

TIP PROJECT: B-4137

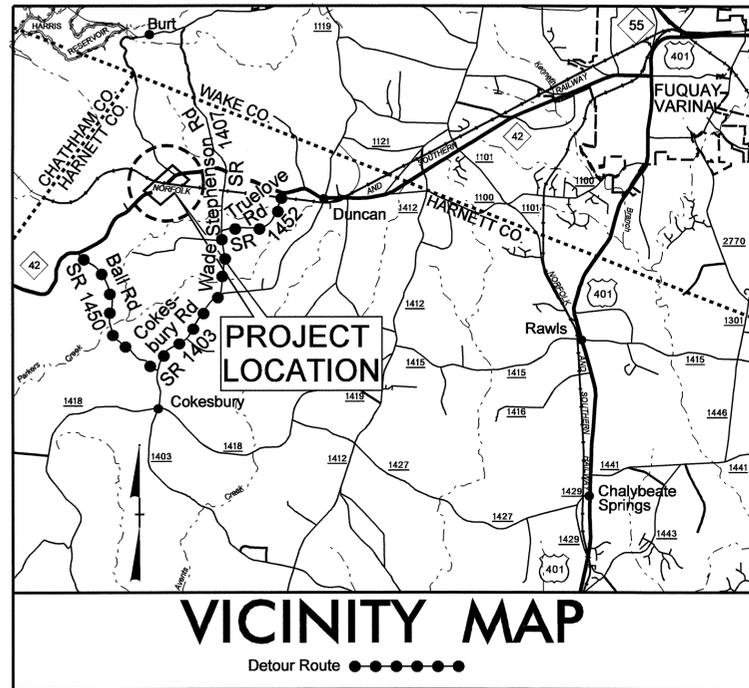
CONTRACT: C202153

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

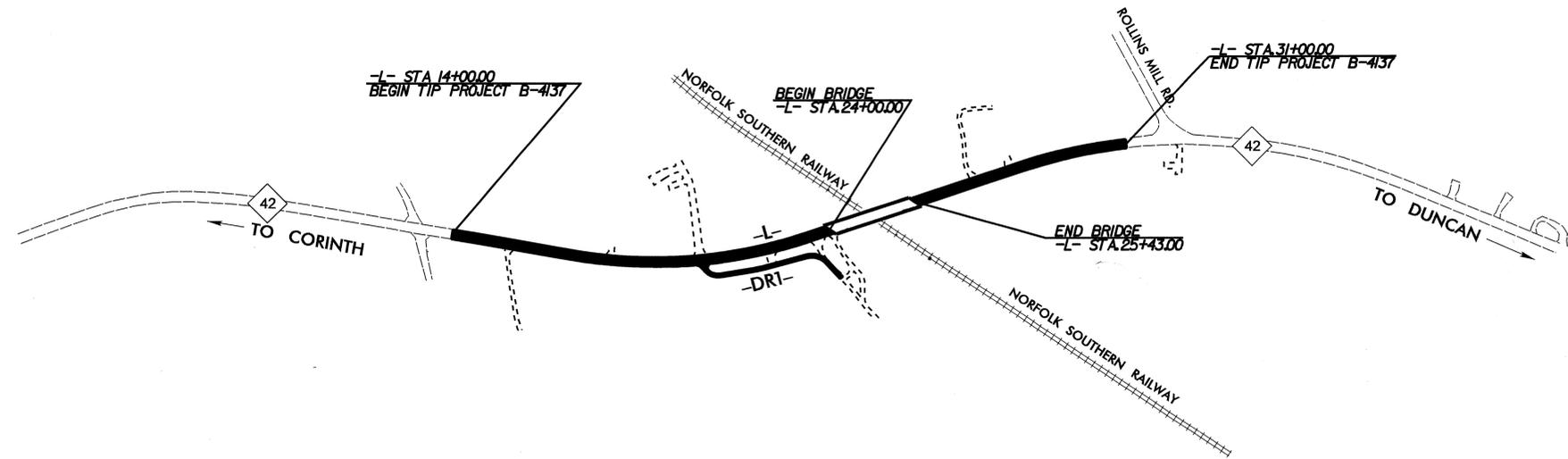
HARNETT COUNTY

LOCATION: BRIDGE No. 35 OVER NORFOLK AND SOUTHERN RAILROAD ON NC 42

TYPE OF WORK: GRADING, DRAINAGE, PAVING, GUARDRAIL, STRUCTURE & RETAINING WALL

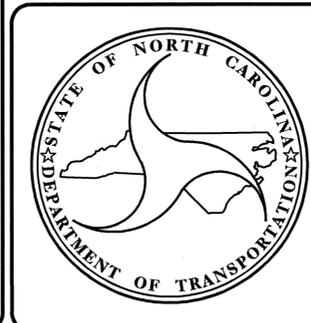


STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4137		
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
33489.1.1	BRSTP-42(8)	PE	
33489.2.1	BRSTP-42(8)	RW + UTIL.	
33489.3.1	BRSTP-42(8)	CONSTR.	



STRUCTURES

NOTE: TRAFFIC IS TO BE MAINTAINED WITH AN OFFSITE DETOUR.



DESIGN DATA

ADT 2009 =	2,240
ADT 2030 =	4,000
DHV =	12 %
D =	60 %
T =	12 % *
V =	60 MPH
FUNC CLASS:	RURAL MAJOR COLLECTOR
* TTST 6%	DUAL 6%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4137 =	0.295 mi
LENGTH STRUCTURE TIP PROJECT B-4137 =	0.027 mi
TOTAL LENGTH TIP PROJECT B-4137 =	0.322 mi

Prepared In the Office of:
DIVISION OF HIGHWAYS

2006 STANDARD SPECIFICATIONS

LETTING DATE: SEPTEMBER 15, 2009	ROY M. GIROLAMI, P.E. PROJECT ENGINEER
	LAURA E. SUTTON, P.E. PROJECT DESIGN ENGINEER

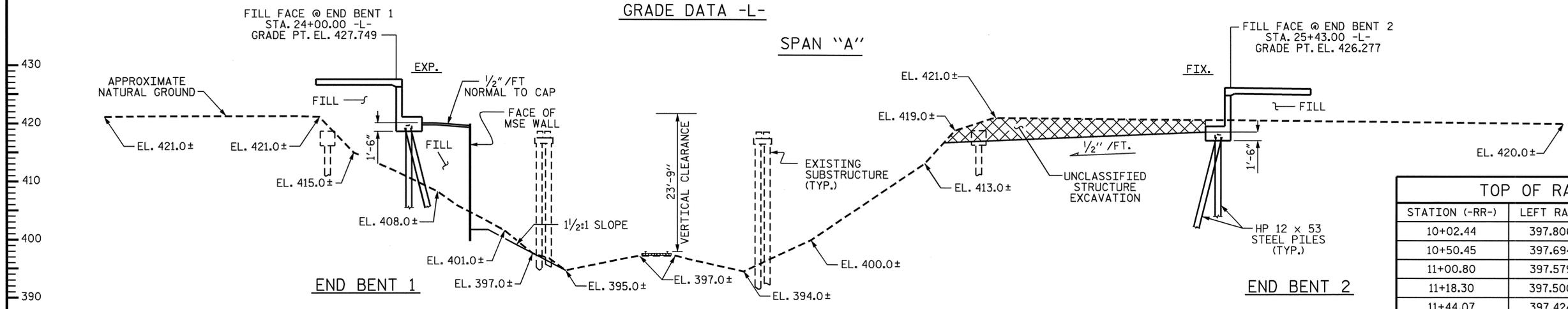
STRUCTURE DESIGN UNIT
1000 BIRCH RIDGE DR.
RALEIGH, NC 27610

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY DESIGN ENGINEER

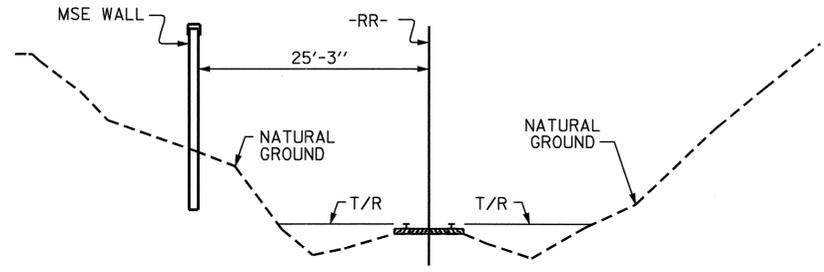
23+50 23+75 24+00 24+25 24+50 24+75 25+00 25+25 25+50 25+75 26+00

1.3554% Δ -3.1300%
 PI = 24+50.00
 EL. = 431.20
 VC = 680.00'
GRADE DATA -L-

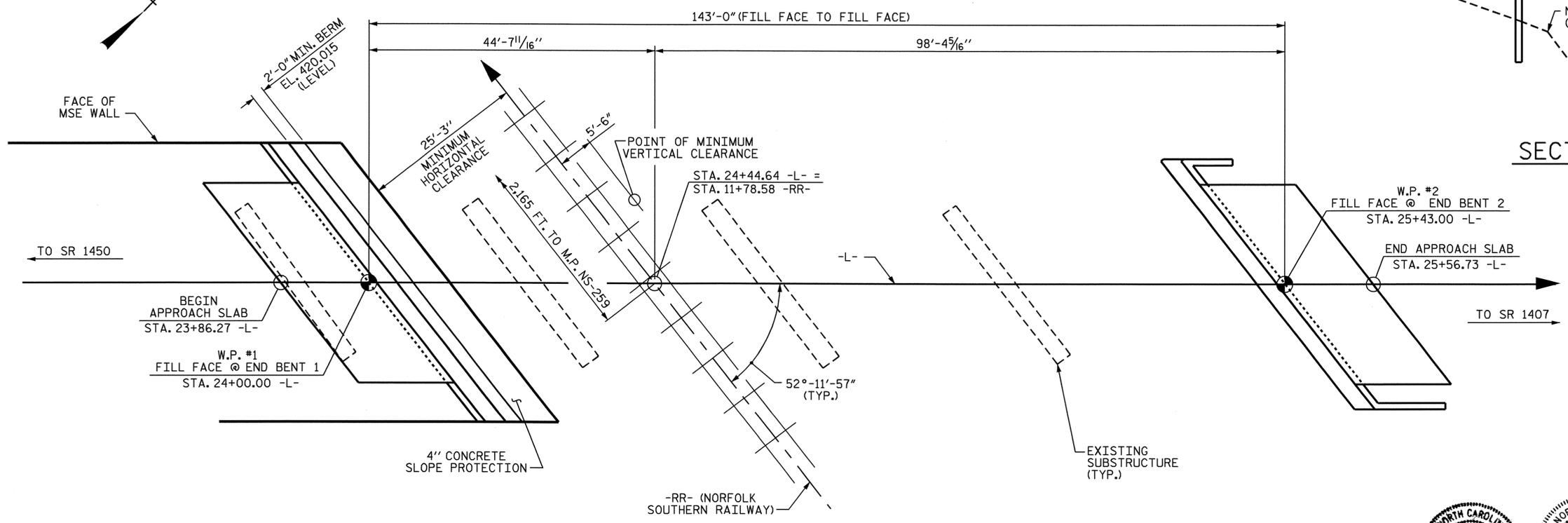


TOP OF RAIL ELEVATIONS			
STATION (-RR-)	LEFT RAIL	STATION (-RR-)	RIGHT RAIL
10+02.44	397.806	10+02.45	397.815
10+50.45	397.694	10+50.51	397.714
11+00.80	397.579	10+93.15	397.631
11+18.30	397.500	11+16.51	397.546
11+44.07	397.424	11+43.86	397.407
11+68.12	397.319	11+67.52	397.328
11+87.92	397.249	11+85.15	397.232
12+22.59	397.038	12+21.75	397.074
12+64.15	396.873	12+64.39	396.872
12+93.97	396.702	12+93.18	396.721
13+13.81	396.547	13+12.70	396.522

SECTION ALONG -L-
 (SECTIONS AT END BENTS ARE TAKEN AT RIGHT ANGLES)



SECTION THRU RAILROAD
 (LOOKING UP-STATION)



PLAN
 (PILES NOT SHOWN FOR CLARITY)

PROJECT NO. B-4137
 HARNETT COUNTY
 STATION: 24+44.64 -L-
11+78.58 -RR-

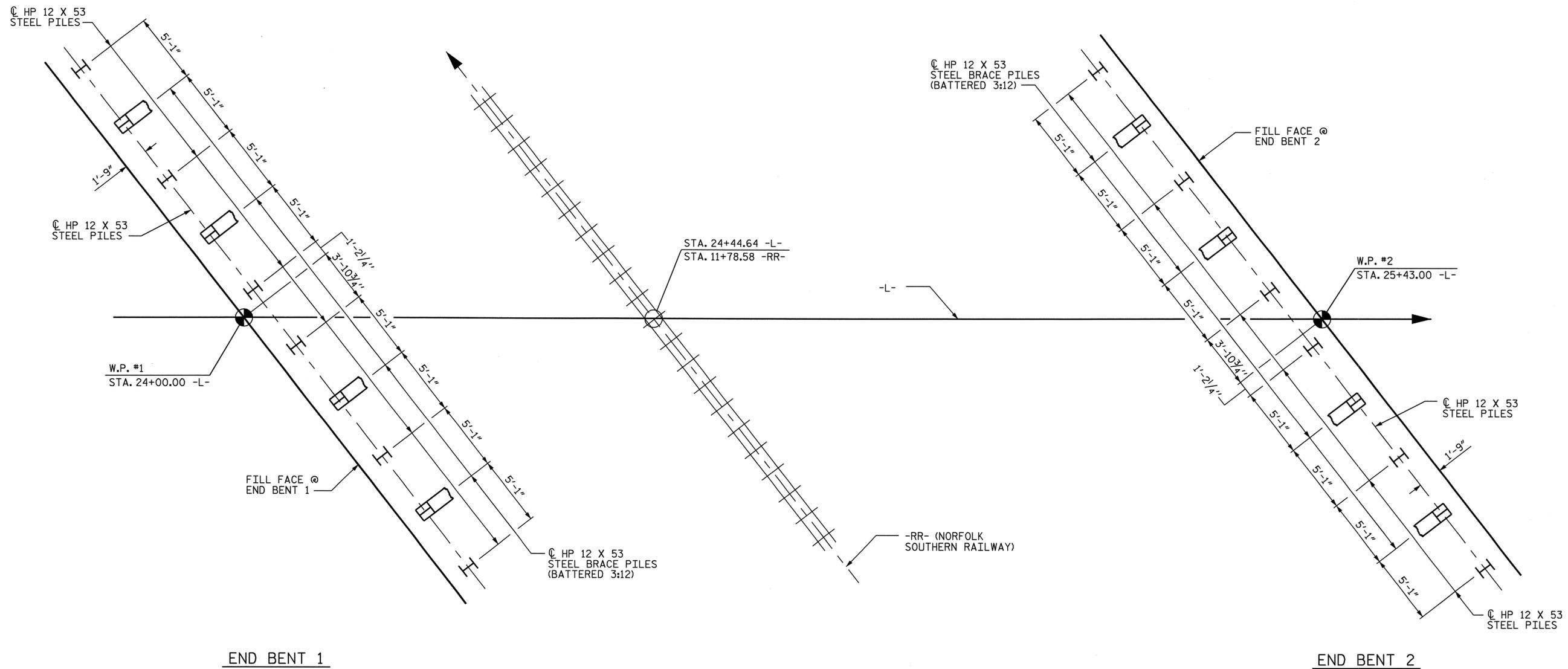
SHEET 1 OF 3 REPLACES BRIDGE NO. 35
 MILE POST NS-258.59

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON NC 42
 OVER NORFOLK SOUTHERN
 RAILWAY BETWEEN
 SR 1450 AND SR 1407



DRAWN BY: A.S. CALLAWAY DATE: 3/4/09
 CHECKED BY: L.E. SUTTON DATE: 3/18/09

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1			3	
2			4	



END BENT 1

FOUNDATION LAYOUT

END BENT 2

PROJECT NO. B-4137
HARNETT COUNTY
 STATION: 24+44.64 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON NC 42
 OVER NORFOLK SOUTHERN
 RAILWAY BETWEEN
 SR 1450 AND SR 1407

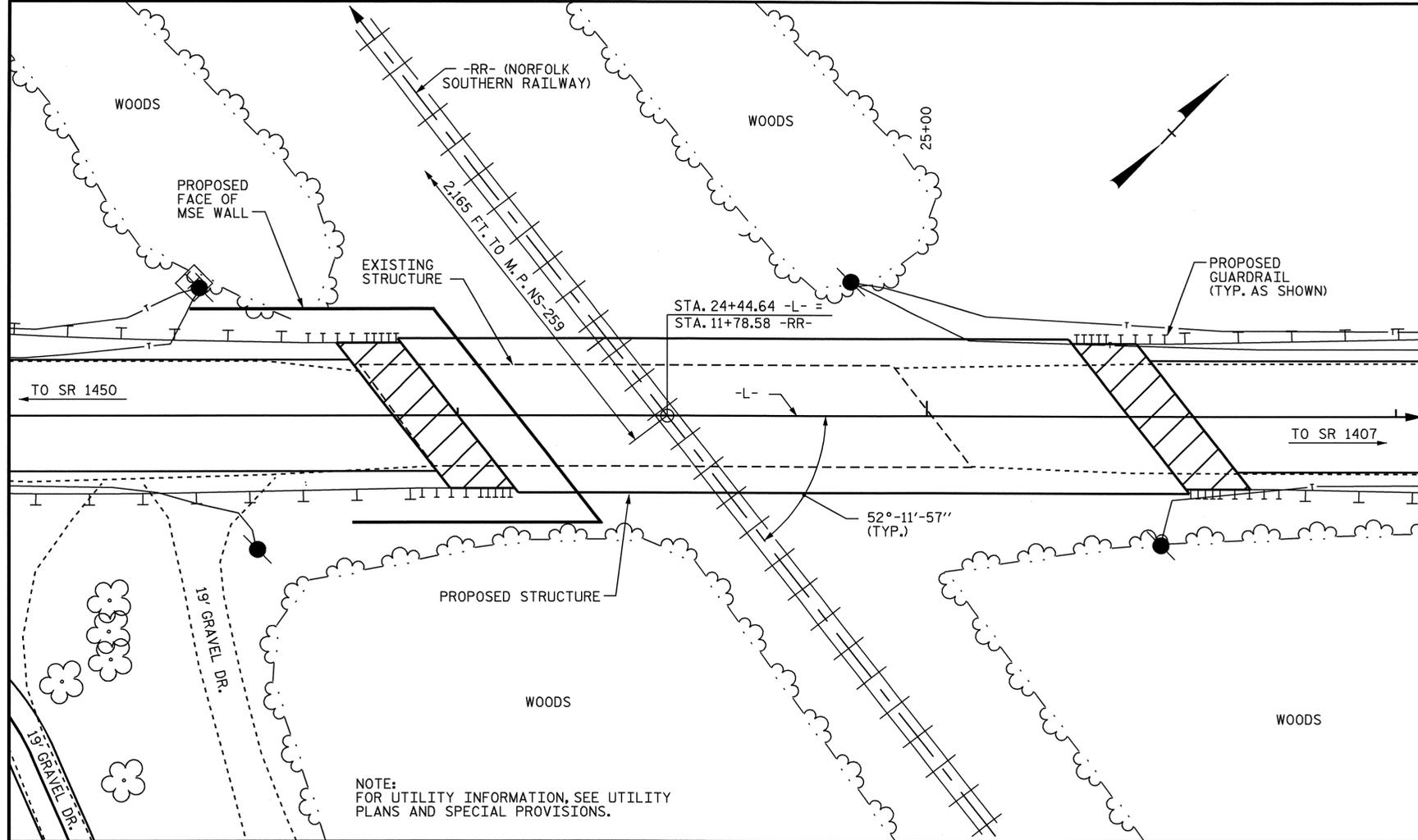


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 CHECKED BY : L.E. SUTTON DATE : 3/17/09

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

BM #81: RR SPIKE IN BASE OF 18" PINE, 28.31' LT. OF STA. 36+84.44 -L-, EL. 405.20.



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

LOCATION SKETCH

NOTES

ASSUMED LIVE LOAD = HS 20 OR ALTERNATE LOADING, EXCEPT THAT GIRDERS HAVE BEEN DESIGNED FOR HS 25.
FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
THIS BRIDGE HAS BEEN DESIGNED BY THE STRENGTH DESIGN METHOD AS SPECIFIED IN AASHTO STANDARD SPECIFICATIONS.
ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W AND PAINTED IN ACCORDANCE WITH SYSTEM 4 OF ARTICLE 442-7 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.
REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
THE EXISTING STRUCTURE CONSISTING OF 3 SPANS (1 @ 33.25', 1 @ 37.75', 1 @ 39.0') WITH A CLEAR ROADWAY WIDTH OF 21.75', REINFORCED CONCRETE FLOOR ON STEEL I-BEAMS, ON CONCRETE END BENT CAPS AND TIMBER BENT CAPS ON TIMBER PILES SHALL BE REMOVED. 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.
THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 21.5 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION, SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.
THE 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.
THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO STANDARD SPECIFICATIONS FOR SEISMIC DESIGN OF HIGHWAY BRIDGES FOR SEISMIC PERFORMANCE CATEGORY A.

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
INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STA. 24+44.64 -L-".
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 SHOWN 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.
DRIVE PILES AT END BENTS 1 AND 2 TO A REQUIRED BEARING CAPACITY OF 100 TONS PER PILE. REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF 2.
THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENTS 1 AND 2 IS 50 TONS PER PILE.
FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
FOR SHIPPING STEEL STRUCTURAL MEMBERS, SEE SPECIAL PROVISIONS.
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.
FOR STRUCTURE DRAINAGE SYSTEM, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	STRUCTURAL STEEL	HP 12 X 53 STEEL PILES	CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	EVAZOTE JOINT SEALS	STRUCTURE DRAINAGE SYSTEM	
	LUMP SUM	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	APPROX. LBS.	NO.	LIN. FT.	LIN. FT.	SQ. YDS.	SQ. YDS.	LUMP SUM	LUMP SUM	LUMP SUM
SUPERSTRUCTURE			4,667	4,466				179,400		280.73			LUMP SUM	LUMP SUM	LUMP SUM	
END BENT 1					25.2		4,492		10	450	30					
END BENT 2					33.0		5,330		10	450		212				
TOTAL	LUMP SUM	LUMP SUM	4,667	4,466	58.2	LUMP SUM	9,822	179,400	20	900	280.73	30	212	LUMP SUM	LUMP SUM	LUMP SUM

PROJECT NO. B-4137
HARNETT COUNTY
STATION: 24+44.64 -L-

SHEET 3 OF 3



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWING
FOR BRIDGE ON NC 42
OVER NORFOLK SOUTHERN
RAILWAY BETWEEN
SR 1450 AND SR 1407

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

DRAWN BY : A.S. CALLAWAY DATE : 3/4/09
CHECKED BY : L.E. SUTTON DATE : 3/18/09

NOTES:

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

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.

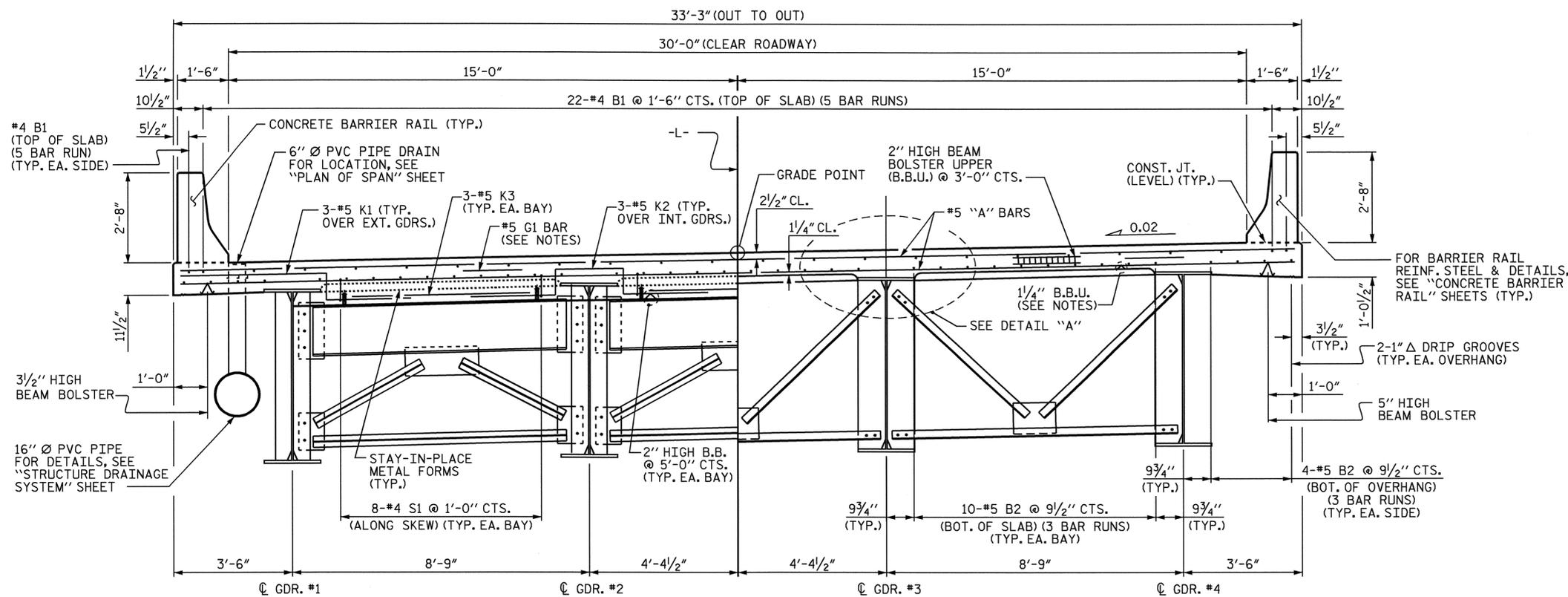
METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO GIRDER FLANGES IN THE ZONES REQUIRING CHARPY V-NOTCH TEST. SEE STRUCTURAL STEEL DETAIL SHEETS.

DIRECTION OF CASTING DECK CONCRETE SHALL BE FROM THE FIXED BEARING END TOWARD THE EXPANSION BEARING END OF THE SPAN.

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

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

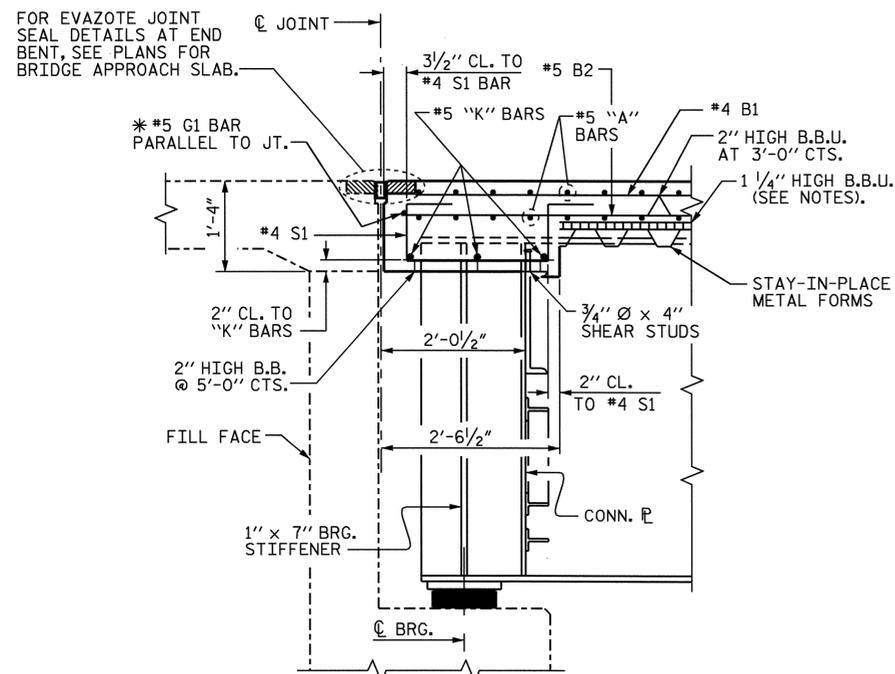
THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 2 1/2" AT END BENTS. FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.



AT END BENT DIAPHRAGMS

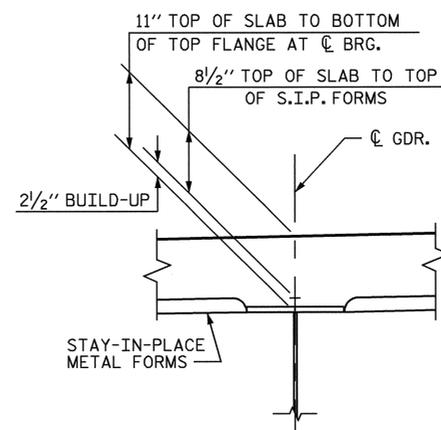
AT INTERMEDIATE DIAPHRAGMS

TYPICAL SECTION



SECTION A-A

*#5 G1 BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.



DETAIL "A"
(TYP. EA. GIRDER)

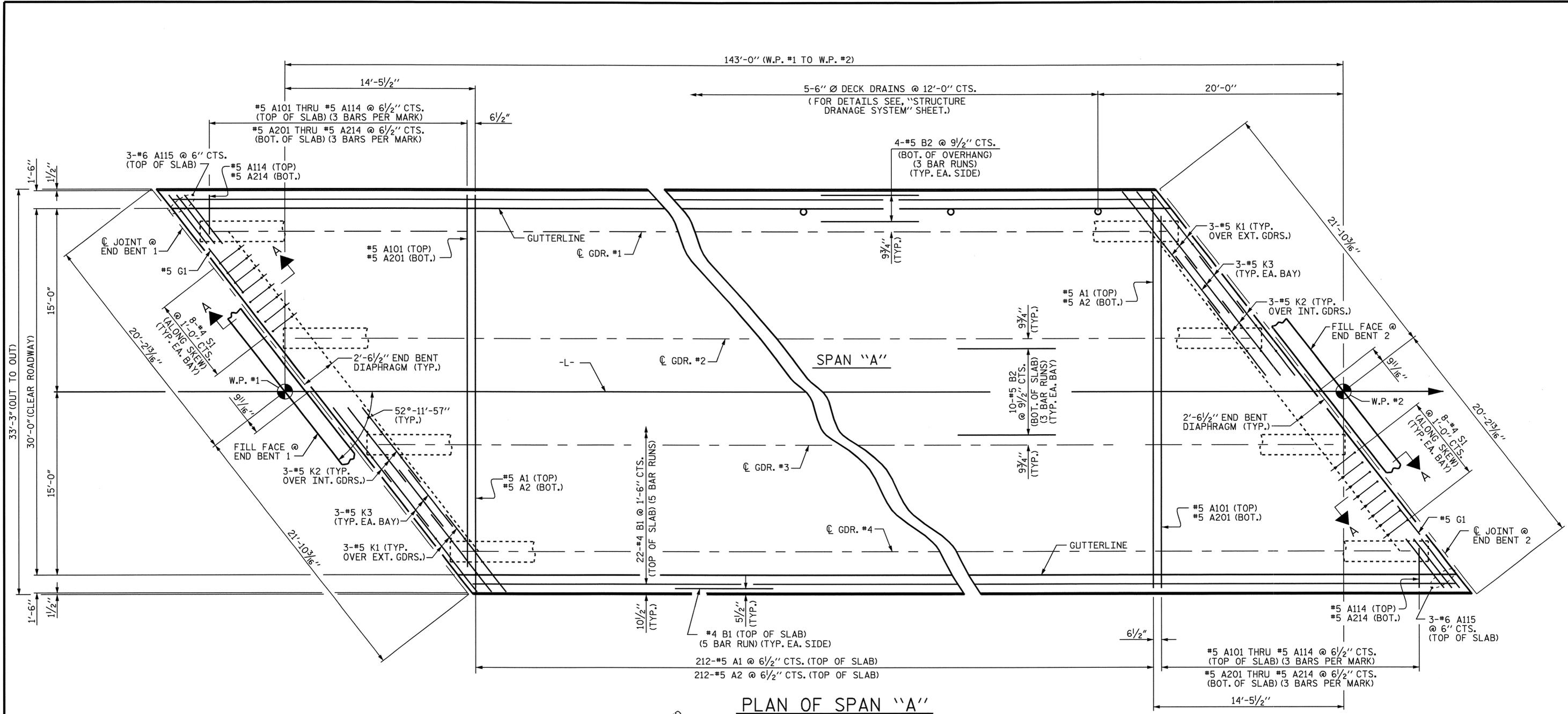
PROJECT NO. B-4137
HARNETT COUNTY
 STATION: 24+44.64 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTIONS

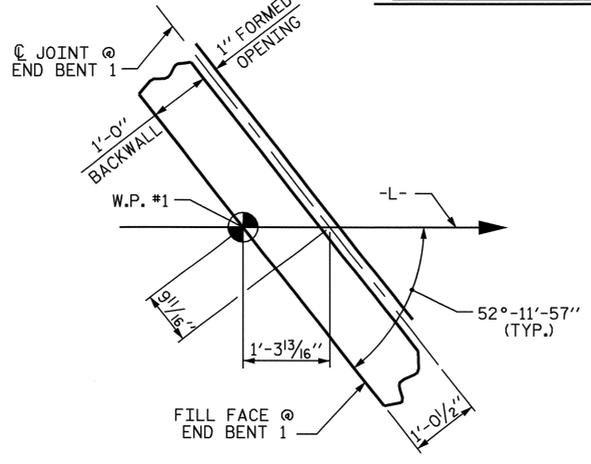


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			24

DRAWN BY: A.S. CALLAWAY DATE: 8/8/07
 CHECKED BY: P.C. BREWER DATE: 10/29/07



PLAN OF SPAN "A"



END BENT DETAIL

(END BENT 1 SHOWN, END BENT 2 SIMILAR)

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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

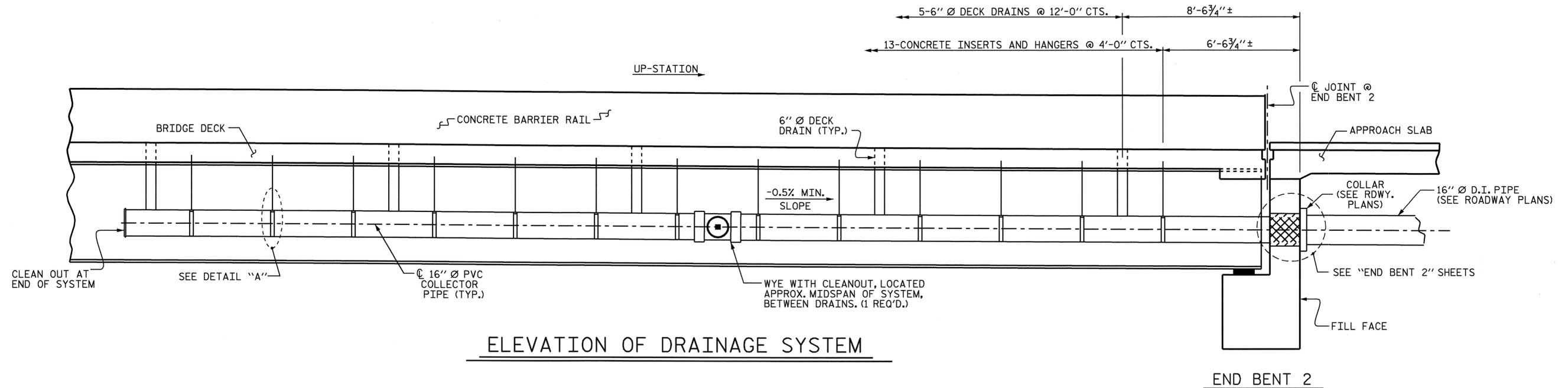
SUPERSTRUCTURE
 PLAN OF SPAN



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

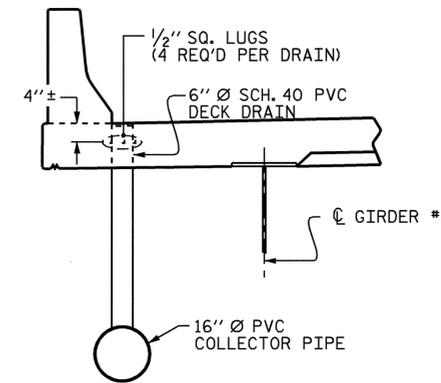
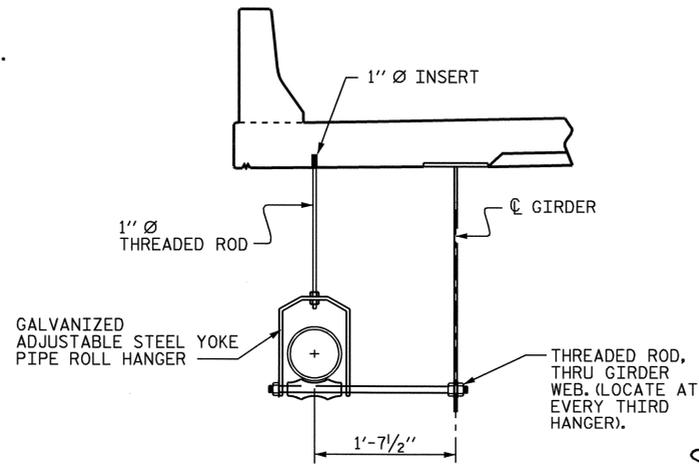
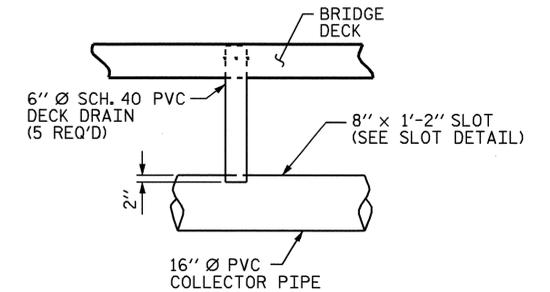
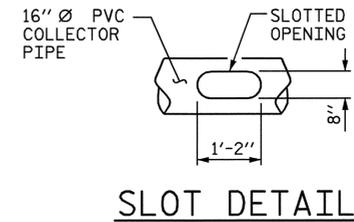
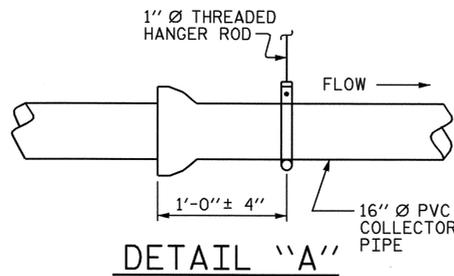
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 LSUTTON



NOTES

- SEE "PLAN OF SPANS" SHEETS, FOR LOCATION OF 6" Ø DECK DRAINS.
- THE DRAINAGE SYSTEM DETAILS ARE SCHEMATIC DRAWINGS ONLY.
- THE CONTRACTOR SHALL SUBMIT FOR ACCEPTANCE, PRIOR TO PURCHASE, A PLAN FOR THE PVC DRAINAGE SYSTEM, INCLUDING ATTACHMENTS TO THE BRIDGE SUPERSTRUCTURE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE HORIZONTAL AND VERTICAL ALIGNMENT OF THE PVC DRAINAGE SYSTEM USING NECESSARY FITTINGS, ELBOWS, TEES AND WYES TO PROVIDE A CONTINUOUS DRAINAGE SYSTEM.
- DRAINAGE SYSTEM WILL BE PAID FOR UNDER THE PAY ITEM "STRUCTURE DRAINAGE SYSTEM". FOR "STRUCTURE DRAINAGE SYSTEM", SEE SPECIAL PROVISIONS.
- THE CONTRACTOR SHALL DETERMINE THE QUANTITY OF FITTINGS, PIPE LENGTHS, GUIDES AND ATTACHMENTS REQUIRED TO CARRY THE WATER FROM THE DECK DRAINS TO THE OUTLETS.
- BOLTS, NUTS AND WASHERS SHALL BE HIGH STRENGTH AND GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
- CONCRETE INSERTS SHALL BE OF AN APPROVED GALVANIZED TYPE HAVING A MINIMUM WORKING LOAD TENSION CAPACITY OF 2.5 KIPS.
- DECK DRAIN PIPES AND FITTINGS SHALL BE SCH. 40 PVC, ASTM D 1785. JOINT FITTINGS SHALL BE SOLVENT CEMENT TYPE.
- COLLECTOR PIPES SHALL BE ASTM D2241, SDR 26, IPS OD 16. JOINTS SHALL BE GASKETED ELASTOMERIC TYPE.
- GASKETED JOINTS SHALL BE POSITIONED TO OCCUR APPROXIMATELY 12" FROM PIPE SUPPORTS, SEE DETAIL "A".
- SEE ROADWAY PLANS FOR DETAILS AND PAY ITEM FOR JUNCTION BOX AT APPROXIMATE STATION 25+77 -L-.



NOTE: FOR LOCATION OF 6" Ø DECK DRAINS, SEE "PLAN OF SPANS" SHEETS.

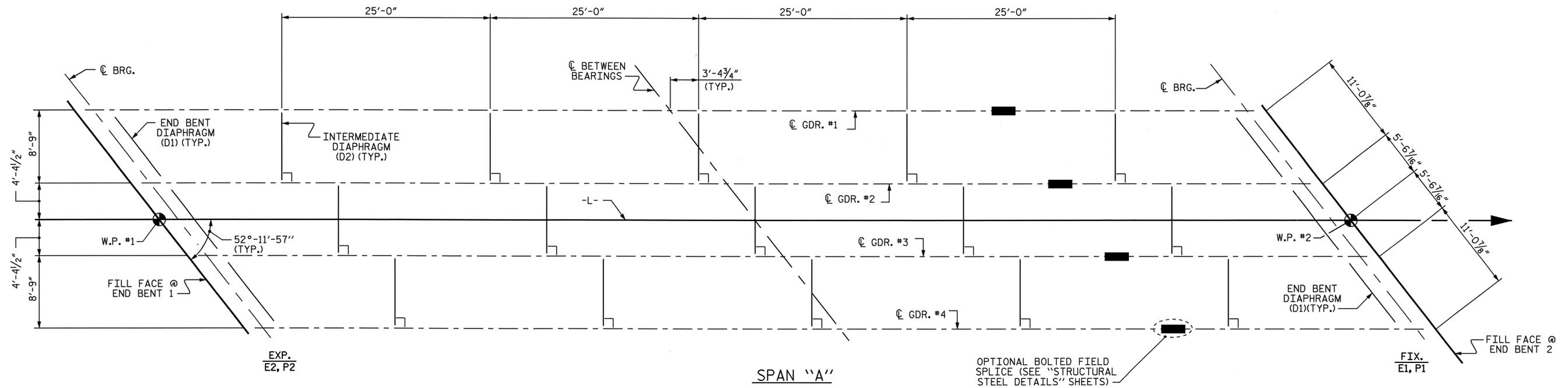
TOP OF DECK DRAIN IS TO BE SET 3/8" BELOW SURFACE OF SLAB.
 4 -1/2" SQUARE LUGS ARE TO BE GLUED TO THE PVC PIPE AT EQUAL SPACES AROUND THE DECK DRAIN.

PROJECT NO. B-4137
HARNETT COUNTY
 STATION: 24+44.64 -L-



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE STRUCTURE DRAINAGE SYSTEM					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-6 TOTAL SHEETS 24

DRAWN BY : A.S. CALLAWAY DATE : 8/7/07
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FRAMING PLAN

PROJECT NO. B-4137
HARNETT COUNTY
 STATION: 24+44.64 -L-

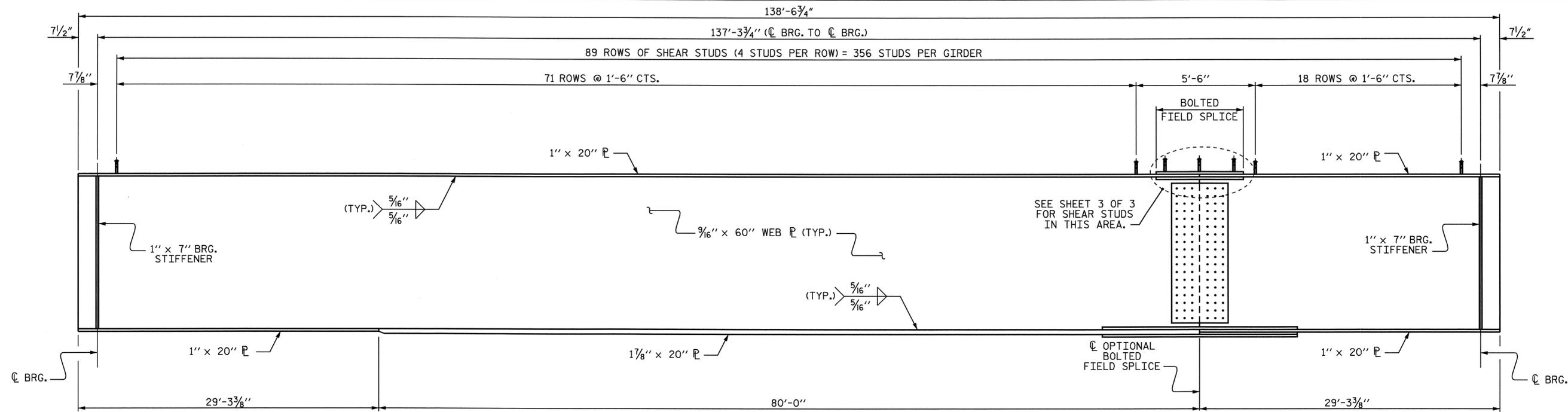
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 FRAMING PLAN



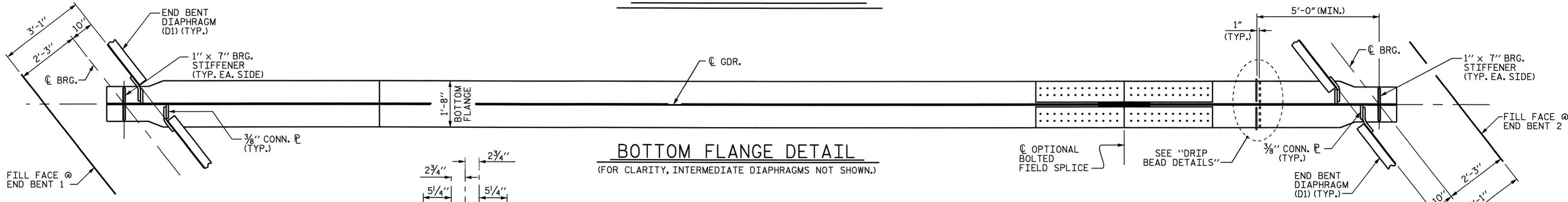
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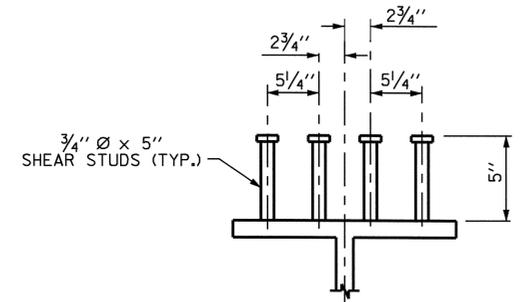
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1			3			TOTAL SHEETS
2			4			24



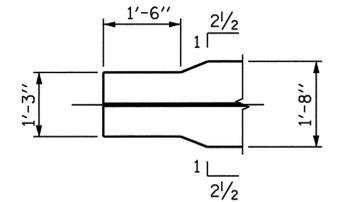
ELEVATION OF GIRDER



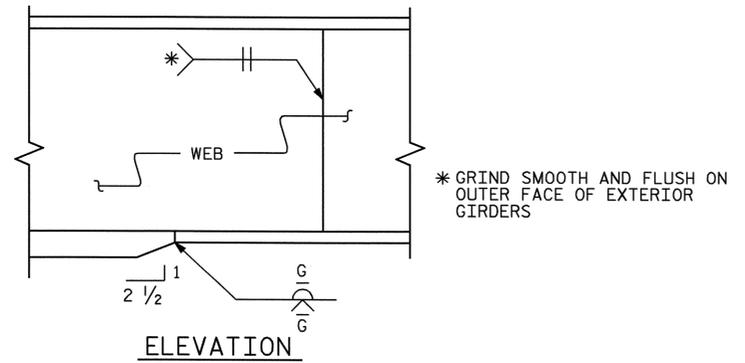
BOTTOM FLANGE DETAIL
(FOR CLARITY, INTERMEDIATE DIAPHRAGMS NOT SHOWN.)



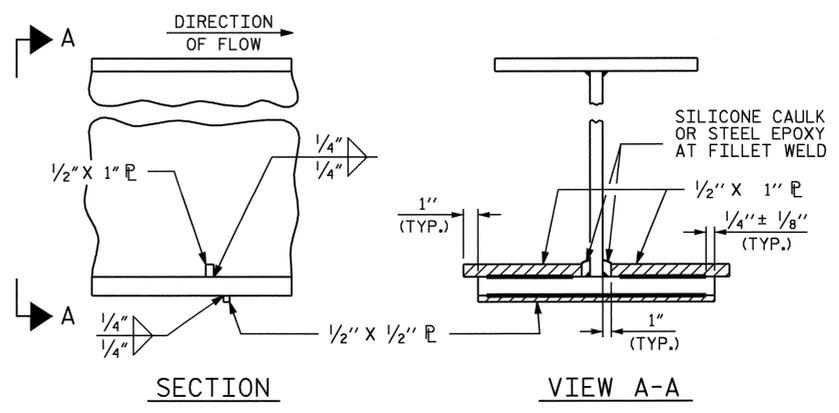
SHEAR STUD DETAILS



BOTTOM FLANGE TAPER DETAIL



TYPICAL FLANGE AND WEB BUTT JOINT



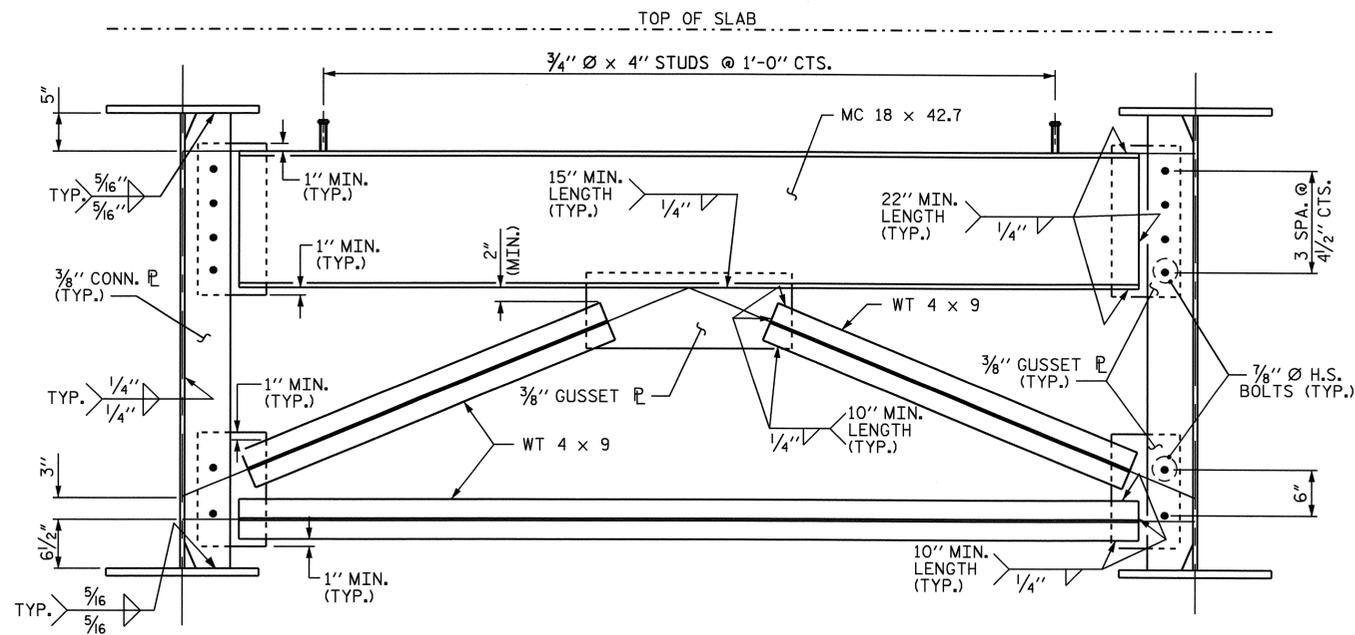
DRIP BEAD DETAILS

PROJECT NO. B-4137
 HARNETT COUNTY
 STATION: 24+44.64 -L-
 SHEET 1 OF 3

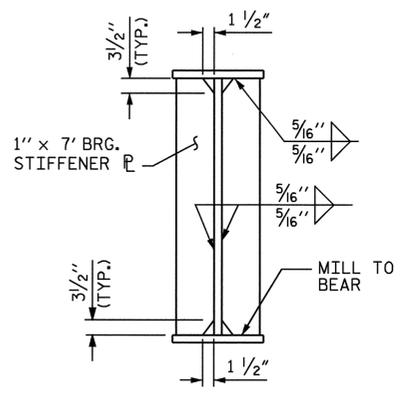
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-8
SUPERSTRUCTURE STRUCTURAL STEEL DETAILS						
REVISIONS						TOTAL SHEETS 24
NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			



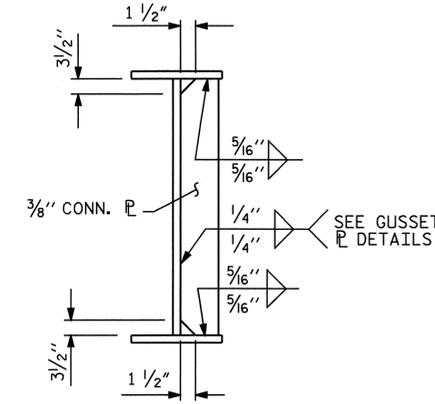
DRAWN BY: A.S. CALLAWAY DATE: 8/9/07
 CHECKED BY: P.C. BREWER DATE: 10/29/07



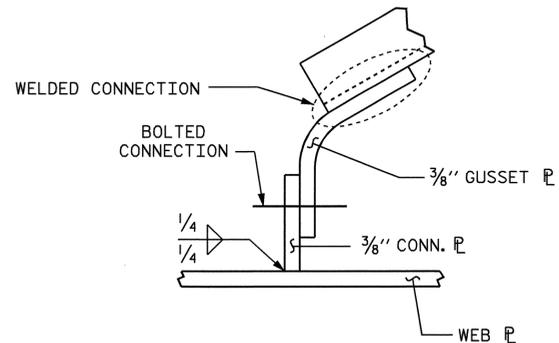
END BENT DIAPHRAGM D1



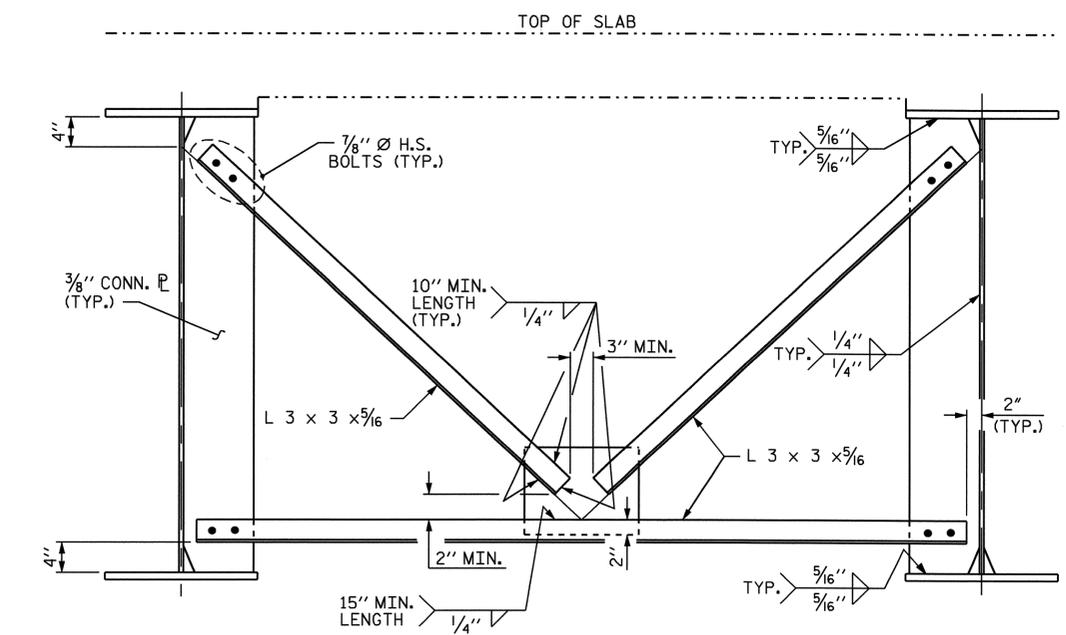
BEARING STIFFENER



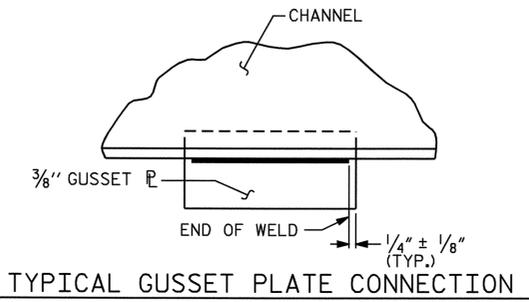
CONNECTOR PLATE



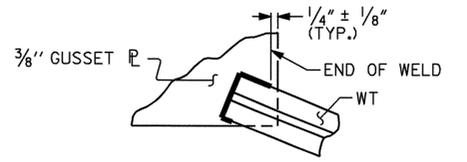
GUSSET PL. DETAILS



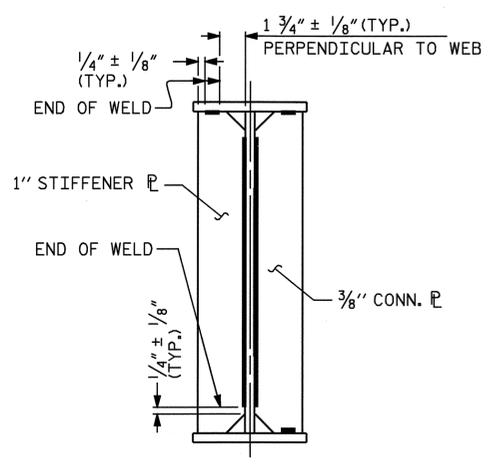
INTERMEDIATE DIAPHRAGM D2



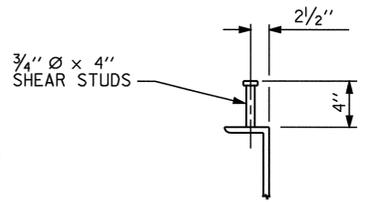
TYPICAL GUSSET PLATE CONNECTION



TYPICAL "TEE" TO GUSSET PLATE CONNECTION



TYPICAL STIFFENER OR CONNECTOR PLATE CONNECTIONS



SHEAR STUD DETAILS

NOTES

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W AND PAINTED IN ACCORDANCE WITH SYSTEM 4 OF ARTICLE 442-7 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED 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. FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.

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

A CHARPY V-NOTCH 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 1072-9 OF THE STANDARD SPECIFICATIONS.

SHOP SPLICES ARE PERMITTED TO LIMIT THE MAXIMUM REQUIRED FLANGE PIECE LENGTHS TO 60 FEET AND WEB PIECE LENGTHS TO 45 FEET. 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 BEAMS AND GIRDERS SHALL BE PLUMB.

AT THE CONTRACTOR'S OPTION, THE OPTIONAL BOLTED FIELD SPLICE MAY BE OMITTED, PROVIDED THE CONTRACTOR OBTAINS ALL PERMITS REQUIRED FOR TRANSPORTING THE LONGER PIECE LENGTHS.

PROJECT NO. B-4137
 HARNETT COUNTY
 STATION: 24+44.64 -L-

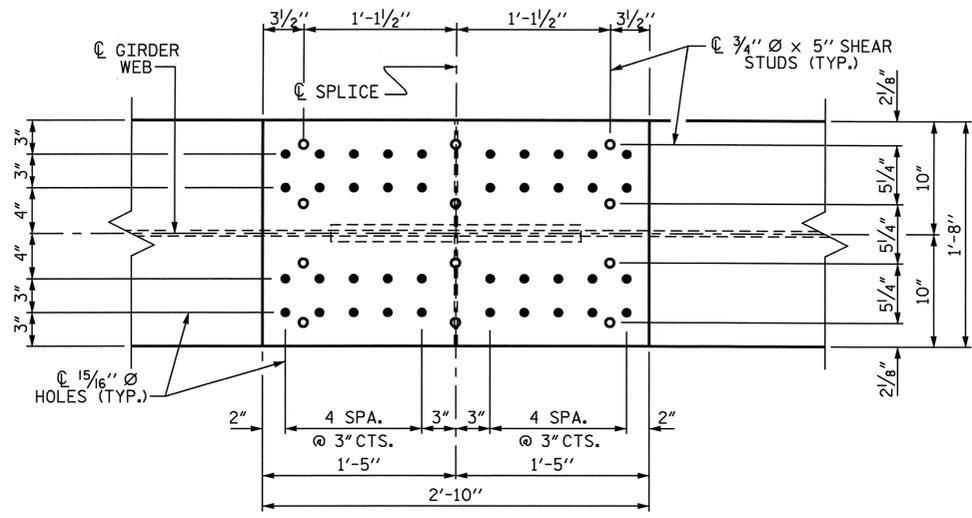
SHEET 2 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE STRUCTURAL STEEL DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
				SHEET NO.	S-9
				TOTAL SHEETS	24

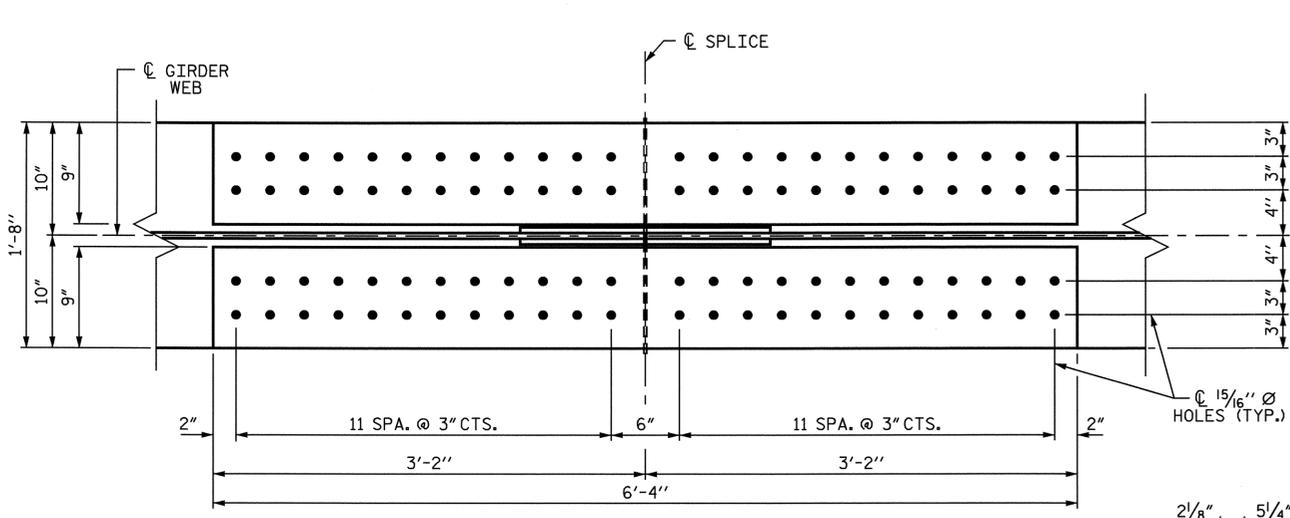
DRAWN BY: A.S. CALLAWAY DATE: 8/20/07
 CHECKED BY: P.C. BREWER DATE: 10/29/07

17-JUL-2009 09:34
 R:\Structures\Callaway\Mcrosstallon\B4137.ed.ss.01.dgn
 LSUTTON

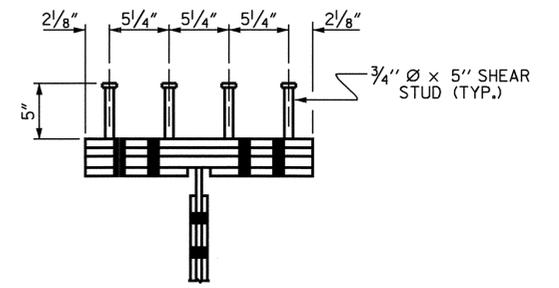




PLAN (TOP OF TOP FLANGE)

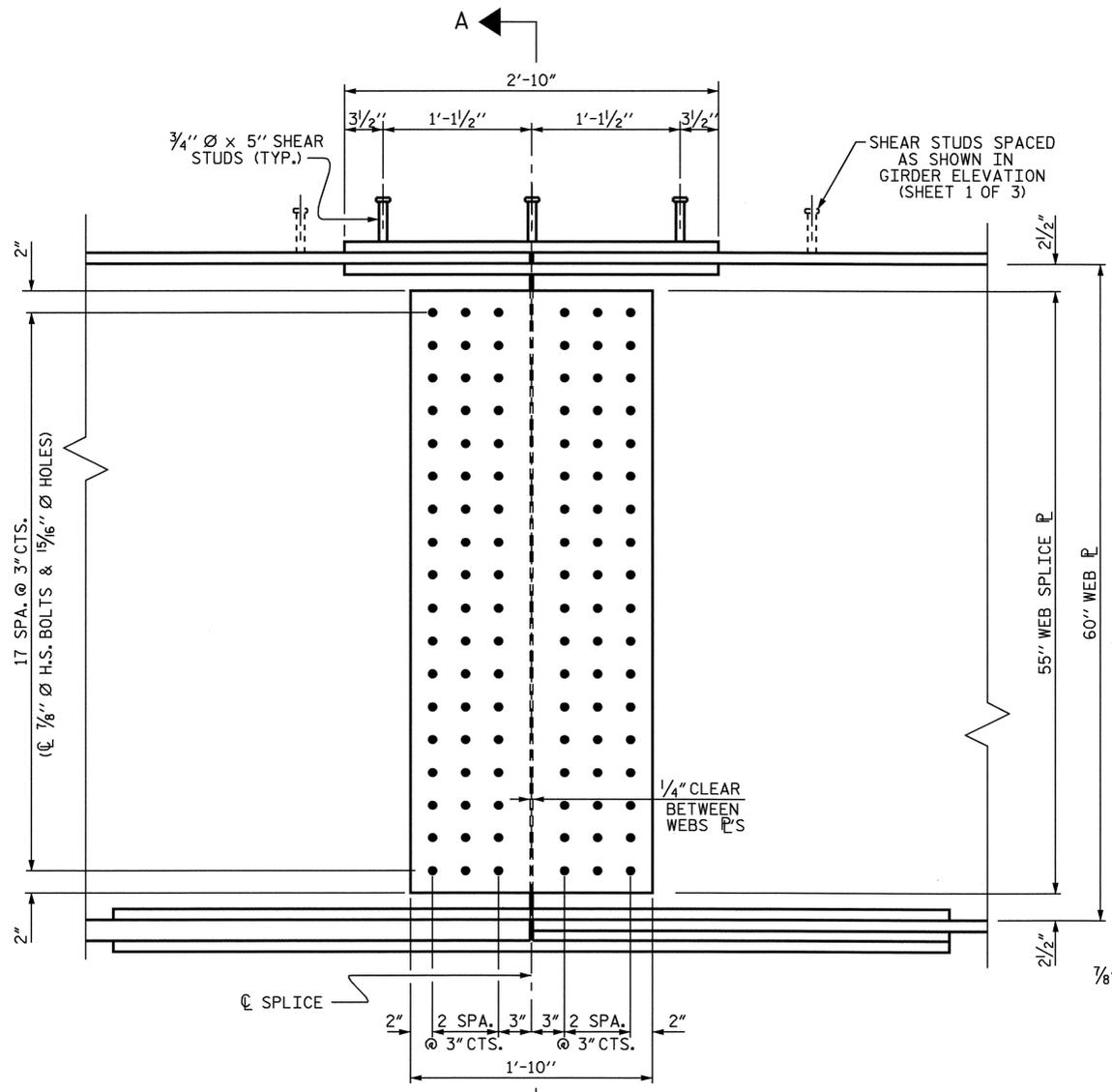


PLAN (TOP OF BOTTOM FLANGE)

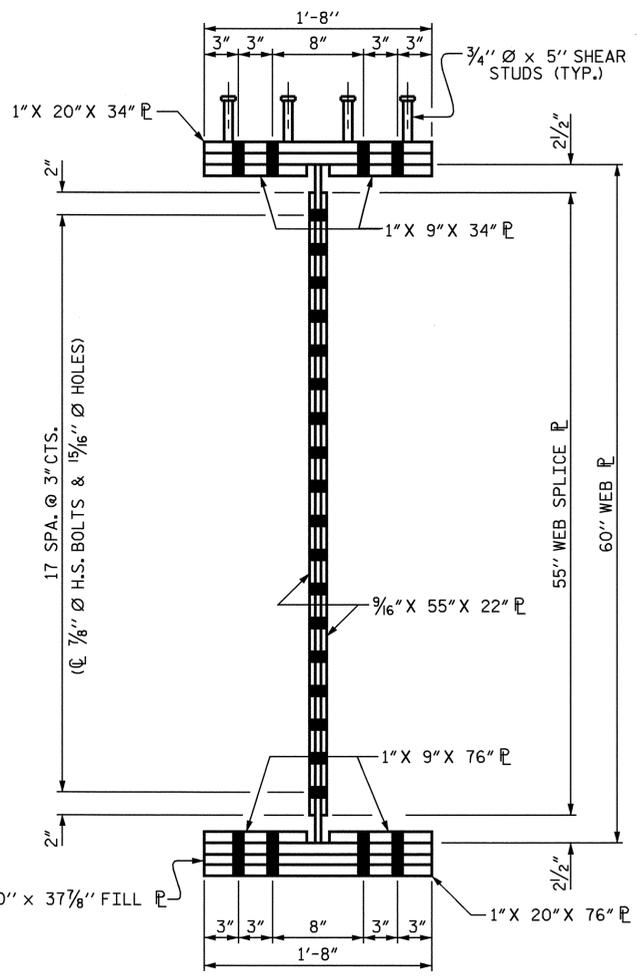


SHEAR STUD DETAIL FOR TOP FLANGE SPLICE PLATE

SHEAR STUDS ARE TO BE SHOP WELDED ON TOP OF PLATE BEFORE FIELD ASSEMBLY.



ELEVATION



SECTION A-A

DESCRIPTION	SIZE	NO. REQ'D. FOR ONE FIELD SPLICE	TOTAL REQ'D.
WEB SPLICE PL	9/16" x 55" x 22"	2	8
TOP FLANGE SPLICE PL (TOP OF FLANGE)	1" x 20" x 34"	1	4
TOP FLANGE SPLICE PL (BOTTOM OF FLANGE)	1" x 9" x 34"	2	8
BOTTOM FLANGE SPLICE PL (TOP OF FLANGE)	1" x 9" x 76"	2	8
BOTTOM FLANGE FILL PL	7/8" x 20" x 37 7/8"	1	4
BOTTOM FLANGE SPLICE PL (BOTTOM OF FLANGE)	1" x 20" x 76"	1	4

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HARNETT COUNTY
 STATION: 24+44.64 -L-

SHEET 3 OF 3



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

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 STRUCTURAL STEEL
 DETAILS

SHEET NO. S-10
 TOTAL SHEETS 24

DRAWN BY : A.S. CALLAWAY DATE : 8/3/07
 CHECKED BY : P.C. BREWER DATE : 10/29/07

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.

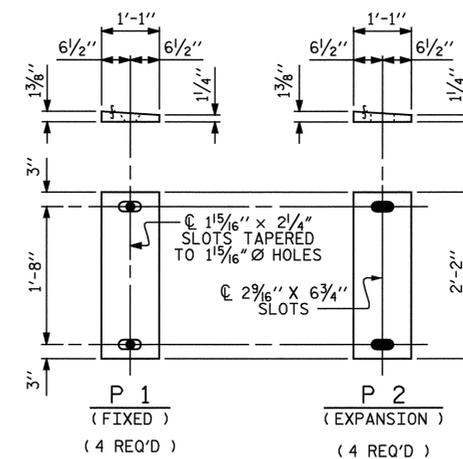
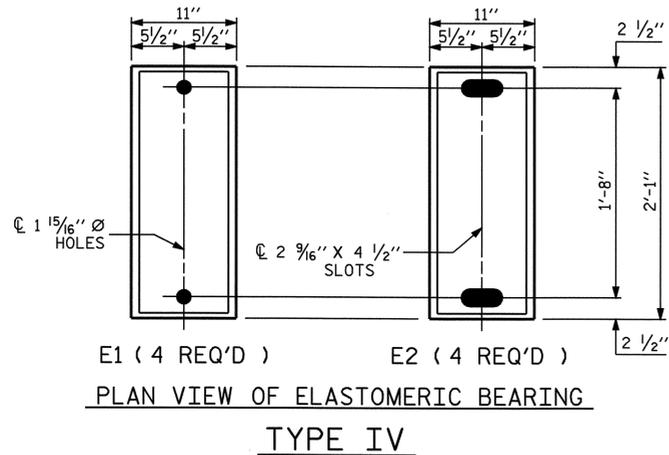
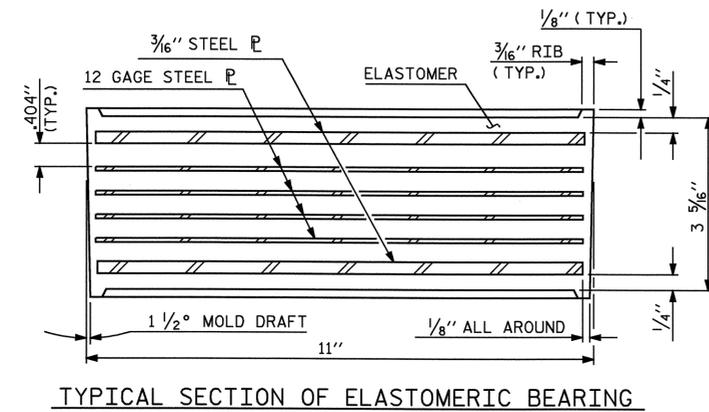
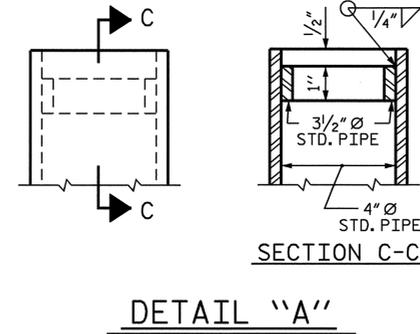
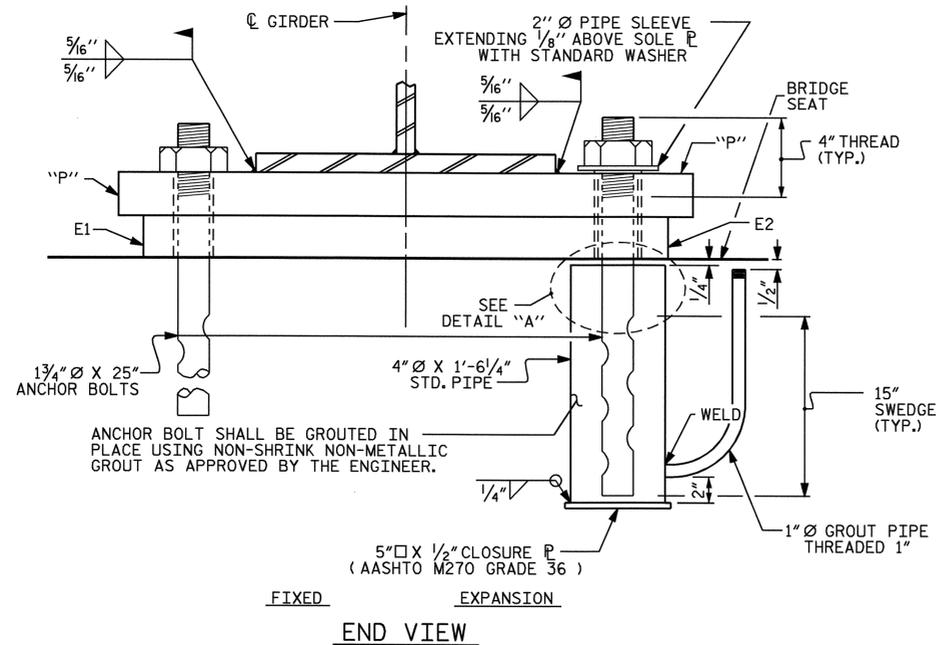
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

THE CLOSURE PLATE, GROUT PIPE AND STANDARD PIPE FOR THE EXPANSION ASSEMBLY NEED NOT BE GALVANIZED.

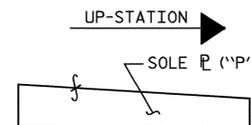
THE CONTRACTOR'S ATTENTION IS CALLED TO THE FOLLOWING PROCEDURES TO ACCOMMODATE GIRDER TRANSLATION AND END ROTATION:

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

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



SOLE PLATE DETAILS ("P")



SOLE P PLACEMENT DETAIL

LOAD RATINGS

	MAX.D.L.+ L.L.
TYPE IV	184 K

PROJECT NO. B-4137
HARNETT COUNTY
 STATION: 24+44.64 -L-



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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-11
2			4			TOTAL SHEETS 24

ASSEMBLED BY : A.S. CALLAWAY	DATE : 8/7/07
CHECKED BY : P.C. BREWER	DATE : 10/29/07
DRAWN BY : EEM 10/95	REV. 10/17/00 RWW/LES
CHECKED BY : PEK 10/95	REV. 7/10/01 LES/RDR
	REV. 5/1/06 TLA/GM

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
SPAN "A"																					
GIRDERS 1 & 4																					
TWENTIETH POINTS	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.019	0.038	0.056	0.071	0.085	0.097	0.106	0.112	0.117	0.118	0.117	0.112	0.106	0.097	0.085	0.071	0.056	0.038	0.019	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.057	0.117	0.174	0.225	0.269	0.306	0.336	0.357	0.371	0.375	0.371	0.357	0.336	0.306	0.269	0.225	0.174	0.117	0.057	0
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0	0.008	0.016	0.023	0.029	0.034	0.039	0.043	0.045	0.047	0.048	0.047	0.045	0.043	0.039	0.034	0.029	0.023	0.016	0.008	0
TOTAL DEAD LOAD DEFLECTION	0	0.084	0.171	0.253	0.325	0.388	0.442	0.485	0.514	0.535	0.541	0.535	0.514	0.485	0.442	0.388	0.325	0.253	0.171	0.084	0
VERTICAL CURVE ORDINATE	0	0.030	0.056	0.079	0.100	0.117	0.131	0.142	0.149	0.154	0.155	0.154	0.149	0.142	0.131	0.117	0.100	0.079	0.056	0.030	0
REQUIRED CAMBER	0	1 3/8"	2 3/4"	4"	5 1/8"	6 1/16"	6 7/8"	7 1/2"	7 5/16"	8 1/4"	8 3/8"	8 1/4"	7 5/16"	7 1/2"	6 7/8"	6 1/16"	5 1/8"	4"	2 3/4"	1 3/8"	0
SPAN "A"																					
GIRDERS 2 & 3																					
TWENTIETH POINTS	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.020	0.039	0.057	0.073	0.087	0.099	0.109	0.116	0.120	0.121	0.120	0.116	0.109	0.099	0.087	0.073	0.057	0.039	0.020	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.056	0.116	0.172	0.222	0.265	0.302	0.331	0.353	0.366	0.370	0.366	0.353	0.331	0.302	0.265	0.222	0.172	0.116	0.056	0
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0	0.008	0.015	0.022	0.028	0.034	0.038	0.042	0.044	0.046	0.047	0.046	0.044	0.042	0.038	0.034	0.028	0.022	0.015	0.008	0
TOTAL DEAD LOAD DEFLECTION	0	0.084	0.170	0.251	0.323	0.386	0.439	0.482	0.513	0.532	0.538	0.532	0.513	0.482	0.439	0.386	0.323	0.251	0.170	0.084	0
VERTICAL CURVE ORDINATE	0	0.030	0.056	0.079	0.100	0.117	0.131	0.142	0.149	0.154	0.155	0.154	0.149	0.142	0.131	0.117	0.100	0.079	0.056	0.030	0
REQUIRED CAMBER	0	1 3/8"	2 1/16"	3 1/16"	5 1/16"	6 1/16"	6 13/16"	7 1/2"	7 5/16"	8 1/4"	8 5/16"	8 1/4"	7 5/16"	7 1/2"	6 13/16"	6 1/16"	5 1/16"	3 1/16"	2 1/16"	1 3/8"	0

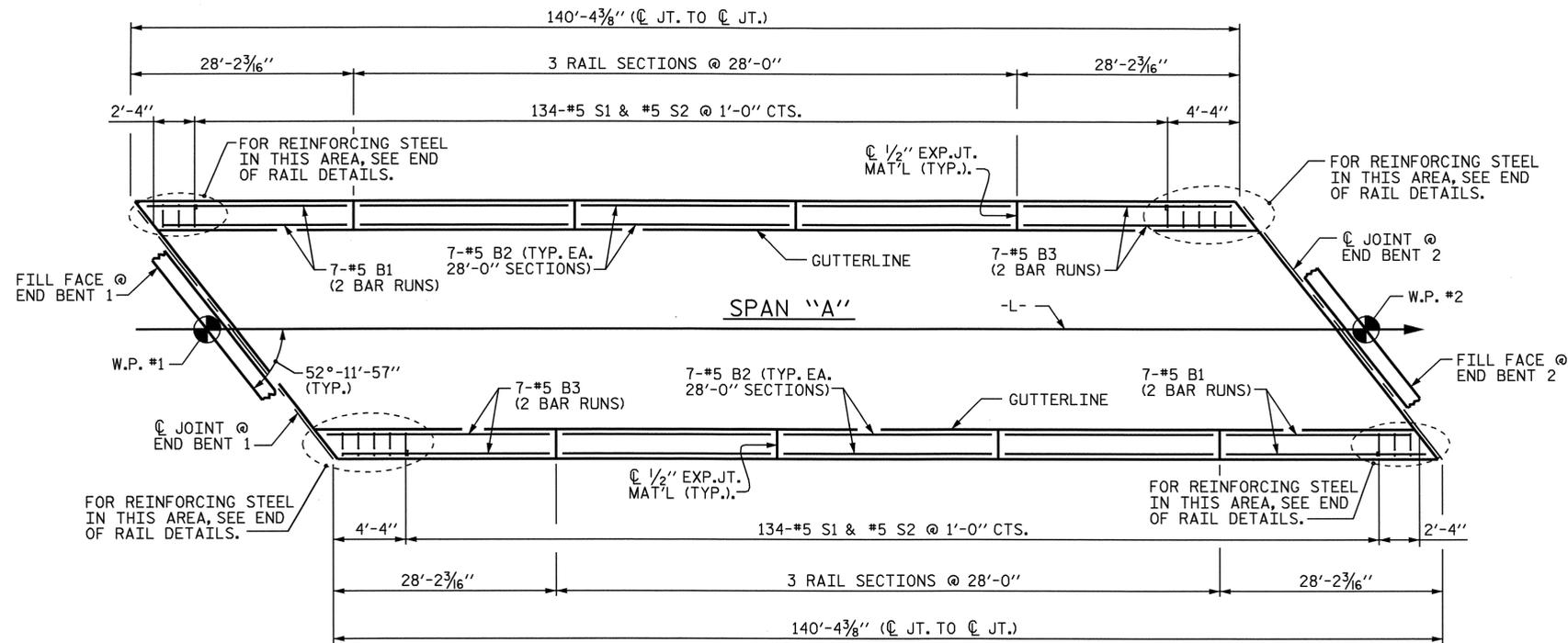
* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
 ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

PROJECT NO. B-4137
HARNETT COUNTY
 STATION: 24+44.64 -L-

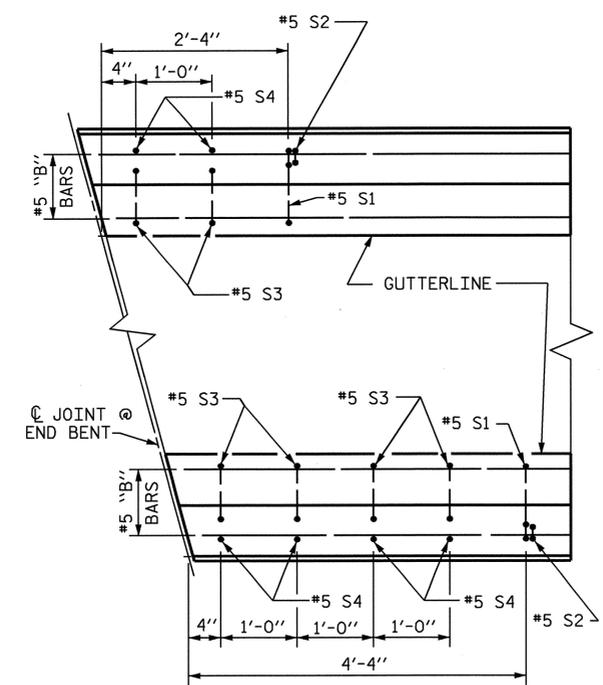


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH				
SUPERSTRUCTURE DEAD LOAD DEFLECTIONS				
REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	
TOTAL SHEETS				24

DRAWN BY : A.S. CALLAWAY DATE : 8/9/07
 CHECKED BY : P.C. BREWER DATE : 10/29/07

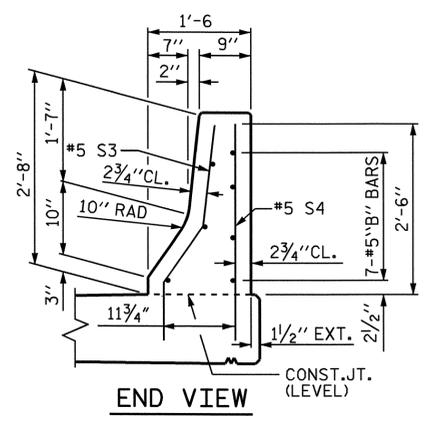


PLAN OF BARRIER RAIL

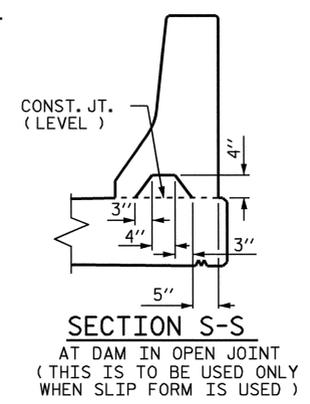


END OF RAIL DETAILS

FOR ADHESIVE ANCHORING AT SAWED JOINTS

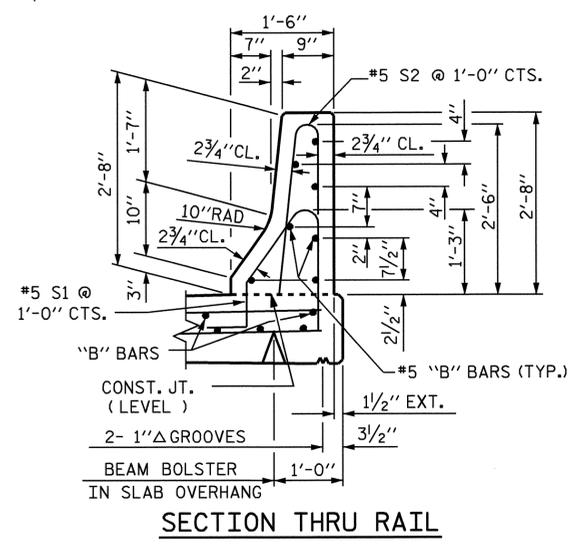


END VIEW

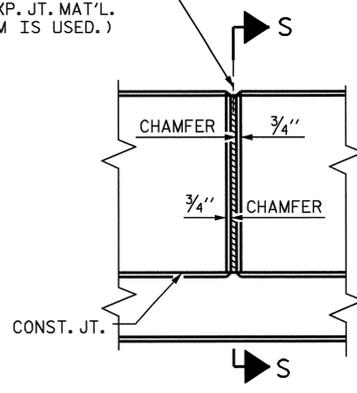


SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY
WHEN SLIP FORM IS USED)

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



SECTION THRU RAIL



ELEVATION AT EXPANSION JOINTS
BARRIER RAIL DETAILS

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.

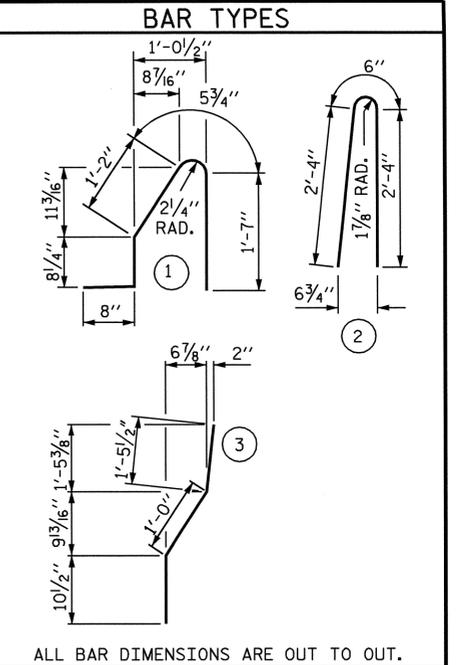
THE JOINT IN THE DECK SHALL BE SAWED PRIOR TO THE CASTING OF BARRIER RAIL.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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

VERTICAL 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.

THE #5 S1 AND #5 S2 BARS MAY BE SHIFTED SLIGHTLY, AS NECESSARY, IN ORDER TO MAINTAIN 2" MIN. CLEARANCE TO THE 1/2" EXPANSION JOINT MATERIAL.



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
FOR CONCRETE BARRIER RAIL ONLY					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	28	#5	STR	15'-6"	453
* B2	42	#5	STR	27'-7"	1208
* B3	28	#5	STR	16'-2"	472
* S1	268	#5	1	4'-7"	1281
* S2	268	#5	2	5'-2"	1444
* S3	12	#5	3	3'-4"	42
* S4	12	#5	STR	3'-2"	40
* EPOXY COATED REINFORCING STEEL				LBS.	4,940
CLASS AA CONCRETE				CU. YDS.	28.1
CONCRETE BARRIER RAIL				LIN. FT.	280.73

PROJECT NO. B-4137
HARNETT COUNTY
 STATION: 24+44.64 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD CONCRETE BARRIER RAIL					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-13
					TOTAL SHEETS 24



ASSEMBLED BY : A.S. CALLAWAY	DATE : 7/24/07
CHECKED BY : P.C. BREWER	DATE : 10/29/07
DRAWN BY : ARB 5/87	REV. 10/17/00 RWW/LES
CHECKED BY : SJD 9/87	REV. 5/7/03R RWW/JTE
	REV. 5/1/06 TLA/GM

NOTES

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

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

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

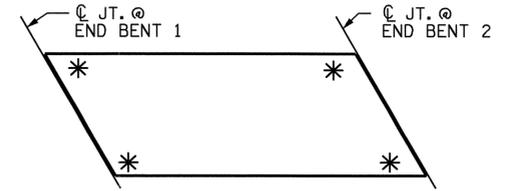
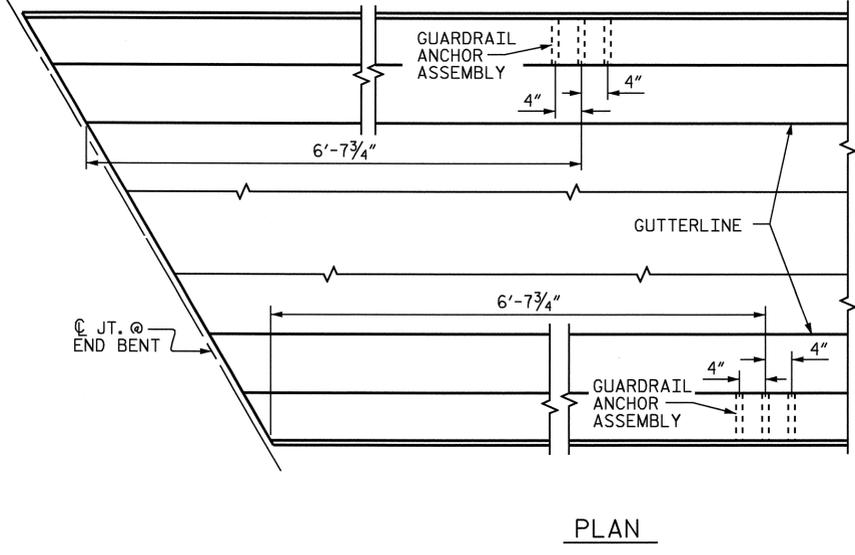
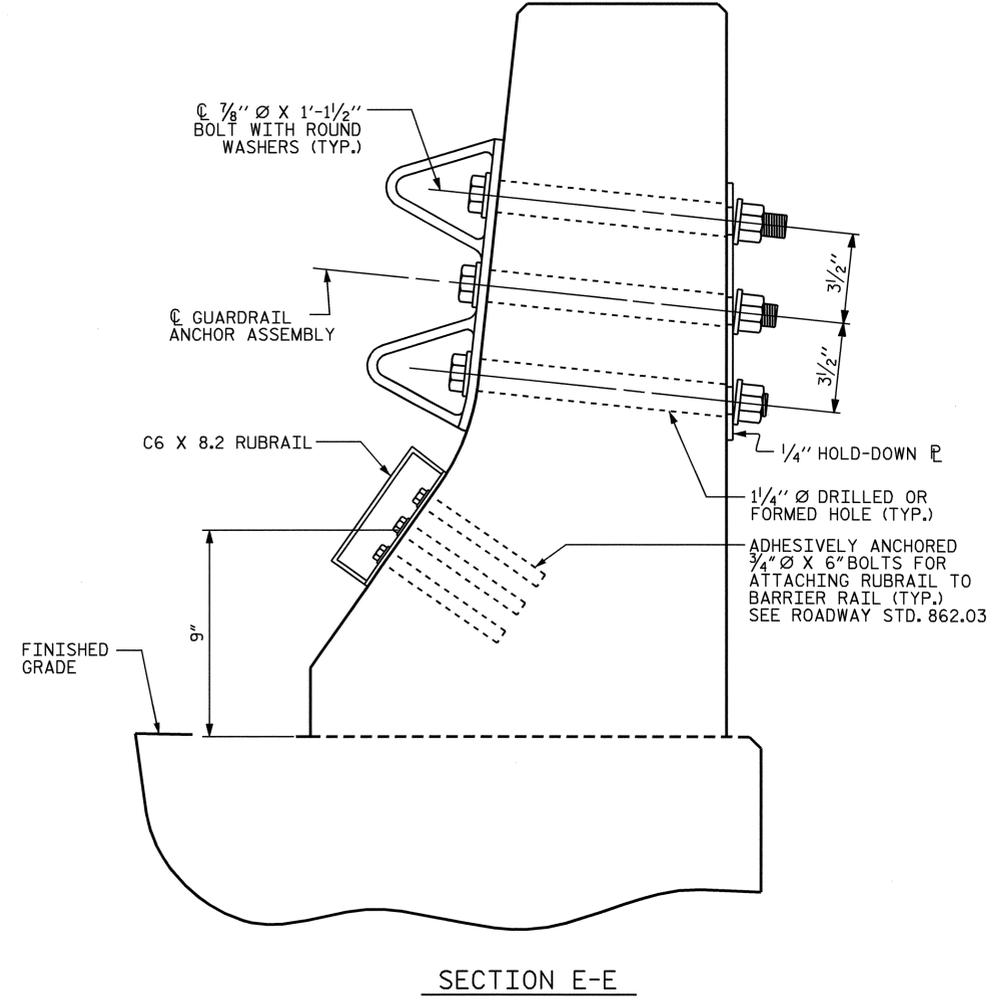
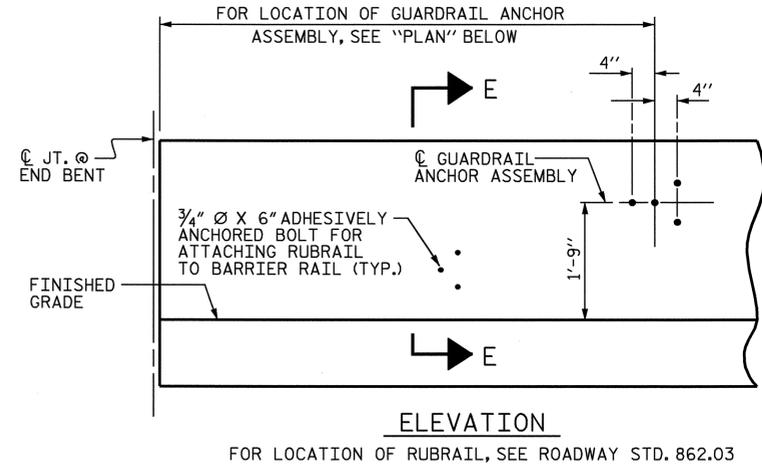
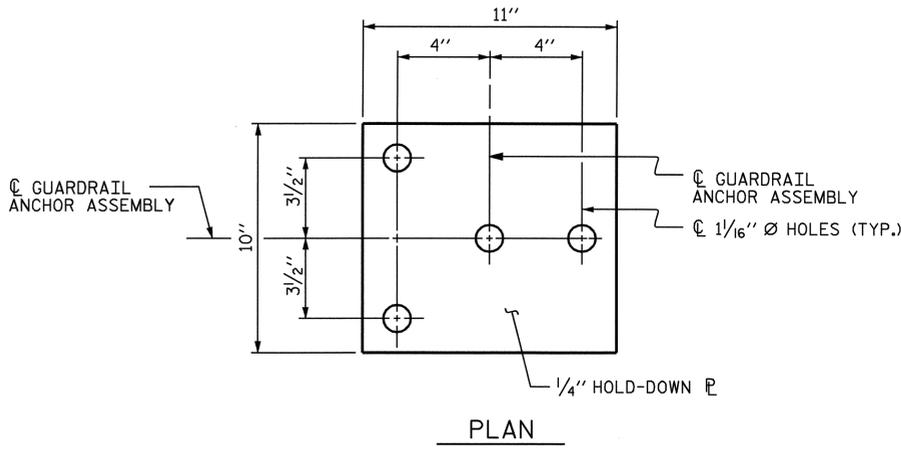
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

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.

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



SKETCH SHOWING POINTS OF ATTACHMENTS
* DENOTES GUARDRAIL ANCHOR ASSEMBLY

LOCATION OF ANCHORS FOR GUARDRAIL
END BENT 1 SHOWN, END BENT 2 SIMILAR.

SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS

PROJECT NO. B-4137
HARNETT COUNTY
STATION: 24+44.64 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
GUARDRAIL ANCHORAGE
FOR BARRIER RAIL

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



ASSEMBLED BY : A.S. CALLAWAY DATE : 7/24/07
CHECKED BY : P.C. BREWER DATE : 10/29/07
DRAWN BY : TLA 5/06
CHECKED BY : GM 5/06

ADDED 5/1/06R KMM/GM

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"			

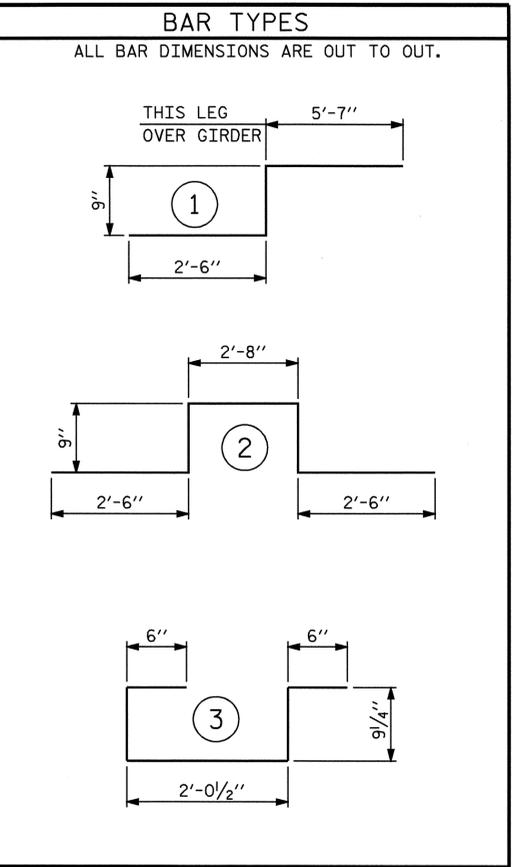
GROOVING BRIDGE FLOORS

APPROACH SLABS	722	SQ.FT.
BRIDGE DECK	3,744	SQ.FT.
TOTAL	4,466	SQ.FT.

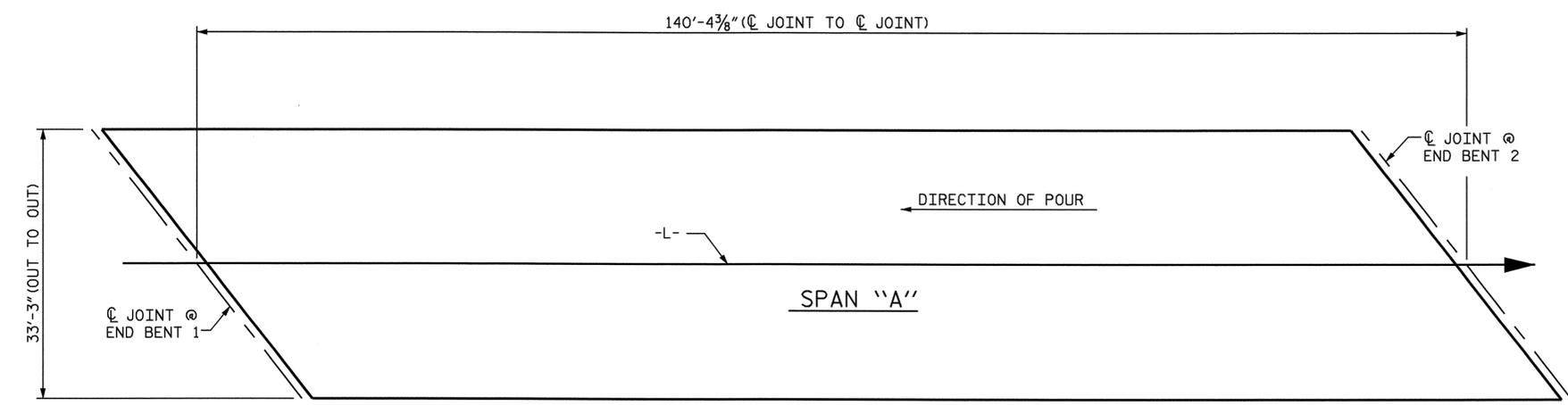
BILL OF MATERIAL

SPAN "A"

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
* A1	212	#5	STR	32'-11"	7278	* B1	120	#4	STR	29'-7"	2371	
A2	212	#5	STR	32'-11"	7278	B2	114	#5	STR	48'-1"	5717	
* A101	6	#5	STR	30'-11"	193	* G1	2	#5	STR	41'-8"	87	
* A102	6	#5	STR	28'-10"	180							
* A103	6	#5	STR	26'-8"	167	* K1	12	#5	1	8'-10"	111	
* A104	6	#5	STR	24'-7"	154	* K2	12	#5	2	9'-2"	115	
* A105	6	#5	STR	22'-6"	141	* K3	18	#5	STR	8'-7"	161	
* A106	6	#5	STR	20'-5"	128							
* A107	6	#5	STR	18'-4"	115	* S1	48	#4	3	4'-7"	147	
* A108	6	#5	STR	16'-3"	102							
* A109	6	#5	STR	14'-2"	89							
* A110	6	#5	STR	12'-0"	75							
* A111	6	#5	STR	9'-11"	62							
* A112	6	#5	STR	7'-10"	49							
* A113	6	#5	STR	5'-9"	36							
* A114	6	#5	STR	3'-8"	23							
* A115	6	#6	STR	5'-6"	50							
A201	6	#5	STR	30'-11"	193							
A202	6	#5	STR	28'-10"	180							
A203	6	#5	STR	26'-8"	167							
A204	6	#5	STR	24'-7"	154							
A205	6	#5	STR	22'-6"	141							
A206	6	#5	STR	20'-5"	128							
A207	6	#5	STR	18'-4"	115							
A208	6	#5	STR	16'-3"	102							
A209	6	#5	STR	14'-2"	89							
A210	6	#5	STR	12'-0"	75							
A211	6	#5	STR	9'-11"	62							
A212	6	#5	STR	7'-10"	49							
A213	6	#5	STR	5'-9"	36							
A214	6	#5	STR	3'-8"	23							
										REINFORCING STEEL	LBS.	14,509
										*EPOXY COATED REINFORCING STEEL	LBS.	11,834



* THESE BARS ARE EPOXY COATED.



LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB (SQ. FT. = 4667)

SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	EPOXY COATED REINFORCING STEEL (LBS.)
SPAN "A"	148.9	14,509	11,834
TOTALS **	148.9	14,509	11,834

**QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED.

PROJECT NO. B-4137
HARNETT COUNTY
 STATION: 24+44.64 -L-

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



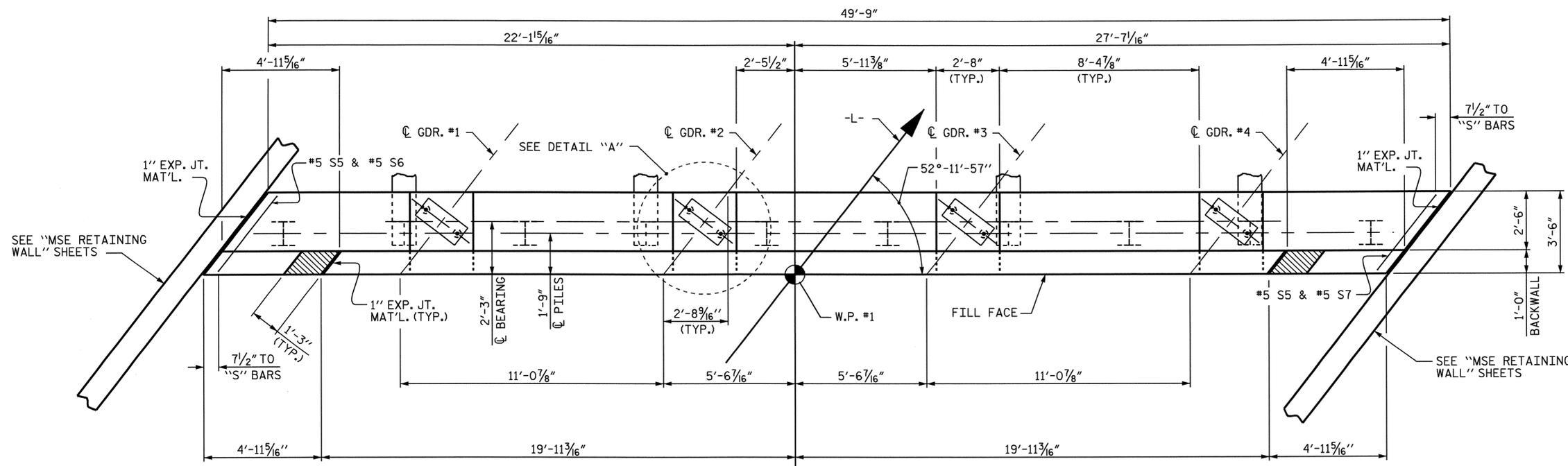
ASSEMBLED BY : A.S. CALLAWAY	DATE : 8/7/07
CHECKED BY : P.C. BREWER	DATE : 10/29/07
DRAWN BY : JMB 5/87	REV. 6/1/94 EEM/GRP
CHECKED BY : SJD 9/87	REV. 8/16/99 RWW/LES
	REV. 5/1/06 TLA/GM

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

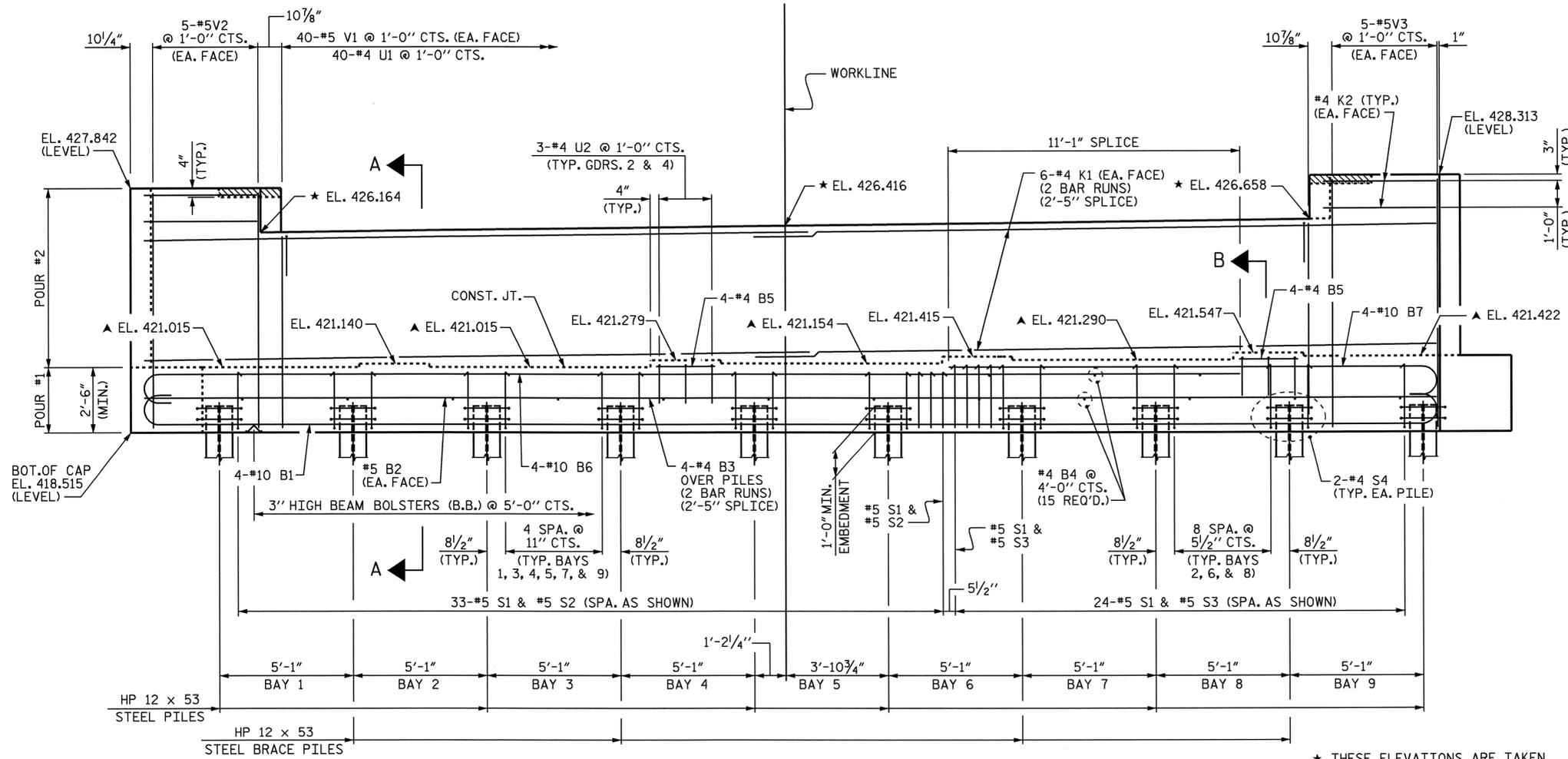
TOTAL SHEETS 24

NOTES

- STIRRUPS AND U2 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- FOR PIPE INSERT DETAILS, SEE BEARINGS SHEET.
- 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 METHOD 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 THE RATE OF 2%.
- THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT BETWEEN THE DECK AND THE APPROACH SLAB HAS BEEN SAWED AND THE BARRIER RAIL HAS BEEN CAST IF SLIP FORMING IS USED.
- EPOXY COAT THE END BENT CAP AFTER ADJUSTMENTS ARE MADE TO BEARINGS AND ANCHOR BOLTS ARE GROUDED.
- THE #5 V1 BARS IN THE BACKWALL SHALL BE PLACED 2" CLEAR FROM THE TOP OF THE BACKWALL.

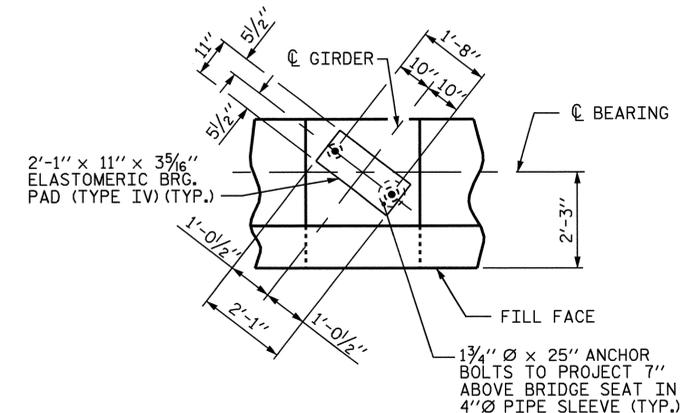


PLAN



ELEVATION

MSE RETAINING WALL NOT SHOWN FOR CLARITY.



DETAIL "A"

(TYP. EA. GIRDER)

PROJECT NO. B-4137
HARNETT COUNTY
 STATION: 24+44.64 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**SUBSTRUCTURE
 END BENT 1**

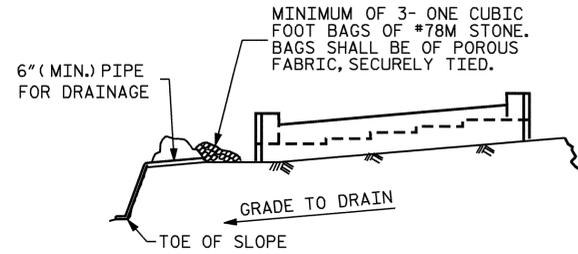
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS
24



- * THESE ELEVATIONS ARE TAKEN AT FILL FACE OF THE BACKWALL.
- ▲ FOR LOCATION OF ELEVATIONS BETWEEN BUILD-UPS, SEE SECTION A-A ON SHEET 2 OF 2.

DRAWN BY : A.S. CALLAWAY DATE : 10/16/07
 CHECKED BY : L.E. SUTTON DATE : 3/16/09

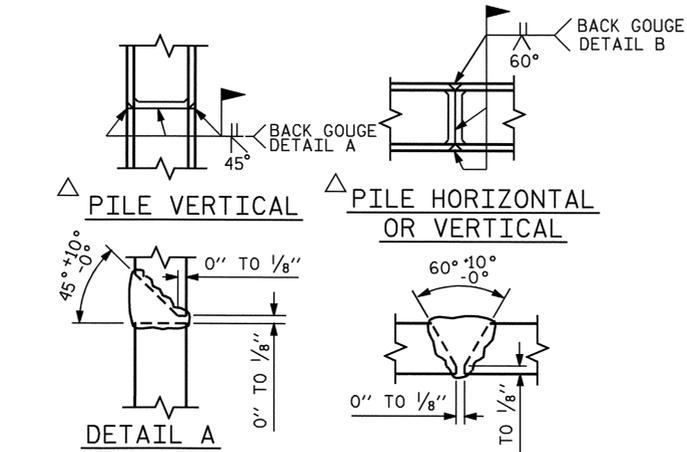


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

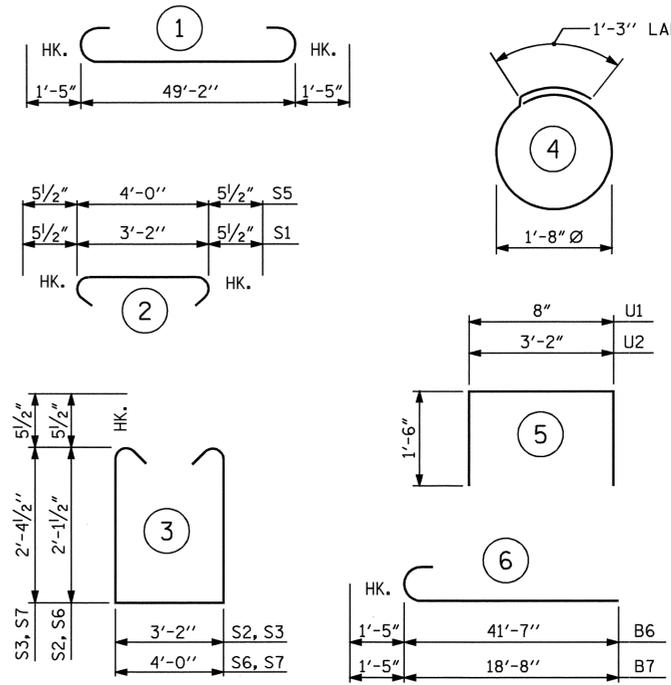
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



POSITION OF PILE DURING WELDING. PILE SPLICE DETAILS

BAR TYPES

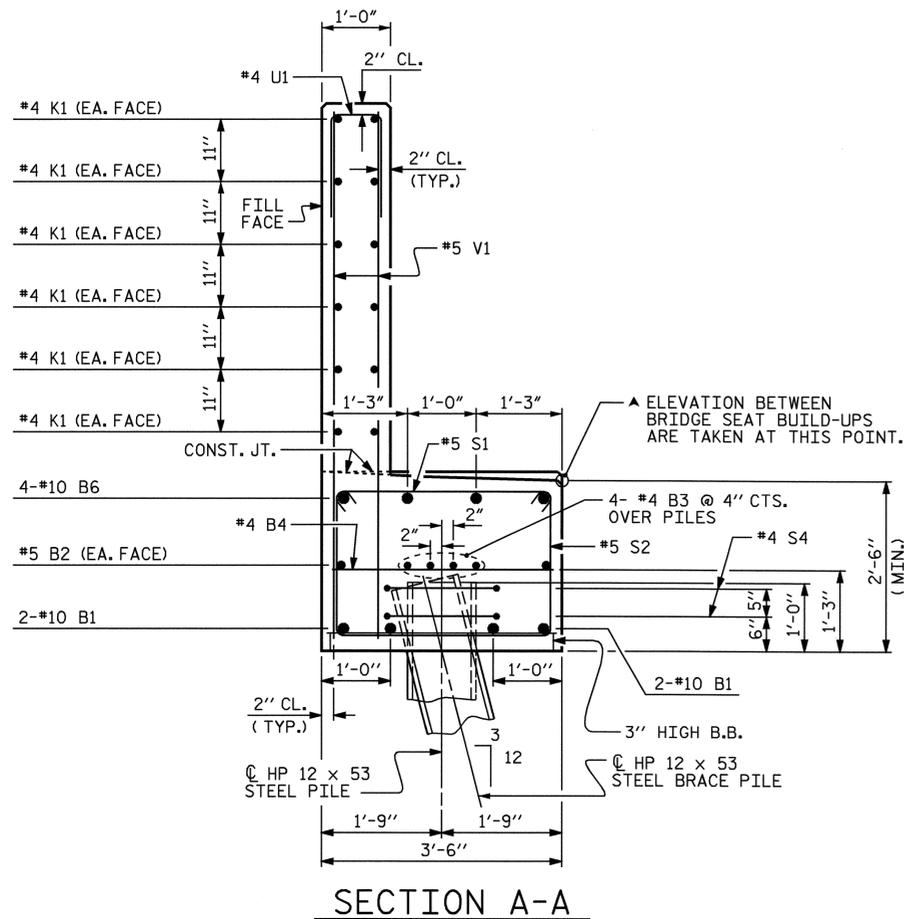


ALL BAR DIMENSIONS ARE OUT TO OUT.

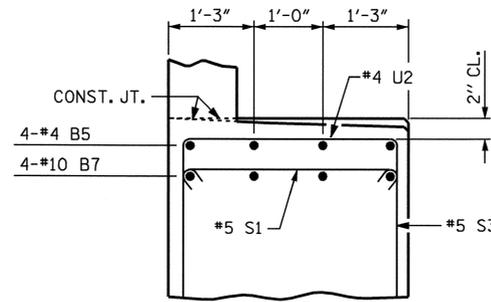
BILL OF MATERIAL

END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	52'-0"	895
B2	2	#5	STR	49'-2"	103
B3	8	#4	STR	25'-11"	138
B4	15	#4	STR	3'-2"	32
B5	8	#4	STR	2'-4"	12
B6	4	#10	6	43'-0"	740
B7	4	#10	6	20'-1"	346
K1	24	#4	STR	25'-11"	415
K2	8	#4	STR	4'-6"	24
S1	57	#5	2	4'-1"	243
S2	33	#5	3	8'-4"	287
S3	24	#5	3	8'-10"	221
S4	20	#4	4	6'-6"	87
S5	2	#5	2	4'-11"	10
S6	1	#5	3	9'-2"	10
S7	1	#5	3	9'-8"	10
U1	40	#4	5	3'-8"	98
U2	6	#4	5	6'-2"	25
V1	80	#5	STR	7'-3"	605
V2	10	#5	STR	8'-11"	93
V3	10	#5	STR	9'-5"	98
REINFORCING STEEL				LBS.	4,492
CLASS A CONCRETE BREAKDOWN :					
POUR #1 - CAP				CU. YDS.	17.5
POUR #2 - BACKWALL				CU. YDS.	7.7
TOTAL				CU. YDS.	25.2
HP 12 x 53 STEEL PILES				LIN. FT.	450
NO. = 10					



SECTION A-A



PART SECTION B

PROJECT NO. B-4137
 HARNETT COUNTY
 STATION: 24+44.64 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 1

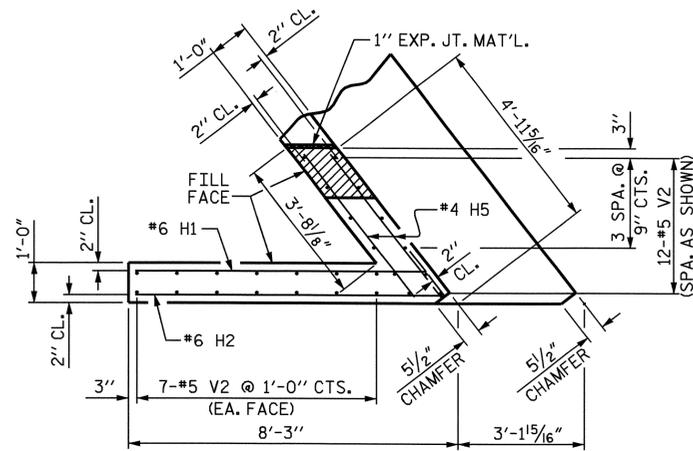


DRAWN BY : A.S. CALLAWAY DATE : 10/16/07
 CHECKED BY : L.E. SUTTON DATE : 3/16/09

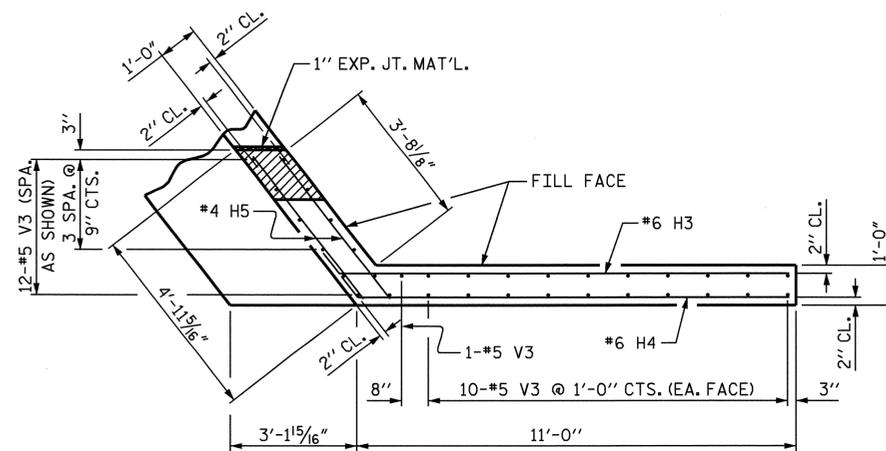
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 LSUTTON

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

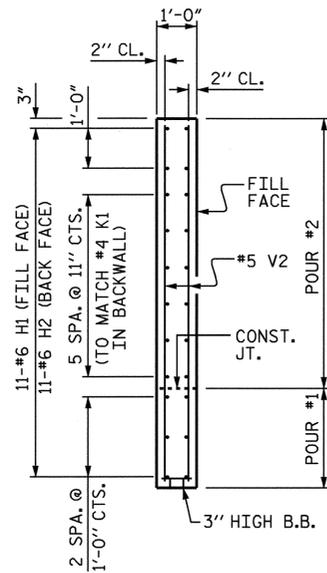
TOTAL SHEETS 24



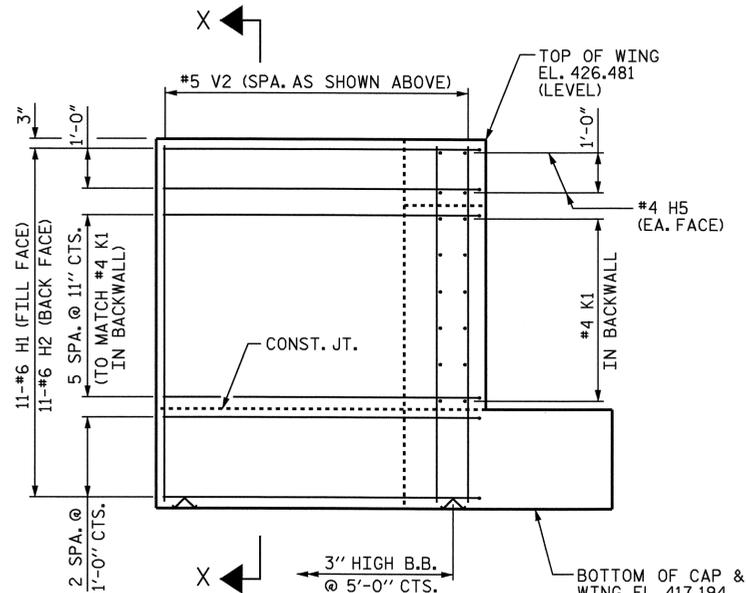
PLAN OF WING (W1)



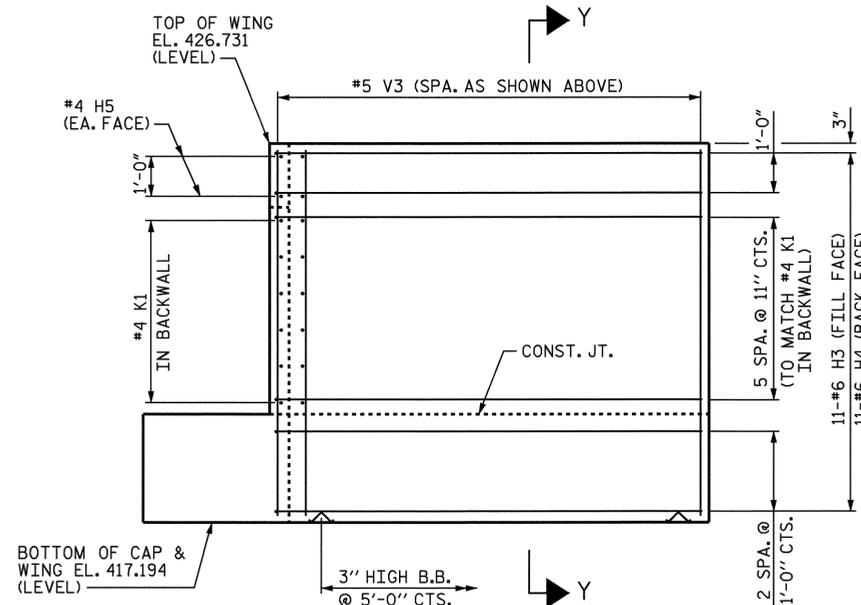
PLAN OF WING (W2)



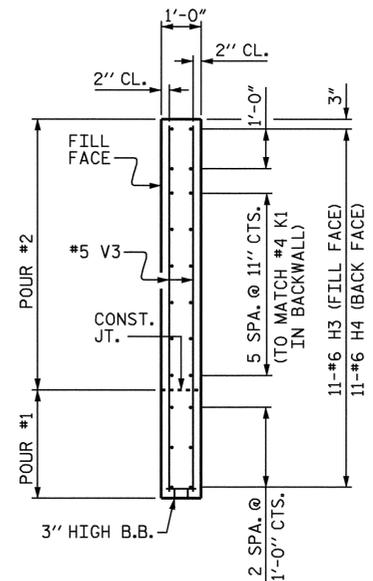
SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION Y-Y

DRAWN BY : A.S. CALLAWAY DATE : 10/17/07
 CHECKED BY : L.E. SUTTON DATE : 3/17/09

17-JUL-2009 08:39
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 LSUTTON



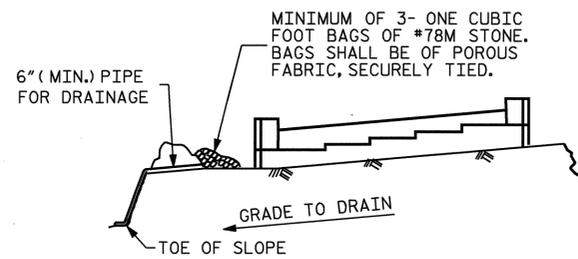
PROJECT NO. B-4137
 HARNETT COUNTY
 STATION: 24+44.64 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 2

REVISIONS						SHEET NO. S-19
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 24
2			4			

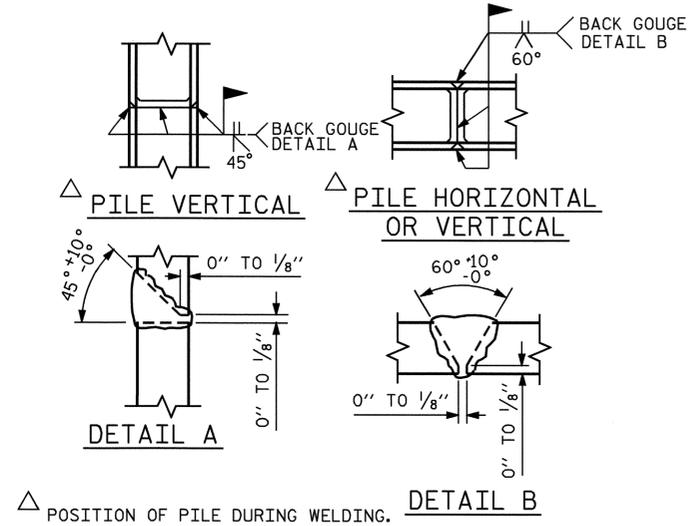


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

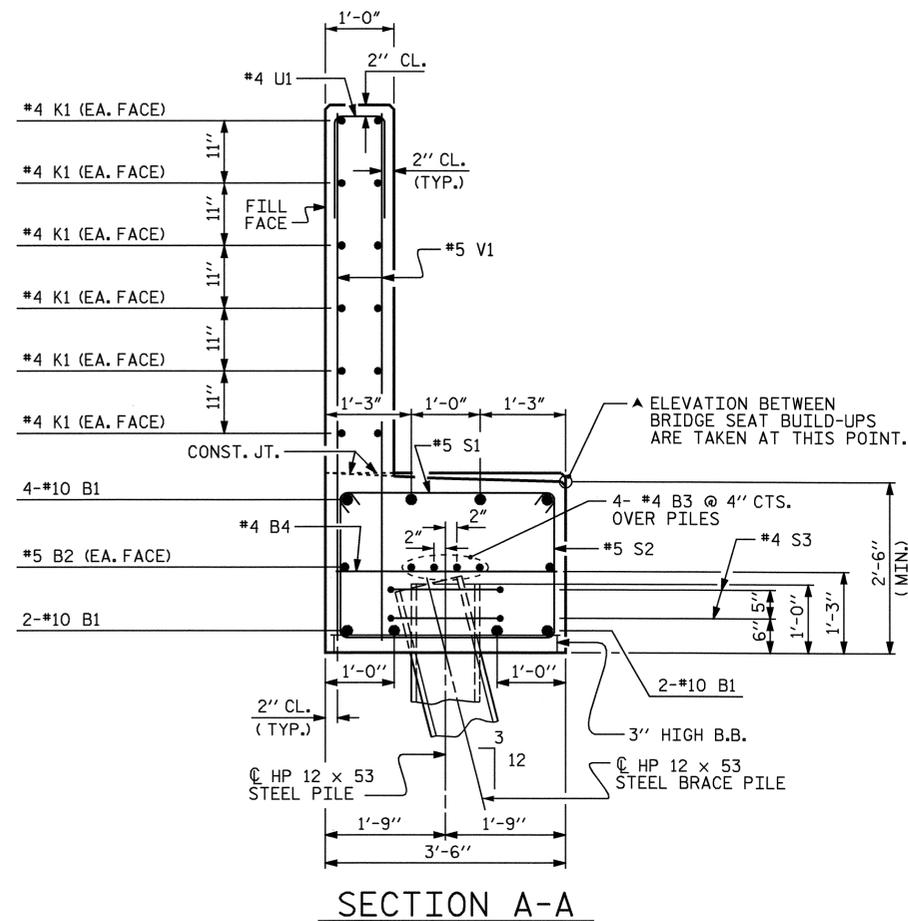
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

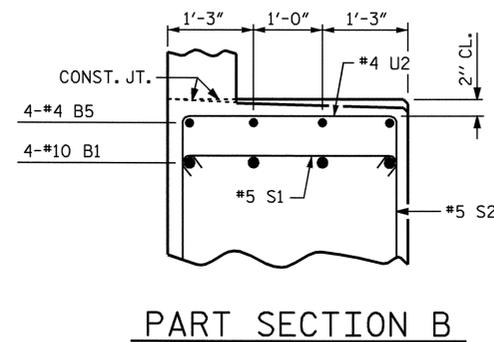
TEMPORARY DRAINAGE AT END BENT



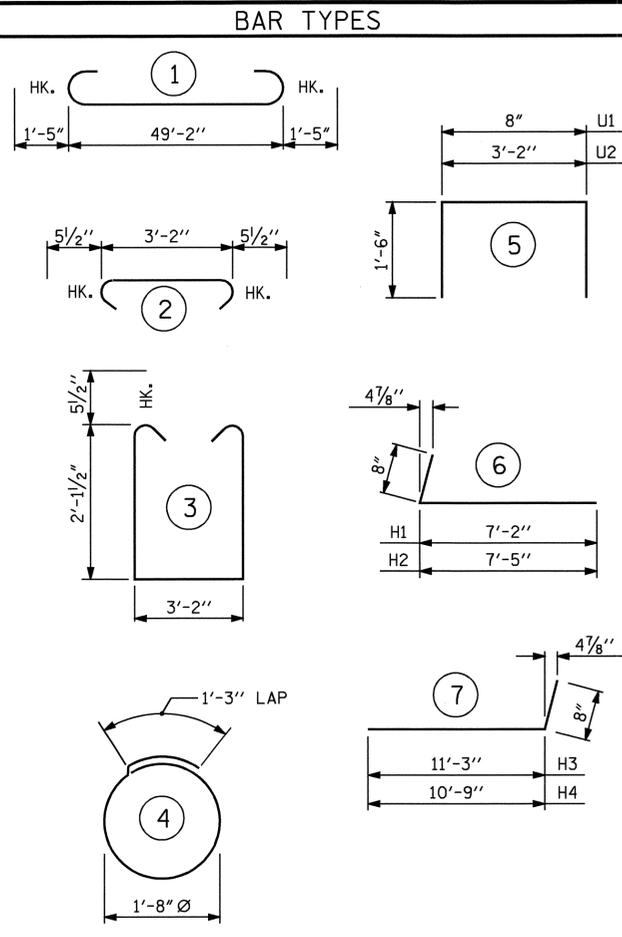
PILE SPLICE DETAILS



SECTION A-A



PART SECTION B



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

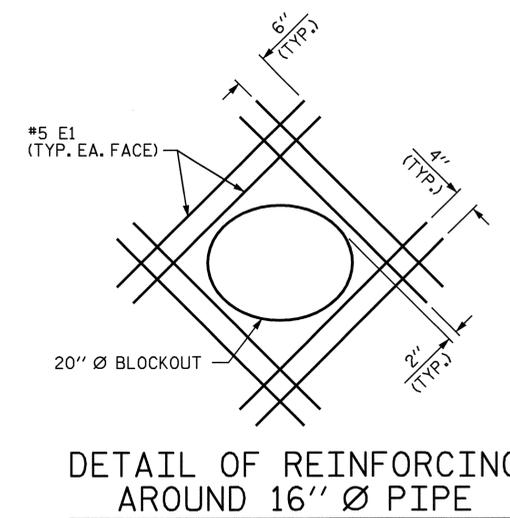
END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#10		52'-0"	1790
B2	2	#5	STR	49'-2"	103
B3	8	#4	STR	25'-11"	138
B4	12	#4	STR	3'-2"	25
B5	8	#4	STR	2'-4"	12
E1	16	#5	STR	3'-10"	64
H1	11	#6	6	7'-10"	129
H2	11	#6	6	8'-1"	134
H3	11	#6	7	11'-11"	197
H4	11	#6	7	11'-5"	189
H5	8	#4	STR	4'-6"	24
K1	24	#4	STR	25'-11"	415
S1	57	#5	2	4'-1"	243
S2	57	#5	3	8'-4"	495
S3	20	#4	4	6'-6"	87
U1	40	#4	5	3'-8"	98
U2	6	#4	5	6'-2"	25
V1	80	#5	STR	7'-3"	605
V2	26	#5	STR	8'-11"	241
V3	33	#5	STR	9'-2"	316

REINFORCING STEEL LBS. 5,330

CLASS A CONCRETE BREAKDOWN :
 POUR #1 - CAP & LOWER WINGS CU. YDS. 18.7
 POUR #2 - BACKWALL & UPPER WINGS CU. YDS. 14.3
 TOTAL CU. YDS. 33.0

HP 12 x 53 STEEL PILES
 NO. = 10 LIN. FT. 450



DETAIL OF REINFORCING AROUND 16" Ø PIPE

PROJECT NO. B-4137
HARNETT COUNTY
 STATION: 24+44.64 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

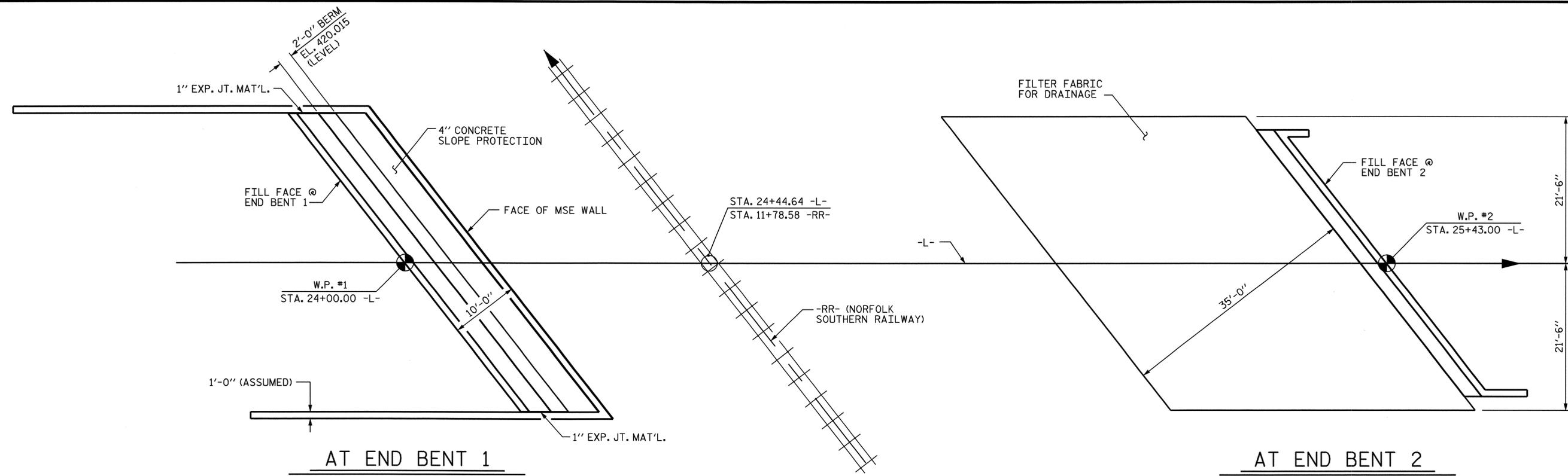
SUBSTRUCTURE END BENT 2



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

DRAWN BY : A.S. CALLAWAY DATE : 10/16/07
 CHECKED BY : L.E. SUTTON DATE : 3/17/09

17-JUL-2009 08:39
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 LSUTTON

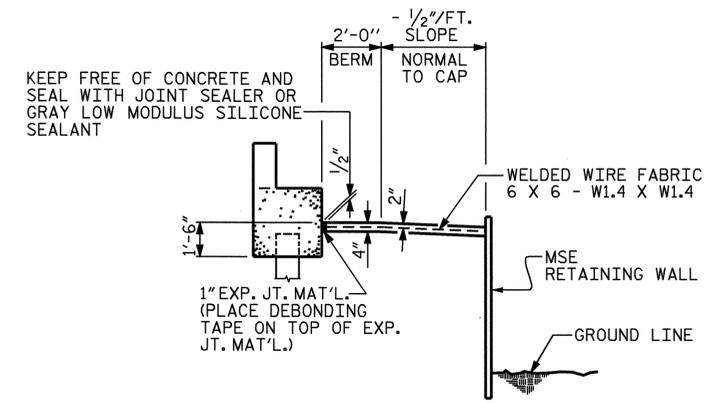


NOTES

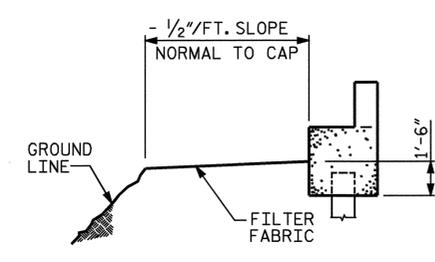
SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS.

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

FILTER FABRIC SHALL REMAIN UNCOVERED. USE WIRE STAPLES AS NEEDED TO HOLD FABRIC IN PLACE.



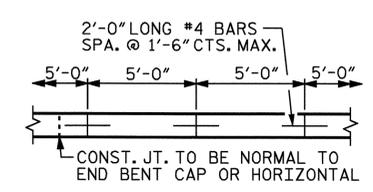
SECTION THRU END BENT 1



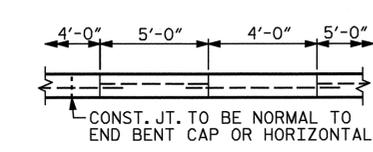
SECTION THRU END BENT 2

BRIDGE @ STA. 24+44.64 -L-	4 INCH SLOPE PROTECTION	WELDED WIRE FABRIC 60 INCHES WIDE	FILTER FABRIC FOR DRAINAGE
	SQUARE YARDS	APPROX. L.F.	SQUARE YARDS
END BENT 1	30	61	
END BENT 2			212

▲ QUANTITY SHOWN IS BASED ON 5' POURS.



POURING DETAIL



OPTIONAL POURING DETAIL

ASSEMBLED BY : A.S. CALLAWAY DATE : 3/11/09
 CHECKED BY : L.E. SUTTON DATE : 3/18/09
 DRAWN BY : ELR 5/92 REV. 7/10/01 LES/RDR
 CHECKED BY : GRP 6/92 REV. 5/7/03 RWW/JTE
 REV. 5/1/06 TLA/GM



PROJECT NO. B-4137
HARNETT COUNTY
 STATION: 24+44.64 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-21
STANDARD SLOPE PROTECTION DETAILS						
REVISIONS						TOTAL SHEETS 24
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

STD. NO. SP1

NOTES

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

FOR REINFORCED BRIDGE APPROACH FILL INCLUDING FABRIC, IMPERMEABLE GEOMEMBRANE, 4" Ø DRAINAGE PIPE, #78M STONE, AND SELECT MATERIAL, SEE ROADWAY PLANS.

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 6" COMP. A.B.C. SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB AND SHALL EXTEND 1'-0" OUTSIDE EACH EDGE OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 4" TYPE B-25.0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 5" CLASS "A" CONCRETE BASE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER OF 30 LB ROOFING FELT SHALL BE PLACED BETWEEN THE CONCRETE BASE AND THE APPROACH SLAB TO PREVENT BOND. THE APPROACH SLAB SHALL NOT BE CAST UNTIL THE CONCRETE BASE HAS REACHED AN AGE OF THREE CURING DAYS.

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

WITH EVAZOTE JOINT SEAL

FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 2 1/2".

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL

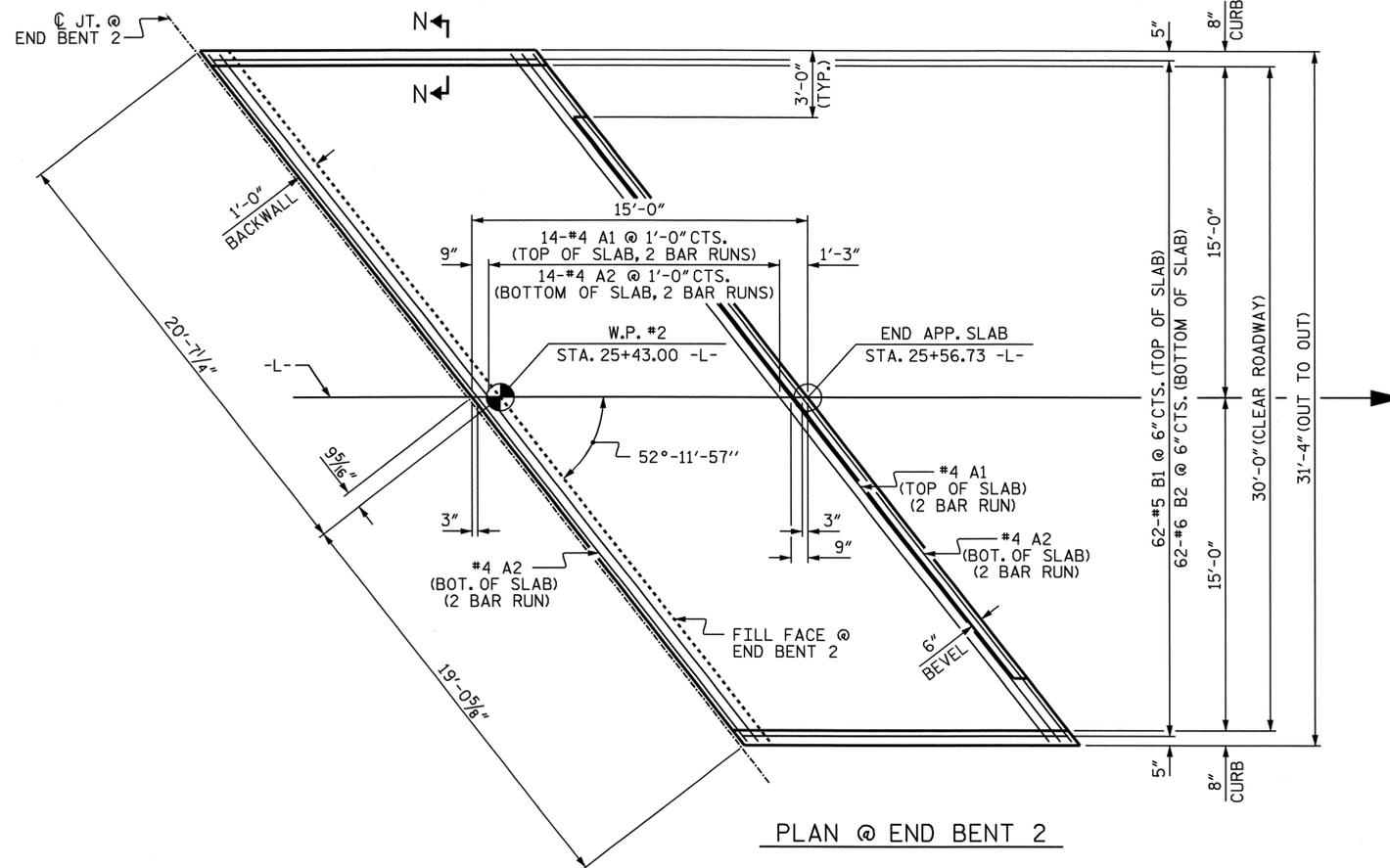
APPROACH SLAB AT END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	30	#4	STR	20'-7"	412
A2	32	#4	STR	20'-6"	438
* B1	62	#5	STR	13'-6"	873
B2	62	#6	STR	14'-6"	1350

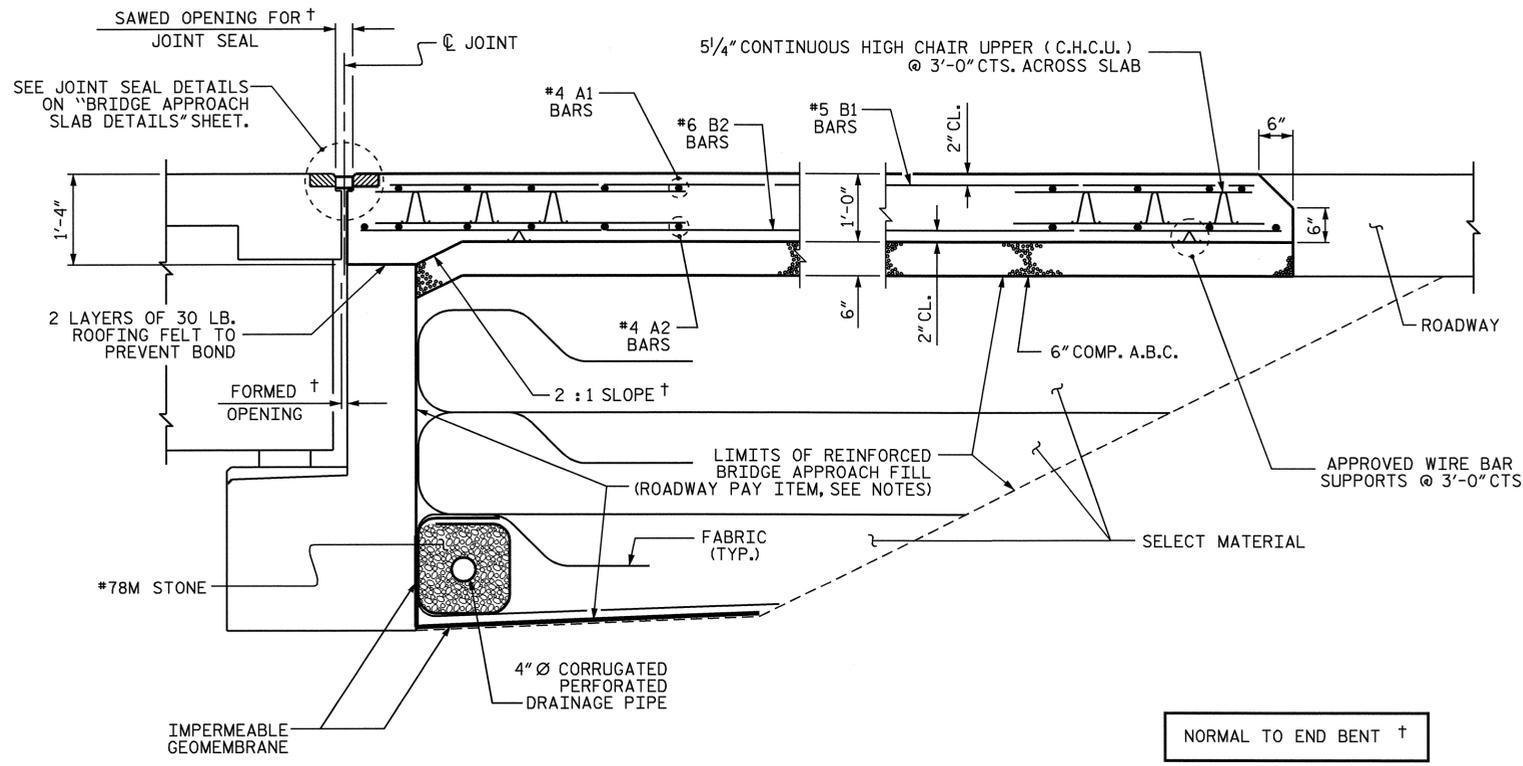
REINFORCING STEEL LBS. 1,788

* EPOXY COATED REINFORCING STEEL LBS. 1,285

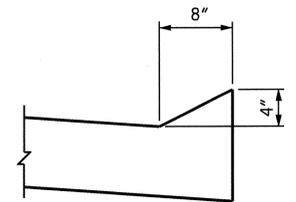
CLASS AA CONCRETE CU. YDS. 17.9



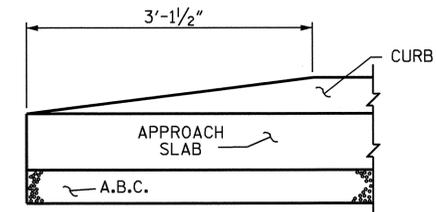
PLAN @ END BENT 2



SECTION THRU SLAB



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

PROJECT NO. B-4137
HARNETT COUNTY
 STATION: 24+44.64 -L-

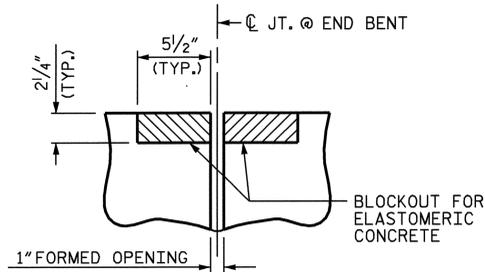
SHEET 2 OF 3
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR FLEXIBLE PAVEMENT



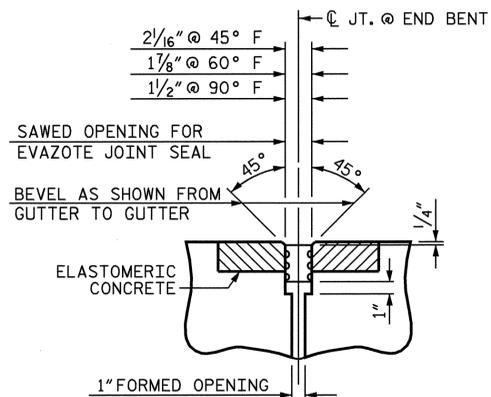
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS
2			4			24

ASSEMBLED BY : L.E. SUTTON DATE : 3/27/09
 CHECKED BY : W.F. PARKER DATE : 3/30/09
 DRAWN BY : EEM 3/95
 CHECKED BY : VAP 3/95

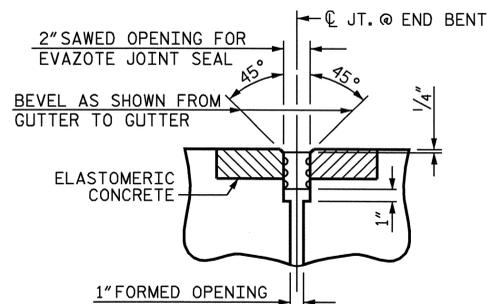
REV. 7/10/01 LES/RDR
 REV. 5/7/03R RWW/JTE
 REV. 5/1/06R KMM/GM



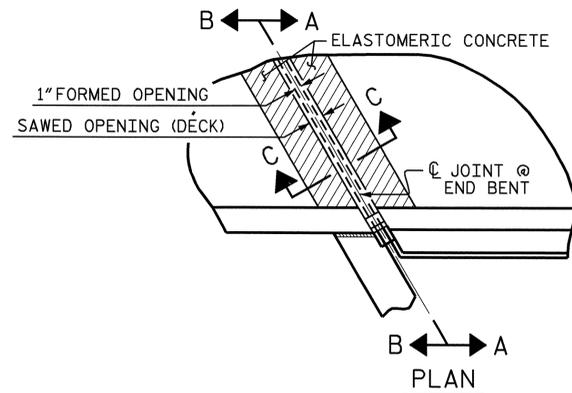
SECTION C-C
EVAZOTE JOINT SEAL
(PRE-SAWED ELASTOMERIC
CONCRETE DIMENSIONS)



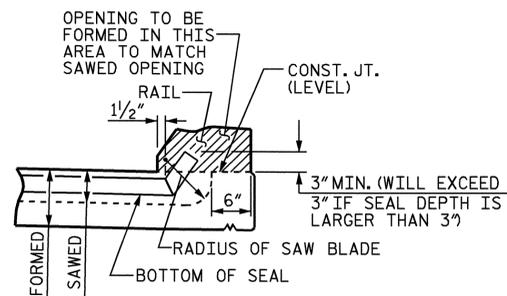
SECTION C-C
EVAZOTE JOINT SEAL
AT END BENT 1



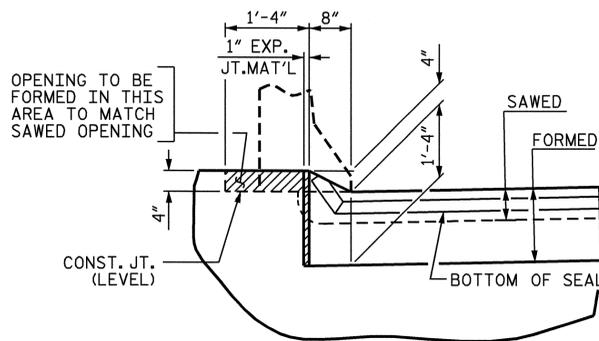
SECTION C-C
EVAZOTE JOINT SEAL
AT END BENT 2



PLAN



SECTION A-A

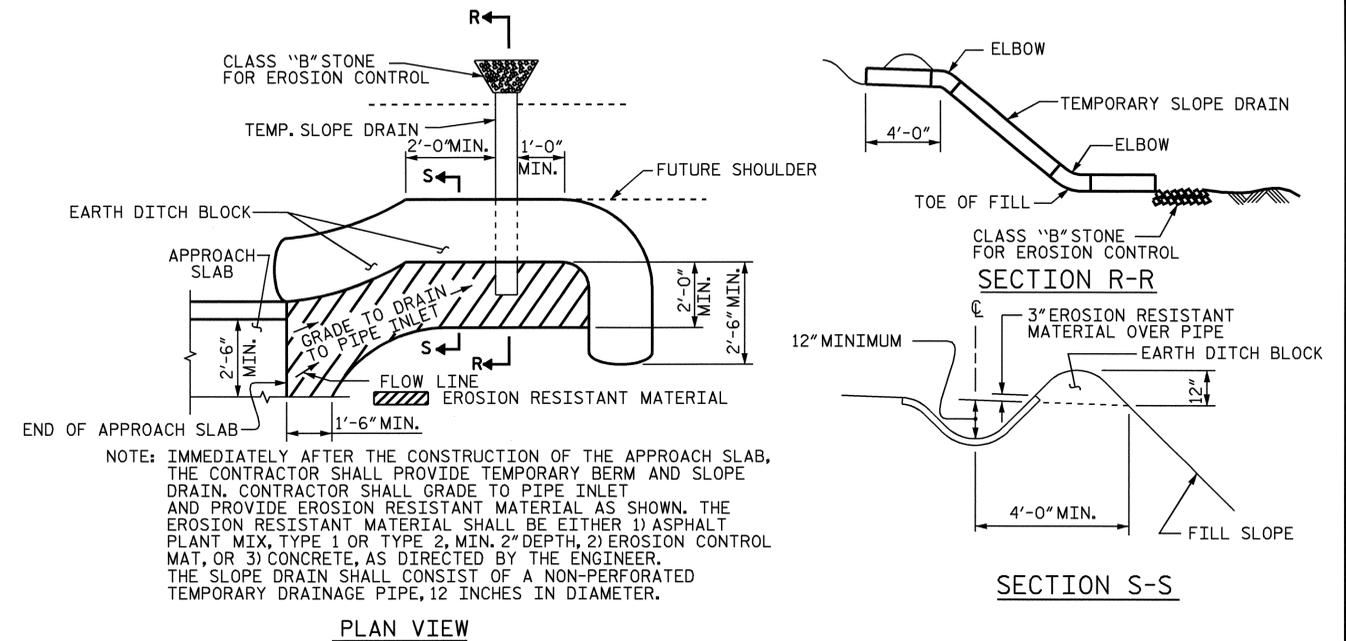


SECTION B-B

JOINT SEAL DETAILS @ END BENT

EVAZOTE JOINT SEAL TO BE CUT, HEAT WELDED AND TURNED UP PARALLEL TO SLOPED FACE OF THE BARRIER RAIL.

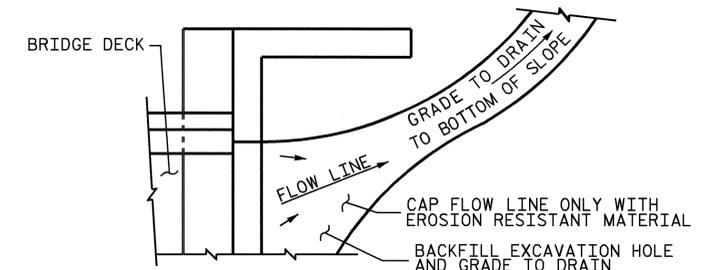
THE JOINT SHALL BE SAWED PRIOR TO THE CASTING OF THE BARRIER RAIL.



PLAN VIEW

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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.

TEMPORARY DRAINAGE DETAIL

ELASTOMERIC CONCRETE	
END BENT	ELASTOMERIC CONCRETE * (CU. FT.)
1	6.5
2	6.5
TOTAL	13.0

* BASED ON THE MINIMUM BLOCKOUT SHOWN.

PROJECT NO. B-4137
HARNETT COUNTY
STATION: 24+44.64 -L-

SHEET 3 OF 3

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



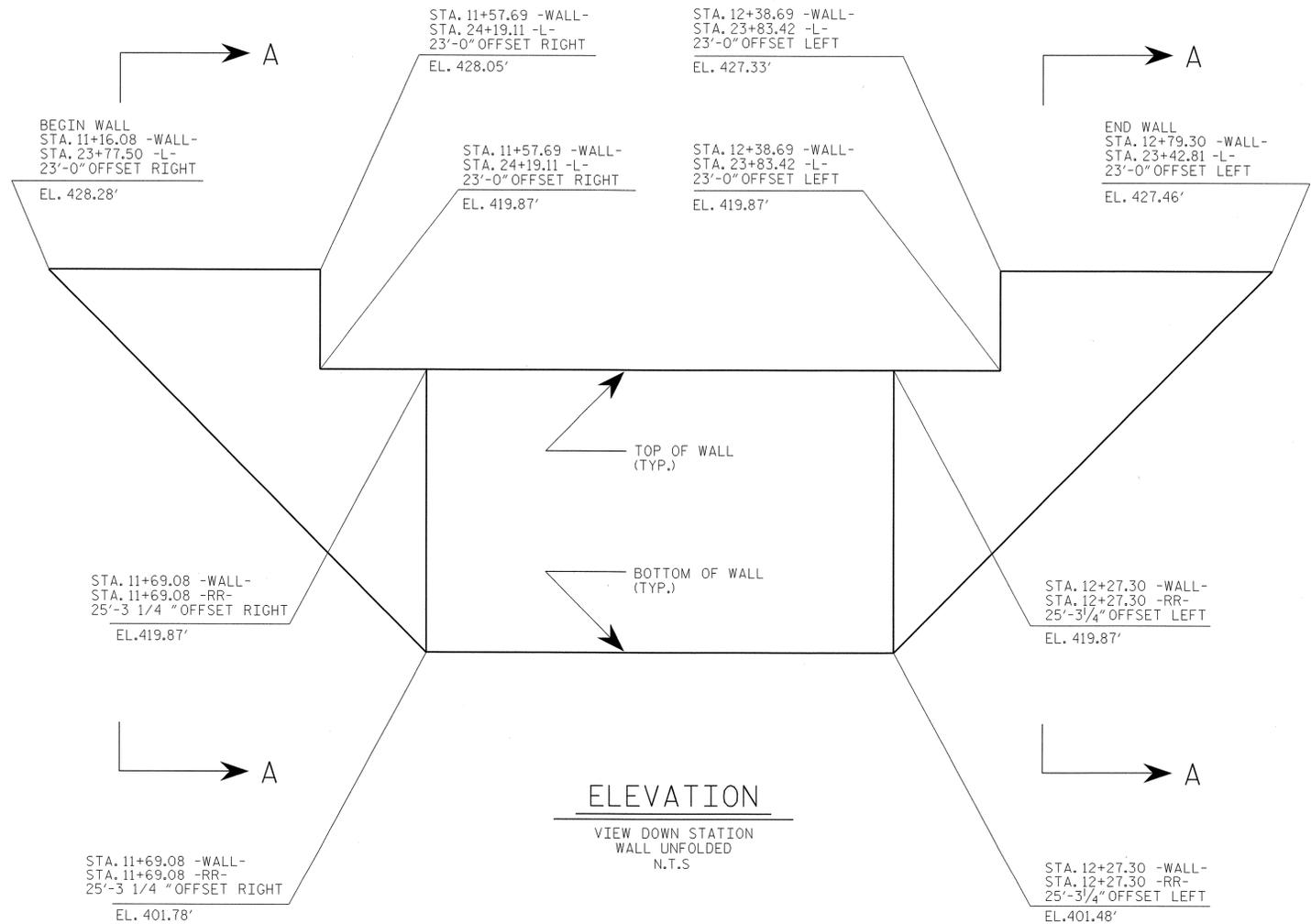
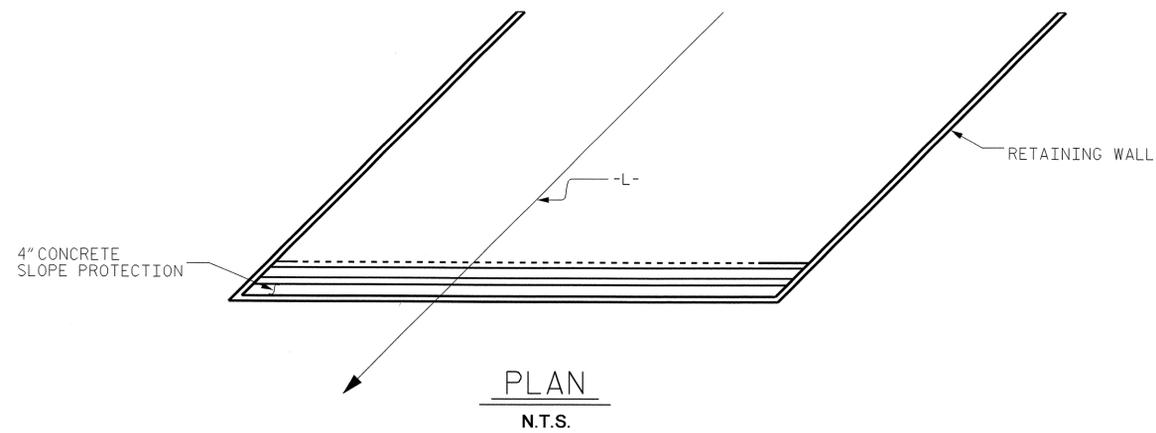
REVISIONS				SHEET NO.	
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1			3		
2			4		

STD. NO. BAS10

ASSEMBLED BY :	L.E. SUTTON	DATE :	3/27/09
CHECKED BY :	W.F. PARKER	DATE :	3/30/09
DRAWN BY :	FCJ 11/88	REV. 10/17/00	RWW/LES
CHECKED BY :	ARB 11/88	REV. 5/7/03	RWW/JTE
		REV. 5/1/06R	MAA/KMM

GEOTECHNICAL ENGINEER
 ENGINEER

 SEAL 18899
 JAMES R. BATT
 3/18/09
 SIGNATURE DATE SIGNATURE DATE



Estimated Area, MSE Retaining Wall = 2245 ft²

NOTE: SEE ROADWAY PLANS FOR EXISTING GROUND ELEVATIONS

NOTES

- FOR MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALLS, SEE MECHANICALLY STABILIZED EARTH RETAINING WALLS SPECIAL PROVISION.
- FOR GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.
- DO NOT USE STANDARD SIZE NO. 2S OR 2MS FOR WALL BACKFILL FOR RETAINING WALL.
- DO NOT USE A MSE WALL SYSTEM WITH SEGMENTAL RETAINING WALL UNITS FOR RETAINING WALL.
- BEFORE BEGINNING MSE WALL DESIGN FOR RETAINING WALL NO. 1, SURVEY ALL EXISTING GROUND ELEVATIONS SHOWN ON THE PLANS AND SUBMIT A REVISED WALL ENVELOPE FOR REVIEW. DO NOT START WALL OR CONSTRUCTION UNTIL THIS ENVELOPE IS ACCEPTED.
- A BROOMED ARCHITECTURAL FINISH IS REQUIRED ON THE FRONT FACE OF PRECAST CONCRETE PANELS FOR RETAINING WALL.
- DESIGN RETAINING WALL FOR A WALL HEIGHT EQUAL TO THE DESIGN HEIGHT (DIFFERENCE BETWEEN GRADE ELEVATION AND BOTTOM OF WALL ELEVATION) PLUS EMBEDMENT (DIFFERENCE BETWEEN BOTTOM OF WALL ELEVATION AND TOP OF LEVELING PAD ELEVATION).
- DESIGN RETAINING WALL FOR THE FOLLOWING:
 - MINIMUM SERVICE LIFE = 100 YEARS
 - ALLOWABLE BEARING CAPACITY = 2.5 TSF
 - WALL BACKFILL MATERIAL PARAMETERS:

MATERIAL STANDARD SIZE NO. (IN ACCORDANCE WITH SECTIONS 1005 AND 1014 OF THE STANDARD SPECIFICATIONS)	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (φ) DEGREES	COHESION (c) PSF
57, 67, AND 78M	110	38	0
 - IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (φ) DEGREES	COHESION (c) PSF
RETAINED AND RANDOM BACKFILL	120	30	0
FOUNDATION	120	30	0
- DESIGN RETAINING WALL FOR A LIVE LOAD (TRAFFIC) SURCHARGE.
- EXISTING OR FUTURE STRUCTURES SUCH AS FOUNDATIONS, GUARDRAIL POSTS, PAVEMENT, PIPES, INLETS OR UTILITIES MAY INTERFERE WITH REINFORCEMENT FOR RETAINING WALL.
- FOUNDATION FOR END BENT NO. 1 LOCATED AT STATION 24+00 -L- MAY INTERFERE WITH REINFORCEMENT FOR RETAINING WALL. SEE FOUNDATION LAYOUT SHEET FOR FOUNDATION LOCATIONS.
- DO NOT PLACE LEVELING PAD CONCRETE, WALL BACKFILL OR FIRST REINFORCEMENT LAYER FOR RETAINING WALL UNTIL OBTAINING APPROVAL OF THE EXCAVATION DEPTH AND FOUNDATION MATERIAL.
- "TEMPORARY SHORING FOR WALL CONSTRUCTION" MAY BE REQUIRED FOR RETAINING WALL. FOR TEMPORARY SHORING FOR WALL CONSTRUCTION, SUBMIT WORKING DRAWINGS AND DESIGN CALCULATIONS WITH THE MSE WALL DESIGN SUBMITTAL AND DESIGN AND CONSTRUCT THE SHORING IN ACCORDANCE WITH THE TEMPORARY SHORING PROVISION. NO SEPARATE PAYMENT WILL BE MADE FOR TEMPORARY SHORING FOR WALL CONSTRUCTION. PAYMENT WILL BE CONSIDERED INCIDENTAL TO THE COST OF THE RETAINING WALL.
- ALL STATION LOCATIONS ARE SHOWN TO THE FRONT OF THE WALL FACE.
- DO NOT BEGIN CONSTRUCTION OF MSE RETAINING WALL UNTIL END BENT PILES HAVE BEEN DRIVEN.

PROJECT NO.: 33489.1.1 (B-4137)
 HARNETT COUNTY
 STATION: 11+20.00 -WALL-
 SHEET 1 OF 2

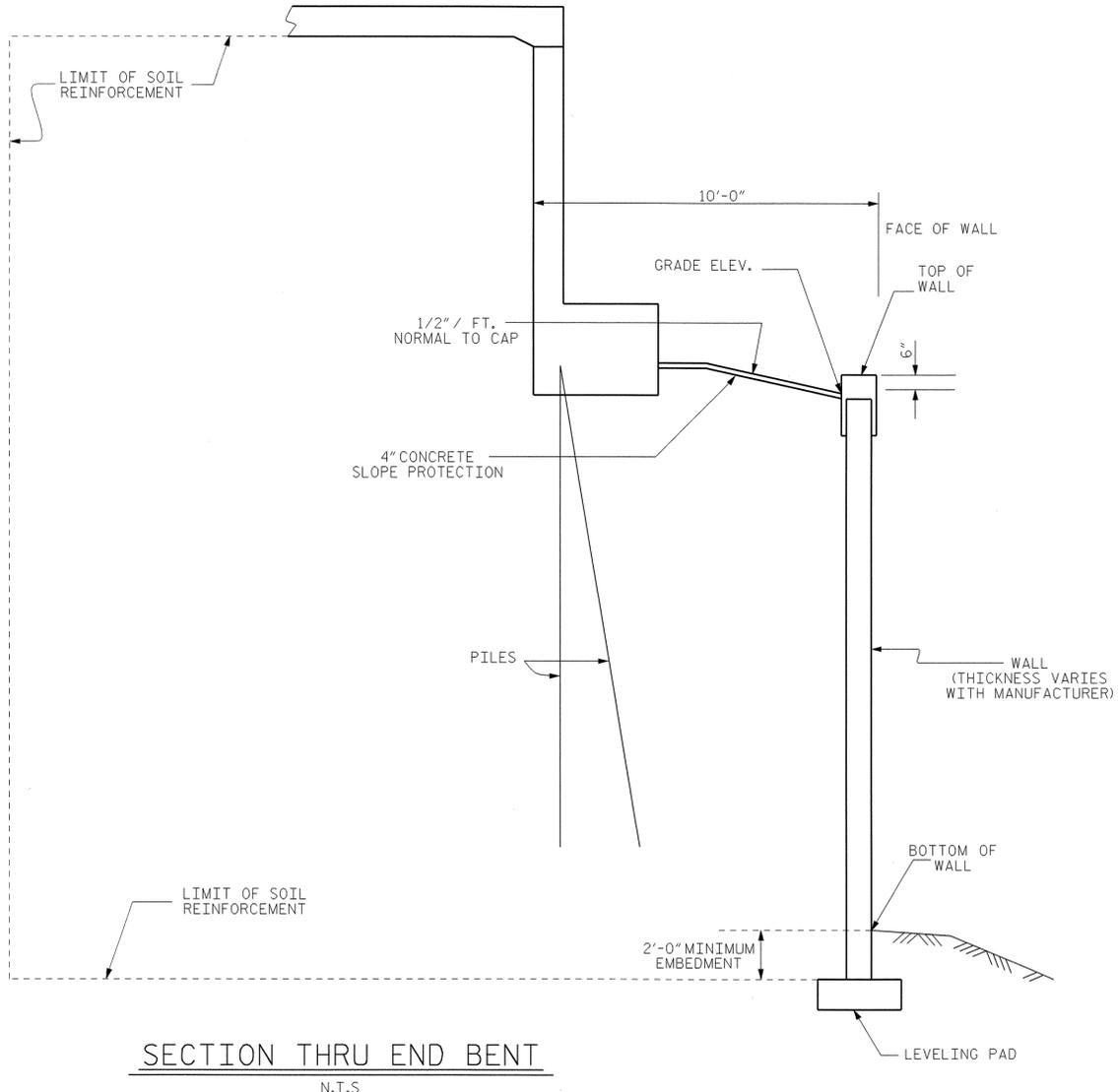
GEOTECHNICAL ENGINEERING UNIT
 EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH



REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS
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2			4			

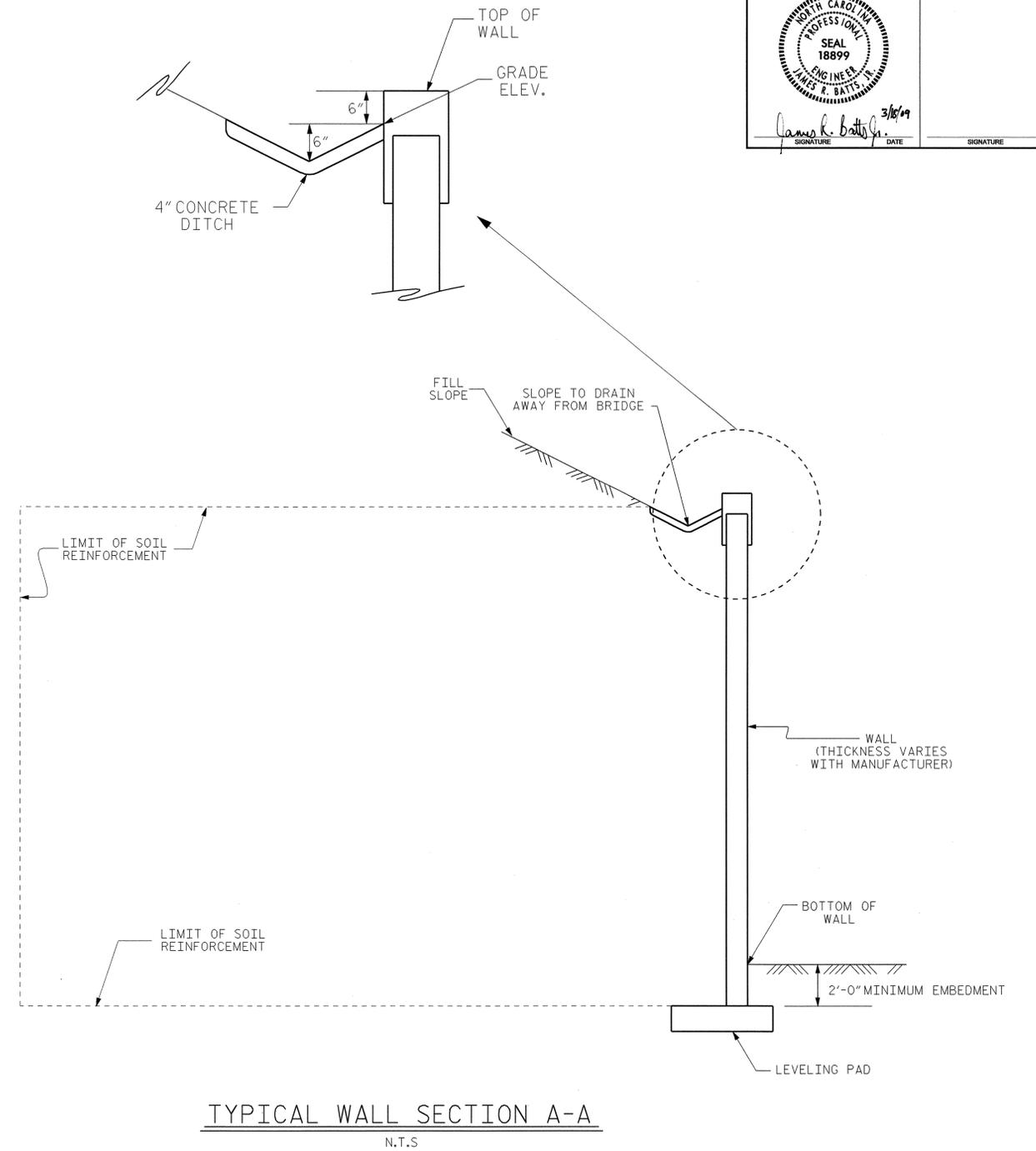
MSE RETAINING WALL

PREPARED BY: JRM	DATE: 1/09
REVIEWED BY: JRB	DATE: 1/09



SECTION THRU END BENT
N.T.S.

FOR END BENT DETAILS,
SEE END BENT DRAWINGS.



TYPICAL WALL SECTION A-A
N.T.S.

PROJECT NO.: 33489.1.1 (B-4137)
 HARNETT COUNTY
 STATION: 11 + 20.00 -WALL-
 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.
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS
2			4			

MSE
RETAINING WALL

PREPARED BY: JRM.	DATE: 1/09
REVIEWED BY: JRB.	DATE: 1/09

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

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990

STD. NO. SN