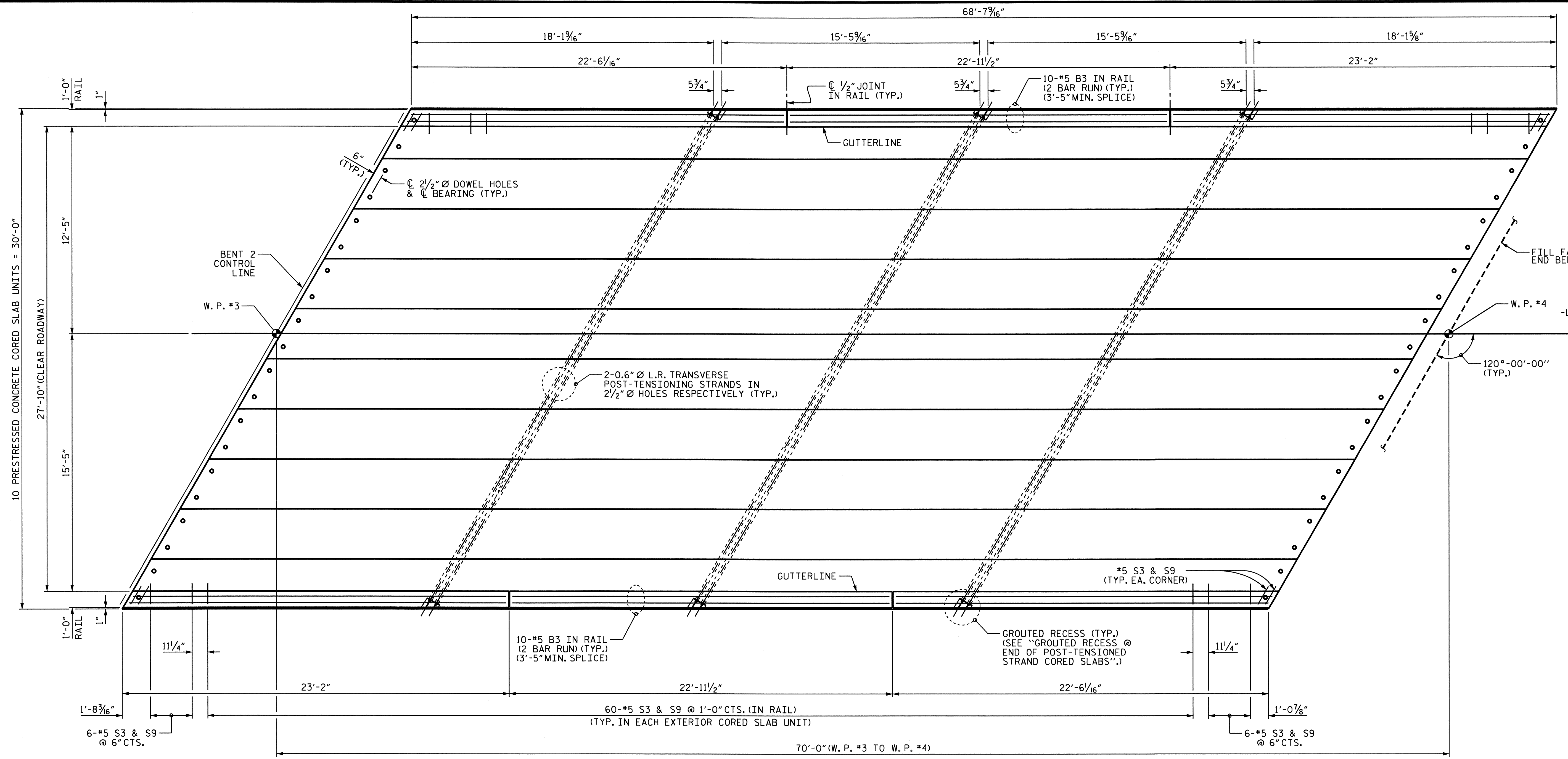
Professional Engineer Seal for P. K. Newton, North Carolina, License No. 26145, dated 4/16/2010.

PROJECT NO. B-3335
GRAHAM COUNTY
 STATION: 14+34.00 -L-
 SHEET 3 OF 5

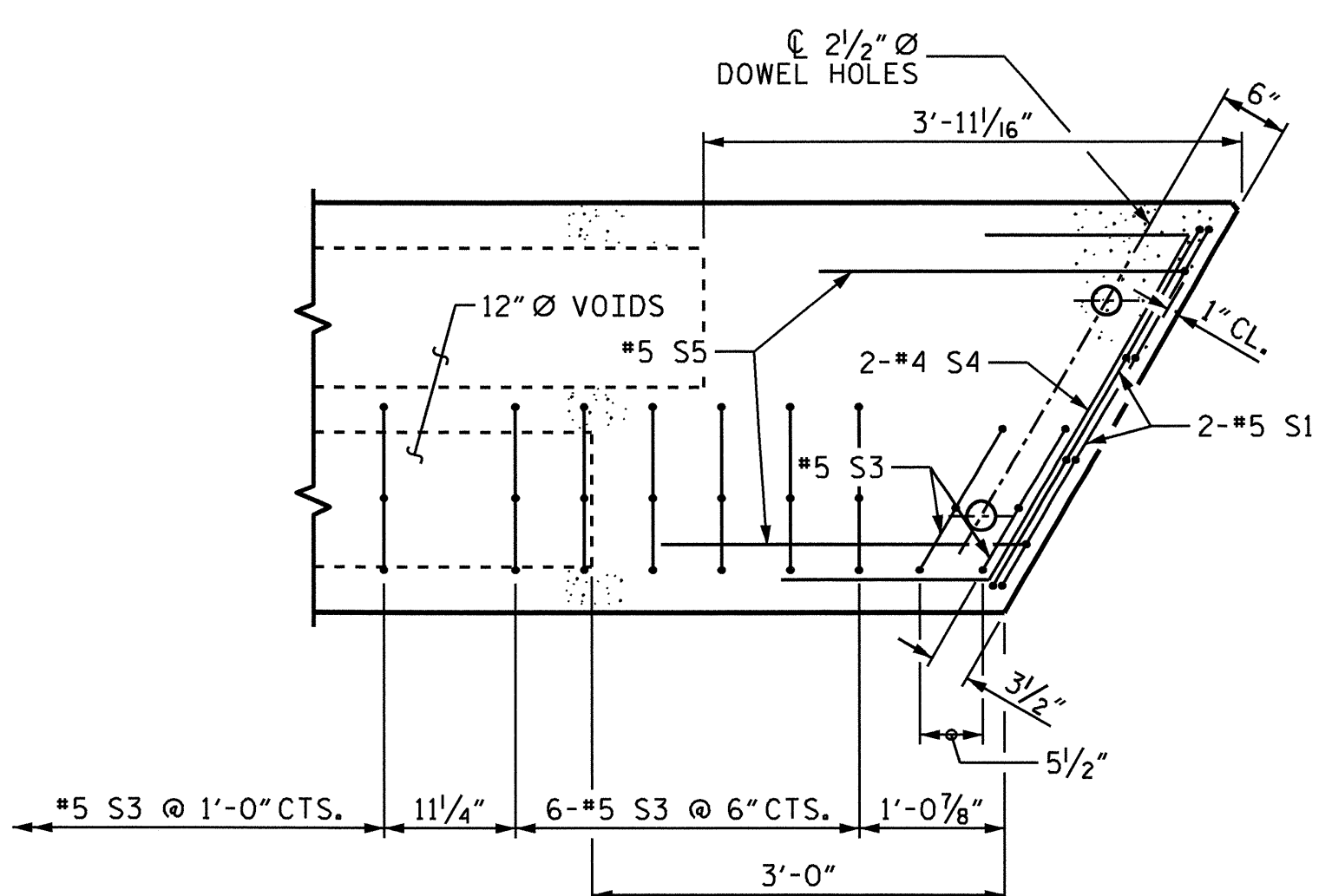
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO.
SUPERSTRUCTURE						S-7
PLAN OF SPAN B						TOTAL SHEETS
						22
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

DRAWN BY : P. K. NEWTON DATE : 1/7/10
 CHECKED BY : T. H. FANG DATE : 2/16/10

04-MAR-2010 13:59
 D:\Structures\Final plans\b3335.sd.cs.dgn
 kpnewton

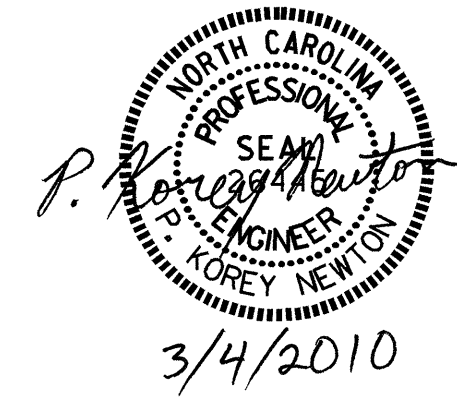


PLAN OF SPAN C
 #5 S9 BARS NOT SHOWN FOR CLARITY



PART PLAN-EXTERIOR SECTION

NOTE: EXTERIOR SECTION SHOWN-INTERIOR SECTION SIMILAR EXCEPT OMIT S3 BARS.

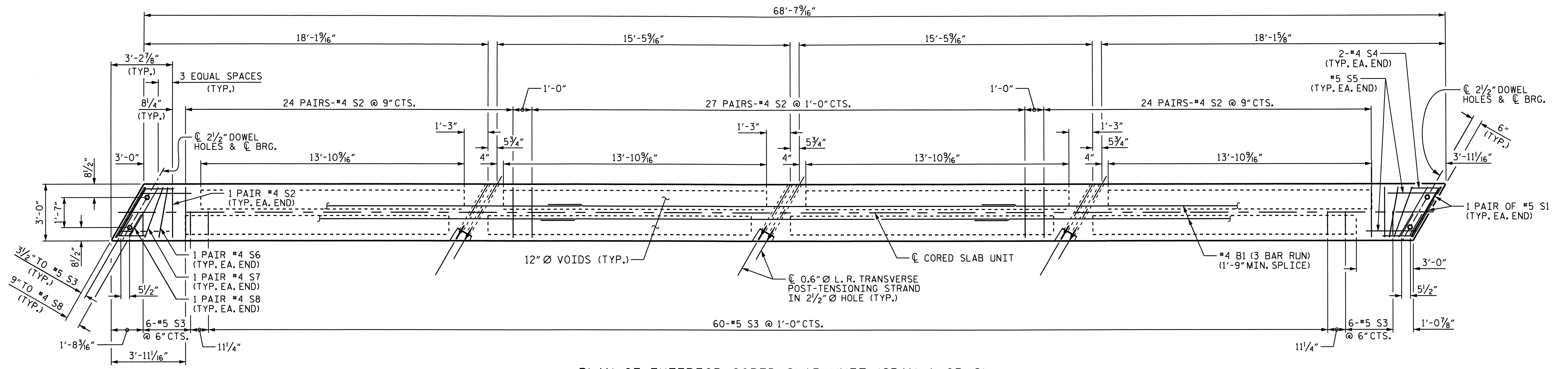


PROJECT NO. B-3335
GRAHAM COUNTY
 STATION: 14+34.00 -L-
 SHEET 4 OF 5

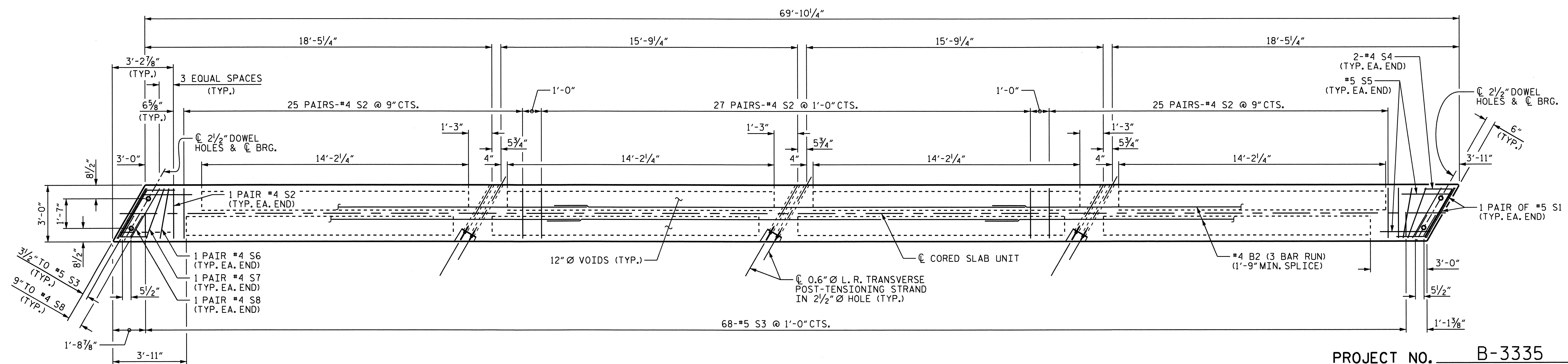
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN C

DRAWN BY : P. K. NEWTON DATE : 1/7/10
 CHECKED BY : T. H. FANG DATE : 2/16/10

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			22

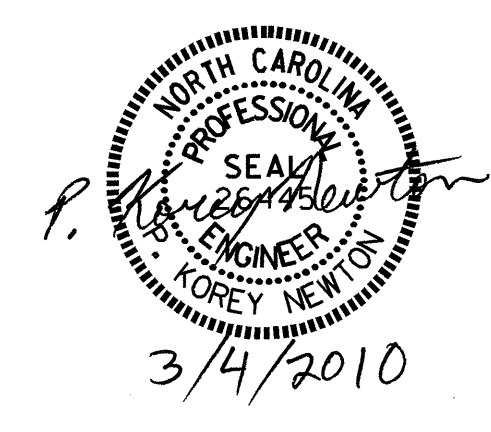


PLAN OF EXTERIOR CORED SLAB UNIT (SPAN A OR C)
 PLAN FOR INTERIOR CORED SLAB UNIT IDENTICAL, EXCEPT OMIT #5 S3 BARS.



PLAN OF EXTERIOR CORED SLAB UNIT (SPAN B)
 PLAN FOR INTERIOR CORED SLAB UNIT IDENTICAL, EXCEPT OMIT #5 S3 BARS.

PROJECT NO. B-3335
GRAHAM COUNTY
 STATION: 14+34.00 -L-
 SHEET 5 OF 5



STATE OF NORTH CAROLINA					
DEPARTMENT OF TRANSPORTATION					
RALEIGH					
SUPERSTRUCTURE					
CORED SLAB UNIT					
DETAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					22
					S-9

DRAWN BY: P. K. NEWTON DATE: 1/7/10
 CHECKED BY: T. H. FANG DATE: 2/16/10

NOTES

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

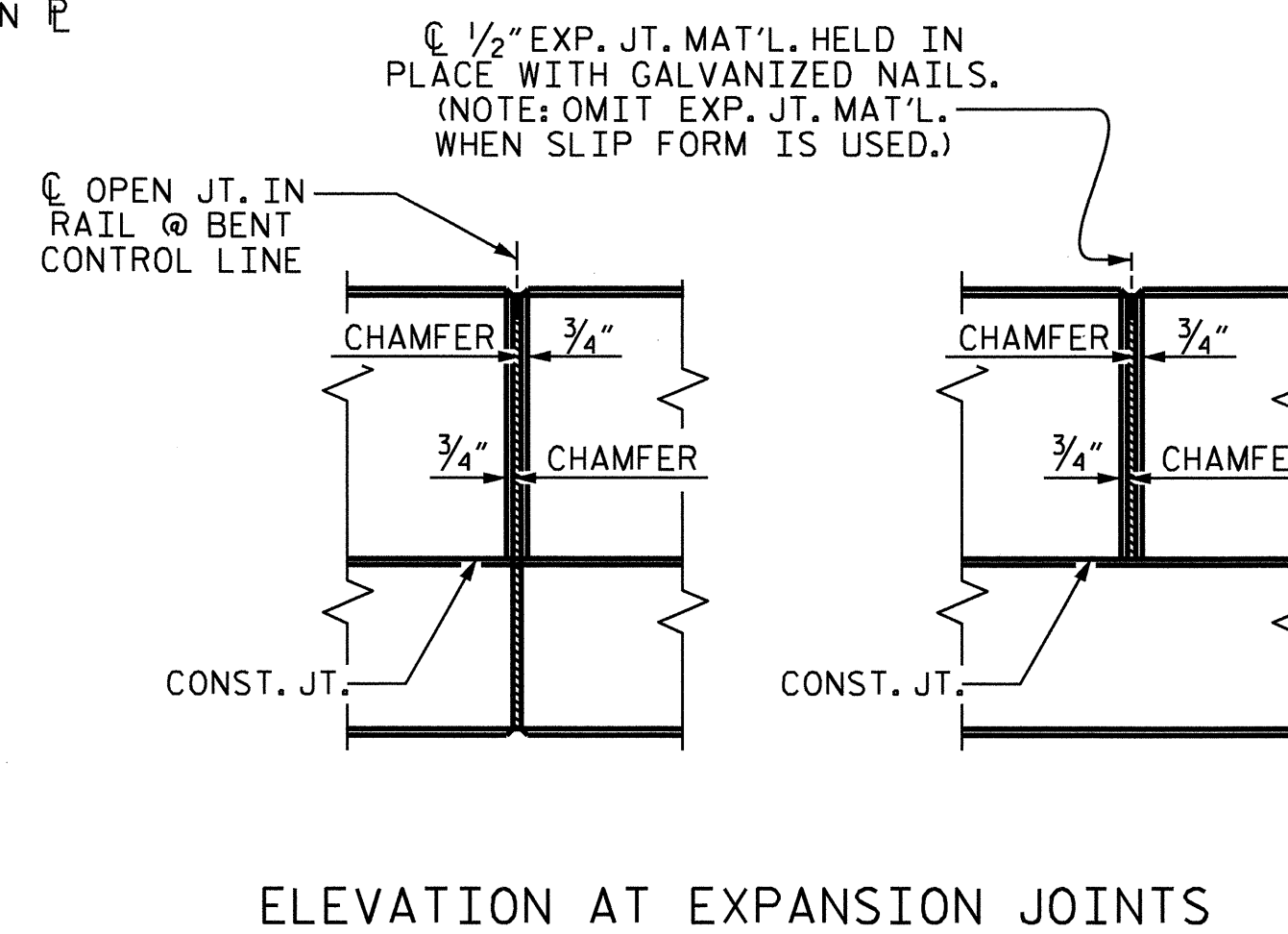
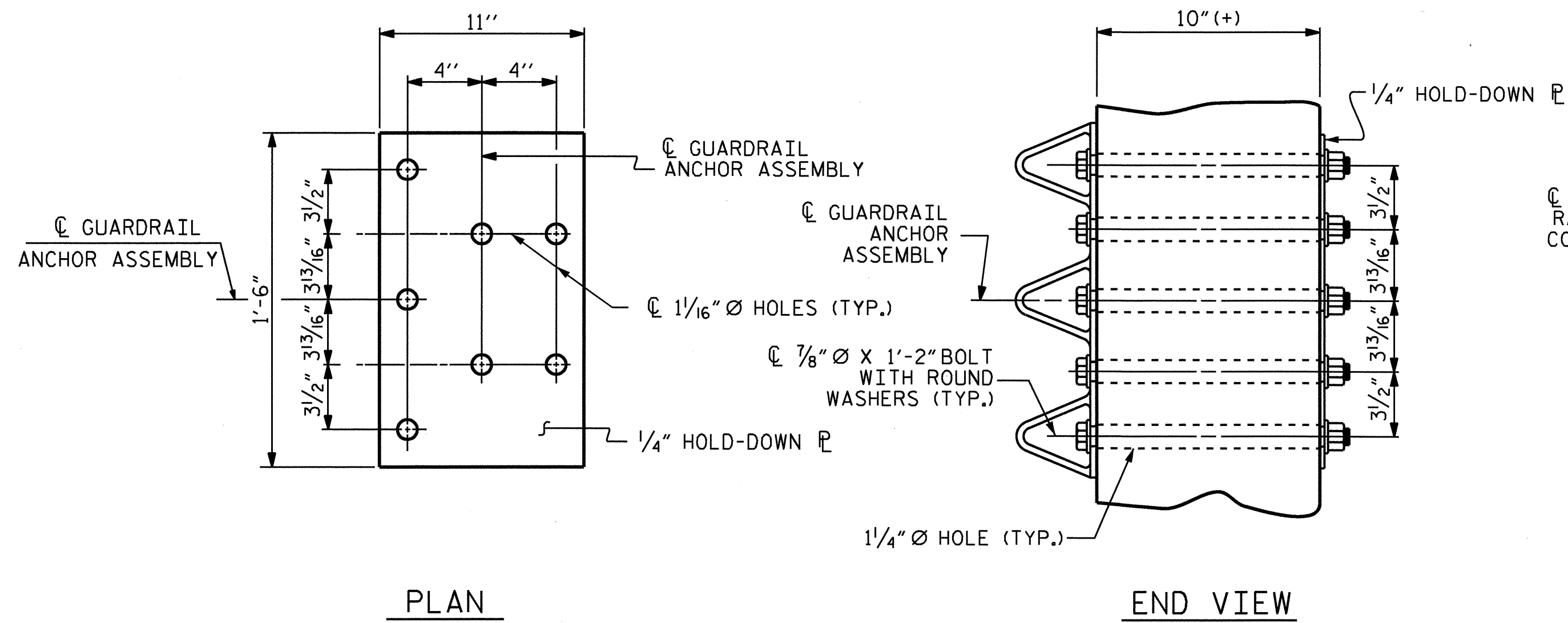
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS.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

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

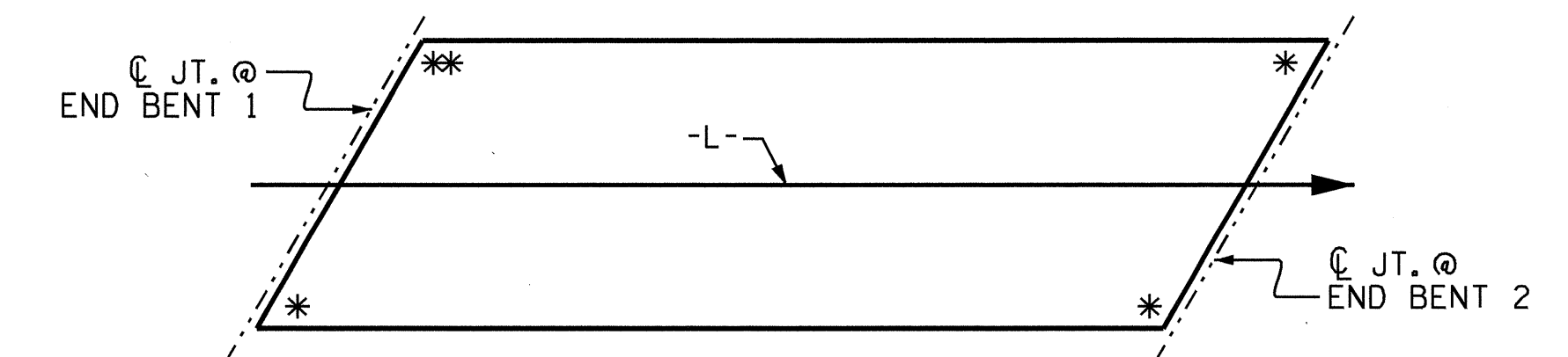
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS. THE ATTACHMENT OF THE IMPACT ATTENUATOR IS A ROADWAY DETAIL AND PAY ITEM.

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.

FOR VERTICAL CONCRETE BARRIER RAIL, SEE SPECIAL PROVISIONS.

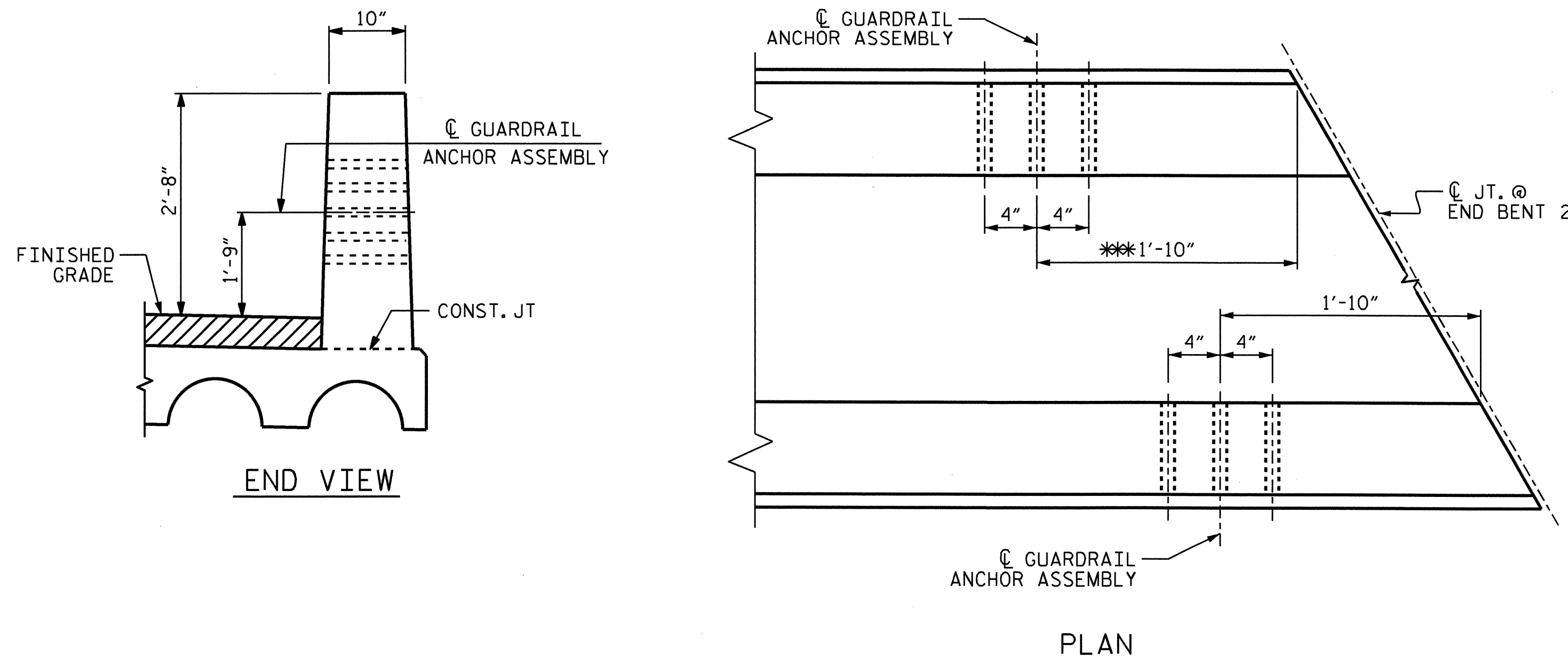


GUARDRAIL ANCHOR ASSEMBLY DETAILS



SKETCH SHOWING POINTS OF ATTACHMENT

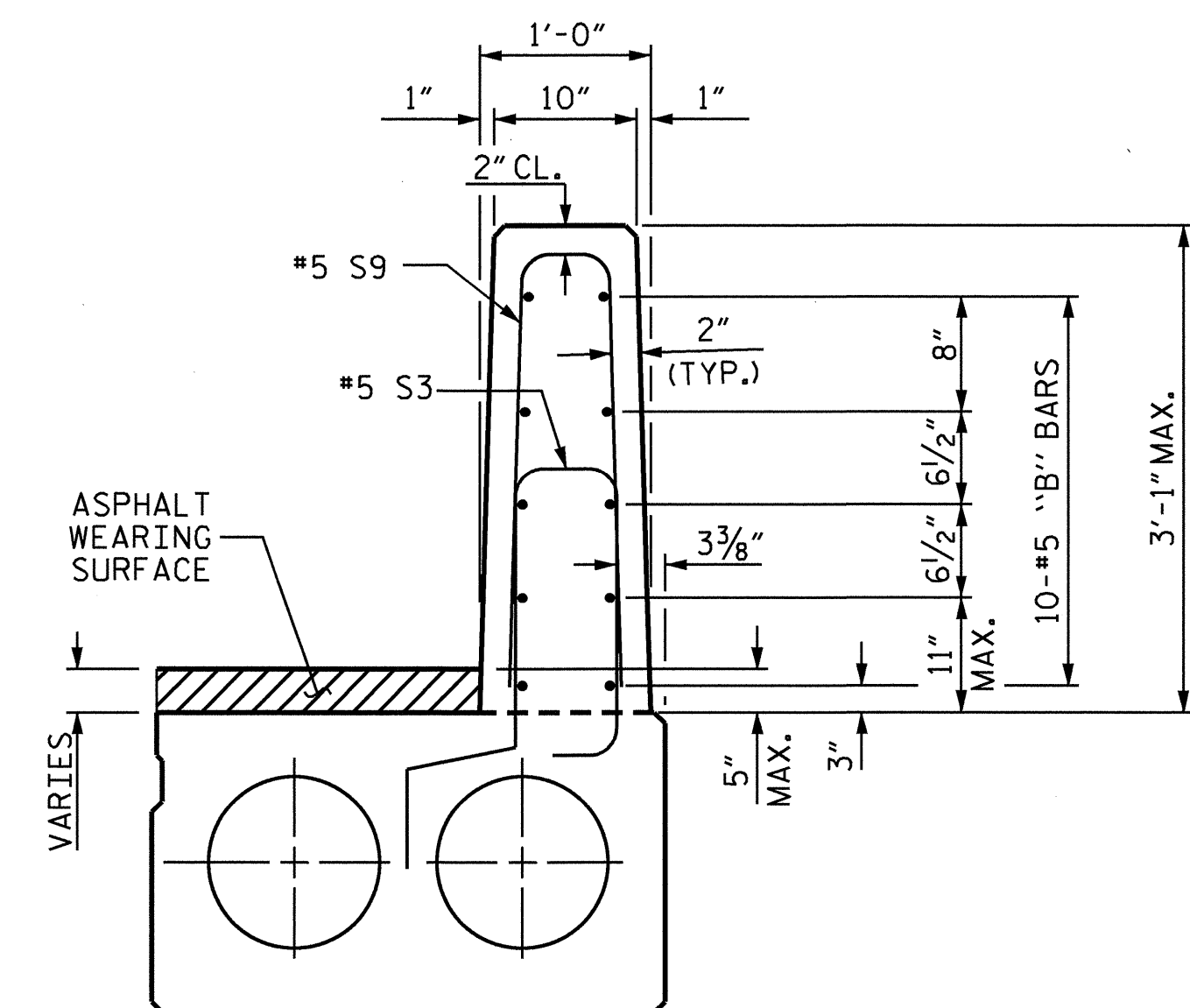
* LOCATION OF GUARDRAIL ATTACHMENT
** LOCATION OF IMPACT ATTENUATOR ATTACHMENT



LOCATION OF GUARDRAIL ANCHOR

END BENT 2 SHOWN, END BENT 1 SIMILAR.

** DIMENSION FOR IMPACT ATTENUATOR ATTACHMENT AT END BENT 1 MAY BE ADJUSTED IN THE FIELD AS NECESSARY, WITH APPROVAL FROM THE ENGINEER.



SECTION THRU RAIL

VERTICAL CONCRETE BARRIER RAIL DETAILS

FOR PLAN VIEW OF VERTICAL CONCRETE BARRIER RAIL, SEE "PLAN OF SPAN" SHEETS.



PROJECT NO. B-3335
GRAHAM COUNTY
STATION: 14+34.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

VERTICAL CONCRETE
BARRIER RAIL
AND GUARDRAIL
ANCHORAGE DETAILS

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10	
1			3			TOTAL SHEETS	
2			4			22	

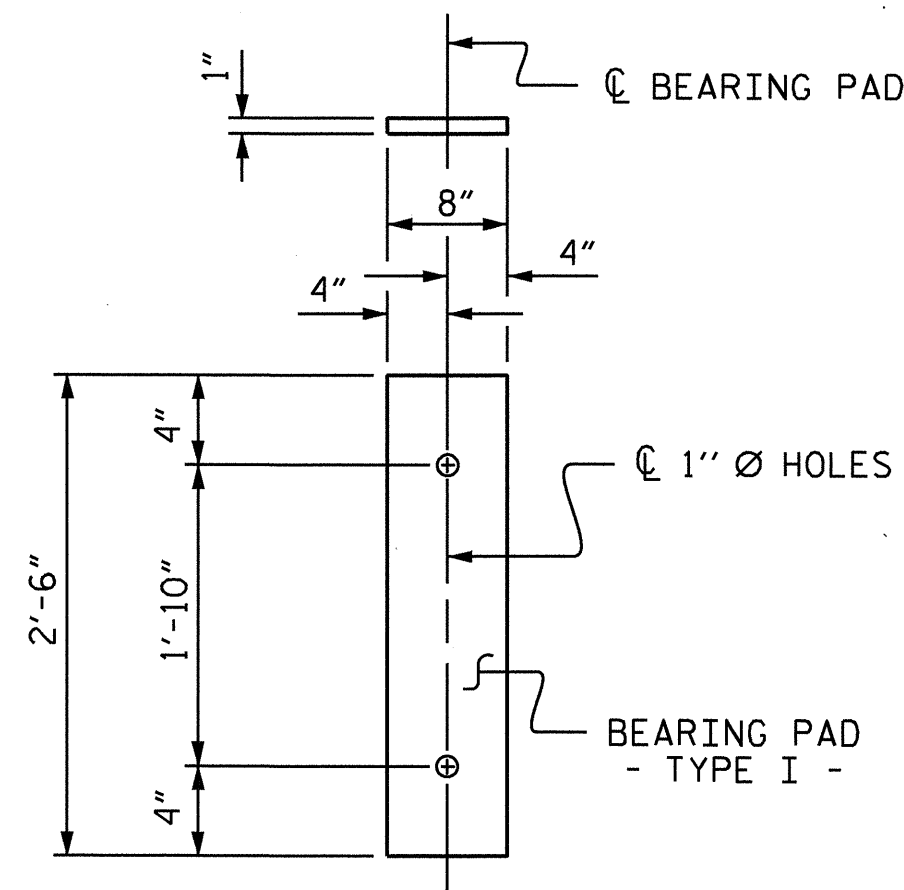
DRAWN BY: P. K. NEWTON DATE: 1/14/10
CHECKED BY: T. H. FANG DATE: 2/16/10

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL								
BAR	NUMBER PER SPAN			SIZE	TYPE	LENGTH	WEIGHT	
	SPAN A	SPAN B	SPAN C					
*B3	120		120	#5	STR	13'-0"	3254	
*B4		120		#5	STR	13'-3"	1658	
*S9	152	144	152	#5	3	5'-6"	2570	
*EPOXY COATED REINFORCING STEEL							7482	LBS.
CLASS AA CONCRETE							41.7	CU. YDS.
TOTAL LIN. FT. OF VERTICAL CONCRETE BARRIER RAIL							414.8	LIN. FT.

DEAD LOAD DEFLECTION AND CAMBER			
	SPAN A	SPAN B	SPAN C
CAMBER (SLAB ALONE IN PLACE)	3 ¹⁵ / ₁₆ " ↑	3 ¹⁵ / ₁₆ " ↑	3 ¹⁵ / ₁₆ " ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD **	1 ³ / ₁₆ " ↓	7 ⁸ / ₁₆ " ↓	1 ³ / ₁₆ " ↓
FINAL CAMBER	3 ¹ / ₈ " ↑	3 ¹ / ₁₆ " ↑	3 ¹ / ₈ " ↑

** INCLUDES FUTURE WEARING SURFACE

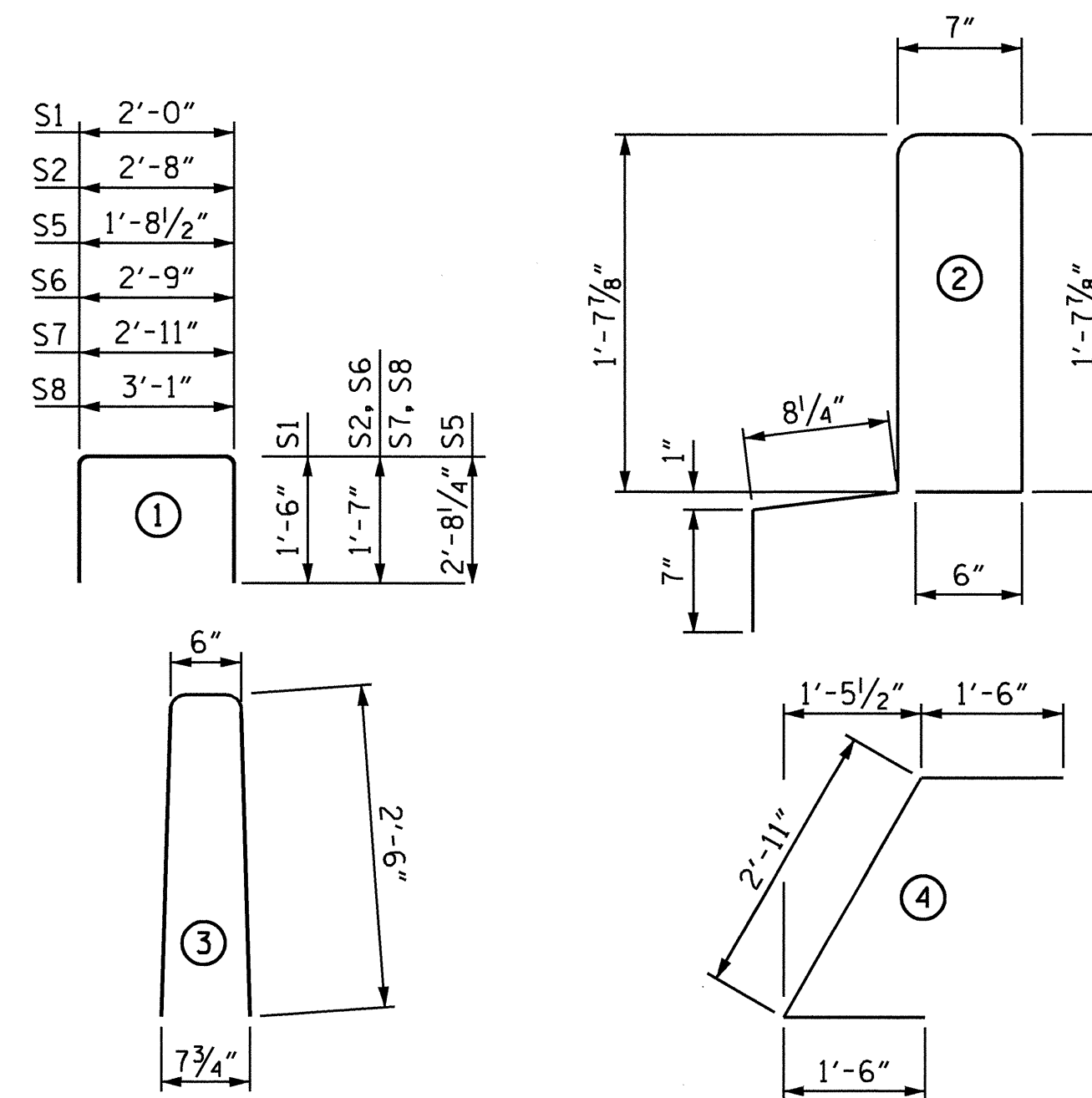
CORED SLABS REQUIRED				
SPAN A				
UNIT TYPE	NUMBER	LENGTH	TOTAL LENGTH	
EXTERIOR	2	68'-7 ⁹ / ₁₆ "	137'-3 ¹ / ₈ "	
INTERIOR	8	68'-7 ⁹ / ₁₆ "	549'-0 ¹ / ₂ "	
TOTAL	10	68'-7 ⁹ / ₁₆ "	686'-3 ⁵ / ₈ "	
SPAN B				
UNIT TYPE	NUMBER	LENGTH	TOTAL LENGTH	
EXTERIOR	2	69'-10 ¹ / ₄ "	139'-8 ¹ / ₂ "	
INTERIOR	8	69'-10 ¹ / ₄ "	558'-10"	
TOTAL	10	69'-10 ¹ / ₄ "	698'-6 ¹ / ₂ "	
SPAN C				
UNIT TYPE	NUMBER	LENGTH	TOTAL LENGTH	
EXTERIOR	2	68'-7 ⁹ / ₁₆ "	137'-3 ¹ / ₈ "	
INTERIOR	8	68'-7 ⁹ / ₁₆ "	549'-0 ¹ / ₂ "	
TOTAL	10	68'-7 ⁹ / ₁₆ "	686'-3 ⁵ / ₈ "	
TOTAL CORED SLAB UNITS NO. 30 2071.15 LIN. FT.				



FIXED END
(TYPE I - 60 REQ'D)

ELASTOMERIC BEARING DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE CORED SLAB UNIT

SPAN A OR C							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B1	6	#4	STR	23'-11"	96	23'-11"	96
S1	8	#5	1	5'-0"	42	5'-0"	42
S2	154	#4	1	5'-10"	600	5'-10"	600
*S3	76	#5	2	5'-8"	449		
S4	4	#4	4	5'-11"	16	5'-11"	16
S5	4	#5	1	7'-1"	30	7'-1"	30
S6	4	#4	1	5'-11"	16	5'-11"	16
S7	4	#4	1	6'-1"	16	6'-1"	16
S8	4	#4	1	6'-3"	17	6'-3"	17
REINFORCING STEEL				833	LBS.	833	LBS.
*EPOXY COATED REINFORCING STEEL				449	LBS.		
7000 P.S.I. CONCRETE				11.9	CU. YDS.	11.9	CU. YDS.
0.6" Ø L.R. STRANDS No. 27							
SPAN B							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B2	6	#4	STR	24'-4"	98	24'-4"	98
S1	8	#5	1	5'-0"	42	5'-0"	42
S2	158	#4	1	5'-10"	616	5'-10"	616
*S3	72	#5	2	5'-8"	426		
S4	4	#4	4	5'-11"	16	5'-11"	16
S5	4	#5	1	7'-1"	30	7'-1"	30
S6	4	#4	1	5'-11"	16	5'-11"	16
S7	4	#4	1	6'-1"	16	6'-1"	16
S8	4	#4	1	6'-3"	17	6'-3"	17
REINFORCING STEEL				851	LBS.	851	LBS.
*EPOXY COATED REINFORCING STEEL				426	LBS.		
7000 P.S.I. CONCRETE				12.1	CU. YDS.	12.1	CU. YDS.
0.6" Ø L.R. STRANDS No. 27							

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 CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

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

THE 2¹/₂" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE 2" Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, A POSITIVE HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. THIS SYSTEM SHALL BE DESIGNED TO BE LEFT IN PLACE UNTIL THE CONCRETE HAS REACHED RELEASE STRENGTH. AT LEAST THREE WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 5800 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A 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 WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.

TRANSVERSE POST TENSIONING OF THE CORED SLAB UNITS SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, EXCEPT THAT THE STRANDS SHALL BE 0.6" Ø AND TENSIONED TO 43,950 POUNDS.

MAINTAIN A SYMMETRIC TENSION FORCE BETWEEN EACH PAIR OF TRANSVERSE POST TENSIONING STRANDS IN THE DIAPHRAGM.

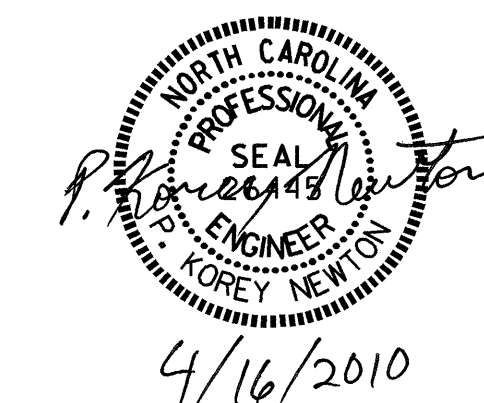
THE #4 S2 STIRRUPS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO THE GROUTED RECESS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

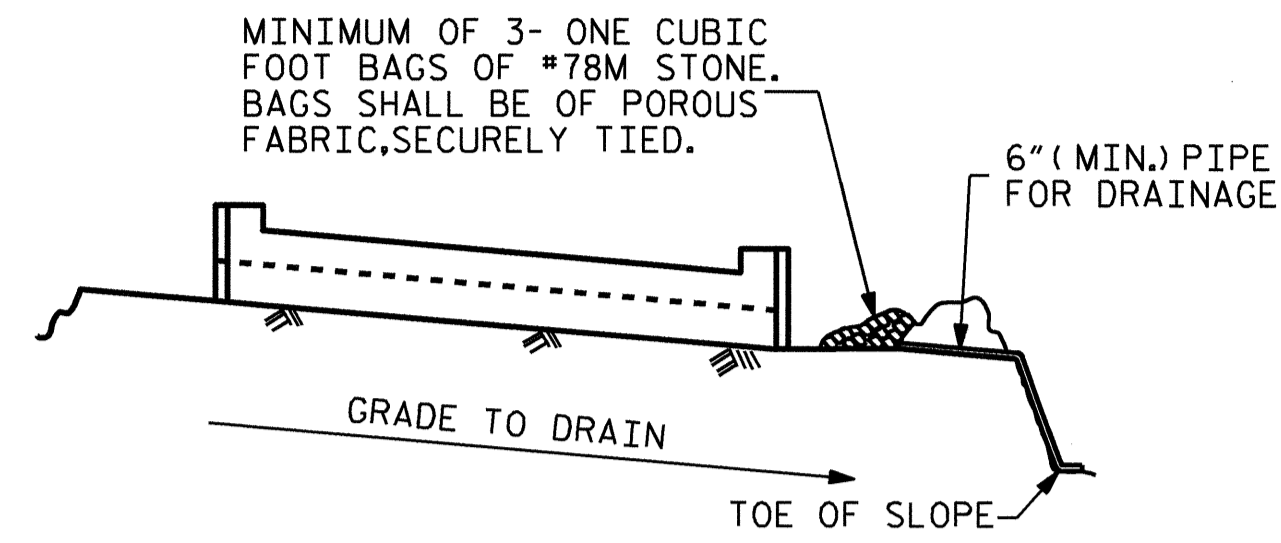
GRADE 270 STRANDS	
	0.6" Ø L.R.
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

PROJECT NO. B-3335
GRAHAM COUNTY
STATION: 14+34.00 -L-



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUPERSTRUCTURE					
BILL OF MATERIAL					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					22

ASSEMBLED BY : P. K. NEWTON	DATE : 1/13/10
CHECKED BY : T. H. FANG	DATE : 2/15/10
DRAWN BY : WJH 4/89	REV. 7/10/01 RWW/LES
CHECKED BY : FCJ 5/89	REV. 5/7/03RRR RWW/JTE
	REV. 5/1/06 TLA/GM

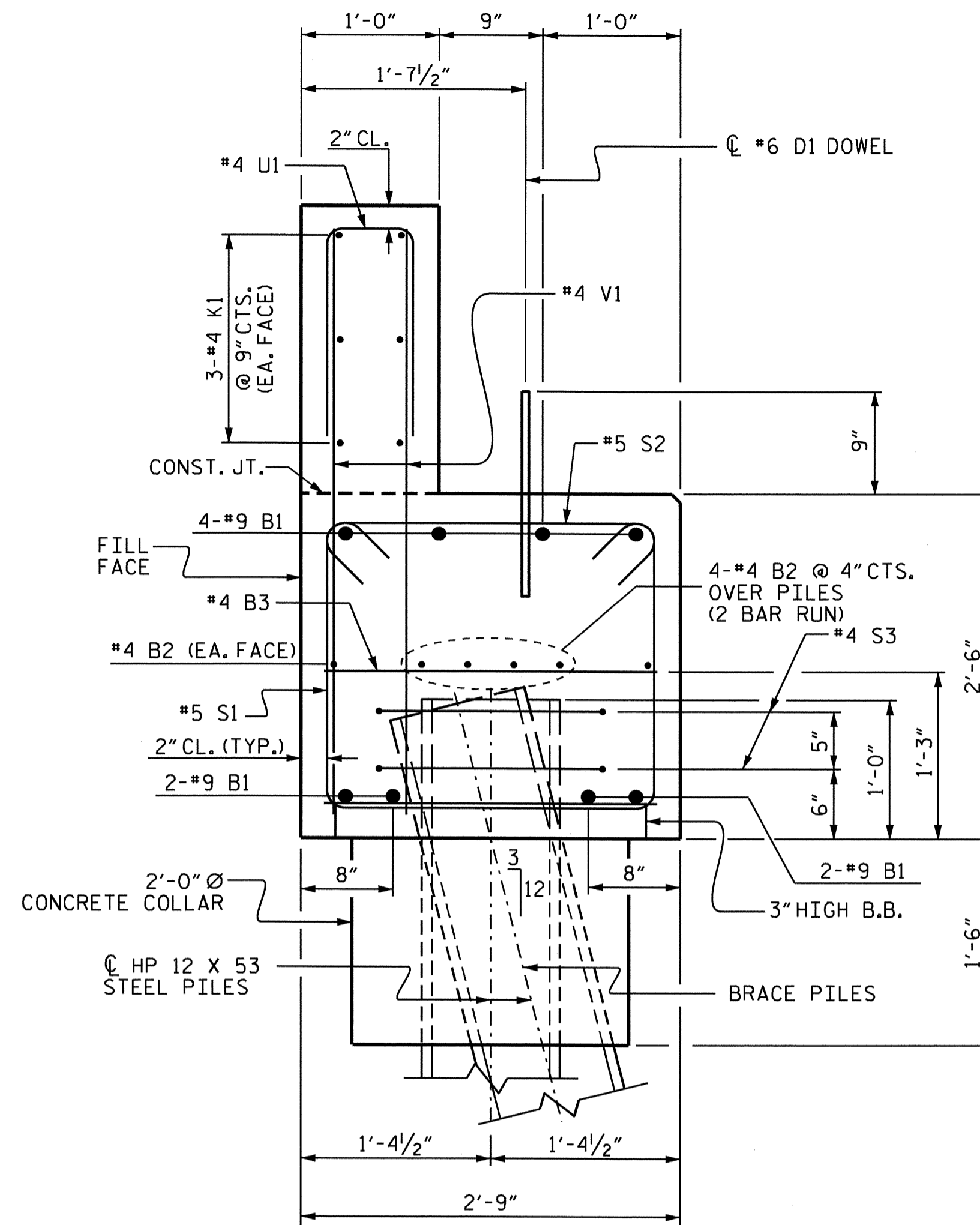


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

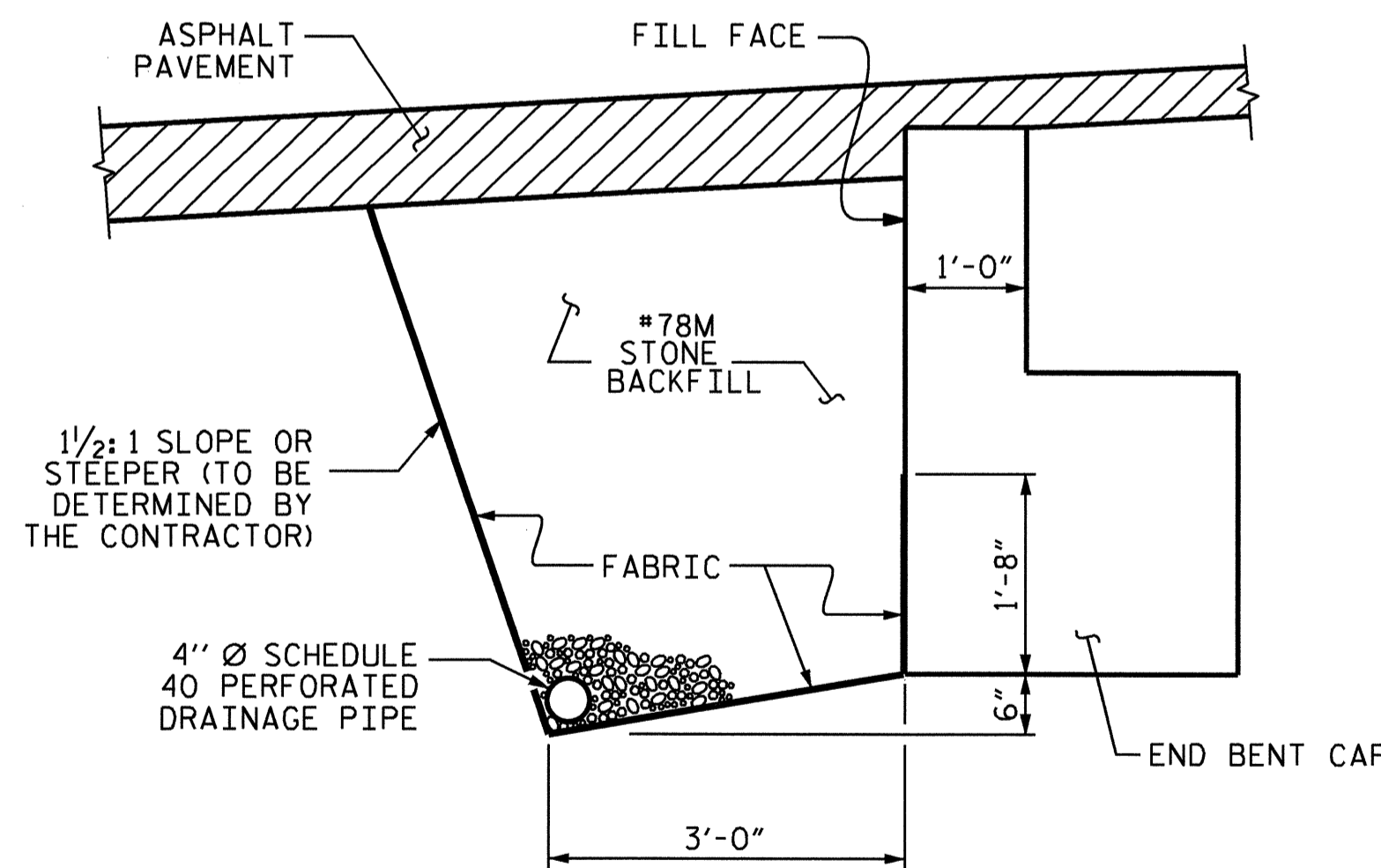
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

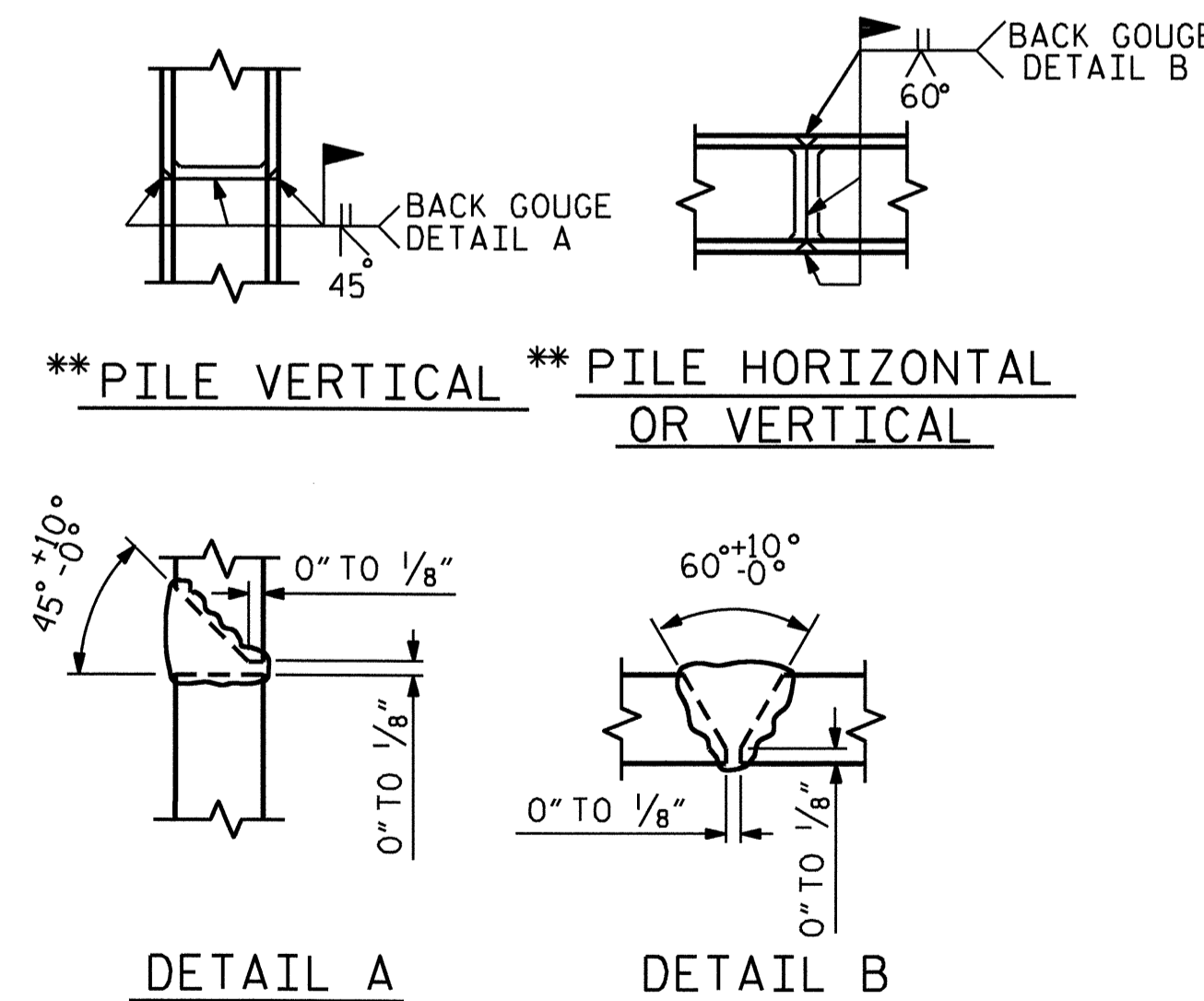


SECTION A-A



BACK FILL DETAILS

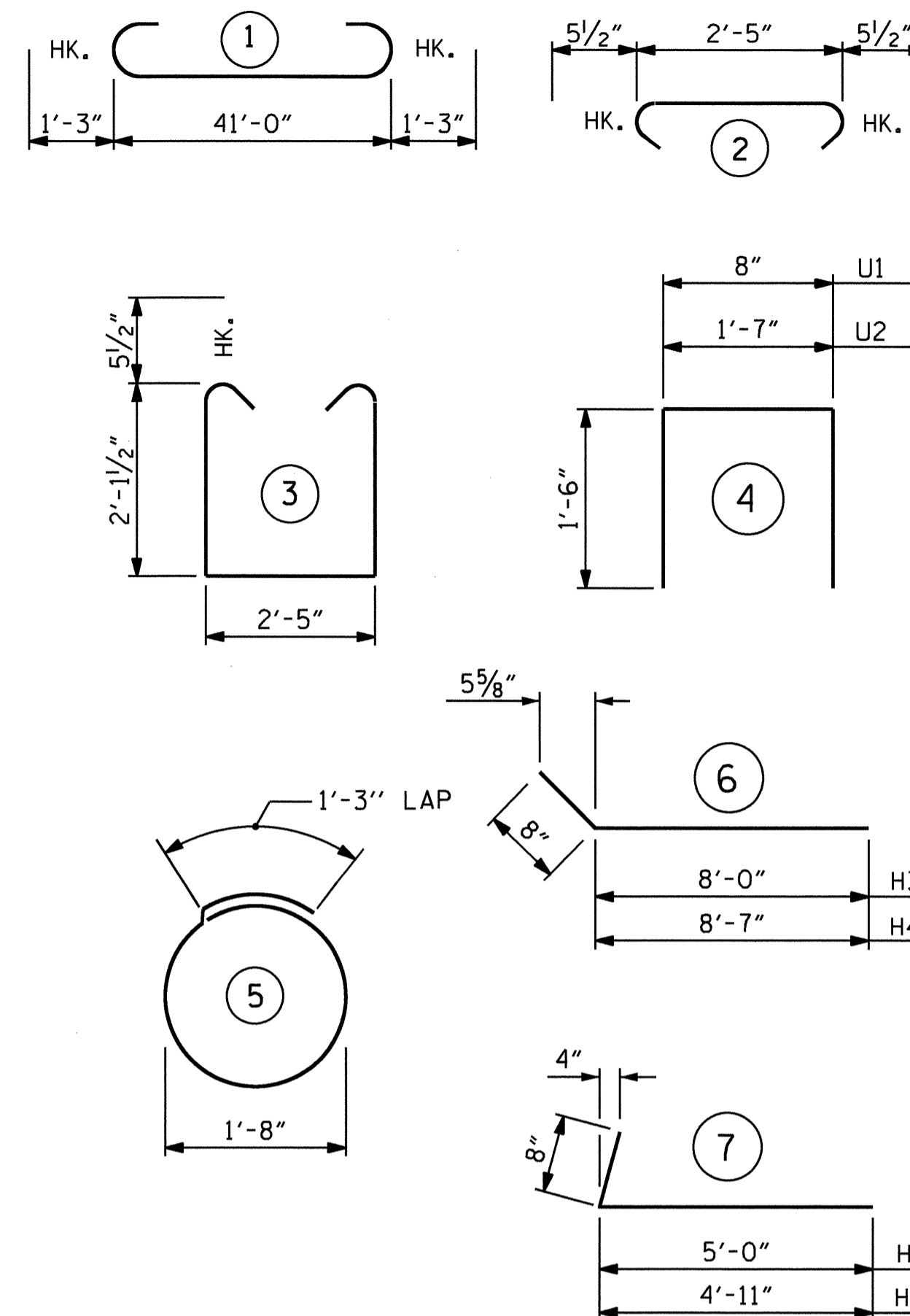
FOR BRIDGE APPROACH FILL INCLUDING FABRIC, 4" Ø DRAINAGE PIPE, AND #78M STONE BACKFILL. SEE ROADWAY PLANS.



PILE SPLICE DETAILS

** POSITION OF PILE DURING WELDING.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	43'-6"	1183
B2	12	#4	STR	22'-0"	176
B3	11	#4	STR	2'-5"	18
D1	20	#6	STR	1'-6"	45
H1	7	#4	7	5'-8"	26
H2	7	#4	7	5'-7"	26
H3	7	#4	6	8'-8"	41
H4	7	#4	6	9'-3"	43
K1	12	#4	STR	22'-0"	176
K2	2	#4	STR	4'-4"	6
K3	1	#4	STR	4'-7"	3
K4	1	#4	STR	4'-5"	3
S1	42	#5	3	7'-7"	332
S2	42	#5	2	3'-4"	146
S3	10	#4	5	6'-6"	43
U1	32	#4	4	3'-8"	78
U2	4	#4	4	4'-7"	12
V1	64	#4	STR	4'-2"	178
V2	22	#4	STR	4'-6"	66
V3	29	#4	STR	4'-8"	90

REINFORCING STEEL 2691 LBS

CLASS A CONCRETE BREAKDOWN:

POUR 1 (CAP, LOWER WINGS, & CONCRETE COLLARS)	12.6 C.Y.
POUR 2 (BACKWALL & UPPER WINGS)	4.5 C.Y.
POUR 3 (LATERAL GUIDES)	0.1 C.Y.
TOTAL	17.2 C.Y.

HP 12 X 53 STEEL PILES

NO. 5	LIN. FT. = 100
PILE EXCAVATION	
IN SOIL	LIN. FT. = 20
NOT IN SOIL	LIN. FT. = 25

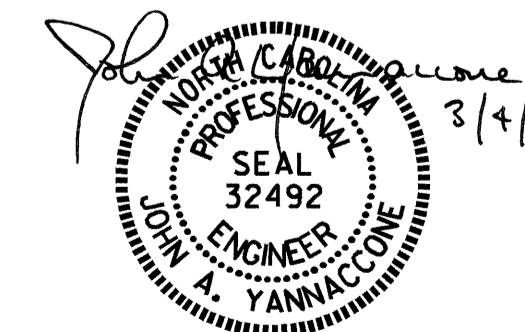
PROJECT NO. B-3335
GRAHAM COUNTY
 STATION: 14+34.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE

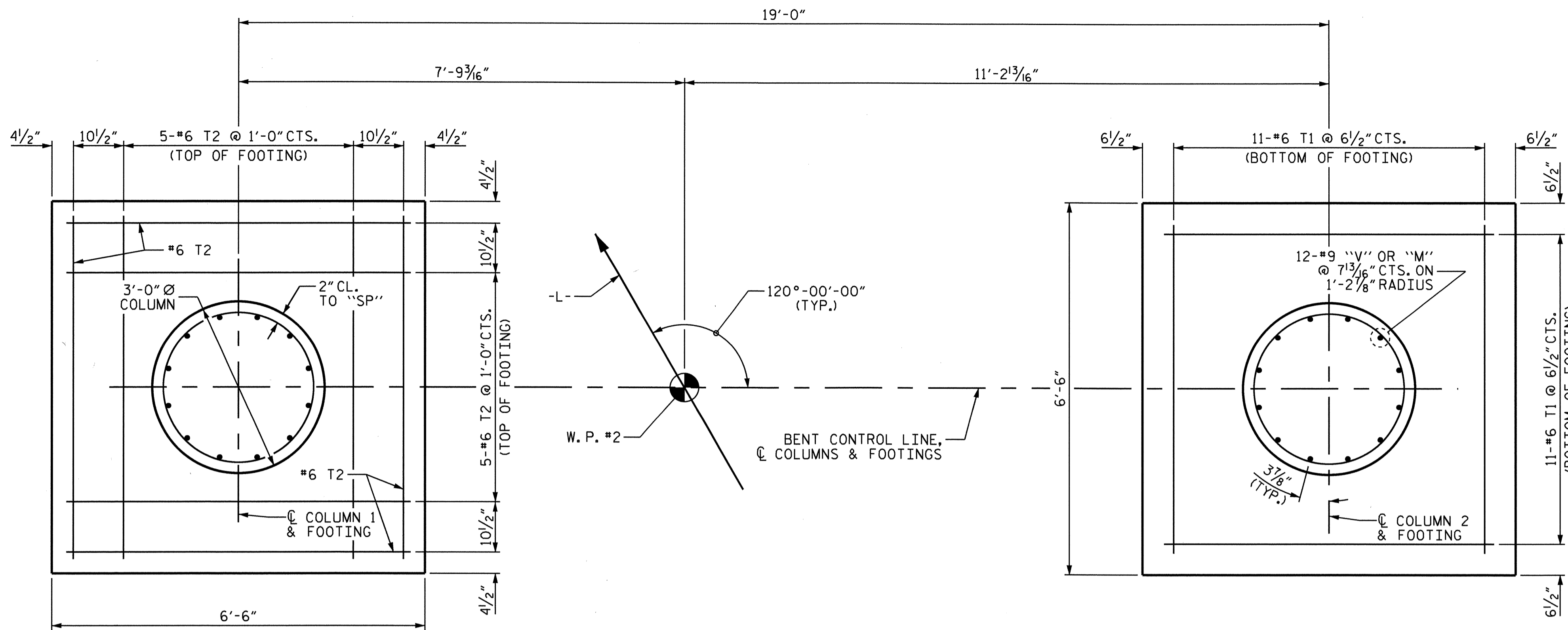
END BENT 1



DRAWN BY: QT NGUYEN DATE: 10-29-09
 CHECKED BY: J.A. YANNAKONE DATE: 1-27-10

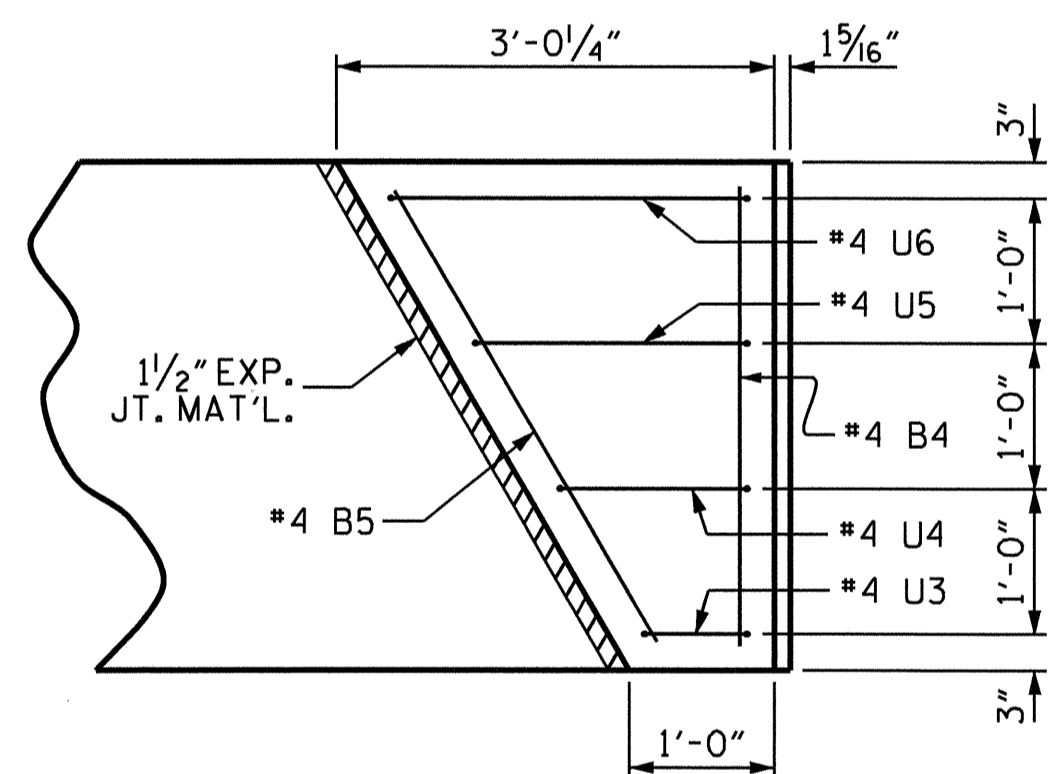
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NO.	BY:	DATE:	NO.	BY:	DATE:
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2			4		

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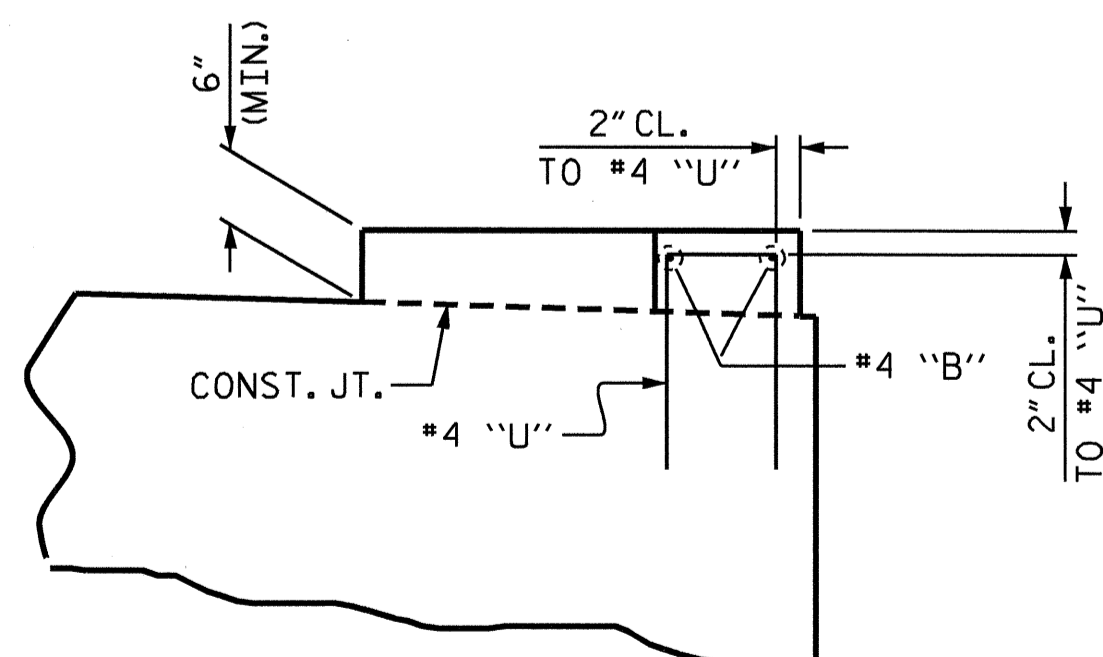


PLAN OF FOOTINGS & COLUMNS

(REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR EACH FOOTING AND COLUMN)

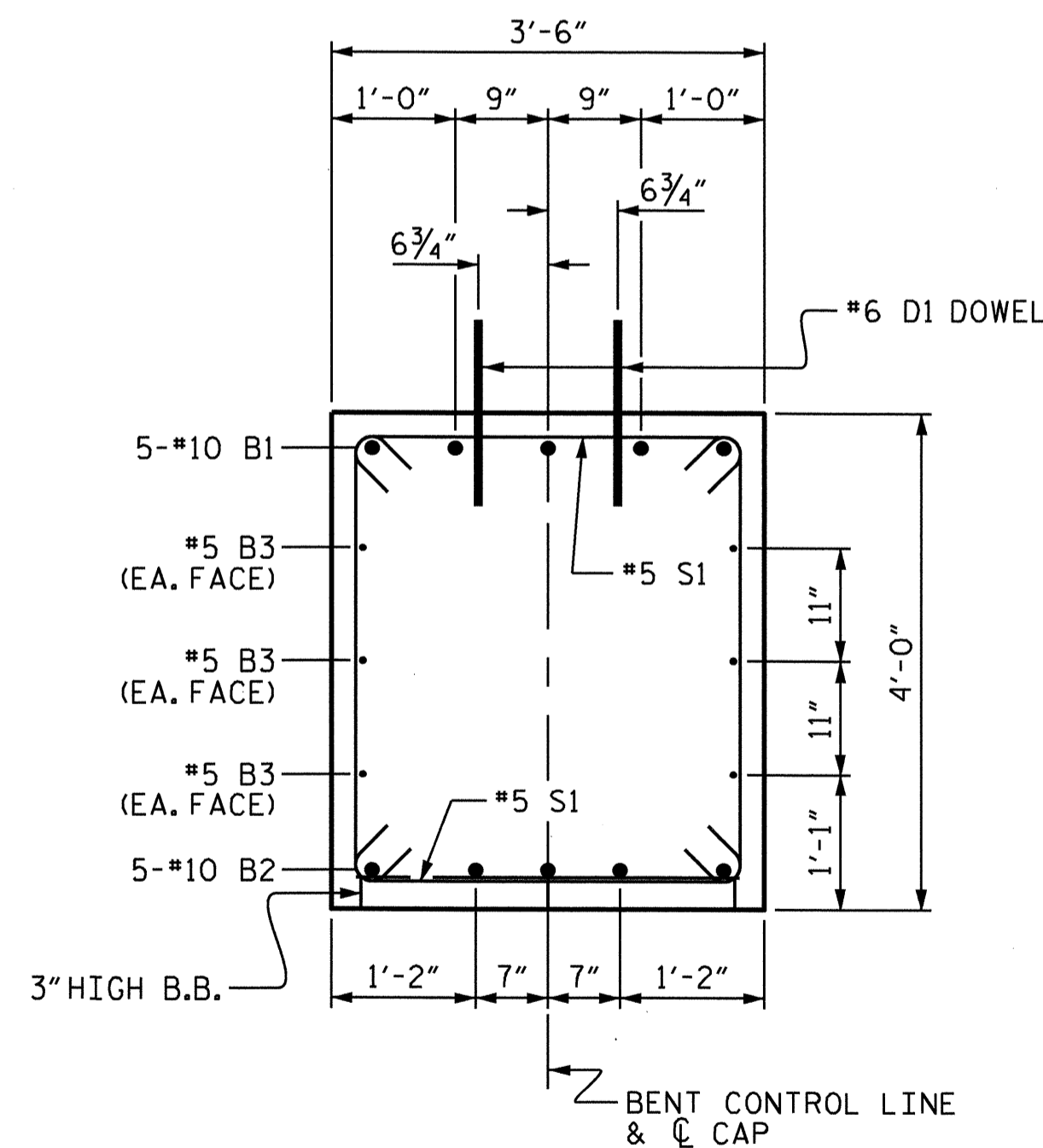


PLAN

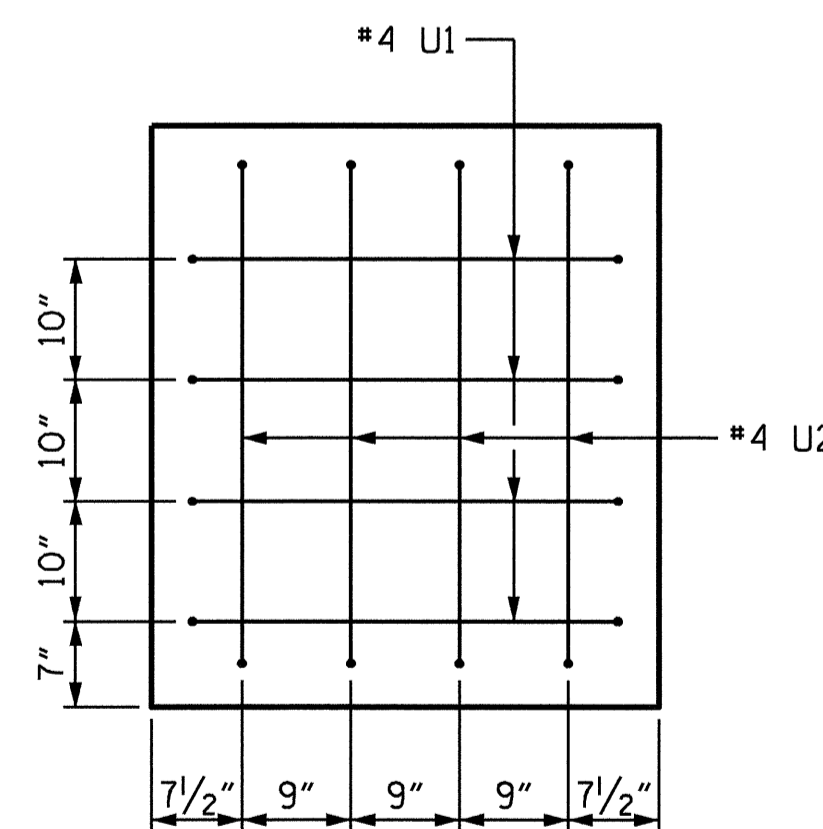


ELEVATION

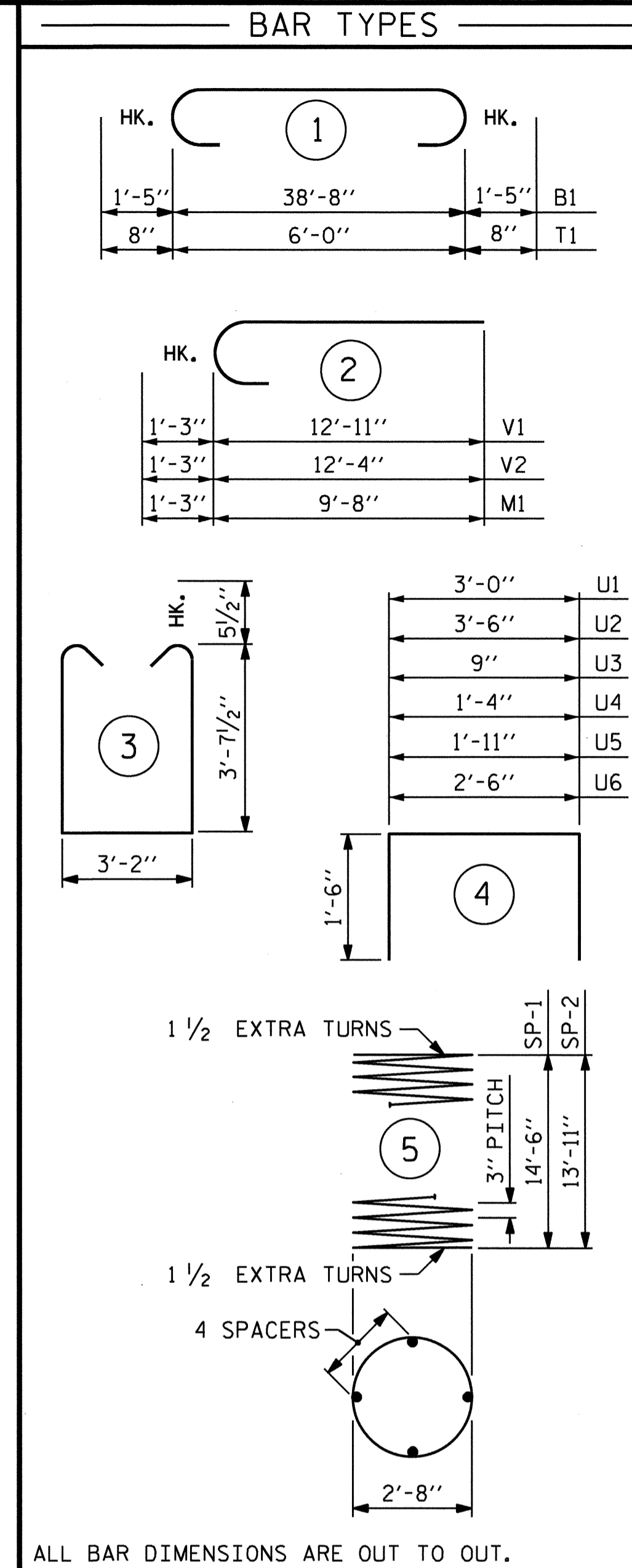
DETAIL A



SECTION A-A



VIEW X-X



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	5	#10	1	41'-6"	893
B2	5	#10	STR	38'-10"	835
B3	6	#5	STR	38'-10"	243
B4	2	#4	STR	3'-2"	4
B5	2	#4	STR	3'-7"	5
D1	40	#6	STR	1'-6"	90
M1	24	#9	2	10'-11"	891
S1	40	#5	3	11'-4"	473
T1	44	#6	1	7'-4"	485
T2	28	#6	STR	6'-0"	252
U1	8	#4	4	6'-0"	32
U2	8	#4	4	6'-6"	35
U3	2	#4	4	3'-9"	5
U4	2	#4	4	4'-4"	6
U5	2	#4	4	4'-11"	7
U6	2	#4	4	5'-6"	7
V1	12	#9	2	14'-2"	578
V2	12	#9	2	13'-7"	554

REINFORCING STEEL LBS 5395

SP-1 1 ** 5 503'-4" 336

SP-2 1 ** 5 486'-10" 325

TOTAL SPIRAL

COLUMN REINFORCING STEEL LBS 661

CLASS A CONCRETE BREAKDOWN:

POUR 1 (FOOTINGS)	7.0 C.Y.
POUR 2 (COLUMNS)	5.7 C.Y.
POUR 3 (CAP)	20.3 C.Y.
POUR 4 (LATERAL GUIDES)	0.3 C.Y.
TOTAL CLASS A CONCRETE	33.3 C.Y.

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

FOUNDATION EXCAVATION LUMP SUM

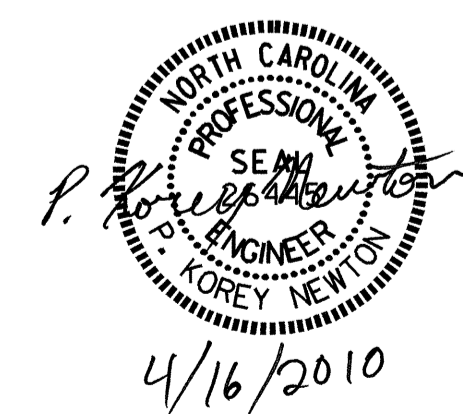
PROJECT NO. B-3335

GRAHAM COUNTY

STATION: 14+34.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
BENT 1

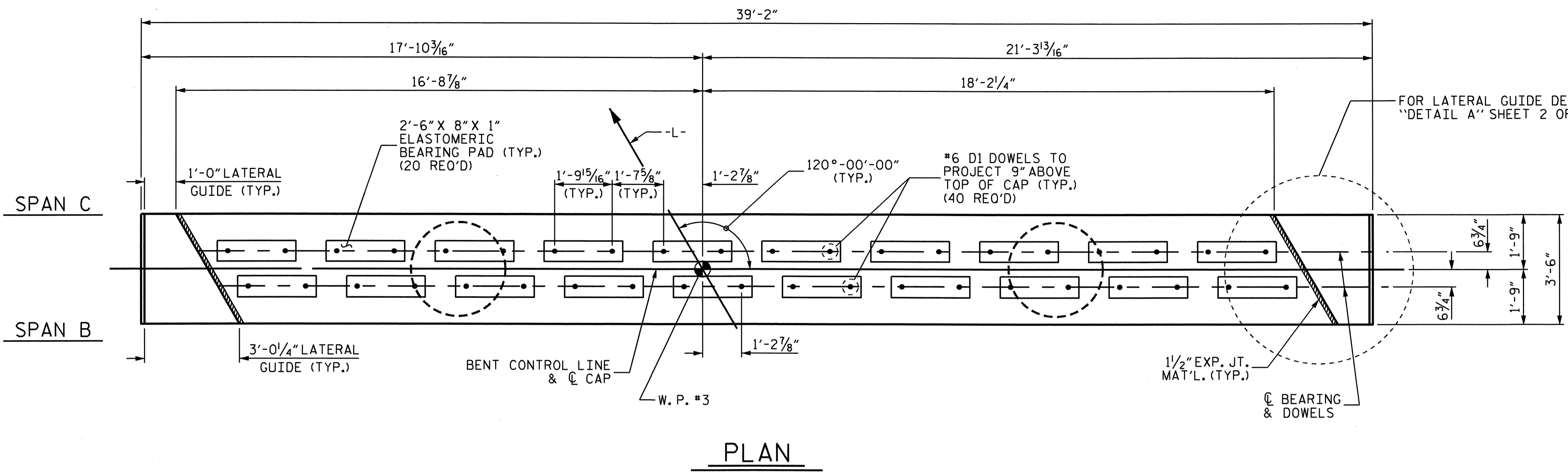


DRAWN BY : P. K. NEWTON DATE : 8/28/09
CHECKED BY : J.A. YANNAACONE DATE : 2/1/10

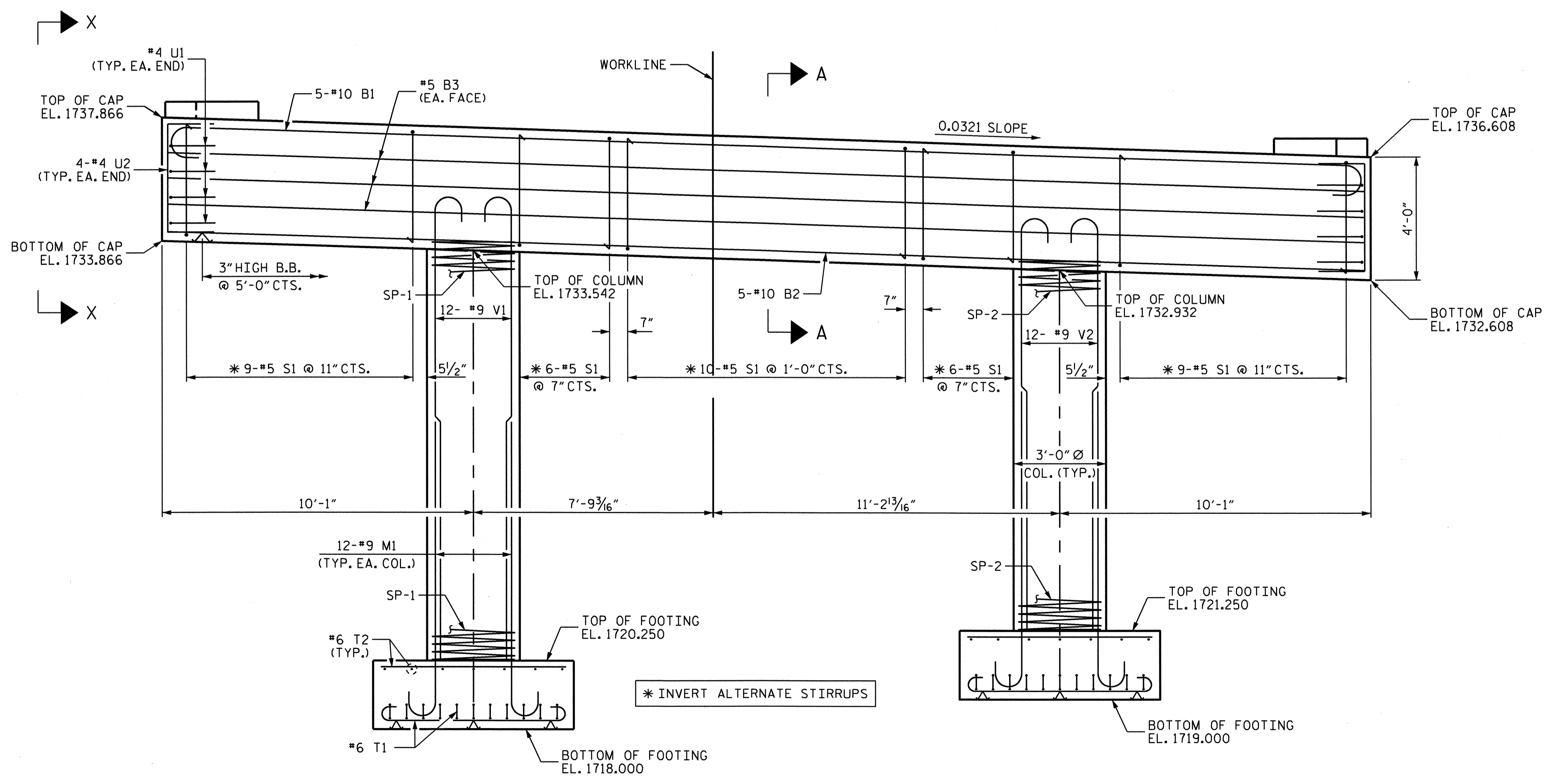
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kpnewton

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			22

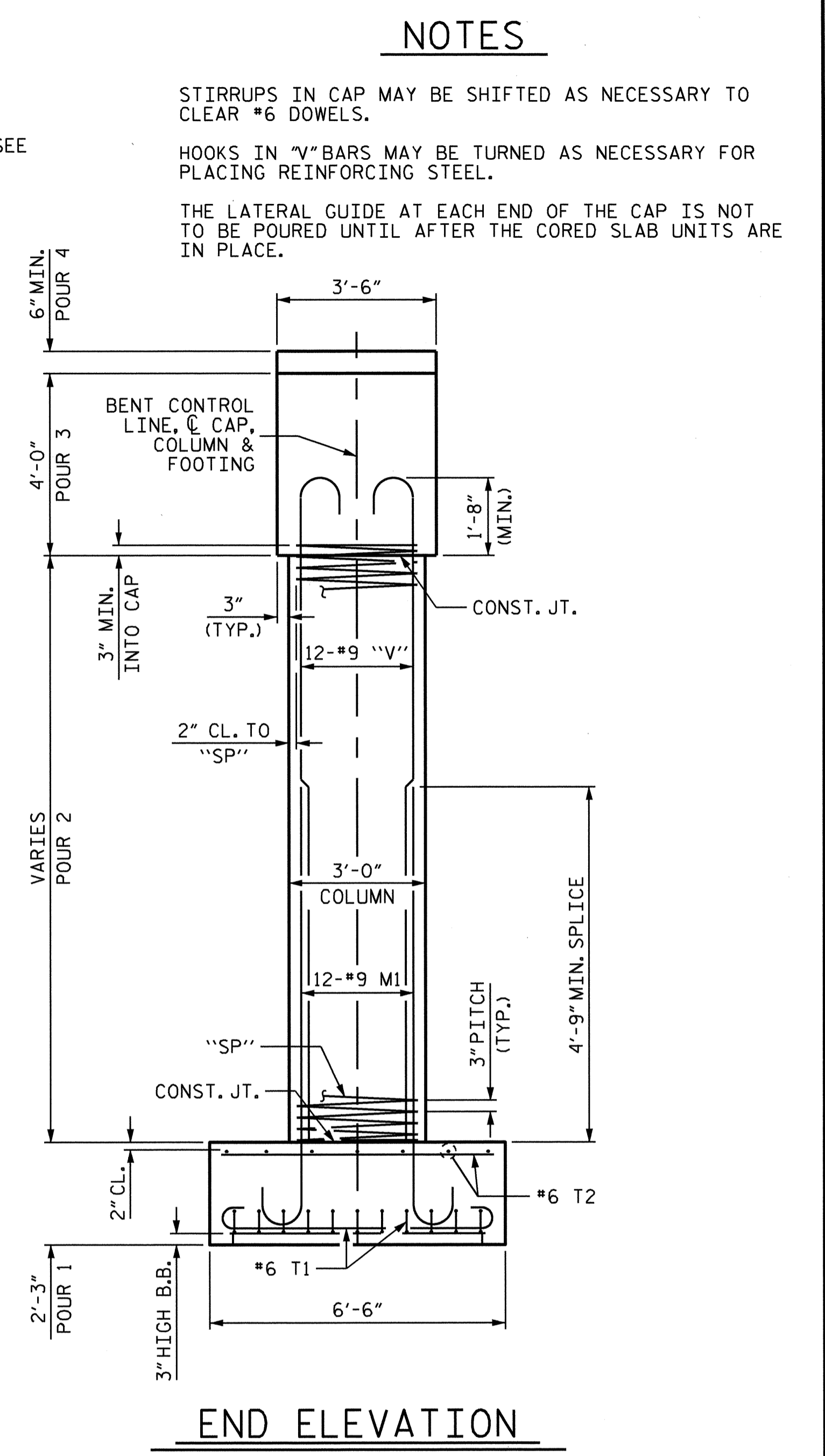
NC005



PLAN



ELEVATION



END ELEVATION

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #6 DOWELS.

HOOKS IN "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.

FOR LATERAL GUIDE DETAIL, SEE "DETAIL A" SHEET 2 OF 2

PROJECT NO. B-3335
GRAHAM COUNTY
 STATION: 14+34.00 -L-
 SHEET 1 OF 2

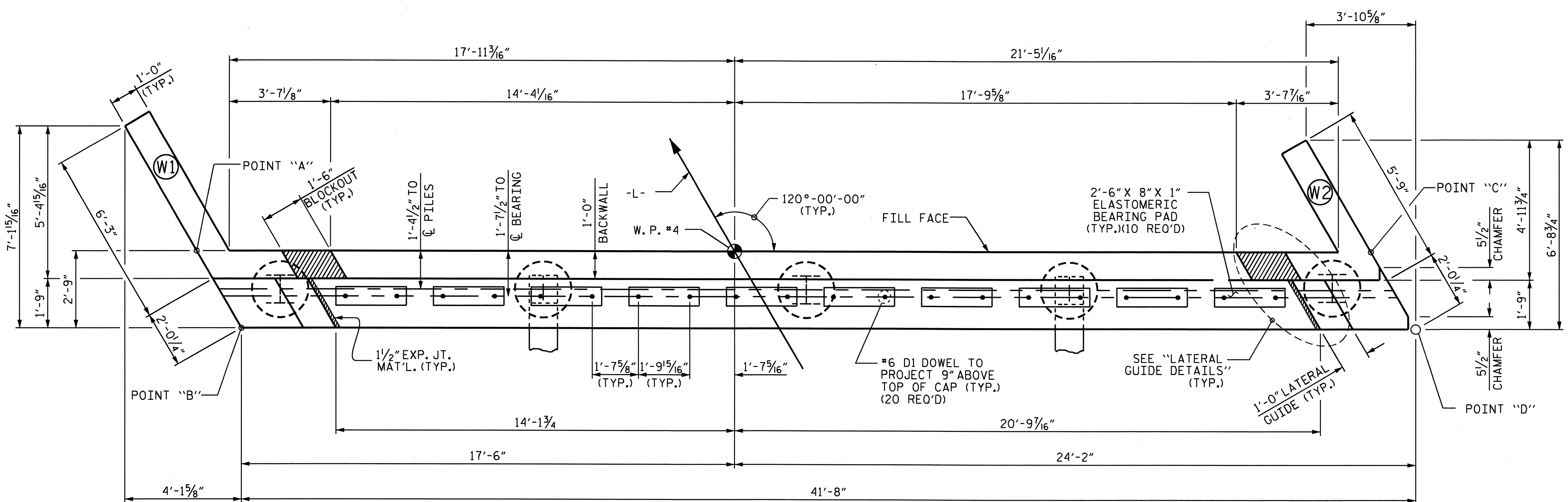


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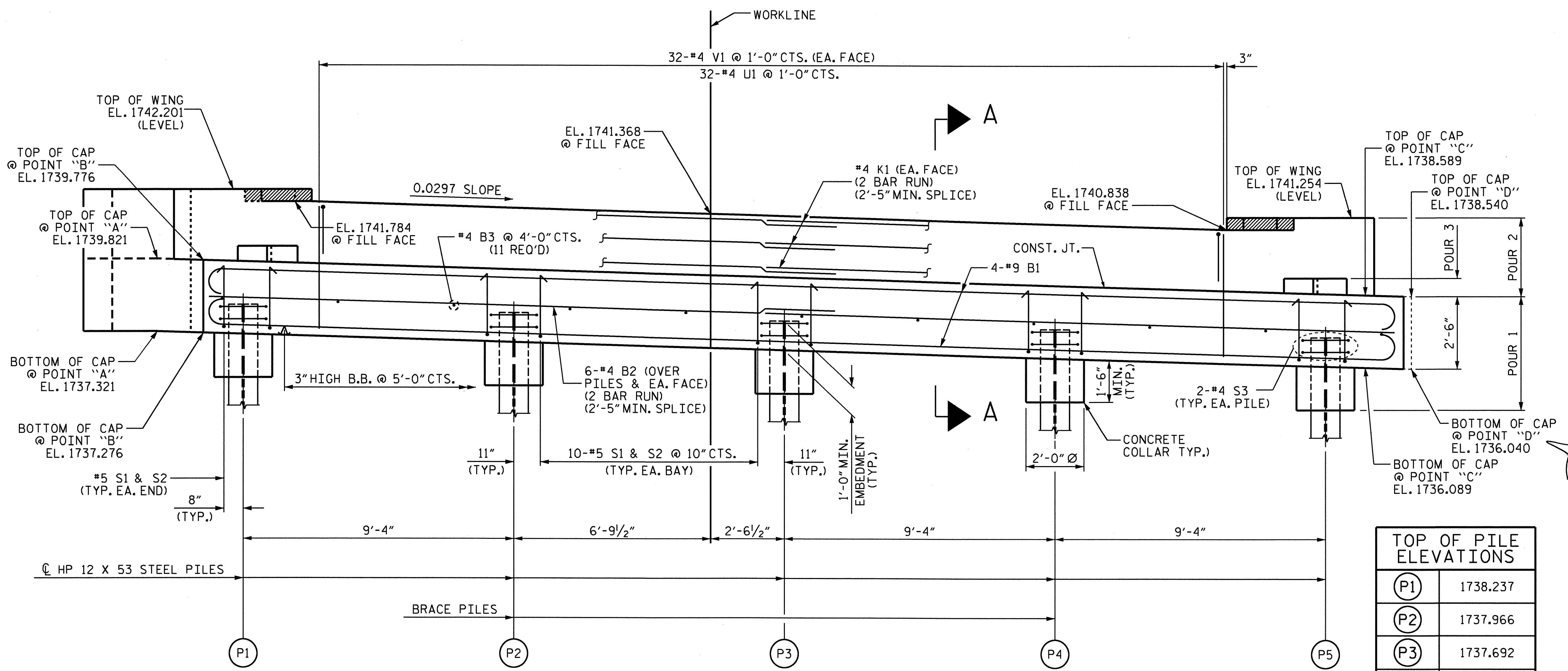
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NCBDS



PLAN

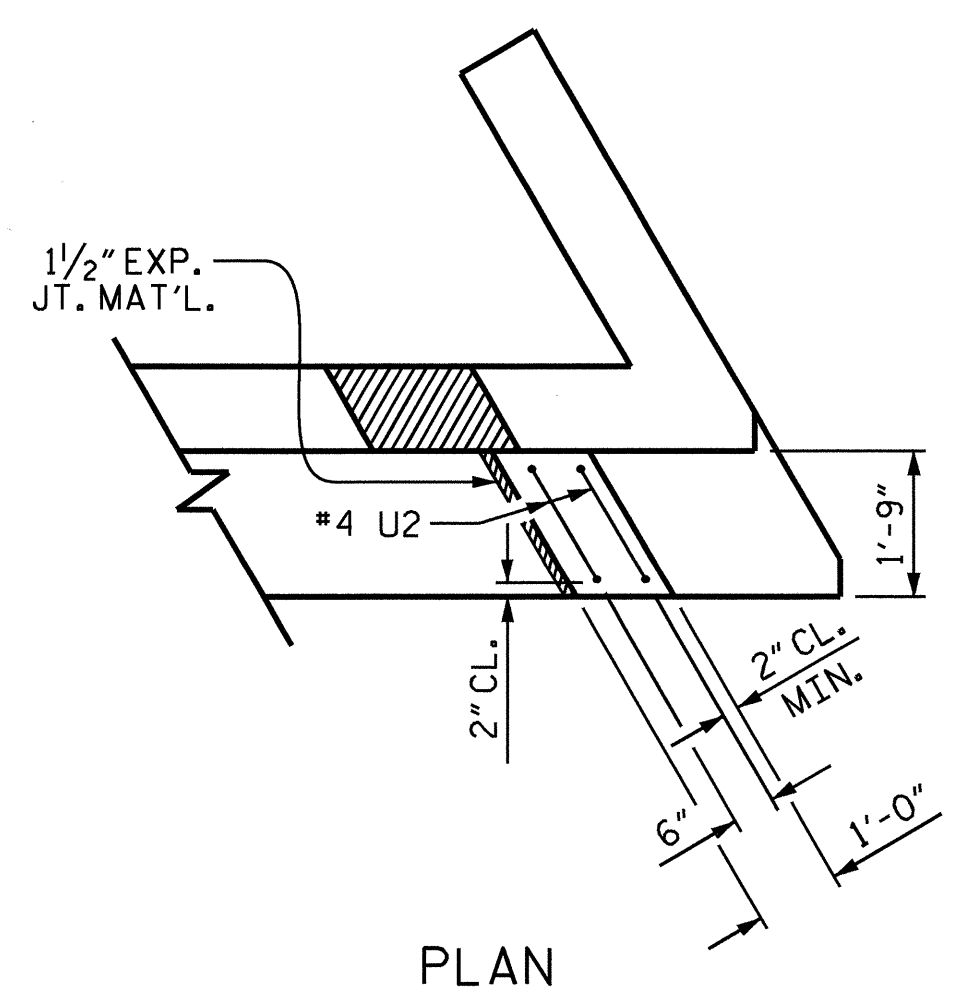


ELEVATION

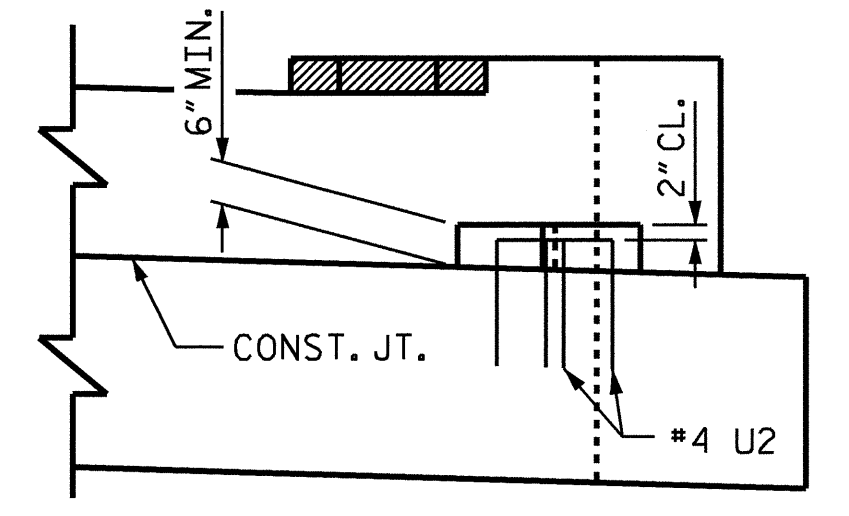
RIGHT WING NOT SHOWN FOR CLARITY

TOP OF PILE ELEVATIONS	
(P1)	1738.237
(P2)	1737.966
(P3)	1737.692
(P4)	1737.413
(P5)	1737.130

NOTES
 STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #6 DI DOWELS.
 THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.
 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.

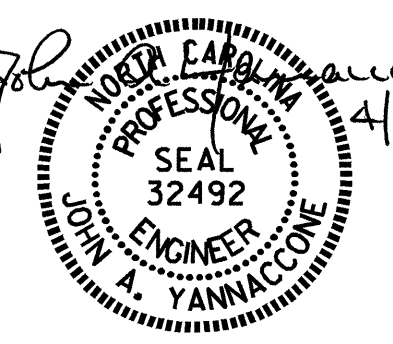


PLAN



ELEVATION

LATERAL GUIDE DETAILS
 (EACH END SIMILAR)



PROJECT NO. B-3335
GRAHAM COUNTY
 STATION: 14+34.00 -L-

SHEET 1 OF 3

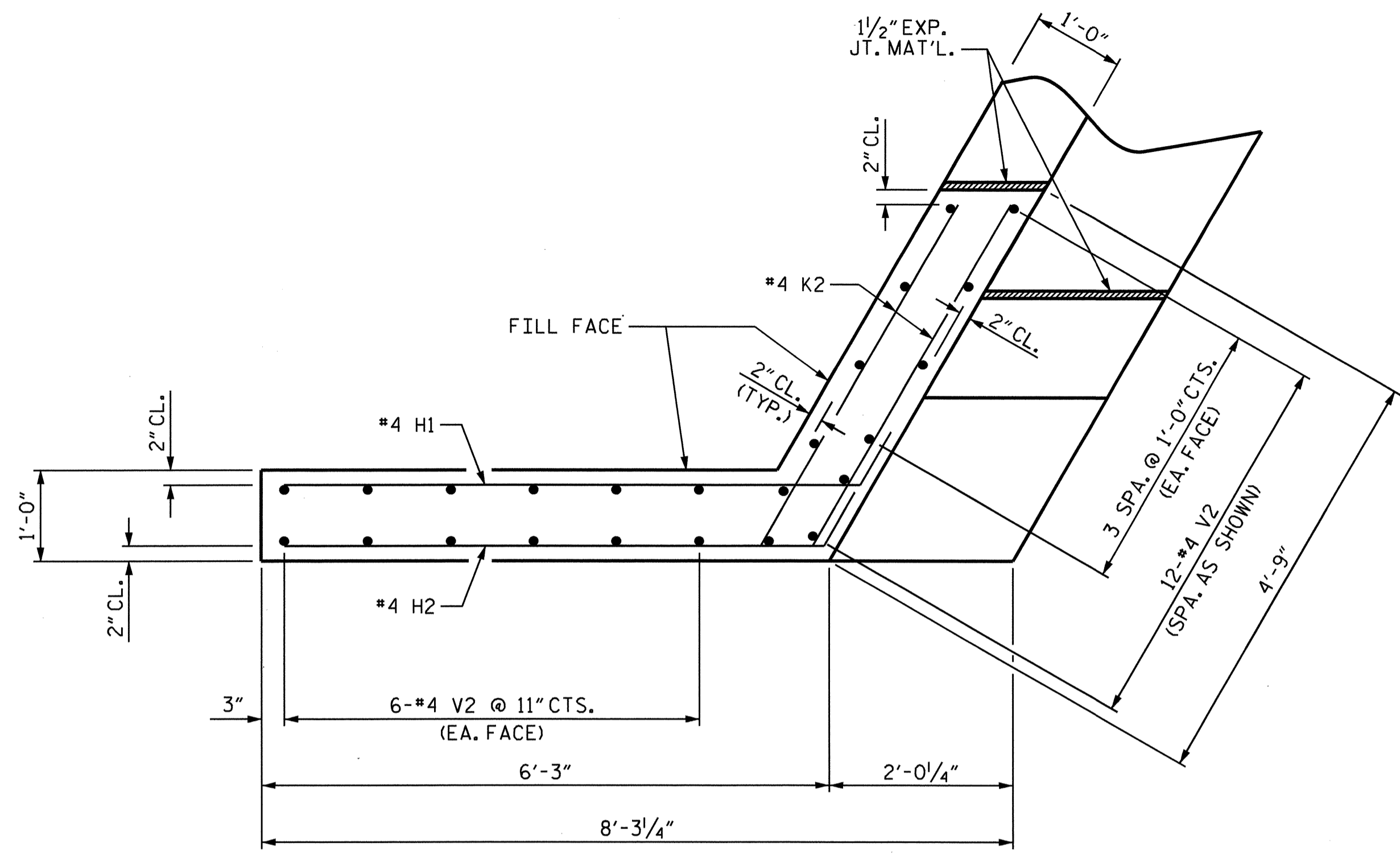
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NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 2

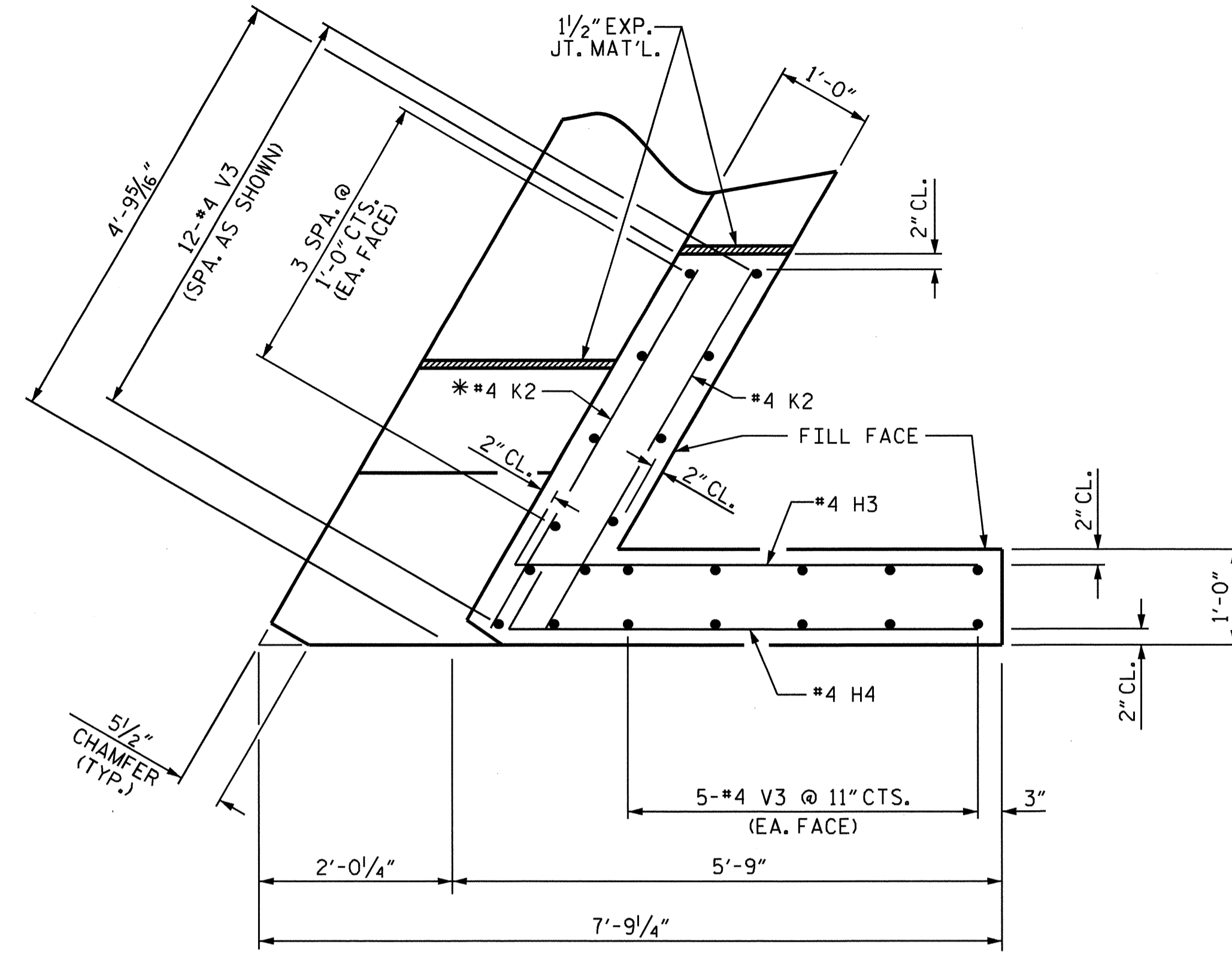
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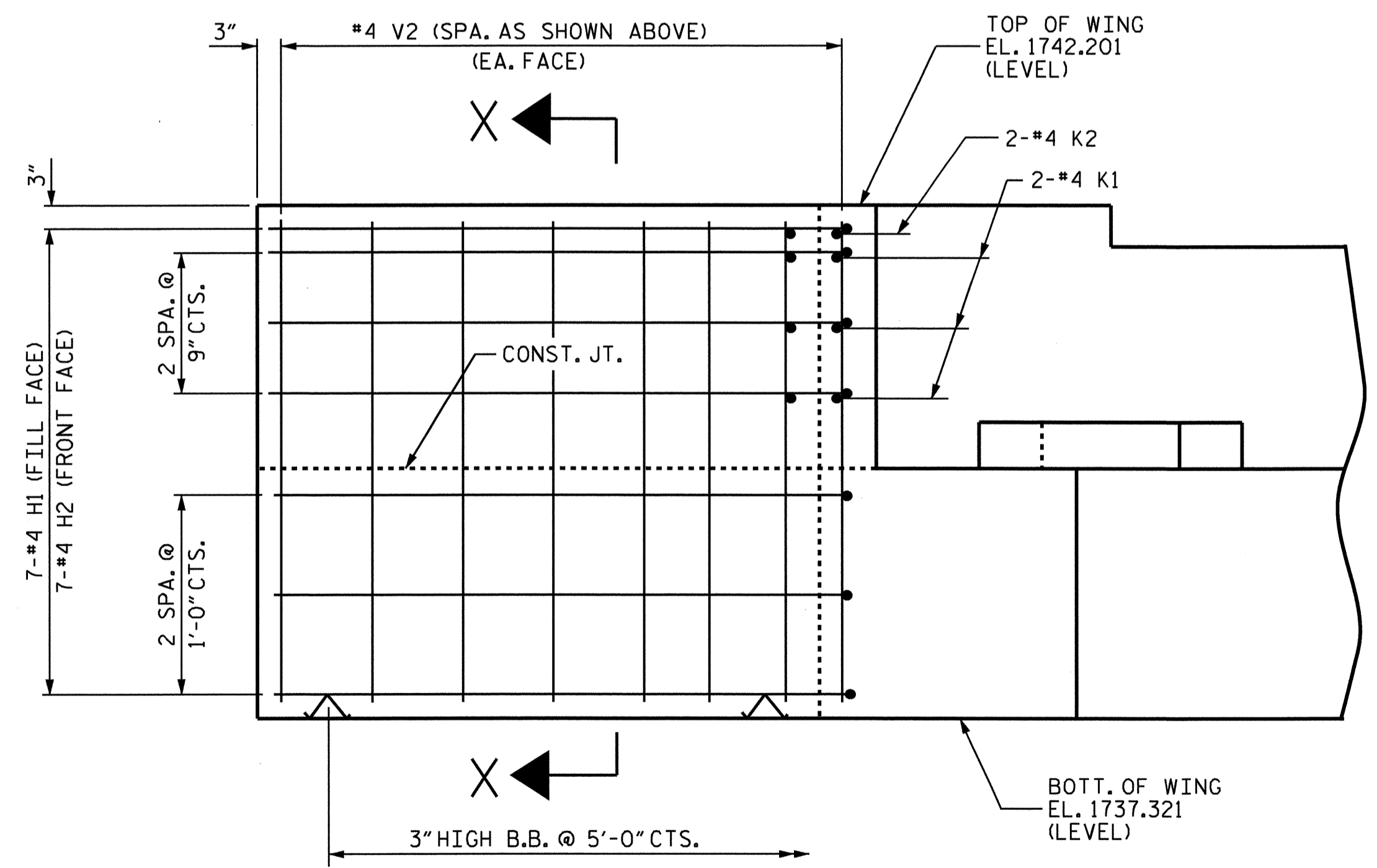


PLAN OF WING W1

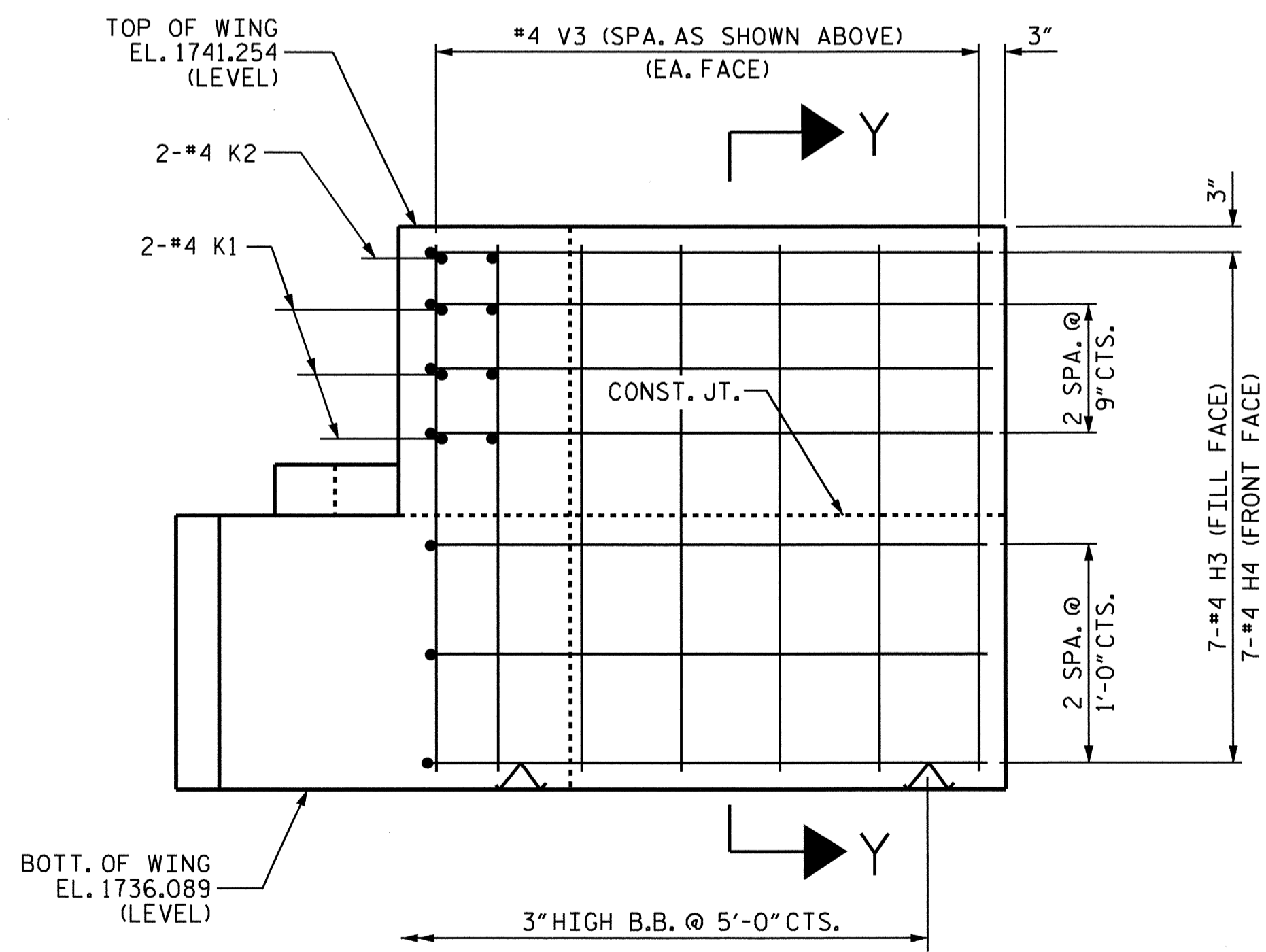


PLAN OF WING W2

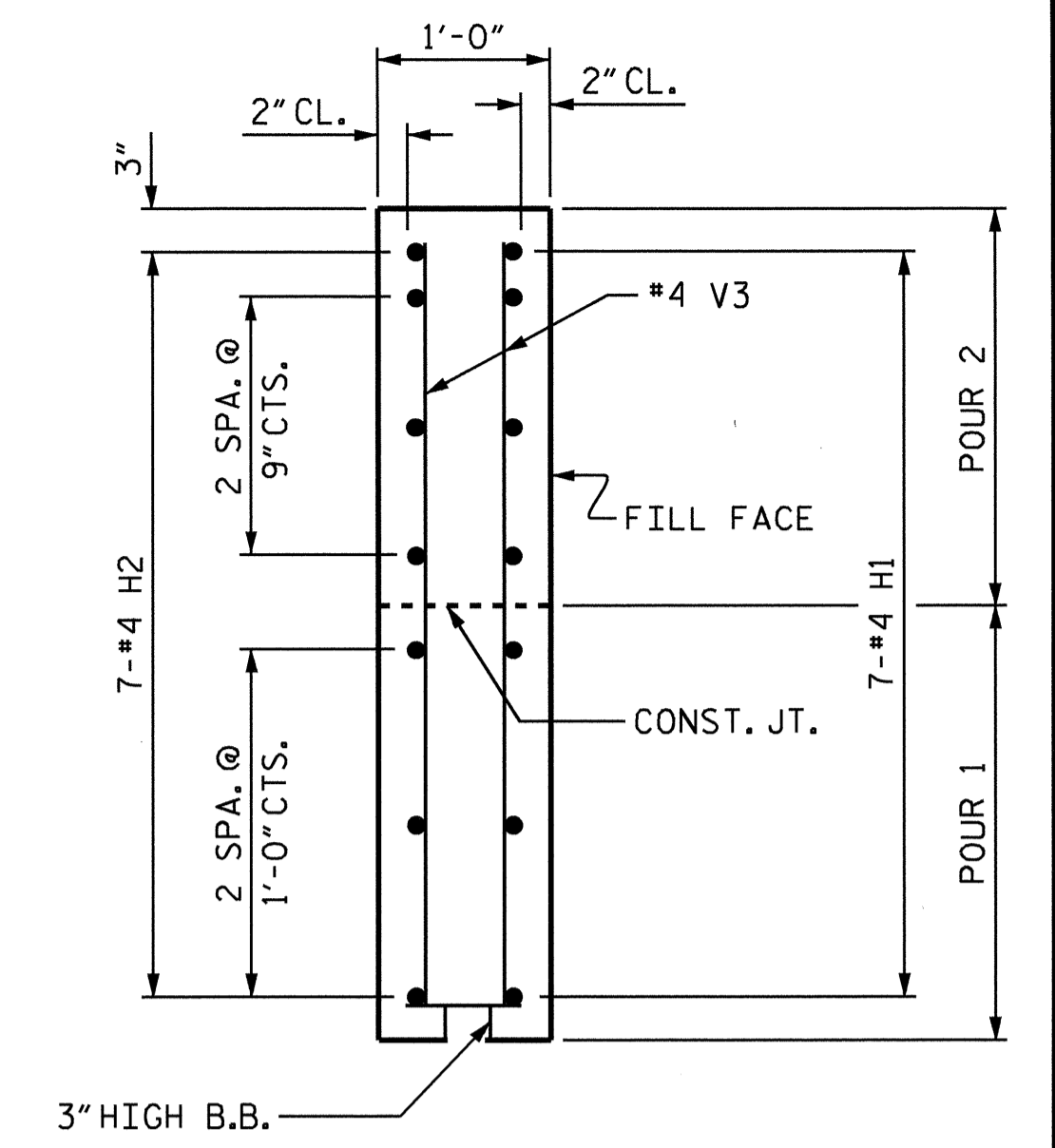
* #4 K2 FIELD CUT AS NECESSARY TO GIVE A 2" OF MIN. CLEARANCE FROM CHAMFER.



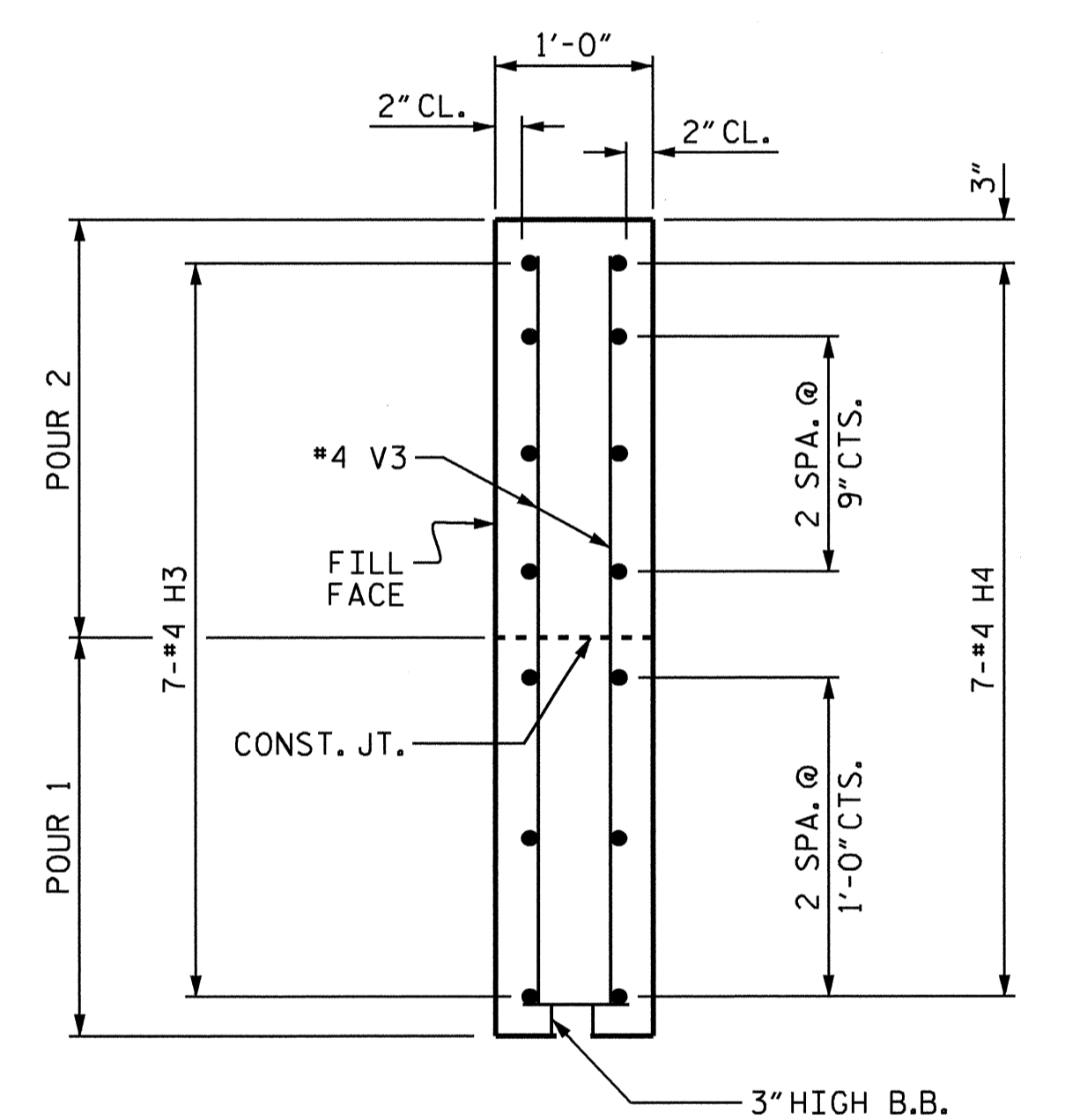
ELEVATION OF WING W1



ELEVATION OF WING W2



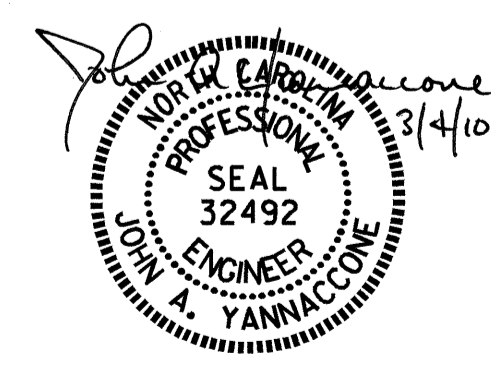
SECTION X-X



SECTION Y-Y

PROJECT NO. B-3335
 GRAHAM COUNTY
 STATION: 14+34.00 -L-

SHEET 2 OF 3

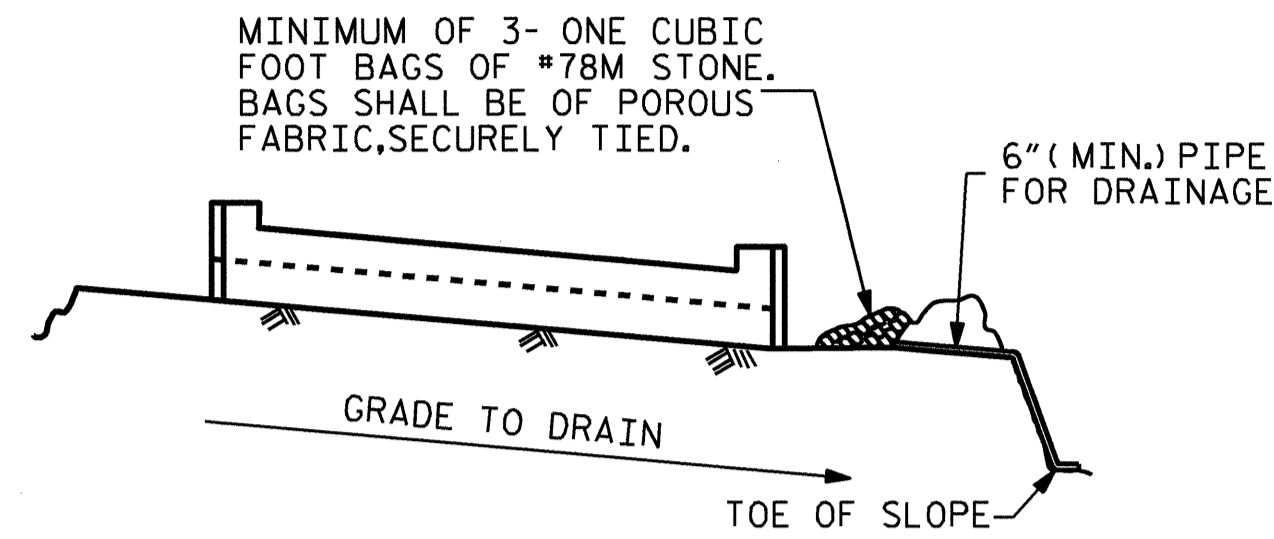


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 2

REVISIONS						SHEET NO. S-20
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 22
2			4			

DRAWN BY: OT NGUYEN DATE: 10-29-09
 CHECKED BY: J.A. YANNACCONI DATE: 1-26-10

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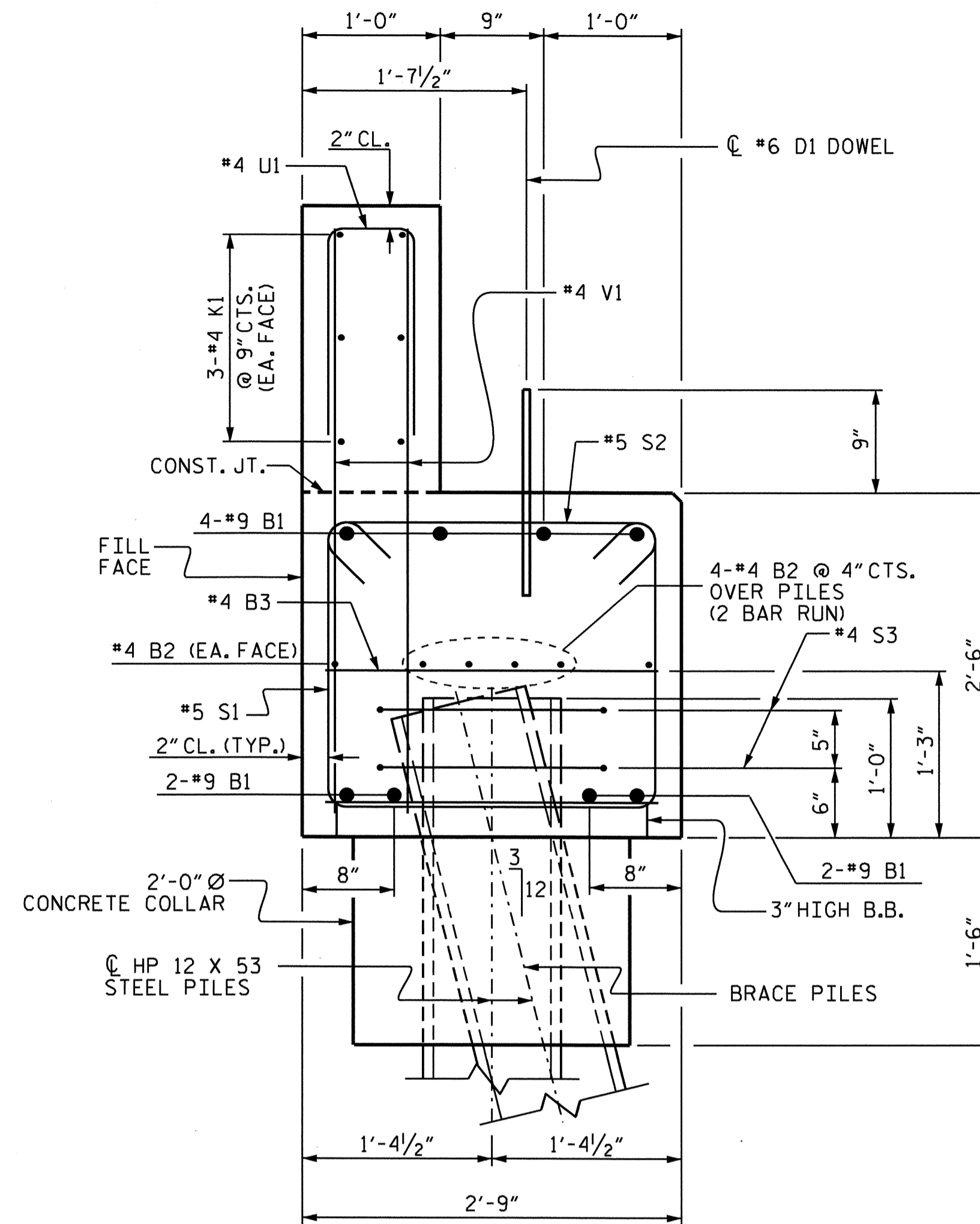


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

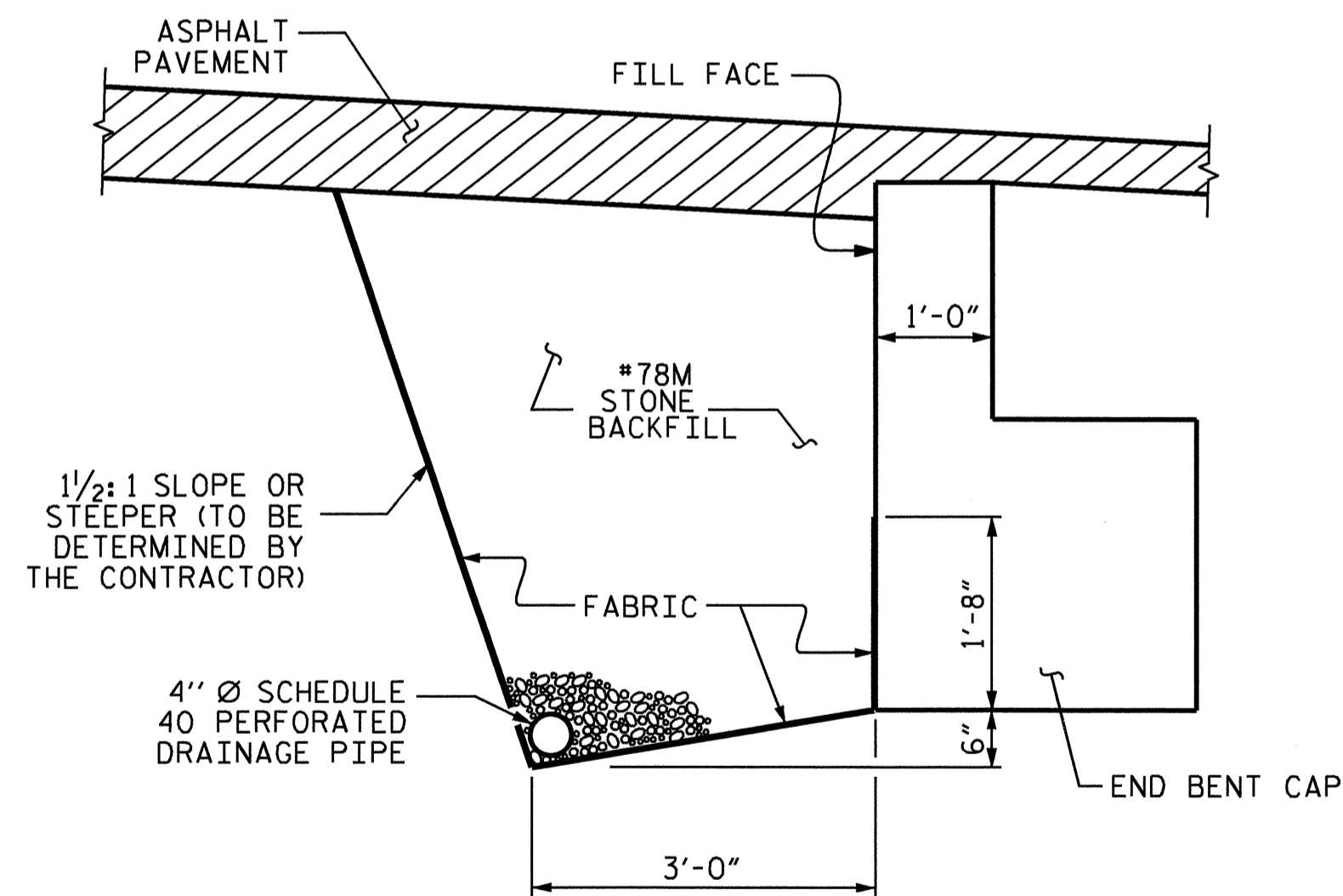
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

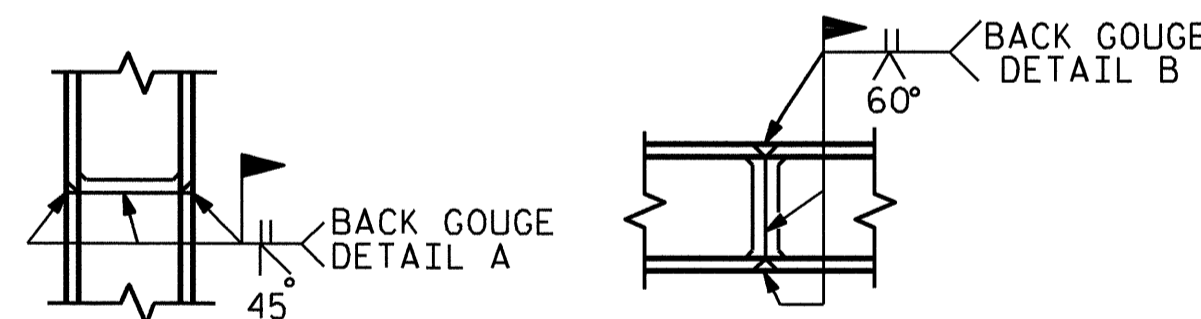


SECTION A-A

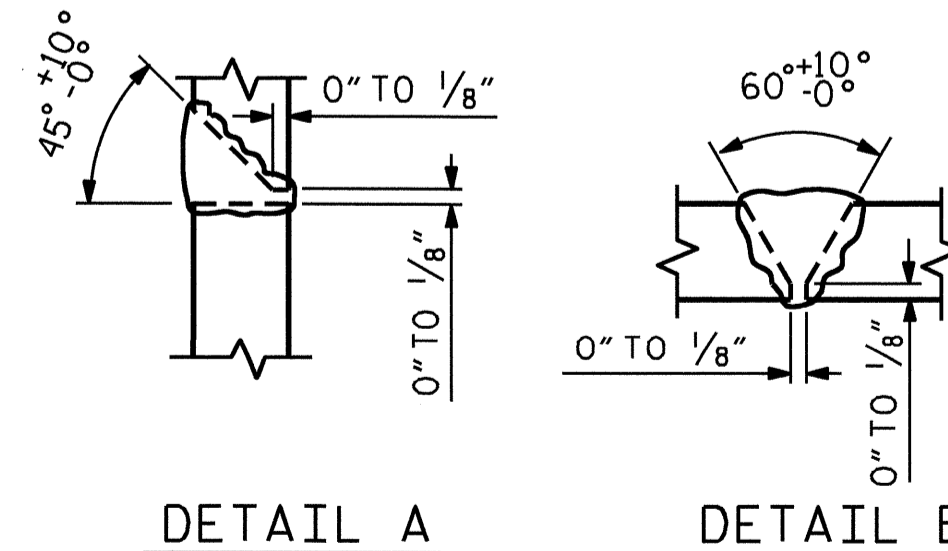


BACK FILL DETAILS

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



** PILE VERTICAL ** PILE HORIZONTAL OR VERTICAL

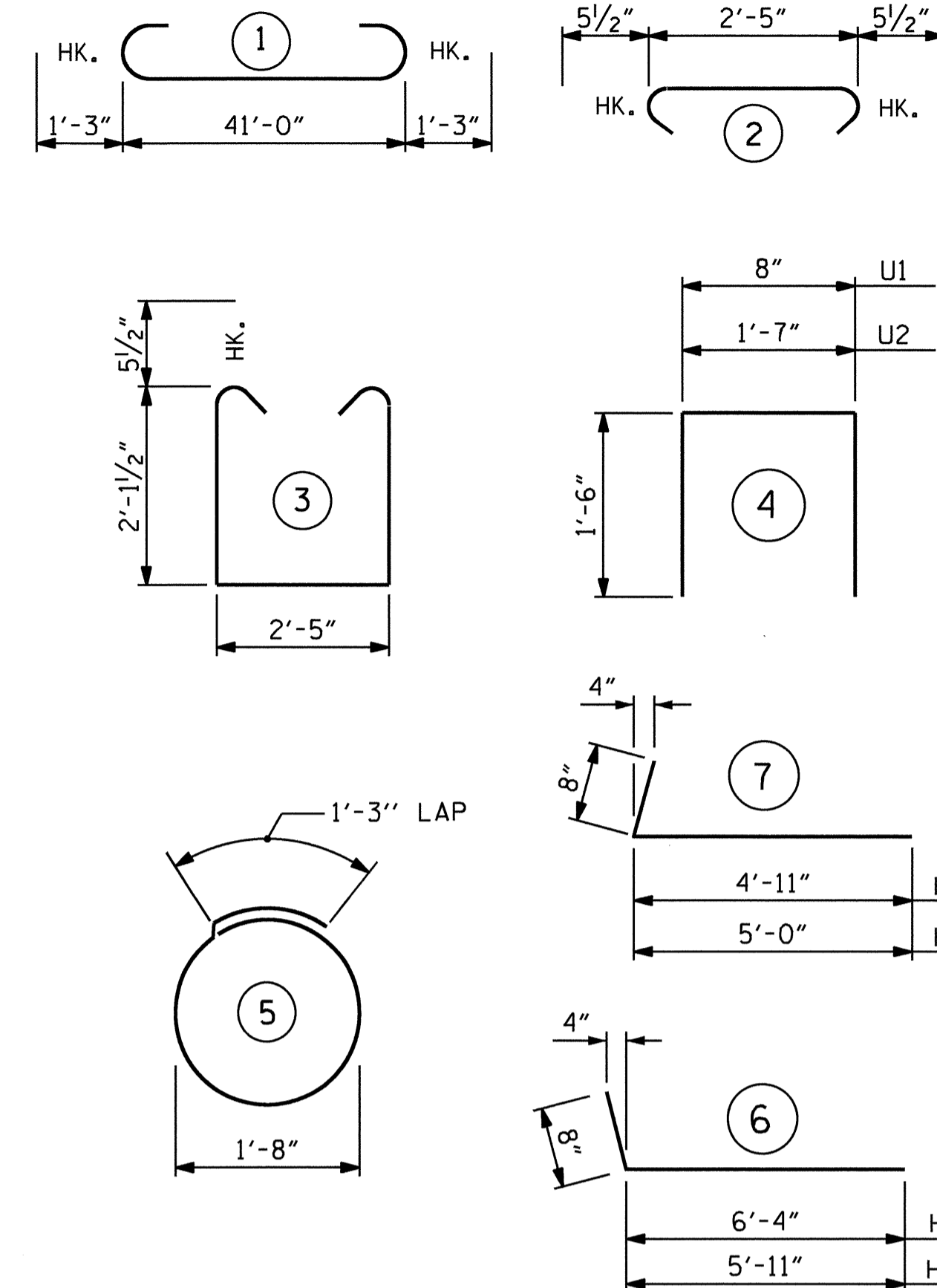


DETAIL A DETAIL B

PILE SPLICE DETAILS

** POSITION OF PILE DURING WELDING.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	43'-6"	1183
B2	12	#4	STR	22'-0"	176
B3	11	#4	STR	2'-5"	18
D1	20	#6	STR	1'-6"	45
H1	7	#4	6	7'-0"	33
H2	7	#4	6	6'-7"	31
H3	7	#4	7	5'-7"	26
H4	7	#4	7	5'-8"	26
K1	12	#4	STR	22'-0"	176
K2	4	#4	STR	4'-4"	12
S1	42	#5	3	7'-7"	332
S2	42	#5	2	3'-4"	146
S3	10	#4	5	6'-6"	43
U1	32	#4	4	3'-8"	78
U2	4	#4	4	4'-7"	12
V1	64	#4	STR	4'-3"	182
V2	24	#4	STR	4'-6"	72
V3	22	#4	STR	4'-8"	69

REINFORCING STEEL 2660 LBS

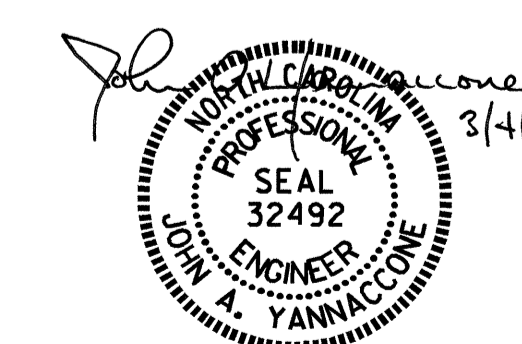
CLASS A CONCRETE BREAKDOWN:
 POUR 1 (CAP, LOWER WINGS, & CONCRETE COLLARS) 12.4 C.Y.
 POUR 2 (BACKWALL & UPPER WINGS) 4.3 C.Y.
 POUR 3 (LATERAL GUIDES) 0.1 C.Y.
 TOTAL 16.8 C.Y.

HP 12 X 53 STEEL PILES
 NO. 5 LIN. FT. = 113
 STEEL PILE POINTS EA. 5

PROJECT NO. B-3335
 GRAHAM COUNTY
 STATION: 14+34.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 2

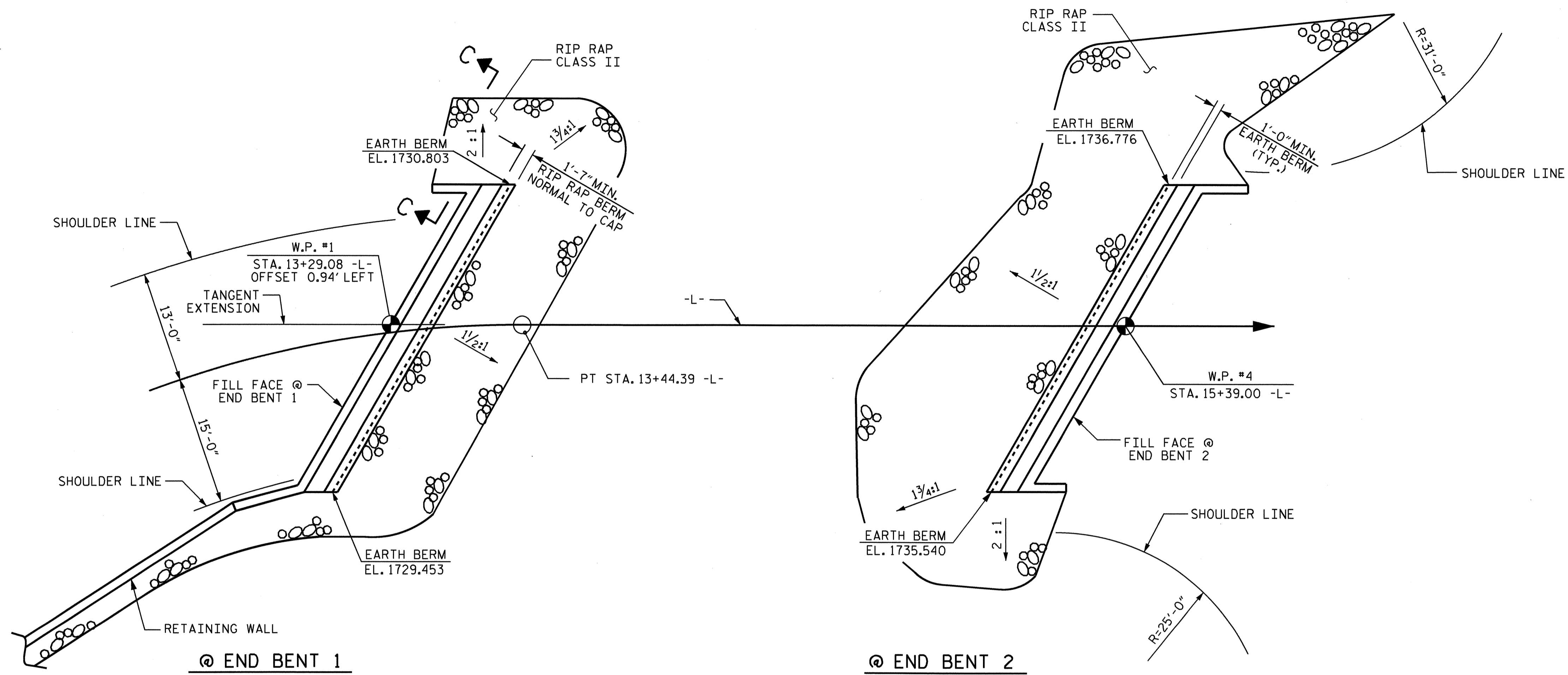


REVISIONS

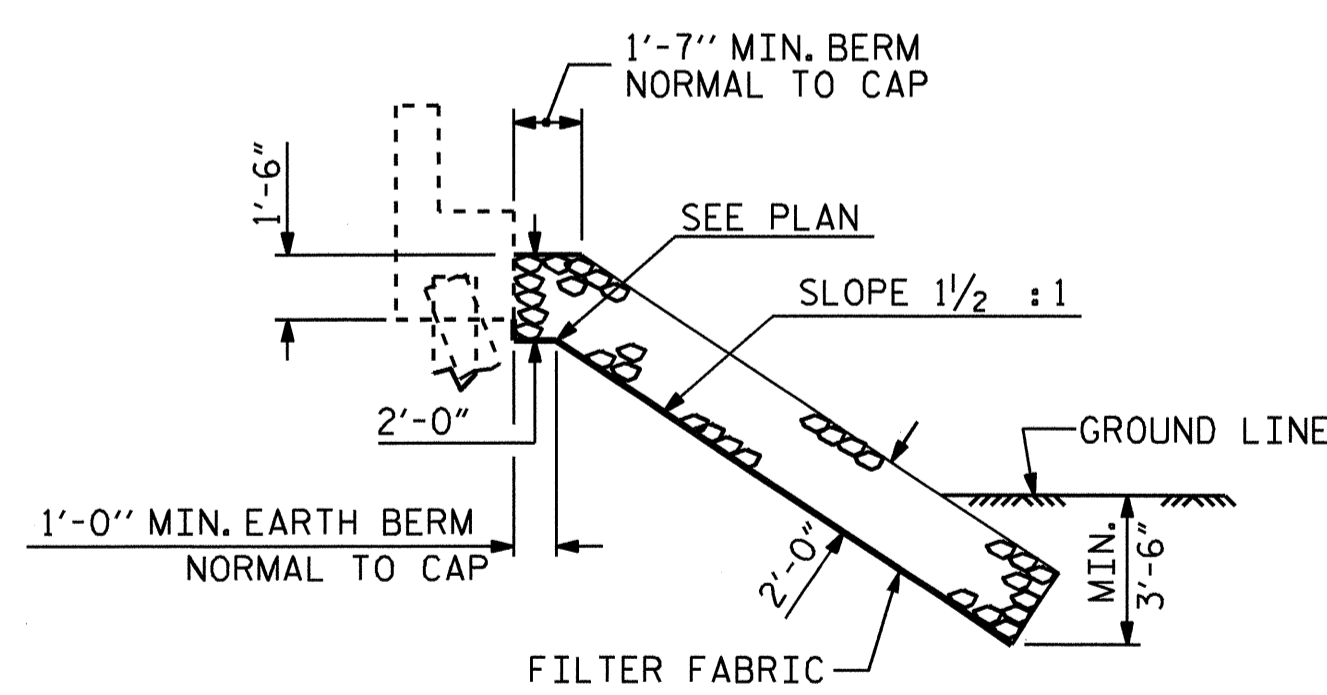
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			5-21
2			4			TOTAL SHEETS 22

DRAWN BY: QT NGUYEN DATE: 10-29-09
 CHECKED BY: J.A. YANNAKONE DATE: 1-27-10

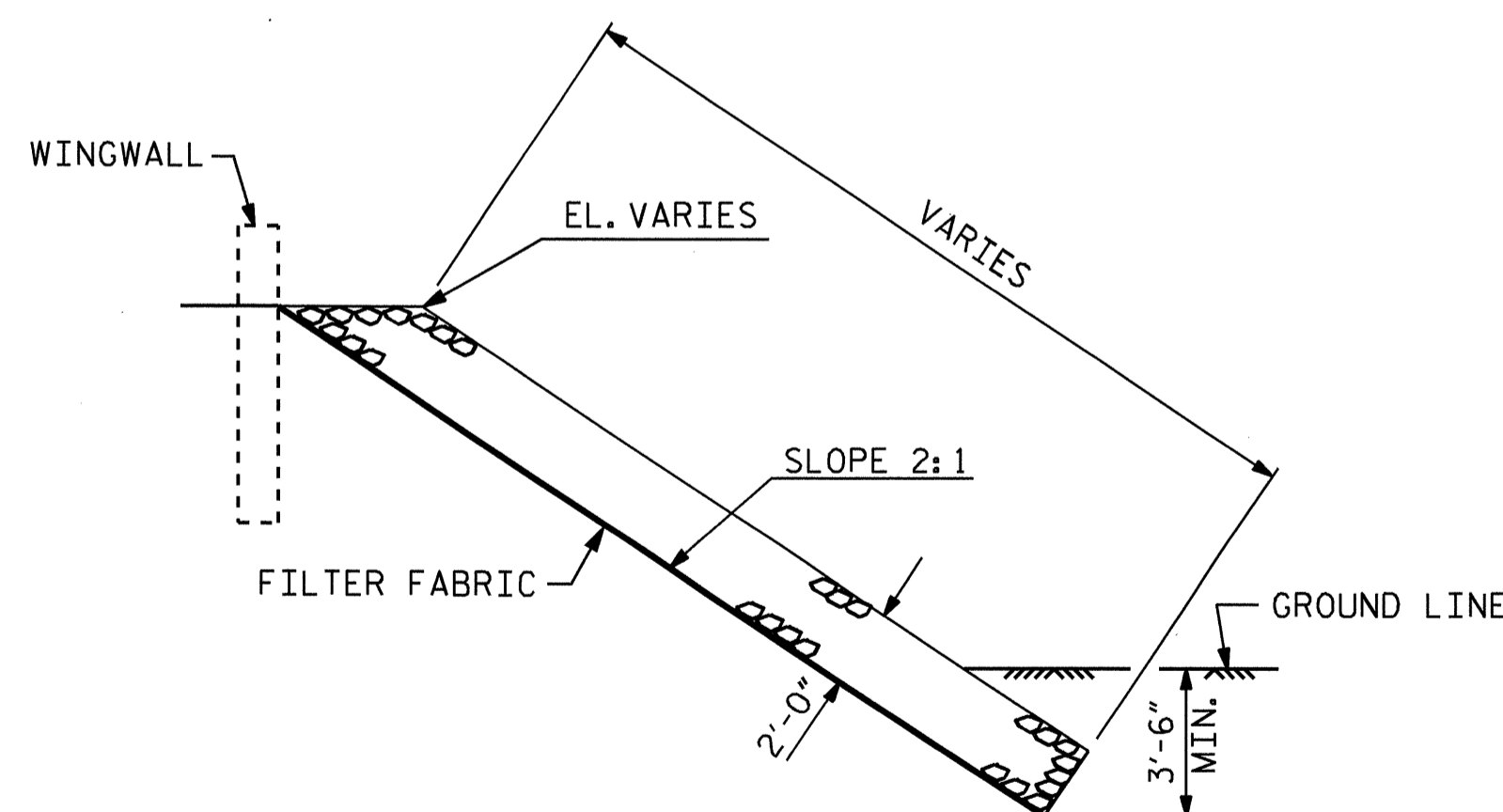
ESTIMATED QUANTITIES		
BRIDGE @ STA. 14+34.00 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	190	210
END BENT 2	240	265



PLAN



SECTION C-C
BERM RIP RAPPED

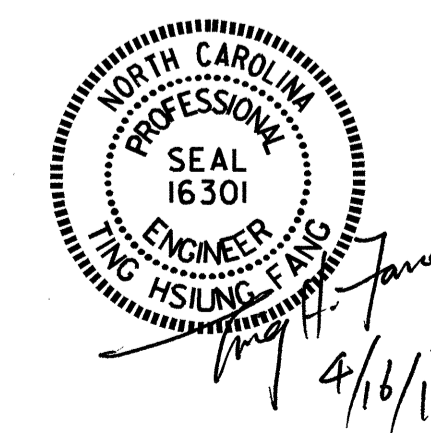


SECTION C-C

PROJECT NO. B-3335
GRAHAM COUNTY
 STATION: 14+34.00 -L-

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

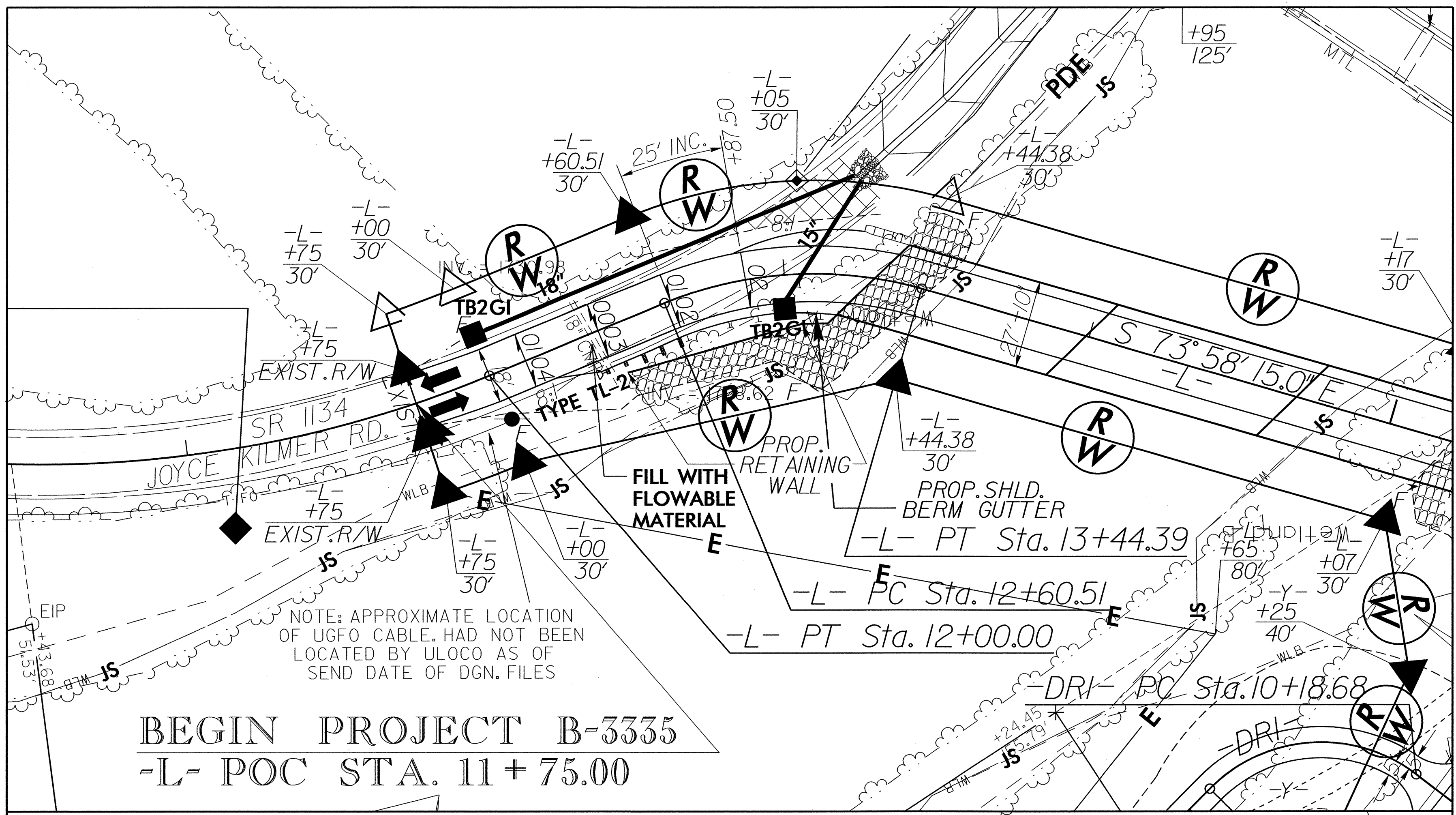
SHEET NO. S-22
TOTAL SHEETS 22



ASSEMBLED BY : HARISH SHAH	DATE : 2-18-10
CHECKED BY : T.H. FANG	DATE : 2-19-10
DRAWN BY : REK 1/84	REV. 8/16/99 RWW/LES
CHECKED BY : RDU 1/84	REV. 10/17/00 RWW/LES
	REV. 5/1/06 TLA/GM

16-APR-2010 15:32
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 kpnewton

STD. NO. RR3

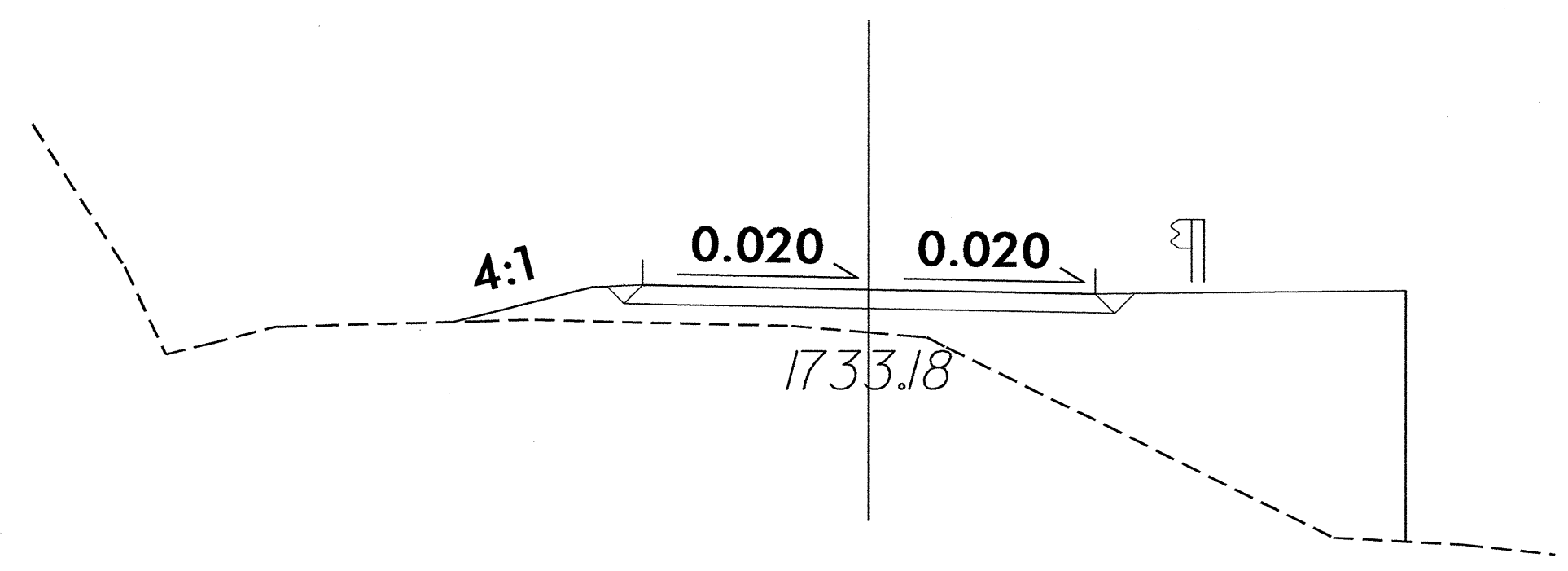


BEGIN PROJECT B-3335
 -L- POC STA. 11+75.00

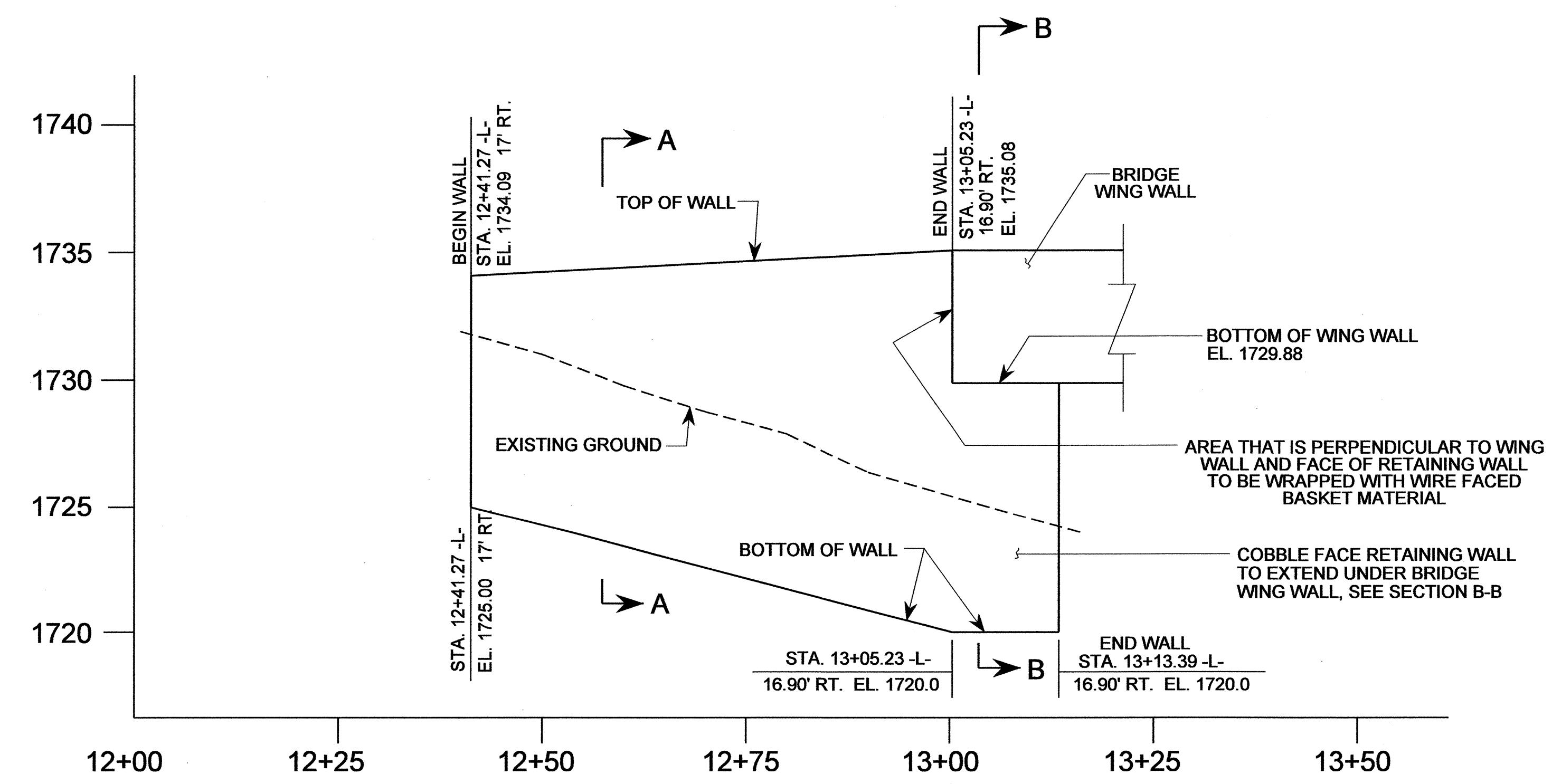
LOCATION SKETCH

TOTAL STRUCTURE QUANTITIES

COBBLE FACE RETAINING WALL	785	SQ. FT.
----------------------------	-----	---------



RETAINING WALL DETAIL



WALL ENEVELOPE

NOTES: RETAINING WALL IS ON A STRAIGHT LINE BETWEEN A POINT 17' RT. AT STA. 12+41.27 -L- AND THE END OF WING. THEN RETAINING WALL CONTINUES UNDER WING WALL TO THE END BENT CAP.

 APPROX. WALL LENGTH = 67.0 FT. (INCLUDES SECTION UNDER WING WALL)

PROJECT NO.: B-3335
 GRAHAM COUNTY
 STATION: 12+41.27 -L- TO 13+13.39 -L-
 SHEET 1 OF 2

GEOTECHNICAL ENGINEERING UNIT
 EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

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

NOTES:

FOR COBBLE FACED RETAINING WALLS, SEE COBBLE FACED RETAINING WALL PROVISION.

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

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

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

THE MINIMUM EMBEDMENT FOR THE WALL IS 2 FEET BELOW THE BERM ELEVATION.

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

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

THE MINIMUM REINFORCEMENT LENGTH IS 9.8 FEET, MEASURED FROM THE WALL FACE.

SEE ROADWAY PLANS FOR FINISH GRADE DETAILS

BACKFILL REINFORCEMENT SHALL HAVE A MINIMUM LONG-TERM DESIGN TENSILE STRENGTH OF 2,900 LB/FT, ASSUMING 100% COVERAGE.

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


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

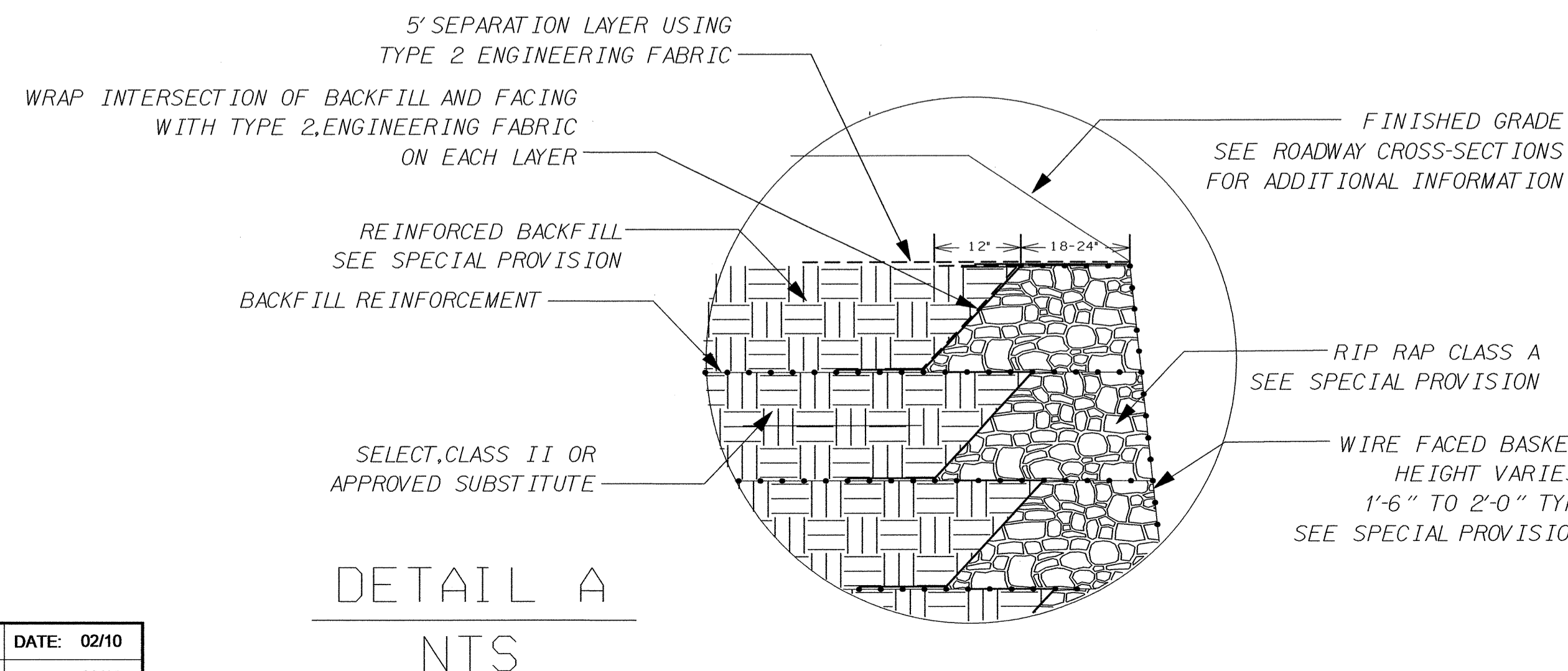
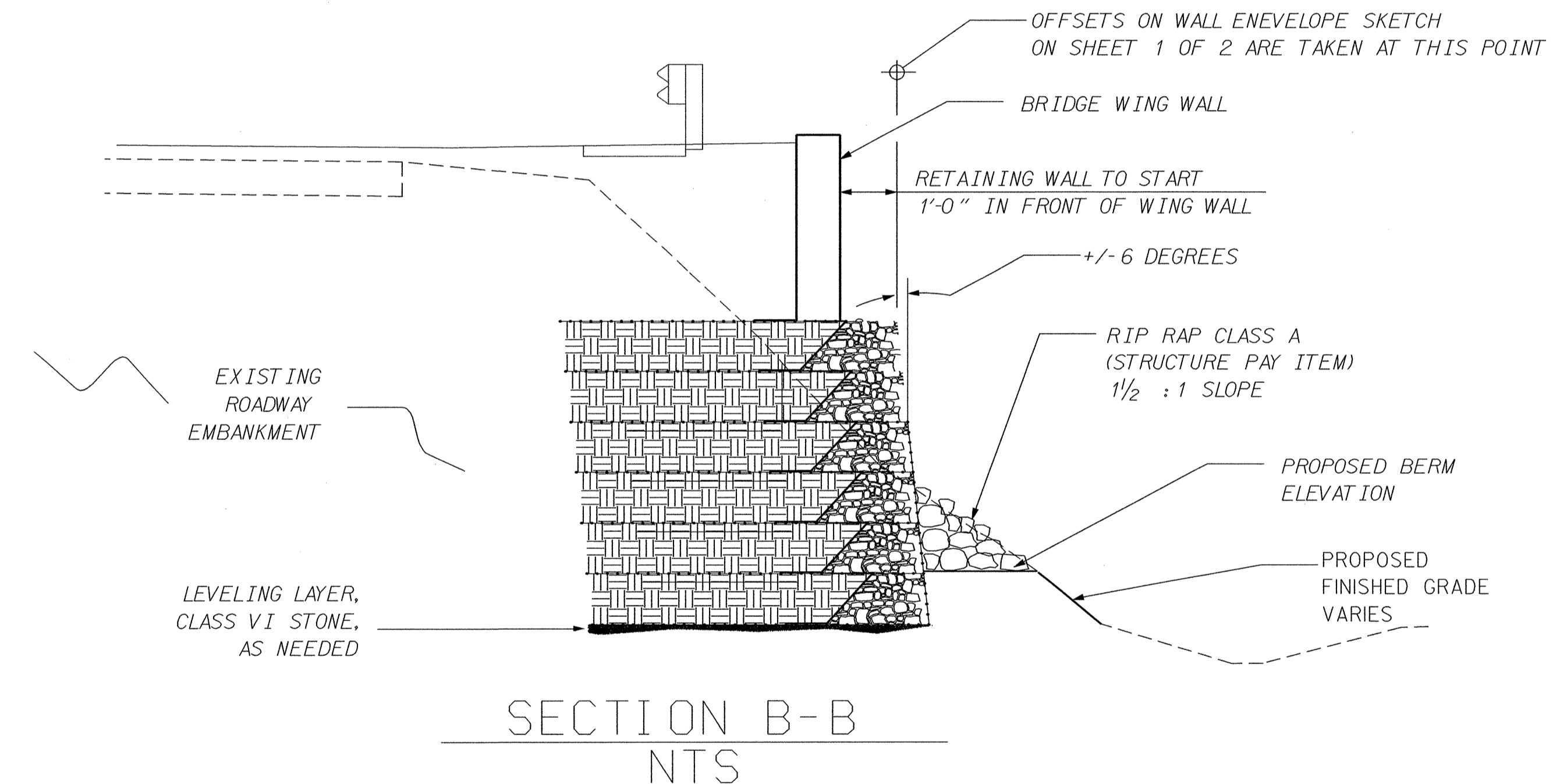
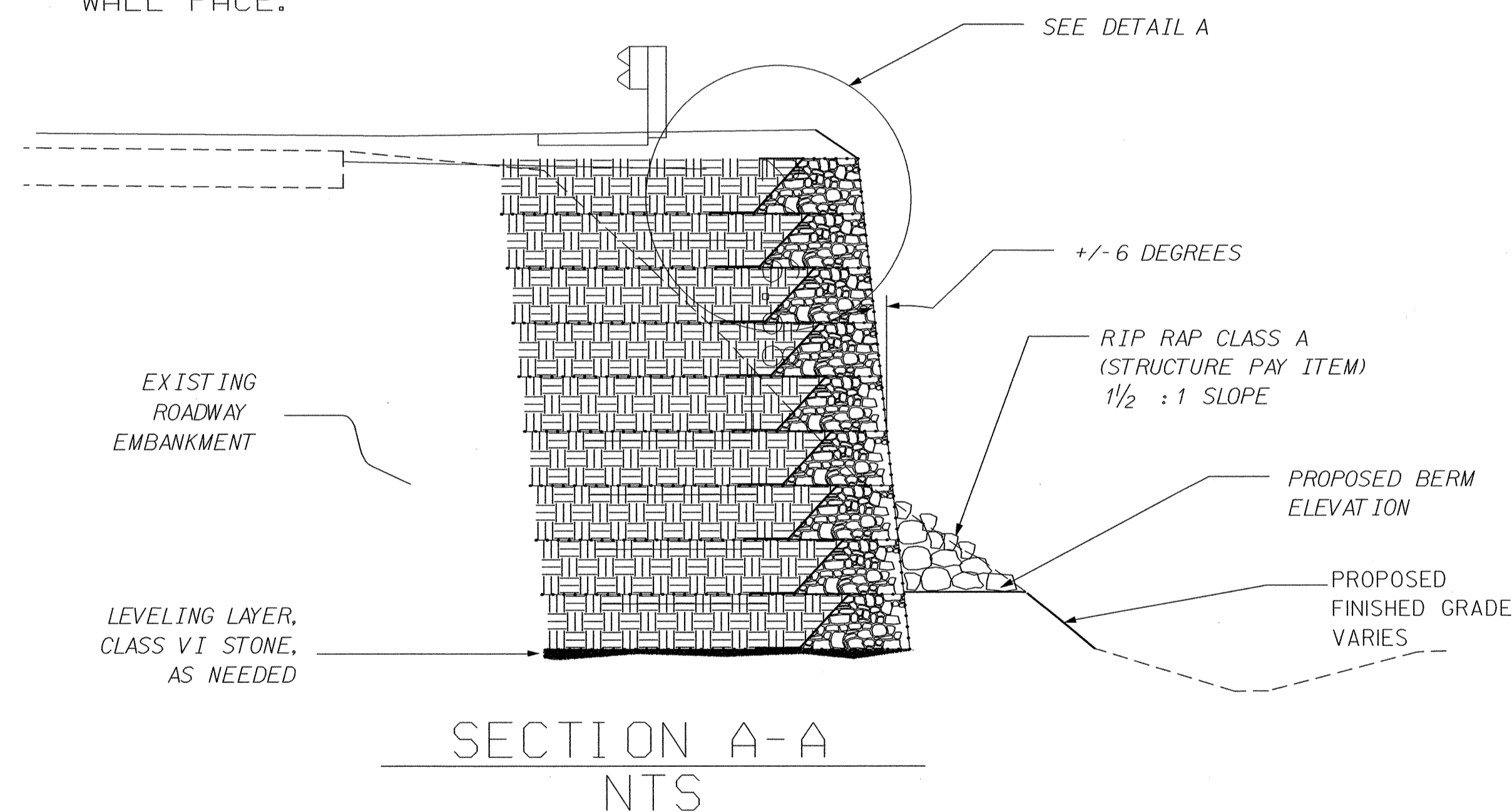
MINIMUM SERVICE LIFE = 75 YEARS

ALLOWABLE BEARING CAPACITY = 2000 PSF

IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT (GAMMA) PCF	FRICTION ANGLE (PHI) DEGREES	COHESION (C) PSF
BACKFILL	120	32	0
FOUNDATION	120	28	0

GEOTECHNICAL ENGINEER  C. Clark 4/15/10 SIGNATURE DATE	ENGINEER SIGNATURE DATE
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PROJECT NO.: B-3335
 GRAHAM COUNTY
 STATION: 12+41.27 -L- TO 13+13.39 -L-
 SHEET 2 OF 2

GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

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

PREPARED BY: EJS	DATE: 02/10
REVIEWED BY: SCC	DATE: 02/10

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 2006 "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. 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