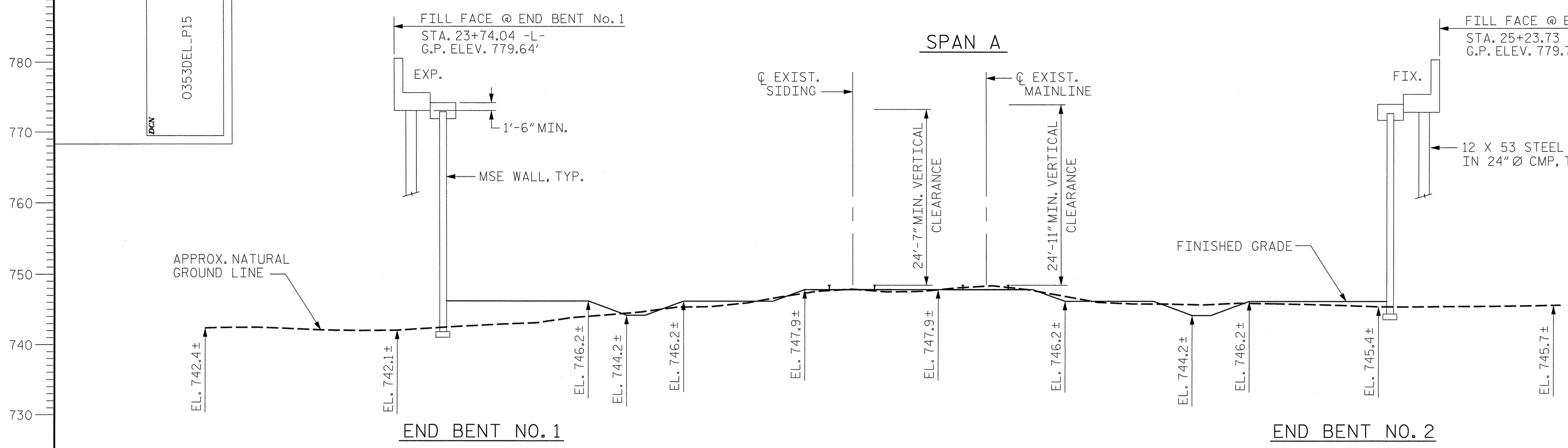


790
780
770
760
750
740
730

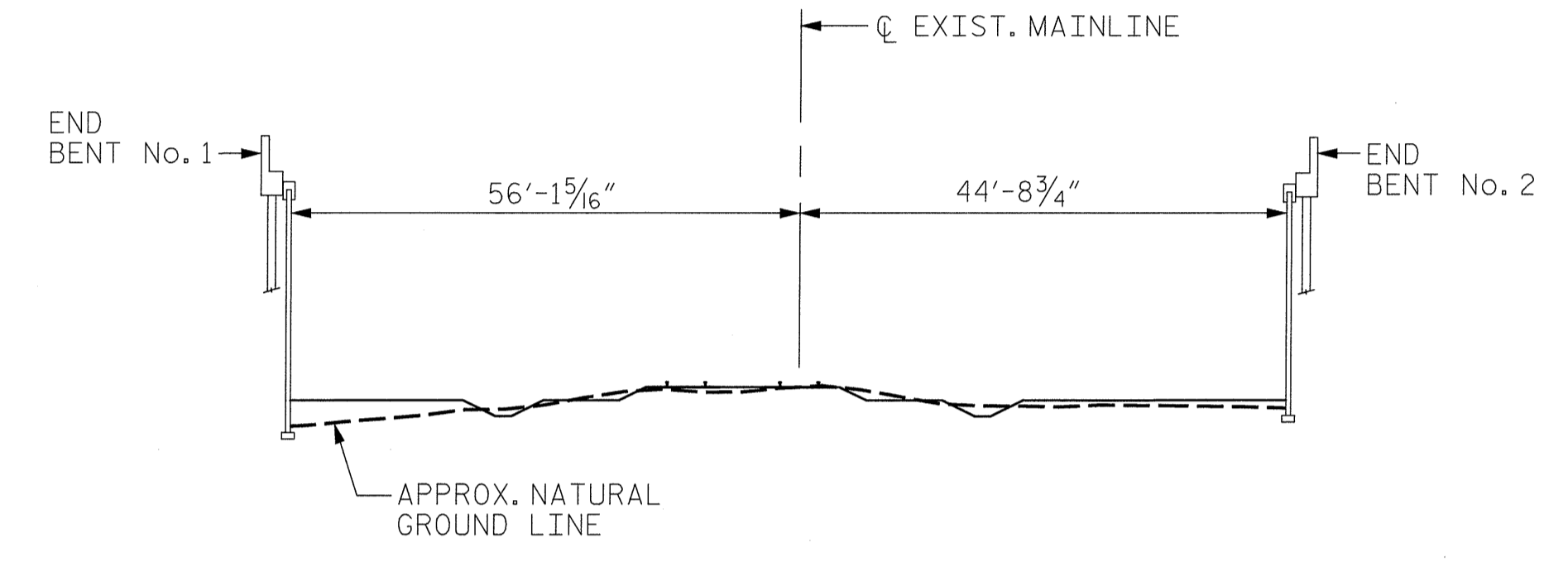


TOP OF RAIL ELEVATIONS		
TRACK STATION	MAINLINE	SIDING
10+10.0000	748.3179	747.9146
10+30.0000	748.3783	747.9478
10+50.0000	748.4381	747.9948
10+70.0000	748.5288	748.0409
10+90.0000	748.6017	748.0732

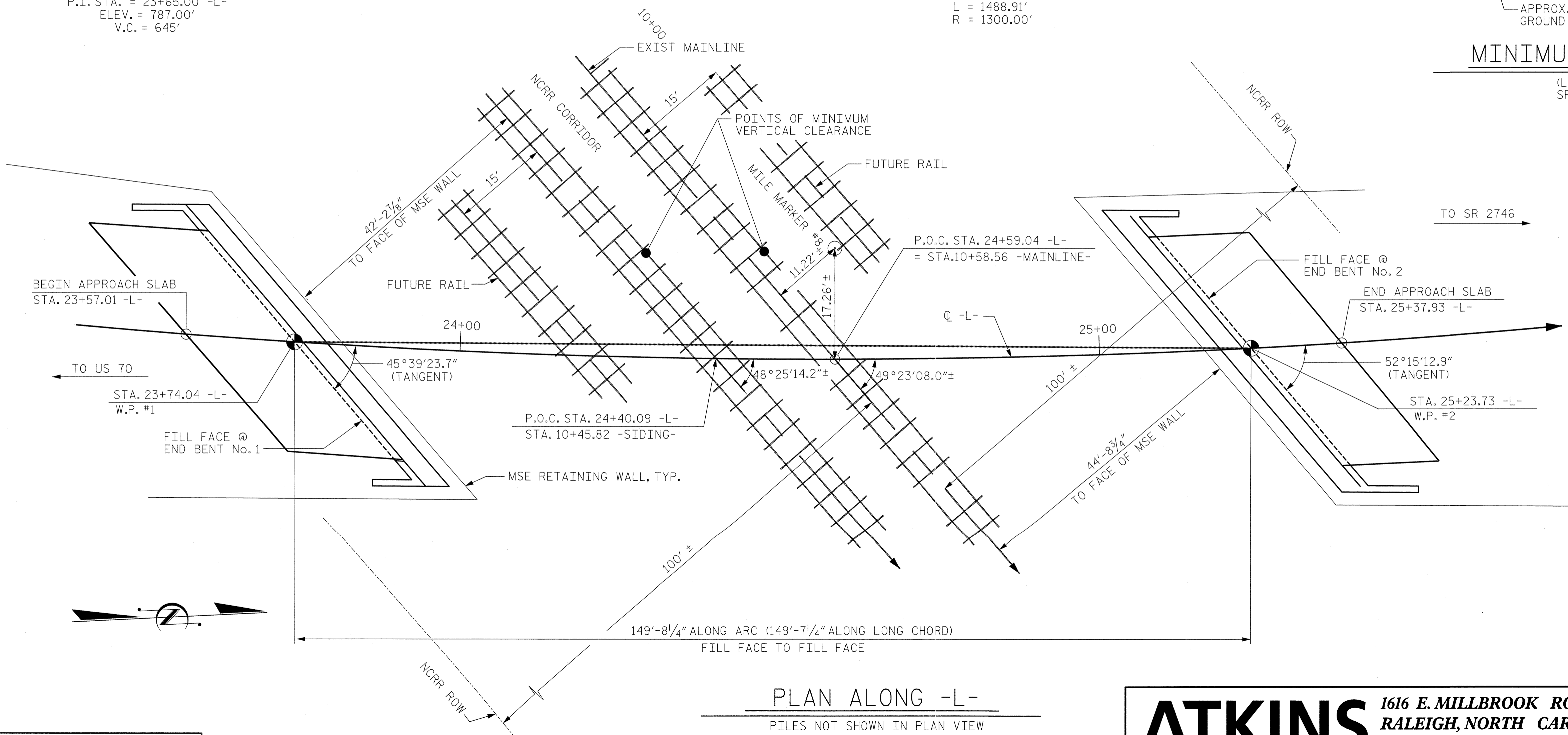
NOTE: TRACK MAINLINE SIDING STATIONS AND ELEVATIONS FOR INFORMATION ONLY. CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS.

GRADE DATA
 P.I. STA. = 23+65.00 -L-
 ELEV. = 787.00'
 V.C. = 645'
 +5.9168 % -3.3452 %

HORIZONTAL CURVE DATA -L-
 P.I. STA. = 21+31.42 -L-
 $\Delta = 65^\circ 37' 17.6''$ (LT)
 L = 1488.91'
 R = 1300.00'



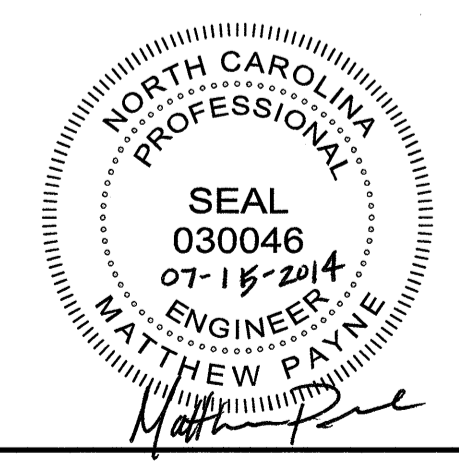
MINIMUM CLEARANCE - RAILROAD
 (LOOKING UPSTATION ALONG RAILROAD)
 SPAN LENGTHS BASED ON THIS SECTION



PLAN ALONG -L-
 PILES NOT SHOWN IN PLAN VIEW

PROJECT NO. P-5204
GUILFORD COUNTY
 STATION: 24+59.04 -L-
 SHEET 1 OF 5 MILE MARKER #8
 BRIDGE NO. 1170

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON
 McLEANSVILLE RD. OVER
 NS/NCRROW RAILROAD FROM
 SR 2826 TO NORTH OF SR 2746

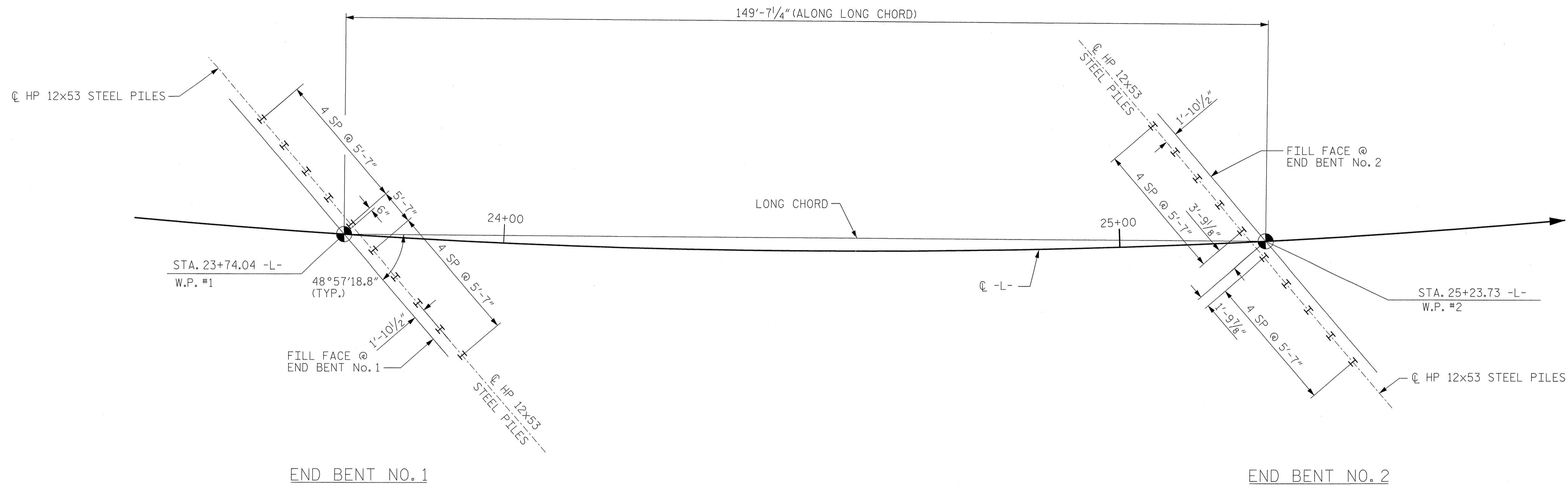


REVISIONS						SHEET NO. S-2
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 27
2			4			

DRAWN BY : C. BLAKES DATE : 3/14
 CHECKED BY : M. PAYNE DATE : 3/14

ATKINS 1616 E. MILLBROOK ROAD, SUITE #310
 RALEIGH, NORTH CAROLINA 27609
 (919) 876-6888 NCBES #F-0326

0353DELL-P15



FOUNDATION LAYOUT

FOUNDATION NOTES:

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 100 TONS PER PILE.
 DRIVE PILES AT END BENT NO. 1 TO A REQUIRED DRIVING RESISTANCE OF 170 TONS PER PILE.

PILES AT END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 100 TONS PER PILE.
 DRIVE PILES AT END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 170 TONS PER PILE.

STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENTS NO. 1 & 2. FOR STEEL H-PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

INSTALL 24-INCH DIAMETER CORRUGATED METAL PIPE (CMP) SLEEVES AT EACH PILE LOCATION BEFORE PLACING FILL OR CONSTRUCTING MSE ABUTMENT WALLS AT END BENTS NO. 1 AND NO. 2. CMP SLEEVES SHALL BE PAID FOR IN THE COST OF STEEL PILES, AND NO SEPARATE PAYMENT SHALL BE MADE.

FILL CMP SLEEVES WITH SELECT MATERIAL CLASS VI OR OTHER MATERIALS APPROVED BY THE ENGINEER AFTER COMPLETION OF PILE DRIVING AT END BENTS NO. 1 AND NO. 2. SELECT MATERIAL FOR CMP SLEEVES SHALL BE PAID FOR IN THE COST OF STEEL PILES, AND NO SEPARATE PAYMENT SHALL BE MADE.

OBSERVE A 1 MONTH WAITING PERIOD AFTER CONSTRUCTING THE MSE WALL, END BENT, AND REINFORCED BRIDGE APPROACH FILL, IF APPLICABLE, BEFORE BEGINNING APPROACH SLAB CONSTRUCTION AT END BENTS NO. 1 AND NO. 2.

PROJECT NO. P-5204
GUILFORD COUNTY
 STATION: 24+59.04 -L-
 MILE MARKER #8
 SHEET 2 OF 5 BRIDGE NO. 1170



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING

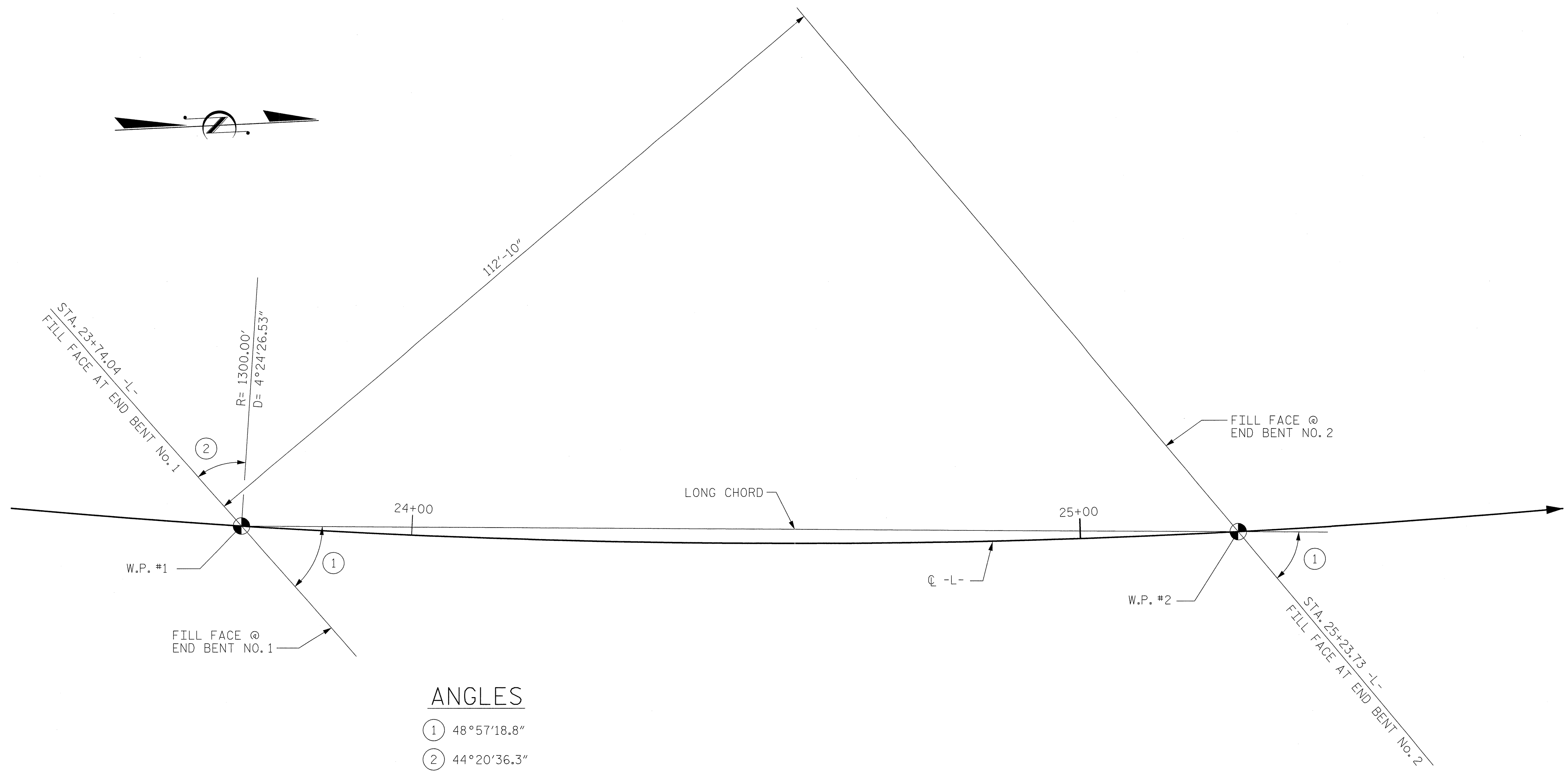
FOR BRIDGE ON
 McLEANSVILLE RD. OVER
 NS/NCRR RAILROAD FROM
 SR 2826 TO NORTH OF SR 2746

DRAWN BY : C. BLAKES DATE : 3/14
 CHECKED BY : M. PAYNE DATE : 3/14

ATKINS 1616 E. MILLBROOK ROAD, SUITE #310
 RALEIGH, NORTH CAROLINA 27609
 (919) 876-6888 NCBEEs #F-0326

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			27
2			4			

0353DEL_P15



- ANGLES**
- ① 48°57'18.8"
 - ② 44°20'36.3"

NOTE: ALL BENTS ARE PARALLEL.

LONG CHORD LAYOUT

PROJECT NO. P-5204
GUILFORD COUNTY
 STATION: 24+59.04 -L-
 MILE MARKER #8
 SHEET 3 OF 5 BRIDGE NO. 1170



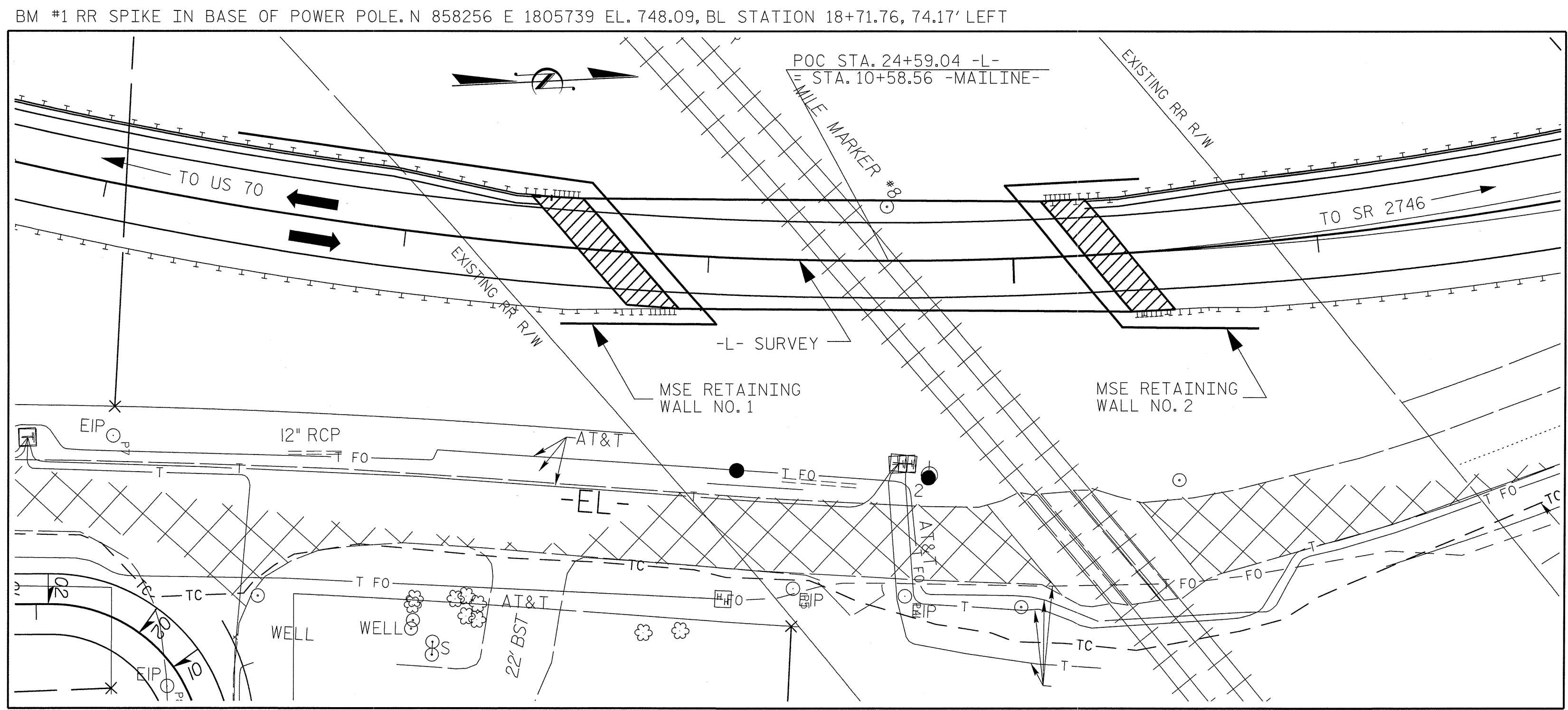
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON
 McLEANSVILLE RD. OVER
 NS/NCRR RAILROAD FROM
 SR 2826 TO NORTH OF SR 2746

DRAWN BY : C. BLAKES DATE : 3/14
 CHECKED BY : M. PAYNE DATE : 3/14

ATKINS 1616 E. MILLBROOK ROAD, SUITE #310
 RALEIGH, NORTH CAROLINA 27609
 (919) 876-6888 NCBEES #F-0326

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			27

0353DEL-P15



LOCATION SKETCH

TOTAL BILL OF MATERIAL

	REINFORCED CONCRETE DECK SLAB	CLASS A CONCRETE	GROOVING BRIDGE FLOORS	BRIDGE APPROACH SLABS	REINFORCING STEEL	STRUCTURAL STEEL	HP 12 X 53 STEEL PILES		STEEL PILE POINTS	VERTICAL CONCRETE BARRIER RAIL	ELASTOMERIC BEARINGS	FOAM JOINT SEALS	MSE RETAINING WALL
	SQ. FT.	CU. YDS.	SQ. FT.	LUMP SUM	LBS.	APPROX. LBS.	NO.	LIN. FT.	NO.	LIN. FT.	LUMP SUM	LUMP SUM	SQ. FT.
SUPERSTRUCTURE	5,529		5,660	LUMP SUM		286,200				293.33	LUMP SUM	LUMP SUM	
END BENT NO. 1		50.6			6,623		10	650	10				5,430
END BENT NO. 2		50.6			6,623		10	600	10				3,472
TOTAL	5,529	101.2	5,660	LUMP SUM	13,246	286,200	20	1,250	20	293.33	LUMP SUM	LUMP SUM	8,902

GENERAL DRAWING 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 UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.
- 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 TEMPORARY BENT, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.
- REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.
- THE RAILROAD TRACK TOP OF RAIL ELEVATIONS ON THE PLANS ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE TOP OF RAIL ELEVATIONS AND REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM VERTICAL CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.
- ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W AND PAINTED IN ACCORDANCE WITH SYSTEM 4 OF ARTICLE 442-8 OF THE STANDARD SPECIFICATIONS UNLESS NOTED OTHERWISE ON THE PLANS.
- THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF REINFORCED CONCRETE DECK SLAB.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

DRAWN BY : C. BLAKES DATE : 3/14
 CHECKED BY : M. PAYNE DATE : 3/14

ATKINS 1616 E. MILLBROOK ROAD, SUITE #310
 RALEIGH, NORTH CAROLINA 27609
 (919) 876-6888 NCBES #F-0326

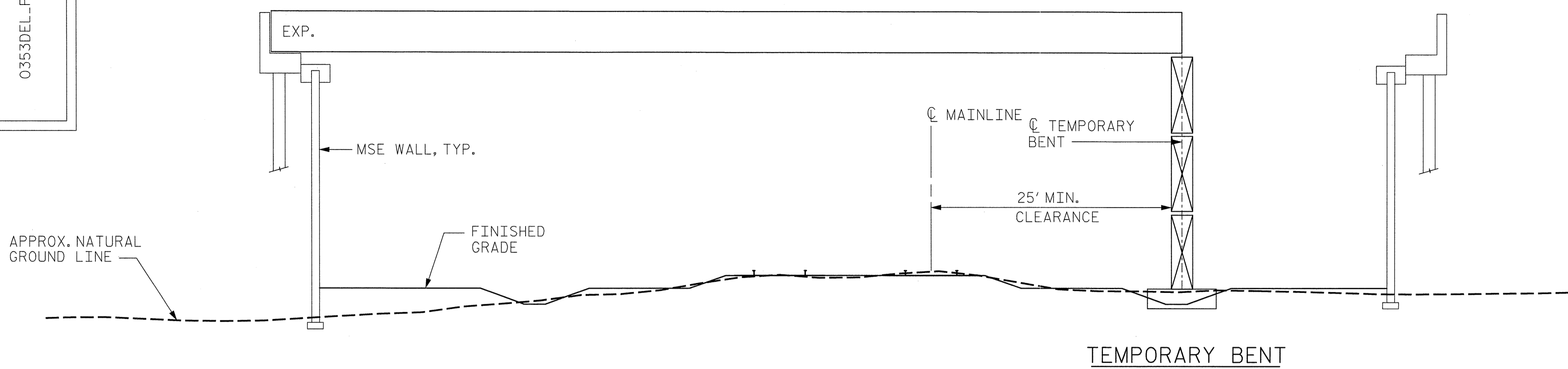


PROJECT NO. P-5204
 GUILFORD COUNTY
 STATION: 24+59.04 -L-
 MILE MARKER #8
 BRIDGE NO. 1170
 SHEET 4 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON
 MCLEANSVILLE RD. OVER
 NS/NCRR RAILROAD FROM
 SR 2826 TO NORTH OF SR 2746

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			5-5
2			4			TOTAL SHEETS 27

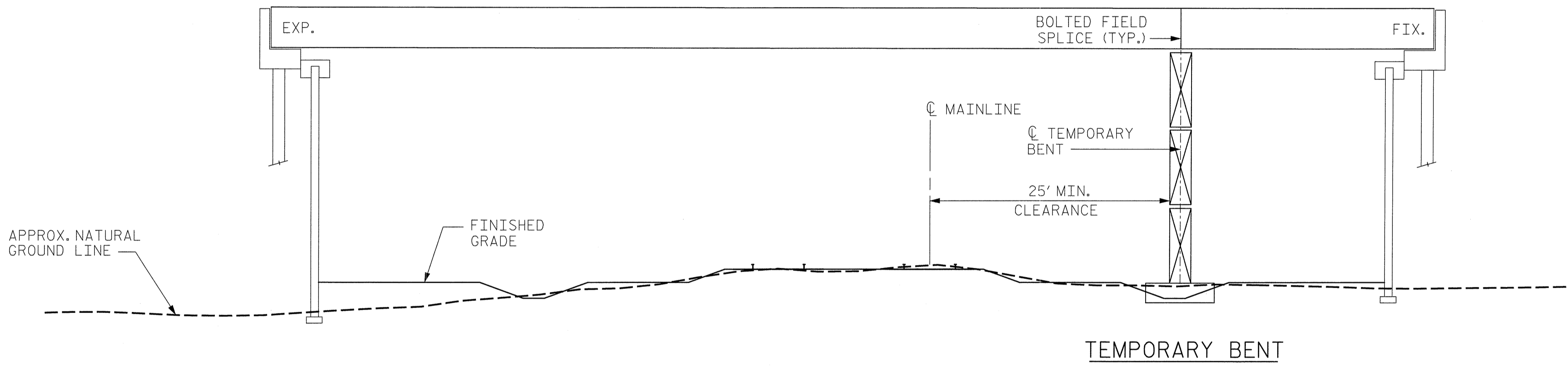
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END BENT No. 1

STAGE I GIRDER ERECTION

END BENT No. 2



END BENT No. 1

STAGE II GIRDER ERECTION

END BENT No. 2

GRIDER ERECTION NOTES

ERECT END BENT 1 SECTION FOR A MINIMUM OF TWO GIRDERS WITH ALL DIAPHRAGM AND LATERAL BRACING IN PLACE AND ALL BOLTS TIGHTENED PRIOR TO RELEASING THE GIRDERS.

FOR ERECTING SUBSEQUENT END SECTION, CONNECT ALL DIAPHRAGMS AND LATERAL BRACING TO THE ADJACENT PREVIOUSLY ERECTED SECTION AND TIGHTEN ALL BOLTS PRIOR TO RELEASING THE GIRDER.

STRUCTURAL STEEL SHALL BE SUPPORTED DURING ERECTION IN ITS CAMBERED POSITION.

THE TEMPORARY BENT SHALL PROVIDE BEARING AT CONNECTOR PLATE OR TRANSVERSE STIFFENER LOCATIONS. WHEN CONNECTOR PLATES ARE USED AS TEMPORARY BEARING STIFFENERS, DIAPHRAGMS SHALL BE CONNECTED.

THE PLACEMENT OF THE TEMPORARY BENT SHALL BE COORDINATED WITH RAILROAD REQUIREMENTS. SEE RAILROAD SPECIAL PROVISIONS.

THE TEMPORARY BENT SHALL REMAIN IN PLACE UNTIL ALL DIAPHRAGMS AND LATERAL BRACING IS IN PLACE AND ALL BOLTS ARE TIGHTENED.

THE TEMPORARY BENT SHALL BE REMOVED PRIOR TO POURING THE DECK SLAB.

PLANS FOR THE TEMPORARY BENT CONSTRUCTION AND REMOVAL SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.

THE CONTRACTOR'S ERECTION PLANS SHALL INCLUDE A METHOD OF TEMPORARY BENT REMOVAL THAT WILL UNIFORMLY TRANSFER THE STRUCTURAL WEIGHT TO THE DIAPHRAGMS, WITH THE GIRDERS REMAINING IN THE CAMBERED POSITIONS.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGNING THE TEMPORARY BENT. THE DESIGNS SHALL BE COMPLETED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA. THE CONTRACTOR SHALL SUBMIT SIGNED AND SEALED WORKING DRAWINGS AND CALCULATIONS TO THE ENGINEER FOR REVIEW AND APPROVAL.

DURING GIRDER ERECTION PROCEDURE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TEMPORARY LATERAL BRACING AND OTHER MEANS OF SUPPORT, AS REQUIRED TO ENSURE STABILITY OF THE GIRDERS, AVOID UPLIFT OF THE GIRDERS AT THE TEMPORARY BENT, AND ENSURE PLUMBNESS OF THE GIRDERS IN THE FINAL CONDITION.

NO SEPARATE PAYMENT WILL BE MADE FOR PROVIDING THE TEMPORARY BENT. THE COST FOR ALL MATERIALS, EQUIPMENT, TOOLS, LABOR, AND ANY INCIDENTALS NECESSARY TO PROVIDE THE TEMPORARY BENT SHALL BE CONSIDERED INCIDENTAL TO THE LUMP SUM BID PRICE FOR STRUCTURAL STEEL.

THE CONTRACTOR MAY SUBMIT AN ALTERNATE ERECTION METHOD TO THE ENGINEER FOR REVIEW AND APPROVAL.

FOR TEMPORARY BENTS, SEE SPECIAL PROVISIONS.

PROJECT NO. P-5204
GUILFORD COUNTY
 STATION: 24+59.04 -L-
 SHEET 5 OF 5 MILE MARKER #8
 BRIDGE NO. 1170



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON
 McLEANSVILLE RD. OVER
 NS/NCRR RAILROAD FROM
 SR 2826 TO NORTH OF SR 2746

DRAWN BY : C. BLAKES DATE : 3/14
 CHECKED BY : M. PAYNE DATE : 3/14

ATKINS 1616 E. MILLBROOK ROAD, SUITE #310
 RALEIGH, NORTH CAROLINA 27609
 (919) 876-6888 NCBES #F-0326

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			27

LOAD FACTORS:

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

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE II LIMIT STATES.
ALLOWABLE STRESS FOR SERVICE II LIMIT STATE ARE AS REQUIRED FOR DESIGN.

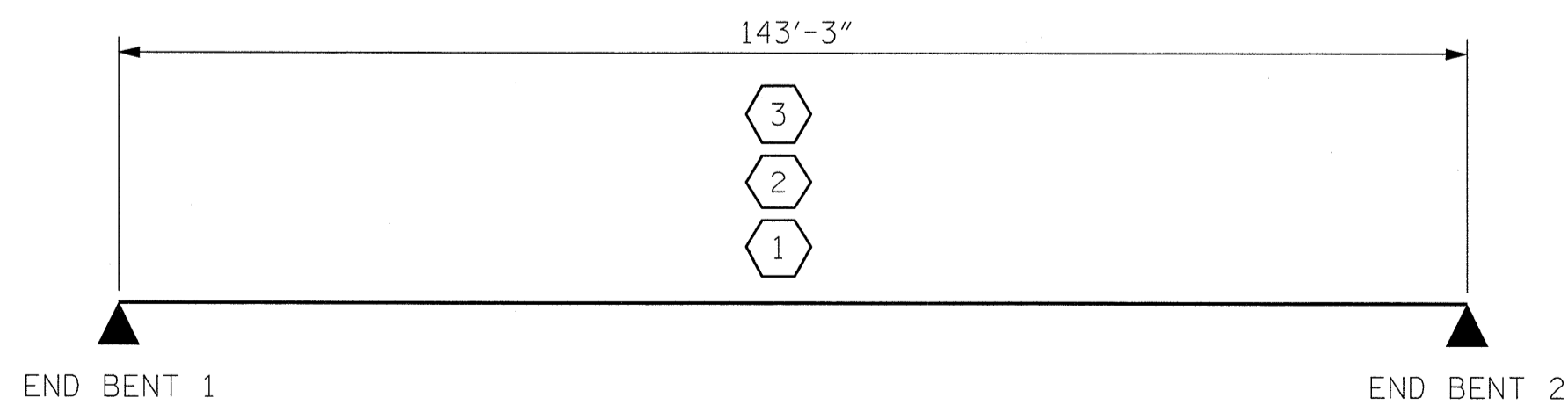
COMMENTS:

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

#	CONTROLLING LOAD RATING
1	DESIGN LOAD RATING (HL-93) **
2	DESIGN LOAD RATING (HS-20) **
3	LEGAL LOAD RATING **
** SEE CHART FOR VEHICLE TYPE	
GIRDER LOCATION	
I	INTERIOR GIRDER
EL	EXTERIOR LEFT GIRDER
ER	EXTERIOR RIGHT GIRDER

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR STEEL GIRDERS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE II 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 (FF)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FF)	LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FF)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	1	1.42	--	1.75	0.776	1.42	A	EL	71.62	0.882	2.10	A	ER	0.00	1.30	0.776	1.59	A	EL	71.62		
	HL-93 (OPERATING)	N/A		2.07	--	1.35	0.776	2.49	A	EL	71.62	0.882	3.68	A	ER	0.00	1.00	0.776	2.07	A	EL	71.62		
	HS-20 (INVENTORY)	36.00	2	2.08	74.88	1.75	0.776	2.08	A	EL	71.62	0.882	3.62	A	ER	0.00	1.30	0.776	3.71	A	EL	71.62		
	HS-20 (OPERATING)	36.00		2.70	97.20	1.35	0.776	2.70	A	EL	71.62	0.882	4.69	A	ER	0.00	1.00	0.776	4.82	A	EL	71.62		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		4.61	62.24	1.40	0.776	4.61	A	EL	71.62	0.882	9.02	A	ER	0.00	1.30	0.776	6.58	A	EL	71.62	
		SNGARBS2	20.000		3.11	62.20	1.40	0.776	3.11	A	EL	71.62	0.882	6.09	A	ER	0.00	1.30	0.776	4.44	A	EL	71.62	
		SNAGRIS2	22.000		2.83	62.26	1.40	0.776	2.83	A	EL	71.62	0.882	5.54	A	ER	0.00	1.30	0.776	4.04	A	EL	71.62	
		SNCOTTS3	27.250		2.29	62.40	1.40	0.776	2.29	A	EL	71.62	0.882	4.47	A	ER	0.00	1.30	0.776	3.26	A	EL	71.62	
		SNAGGRS4	34.925		1.78	62.17	1.40	0.776	1.78	A	EL	71.62	0.882	3.49	A	ER	0.00	1.30	0.776	2.54	A	EL	71.62	
		SNS5A	35.550		1.75	62.21	1.40	0.776	1.75	A	EL	71.62	0.882	3.43	A	ER	0.00	1.30	0.776	2.50	A	EL	71.62	
		SNS6A	39.950		1.56	62.32	1.40	0.776	1.56	A	EL	71.62	0.882	3.05	A	ER	0.00	1.30	0.776	2.22	A	EL	71.62	
		SNS7B	42.000		1.48	62.16	1.40	0.776	1.48	A	EL	71.62	0.882	2.90	A	ER	0.00	1.30	0.776	2.11	A	EL	71.62	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.89	62.37	1.40	0.776	1.89	A	EL	71.62	0.882	3.69	A	ER	0.00	1.30	0.776	2.69	A	EL	71.62	
		TNT4A	33.075		1.88	62.18	1.40	0.776	1.88	A	EL	71.62	0.882	3.68	A	ER	0.00	1.30	0.776	2.68	A	EL	71.62	
		TNT6A	41.600		1.50	62.40	1.40	0.776	1.50	A	EL	71.62	0.882	2.93	A	ER	0.00	1.30	0.776	2.13	A	EL	71.62	
		TNT7A	42.000		1.48	62.16	1.40	0.776	1.48	A	EL	71.62	0.882	2.90	A	ER	0.00	1.30	0.776	2.11	A	EL	71.62	
		TNT7B	42.000		1.48	62.16	1.40	0.776	1.48	A	EL	71.62	0.882	2.90	A	ER	0.00	1.30	0.776	2.11	A	EL	71.62	
		TNAGRIT4	43.000		1.45	62.35	1.40	0.776	1.45	A	EL	71.62	0.882	2.83	A	ER	0.00	1.30	0.776	2.06	A	EL	71.62	
FATIGUE	HL-93 (INVENTORY)	$\gamma_{LL}=0.75$																						



LRFR SUMMARY

PROJECT NO. P-5204
GUILFORD COUNTY
STATION: 24+59.04 -L-
MILE MARKER #8
BRIDGE NO. 1170



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

DRAWN BY : C. BLAKES DATE : 3/14
CHECKED BY : M. PAYNE DATE : 3/14

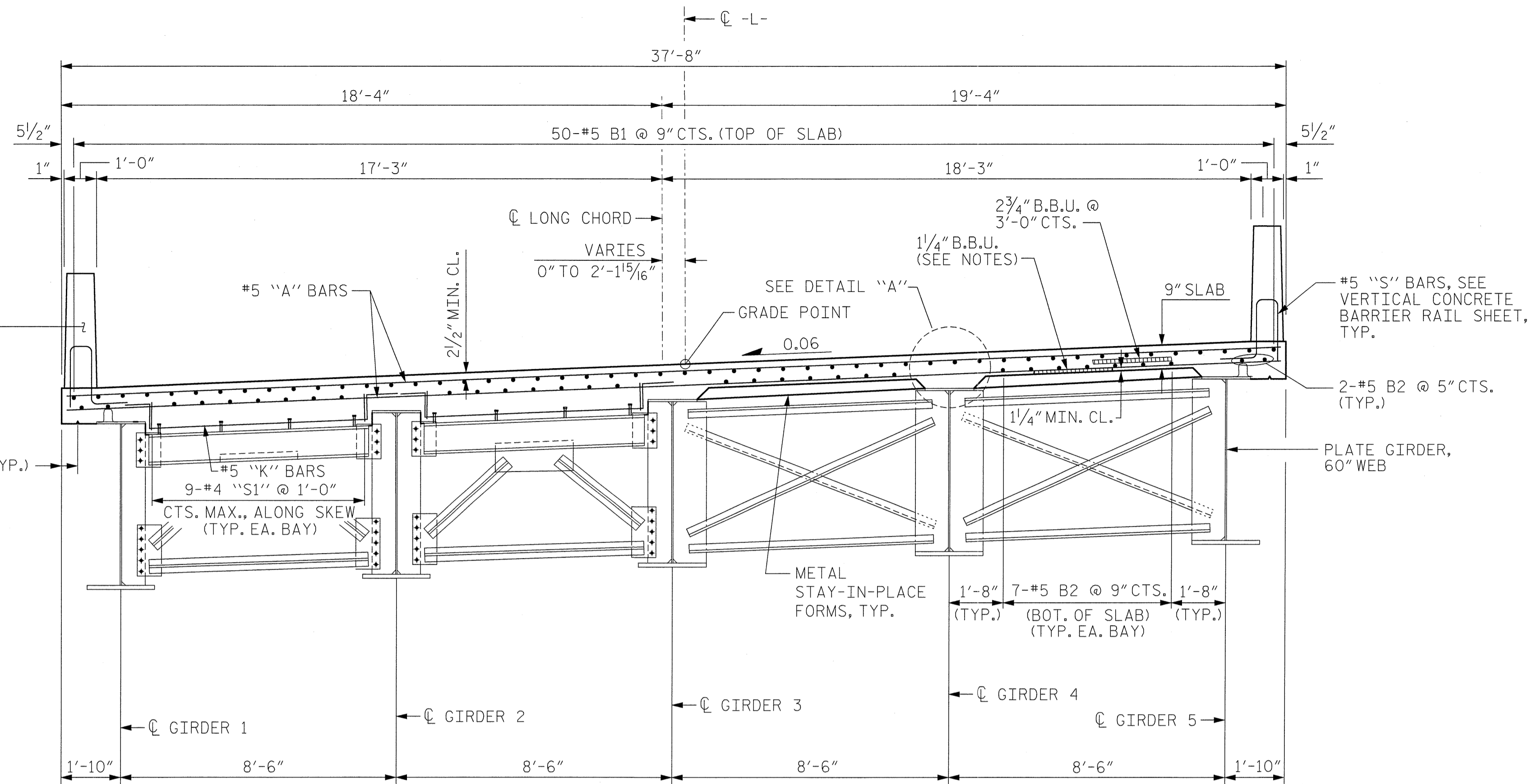
ATKINS 1616 E. MILLBROOK ROAD, SUITE #310
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBES #F-0326

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			27

0353DEL_P15

VERTICAL CONCRETE BARRIER RAIL, TYP.

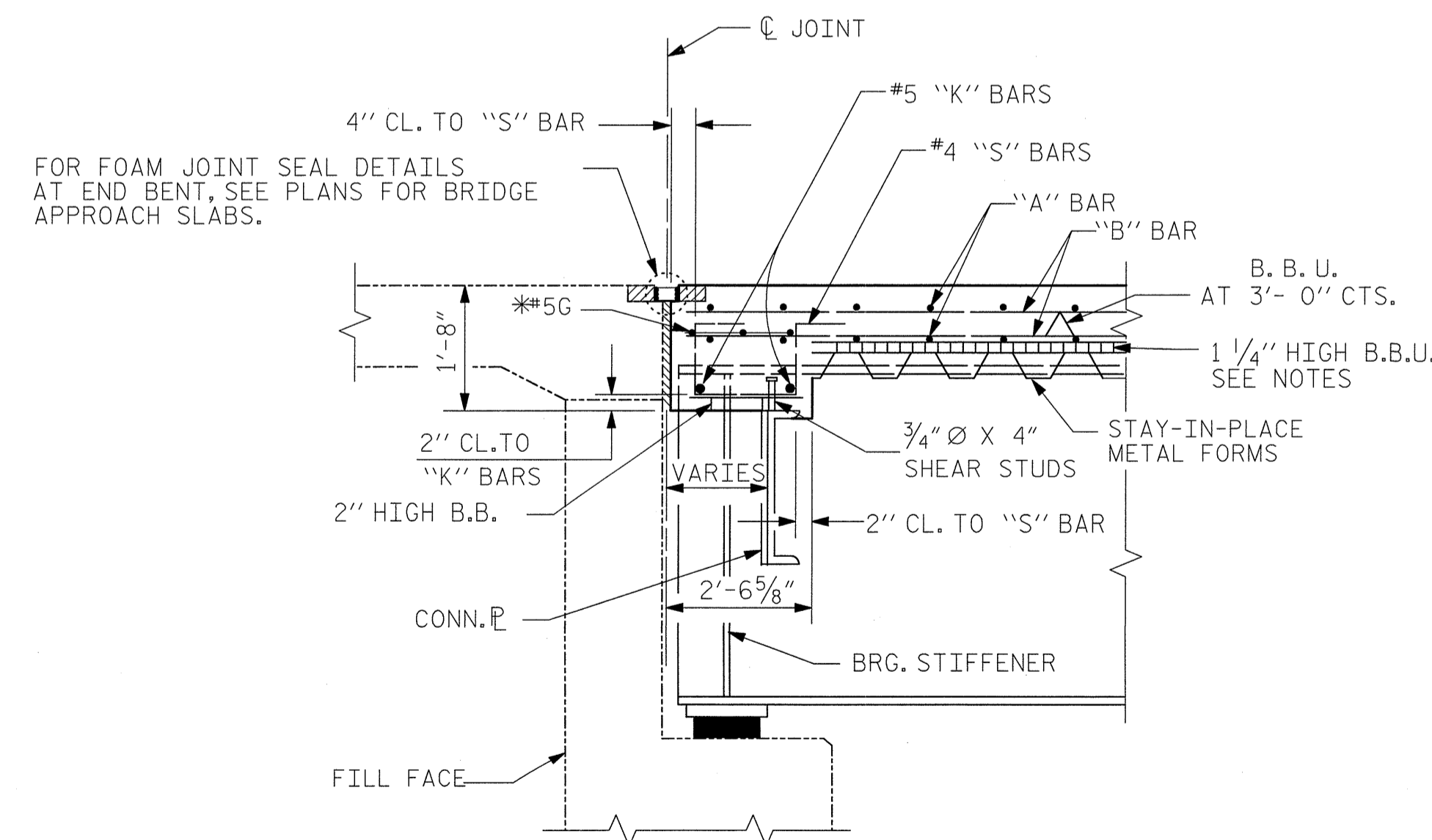
2-1" Δ GROOVES, (TYP.)



PARTIAL TYPICAL SECTION (SHOWING END BENT DIAPHRAGM)

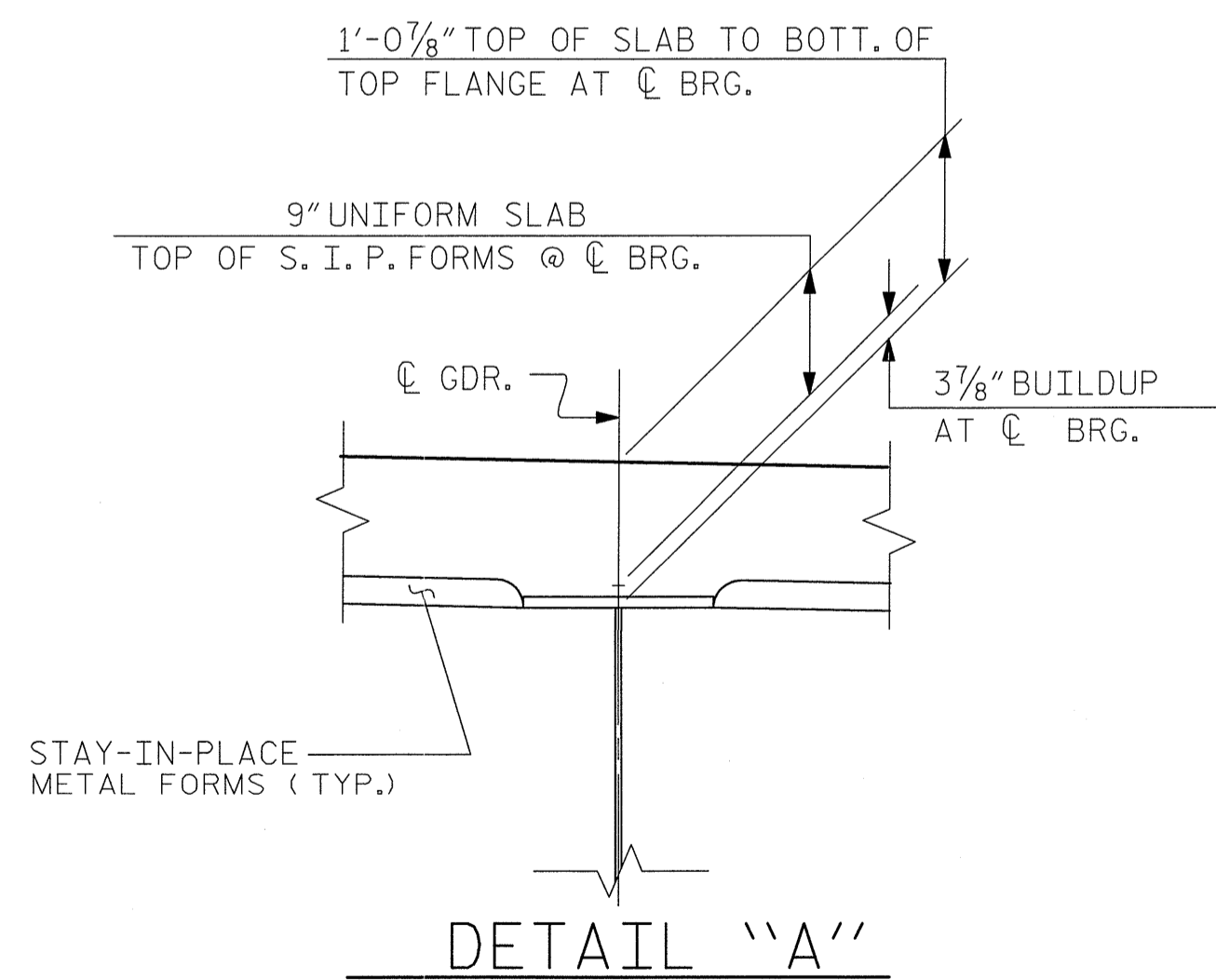
PARTIAL TYPICAL SECTION (SHOWING INTERMEDIATE DIAPHRAGM)

TYPICAL SECTION



SECTION @ END BENT

* #5G BARS MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR DIAPHRAGM AND REINFORCING STEEL.



DETAIL "A"

NOTES:

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

THE CONTRACTOR MAY, WHEN NECESSARY, PROPOSE A SCHEME FOR AVOIDING INTERFERENCE BETWEEN STAY-IN-PLACE METAL FORM SUPPORTS OR FORMS AND BEAM/GIRDER STIFFENERS OR CONNECTOR PLATES. THE PROPOSAL SHALL BE INDICATED, AS APPROPRIATE, ON EITHER THE STEEL WORKING DRAWINGS OR THE STAY METAL FORM WORKING DRAWINGS.

METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO BEAM OR GIRDER FLANGES IN THE ZONES REQUIRING CHARPY V-NOTCH TEST. SEE STRUCTURAL STEEL DETAIL SHEETS.

STRUCTURAL STEEL ERECTION SHALL BE COMPLETE BEFORE FALSEWORK OR FORMS ARE PLACED ON THE UNIT.

PROJECT NO. P-5204
 GUILFORD COUNTY
 STATION: 24+59.04 -L-
 MILE MARKER #8
 BRIDGE NO. 1170



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

TYPICAL SECTION

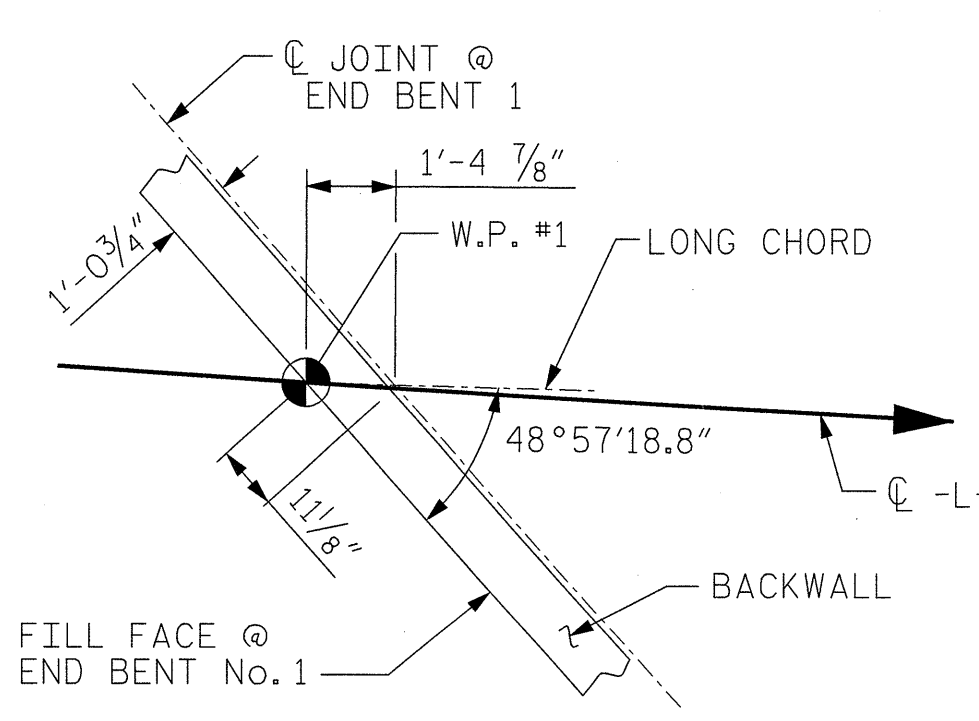
FOR BRIDGE ON
 McLEANSVILLE RD. OVER
 NS/NCR RAILROAD FROM
 SR 2826 TO NORTH OF SR 2746

DRAWN BY : C. BLAKES DATE : 3/14
 CHECKED BY : M. PAYNE DATE : 3/14

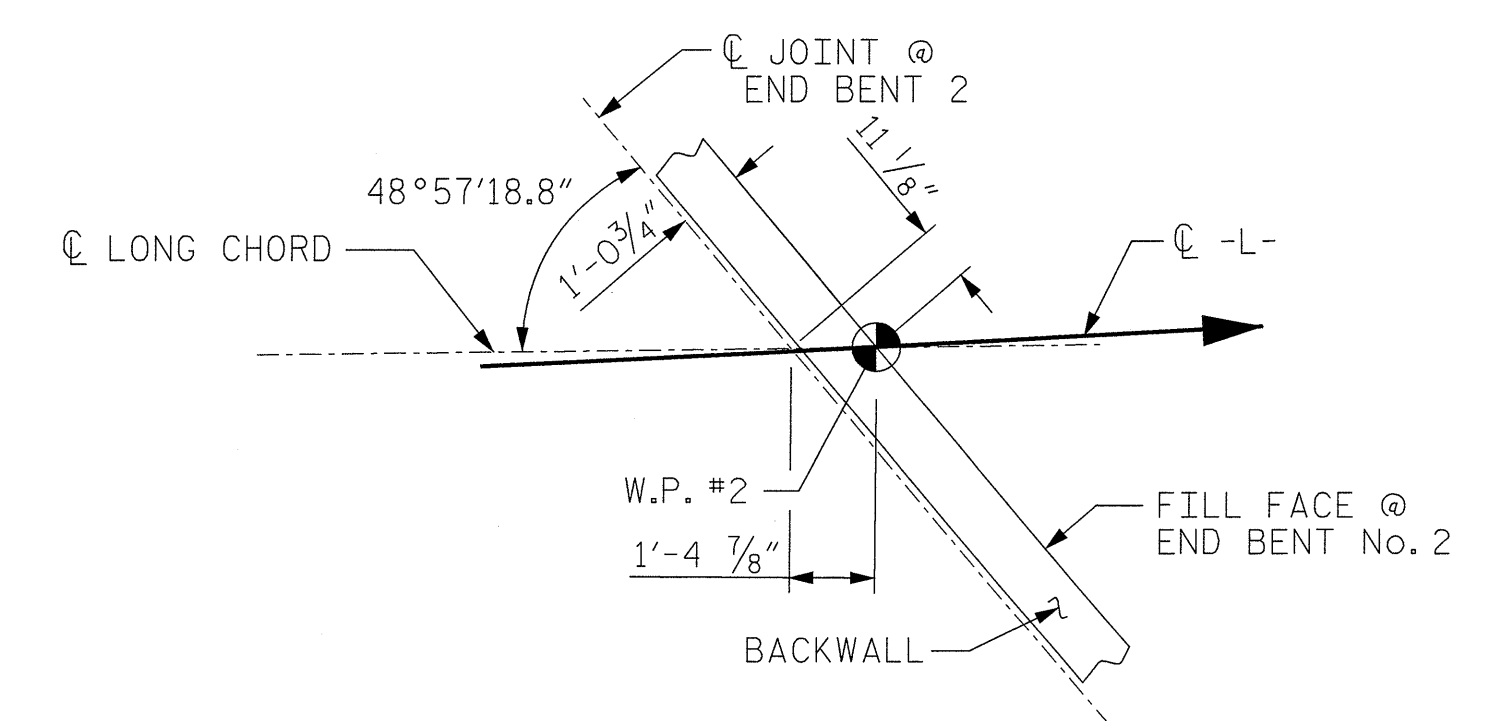
ATKINS 1616 E. MILLBROOK ROAD, SUITE #310
 RALEIGH, NORTH CAROLINA 27609
 (919) 876-6888 NCBES #F-0326

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			27

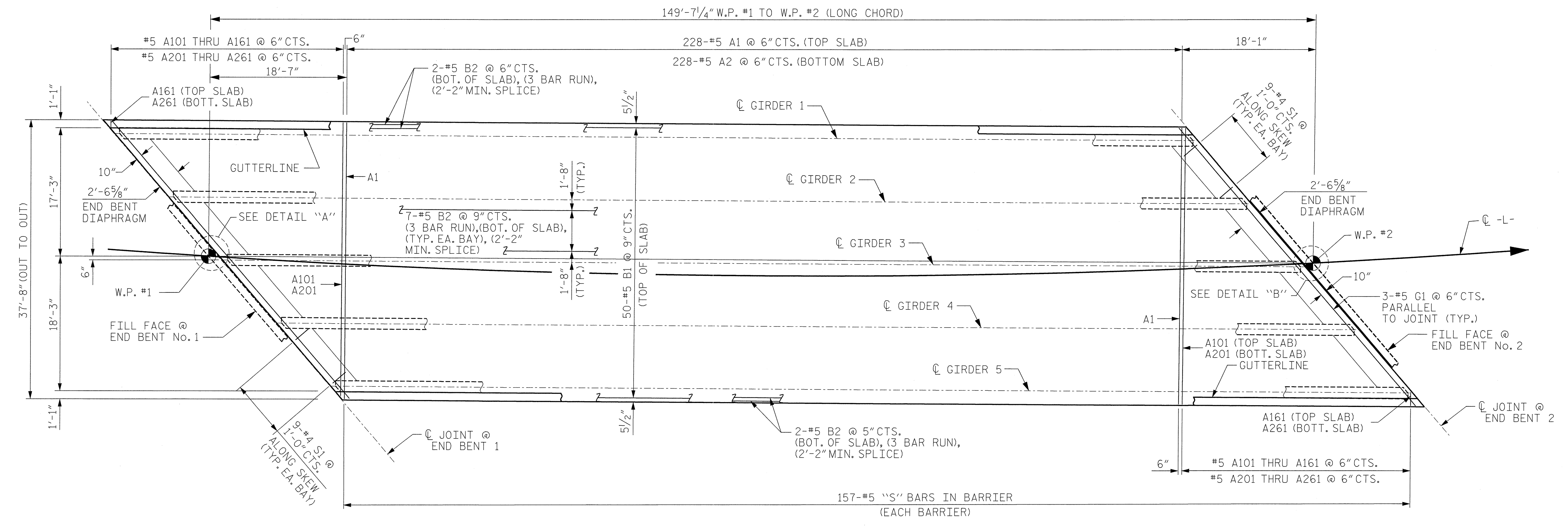
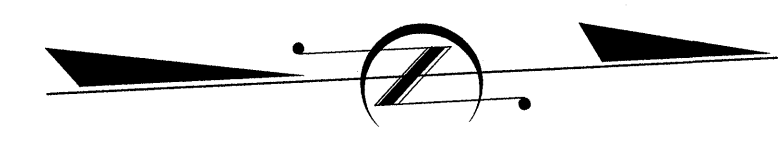
0353DEL-P15



DETAIL "A"
END BENT 1



DETAIL "B"
END BENT 2



PLAN OF SPAN A

PROJECT NO. P-5204
GUILFORD COUNTY
 STATION: 24+59.04 -L-
 MILE MARKER #8
 BRIDGE NO. 1170



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 PLAN OF SPAN A
 FOR BRIDGE ON
 McLEANSVILLE RD. OVER
 NS/NCRR RAILROAD FROM
 SR 2826 TO NORTH OF SR 2746

DRAWN BY : C. BLAKES DATE : 3/14
 CHECKED BY : M. PAYNE DATE : 3/14

ATKINS 1616 E. MILLBROOK ROAD, SUITE #310
 RALEIGH, NORTH CAROLINA 27609
 (919) 876-6888 NCBES #F-0326

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			27

0353DEL_P15

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	228	#5	STR	37'-2"	8,838
A2	228	#5	STR	37'-2"	8,838
*A101	2	#5	STR	36'-7"	76
*A102	2	#5	STR	36'-0"	75
*A103	2	#5	STR	35'-6"	74
*A104	2	#5	STR	34'-11"	73
*A105	2	#5	STR	34'-4"	72
*A106	2	#5	STR	33'-9"	70
*A107	2	#5	STR	33'-2"	69
*A108	2	#5	STR	32'-7"	68
*A109	2	#5	STR	32'-0"	67
*A110	2	#5	STR	31'-5"	66
*A111	2	#5	STR	30'-10"	64
*A112	2	#5	STR	30'-3"	63
*A113	2	#5	STR	29'-9"	62
*A114	2	#5	STR	29'-2"	61
*A115	2	#5	STR	28'-7"	60
*A116	2	#5	STR	28'-0"	58
*A117	2	#5	STR	27'-5"	57
*A118	2	#5	STR	26'-10"	56
*A119	2	#5	STR	26'-3"	55
*A120	2	#5	STR	25'-8"	54
*A121	2	#5	STR	25'-1"	52
*A122	2	#5	STR	24'-7"	51
*A123	2	#5	STR	24'-0"	50
*A124	2	#5	STR	23'-5"	49
*A125	2	#5	STR	22'-10"	48
*A126	2	#5	STR	22'-3"	46
*A127	2	#5	STR	21'-8"	45
*A128	2	#5	STR	21'-1"	44
*A129	2	#5	STR	20'-6"	43
*A130	2	#5	STR	19'-11"	42
*A131	2	#5	STR	19'-5"	41
*A132	2	#5	STR	18'-10"	39
*A133	2	#5	STR	18'-3"	38
*A134	2	#5	STR	17'-8"	37
*A135	2	#5	STR	17'-1"	36
*A136	2	#5	STR	16'-6"	34
*A137	2	#5	STR	15'-11"	33
*A138	2	#5	STR	15'-4"	32
*A139	2	#5	STR	14'-9"	31
*A140	2	#5	STR	14'-3"	30

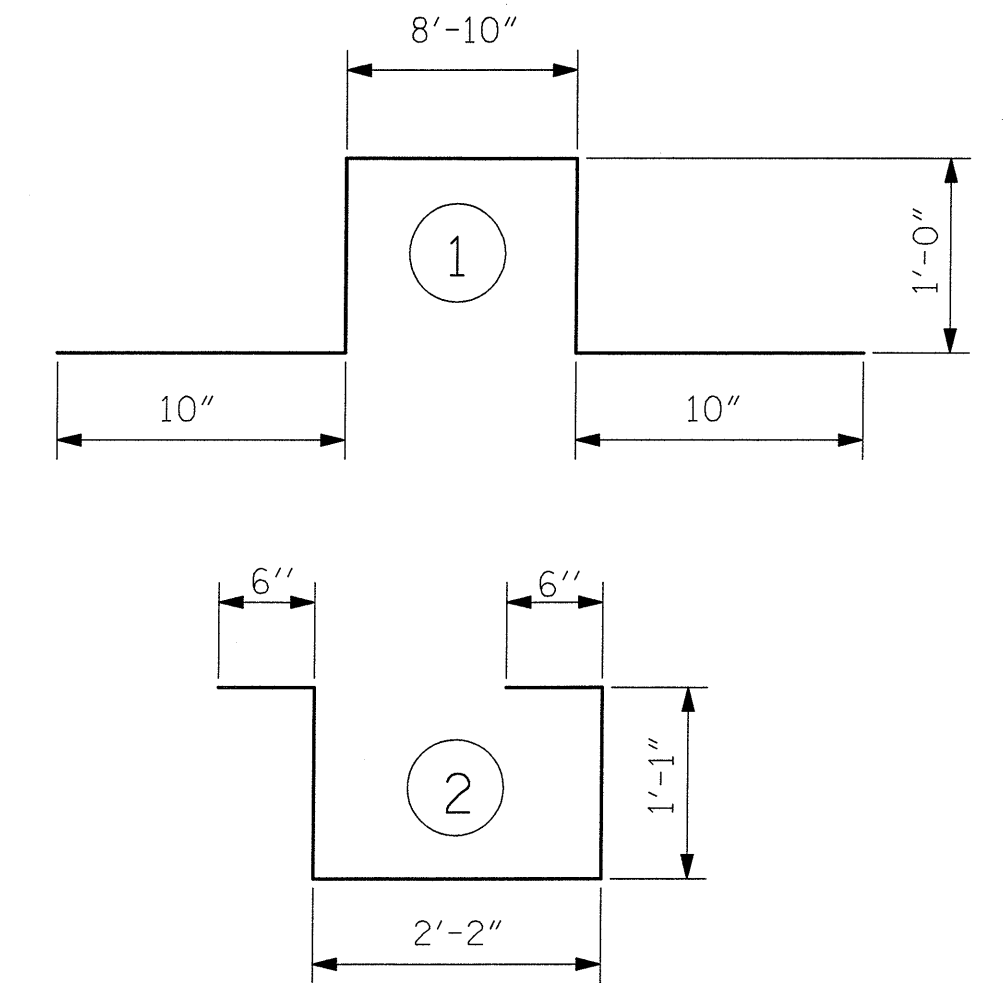
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A141	2	#5	STR	13'-8"	29
*A142	2	#5	STR	13'-1"	27
*A143	2	#5	STR	12'-6"	26
*A144	2	#5	STR	11'-11"	25
*A145	2	#5	STR	11'-4"	24
*A146	2	#5	STR	10'-9"	22
*A147	2	#5	STR	10'-2"	21
*A148	2	#5	STR	9'-7"	20
*A149	2	#5	STR	9'-1"	19
*A150	2	#5	STR	8'-6"	18
*A151	2	#5	STR	7'-11"	17
*A152	2	#5	STR	7'-4"	15
*A153	2	#5	STR	6'-9"	14
*A154	2	#5	STR	6'-2"	13
*A155	2	#5	STR	5'-7"	12
*A156	2	#5	STR	5'-0"	10
*A157	2	#5	STR	4'-5"	9
*A158	2	#5	STR	3'-10"	8
*A159	2	#5	STR	3'-4"	7
*A160	2	#5	STR	2'-9"	6
*A161	2	#5	STR	2'-2"	5
B1	150	#5	STR	51'-1"	7,992
B2	96	#5	STR	50'-9"	5,116
S1	72	#4	2	5'-4"	257
K1	16	#5	1	12'-6"	197
G1	6	#5	STR	49'-5"	309

* DENOTES EPOXY COATED REINFORCING STEEL FOR TOP MAT OF DECK SLAB

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A201	2	#5	STR	36'-7"	76
A202	2	#5	STR	36'-0"	75
A203	2	#5	STR	35'-6"	74
A204	2	#5	STR	34'-11"	73
A205	2	#5	STR	34'-4"	72
A206	2	#5	STR	33'-9"	70
A207	2	#5	STR	33'-2"	69
A208	2	#5	STR	32'-7"	68
A209	2	#5	STR	32'-0"	67
A210	2	#5	STR	31'-5"	66
A211	2	#5	STR	30'-10"	64
A212	2	#5	STR	30'-3"	63
A213	2	#5	STR	29'-9"	62
A214	2	#5	STR	29'-2"	61
A215	2	#5	STR	28'-7"	60
A216	2	#5	STR	28'-0"	58
A217	2	#5	STR	27'-5"	57
A218	2	#5	STR	26'-10"	56
A219	2	#5	STR	26'-3"	55
A220	2	#5	STR	25'-8"	54
A221	2	#5	STR	25'-1"	52
A222	2	#5	STR	24'-7"	51
A223	2	#5	STR	24'-0"	50
A224	2	#5	STR	23'-5"	49
A225	2	#5	STR	22'-10"	48
A226	2	#5	STR	22'-3"	46
A227	2	#5	STR	21'-8"	45
A228	2	#5	STR	21'-1"	44
A229	2	#5	STR	20'-6"	43
A230	2	#5	STR	19'-11"	42
A231	2	#5	STR	19'-5"	41
A232	2	#5	STR	18'-10"	39
A233	2	#5	STR	18'-3"	38
A234	2	#5	STR	17'-8"	37
A235	2	#5	STR	17'-1"	36
A236	2	#5	STR	16'-6"	34
A237	2	#5	STR	15'-11"	33
A238	2	#5	STR	15'-4"	32
A239	2	#5	STR	14'-9"	31
A240	2	#5	STR	14'-3"	30

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A241	2	#5	STR	13'-8"	29
A242	2	#5	STR	13'-1"	27
A243	2	#5	STR	12'-6"	26
A244	2	#5	STR	11'-11"	25
A245	2	#5	STR	11'-4"	24
A246	2	#5	STR	10'-9"	22
A247	2	#5	STR	10'-2"	21
A248	2	#5	STR	9'-7"	20
A249	2	#5	STR	9'-1"	19
A250	2	#5	STR	8'-6"	18
A251	2	#5	STR	7'-11"	17
A252	2	#5	STR	7'-4"	15
A253	2	#5	STR	6'-9"	14
A254	2	#5	STR	6'-2"	13
A255	2	#5	STR	5'-7"	12
A256	2	#5	STR	5'-0"	10
A257	2	#5	STR	4'-5"	9
A258	2	#5	STR	3'-10"	8
A259	2	#5	STR	3'-4"	7
A260	2	#5	STR	2'-9"	6
A261	2	#5	STR	2'-2"	5

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

— SUPERSTRUCTURE BILL OF MATERIAL —

	CLASS AA CONCRETE (CU.YDS.)	REINFORCING STEEL (LBS.)	EPOXY COATED REINFORCING STEEL (LBS.)
SPAN "A"	177	17,231	19,298
TOTALS**	177	17,231	19,298

**QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

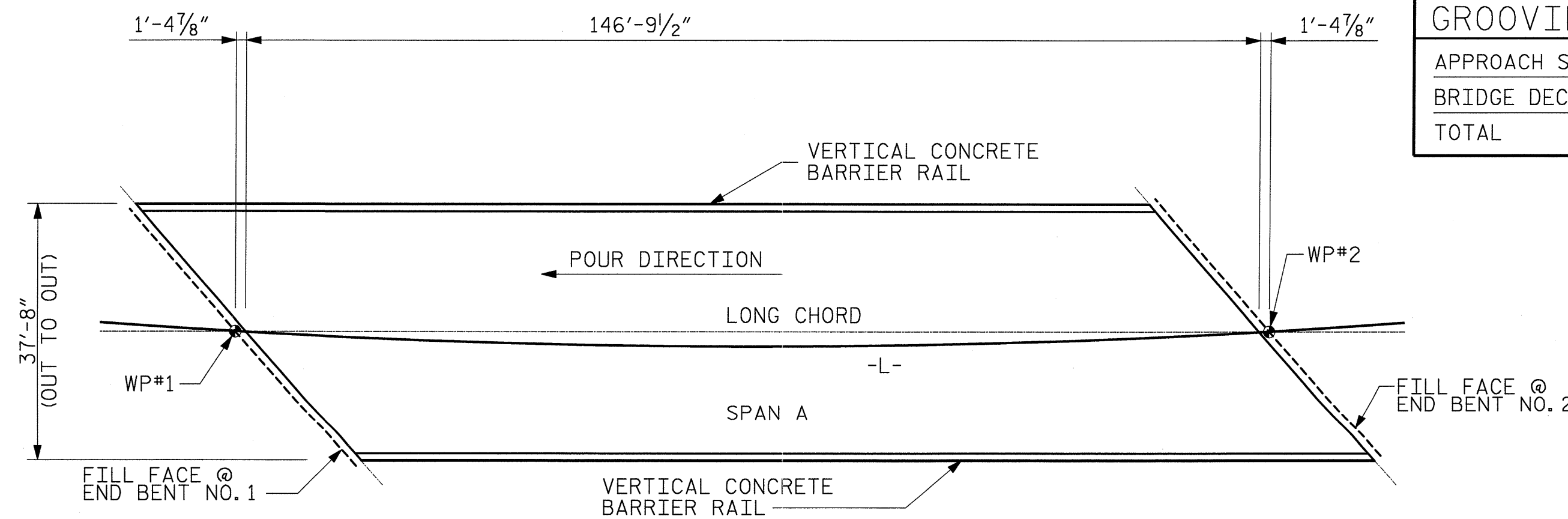
PROJECT NO. P-5204
 GUILFORD COUNTY
 STATION: 24+59.04 -L-
 MILE MARKER #8
 BRIDGE NO. 1170



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 SUPERSTRUCTURE
 BILL OF MATERIAL

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

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



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB (SQ. FT. = 5,529)

GROOVING BRIDGE FLOORS

APPROACH SLABS	889 SQ.FT.
BRIDGE DECK	4,771 SQ.FT.
TOTAL	5,660 SQ.FT.

ASSEMBLED BY : M. PAYNE DATE : 4/14
 CHECKED BY : J. WERES DATE : 4/14
 DRAWN BY : JMB 5/87 REV. 8/16/99 RWW/LES
 CHECKED BY : SJD 9/87 REV. 5/1/06 TLA/GM
 REV. 10/1/11 MAA/GM

ATKINS 1616 E. MILLBROOK ROAD, SUITE #310
 RALEIGH, NORTH CAROLINA 27609
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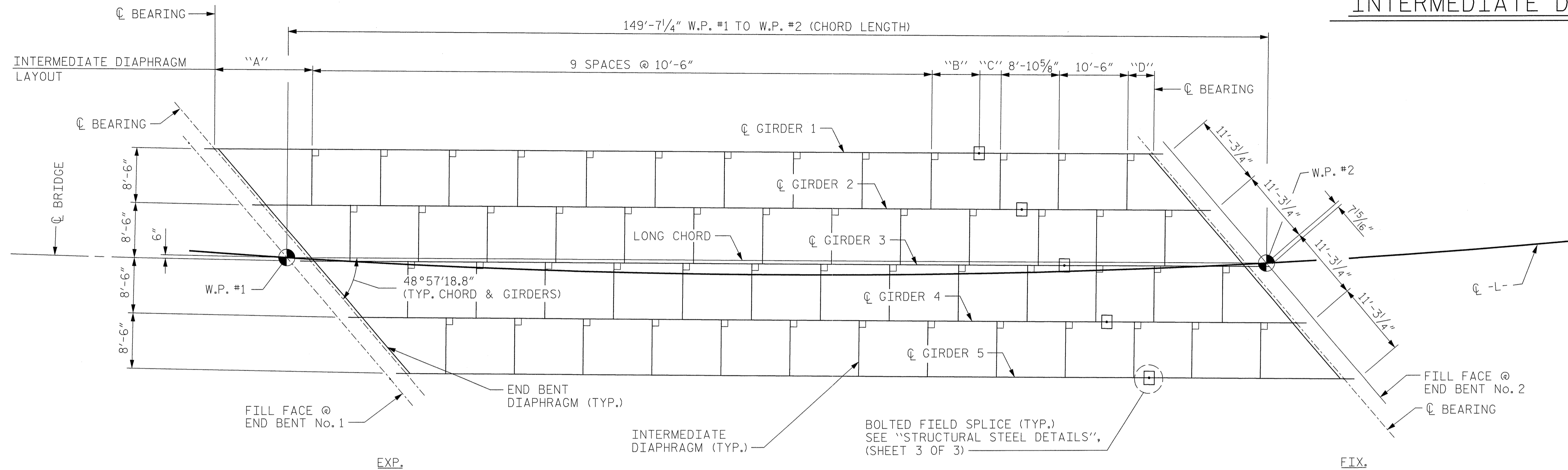
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS 27
2			4			

STD. NO. BOM1

0353DEL-P15

GIRDER	DIM "A"	DIM "B"	DIM "C"	DIM "D"
G1	15'-4 ⁵ / ₈ "	5'-7 ³ / ₈ "	4'-10 ⁵ / ₈ "	3'-5 ³ / ₄ "
G2	15'-4 ³ / ₄ "	5'-7 ¹ / ₄ "	4'-10 ³ / ₄ "	3'-5 ⁵ / ₈ "
G3	16'-10 ⁵ / ₈ "	4'-1 ³ / ₈ "	6'-4 ⁵ / ₈ "	1'-11 ³ / ₄ "
G4	15'-4 ³ / ₄ "	5'-7 ¹ / ₄ "	4'-10 ³ / ₄ "	3'-5 ⁵ / ₈ "

INTERMEDIATE DIAPHRAGM DIMENSIONS



FRAMING PLAN

STRUCTURAL STEEL NOTES:

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W AND PAINTED IN ACCORDANCE WITH SYSTEM 4 OF ARTICLE 442-8 OF THE STANDARD SPECIFICATIONS UNLESS NOTED OTHERWISE ON THE PLANS.

ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL, UNLESS OTHERWISE NOTED.

ALL FIELD CONNECTIONS TO BE 7/8" DIA. HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED.

BEARING STIFFENERS ARE TO BE PLACED NORMAL TO THE WEB OF THE GIRDER AND SHALL BE PLUMB.

A CHARPY V-NOTHC TEST IS REQUIRED FOR WEB PLATES, BOTTOM FLANGE PLATES, BOTTOM FLANGE SPLICE PLATES AND WEB SPLICE PLATES FOR ALL GIRDERS AND IN ACCORDANCE WITH ARTICLE 1072-7 OF THE STANDARD SPECIFICATIONS.

PERMITTED FLANGE AND WEB SHOP SPLICES SHALL NOT BE LOCATED WITHIN 15 FEET OF MAXIMUM DEAD LOAD DEFLECTION. KEEP 2 FEET MINIMUM BETWEEN WEB AND FLANGE SHOP SPLICES. KEEP 6" MINIMUM BETWEEN CONNECTOR PLATE OR TRANSVERSE STIFFENER WELDS AND WEB OR FLANGE SHOP SPLICES.

STUDS ON GIRDERS MAY BE SHIFTED UP TO 1" IF NECESSARY TO CLEAR FLANGE SPLICE WELD.

TENSION ON THE AASHTO M164 BOLTS SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH ARTICLE 440-8 OF THE STANDARD SPECIFICATIONS.

END OF GIRDERS SHALL BE PLUMB.

BEARING STIFFENER MAY REQUIRE COPING IF WIDER THAN BOTTOM FLANGE.

FABRICATORS SHALL DETAIL DIAPHRAGM MEMBERS AND CONNECTIONS FOR STEEL DEAD LOAD FIT UP.

PROJECT NO. P-5204

GUILFORD COUNTY

STATION: 24+59.04 -L-

MILE MARKER #8
BRIDGE NO. 1170

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FRAMING PLAN

FOR BRIDGE ON
MCLEANSVILLE RD. OVER
NS/NCRR RAILROAD FROM
SR 2826 TO NORTH OF SR 2746

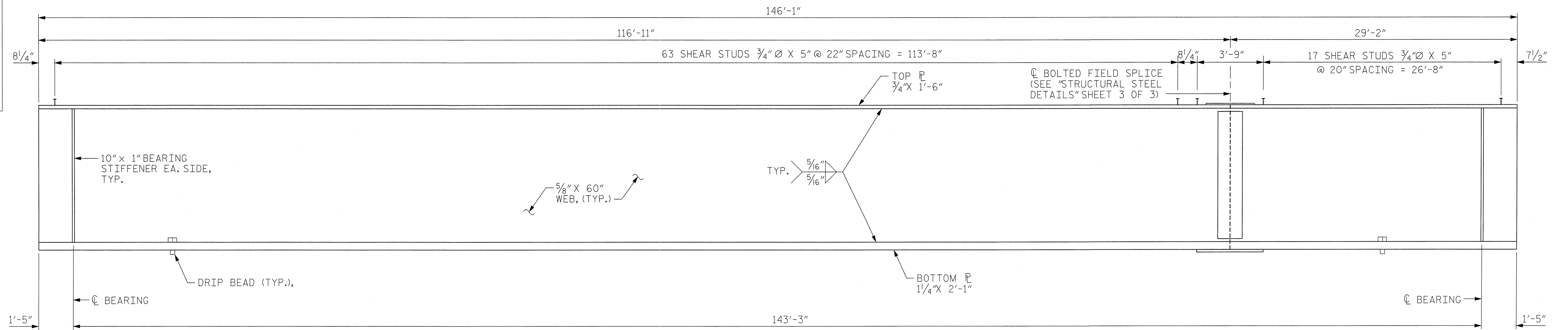


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(919) 876-6888 NCBES #F-0326

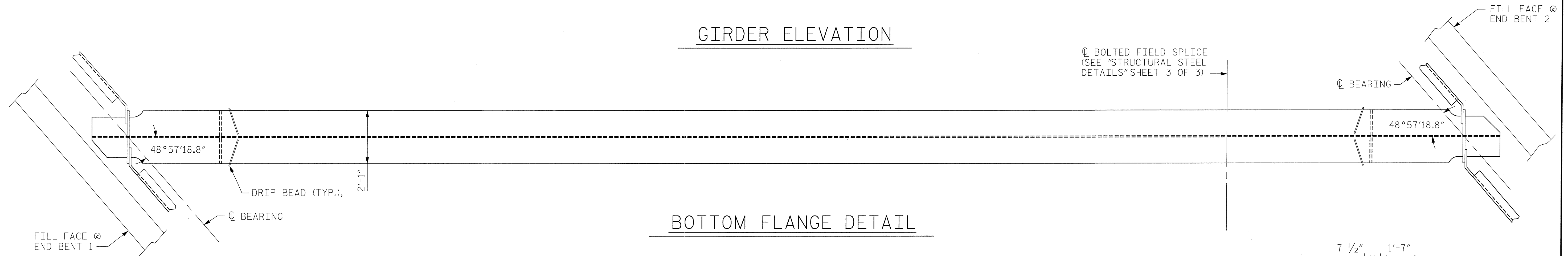
DRAWN BY : C. BLAKES DATE : 3/14
CHECKED BY : M. PAYNE DATE : 3/14

REVISIONS						SHEET NO. S-11
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 27
2			4			

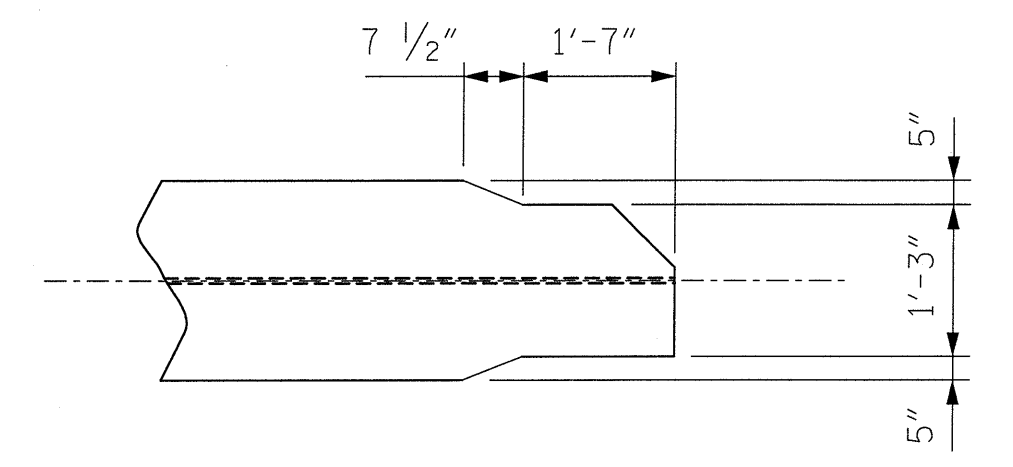
0353DEL-P15



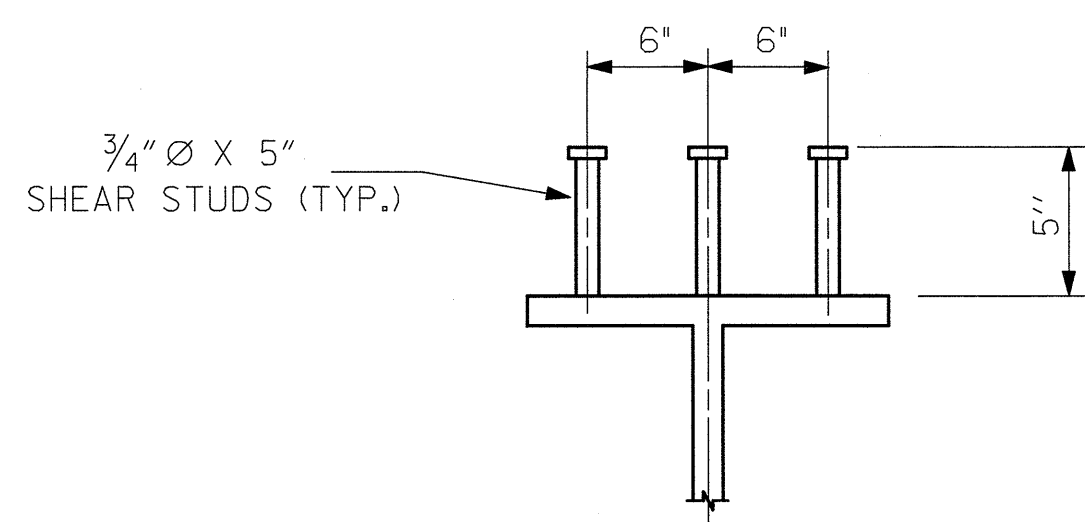
GIRDER ELEVATION



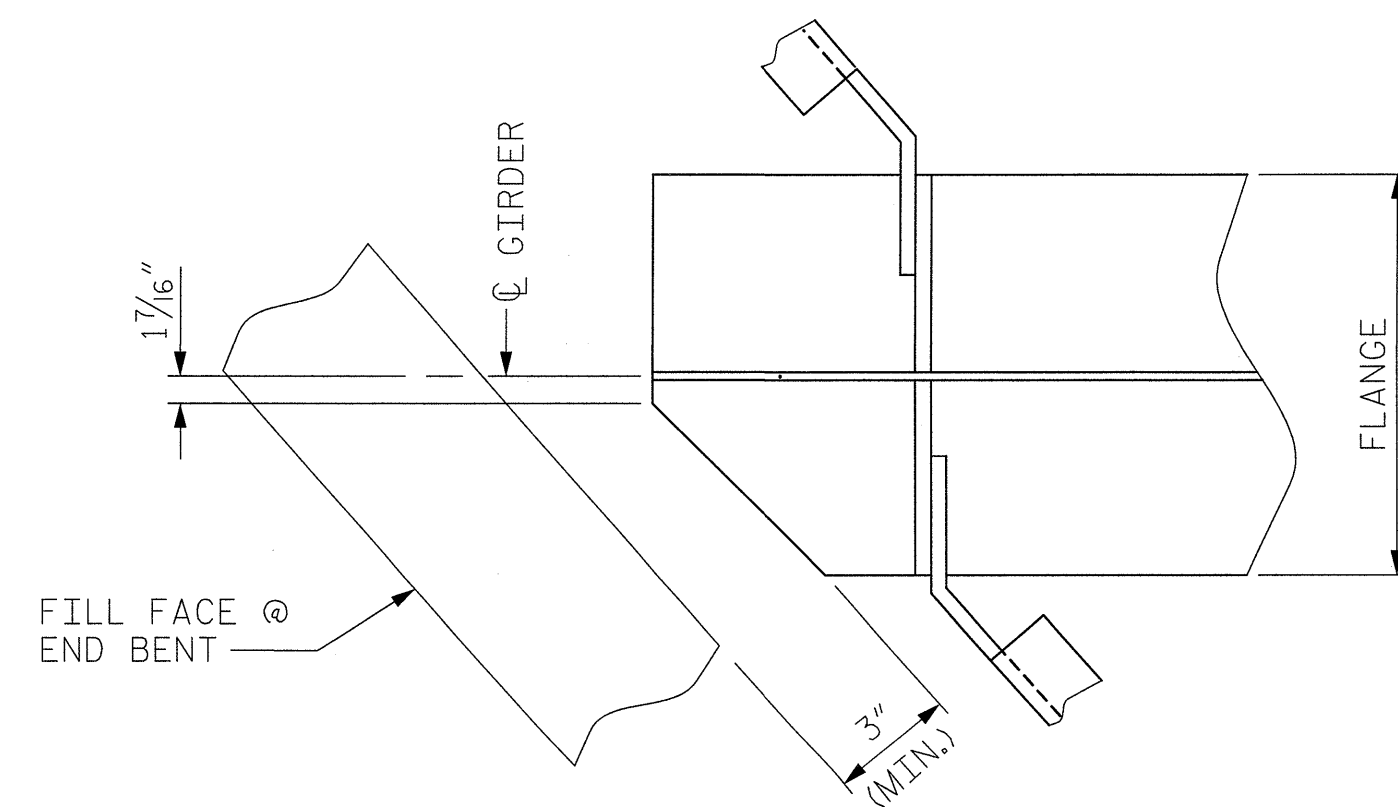
BOTTOM FLANGE DETAIL



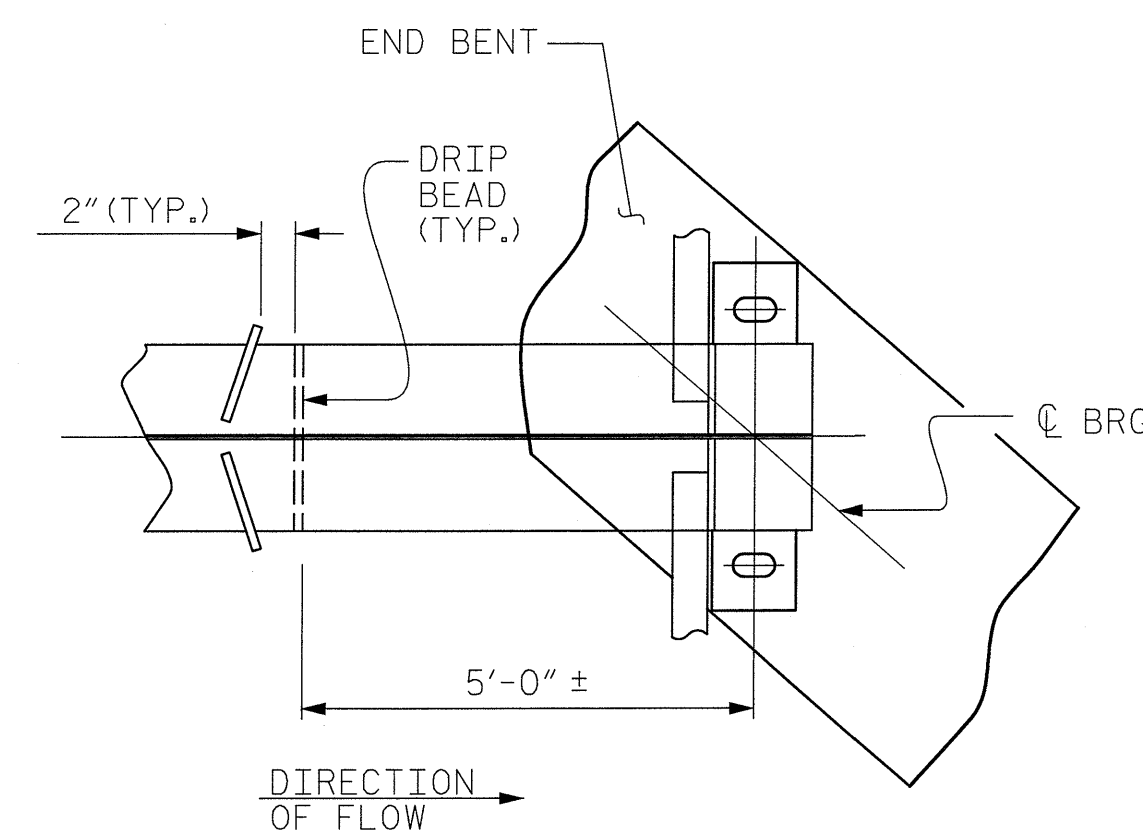
END OF GIRDER DETAIL



GIRDER SHEAR STUD DETAILS



TOP FLANGE CLIP DETAIL



NOTE: SEE SHEET S-13 FOR "DRIP BEAD WELD DETAILS"
PART PLAN - BOTTOM FLANGE
DRIP BEAD DETAILS



PROJECT NO. P-5204
GUILFORD COUNTY
STATION: 24+59.04 -L-
MILE MARKER #8
BRIDGE NO. 1170
SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

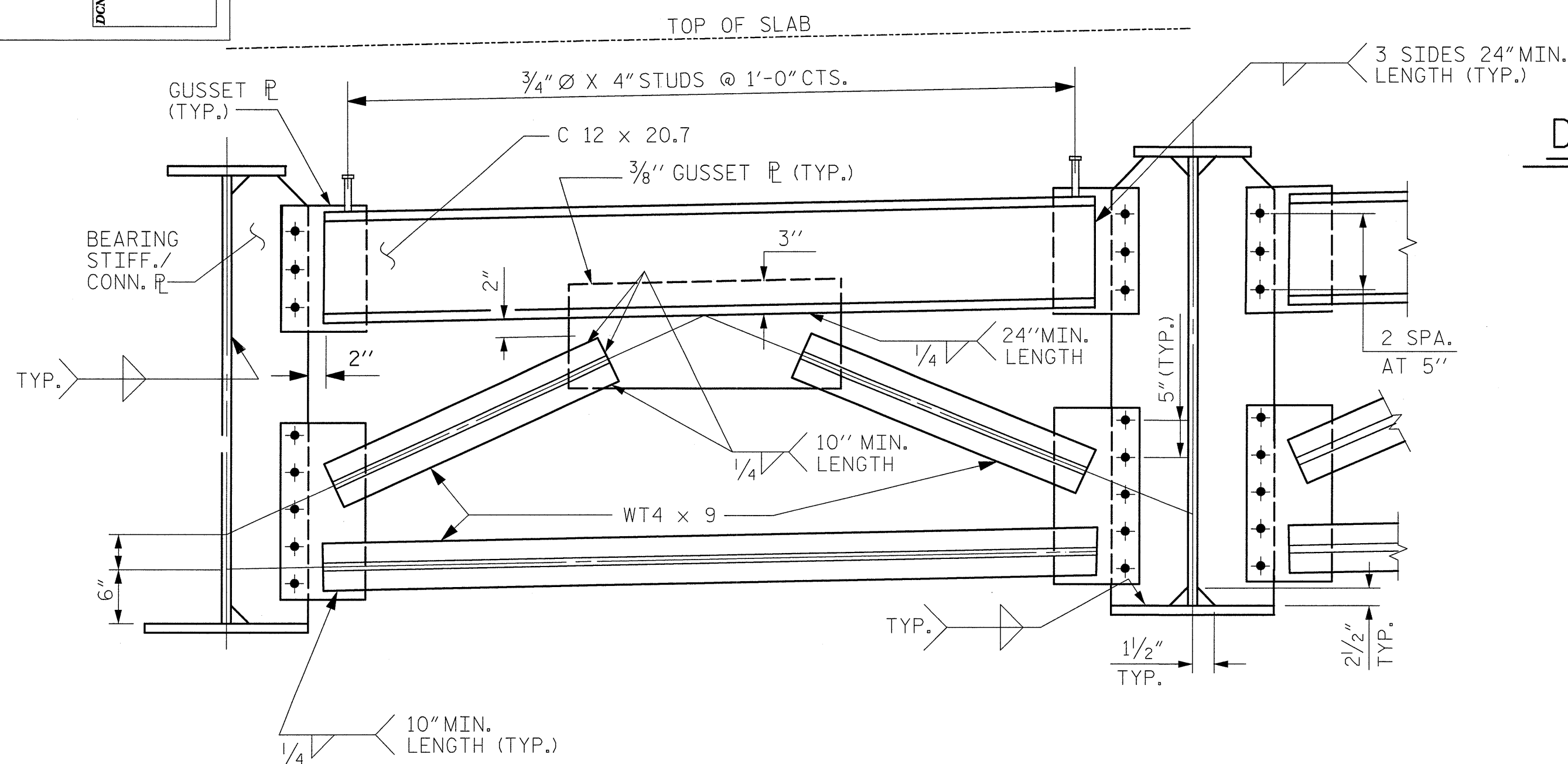
STRUCTURAL STEEL
DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			27

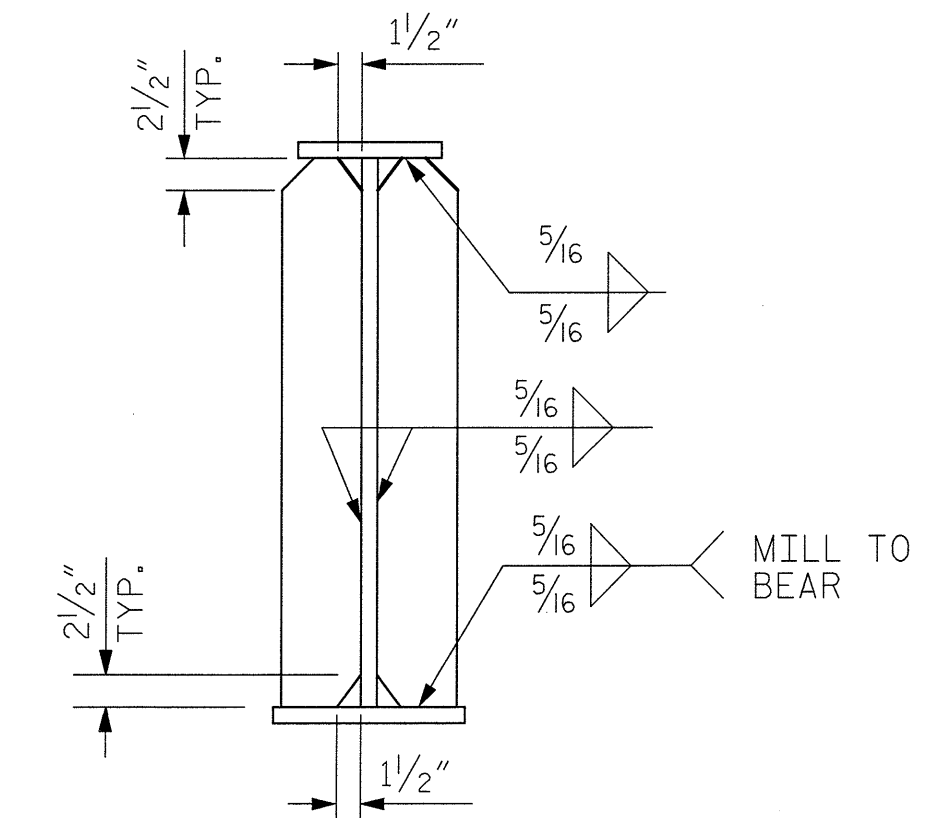
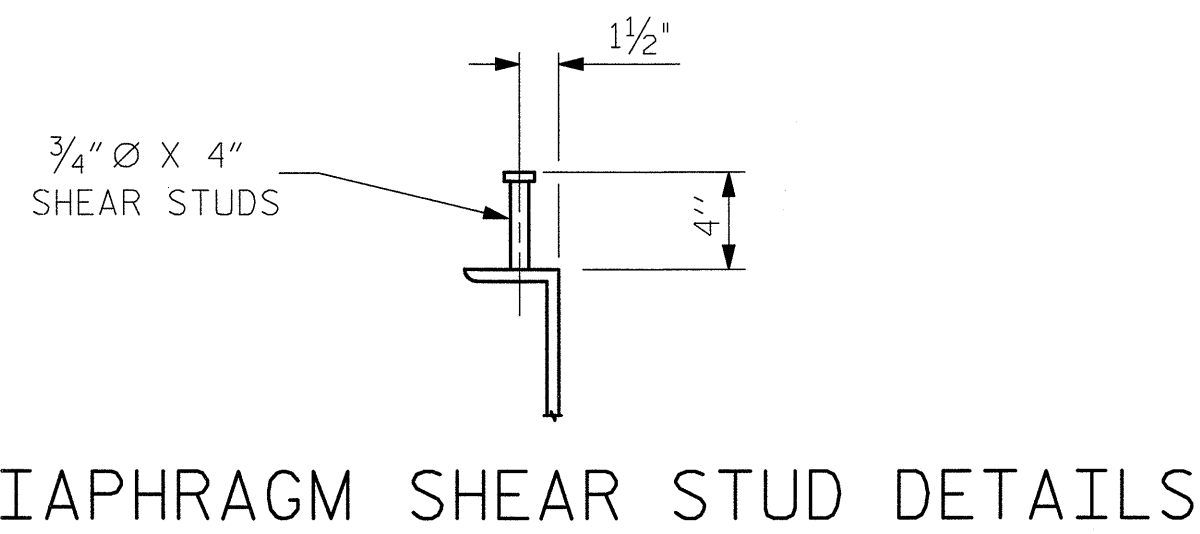
DRAWN BY : C. BLAKES DATE : 3/14
CHECKED BY : M. PAYNE DATE : 3/14

ATKINS 1616 E. MILLBROOK ROAD, SUITE #310
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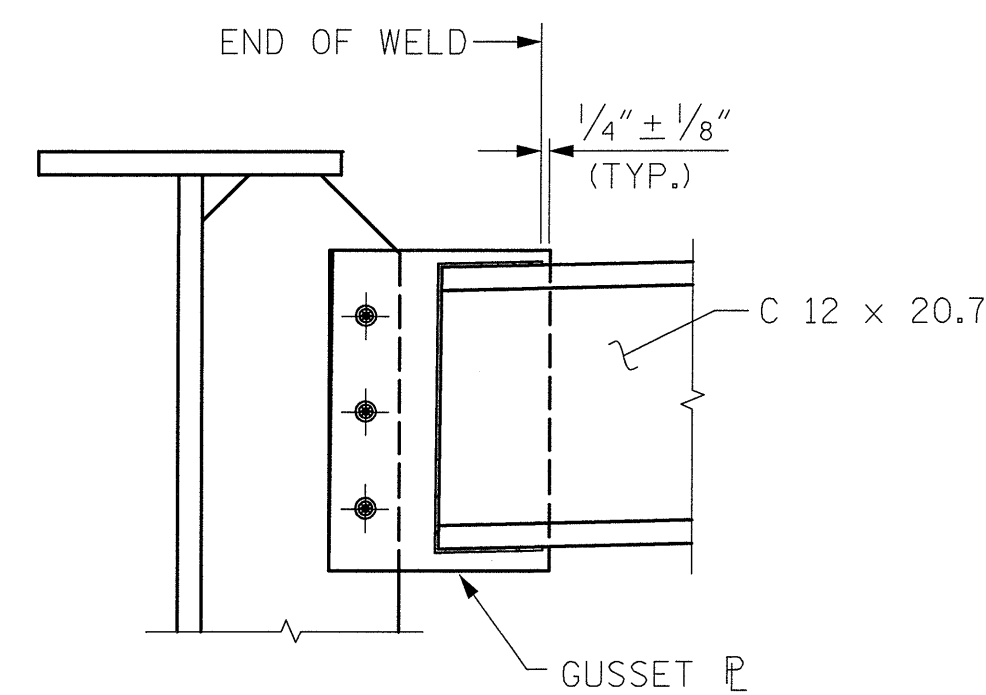
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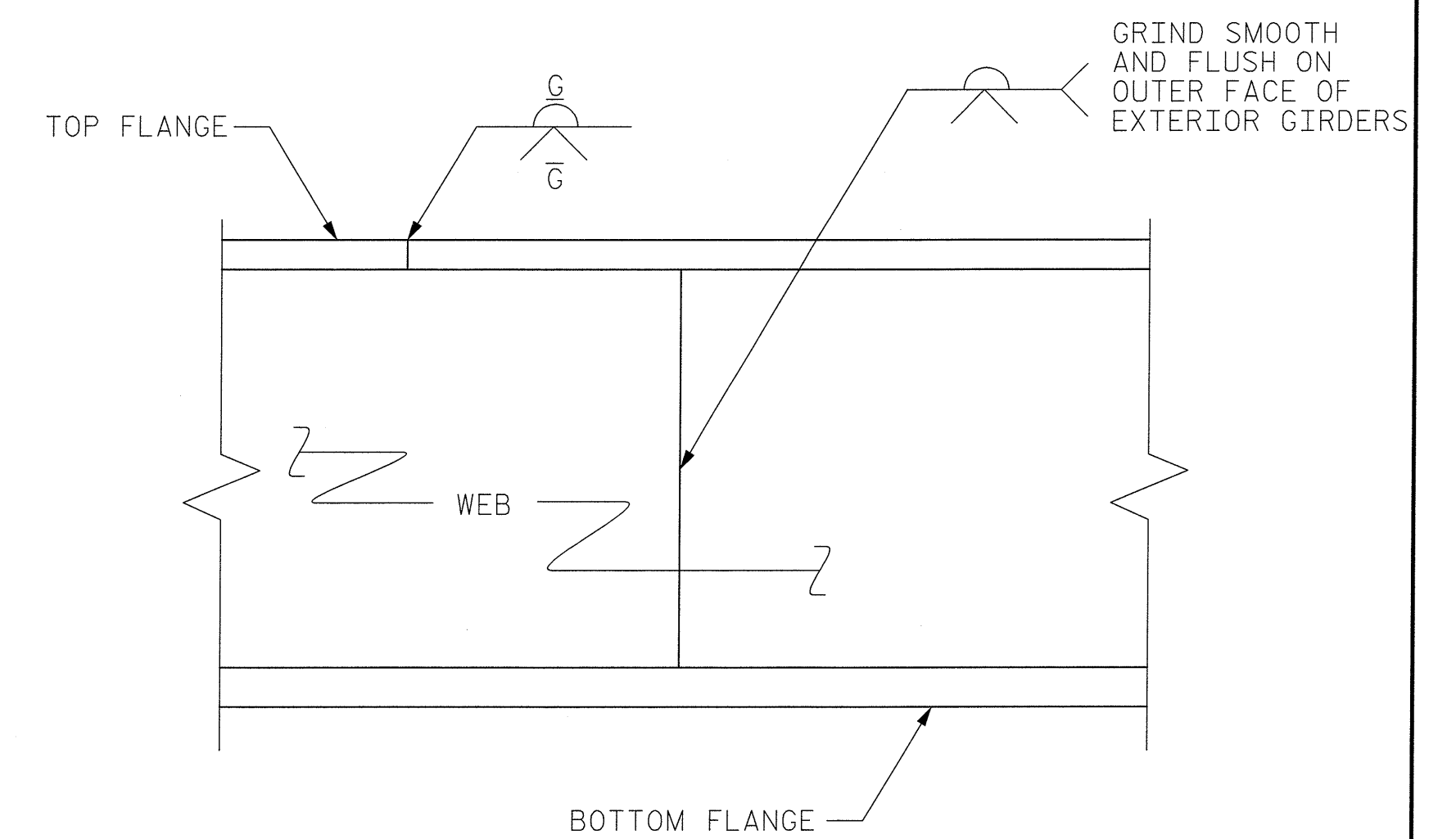
END BENT DIAPHRAGM



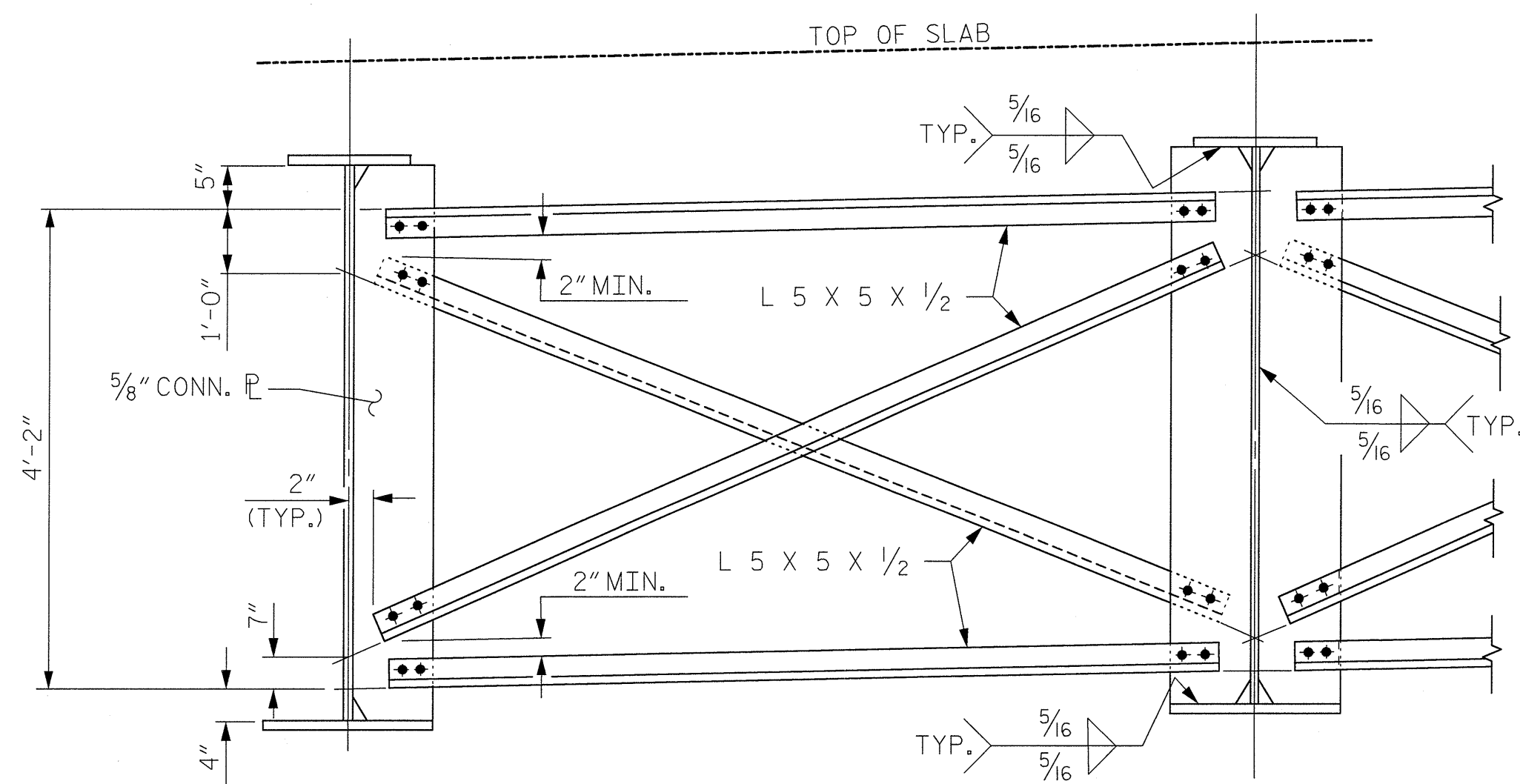
BEARING STIFFENER/CONNECTOR PLATE



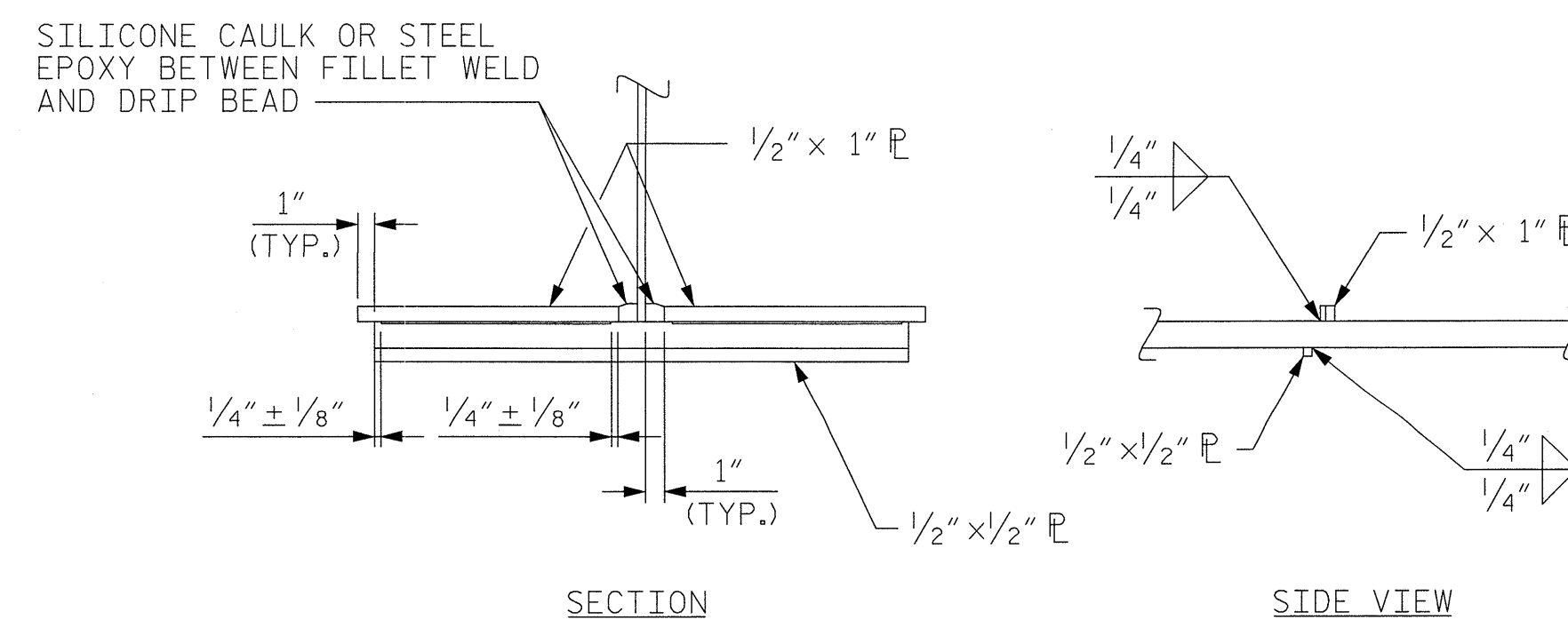
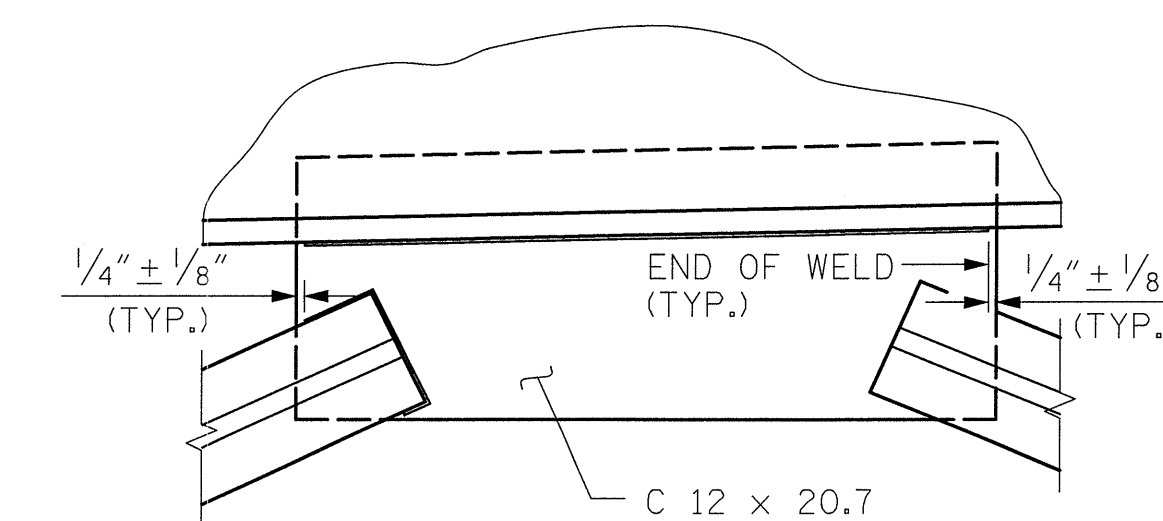
WELD TERMINATION DETAILS



TYPICAL FLANGE AND WEB BUTT JOINT



TYPICAL INTERMEDIATE DIAPHRAGM



DRIP BEAD WELD DETAILS

PROJECT NO. P-5204
 GUILFORD COUNTY
 STATION: 24+59.04 -L-
 MILE MARKER #8
 BRIDGE NO. 1170
 SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STRUCTURAL STEEL
 DETAILS

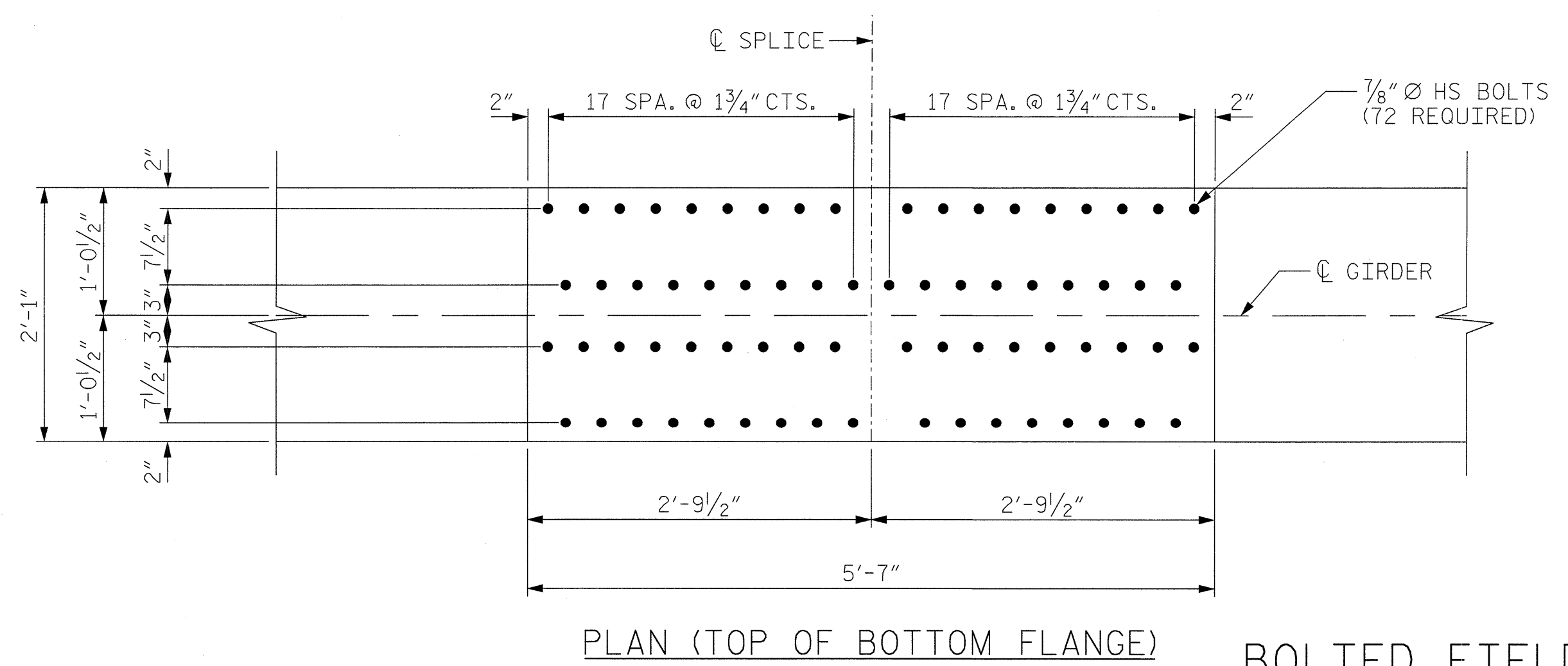
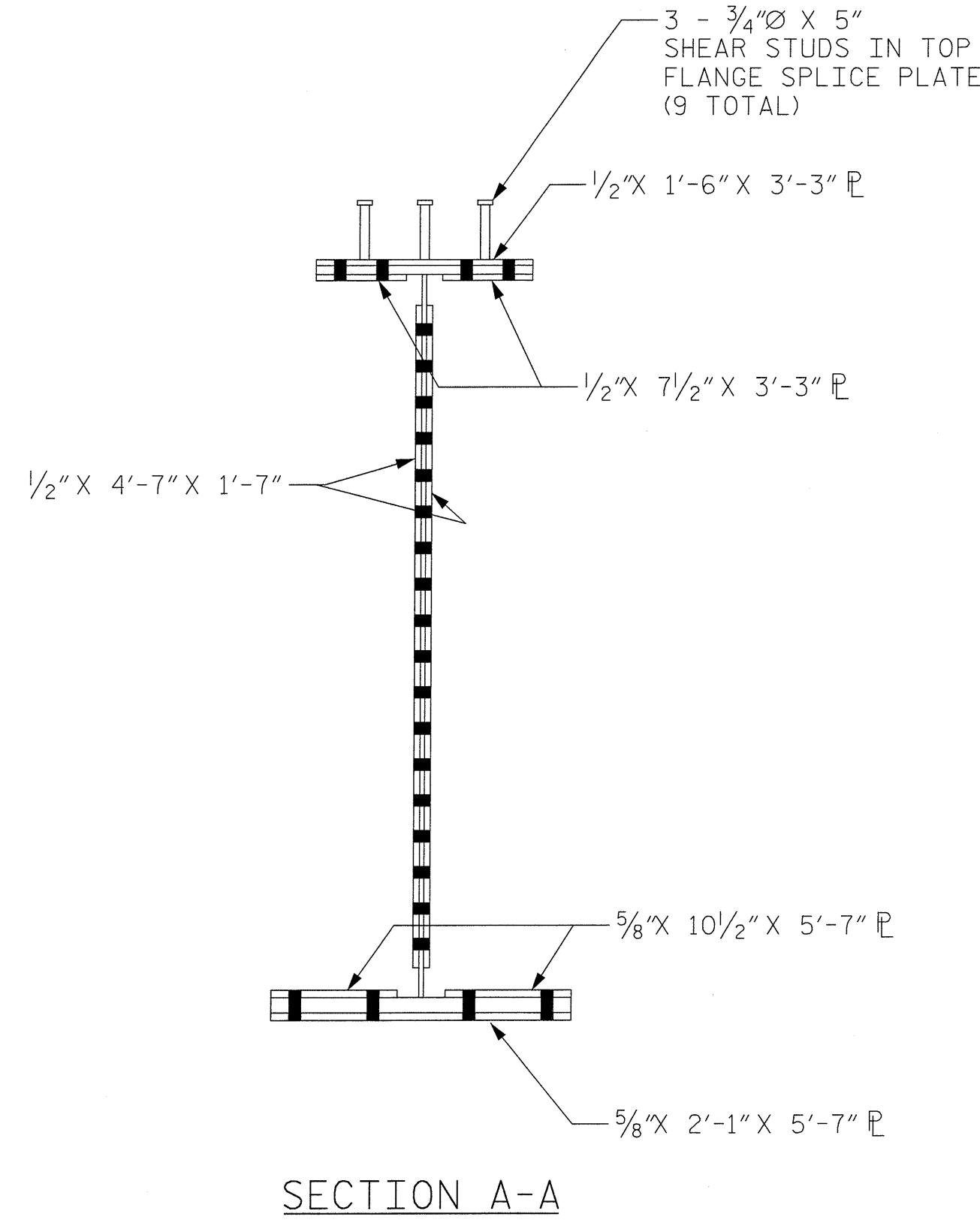
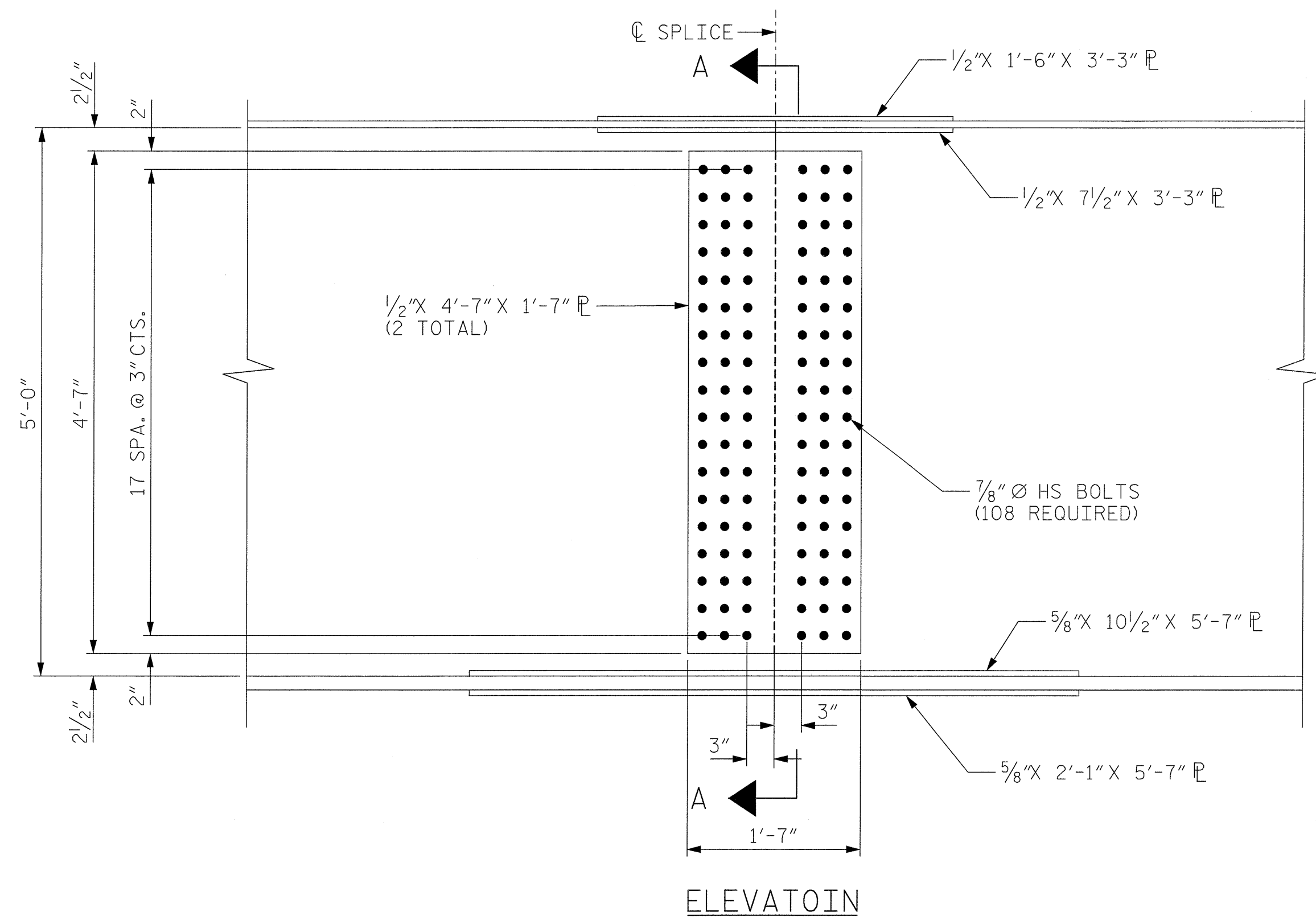
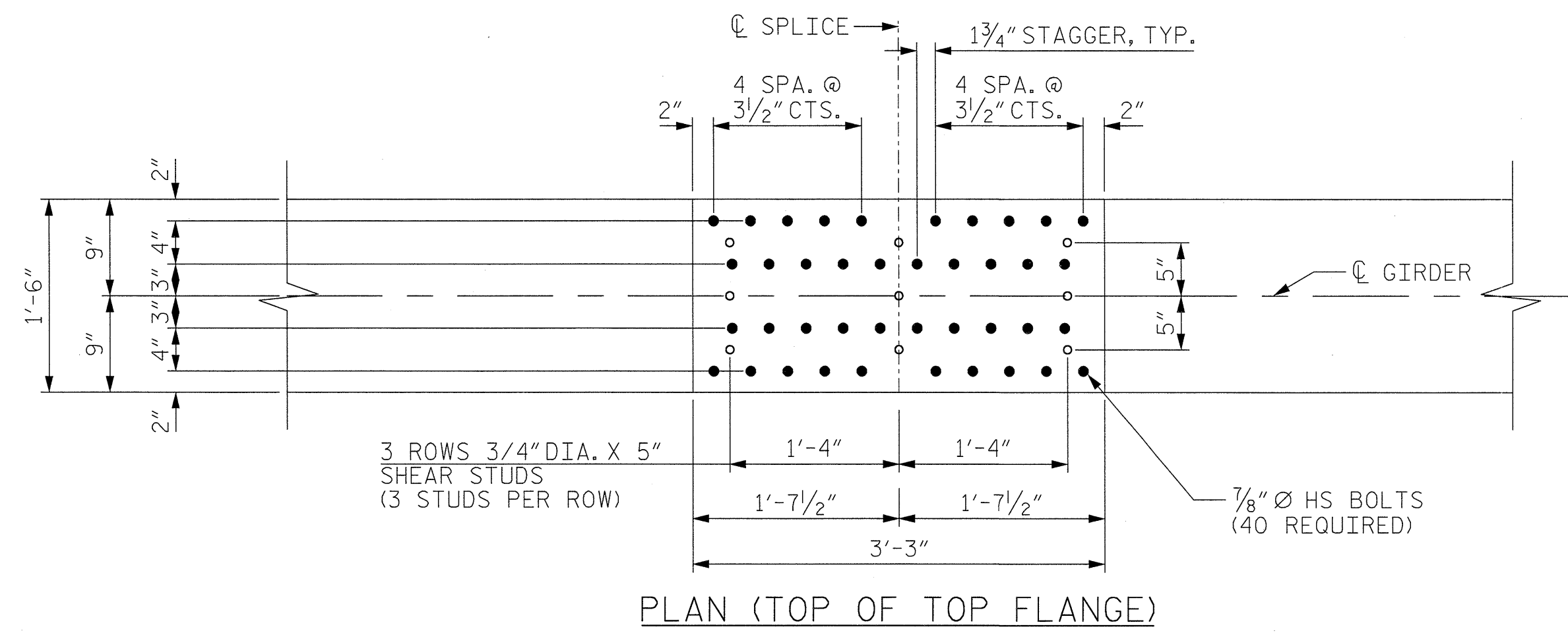


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ATKINS 1616 E. MILLBROOK ROAD, SUITE #310
 RALEIGH, NORTH CAROLINA 27609
 (919) 876-6888 NCBES #F-0326

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-13
1			3			TOTAL SHEETS
2			4			27

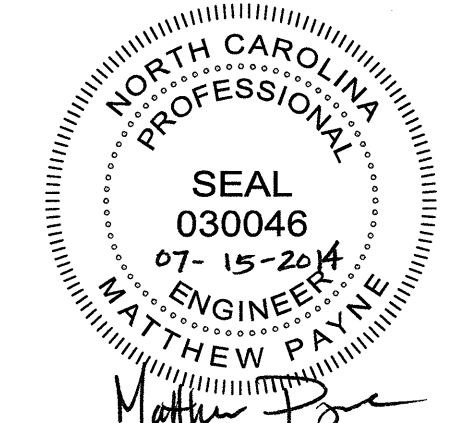
0353DEL-P15



BOLTED FIELD SPLICE DETAILS

PROJECT NO. P-5204
GUILFORD COUNTY
 STATION: 24+59.04 -L-
 MILE MARKER #8
 BRIDGE NO. 1170

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STRUCTURAL STEEL
 DETAILS



DRAWN BY : C. BLAKES DATE : 3/14
 CHECKED BY : M. PAYNE DATE : 3/14

ATKINS 1616 E. MILLBROOK ROAD, SUITE #310
 RALEIGH, NORTH CAROLINA 27609
 (919) 876-6888 NCBEES #F-0326

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			27

0353DEL_P15

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

SPAN A																					
GIRDER 1																					
TWENTIETH POINTS	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	0.033	0.067	0.096	0.126	0.149	0.172	0.186	0.201	0.206	0.211	0.206	0.201	0.186	0.172	0.149	0.126	0.096	0.067	0.033	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.067	0.134	0.194	0.253	0.300	0.346	0.376	0.406	0.416	0.426	0.416	0.406	0.376	0.346	0.300	0.253	0.194	0.134	0.067	0.000
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.000	0.009	0.018	0.026	0.034	0.041	0.047	0.051	0.055	0.056	0.058	0.056	0.055	0.051	0.047	0.041	0.034	0.026	0.018	0.009	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	0.110	0.219	0.316	0.413	0.489	0.565	0.613	0.661	0.678	0.694	0.678	0.661	0.613	0.565	0.489	0.413	0.316	0.219	0.110	0.000
VERTICAL CURVE ORDINATE	0.000	0.049	0.093	0.131	0.165	0.193	0.213	0.235	0.248	0.255	0.258	0.255	0.248	0.235	0.217	0.194	0.165	0.132	0.093	0.049	0.000
ORDINATE DUE TO SUPERELEVATION	0.946	0.974	0.999	1.022	1.042	1.060	1.079	1.089	1.100	1.108	1.114	1.118	1.119	1.118	1.114	1.108	1.100	1.089	1.076	1.061	1.043
REQUIRED CAMBER	0	1 5/16"	2 5/8"	3 13/16"	4 15/16"	5 7/8"	6 3/4"	7 3/8"	7 15/16"	8 1/8"	8 5/16"	8 1/8"	7 15/16"	7 3/8"	6 3/4"	5 7/8"	4 15/16"	3 13/16"	2 5/8"	1 5/16"	0
GIRDER 2																					
TWENTIETH POINTS	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	0.034	0.069	0.099	0.130	0.153	0.177	0.192	0.207	0.212	0.218	0.212	0.207	0.192	0.177	0.153	0.130	0.099	0.069	0.034	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.081	0.163	0.234	0.304	0.362	0.418	0.453	0.488	0.500	0.512	0.500	0.488	0.453	0.418	0.362	0.304	0.234	0.163	0.081	0.000
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.000	0.009	0.017	0.025	0.033	0.039	0.045	0.049	0.052	0.054	0.055	0.054	0.052	0.049	0.045	0.039	0.033	0.025	0.017	0.009	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	0.124	0.249	0.359	0.469	0.554	0.640	0.694	0.748	0.766	0.784	0.766	0.748	0.694	0.640	0.554	0.469	0.359	0.249	0.124	0.000
VERTICAL CURVE ORDINATE	0.000	0.048	0.091	0.129	0.162	0.190	0.213	0.231	0.244	0.252	0.254	0.252	0.244	0.231	0.213	0.191	0.163	0.130	0.091	0.018	0.000
ORDINATE DUE TO SUPERELEVATION	0.466	0.491	0.513	0.533	0.551	0.567	0.580	0.590	0.599	0.605	0.608	0.609	0.608	0.604	0.598	0.590	0.579	0.566	0.550	0.532	0.512
REQUIRED CAMBER	0	1 1/2"	3"	4 5/16"	5 5/8"	6 5/8"	7 11/16"	8 5/16"	9"	9 3/16"	9 1/16"	9 3/16"	9"	8 5/16"	7 11/16"	6 5/8"	5 5/8"	4 5/16"	3"	1 1/2"	0
GIRDER 3																					
TWENTIETH POINTS	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	0.035	0.070	0.100	0.131	0.155	0.179	0.195	0.210	0.215	0.220	0.215	0.210	0.195	0.179	0.155	0.131	0.100	0.070	0.035	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.086	0.172	0.248	0.324	0.383	0.442	0.480	0.518	0.530	0.543	0.530	0.518	0.480	0.442	0.383	0.324	0.248	0.172	0.086	0.000
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.000	0.009	0.017	0.025	0.032	0.038	0.044	0.048	0.052	0.053	0.054	0.053	0.052	0.048	0.044	0.038	0.032	0.025	0.017	0.009	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	0.129	0.258	0.373	0.487	0.577	0.665	0.722	0.780	0.798	0.817	0.798	0.780	0.722	0.665	0.577	0.487	0.373	0.258	0.129	0.000
VERTICAL CURVE ORDINATE	0.000	0.047	0.090	0.127	0.160	0.187	0.210	0.228	0.240	0.248	0.250	0.248	0.240	0.228	0.210	0.187	0.160	0.127	0.090	0.047	0.000
ORDINATE DUE TO SUPERELEVATION	-0.018	0.005	0.025	0.042	0.057	0.070	0.081	0.089	0.095	0.098	0.099	0.098	0.094	0.089	0.081	0.069	0.056	0.040	0.022	0.002	-0.021
REQUIRED CAMBER	0	1 9/16"	3 1/8"	4 1/2"	5 7/8"	7"	8"	8 11/16"	9 3/8"	9 9/16"	9 13/16"	9 9/16"	9 3/8"	8 11/16"	8"	7"	5 7/8"	4 1/2"	3 1/8"	1 9/16"	0
GIRDER 4																					
TWENTIETH POINTS	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	0.034	0.068	0.098	0.128	0.152	0.175	0.190	0.205	0.211	0.216	0.211	0.205	0.190	0.175	0.152	0.128	0.098	0.068	0.034	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.079	0.159	0.229	0.300	0.354	0.409	0.444	0.479	0.492	0.504	0.492	0.479	0.444	0.409	0.354	0.300	0.229	0.159	0.079	0.000
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.000	0.009	0.017	0.025	0.033	0.039	0.045	0.049	0.052	0.054	0.055	0.054	0.052	0.049	0.045	0.039	0.033	0.025	0.017	0.009	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	0.122	0.244	0.352	0.461	0.545	0.630	0.683	0.737	0.756	0.775	0.756	0.737	0.683	0.630	0.545	0.461	0.352	0.244	0.122	0.000
VERTICAL CURVE ORDINATE	0.000	0.047	0.088	0.125	0.157	0.185	0.207	0.224	0.236	0.244	0.247	0.244	0.236	0.224	0.207	0.184	0.157	0.125	0.088	0.047	0.000
ORDINATE DUE TO SUPERELEVATION	-0.504	-0.484	-0.467	-0.452	-0.439	-0.429	-0.421	-0.415	-0.412	-0.411	-0.412	-0.416	-0.422	-0.431	-0.441	-0.454	-0.470	-0.488	-0.508	-0.531	-0.556
REQUIRED CAMBER	0	1 7/16"	2 15/16"	4 1/4"	5 1/2"	6 3/16"	7 9/16"	8 3/16"	8 7/8"	9 1/16"	9 5/16"	9 1/16"	8 7/8"	8 3/16"	7 9/16"	6 9/16"	5 1/2"	4 1/4"	2 15/16"	1 7/16"	0
GIRDER 5																					
TWENTIETH POINTS	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	0.034	0.067	0.096	0.125	0.148	0.171	0.186	0.201	0.206	0.211	0.206	0.201	0.186	0.171	0.148	0.125	0.096	0.067	0.034	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.068	0.137	0.194	0.254	0.301	0.348	0.378	0.408	0.418	0.429	0.418	0.408	0.378	0.348	0.301	0.254	0.194	0.137	0.068	0.000
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.000	0.009	0.018	0.026	0.034	0.040	0.047	0.051	0.055	0.056	0.058	0.056	0.055	0.051	0.047	0.040	0.034	0.026	0.018	0.009	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	0.111	0.222	0.316	0.413	0.490	0.566	0.615	0.663	0.680	0.697	0.680	0.663	0.615	0.566	0.490	0.413	0.316	0.222	0.111	0.000
VERTICAL CURVE ORDINATE	0.000	0.046	0.087	0.123	0.155	0.182	0.203	0.220	0.232	0.240	0.242	0.240	0.232	0.220	0.203	0.181	0.155	0.123	0.087	0.046	0.000
ORDINATE DUE TO SUPERELEVATION	-0.993	-0.976	-0.961	-0.949	-0.938	-0.930	-0.925	-0.922	-0.921	-0.922	-0.926	-0.932	-0.941	-0.952	-0.965	-0.980	-0.998	-1.018	-1.041	-1.066	-1.093
REQUIRED CAMBER	0	1 5/16"	2 5/8"	3 13/16"	4 15/16"	5 7/8"	6 3/4"	7 3/8"	7 15/16"	8 1/8"	8 5/16"	8 1/8"	7 15/16"	7 3/8"	6 3/4"	5 7/8"	4 15/16"	3 13/16"	2 5/8"	1 5/16"	0

* INCLUDES SLAB, BUILDUPS, AND SIP FORMS.

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

DRAWN BY : C. BLAKES DATE : 3/14
 CHECKED BY : M. PAYNE DATE : 3/14

ATKINS 1616 E. MILLBROOK ROAD, SUITE #310
 RALEIGH, NORTH CAROLINA 27609
 (919) 876-6888 NCBES #F-0326



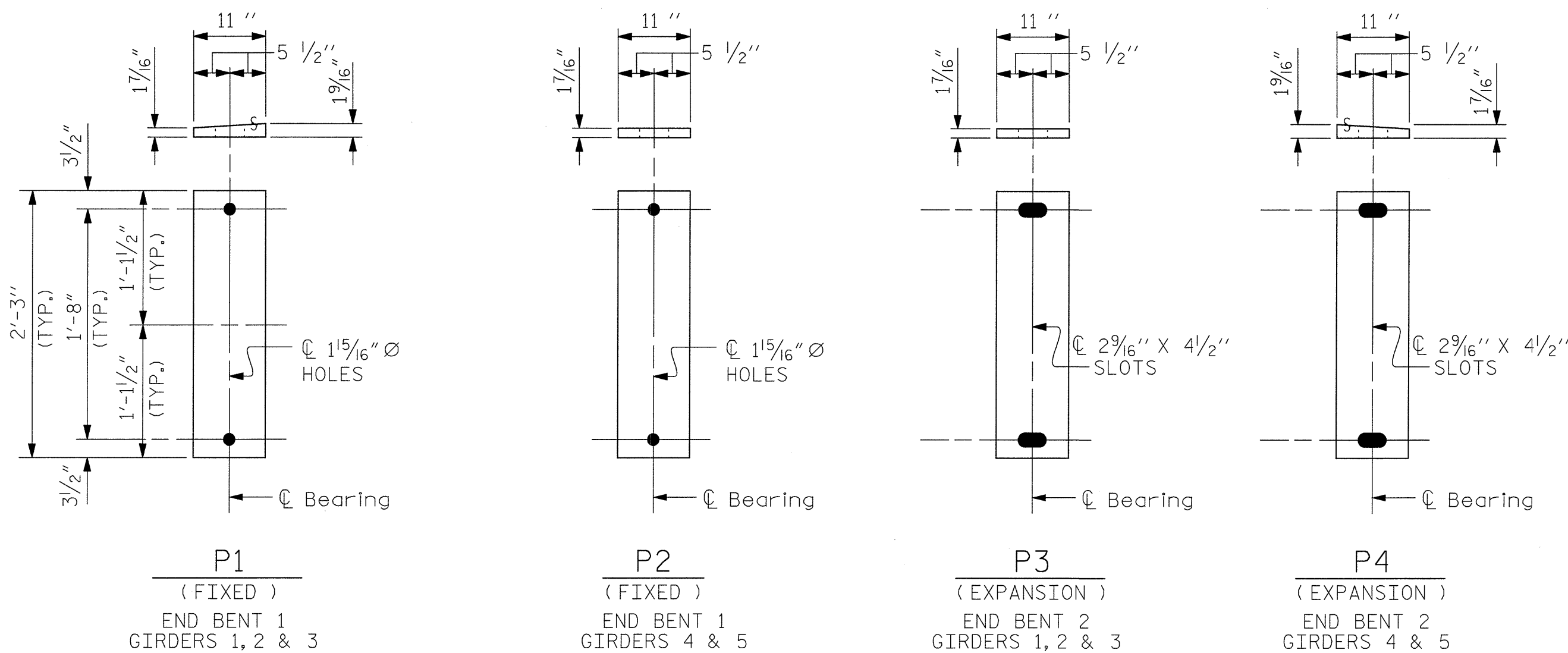
PROJECT NO. P-5204
 GUILFORD COUNTY
 STATION: 24+59.04 -L-
 MILE MARKER #8
 BRIDGE NO. 1170

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
STRUCTURAL STEEL DEFLECTIONS
 FOR BRIDGE ON
 MCLEANSVILLE RD. OVER
 NS/NCR RAILROAD FROM
 SR 2826 TO NORTH OF SR 2746

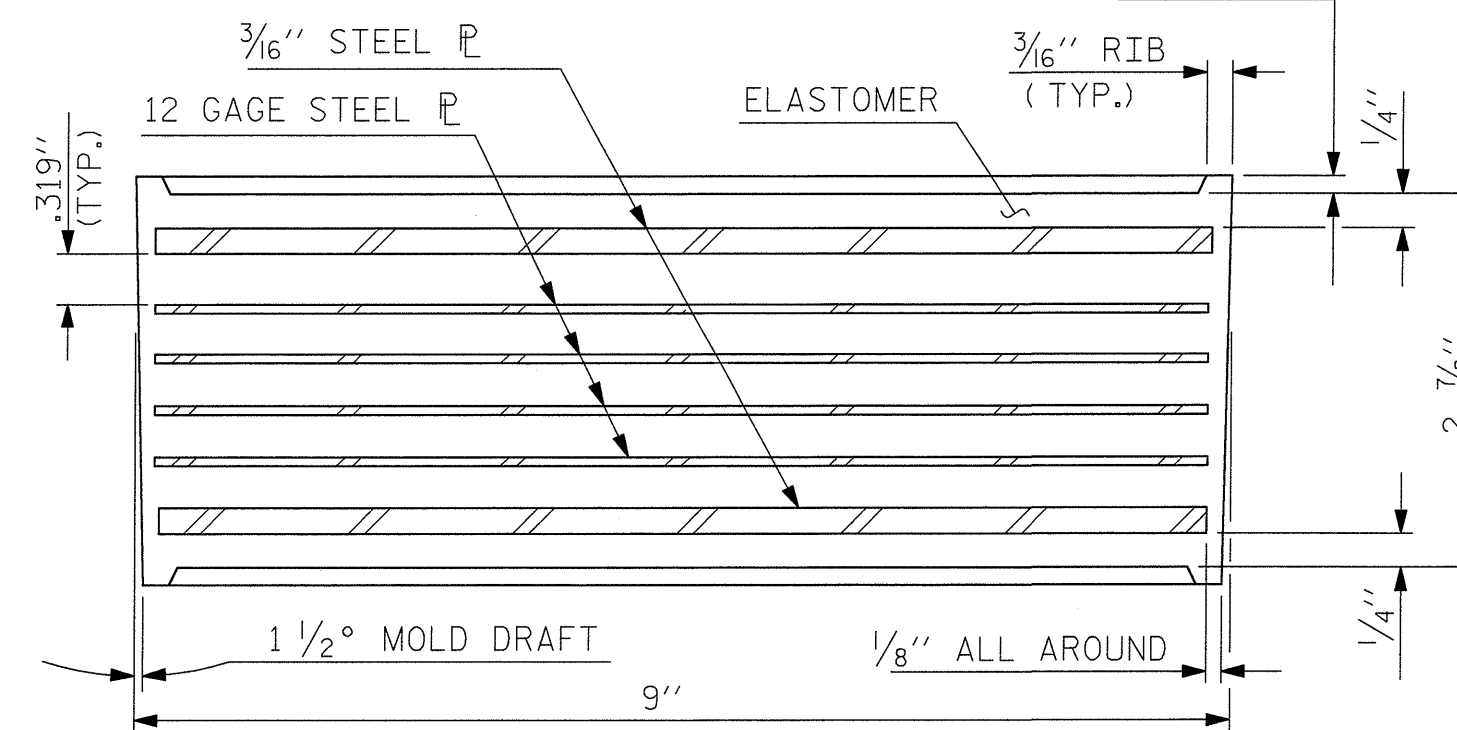
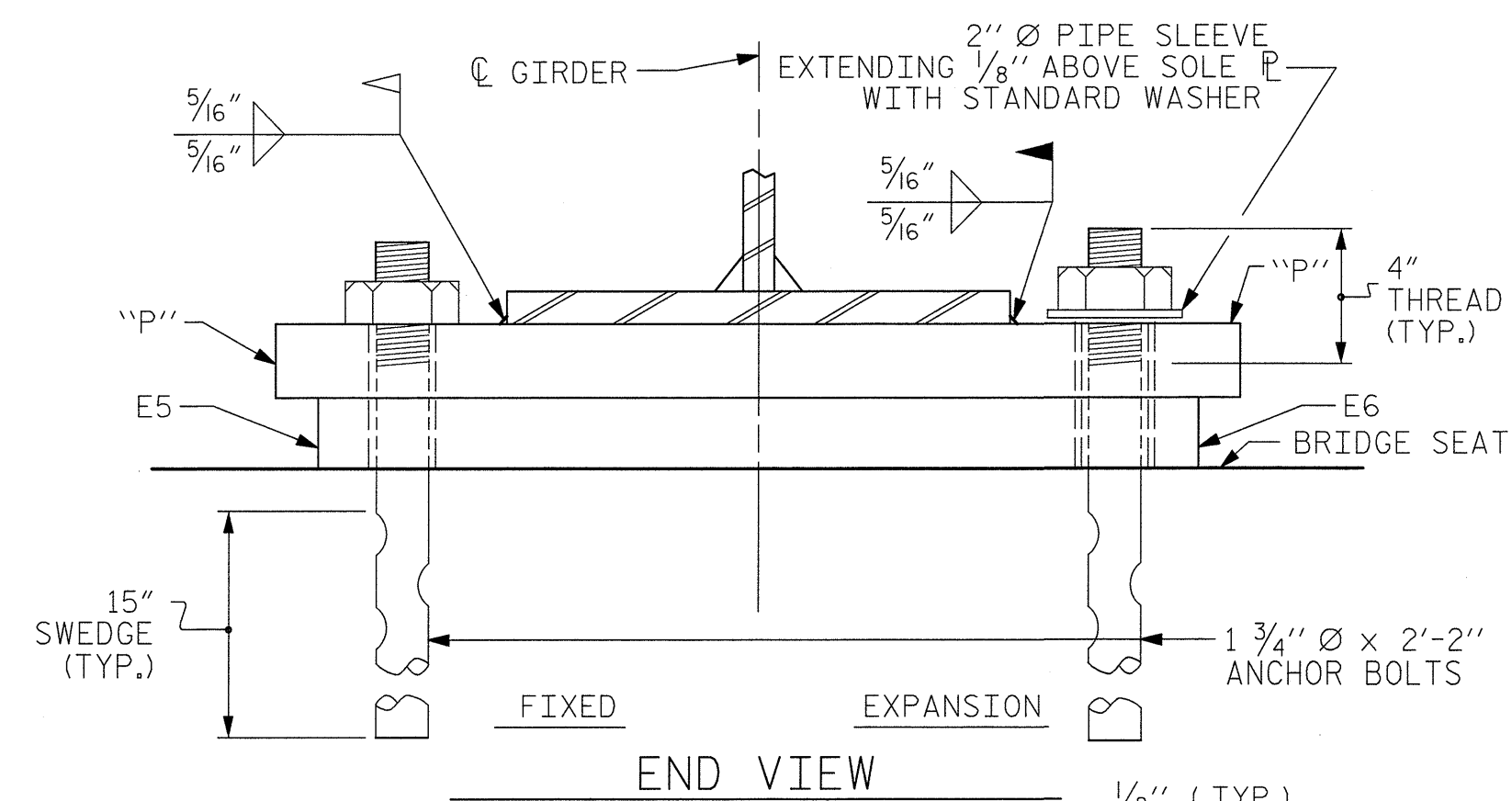
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			27

0353DEL_P15

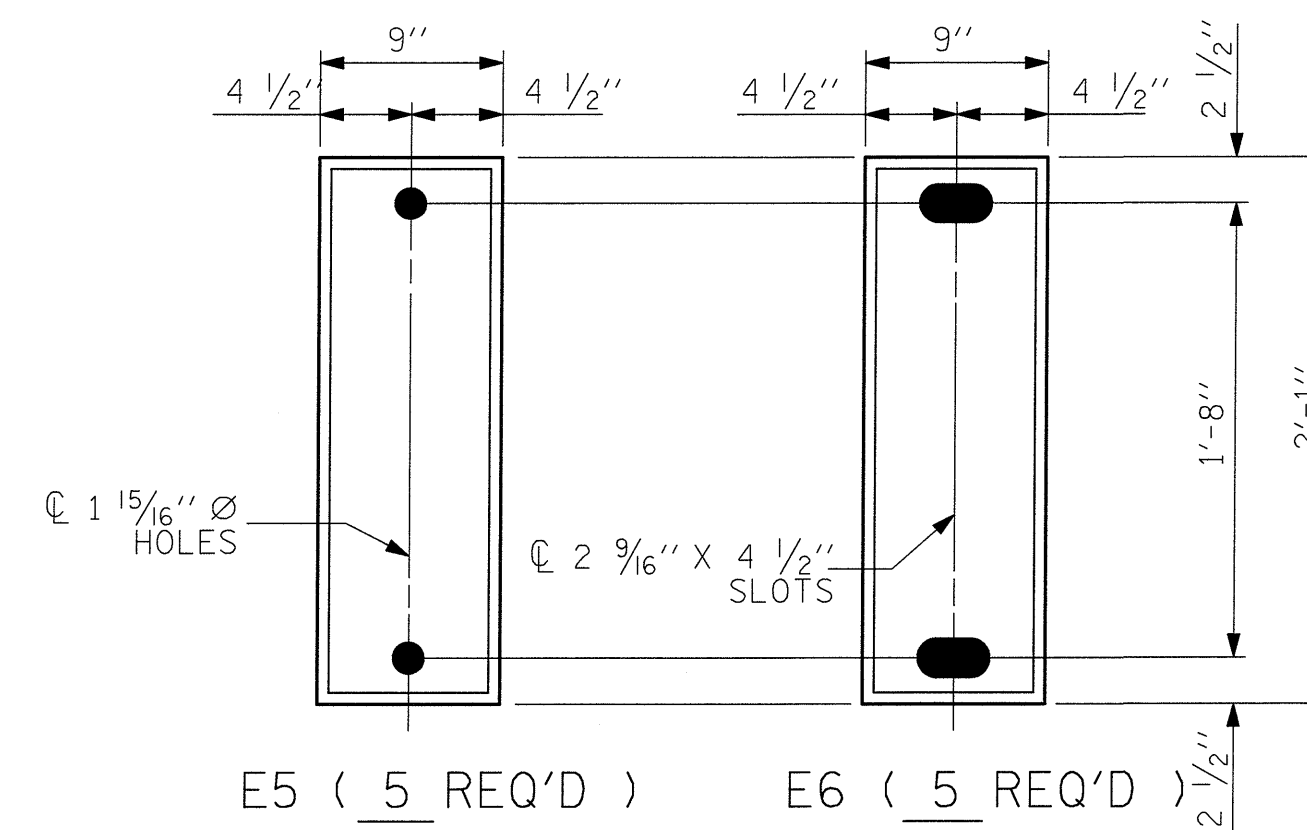
DIRECTION OF INCREASING STATIONS



SOLE PLATE DETAILS ("P")



TYPICAL SECTION OF ELASTOMERIC BEARINGS



PLAN VIEW OF ELASTOMERIC BEARING

TYPE III

NOTES

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF 1/2 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

THE 2" Ø PIPE SLEEVE SHALL BE CUT FROM SCHEDULE 40 PVC PLASTIC PIPE. THE PVC PLASTIC PIPE SHALL MEET THE REQUIREMENTS OF ASTM D1785.

THE PAYMENT FOR THE PIPE SLEEVES SHALL BE INCLUDED IN THE SEVERAL PAY ITEMS.

FOR AASHTO M270 GRADE 50W STRUCTURAL STEEL, SOLE PLATE SHALL BE AASHTO M270 GRADE 50W AND SHALL NOT BE GALVANIZED. ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

WHEN FIELD WELDING THE SOLE PLATE TO THE GIRDER FLANGE, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE SOLE PLATE DOES NOT EXCEED 300°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FOLLOWING PROCEDURE, WHICH MAY BE REQUIRED BY THE ENGINEER, TO RESET ELASTOMERIC BEARINGS DUE TO GIRDER TRANSLATION AND END ROTATION:

1. ONCE THE DECK HAS CURED, THE GIRDERS SHALL BE JACKED AND THE ELASTOMERIC BEARING SLOTS CENTERED AS NEARLY AS PRACTICAL ABOUT THE BEARING STIFFENER. THIS OPERATION SHALL BE PERFORMED AT APPROXIMATELY 60° F.
2. AFTER CENTERING THE ELASTOMERIC BEARING SLOTS AND ANCHOR BOLTS, THE ANCHOR BOLTS SHALL BE GROUTED.

THE CONTRACTOR MAY PROPOSE ALTERNATE METHODS, PROVIDED DETAILS ARE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE III	255 k

PROJECT NO. P-5204

GUILFORD COUNTY

STATION: 24+59.04 -L-

MILE MARKER #8
BRIDGE NO. 1170

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
ELASTOMERIC BEARING
DETAILS
(STEEL SUPERSTRUCTURE)

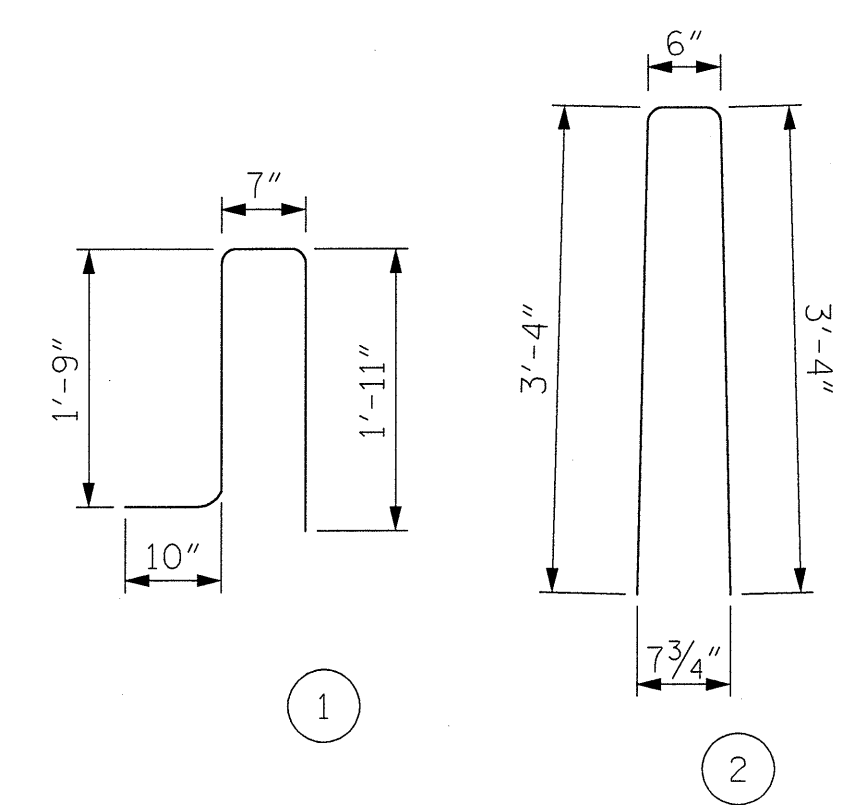


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			27

ATKINS 1616 E. MILLBROOK ROAD, SUITE #310
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBES #F-0326

DRAWN BY : C. BLAKES DATE : 3/14
CHECKED BY : M. PAYNE DATE : 3/14

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR VERTICAL CONCRETE BARRIER RAIL ONLY					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	80	#5	STR	24'-6"	2044
* B2	40	#5	STR	22'-10"	953
* S1	270	#5	1	5'-1"	1432
* S2	270	#5	2	7'-2"	2018
* S3	32	#5	STR	4'-0"	134
* S4	32	#5	STR	3'-6"	117
* EPOXY COATED REINFORCING STEEL				6698	LBS.
CLASS AA CONCRETE				39	CU. YDS.
VERTICAL CONCRETE BARRIER RAIL				293.33	LIN. FT.

NOTES

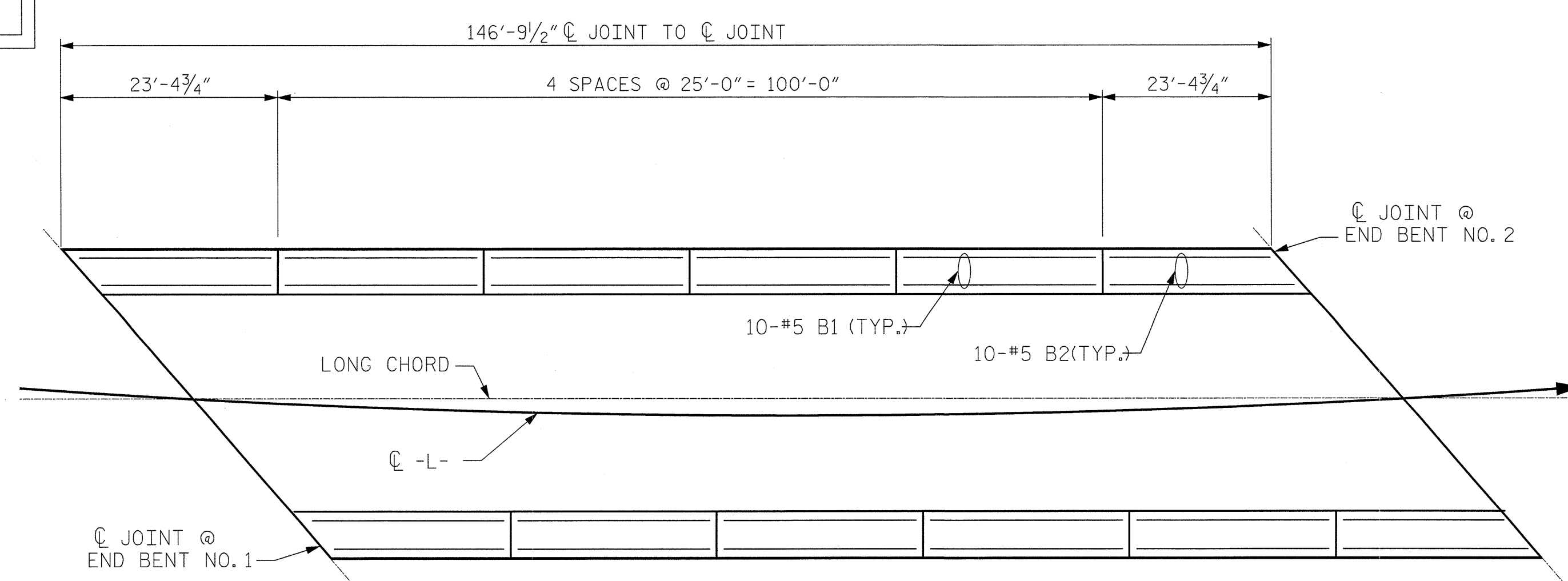
THE BARRIER RAIL IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

WHEN FOAM JOINT SEAL IS REQUIRED, THE JOINT IN THE DECK SHALL BE SAWED PRIOR TO THE CASTING OF VERTICAL CONCRETE BARRIER RAIL.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

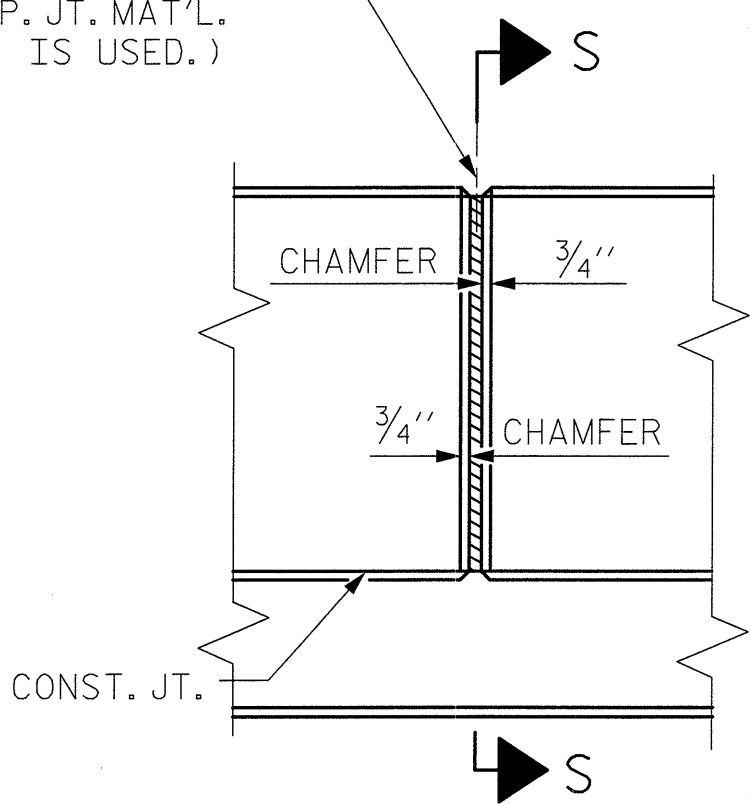
THE #5 S3 & S4 BARS SHALL BE INSTALLED, USING AN ADHESIVE ANCHORING SYSTEM, AFTER SAWING THE JOINT. THE YIELD LOAD FOR THE #5 S3 & S4 BARS IS 18.6 KIPS. FIELD TESTING FOR THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

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

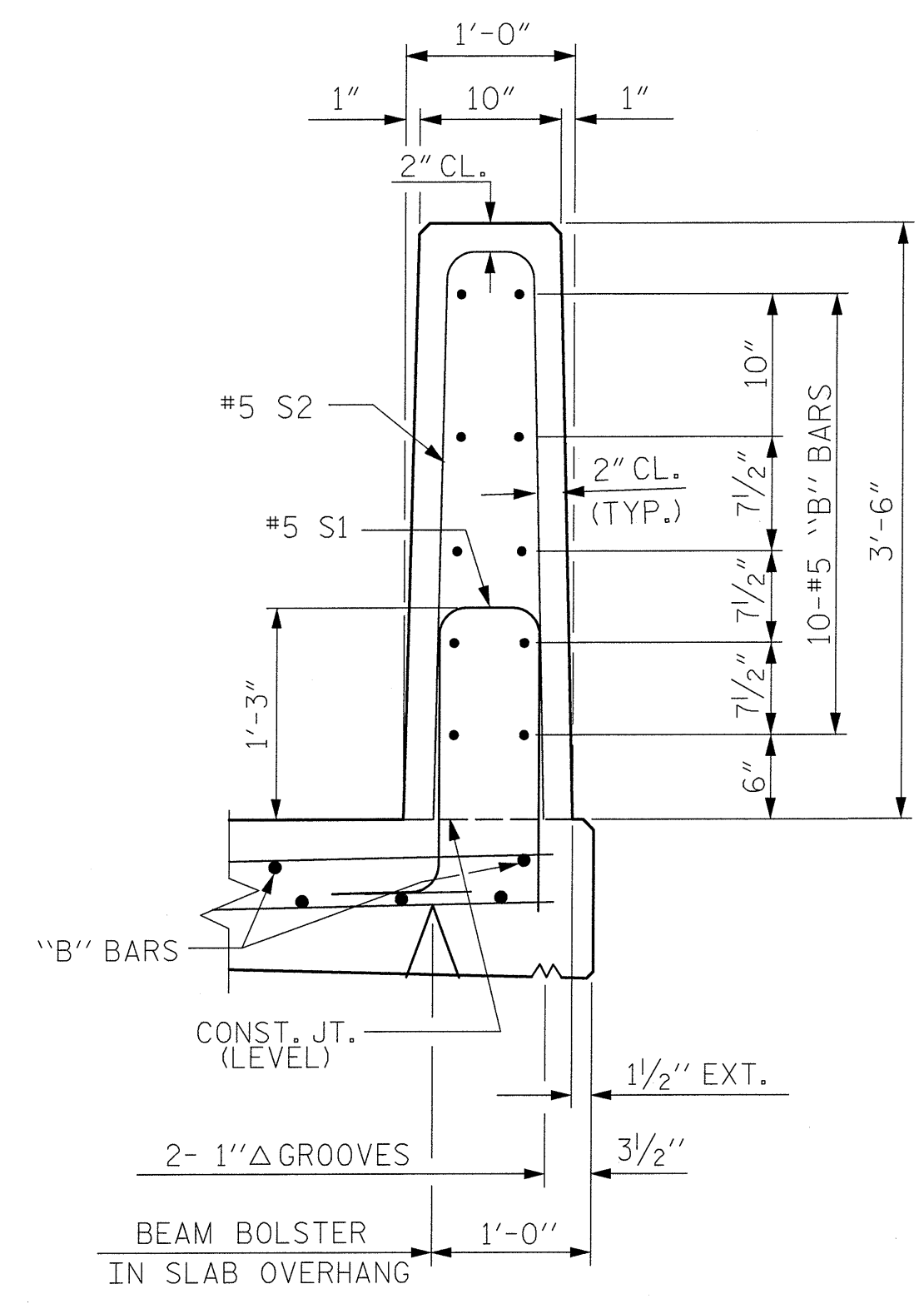


PLAN
NOT TO SCALE

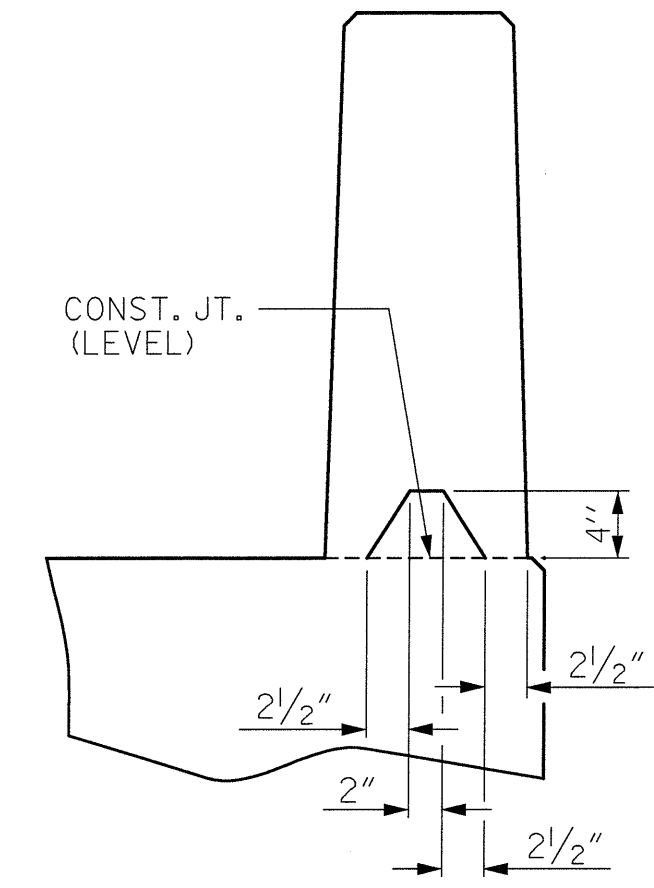
1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS.
(NOTE: OMIT EXP. JT. MAT'L. WHEN SLIP FORM IS USED.)



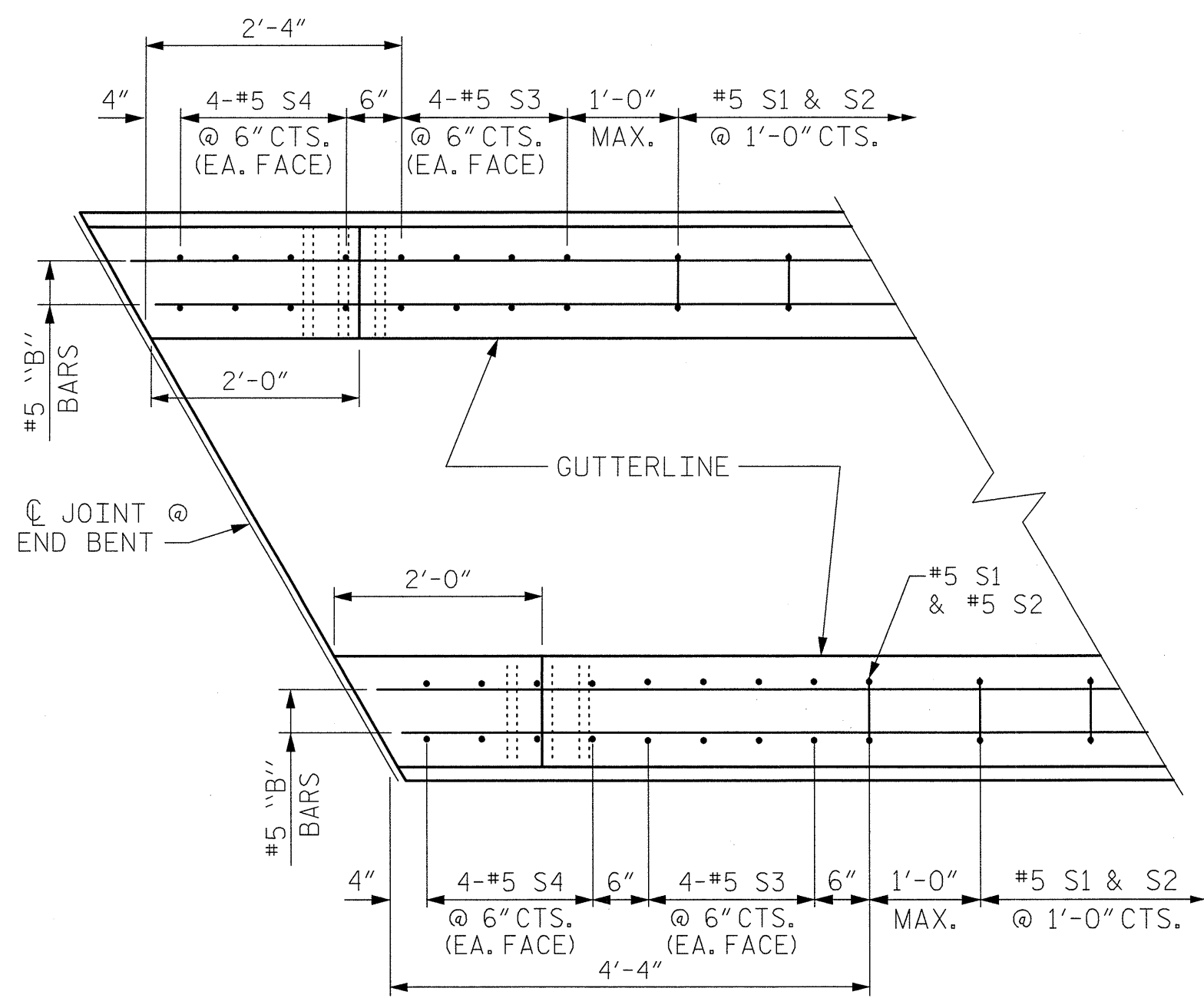
ELEVATION AT EXPANSION JOINTS
BARRIER RAIL DETAILS



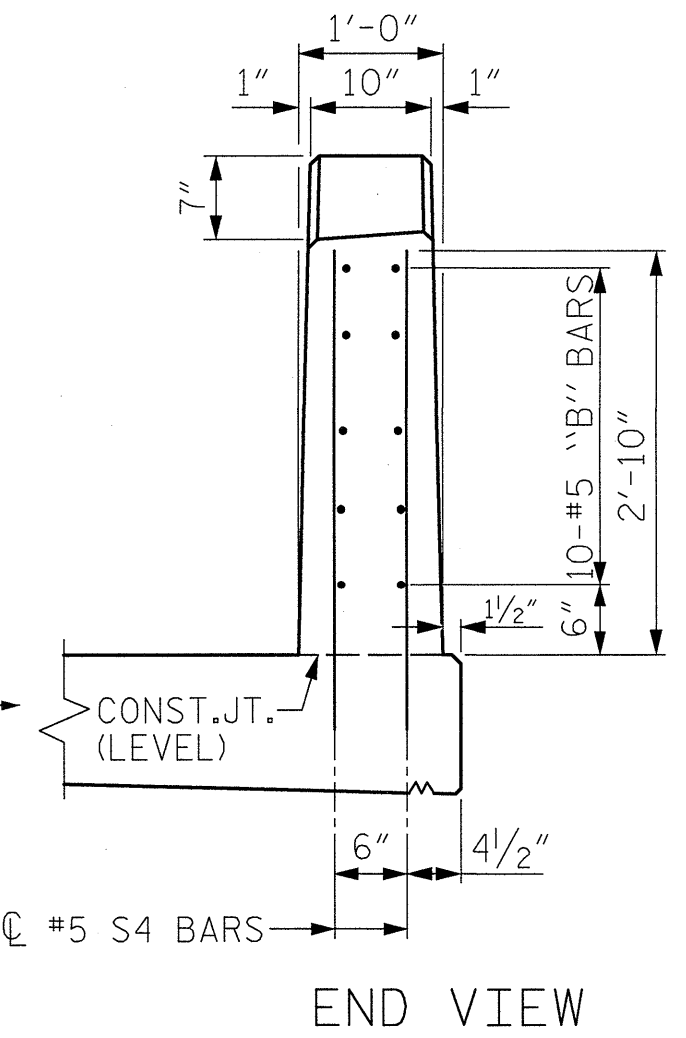
SECTION THRU RAIL



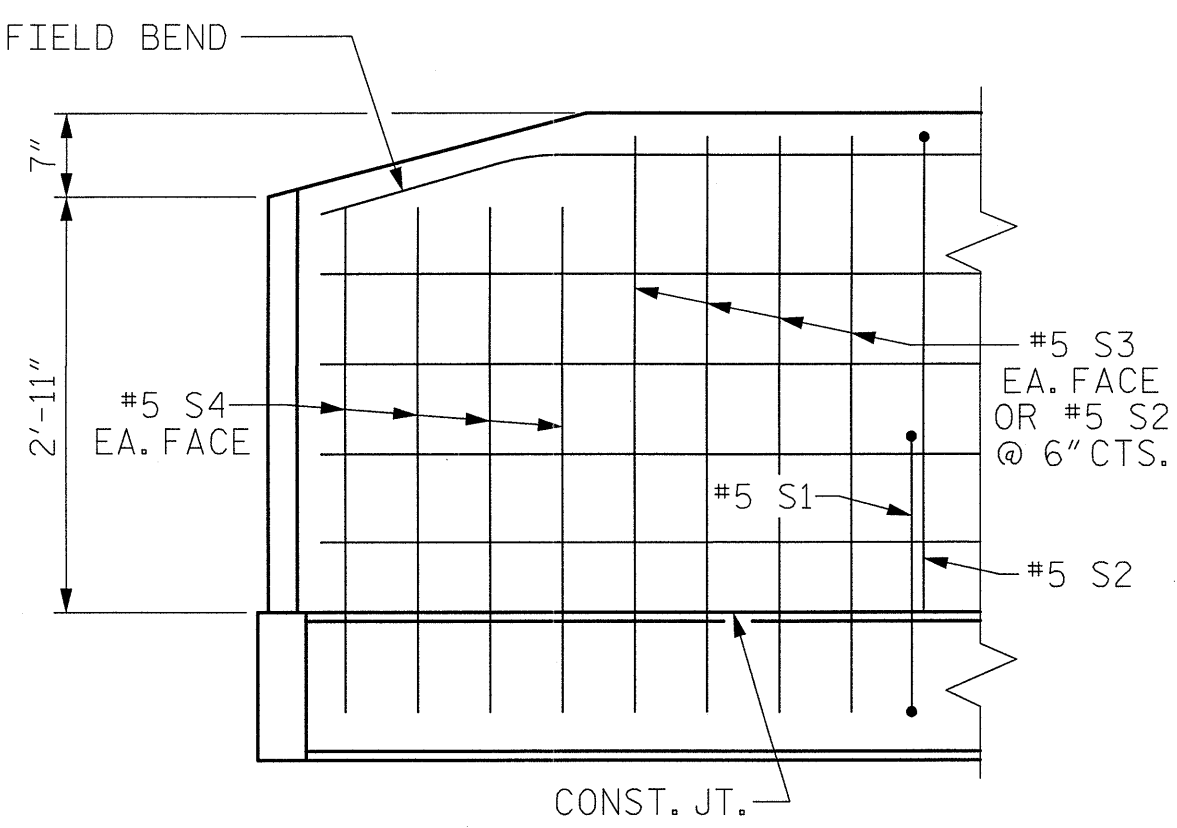
SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



PLAN AT END BENT NO. 1
END BENT NO. 2 SIMILAR



END VIEW



SIDE VIEW

DRAWN BY : C. BLAKES DATE : 3/14
CHECKED BY : M. PAYNE DATE : 3/14

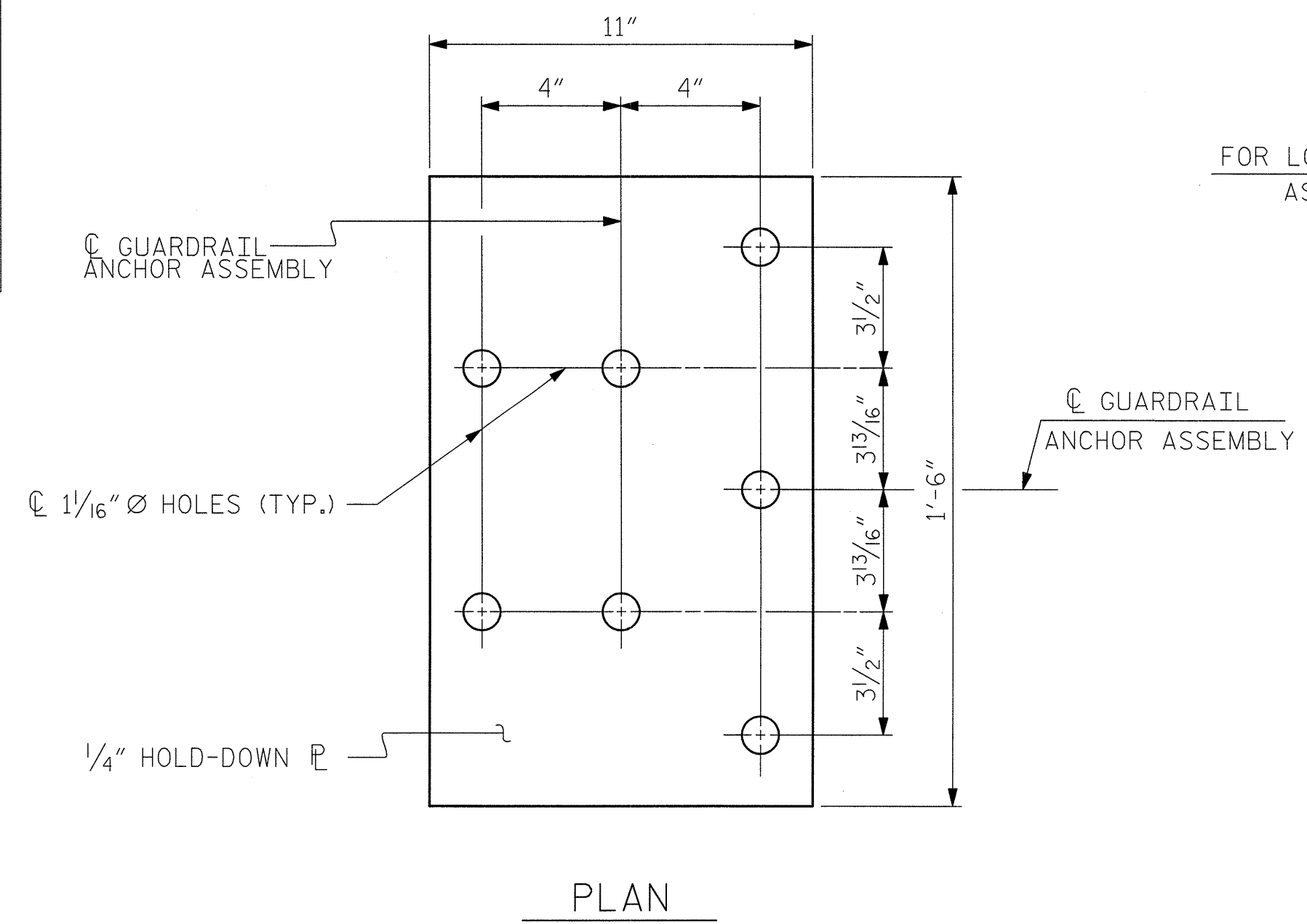
ATKINS 1616 E. MILLBROOK ROAD, SUITE #310
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBES #F-0326



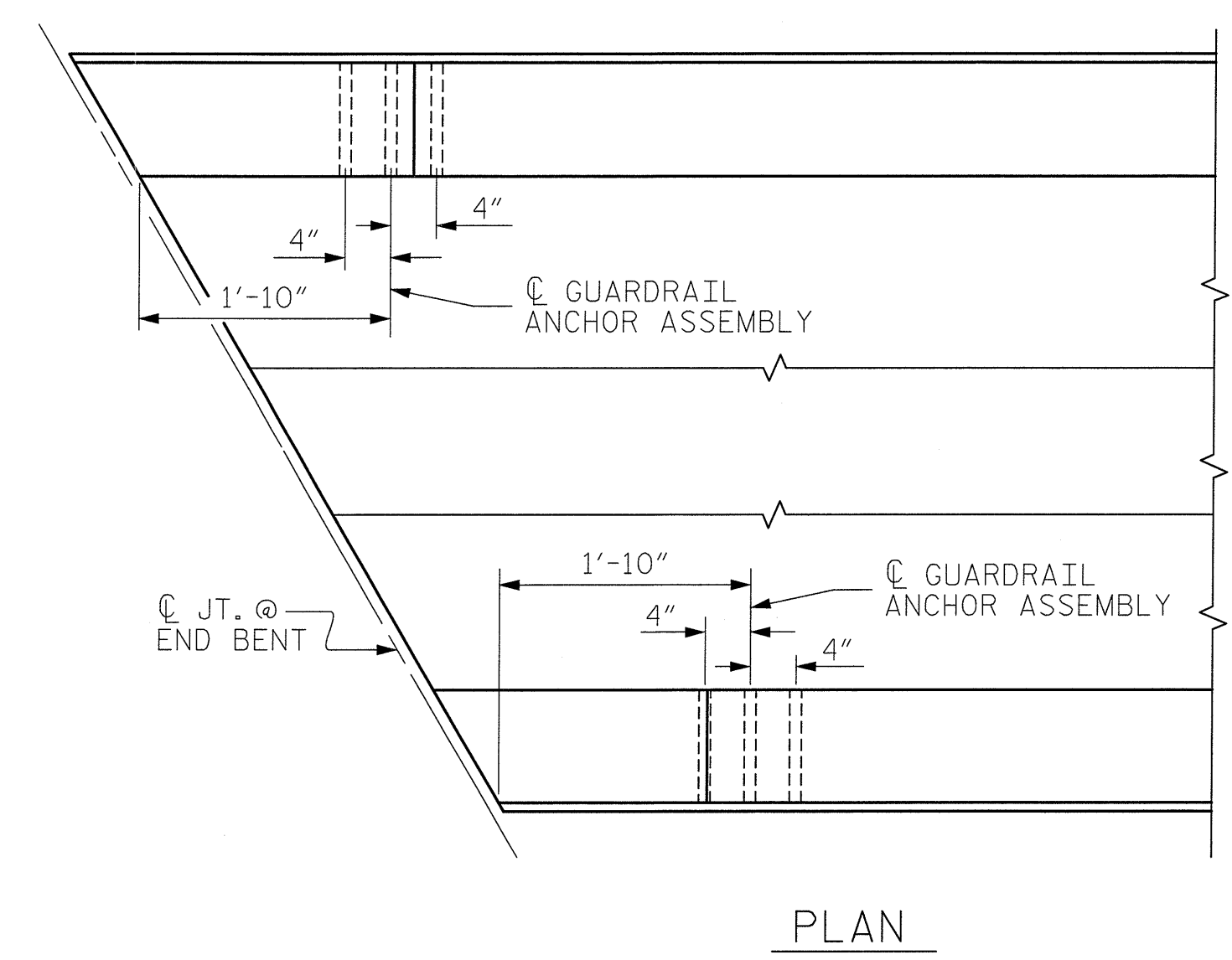
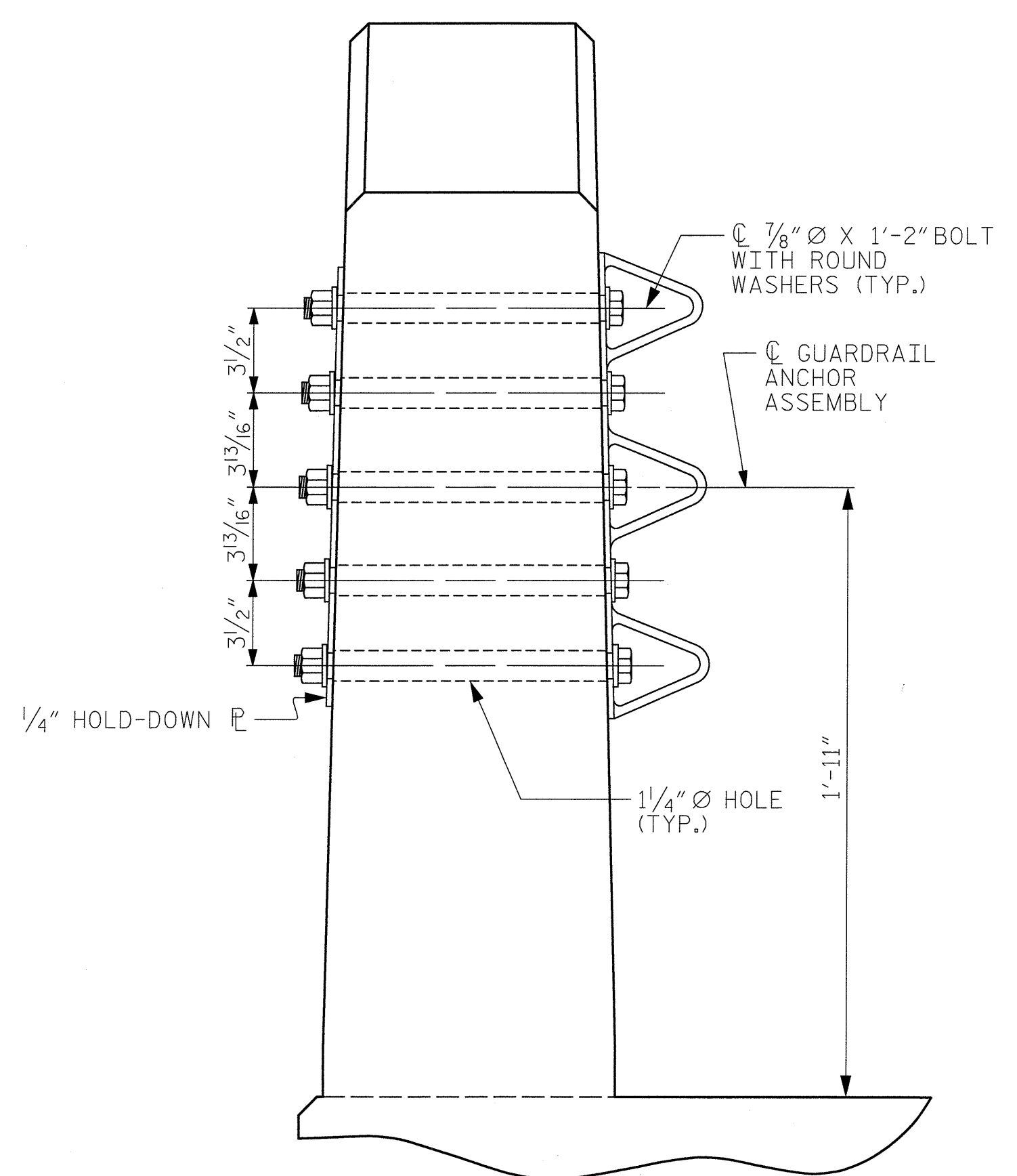
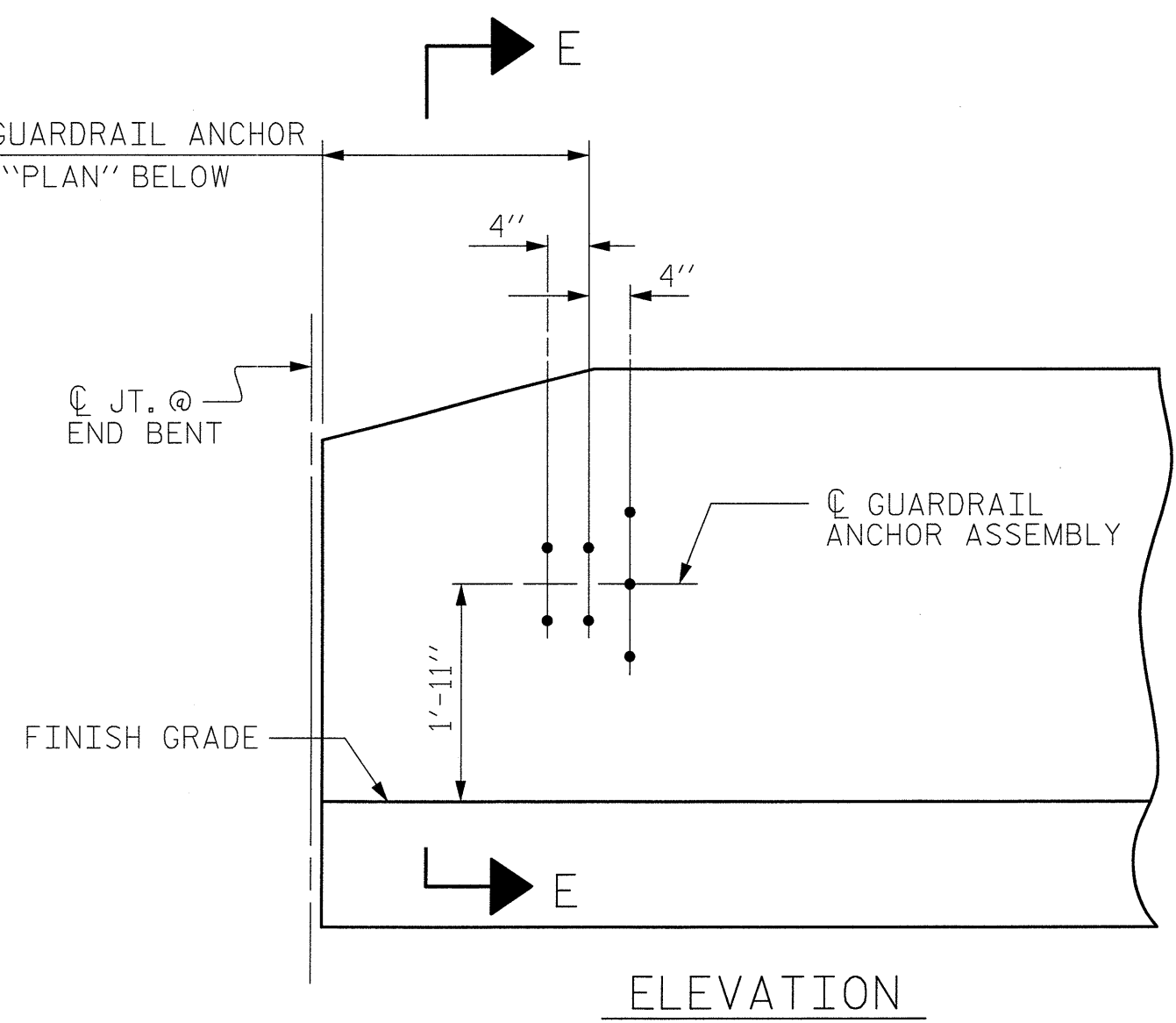
PROJECT NO. P-5204
GUILFORD COUNTY
STATION: 24+59.04 -L-
MILE MARKER #8
BRIDGE NO. 1170

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
VERTICAL CONCRETE BARRIER RAIL					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 27

0353DEL_P15

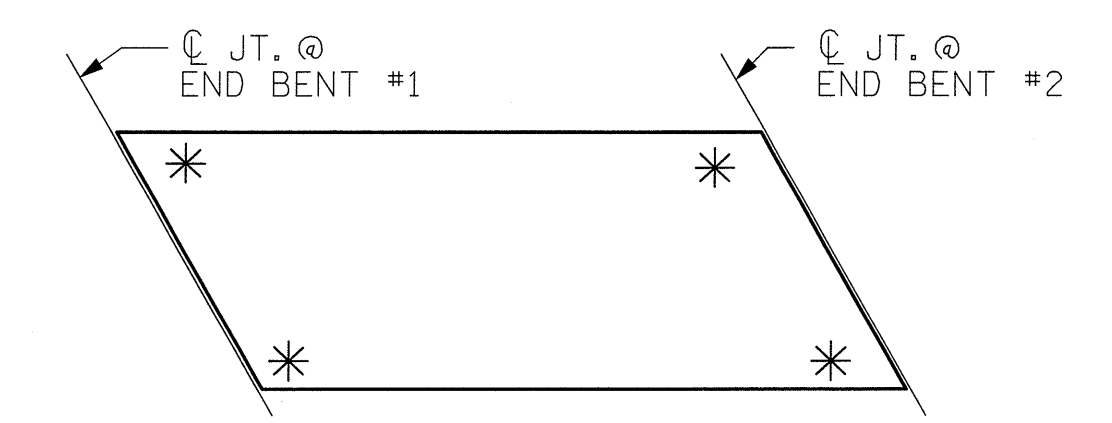


FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW



LOCATION OF ANCHORS FOR GUARDRAIL

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



* DENOTES GUARDRAIL ANCHOR ASSEMBLY

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 3/8" 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 3/8" 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 1/4" 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.

PROJECT NO. P-5204
 GUILFORD COUNTY
 STATION: 24+59.04 -L-
 MILE MARKER #8
 BRIDGE NO. 1170



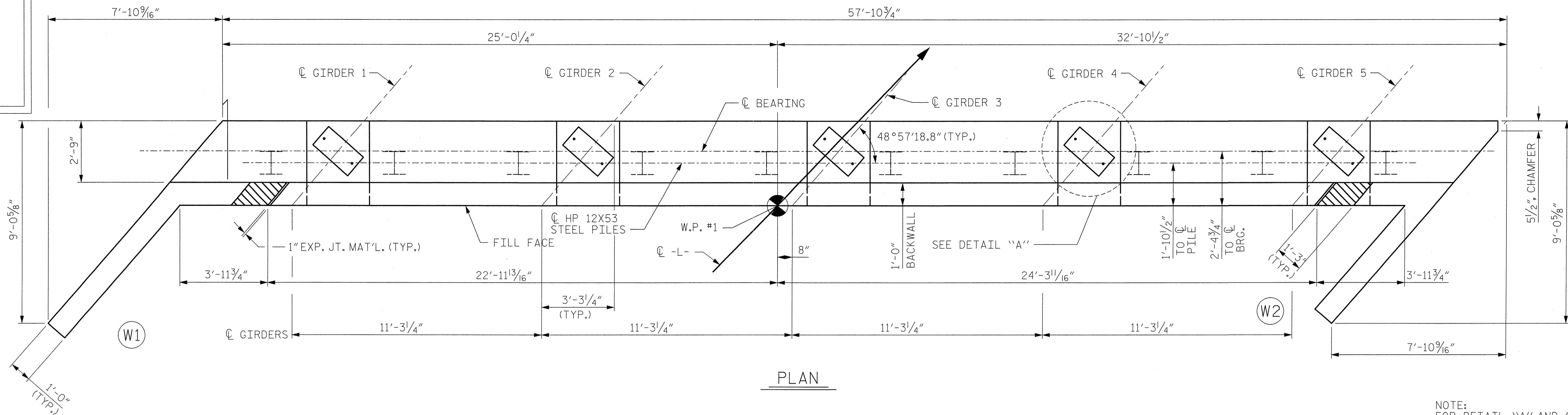
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 FOR VERTICAL CONCRETE
 BARRIER RAIL

ASSEMBLED BY : M. PAYNE	DATE : 04/14
CHECKED BY : J. WERES	DATE : 04/14
DRAWN BY : MAA 5/10	REV. 10/1/11 MAA/GM
CHECKED BY : GM 5/10	REV. 12/5/11 MAA/GM
	REV. 6/13 MAA/GM

ATKINS 1616 E. MILLBROOK ROAD, SUITE #310
 RALEIGH, NORTH CAROLINA 27609
 (919) 876-6888 NCBES #F-0326

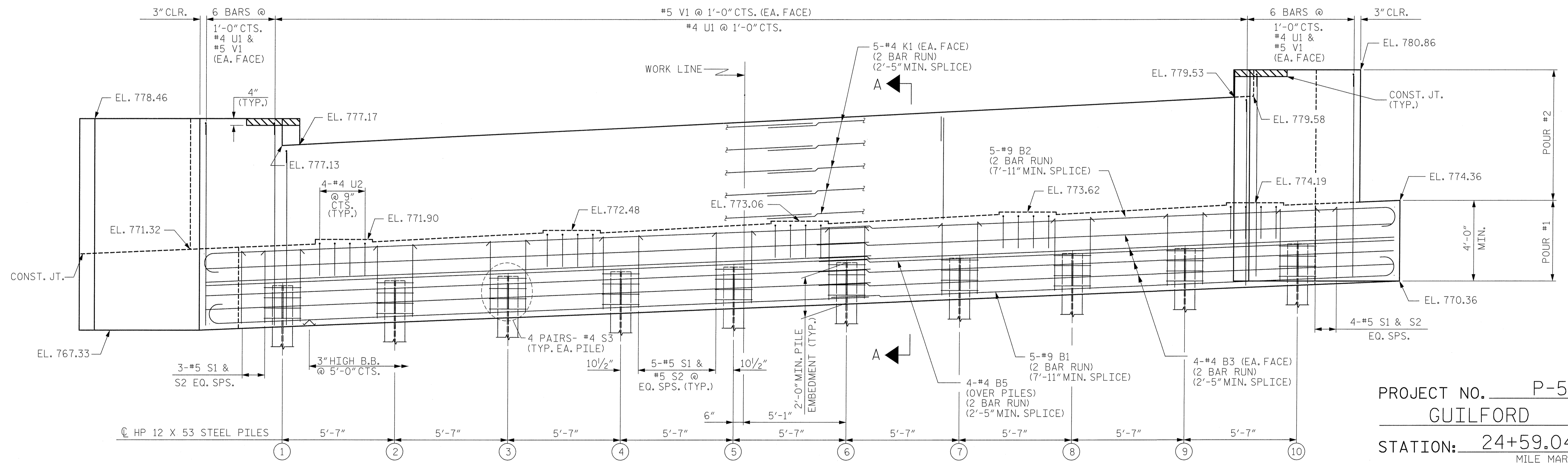
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			27

0353DEL_P15



PLAN

NOTE:
FOR DETAIL "A" AND SECTION A-A, SEE
'END BENT DETAILS' SHEET 4 OF 4.
WINGWALL DETAILS ARE TYPICAL.



ELEVATION

TOP OF PILE ELEVATIONS			
PILE NUMBER	ELEVATION	PILE NUMBER	ELEVATION
1	770.176	6	771.322
2	770.416	7	771.551
3	770.645	8	771.781
4	770.869	9	772.005
5	771.098	10	772.234

PROJECT NO. P-5204
GUILFORD COUNTY
STATION: 24+59.04 -L-
MILE MARKER #8
BRIDGE NO. 1170

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
END BENT NO. 1
FOR BRIDGE ON
MCLEANSVILLE RD. OVER
NS/NCR RAILROAD FROM
SR 2826 TO NORTH OF SR 2746

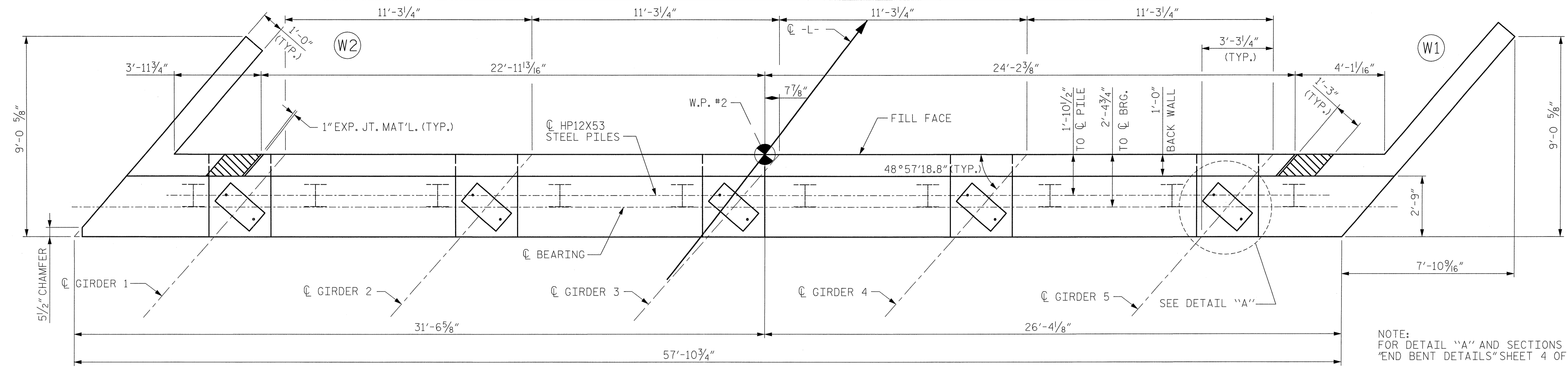


DRAWN BY : C. BLAKES DATE : 3/14
CHECKED BY : M. PAYNE DATE : 3/14

ATKINS 1616 E. MILLBROOK ROAD, SUITE #310
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBES #F-0326

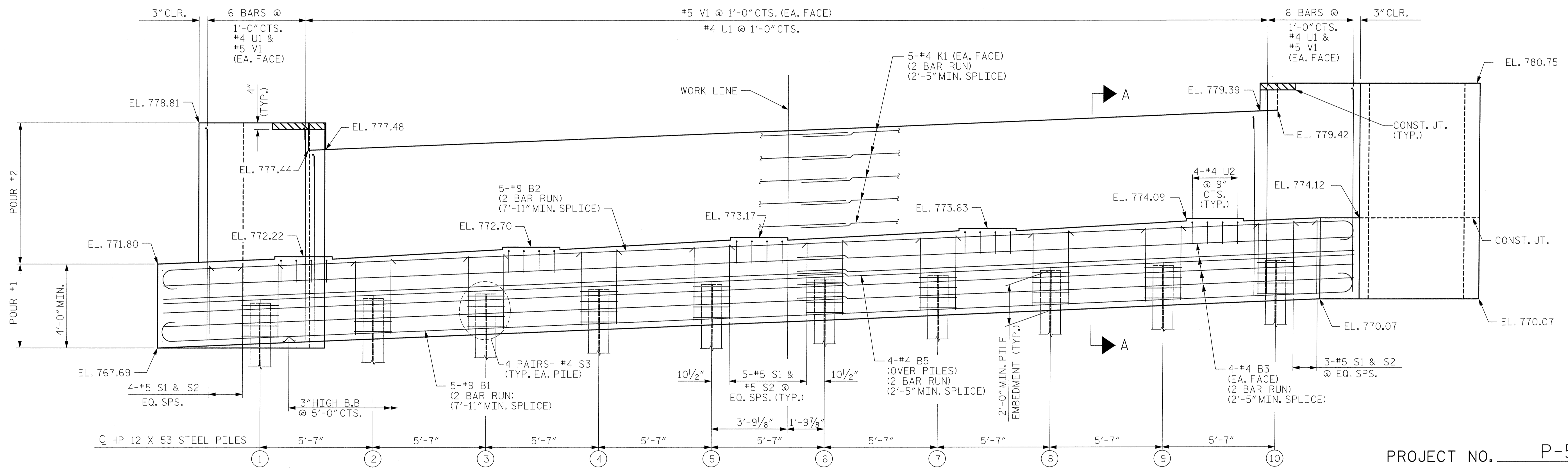
REVISIONS						SHEET NO. S-19
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 27
2			4			

0353DEL-P15



NOTE:
FOR DETAIL "A" AND SECTIONS A-A, SEE
"END BENT DETAILS" SHEET 4 OF 4.
WINGWALL DETAILS ARE TYPICAL.

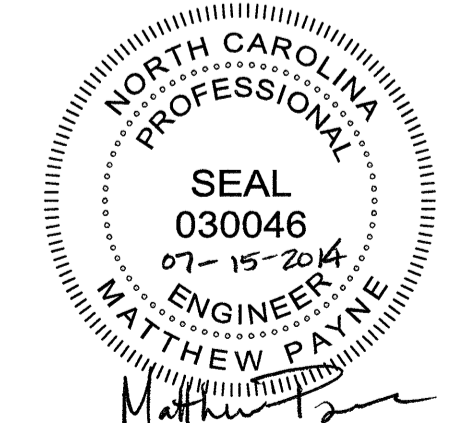
PLAN



ELEVATION

TOP OF PILE ELEVATIONS			
PILE NUMBER	ELEVATION	PILE NUMBER	ELEVATION
1	769.875	6	771.036
2	770.109	7	771.265
3	770.338	8	771.500
4	770.573	9	771.729
5	770.802	10	771.963

PROJECT NO. P-5204
GUILFORD COUNTY
STATION: 24+59.04 -L-
MILE MARKER #8
BRIDGE NO. 1170
SHEET 2 OF 4



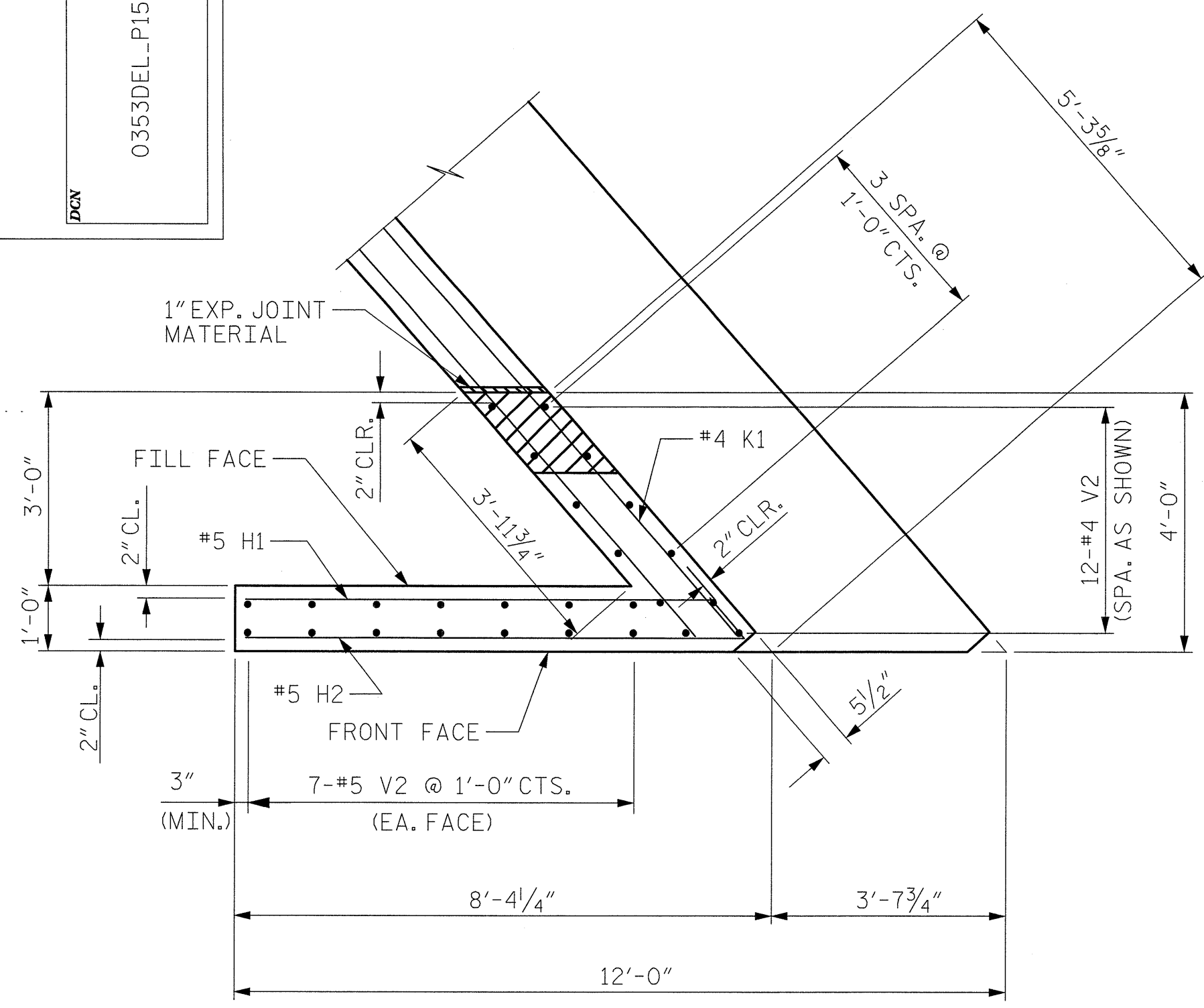
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
END BENT NO. 2
FOR BRIDGE ON
MCLEANSVILLE RD. OVER
NS/NCRR RAILROAD FROM
SR 2826 TO NORTH OF SR 2746

DRAWN BY : C. BLAKES DATE : 3/14
CHECKED BY : M. PAYNE DATE : 3/14

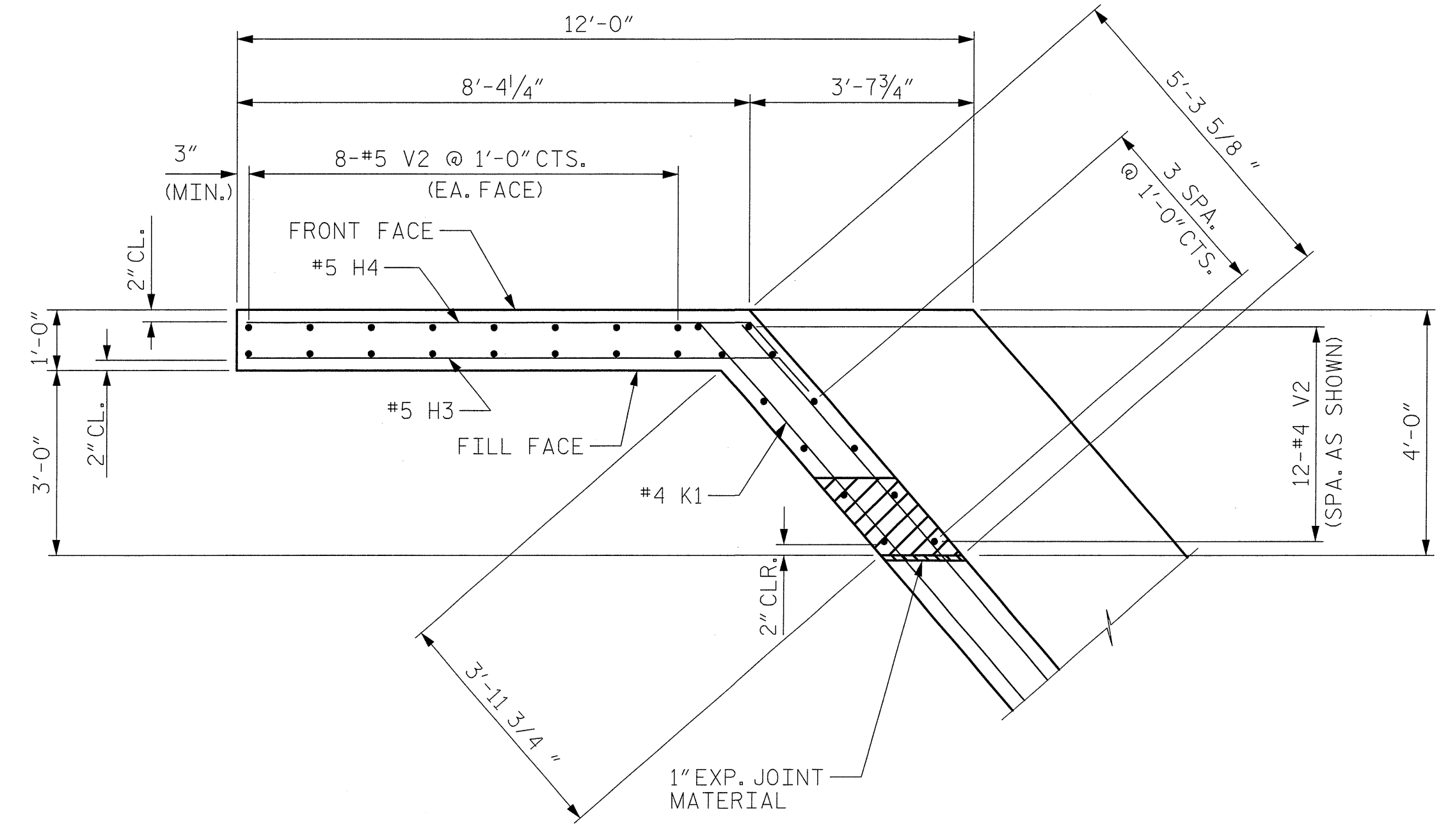
ATKINS 1616 E. MILLBROOK ROAD, SUITE #310
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBES #F-0326

REVISIONS						SHEET NO. S-20
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 27
2			4			

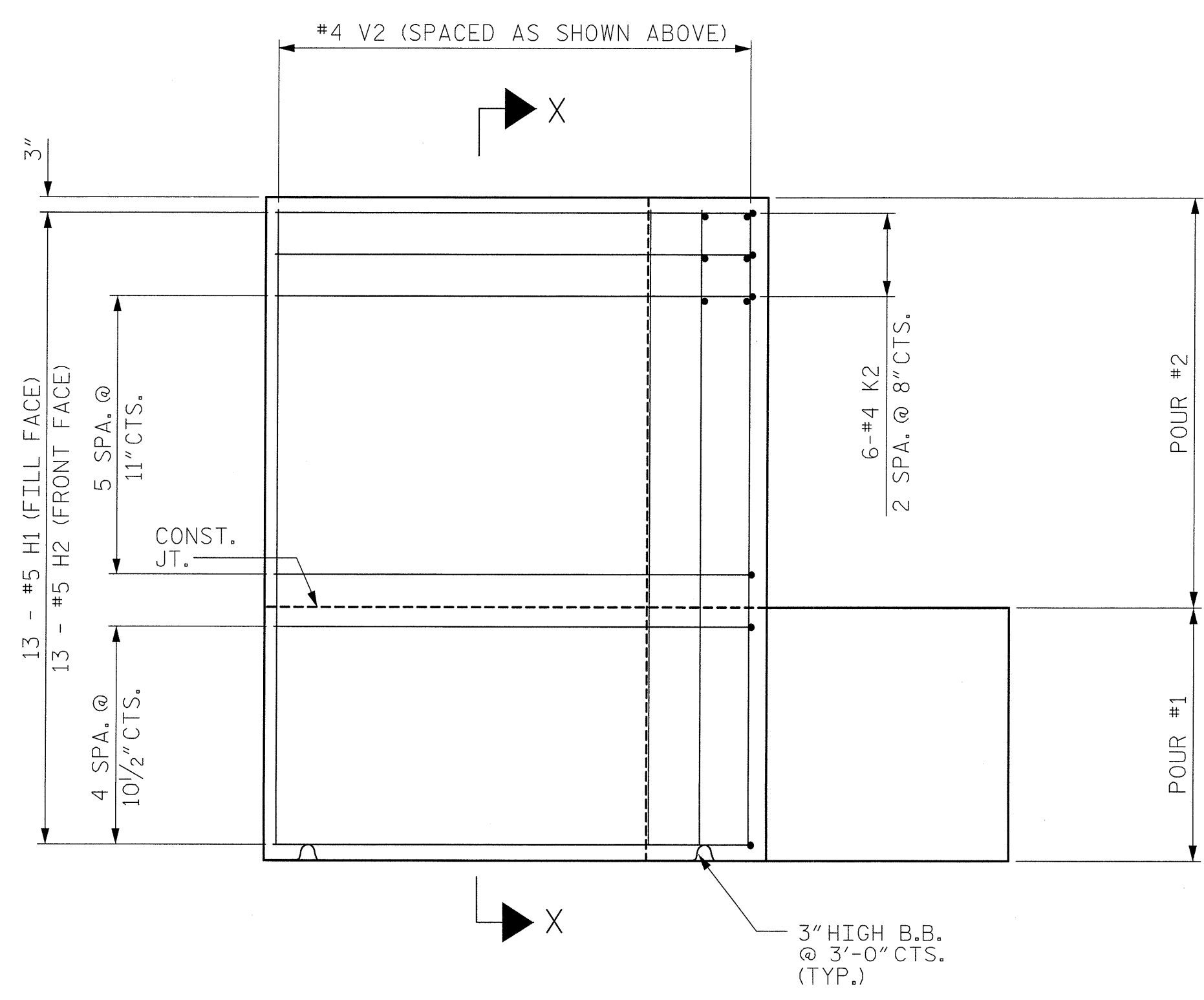
0353DEL_P15



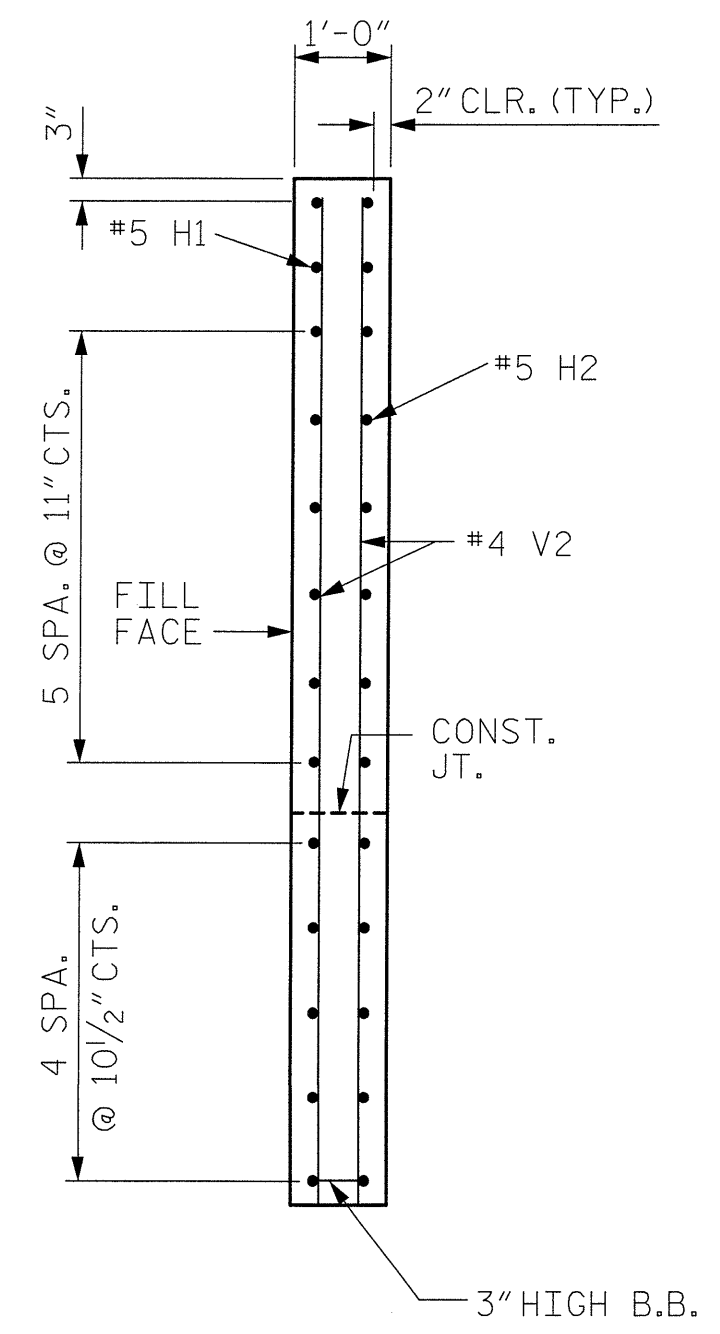
PLAN OF WING (W1)



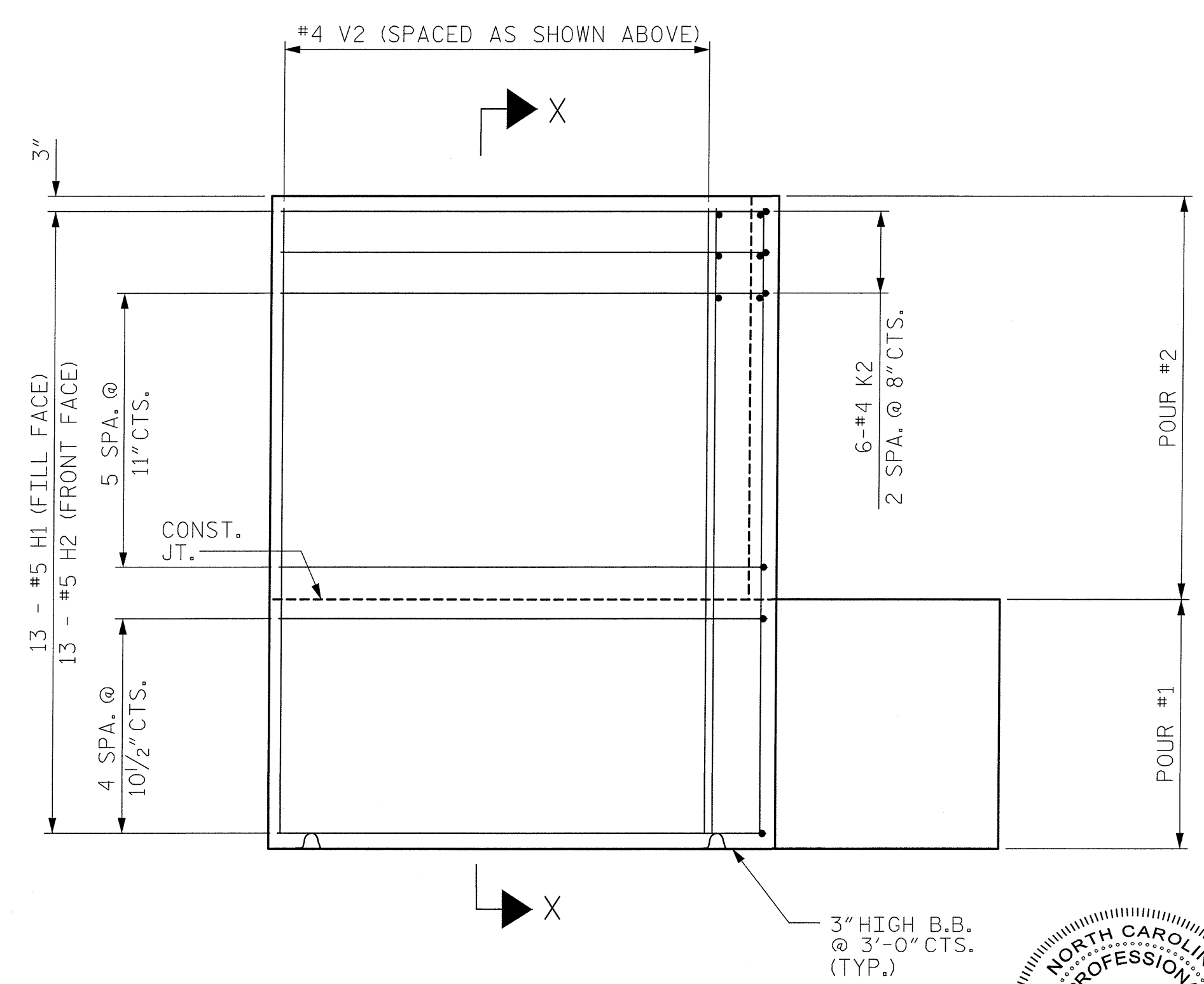
PLAN OF WING (W2)



ELEVATION OF WING (W1)



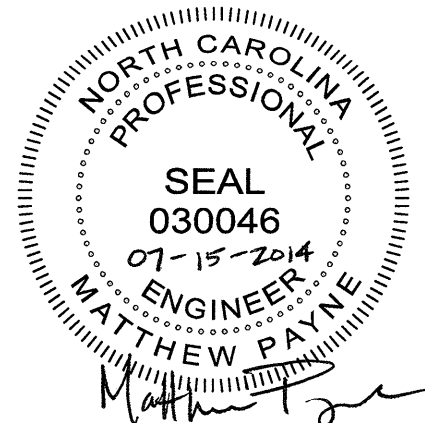
SECTION X-X



ELEVATION OF WING (W2)

PROJECT NO. P-5204
 GUILFORD COUNTY
 STATION: 24+59.04 -L-
 MILE MARKER #8
 BRIDGE NO. 1170

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 WING WALL DETAILS
 FOR BRIDGE ON
 MCLEANSVILLE RD. OVER
 NS/NCR RAILROAD FROM
 SR 2826 TO NORTH OF SR 2746

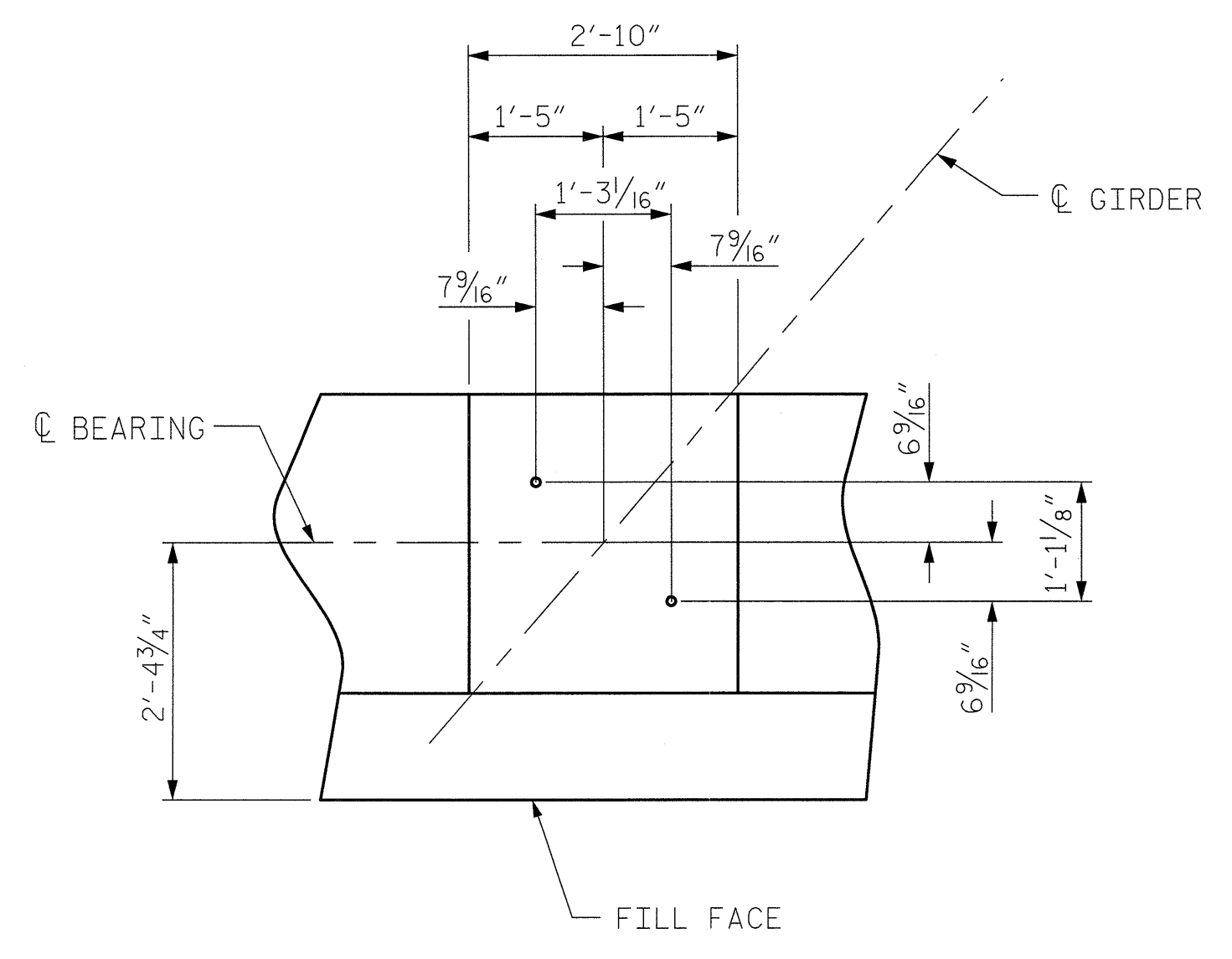
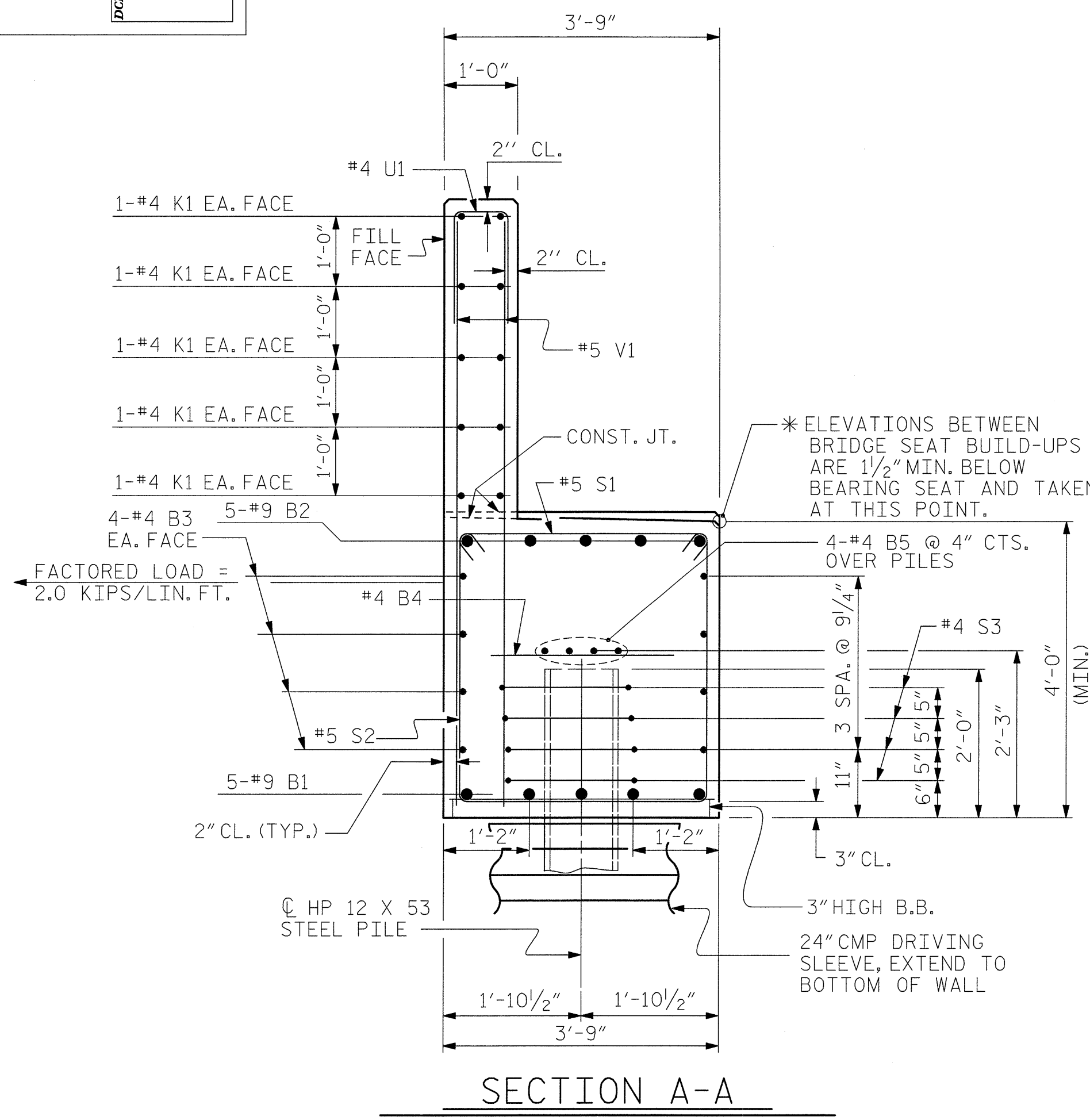


ATKINS 1616 E. MILLBROOK ROAD, SUITE #310
 RALEIGH, NORTH CAROLINA 27609
 (919) 876-6888 NCBES #F-0326

DRAWN BY: C. BLAKES DATE: 3/14
 CHECKED BY: M. PAYNE DATE: 3/14

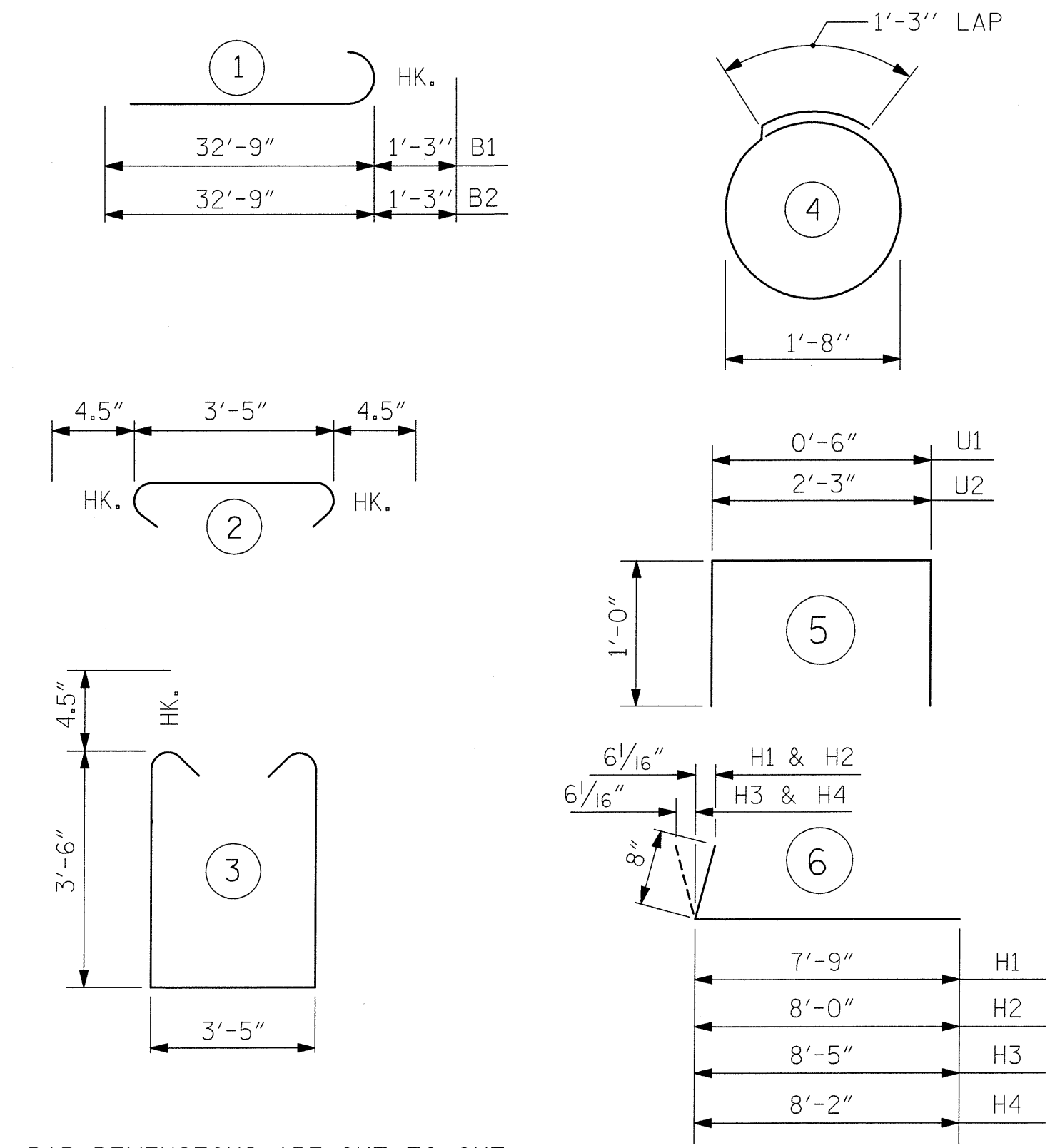
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21	
1			3			TOTAL SHEETS	
2			4			27	

0353DEL_P15



DETAIL "A"
END BENT No. 1 and No. 2

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL
END BENT NO. 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#9	1	34'-0"	1156
B2	10	#9	1	34'-0"	1156
B3	16	#4	STR	31'-1"	332
B4	40	#4	STR	2'-9"	73
B5	8	#4	STR	31'-1"	166
S1	52	#5	2	4'-2"	226
S2	52	#5	3	11'-2"	606
S3	40	#4	4	6'-6"	174
K1	20	#4	STR	30'-0"	401
U1	50	#4	5	2'-6"	84
U2	20	#4	5	4'-3"	57
V1	114	#5	STR	9'-4"	1110
V2	54	#5	STR	10'-7"	596
H1	13	#5	6	8'-5"	114
H2	13	#5	6	8'-8"	118
H3	13	#5	6	9'-1"	123
H4	13	#5	6	8'-10"	120

REINFORCING STEEL LBS. 6,623

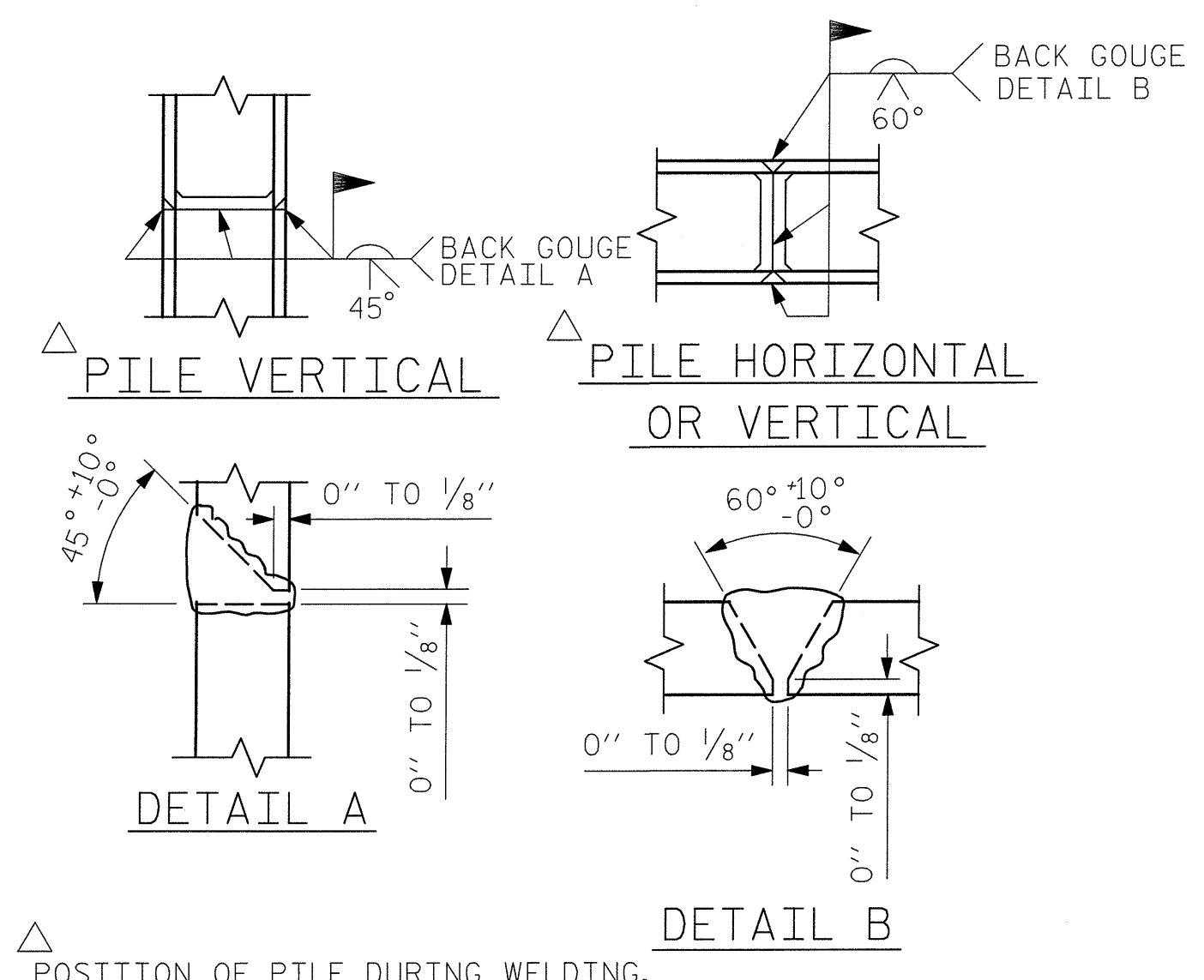
CLASS A CONCRETE C. Y. 50.60
POUR NO. 1 C. Y. 35.10
POUR NO. 2 C. Y. 15.50

HP 12x53 STEEL PILES	NO.	LIN. FT.
END BENT NO. 1	10	650
END BENT NO. 2	10	650

NOTE:
END BENT NO. 2 QUANTITIES SIMILAR

SUBSTRUCTURE NOTES:

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.
- THE TOP SURFACE AREAS OF THE END BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND SHALL NOT BE USED.
- THE TOP SURFACE OF THE CAP, EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT A RATE OF 2%.
- ANCHOR BOLTS SHALL BE SET BY DRILLING HOLES AND GROUTING AFTER THE BREASTWALL HAS BEEN BACKFILLED TO 1'-0" +/- BELOW BRIDGE SEAT. CAREFUL ATTENTION SHALL BE GIVEN TO ANTICIPATED MOVEMENT OF BREASTWALL DURING BACKFILLING IN ORDER THAT REINFORCING WILL NOT FOUL THE DRILLED ANCHOR BOLT HOLES.
- EPOXY COAT THE END BENT CAP AFTER ADJUSTMENTS ARE MADE TO THE BEARINGS AND ANCHOR BOLTS ARE GROUTED.
- THE TOP SURFACE OF THE END BENT CAP AND WINGS, EXCEPT THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".



PILE SPLICE DETAILS

PROJECT NO. P-5204
GUILFORD COUNTY
STATION: 24+59.04 -L-
SHEET 4 OF 4 MILE MARKER #8 BRIDGE NO. 1170



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
END BENT DETAILS
FOR BRIDGE ON
MCLEANSVILLE RD. OVER
NS/NCR RAILROAD FROM
SR 2826 TO NORTH OF SR 2746

DRAWN BY: C. BLAKES DATE: 3/14
CHECKED BY: M. PAYNE DATE: 3/14

ATKINS 1616 E. MILLBROOK ROAD, SUITE #310
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBES #F-0326

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-22
1			3			TOTAL SHEETS
2			4			27

BILL OF MATERIAL

APPROACH SLAB AT EB #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	30	#4	STR	25'-2"	504
A2	32	#4	STR	25'-1"	536
*B1	75	#5	STR	13'-8"	1069
B2	75	#6	STR	14'-6"	1633

REINFORCING STEEL	LBS.	2169
* EPOXY COATED REINFORCING STEEL	LBS.	1573

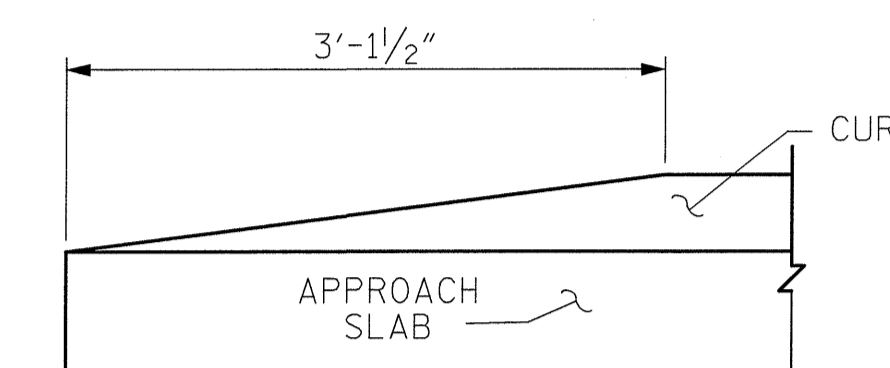
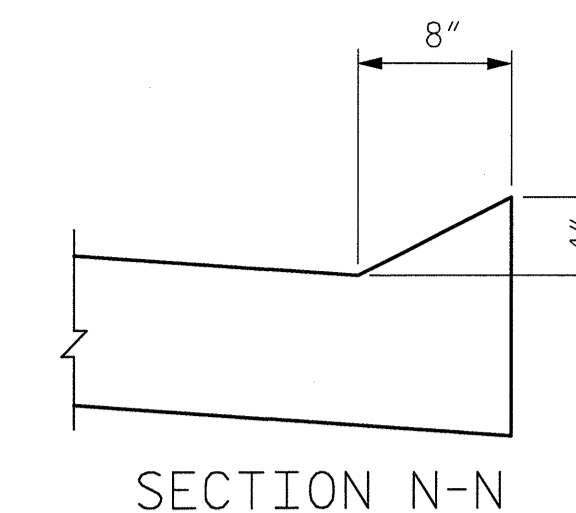
CLASS AA CONCRETE	C. Y.	25.8
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APPROACH SLAB AT EB #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	30	#4	STR	25'-2"	504
A2	32	#4	STR	25'-1"	536
*B1	73	#5	STR	13'-8"	1041
B2	73	#6	STR	14'-6"	1590

REINFORCING STEEL	LBS.	2126
* EPOXY COATED REINFORCING STEEL	LBS.	1545

CLASS AA CONCRETE	C. Y.	25.6
-------------------	-------	------



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

SPLICE LENGTHS

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

NOTES

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

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

THE JOINT SHALL BE SAWS PRIOR TO THE CASTING OF THE BARRIER RAIL.

WITH FOAM JOINT SEAL

FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.

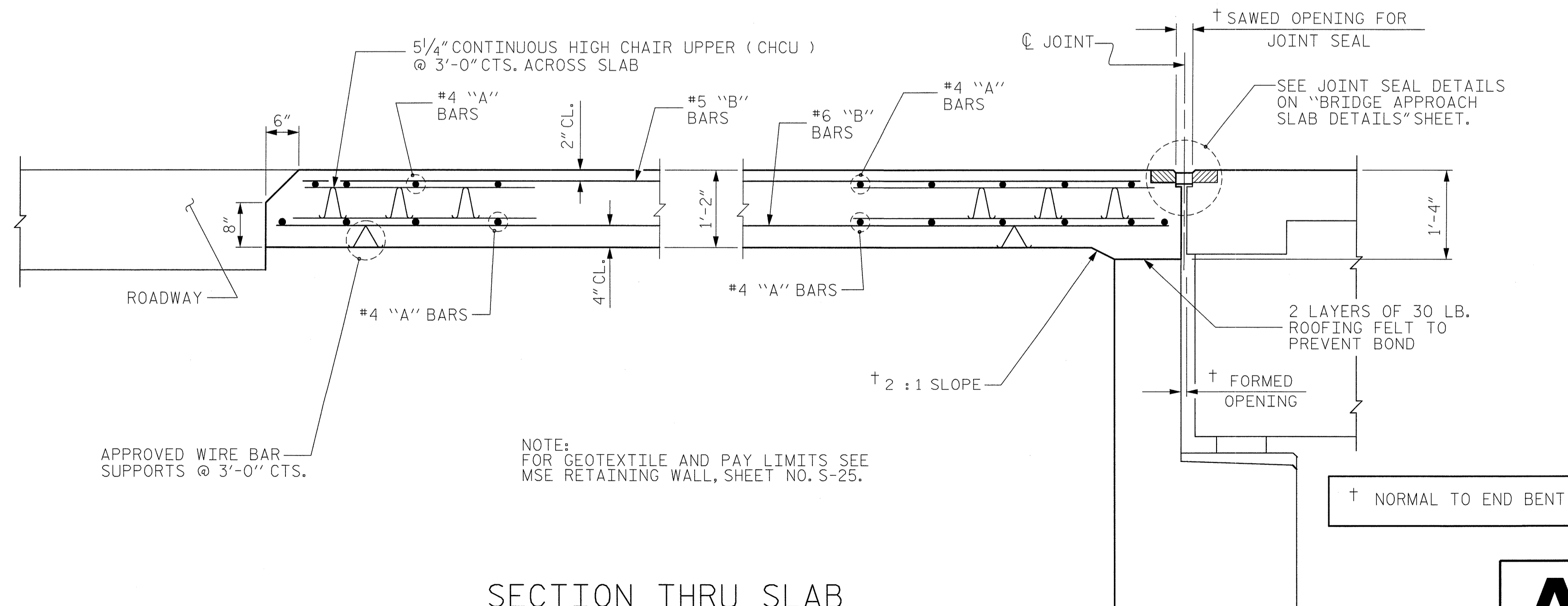
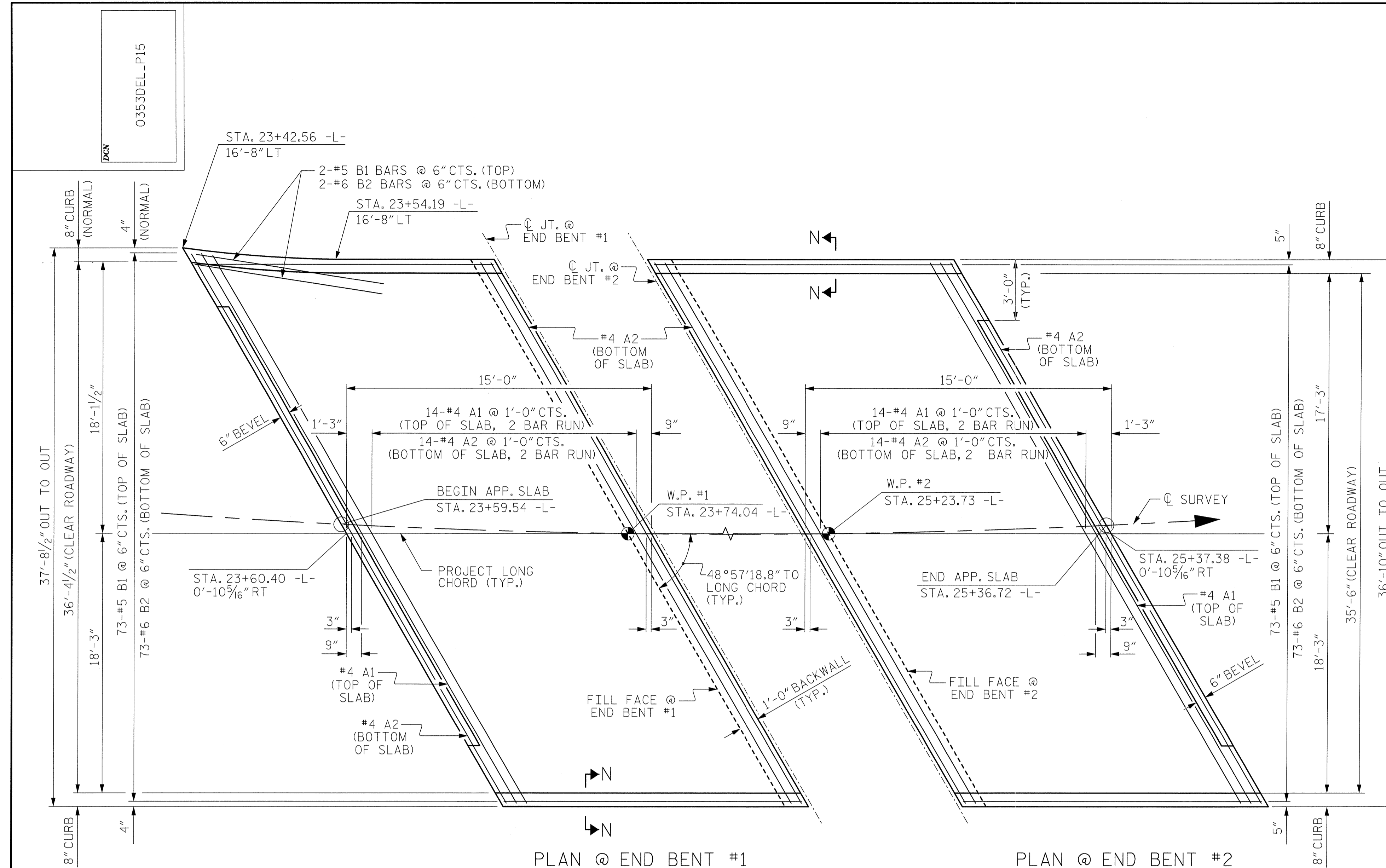
FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

PROJECT NO. P-5204
 GUILFORD COUNTY
 STATION: 24+59.04 -L-
 MILE MARKER #8
 BRIDGE NO. 1170
 SHEET 1 OF 2

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



REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23	
1			3			TOTAL SHEETS 27	
2			4				



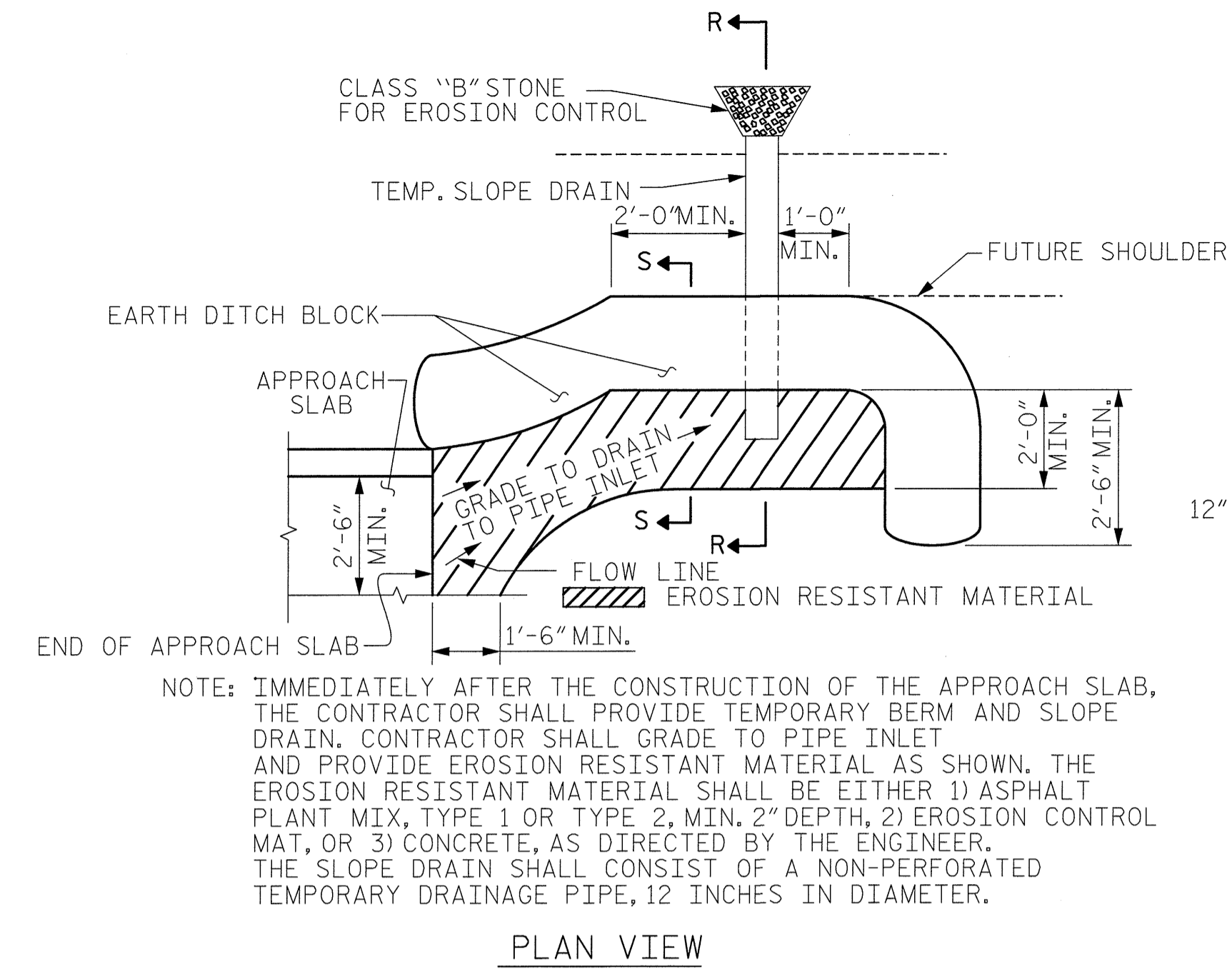
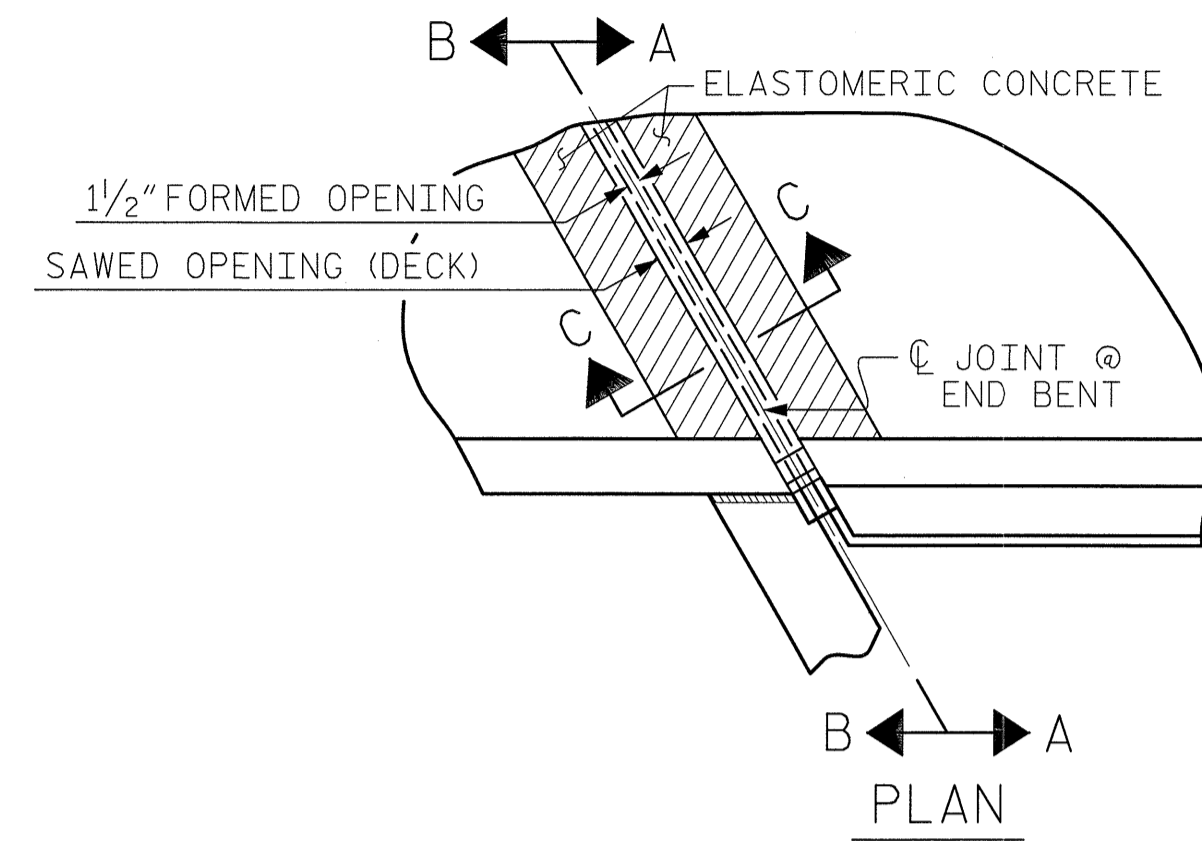
SECTION THRU SLAB

DRAWN BY : C. BLAKES DATE : 3/14
 CHECKED BY : M. PAYNE DATE : 3/14

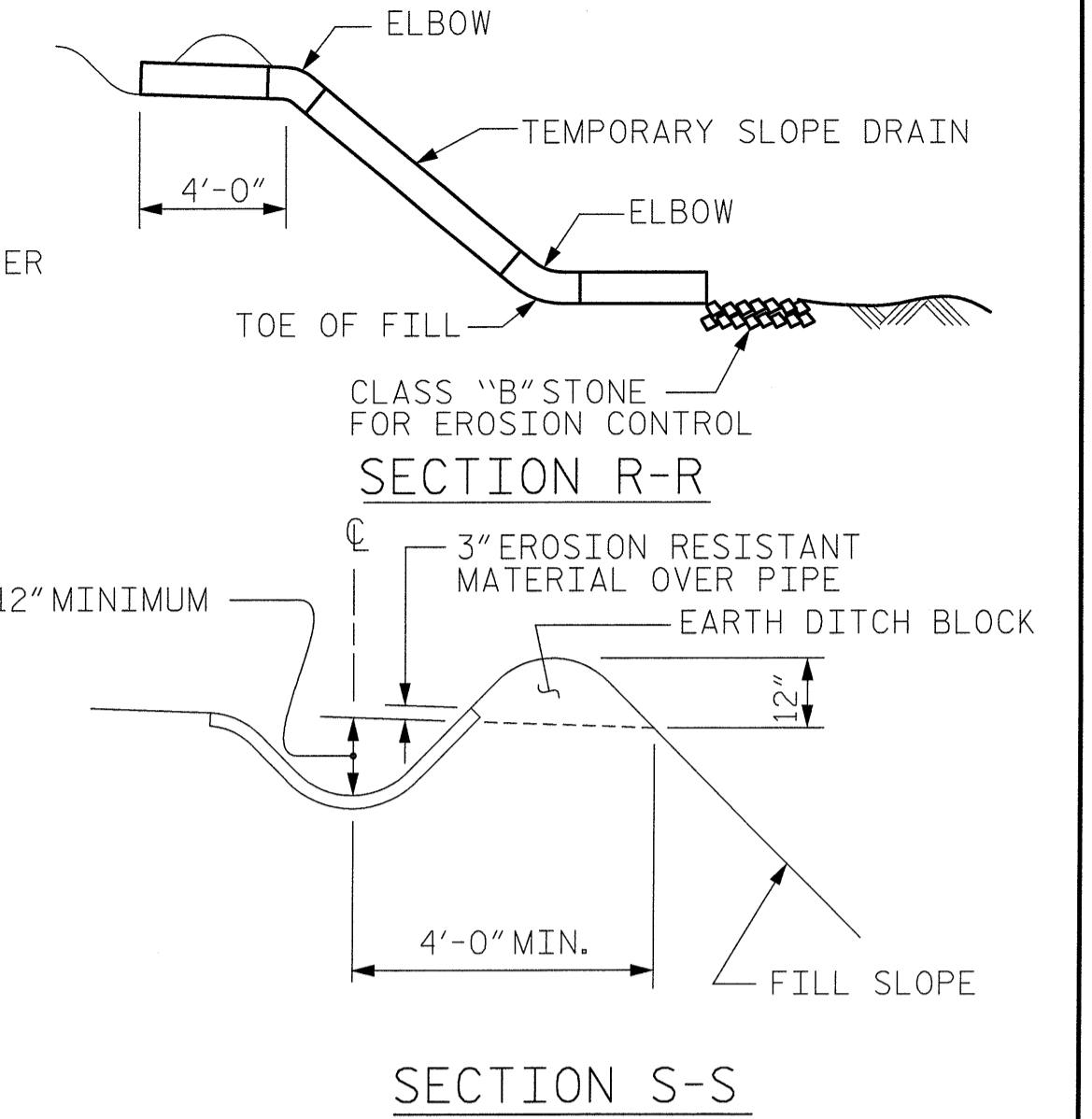
ATKINS 1616 E. MILLBROOK ROAD, SUITE #310
 RALEIGH, NORTH CAROLINA 27609
 (919) 876-6888 NCBES #F-0326

ELASTOMERIC CONCRETE	
END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
1	8.08
2	8.08
TOTAL	16.16

* BASED ON THE MINIMUM BLOCKOUT SHOWN.

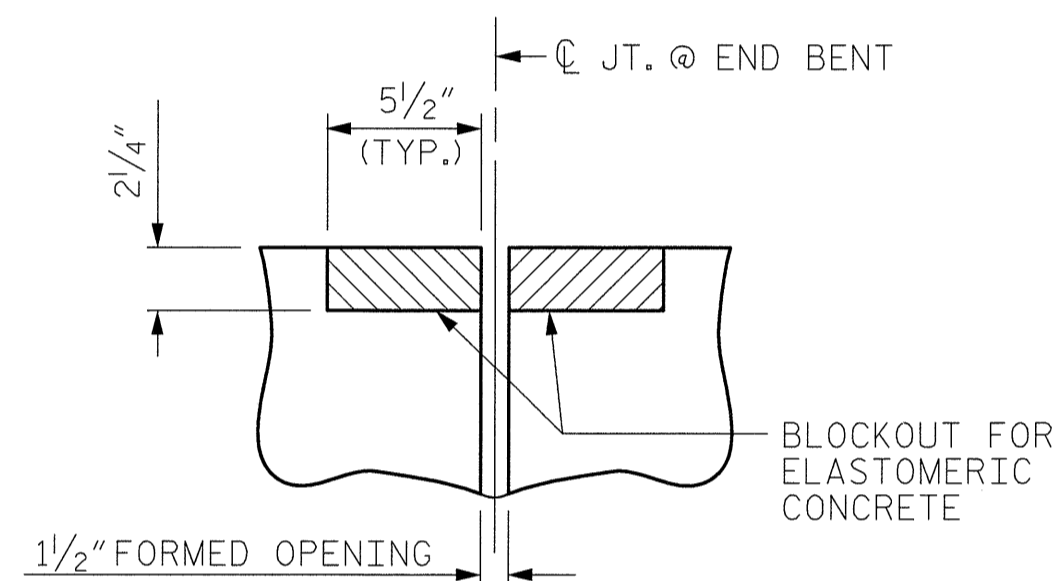


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

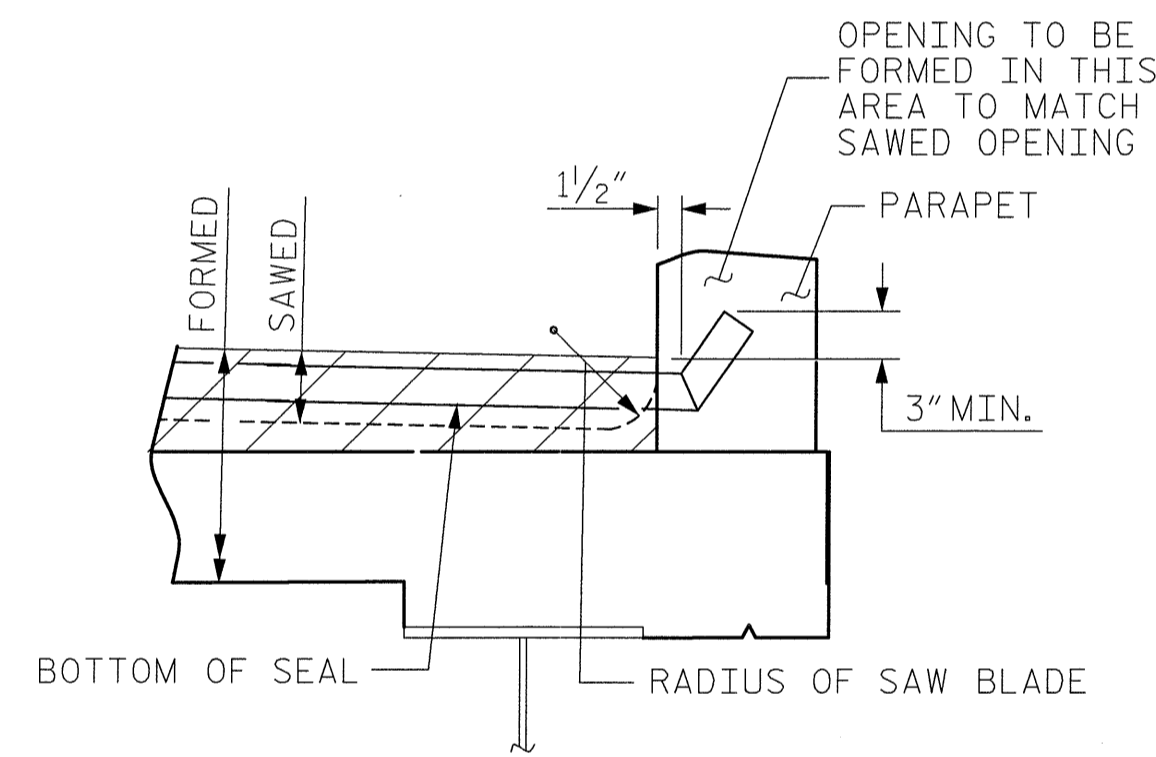


TEMPORARY BERM AND SLOPE DRAIN DETAILS

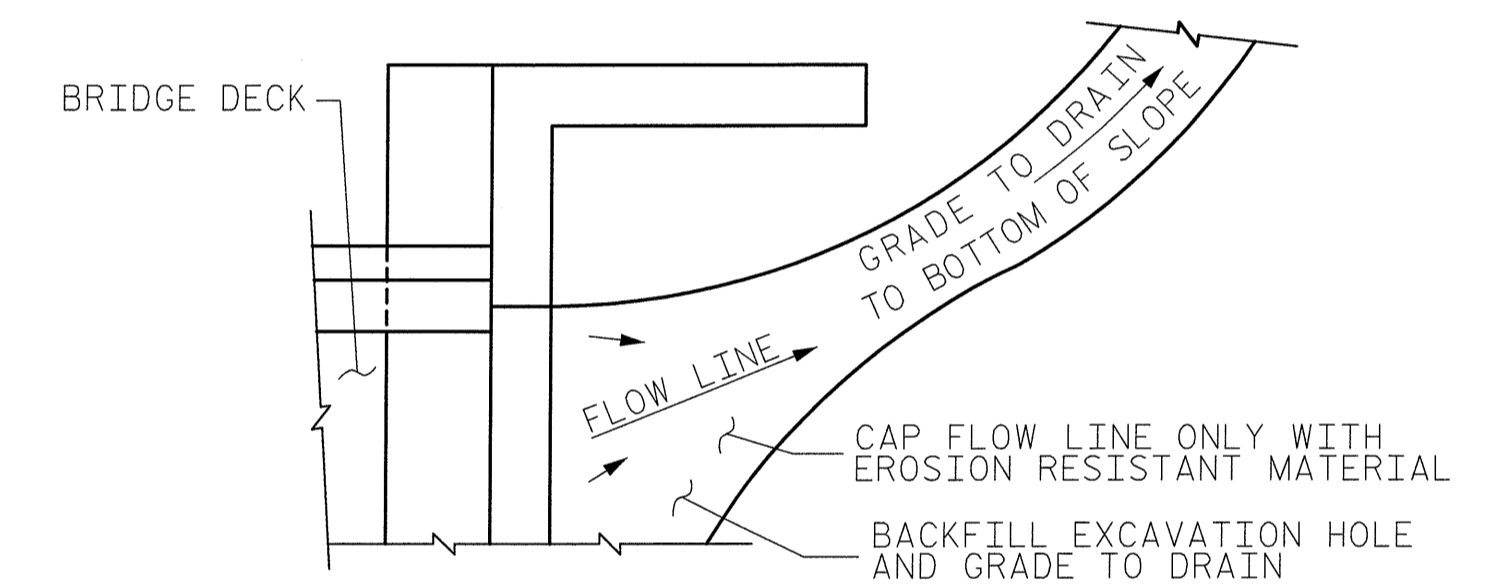
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



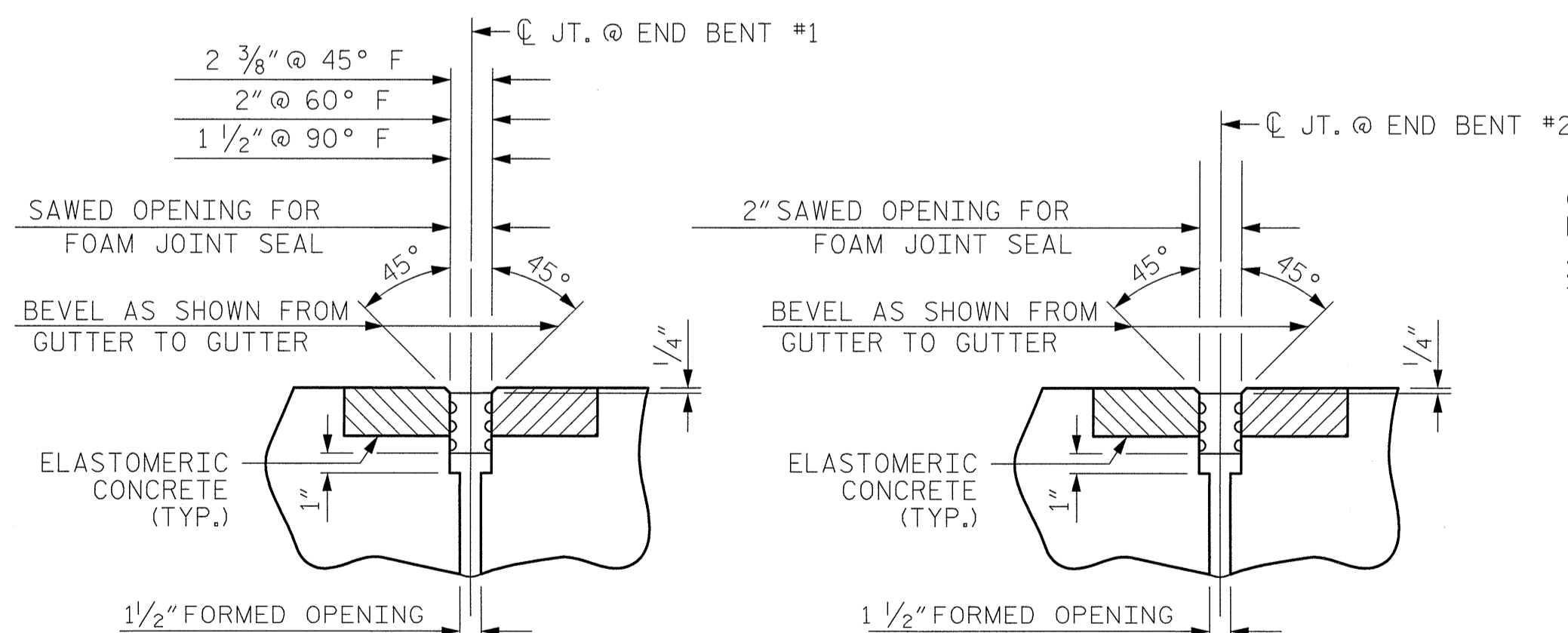
SECTION C-C
FOAM JOINT SEAL
(PRE-SAWED ELASTOMERIC CONCRETE DIMENSIONS)



SECTION A-A



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

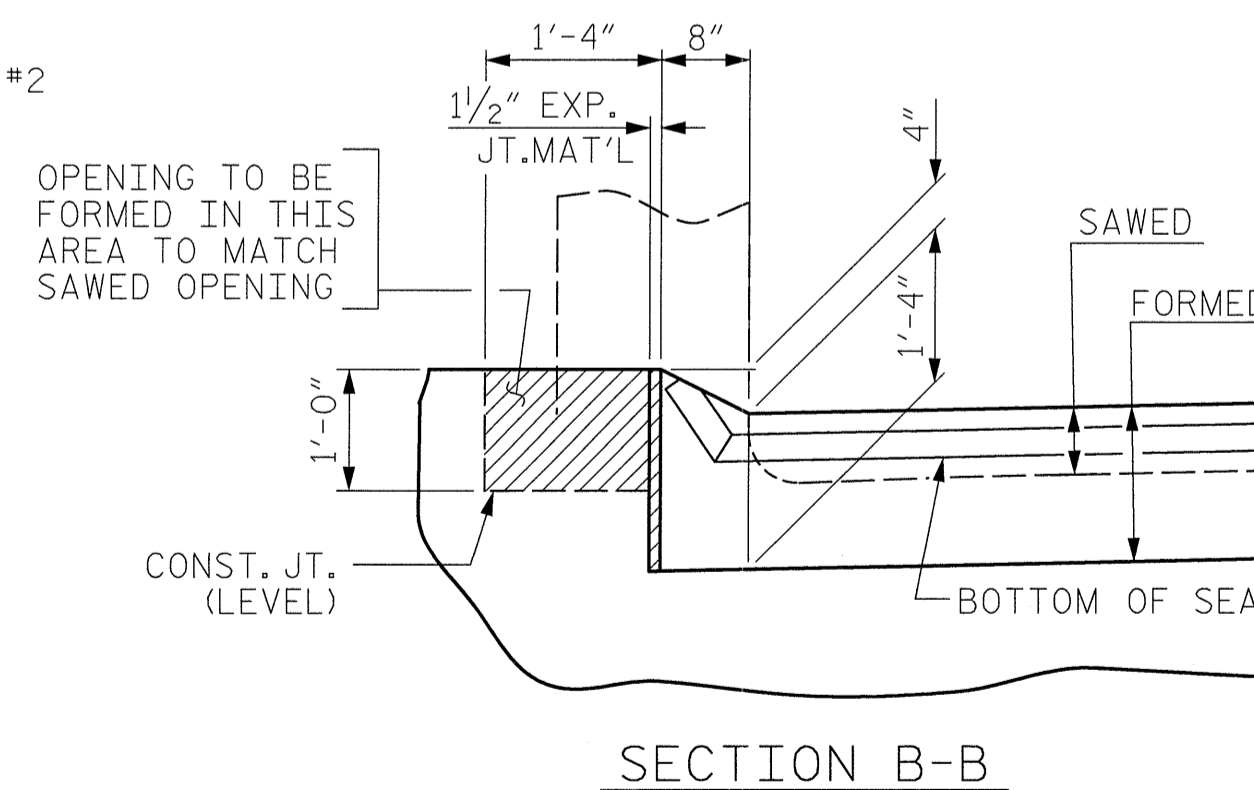


SECTION C-C
FOAM JOINT SEAL
THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL SHALL BE 2 3/8" AT END BENT NO. 1. (EXPANSION)

SECTION C-C
FOAM JOINT SEAL
THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL SHALL BE 2 1/2" AT END BENT NO. 2. (FIXED)

JOINT SEAL DETAILS @ END BENT

FOAM JOINT SEAL TO BE CUT, HEAT WELDED AND TURNED UP AS SHOWN.



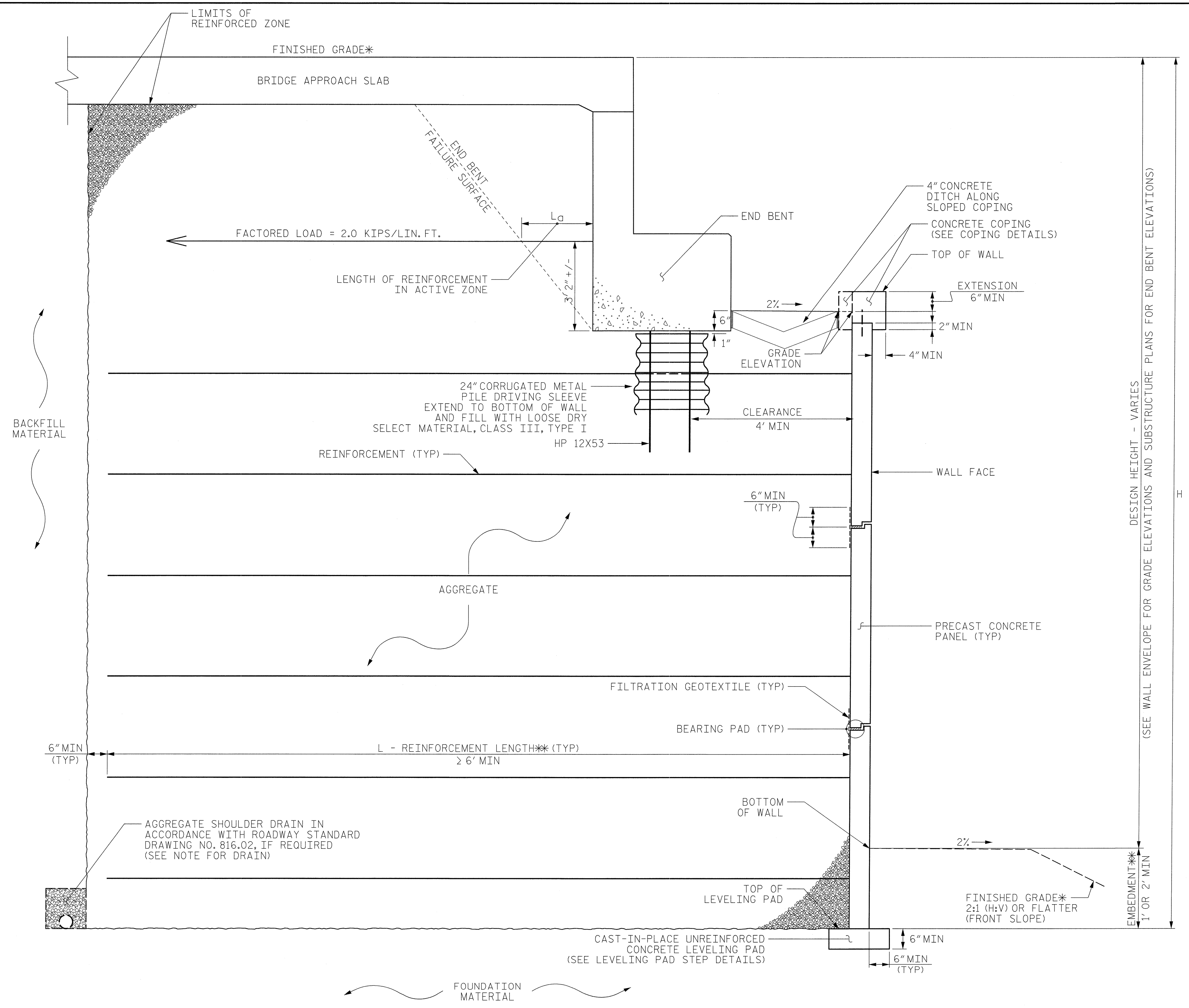
SECTION B-B



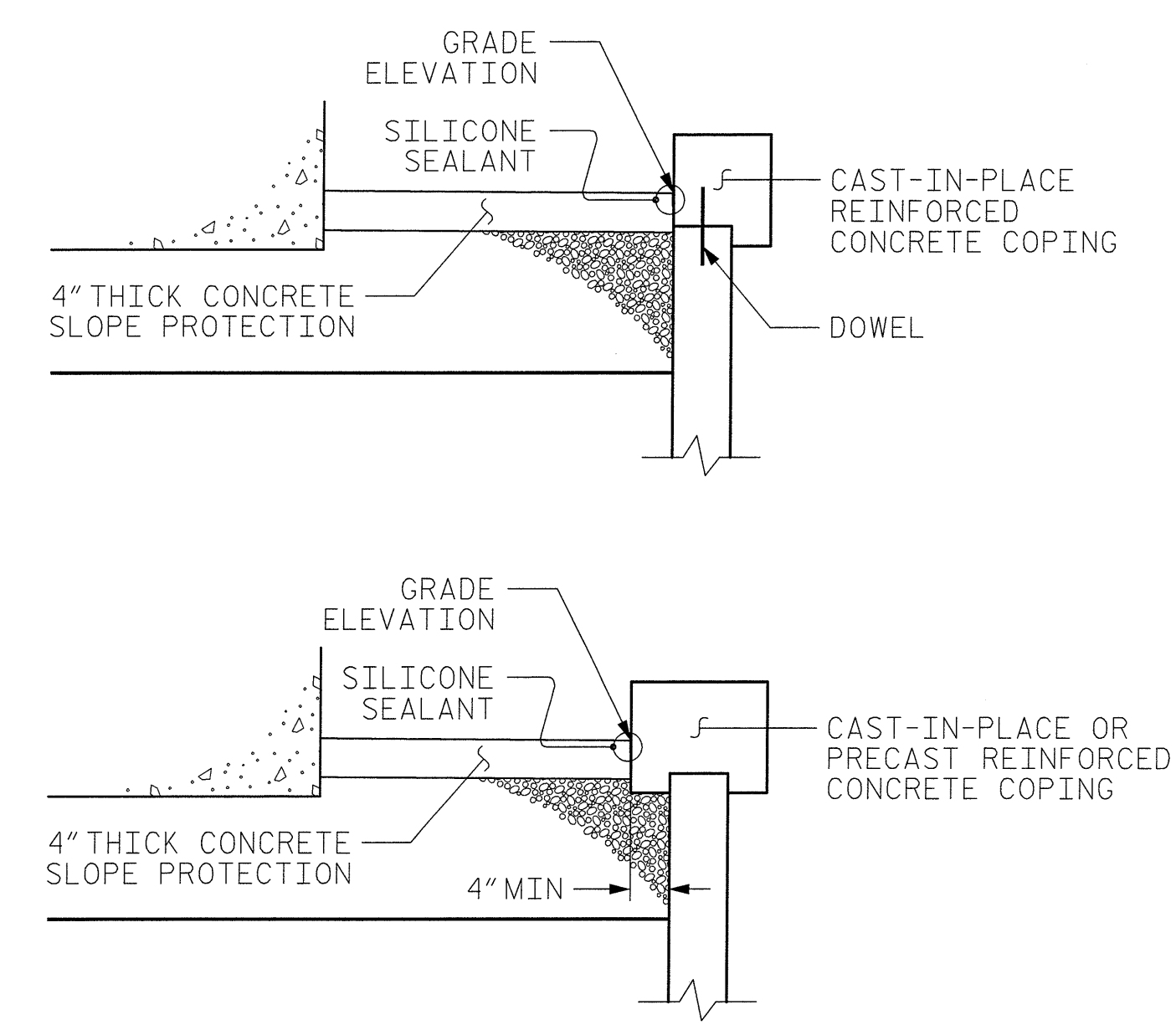
PROJECT NO. P-5204
GUILFORD COUNTY
STATION: 24+59.04 -L-
MILE MARKER #8
BRIDGE NO. 1170
SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
BRIDGE APPROACH
SLAB DETAILS

0353DEL_P15



NOTES:
FOR MSE RETAINING WALL NOTES, SEE SHEET 3 OF 3.

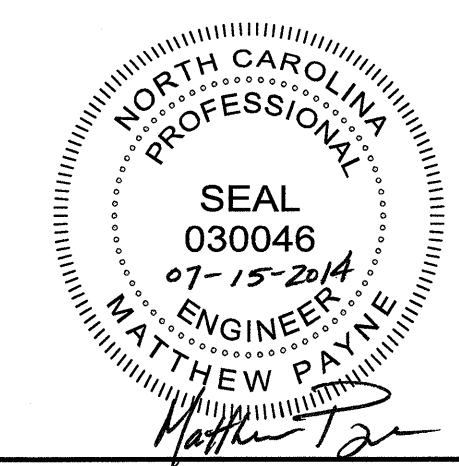


COPING DETAILS
AT THE CONTRACTOR'S OPTION, CONNECT COPING TO PANELS WITH DOWELS OR EXTEND COPING DOWN BACK OF PANELS.

MSE ABUTMENT WALL WITH PRECAST PANELS - TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.
**SEE MSE RETAINING WALLS PROVISION FOR EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.

PROJECT NO. P-5204
GUILFORD COUNTY
STATION: 24+59.04 -L-
MILE MARKER #8
BRIDGE NO. 1170



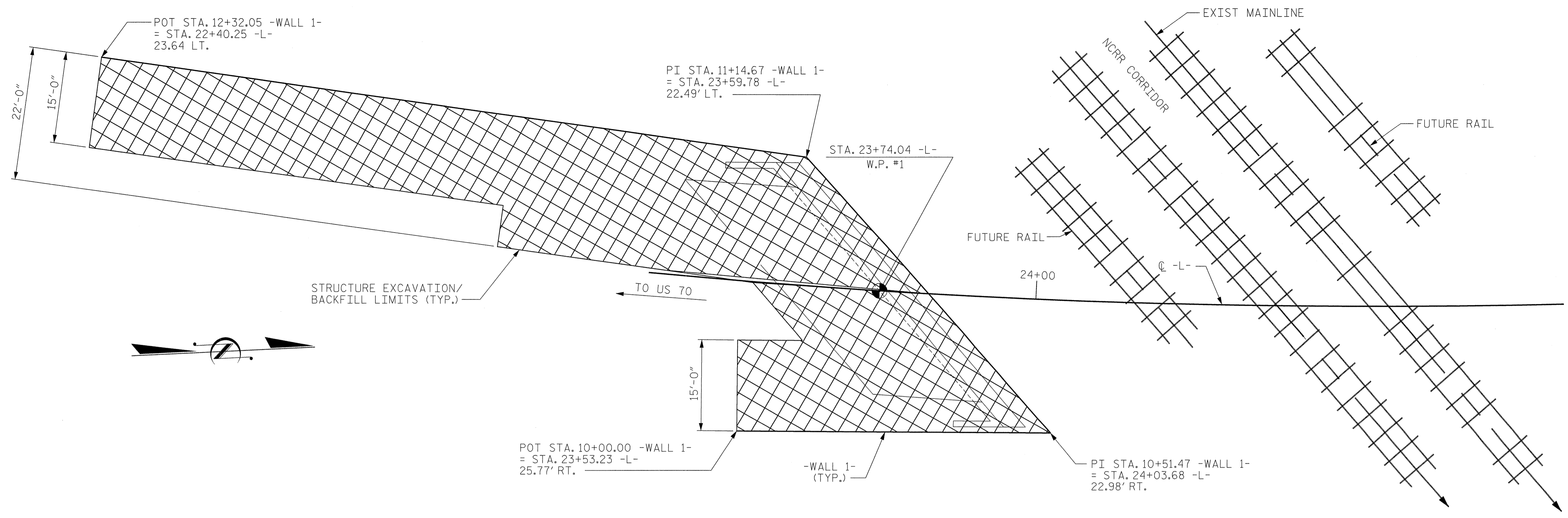
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
**MSE END BENT
RETAINING WALL**
FOR BRIDGE ON
MCLEANSVILLE RD. OVER
NS/NCR RAILROAD FROM
SR 2826 TO NORTH OF SR 2746

DRAWN BY : C. BLAKES DATE : 3/14
CHECKED BY : M. PAYNE DATE : 3/14

ATKINS 1616 E. MILLBROOK ROAD, SUITE #310
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEEB #F-0326

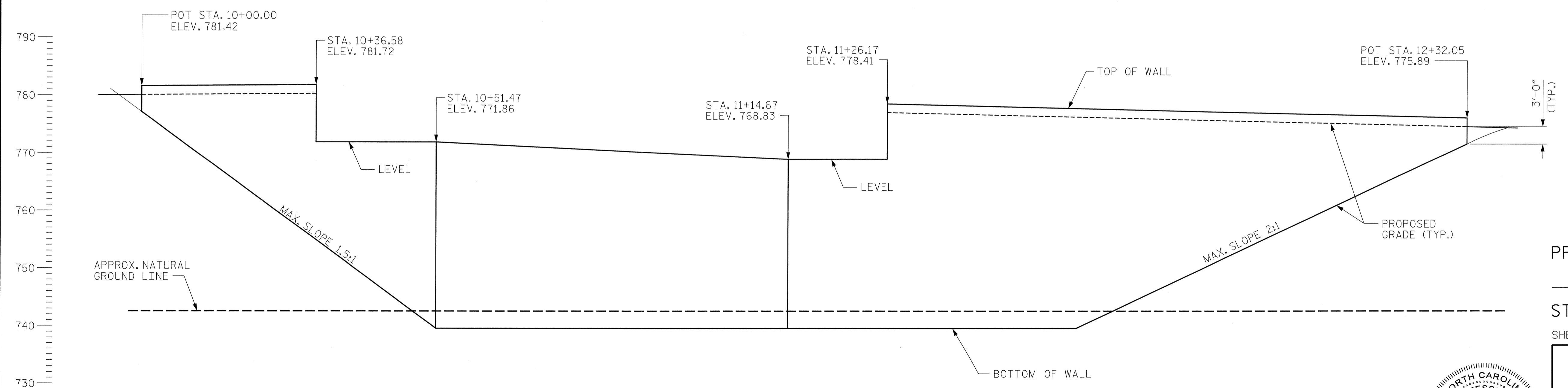
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25	
1			3			TOTAL SHEETS	
2			4			27	

0353DEL_P15



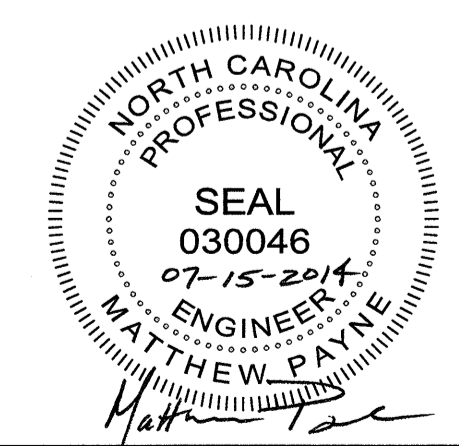
PLAN

NOTE: ALIGNMENT TAKEN ALONG FRONT FACE OF WALL.



ELEVATION

PROJECT NO. P-5204
GUILFORD COUNTY
 STATION: 24+59.04 -L-
 SHEET 2 OF 3 MILE MARKER #8
 BRIDGE NO. 1170



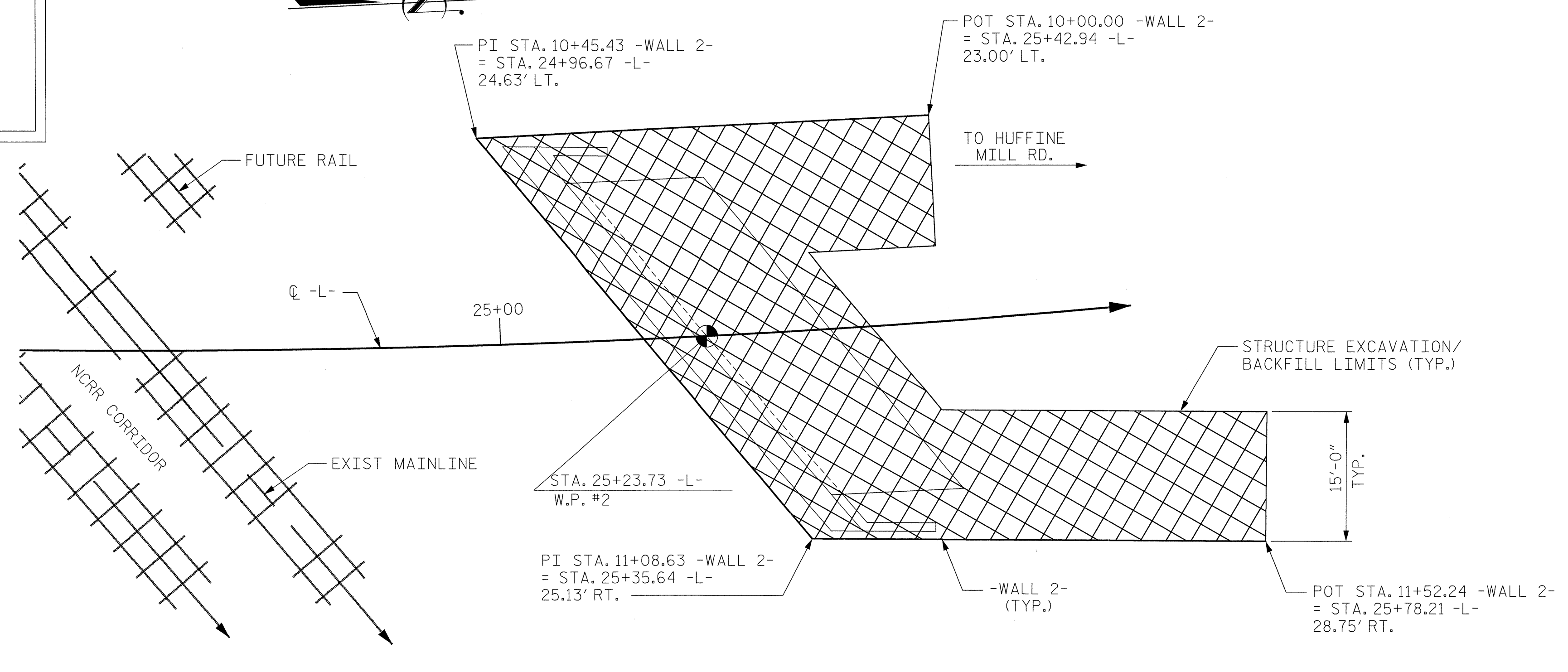
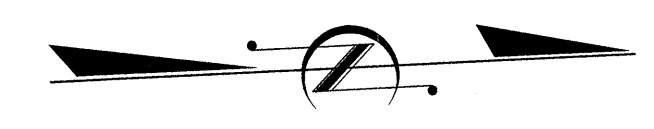
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**MSE RETAINING WALL
 -WALL 1-**
 FOR BRIDGE ON
 MCLEANSVILLE RD. OVER
 NS/NCR RAILROAD FROM
 SR 2826 TO NORTH OF SR 2746

DRAWN BY : C. BLAKES DATE : 3/14
 CHECKED BY : M. PAYNE DATE : 3/14

ATKINS 1616 E. MILLBROOK ROAD, SUITE #310
 RALEIGH, NORTH CAROLINA 27609
 (919) 876-6888 NCBEES #F-0326

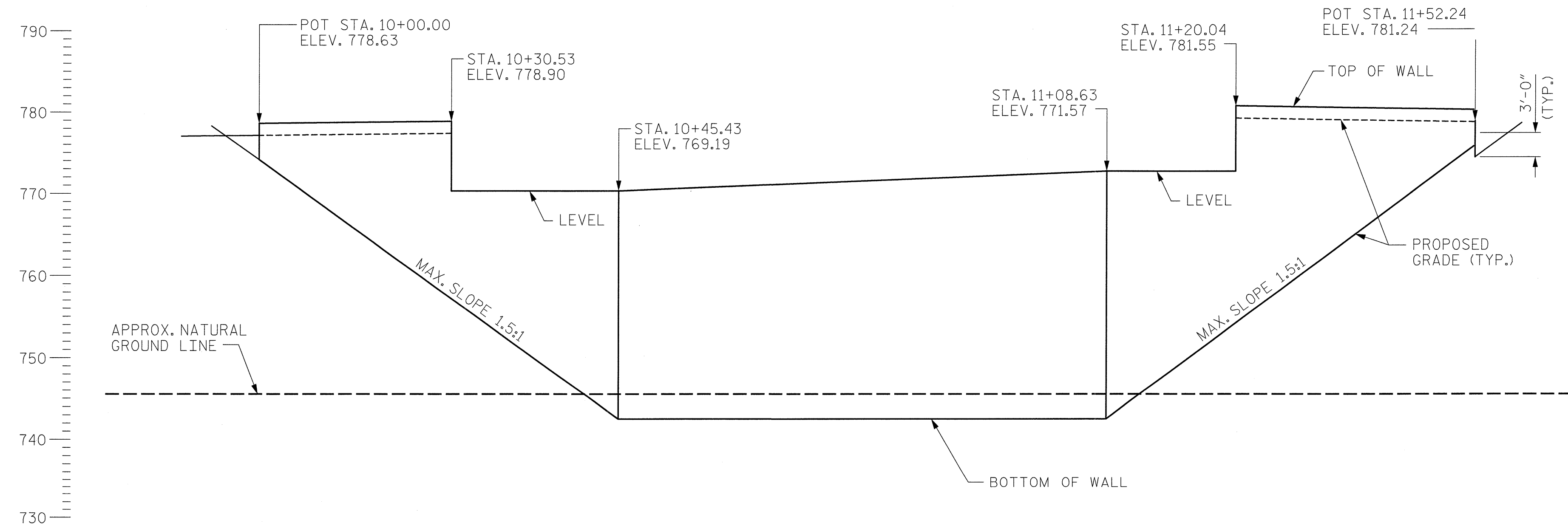
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			27

0353DEL_P15



PLAN

NOTE: ALIGNMENT TAKEN AT FRONT FACE OF WALL.



ELEVATION

MSE RETAINING WALL NOTES:

FOR MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALLS, SEE MECHANICALLY STABILIZED EARTH RETAINING WALL PROVISION.

USE AN MSE WALL SYSTEM WITH PRECAST CONCRETE PANELS THAT MEET SECTION 1077 OF THE STANDARD SPECIFICATIONS FOR RETAINING WALLS NO.1 & 2.

A DRAIN IS REQUIRED FOR RETAINING WALLS NO.1 & 2.

BEFORE BEGINNING DESIGN FOR RETAINING WALLS NO.1 & 2, SURVEY WALL LOCATION AND SUBMIT REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN NOR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.

DESIGN RETAINING WALLS NO.1 & 2 FOR THE FOLLOWING:

1. H = DESIGN HEIGHT + EMBEDMENT
2. DESIGN LIFE = 100 YEARS
3. MAXIMUM FACTORED VERTICAL STRESS ON FOUNDATION MATERIAL:
RETAINING WALL NO.1 = 10,000 LBS/SF
RETAINING WALL NO.2 = 7,750 LBS/SF
4. MINIMUM REINFORCEMENT LENGTH (L) (FOR ABUTMENT PORTIONS OF WALLS):
RETAINING WALL NO.1 = 36 FT
RETAINING WALL NO.2 = 30 FT
5. MINIMUM REINFORCEMENT LENGTH (L) = 0.8H (FOR NON-ABUTMENT PORTIONS OF WALLS)
6. MINIMUM EMBEDMENT ELEVATIONS = VARIES (SEE PLANS)
7. AGGREGATE PARAMETERS:

AGGREGATE TYPE*	UNIT WEIGHT (GAMMA)	FRICTION ANGLE (PHI)	COHESION (C)
COARSE	110 LB/CF	38°	0 LB/SF
FINE	N/A	N/A	N/A

* SEE MSE RETAINING WALL PROVISIONS FOR COARSE AND FINE AGGREGATE MATERIAL REQUIREMENTS.

8. IN-SITU ASSUMED MATERIAL PROPERTIES:

MATERIAL TYPE	UNIT WEIGHT (GAMMA)	FRICTION ANGLE (PHI)	COHESION (C)
BACKFILL	120 LB/CF	30°	0 LB/SF
FOUNDATION	120 LB/CF	28°	0 LB/SF

DESIGN RETAINING WALLS NO.1 & 2 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

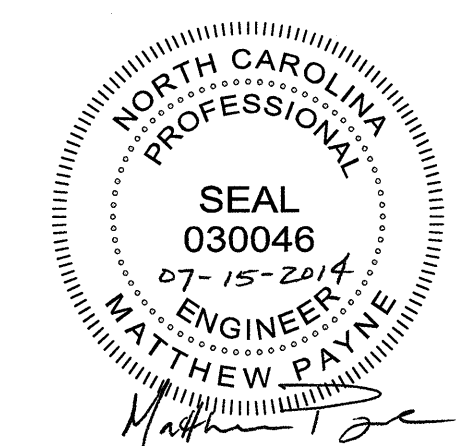
DESIGN REINFORCEMENT CONNECTED TO END BENT CAPS FOR A FACTORED LOAD AND LENGTH OF REINFORCEMENT IN ACTIVE ZONE (L_a) SHOWN. CAST REINFORCEMENT CONNECTORS INTO CAP BACKWALL FOR END BENTS NO.1 & 2 LOCATED AT STATION 23+74.04 -L- AND STATION 25+23.73 -L-. MAINTAIN A CLEARANCE OF AT LEAST 3 INCHES BETWEEN CONNECTORS AND REINFORCING STEEL IN CAP.

EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL, FENCE OR HANDRAIL POSTS, PAVEMENT, PIPES, INLETS, OR UTILITIES WILL INTERFERE WITH REINFORCEMENT FOR RETAINING WALLS NO.1 & 2.

FOUNDATIONS FOR END BENTS NO.1 & 2 LOCATED AT STATION 23+74.04 -L- AND STATION 25+23.73 -L- WILL INTERFERE WITH REINFORCEMENT FOR RETAINING WALLS NO.1 & 2. SEE "FOUNDATION LAYOUT" SHEET FOR FOUNDATION LOCATIONS.

DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE, OR REINFORCEMENT FOR RETAINING WALLS NO.1 & 2 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.

PROJECT NO. P-5204
GUILFORD COUNTY
 STATION: 24+59.04 -L-
 MILE MARKER #8
 BRIDGE NO. 1170



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
MSE RETAINING WALL
-WALL 2-
 FOR BRIDGE ON
 MCLEANSVILLE RD. OVER
 NS/NCCR RAILROAD FROM
 SR 2826 TO NORTH OF SR 2746

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			27

DRAWN BY : C. BLAKES DATE : 3/14
 CHECKED BY : M. PAYNE DATE : 3/14

ATKINS 1616 E. MILLBROOK ROAD, SUITE #310
 RALEIGH, NORTH CAROLINA 27609
 (919) 876-6888 NCBES #F-0326

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. FINES 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