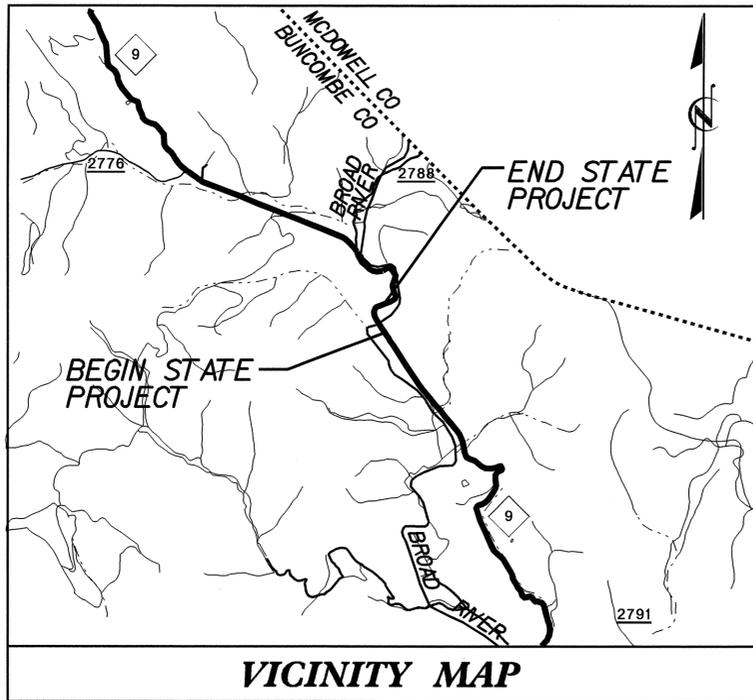


CONTRACT: C201849 TIP PROJECT: B-4032



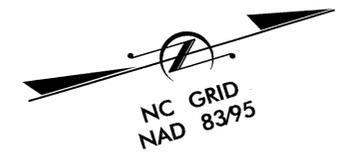
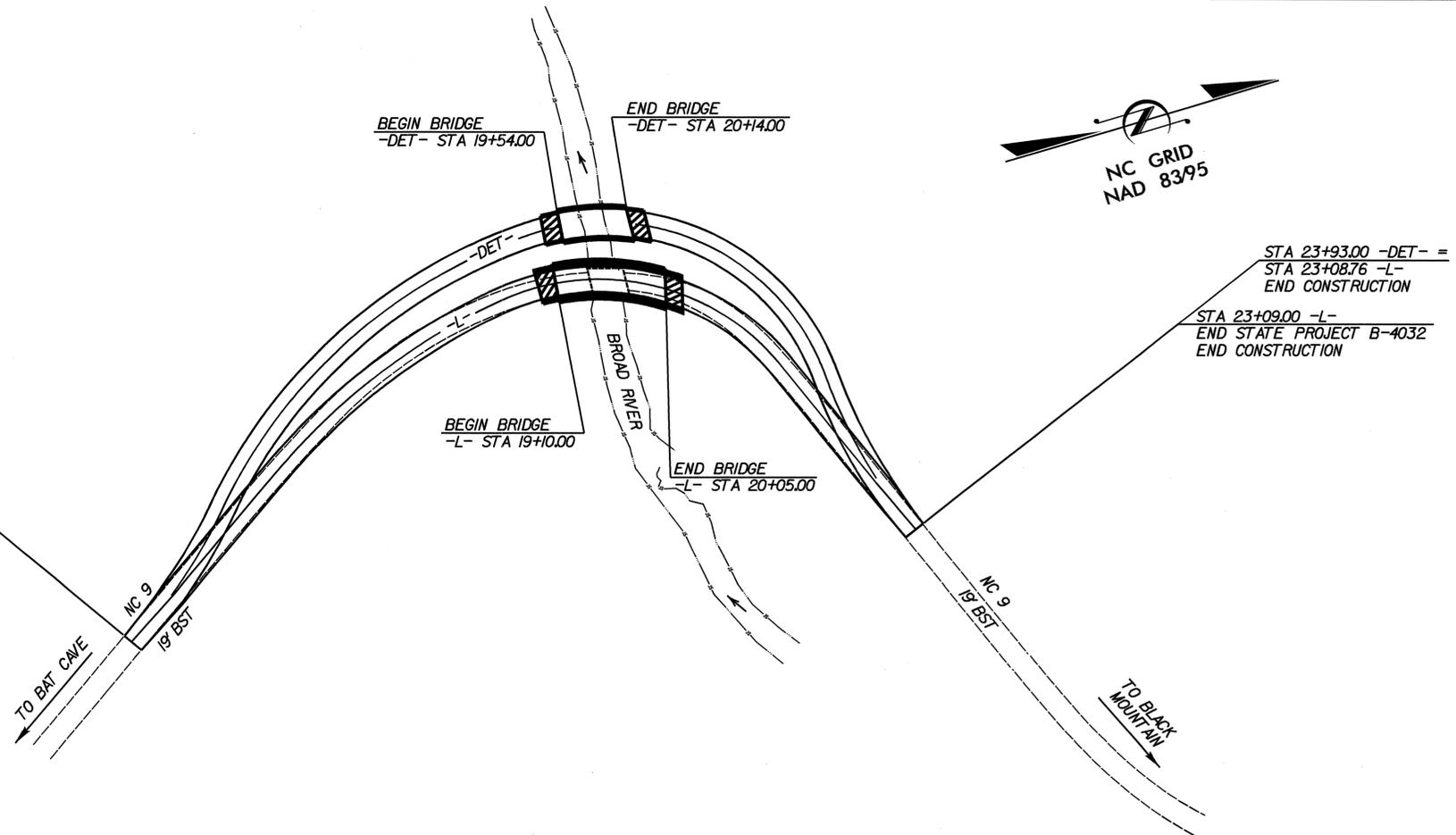
NEAREST SHIPPING POINT: BLACK MOUNTAIN ON SOUTHERN RR
APPROX. 7.0 MILES FROM PROJECT

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

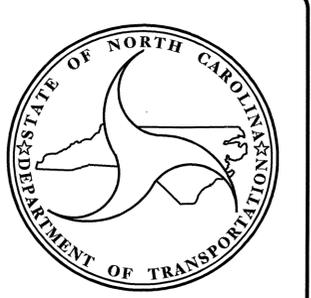
BUNCOMBE COUNTY

LOCATION: BRIDGE NO. 130 OVER THE BROAD RIVER ON NC 9
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4032		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33399.1.1	BRSTP-0009(1)	PE	
33399.2.1	BRSTP-0009(1)	R/W & UTIL	
33399.3.1	BRSTP-0009(1)	CONST.	



STRUCTURE



DESIGN DATA

ADT 2008 = 1,100 VPD
ADT 2030 = 1,900 VPD
DHV = 12%
D = 60%
T = 8% *
V = 35 mph

DESIGN EXCEPTION:
HORIZONTAL CURVE RADIUS
HORIZONTAL SSD

FUNCTIONAL CLASSIFICATION:
RURAL MAJOR COLLECTOR
* (TTST 2% + DUAL 6%)

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-4032 = 0.150 MI.
LENGTH OF STRUCTURE TIP PROJECT B-4032 = 0.018 MI.
TOTAL LENGTH OF TIP PROJECT B-4032 = 0.168 MI.

Prepared in the Office of:
DIVISION OF HIGHWAYS
1000 BIRCH RIDGE DR. RALEIGH, NC 27610

2006 STANDARD SPECIFICATIONS

LETTING DATE:
JUNE 17, 2008

N. N. BULLOCK, PE
PROJECT ENGINEER

D. R. CALHOUN, PE
PROJECT DESIGN ENGINEER

STRUCTURE DESIGN UNIT

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.

STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

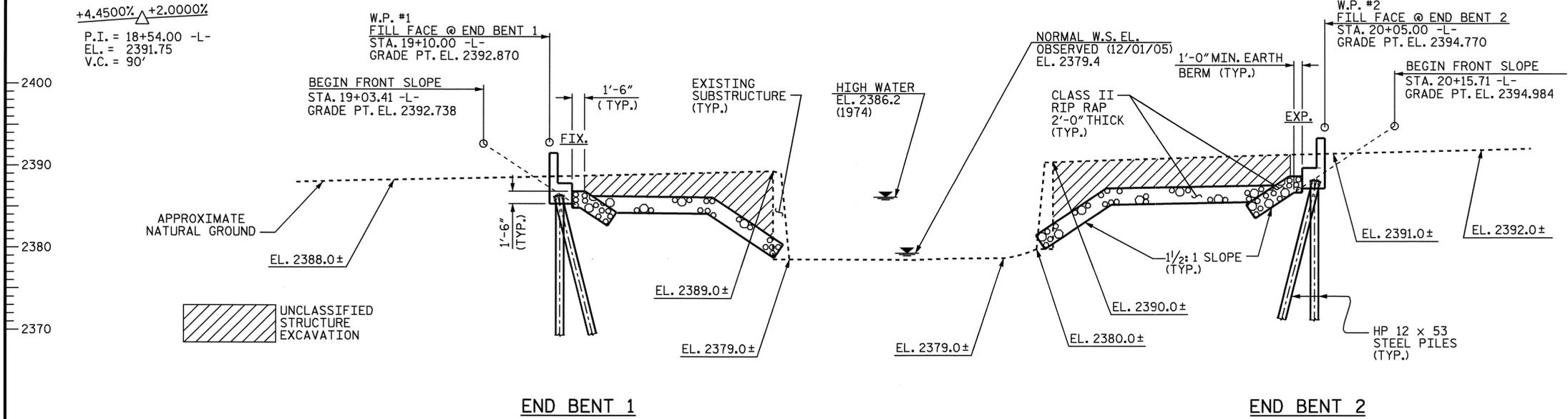
APPROVED
DIVISION ADMINISTRATOR

DATE

24-APR-2008 11:52
C:\projects\1849\1849.dwg
bmg

GRADE DATA

+4.4500% Δ +2.0000%
 P.I. = 18+54.00 -L-
 EL. = 2391.75
 V.C. = 90'

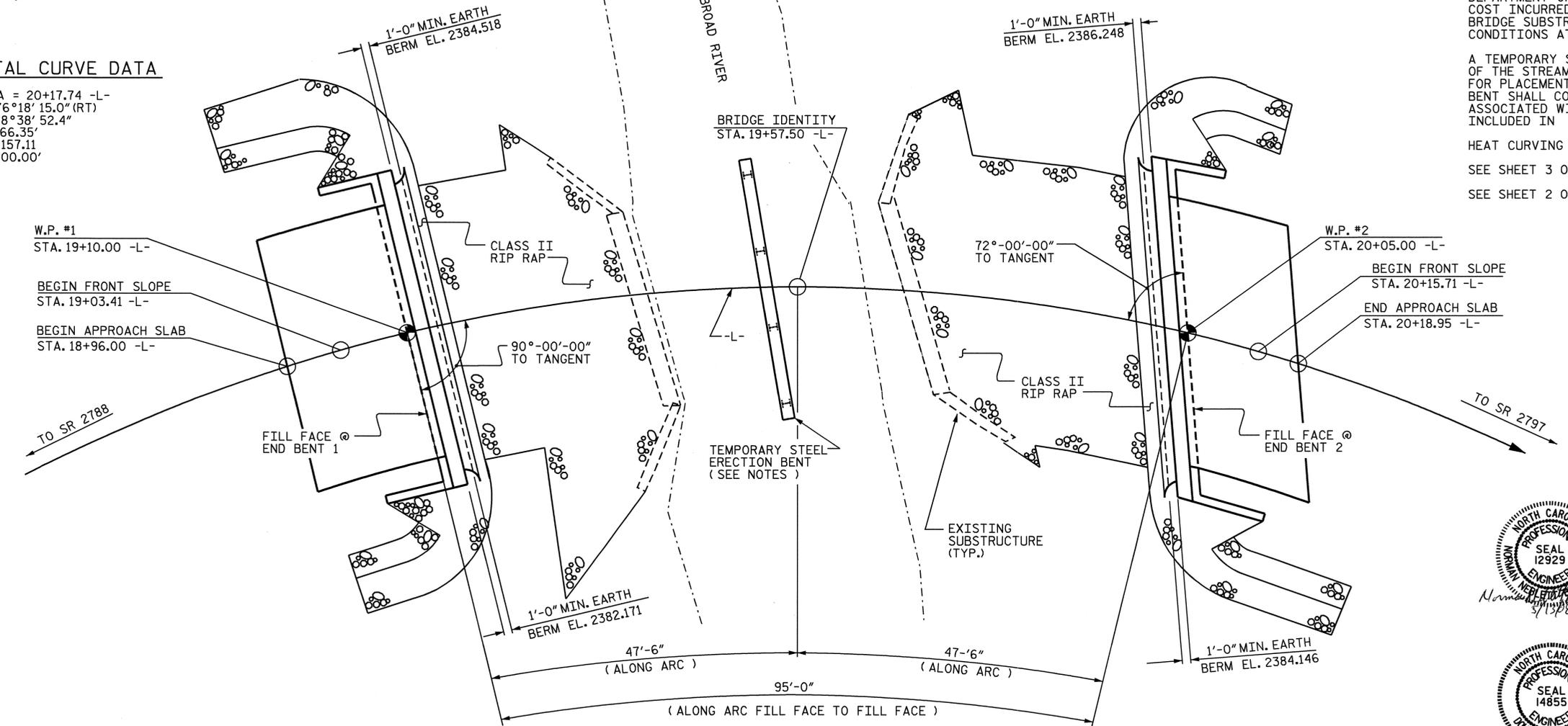


NOTES :

ASSUMED LIVE LOAD = HS 20 OR ALTERNATE LOADING, EXCEPT THAT THE 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.
 THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO SPECIFICATIONS FOR SEISMIC DESIGN OF HIGHWAY BRIDGES FOR SEISMIC PERFORMANCE CATEGORY B.
 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 ONE 34'-0" CONCRETE CAST IN PLACE DECK SPAN ON CONCRETE GIRDER AND FLOOR BEAM SYSTEM WITH A CLEAR ROADWAY WIDTH OF 18'-1" ON REINFORCED CONCRETE ABUTMENTS AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED BELOW THE LEGAL LIMIT.
 THE EXISTING ABUTMENTS SHALL BE REMOVED TO THE APPROXIMATE ELEVATION OF TOP OF FOOTING AS DIRECTED BY THE ENGINEER.
 REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
 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.
 A TEMPORARY STEEL ERECTION BENT HAS BEEN LOCATED IN THE MIDDLE OF THE STREAM SHOULD THE CONTRACTOR DETERMINE THAT IT IS NEEDED FOR PLACEMENT OF THE STEEL GIRDERS. THE TEMPORARY STEEL ERECTION BENT SHALL COMPLY WITH THE STANDARD SPECIFICATIONS. ANY COST ASSOCIATED WITH THE TEMPORARY STEEL ERECTION BENTS SHALL BE INCLUDED IN THE VARIOUS STRUCTURE PAY ITEMS.
 HEAT CURVING OF THE PLATE GIRDERS WILL NOT BE ALLOWED.
 SEE SHEET 3 OF 3 FOR ADDITIONAL NOTES.
 SEE SHEET 2 OF 3 FOR FOUNDATION NOTES.

HORIZONTAL CURVE DATA

PI STA = 20+17.74 -L-
 Δ = 76°18' 15.0" (RT)
 D = 28°38' 52.4"
 L = 266.35'
 T = 157.11
 R = 200.00'



PLAN

PILES ARE NOT SHOWN FOR CLARITY.

PROJECT NO. B-4032
BUNCOMBE COUNTY
 STATION: 19+57.50 -L-

SHEET 1 OF 3 REPLACES BRIDGE NO. 130

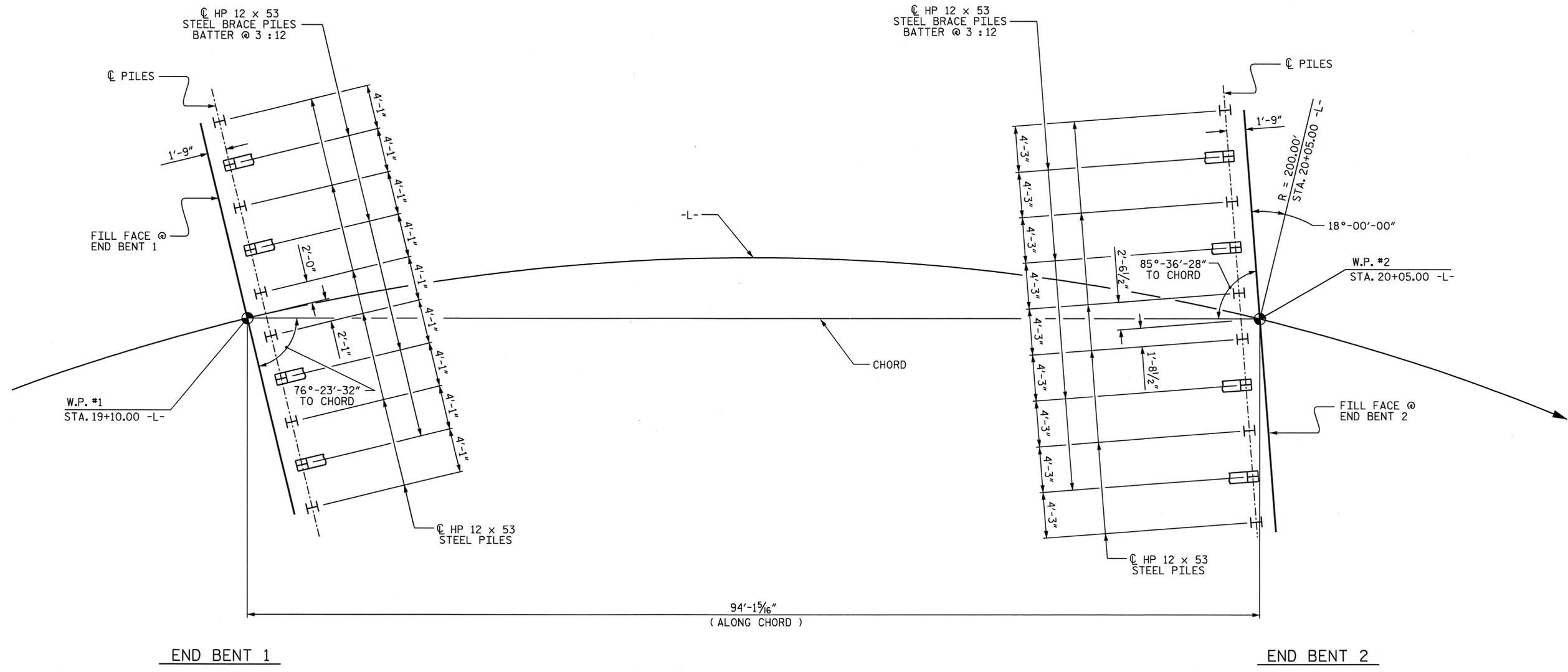
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON NC 9
 OVER BROAD RIVER BETWEEN
 SR 2788 AND SR 2797



DRAWN BY : E. G. ALLEN DATE : 2-6-08
 CHECKED BY : D. R. CALHOUN DATE : 3-13-08

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



FOUNDATION & CHORD LAYOUT

(DIMENSIONS LOCATING END BENT PILES ARE SHOWN TO CENTERLINE PILES)
 END BENTS ARE NOT PARALLEL, END BENT 1 IS RADIAL

HORIZONTAL CURVE DATA

PI STA = 20+17.74 -L-
 Δ = 76°18'15.0" (RT)
 D = 28°38'52.4"
 L = 266.35'
 T = 157.11'
 R = 200.00'

FOUNDATION NOTES :

- THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENT 1 AND 2 IS 50 TONS PER PILE.
- DRIVE PILES AT END BENT 1 AND 2 TO A REQUIRED BEARING CAPACITY OF 100 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.
- STEEL PILE POINTS ARE REQUIRED FOR STEEL PILES AT END BENT 1.
- OBSERVE A ONE MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT, END BENT AND REINFORCED BRIDGE APPROACH FILL, IF APPLICABLE, BEFORE BEGINNING APPROACH SLAB CONSTRUCTION AT END BENT 1 AND 2.

PROJECT NO. B-4032
BUNCOMBE COUNTY
 STATION: 19+57.50 -L-

SHEET 2 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON NC 9
 OVER BROAD RIVER BETWEEN
 SR 2788 AND SR 2797

DRAWN BY : E. G. ALLEN DATE : 2-6-08
 CHECKED BY : D. R. CALHOUN DATE : 3-3-08

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

TOTAL BILL OF MATERIAL

	CONSTRUCTION, MAINTENANCE & REMOVAL OF TEMPORARY STRUCTURE	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	STEEL PILE POINTS	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	EVAZOTE JOINT SEALS	
	LUMP SUM	LUMP SUM	LUMP SUM	SQ. FEET	SQ. FEET	CU. YDS.	LUMP SUM	LBS.	APPROX. LBS.	NO.	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	LUMP SUM	
SUPERSTRUCTURE				3085	3278		LUMP SUM		128,400			185.77			LUMP SUM	LUMP SUM	
END BENT 1			LUMP SUM			27.5		3792		10	350		144	160			
END BENT 2			LUMP SUM			29.1		3930		10	300		145	161			
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	3085	3278	56.6	LUMP SUM	7722	128,400	20	650	10	185.77	289	321	LUMP SUM	LUMP SUM

NOTES (CONT.) :

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 THE REINFORCED CONCRETE DECK SLAB.

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

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS.

THE CONTRACTOR WILL BE REQUIRED TO CONSTRUCT, MAINTAIN AND AFTERWARDS REMOVE A TEMPORARY STRUCTURE AT STATION 19+57.50-L- FOR USE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 30 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.

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

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.

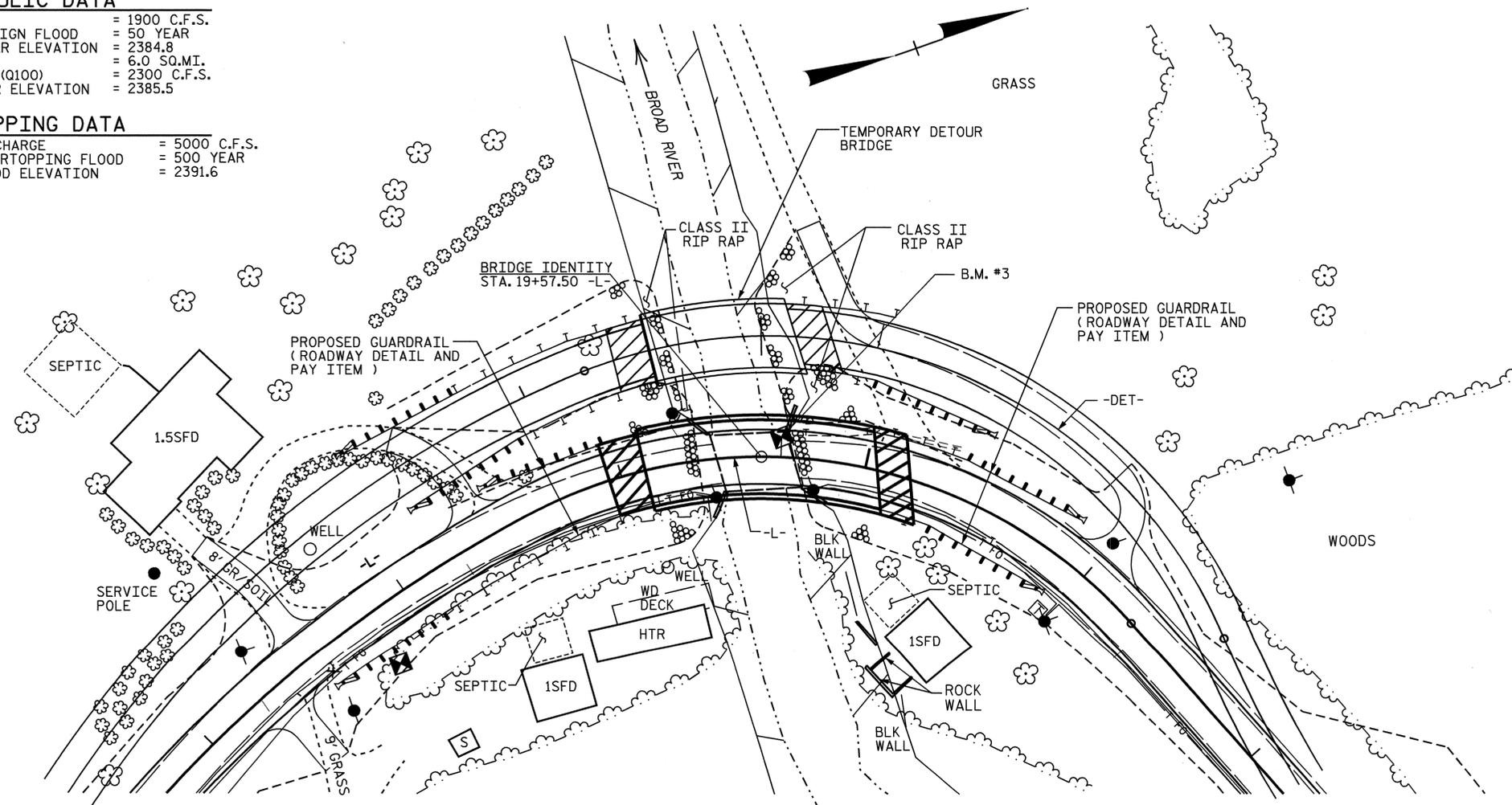
BM. #3 : AT EXISTING ABUTMENT 8.09' LEFT STA. 19+65.44 -L- ELEV. 2391.41'

HYDRAULIC DATA

DESIGN DISCHARGE = 1900 C.F.S.
 FREQUENCY OF DESIGN FLOOD = 50 YEAR
 DESIGN HIGH WATER ELEVATION = 2384.8
 DRAINAGE AREA = 6.0 SQ.MI.
 BASIC DISCHARGE (Q100) = 2300 C.F.S.
 BASIC HIGH WATER ELEVATION = 2385.5

OVERTOPPING DATA

OVERTOPPING DISCHARGE = 5000 C.F.S.
 FREQUENCY OF OVERTOPPING FLOOD = 500 YEAR
 OVERTOPPING FLOOD ELEVATION = 2391.6



LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

PROJECT NO. B-4032
BUNCOMBE COUNTY
 STATION: 19+57.50 -L-

SHEET 3 OF 3

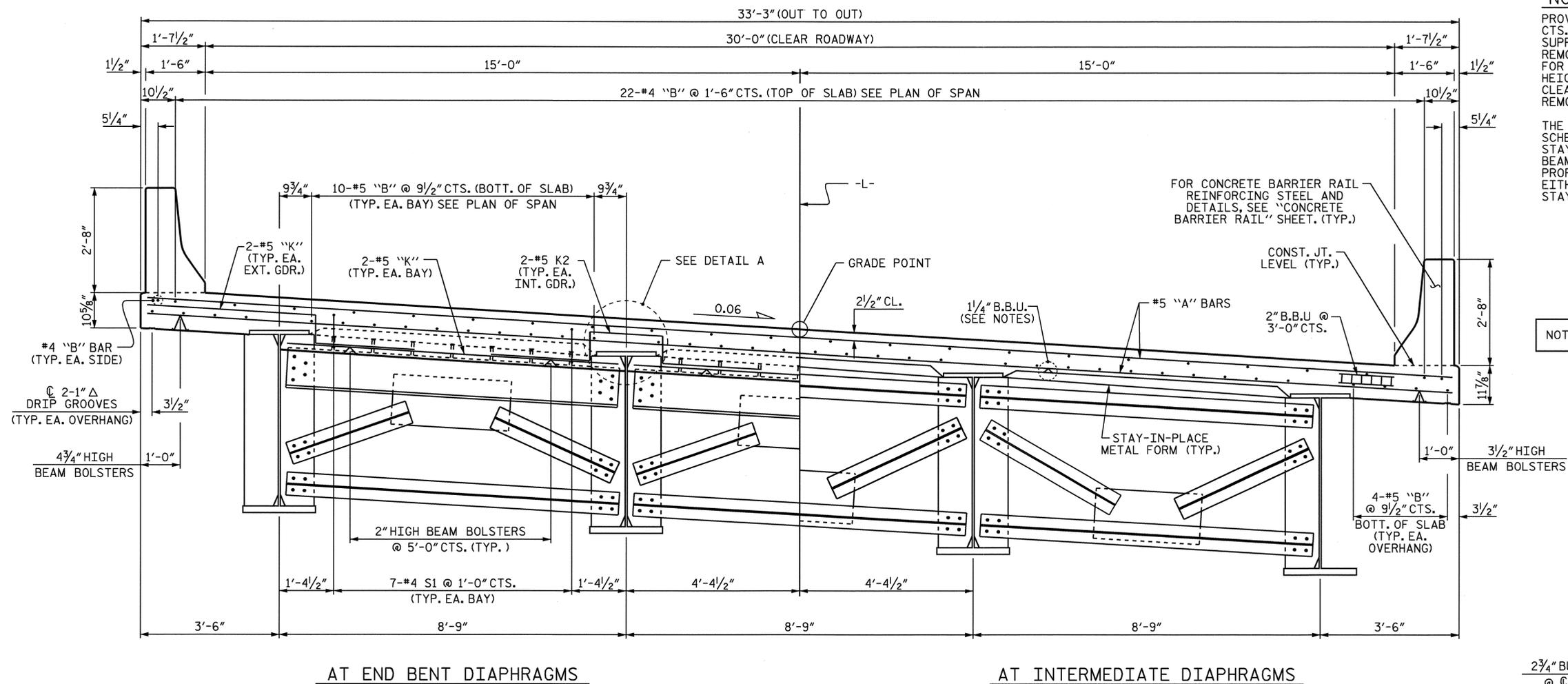
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON NC 9
 OVER BROAD RIVER BETWEEN
 SR 2788 AND SR 2797



DRAWN BY : E. G. ALLEN DATE : 2-6-08
 CHECKED BY : D. R. CALHOUN DATE : 3-13-08

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

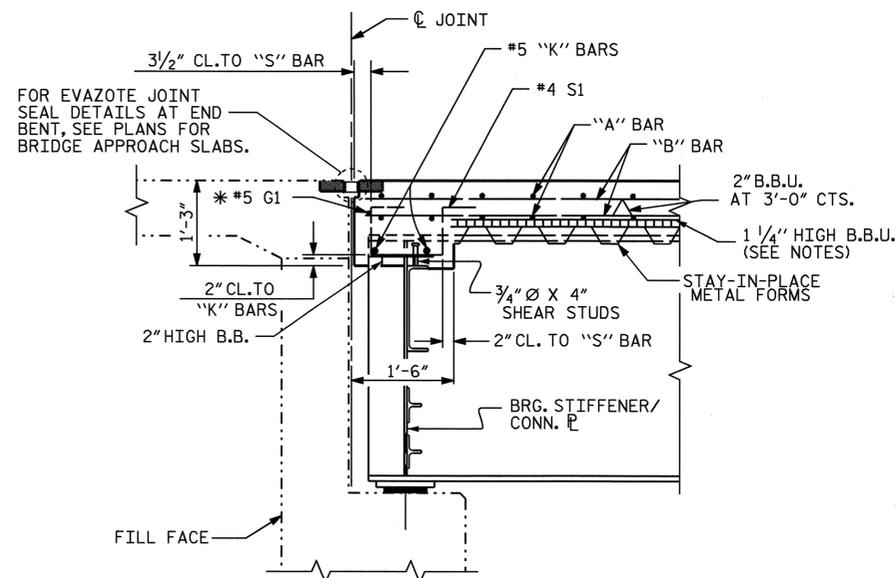
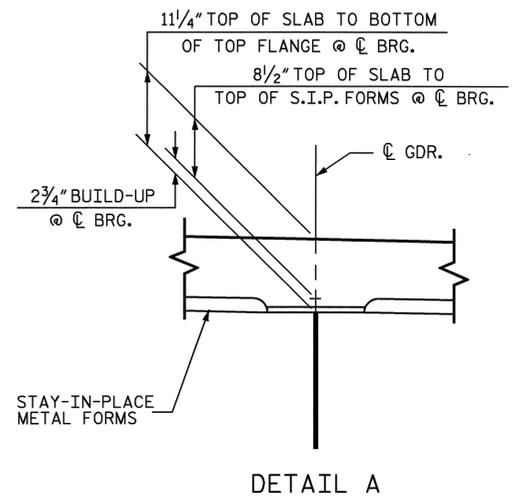


NOTES

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

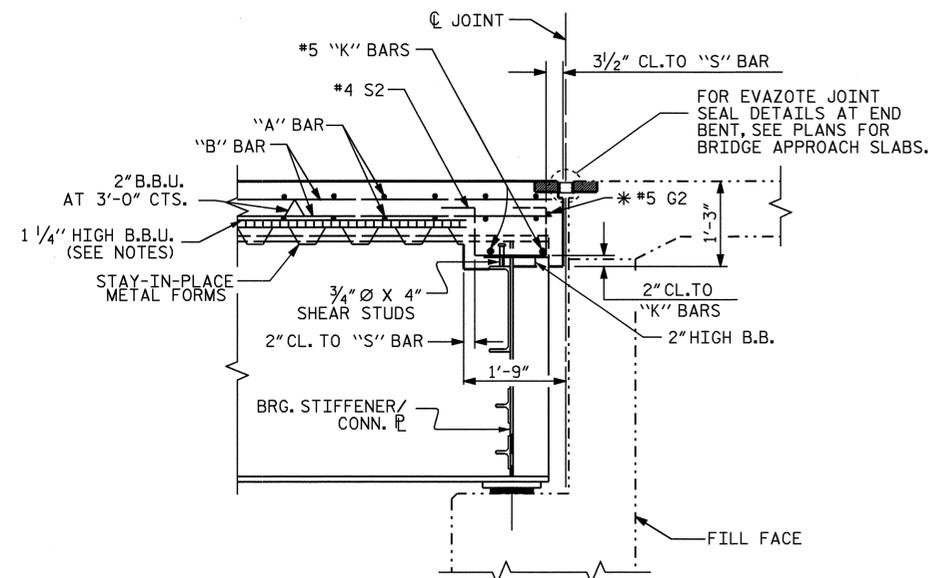
THE CONTRACTOR MAY, WHEN NECESSARY, PROPOSE A SCHEME FOR AVOIDING INTERFERENCE BETWEEN METAL STAY-IN-PLACE FORM SUPPORTS OR FORMS AND BEAM/GIRDER STIFFENERS OR CONNECTOR PLATES. THE PROPOSAL SHALL BE INDICATED, AS APPROPRIATE, ON EITHER THE STEEL WORKING DRAWINGS OR THE METAL STAY-IN-PLACE FORM WORKING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

NOTE: ALL HORIZONTAL DIMENSIONS ARE RADIAL.



SECTION A-A

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



SECTION B-B

* #5 G2 BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.

DRAWN BY : B.N. GRADY DATE : 5/07
 CHECKED BY : A.K. PATEL DATE : 6/07

12-MAY-2008 09:28
 R:\Structures\Final Plans\B4032.ed.TS.dgn
 galen



PROJECT NO. B-4032
 BUNCOMBE COUNTY
 STATION: 19+57.50 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 TYPICAL SECTION

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

NOTES

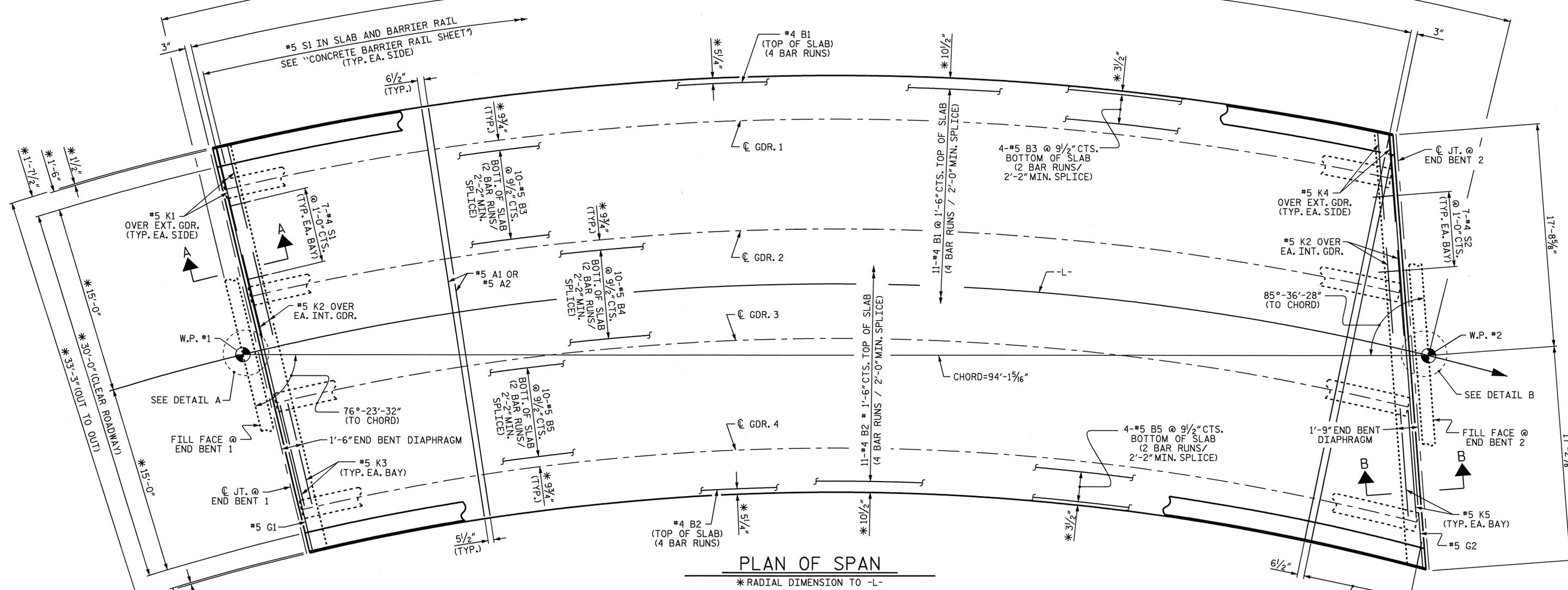
FOR SECTION VIEWS, SEE "TYPICAL SECTION" SHEET.

ALL "A" BARS ARE PLACED NORMAL TO ARC -L-.

FOR LOCATION OF INTERMEDIATE DIAPHRAGMS, SEE "STRUCTURAL STEEL DETAILS" SHEET 1 OF 3.

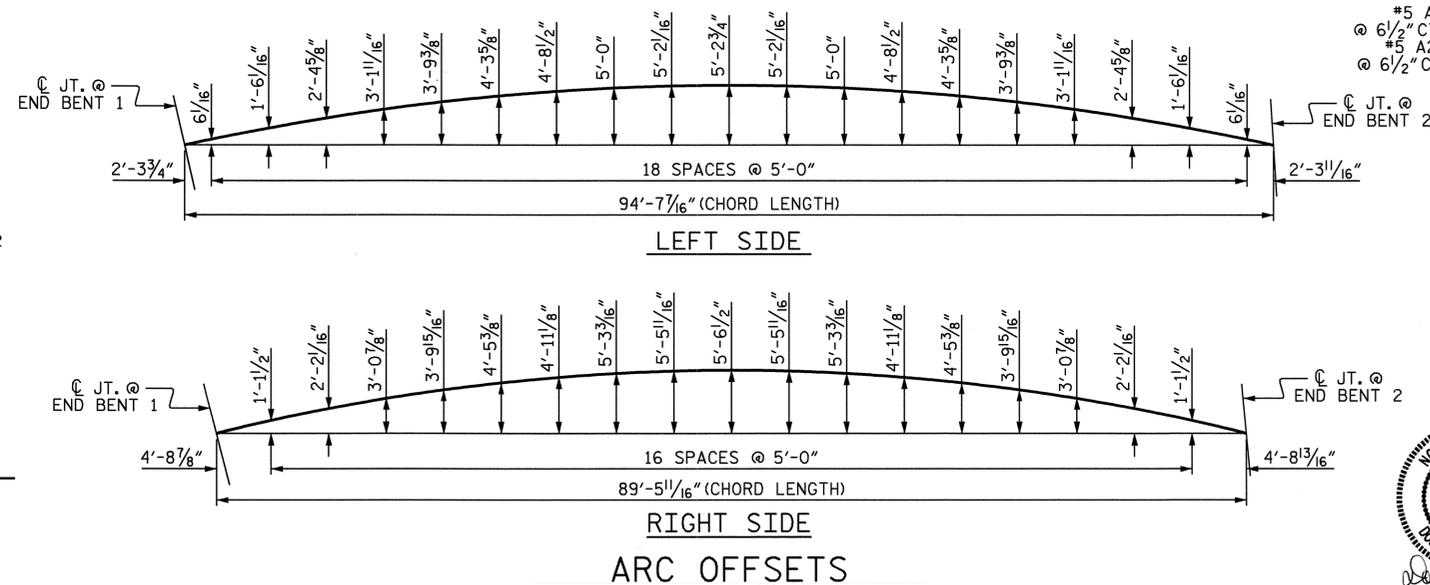
95'-0" ALONG ARC -L- (W.P. #1 TO W.P. #2)

177-#5 A1 @ 6 1/2" CTS. (TOP OF SLAB)
177-#5 A2 @ 6 1/2" CTS. (BOTTOM OF SLAB)

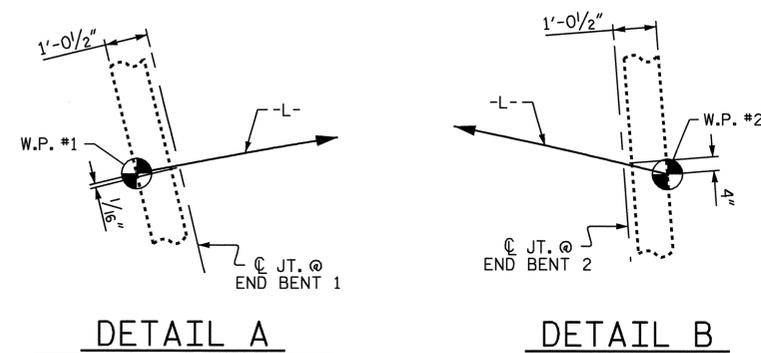


PLAN OF SPAN

* RADIAL DIMENSION TO -L-



ARC OFFSETS



DETAIL A

DETAIL B

PROJECT NO. B-4032
BUNCOMBE COUNTY
 STATION: 19+57.50 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 PLAN OF SPAN**

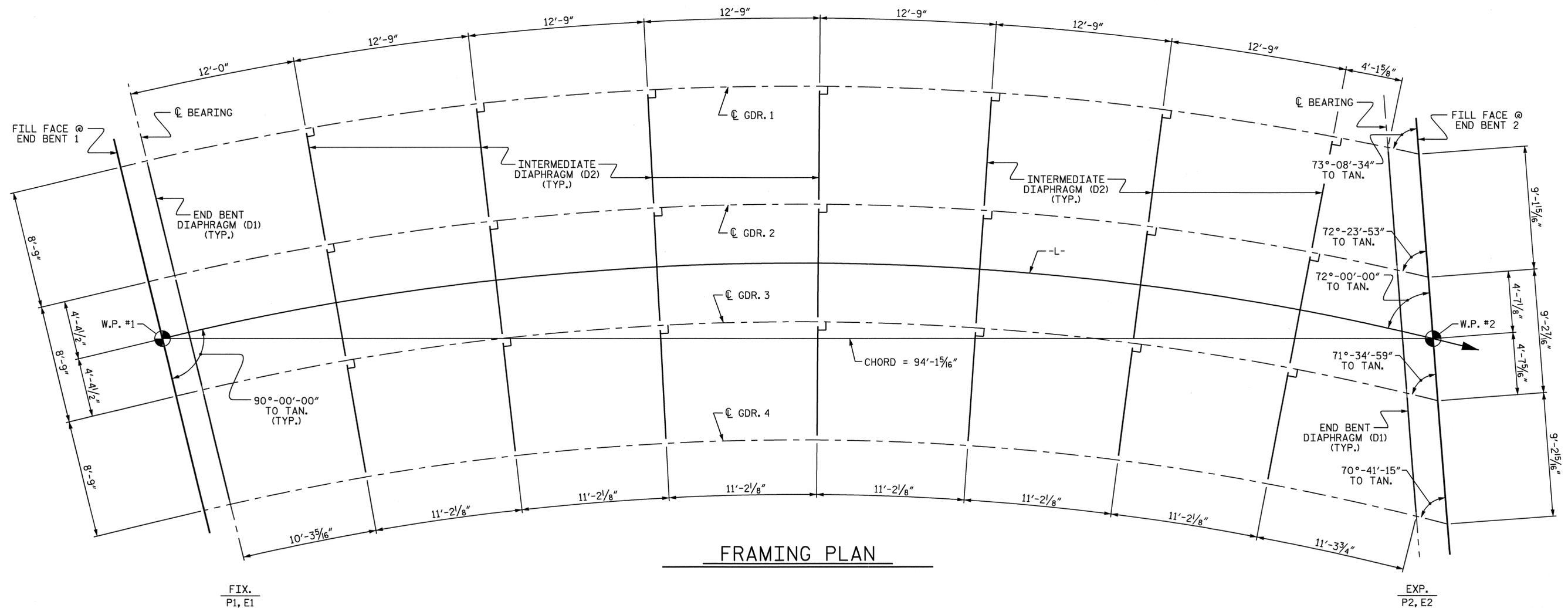
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

S-5
 TOTAL SHEETS 22



DRAWN BY: B.N. GRADY DATE: 5/07
 CHECKED BY: A.K. PATEL DATE: 6/07

NOTES
 ALL INTERMEDIATE DIAPHRAGMS ARE RADIAL TO GIRDER CENTERLINES.
 FOR DIAPHRAGM DETAILS, SEE SHEET 3 OF 3.



FRAMING PLAN

DEAD LOAD DEFLECTION TABLE																						
TENTH POINTS	GIRDER 1											GIRDER 2										
	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
DEFLECTION DUE TO WEIGHT OF GIRDER	↓ 0.000	0.019	0.035	0.048	0.057	0.059	0.057	0.048	0.035	0.019	0.000	0.000	0.014	0.029	0.037	0.043	0.045	0.042	0.036	0.026	0.014	0.000
* DEFLECTION DUE TO WEIGHT OF SLAB	↓ 0.000	0.055	0.105	0.143	0.168	0.176	0.168	0.143	0.104	0.055	0.000	0.000	0.042	0.080	0.105	0.127	0.132	0.125	0.106	0.077	0.040	0.000
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	↓ 0.000	0.006	0.011	0.015	0.018	0.018	0.018	0.015	0.011	0.006	0.000	0.000	0.004	0.008	0.011	0.013	0.014	0.013	0.011	0.008	0.004	0.000
TOTAL DEAD LOAD DEFLECTION	↓ 0.000	0.080	0.151	0.206	0.242	0.253	0.243	0.206	0.150	0.080	0.000	0.000	0.060	0.115	0.153	0.183	0.191	0.180	0.513	0.111	0.058	0.000
REQUIRED CAMBER	↑ 0	15/16"	1 1/16"	2 1/2"	2 5/16"	3"	2 5/16"	2 1/2"	1 3/16"	1 5/16"	0	0	3/4"	1 3/8"	1 7/8"	2 3/16"	2 5/16"	2 3/16"	1 13/16"	1 5/16"	1 1/16"	0

DEAD LOAD DEFLECTION TABLE																						
TENTH POINTS	GIRDER 3											GIRDER 4										
	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
DEFLECTION DUE TO WEIGHT OF GIRDER	↓ 0.000	0.010	0.019	0.026	0.030	0.032	0.030	0.025	0.018	0.010	0.000	0.000	0.006	0.012	0.016	0.019	0.020	0.019	0.016	0.012	0.006	0.000
* DEFLECTION DUE TO WEIGHT OF SLAB	↓ 0.000	0.030	0.057	0.078	0.090	0.094	0.089	0.076	0.055	0.029	0.000	0.000	0.018	0.035	0.048	0.056	0.059	0.056	0.048	0.035	0.019	0.000
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	↓ 0.000	0.003	0.006	0.008	0.010	0.010	0.010	0.008	0.006	0.003	0.000	0.000	0.002	0.004	0.006	0.007	0.007	0.007	0.006	0.004	0.002	0.000
TOTAL DEAD LOAD DEFLECTION	↓ 0.000	0.043	0.083	0.112	0.130	0.136	0.129	0.109	0.079	0.042	0.000	0.000	0.026	0.051	0.070	0.082	0.086	0.082	0.070	0.051	0.027	0.000
REQUIRED CAMBER	↑ 0	1/2"	1"	1 5/16"	1 9/16"	1 5/8"	1 9/16"	1 5/16"	1 1/2"	0	0	0	5/16"	5/8"	1 3/16"	1"	1"	1"	1 3/16"	5/8"	5/16"	0

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



PROJECT NO. B-4032
BUNCOMBE COUNTY
 STATION: 19+57.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 STRUCTURAL STEEL
 DETAILS**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			22

DRAWN BY: B.N. GRADY DATE: 5/07
 CHECKED BY: A.K. PATEL DATE: 6/07

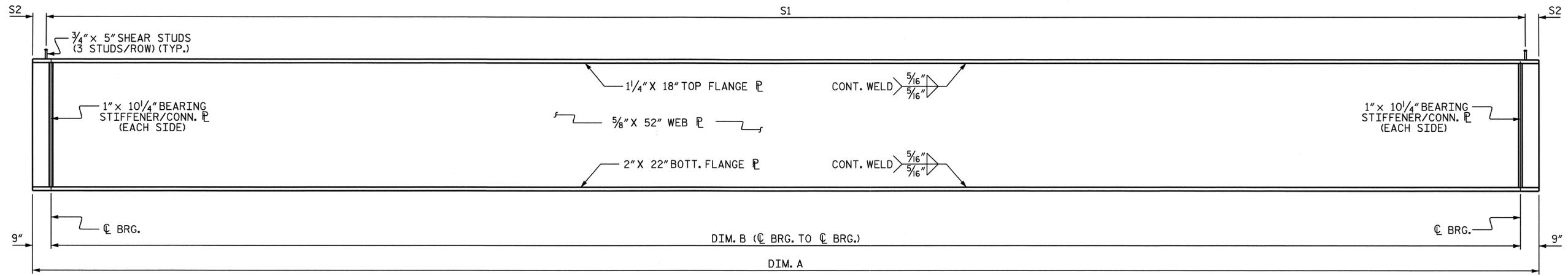
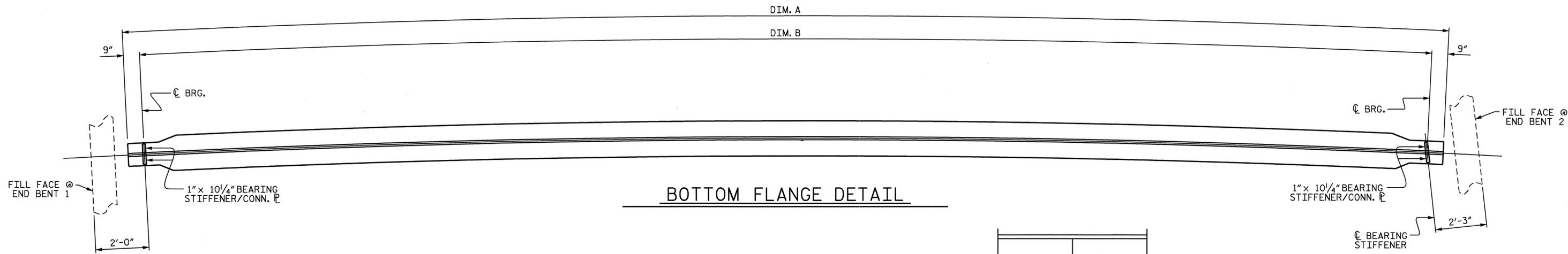
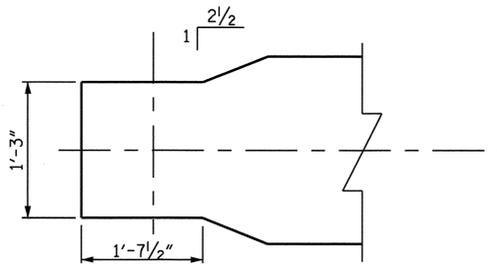


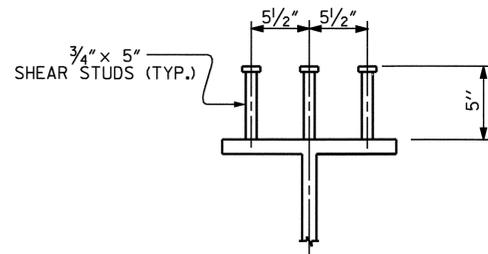
PLATE GIRDER ELEVATION



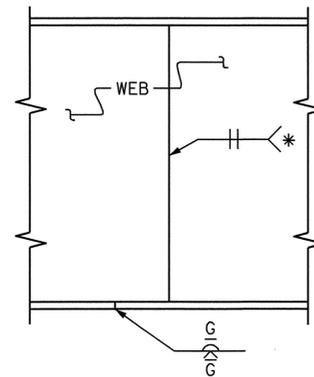
BOTTOM FLANGE DETAIL



BOTTOM FLANGE
DETAIL @ END BENTS



SHEAR STUD DETAILS



ELEVATION

TYPICAL FLANGE AND WEB BUTT JOINT

* GRIND SMOOTH AND FLUSH ON OUTER FACE OF EXTERIOR GIRDERS

GIRDER TABLE						
	RADIUS (ϕ GIRDER)	DIM. A	DIM. B	S1	S2	TOTAL STUDS
GIRDER 1	213'-1 1/2"	94'-1 5/8"	92'-7 5/8"	92 SPA. @ 1'-0"	1'-0 13/16"	279
GIRDER 2	204'-4 1/2"	92'-9 5/8"	91'-3 5/8"	91 SPA. @ 1'-0"	10 13/16"	276
GIRDER 3	195'-7 1/2"	91'-5 3/4"	89'-11 3/4"	90 SPA. @ 1'-0"	8 7/8"	273
GIRDER 4	186'-10 1/2"	90'-2"	88'-8"	88 SPA. @ 1'-0"	1'-1"	267

NOTE: ALL GIRDER DIMENSIONS IN THE ABOVE TABLE ARE MEASURED ALONG ϕ GIRDER.

PROJECT NO. B-4032
BUNCOMBE COUNTY
 STATION: 19+57.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

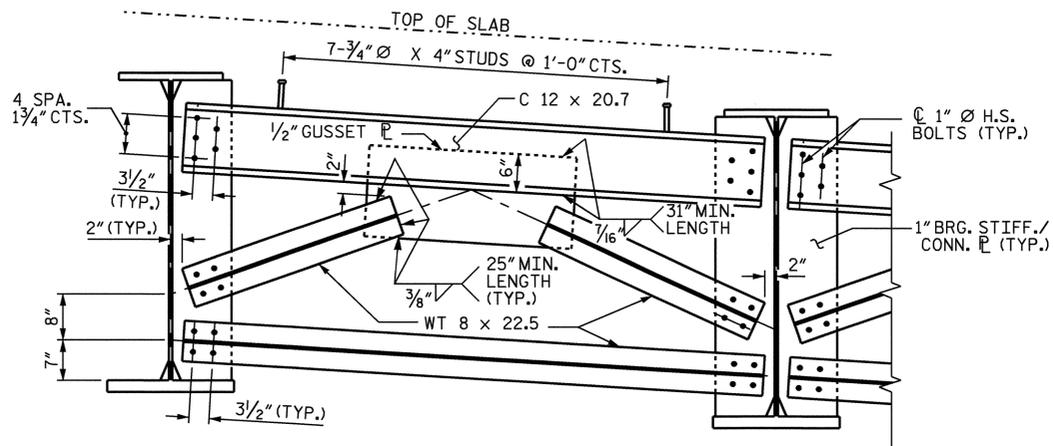
SUPERSTRUCTURE
 STRUCTURAL STEEL
 DETAILS



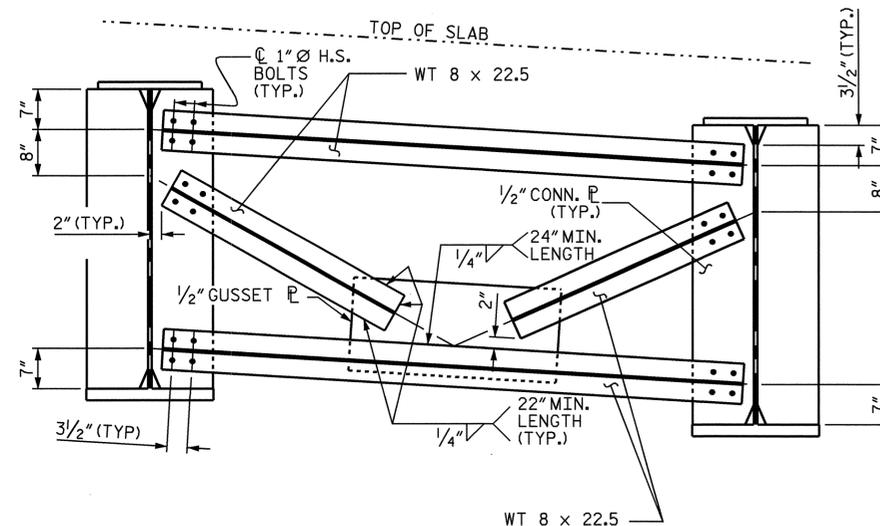
DRAWN BY : B.N. GRADY DATE : 6/07
 CHECKED BY : A.K. PATEL DATE : 6/07

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			22



TYPICAL END BENT DIAPHRAGM (D1)



TYPICAL INTERMEDIATE DIAPHRAGM (D2)

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 1" DIA. HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED.

A CHARPY V-NOTCH TEST IS REQUIRED FOR WEB PLATES, BOTTOM FLANGE PLATES, BOTTOM FLANGE SPLICE PLATES AND WEB SPLICE PLATES (IF USED) 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.

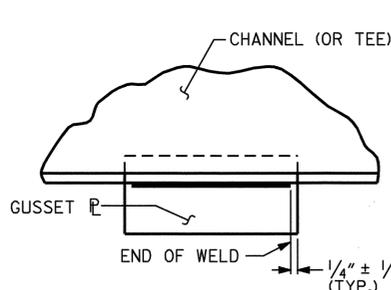
TENSION ON THE AASHTO M164 BOLTS SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH ARTICLE 440-8 OF THE STANDARD SPECIFICATIONS.

END OF GIRDERS SHALL BE PLUMB.

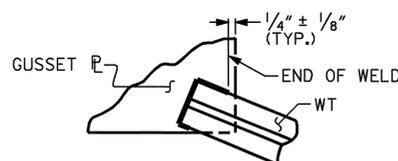
BEARING STIFFENERS ARE TO BE PLACED ALONG SKEW AND USED AS CONNECTOR PLATES AND SHALL BE PLUMB.

BEARING STIFFENER MAY REQUIRE COPING IF WIDER THAN BOTTOM FLANGE TO AVOID INTERFERENCE WITH THE ANCHOR BOLTS.

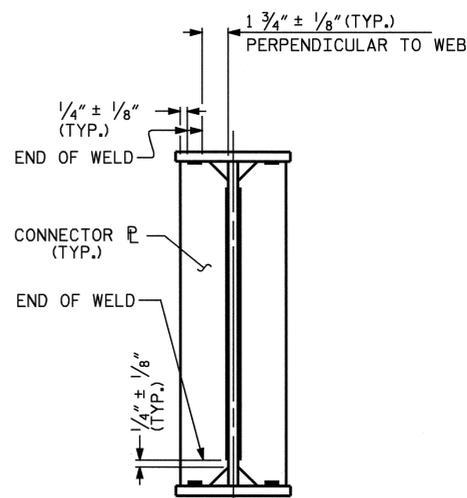
FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.



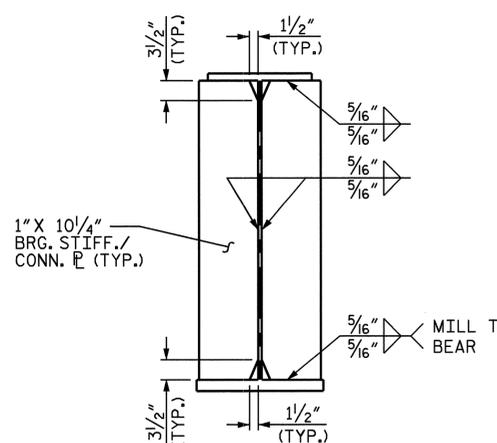
TYPICAL GUSSET PLATE CONNECTION



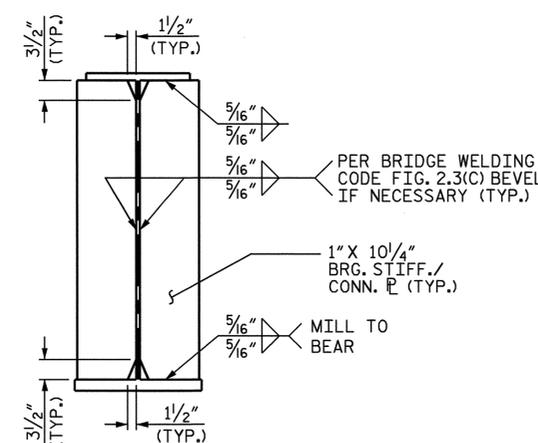
TYPICAL "TEE" TO GUSSET PLATE CONNECTION



TYPICAL STIFFENER & CONNECTOR PLATE CONNECTIONS

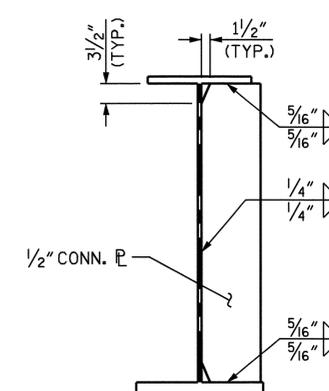


AT END BENT 1



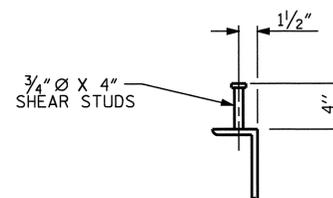
AT END BENT 2

BEARING STIFFENER/CONNECTOR PLATE



CONNECTOR PLATE

WELD TERMINATION DETAILS



SHEAR STUD DETAILS

PROJECT NO. B-4032
 BUNCOMBE COUNTY
 STATION: 19+57.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 STRUCTURAL STEEL
 DETAILS

DRAWN BY: B.N. GRADY DATE: 6/07
 CHECKED BY: A.K. PATEL DATE: 6/07

12-MAY-2008 09:29
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REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8	
1			3			TOTAL SHEETS 22	
2			4				

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.

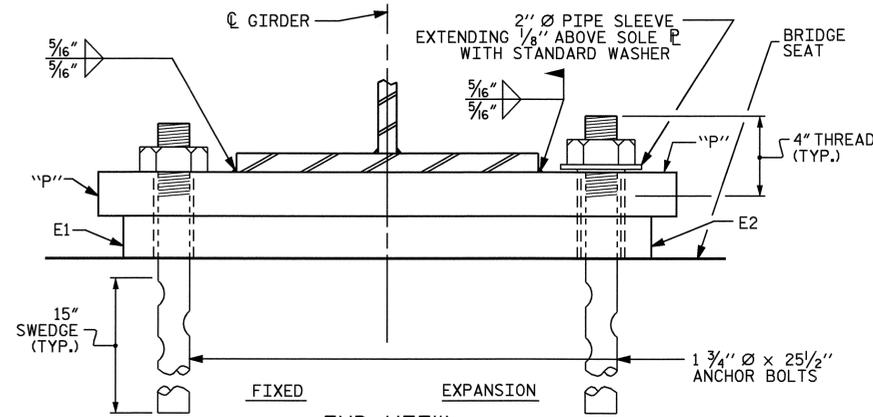
FOR PAINTED STRUCTURAL STEEL (EXCLUDING AASHTO M270 GRADE 50W), SOLE PLATES, ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

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.

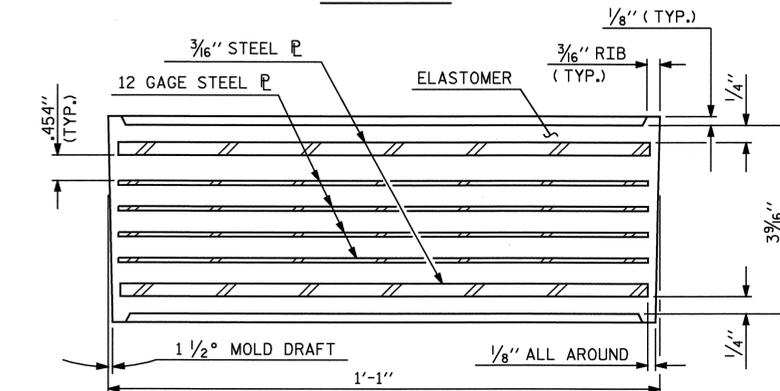
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

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.

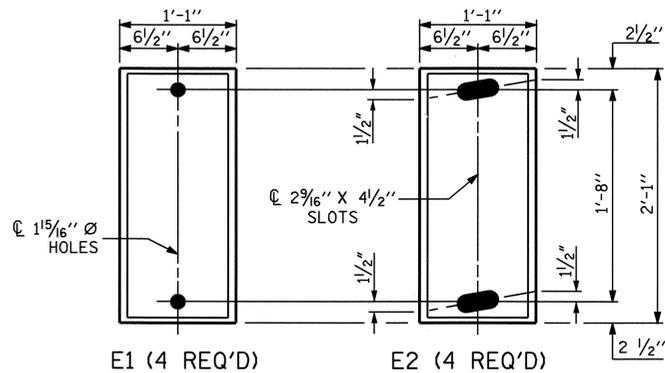
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.



END VIEW

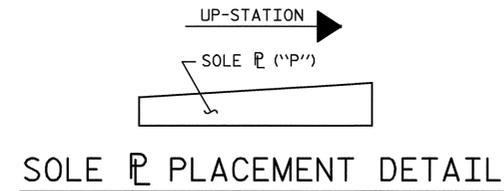


TYPICAL SECTION OF ELASTOMERIC BEARING

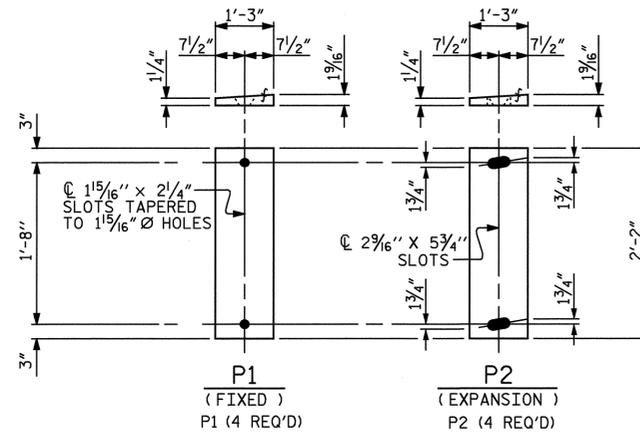


PLAN VIEW OF ELASTOMERIC BEARING

TYPE V



SOLE PLATE PLACEMENT DETAIL



SOLE PLATE DETAILS ('P')

-LOAD RATINGS-	
	MAX.D.L.+ L.L.
TYPE V	200 K

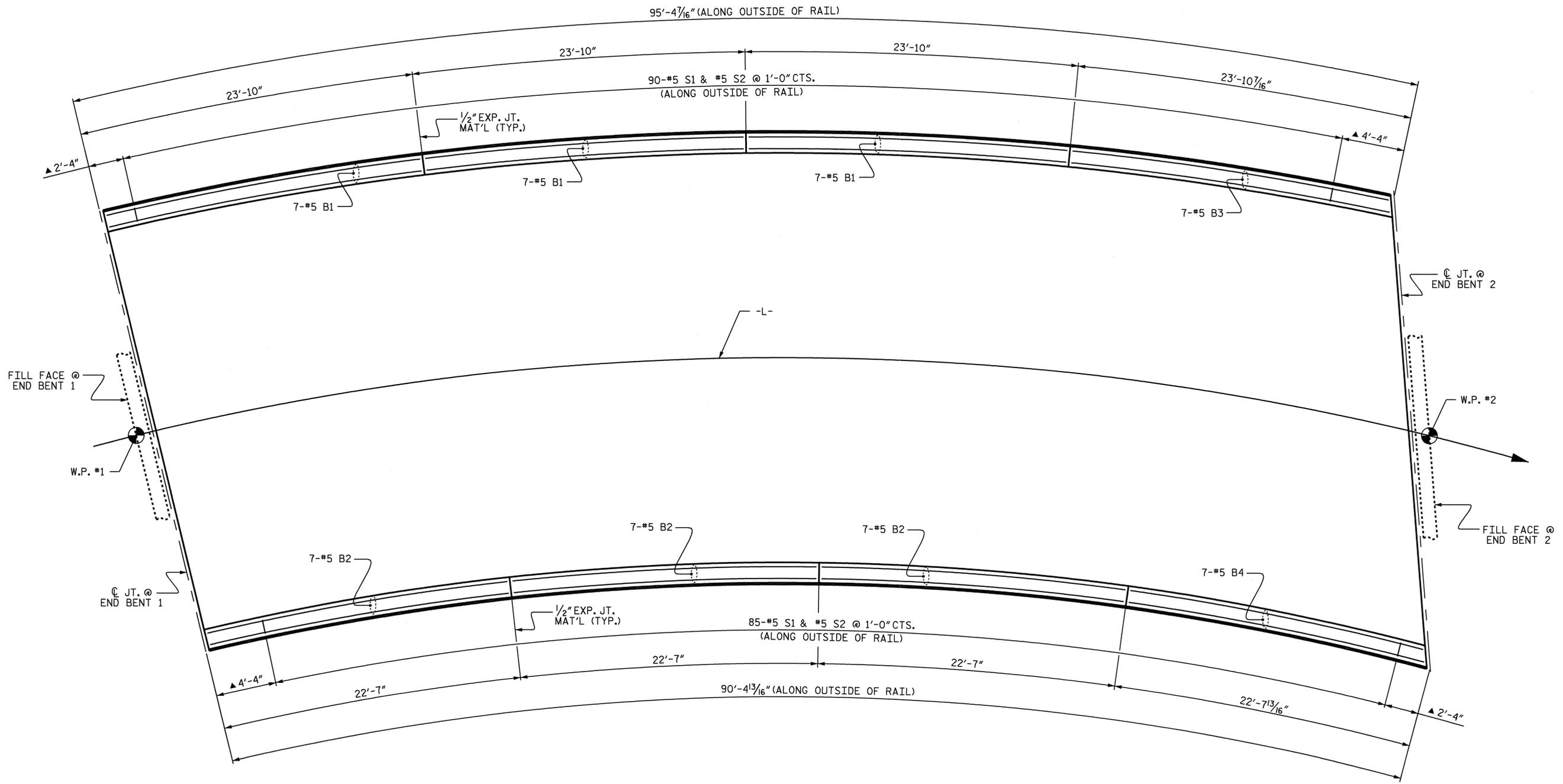
PROJECT NO. B-4032
BUNCOMBE COUNTY
 STATION: 19+57.50 -L-

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



ASSEMBLED BY : B.N. GRADY	DATE : 6/07
CHECKED BY : A.K. PATEL	DATE : 6/07
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

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9	
1			3			TOTAL SHEETS	
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PLAN OF BARRIER RAIL

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE FROM C. JOINT TO C. JOINT.
 ▲ FOR REINFORCING STEEL AT ENDS OF RAIL, SEE "END OF RAIL DETAILS" SHEET 2 OF 3.

PROJECT NO. B-4032
BUNCOMBE COUNTY
 STATION: 19+57.50 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 CONCRETE
 BARRIER RAIL**



DRAWN BY : B.N. GRADY DATE : 6/07
 CHECKED BY : A.K. PATEL DATE : 6/07

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

NOTES

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

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

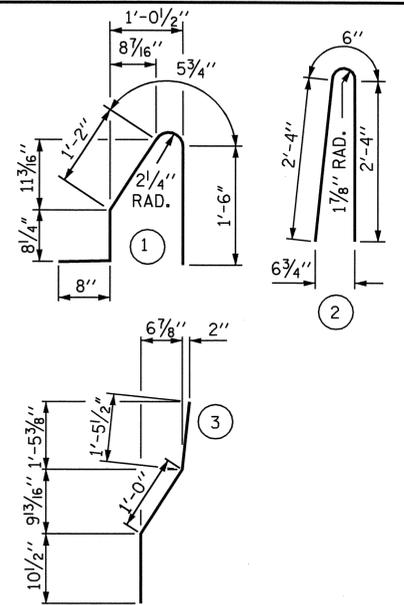
ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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 IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE 1/2" EXPANSION JOINT MATERIAL IN BARRIER RAIL.

BAR TYPES



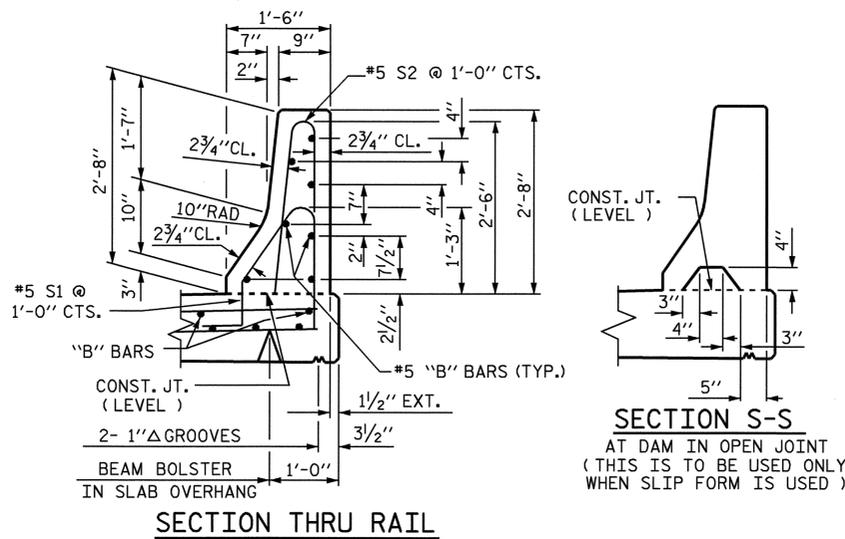
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

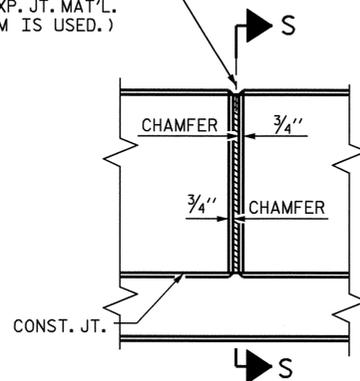
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	21	#5	STR	23'-3"	509
* B2	21	#5	STR	22'-3"	487
* B3	7	#5	STR	23'-6"	172
* B4	7	#5	STR	21'-11"	160
* S1	175	#5	1	4'-6"	821
* S2	175	#5	2	5'-2"	943
* S3	12	#5	3	3'-4"	42
* S4	12	#5	STR	3'-2"	40

* EPOXY COATED REINFORCING STEEL 3174 LBS.
 CLASS AA CONCRETE 18.6 CU. YDS.
 CONCRETE BARRIER RAIL 185.77 LIN. FT.

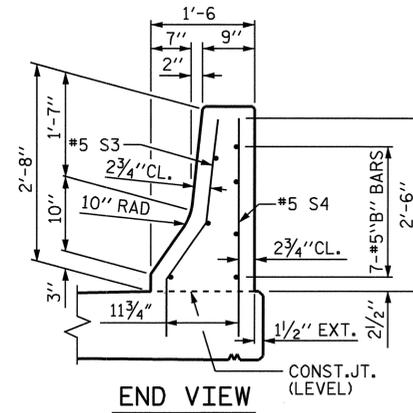


SECTION THRU RAIL

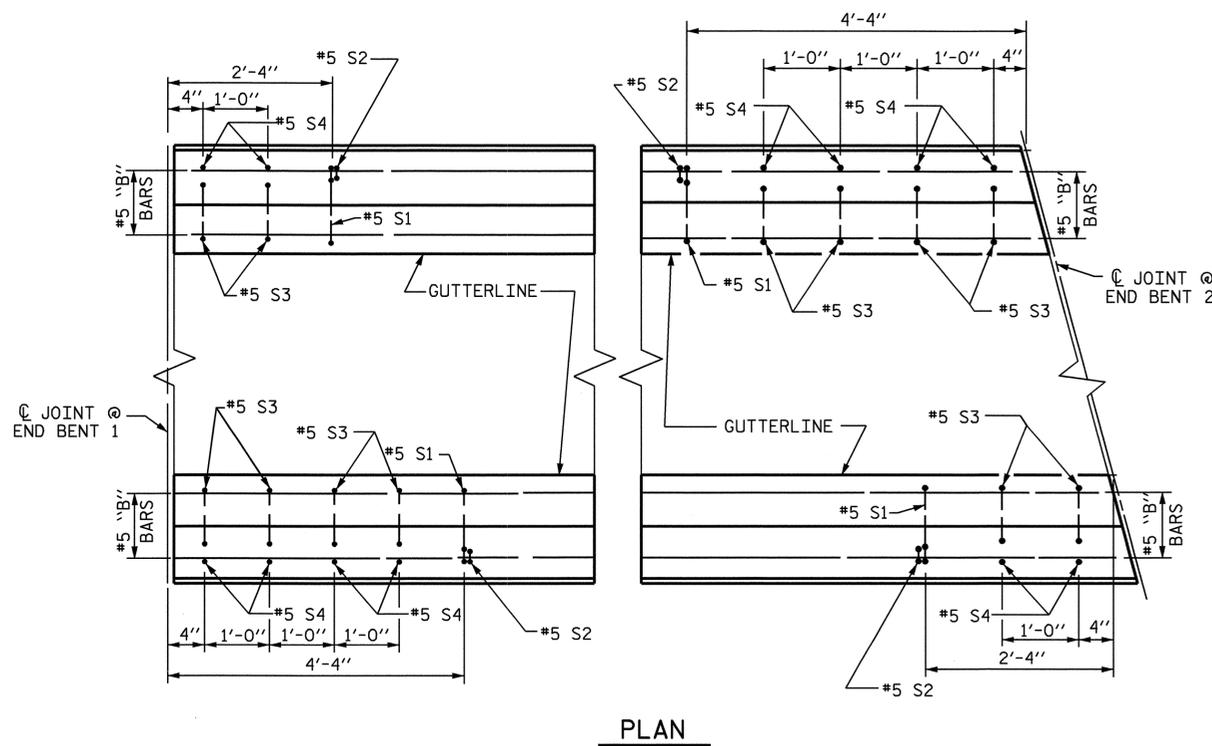
1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS.
 (NOTE: OMIT EXP. JT. MAT'L WHEN SLIP FORM IS USED.)



**ELEVATION AT EXPANSION JOINTS
 BARRIER RAIL DETAILS**



END VIEW



PLAN

**END OF RAIL DETAILS
 FOR ADHESIVE ANCHORING AT SAWED JOINTS**



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BUNCOMBE COUNTY
 STATION: 19+57.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 CONCRETE
 BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS 22
2			4			

STD. NO. CBR1

ASSEMBLED BY : B.N. GRADY	DATE : 6/07
CHECKED BY : A.K. PATEL	DATE : 6/07
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.)

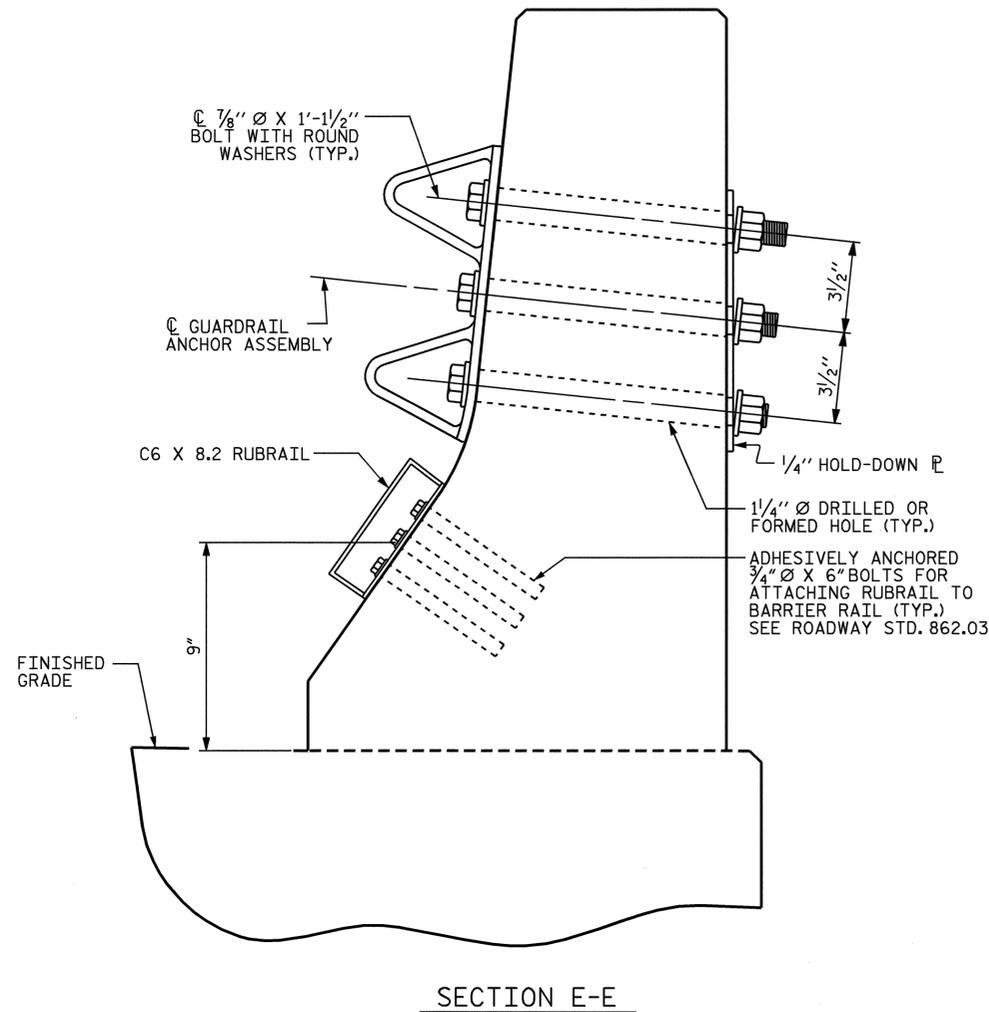
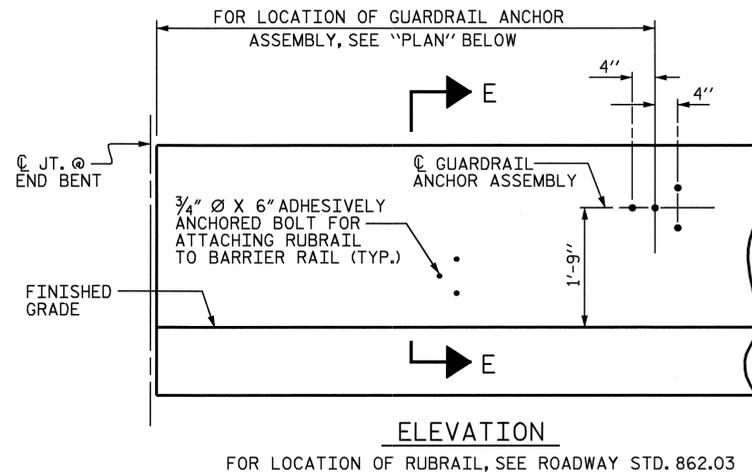
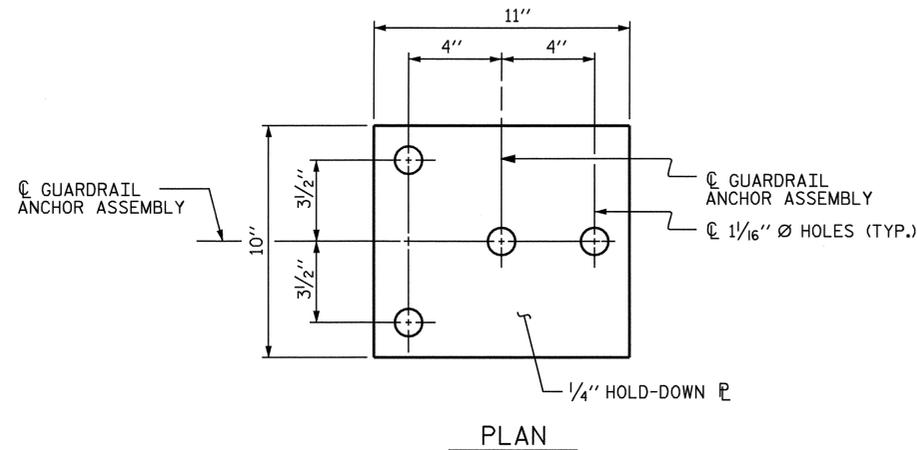
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

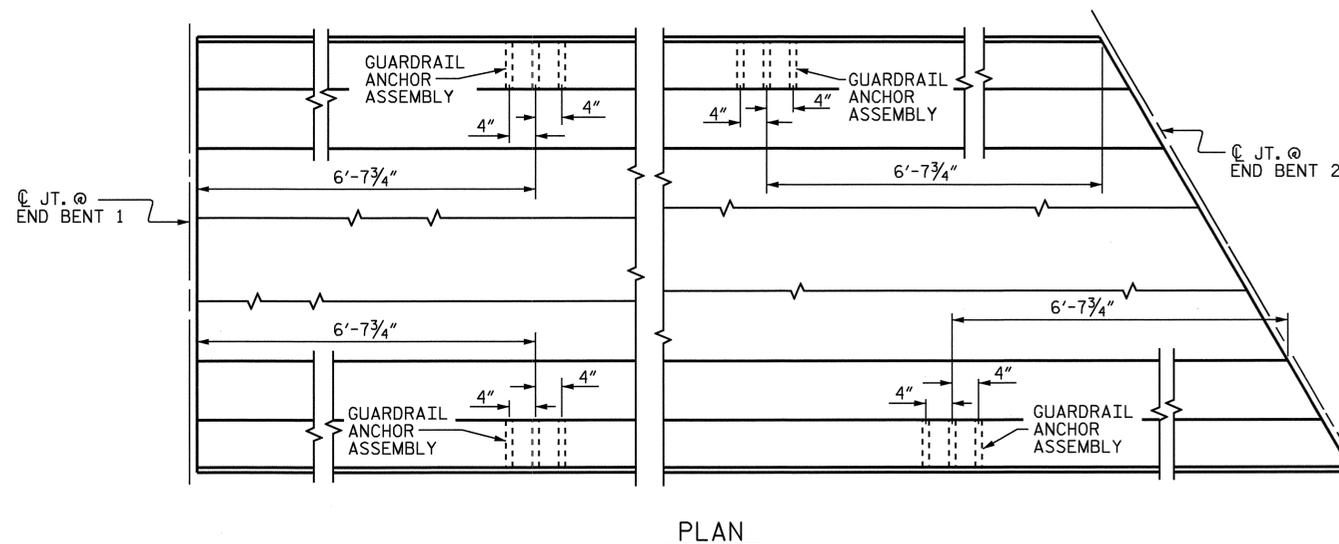
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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.

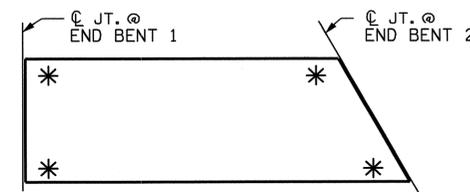
THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS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



GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF ANCHORS FOR GUARDRAIL



* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-4032
 BUNCOMBE COUNTY
 STATION: 19+57.50 -L-

SHEET 3 OF 3

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



ASSEMBLED BY : B.N. GRADY	DATE : 6/07
CHECKED BY : A.K. PATEL	DATE : 6/07
DRAWN BY : TLA 5/06	ADDED 5/1/06R KMM/GM
CHECKED BY : GM 5/06	

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS 22
2			4			

STD. NO. GRA2

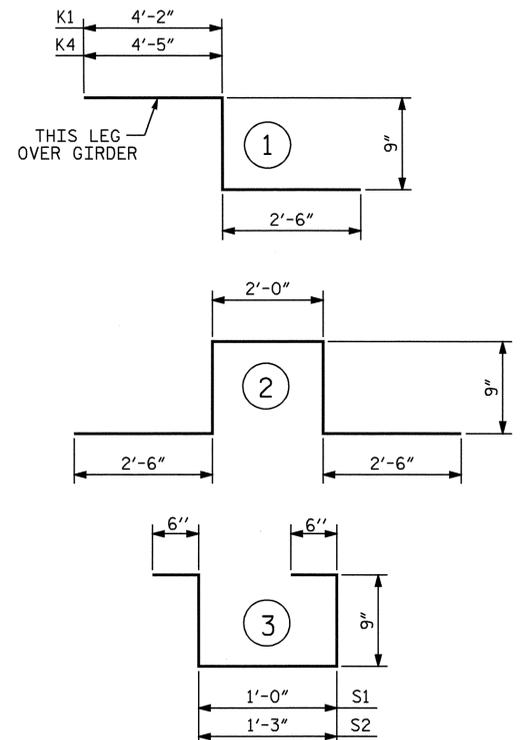
SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

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"			

REINFORCING BAR SCHEDULE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	177	#5	STR	32'-11"	6077
A2	177	#5	STR	32'-11"	6077
* A101	1	#5	STR	31'-5"	33
* A102	1	#5	STR	29'-7"	31
* A103	1	#5	STR	27'-9"	29
* A104	1	#5	STR	25'-11"	27
* A105	1	#5	STR	24'-0"	25
* A106	1	#5	STR	22'-2"	23
* A107	1	#5	STR	20'-4"	21
* A108	1	#5	STR	18'-6"	19
* A109	1	#5	STR	16'-7"	17
* A110	1	#5	STR	14'-9"	15
* A111	1	#5	STR	12'-11"	13
* A112	1	#5	STR	11'-1"	12
* A113	1	#5	STR	9'-3"	10
* A114	1	#5	STR	7'-5"	8
* A115	1	#5	STR	5'-7"	6
* A116	1	#5	STR	3'-9"	4
* A117	1	#5	STR	1'-11"	2
A201	1	#5	STR	31'-5"	33
A202	1	#5	STR	29'-7"	31
A203	1	#5	STR	27'-9"	29
A204	1	#5	STR	25'-11"	27
A205	1	#5	STR	24'-0"	25
A206	1	#5	STR	22'-2"	23
A207	1	#5	STR	20'-4"	21
A208	1	#5	STR	18'-6"	19
A209	1	#5	STR	16'-7"	17
A210	1	#5	STR	14'-9"	15
A211	1	#5	STR	12'-11"	13
A212	1	#5	STR	11'-1"	12
A213	1	#5	STR	9'-3"	10
A214	1	#5	STR	7'-5"	8
A215	1	#5	STR	5'-7"	6
A216	1	#5	STR	3'-9"	4
A217	1	#5	STR	1'-11"	2
* B1	48	#4	STR	25'-3"	810
* B2	48	#4	STR	24'-7"	788
B3	28	#5	STR	48'-7"	1419
B4	20	#5	STR	47'-7"	993
B5	28	#5	STR	46'-11"	1370
* G1	1	#5	STR	32'-11"	34
* G2	1	#5	STR	34'-6"	36
* K1	4	#5	1	7'-5"	31
* K2	8	#5	2	8'-6"	71
K3	6	#5	STR	8'-4"	52
* K4	4	#5	1	7'-8"	32
K5	6	#5	STR	8'-9"	55
* S1	21	#4	3	3'-6"	49
* S2	21	#4	3	3'-9"	53
REINFORCING STEEL = 10261 LBS					
* EPOXY COATED REINF. STEEL = 8276 LBS					

BAR TYPES



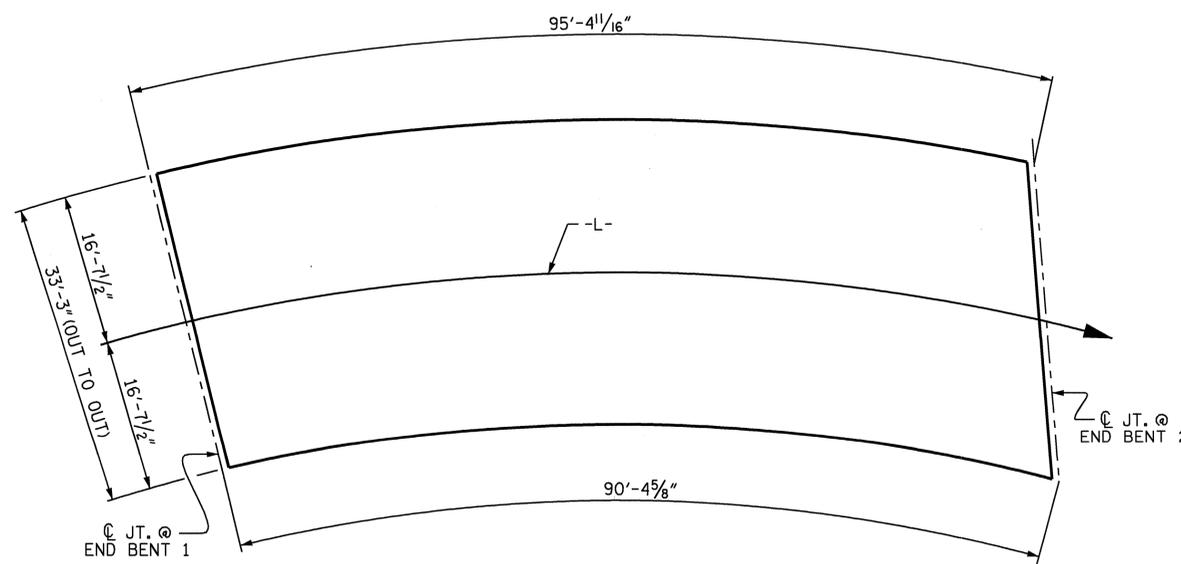
ALL BAR DIMENSIONS ARE OUT TO OUT

— SUPERSTRUCTURE BILL OF MATERIAL —

	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU.YDS.)	(LBS.)	(LBS.)
TOTALS**	98.5	10261	8276

** QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

GROOVING BRIDGE FLOORS	
APPROACH SLABS	782 SQ.FT.
BRIDGE DECK	2496 SQ.FT.
TOTAL	3278 SQ.FT.



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB (SQ. FT. = 3085)

ASSEMBLED BY : B.N. GRADY	DATE : 6/07
CHECKED BY : A.K. PATEL	DATE : 6/07
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

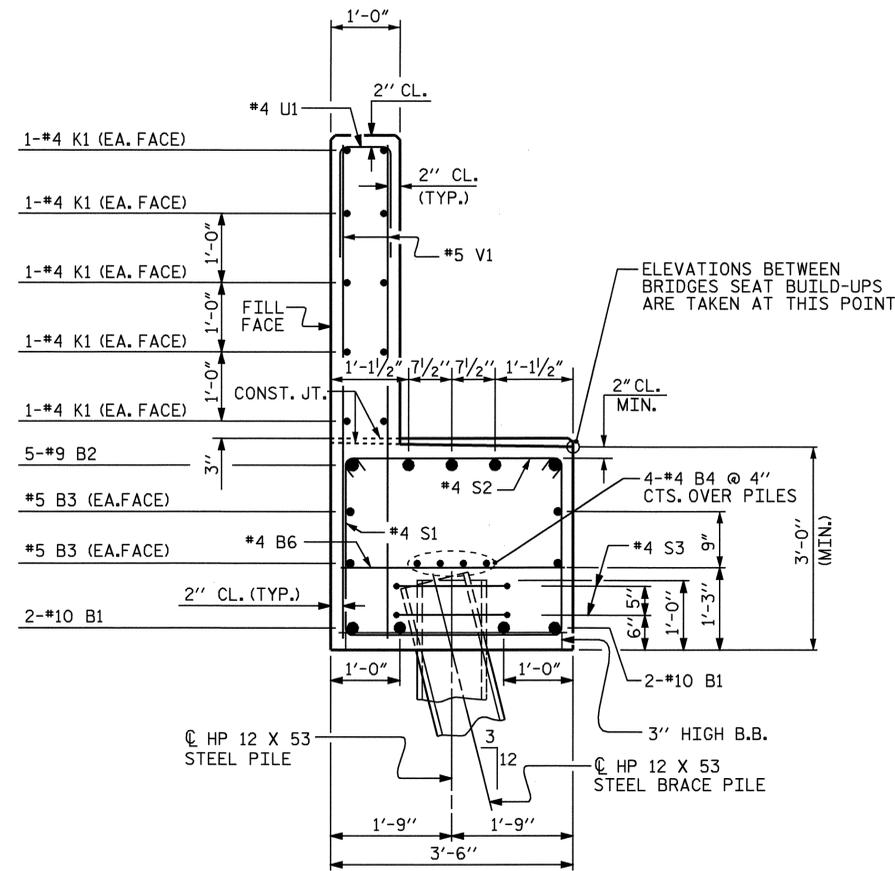


PROJECT NO. B-4032
BUNCOMBE COUNTY
 STATION: 19+57.50 -L-

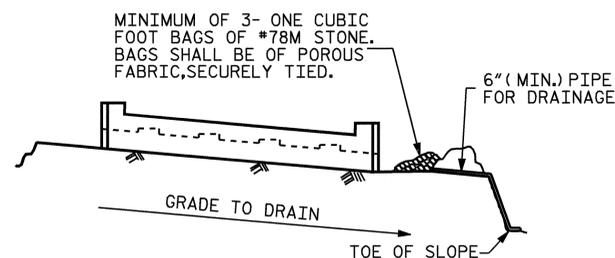
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 SUPERSTRUCTURE
 BILL OF MATERIAL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS 22
2			4			

STD. NO. BOM1



SECTION A-A



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.

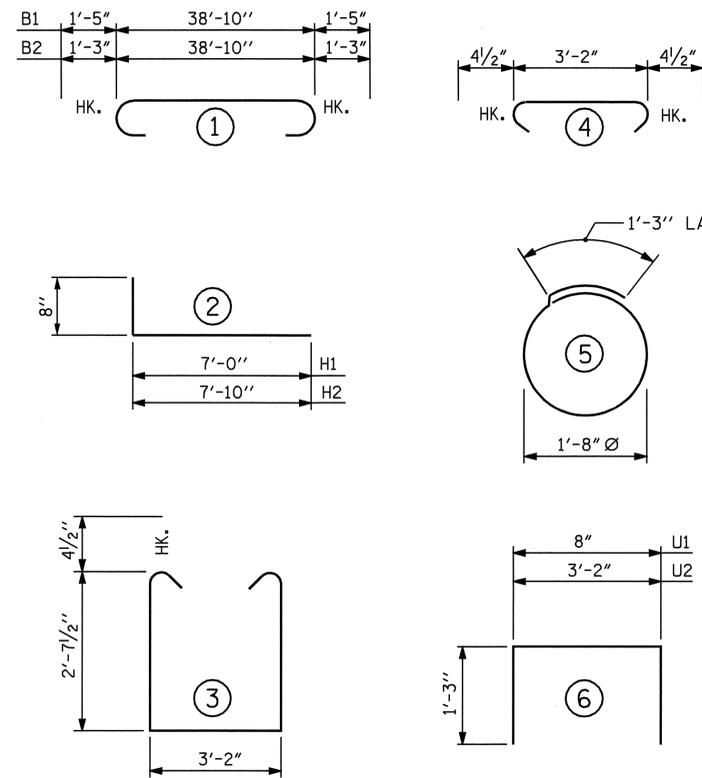
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

DRAWN BY : A. K. PATEL DATE : 5/28/07
 CHECKED BY : K. P. SEDAİ DATE : 6/22/07

24-APR-2008 11:56
 Z:\Structures\Final Plans\B-4032.sd.E*.dgn
 bng Brady

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	41'-8"	717
B2	5	9	1	41'-4"	703
B3	4	5	STR	38'-11"	162
B4	8	4	STR	20'-8"	110
B5	20	4	STR	2'-8"	36
B6	10	4	STR	3'-2"	21
H1	22	4	2	7'-8"	113
H2	22	4	2	8'-6"	125
K1	20	4	STR	20'-8"	276
K2	8	4	STR	3'-6"	19
S1	40	4	3	9'-2"	245
S2	40	4	4	3'-11"	105
S3	20	4	5	6'-6"	87
U1	32	4	6	3'-2"	68
U2	12	4	6	5'-8"	45
V1	64	5	STR	7'-4"	490
V2	24	5	STR	8'-9"	219
V3	26	5	STR	9'-3"	251

REINFORCING STEEL	LBS.	3792
CLASS A CONCRETE BREAKDOWN		
POUR 1 (CAP & LOWER PART OF WING)	C.Y.	17.1
POUR 2 (BACKWALL & UPPER PART OF WING)	C.Y.	10.4
TOTAL	C.Y.	27.5

HP 12 X 53 STEEL PILES :		
	NO. 10	FT. 350
STEEL PILE POINTS :	EA.	10

PROJECT NO. B-4032
 BUNCOMBE COUNTY
 STATION: 19+57.50 -L-

SHEET 3 OF 3

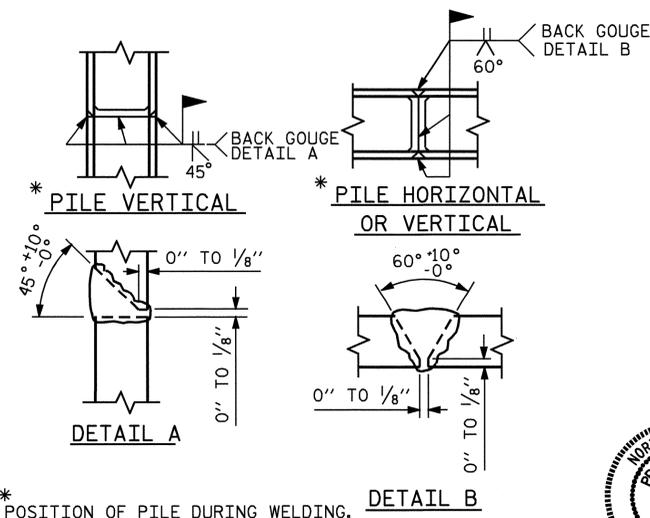
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 1

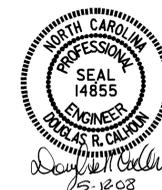
REVISIONS

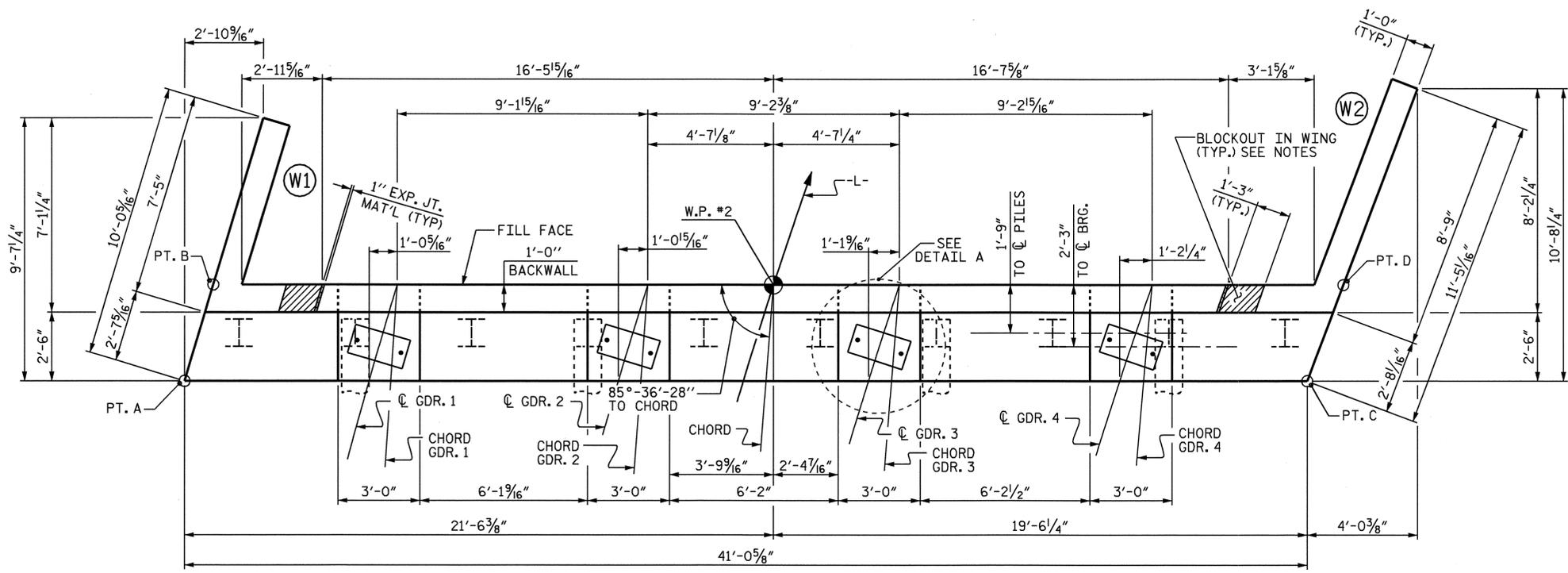
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.
S-16
TOTAL SHEETS
22



POSITION OF PILE DURING WELDING. PILE SPLICE DETAILS





PLAN

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 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 CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

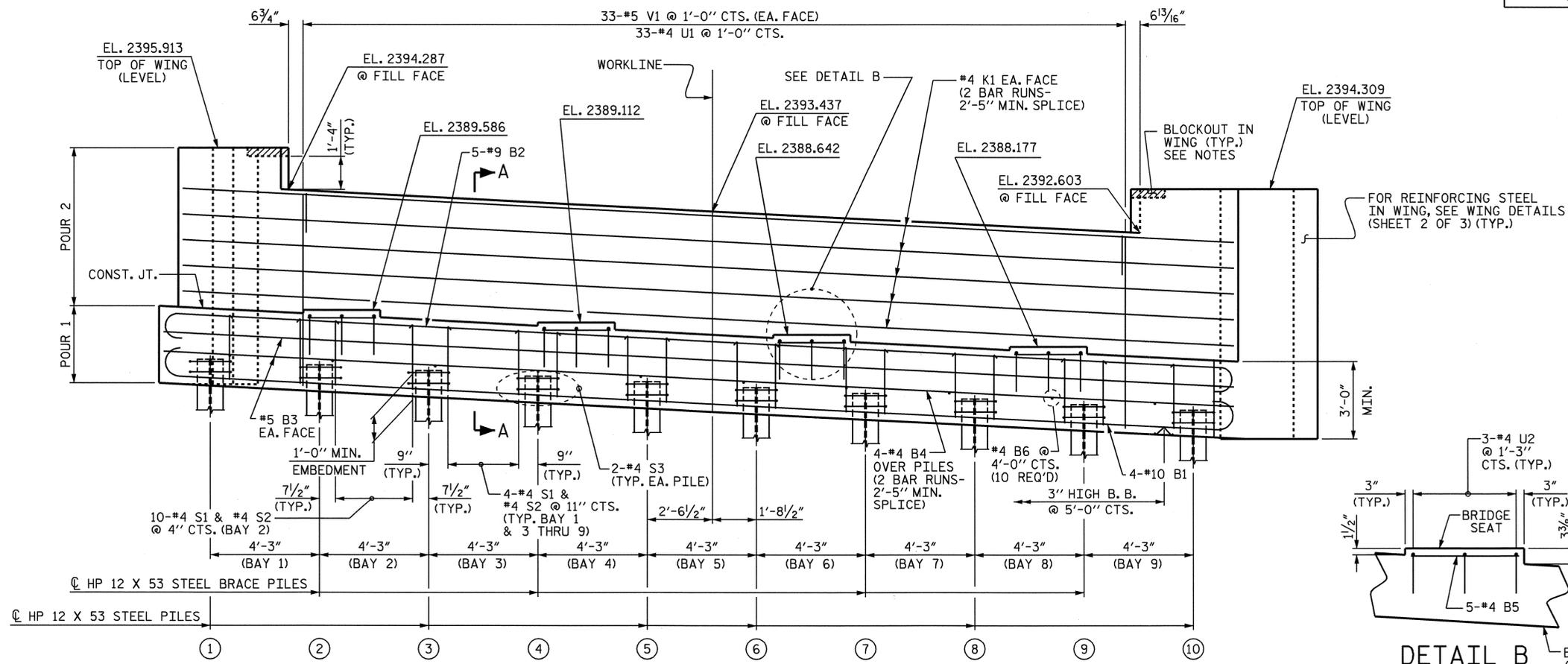
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT BETWEEN THE DECK AND APPROACH SLAB HAS BEEN SAWED AND THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR ANCHOR BOLT LAYOUT, SEE SHEET 3 OF 3.

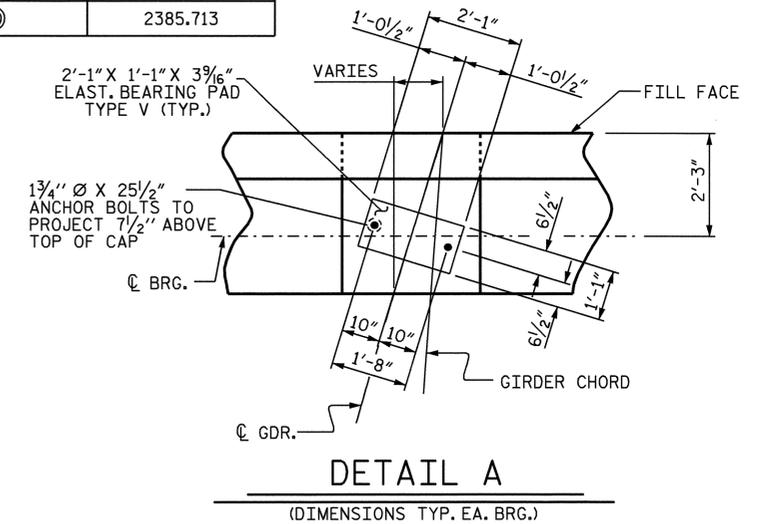
TOP OF PILE ELEVATIONS

PILE	ELEVATION
①	2387.672
②	2387.454
③	2387.237
④	2387.019
⑤	2386.801
⑥	2386.584
⑦	2386.366
⑧	2386.148
⑨	2385.930
⑩	2385.713

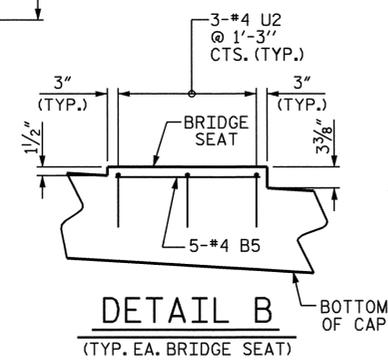
POINT	BOTT. OF CAP EL.	TOP OF CAP EL.
A	2386.748	2389.748
B	2386.695	2389.695
C	2384.646	2387.646
D	2384.578	2387.578



ELEVATION



DETAIL A



DETAIL B

PROJECT NO. B-4032
BUNCOMBE COUNTY
 STATION: 19+57.50 -L-
 SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

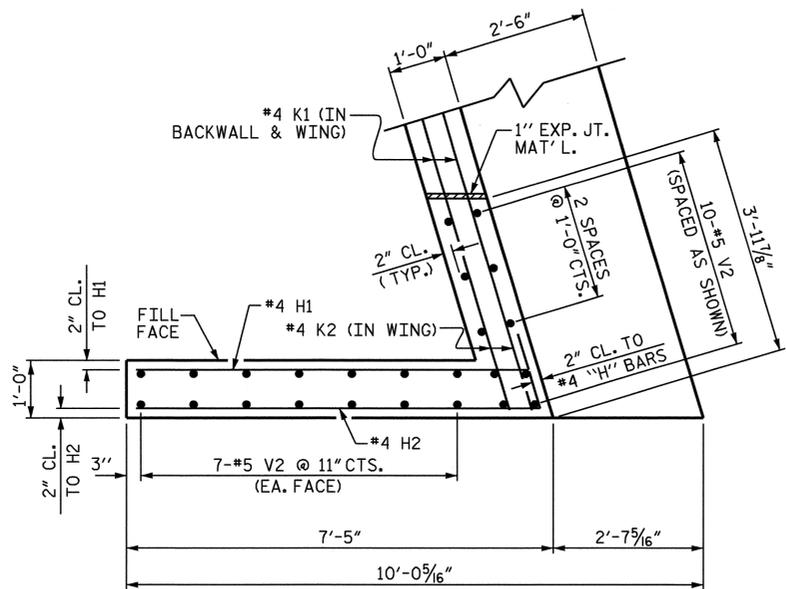
**SUBSTRUCTURE
 END BENT 2**



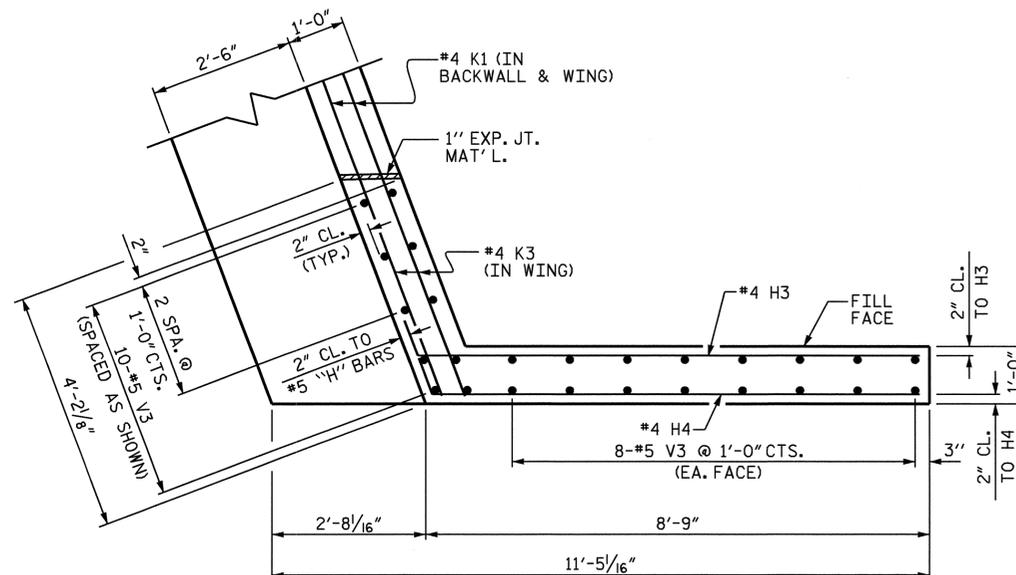
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NO.	BY:	DATE:	NO.	BY:	DATE:
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2			4		

TOTAL SHEETS: 22

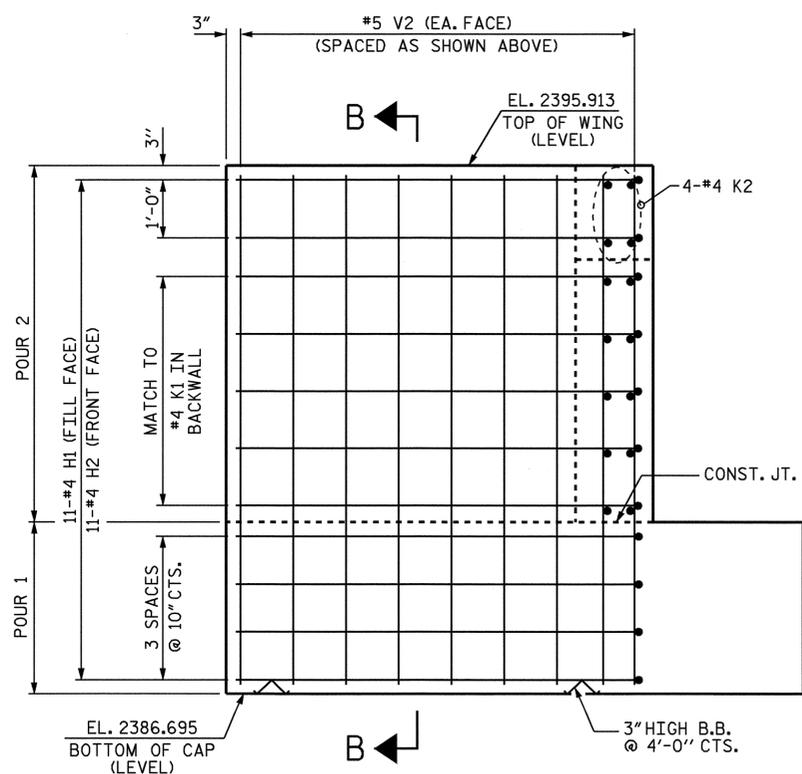
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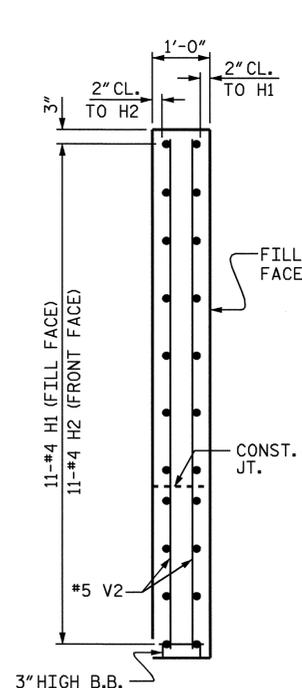
PLAN OF WING - W1



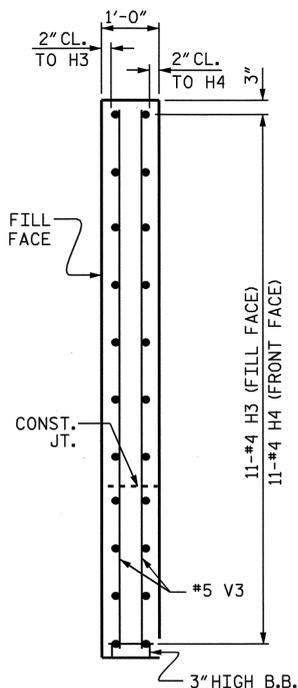
PLAN OF WING - W2



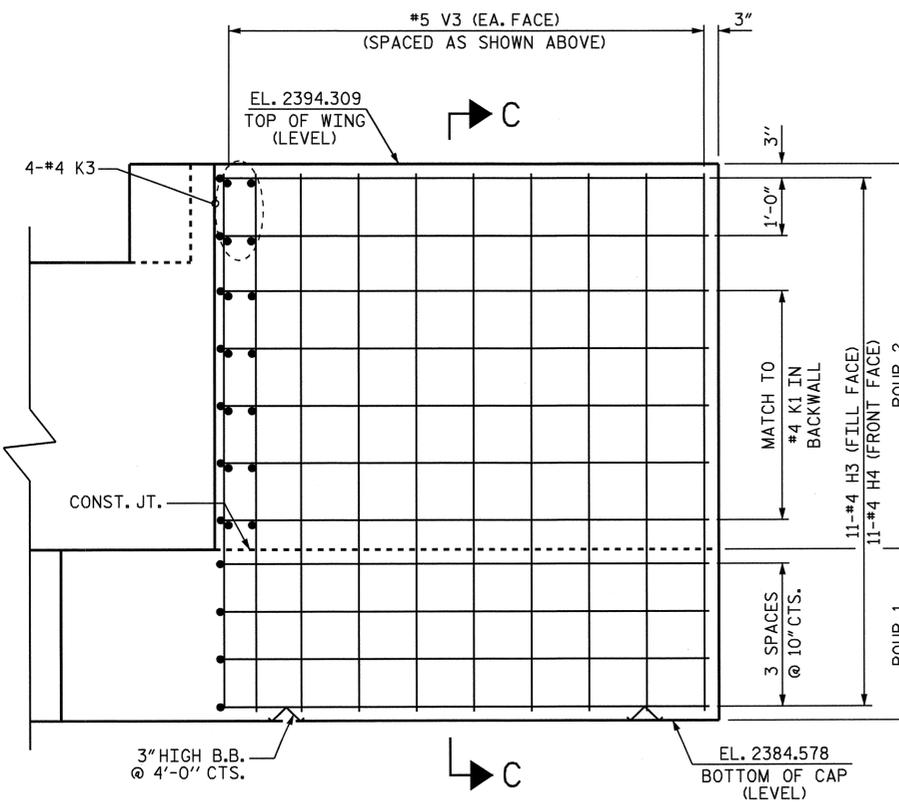
ELEVATION OF WING - W1



SECTION B-B



SECTION C-C



ELEVATION OF WING - W2

PROJECT NO. B-4032
 BUNCOMBE COUNTY
 STATION: 19+57.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

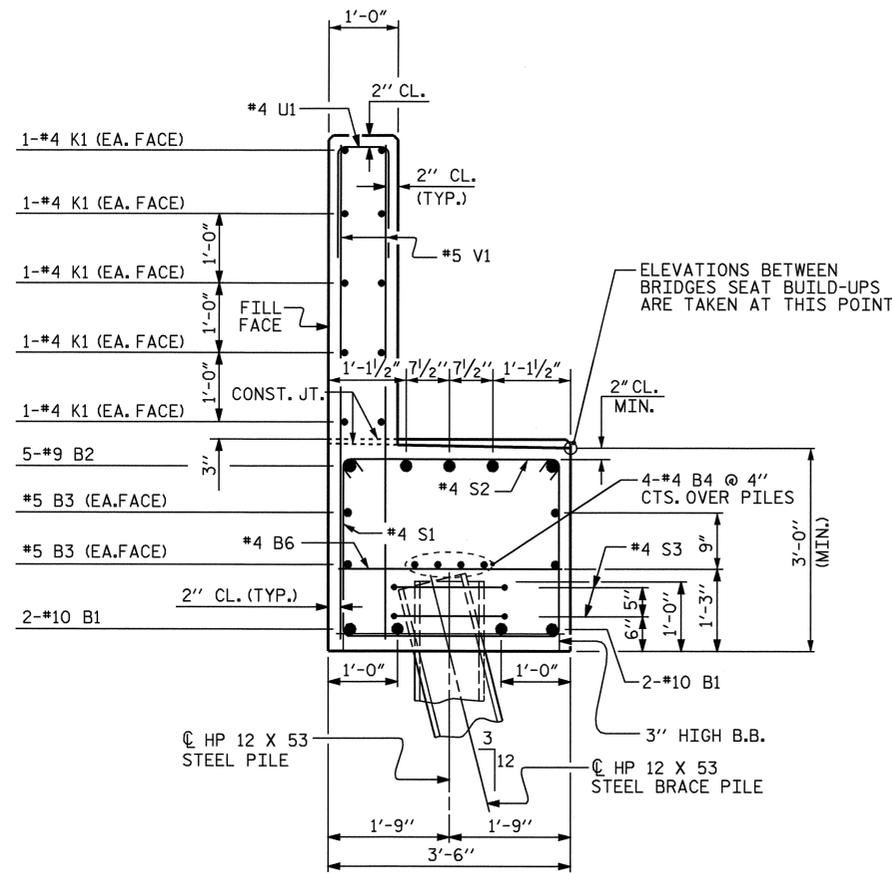
SUBSTRUCTURE
 END BENT 2



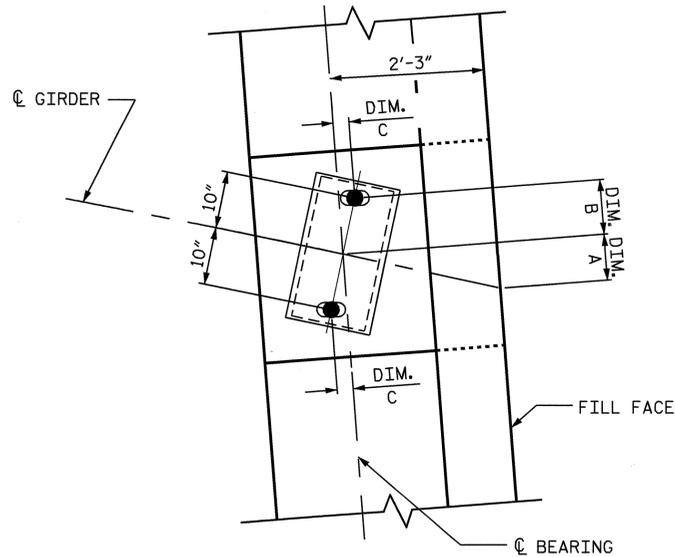
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 bng Brady

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NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
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2			4			22



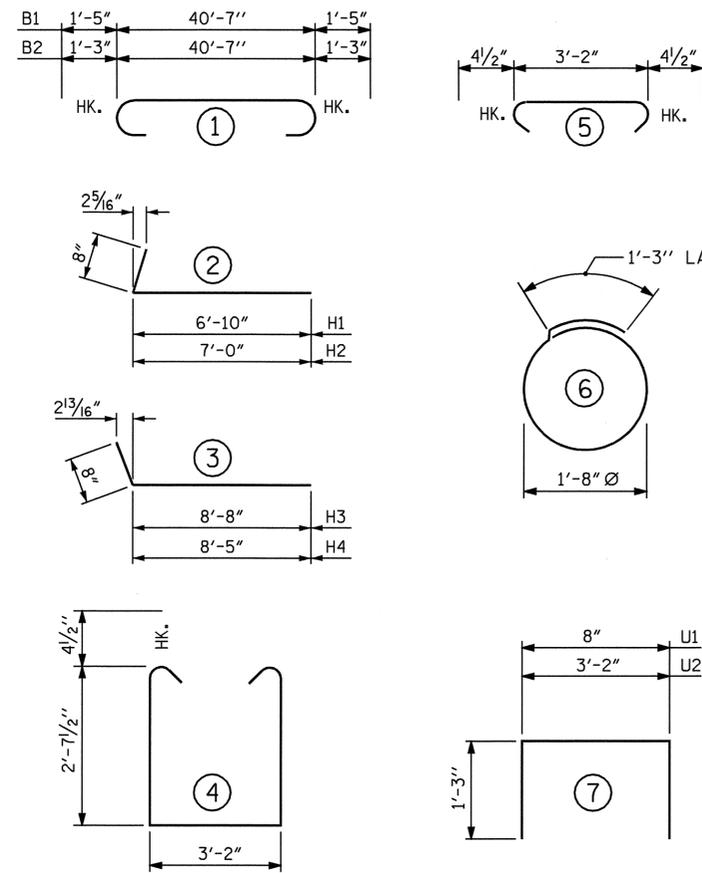
SECTION A-A



ANCHOR BOLT LAYOUT

LOCATION	A	B	C
GIRDER 1	8"	9 ⁵ / ₈ "	2 ¹³ / ₁₆ "
GIRDER 2	8 ³ / ₈ "	9 ⁹ / ₁₆ "	2 ¹⁵ / ₁₆ "
GIRDER 3	8 ³ / ₁₆ "	9 ¹ / ₂ "	3 ¹ / ₁₆ "
GIRDER 4	9 ¹ / ₄ "	9 ¹ / ₂ "	3 ³ / ₁₆ "

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 2

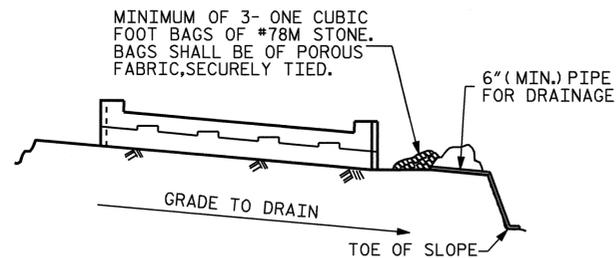
BAR NO	SIZE	TYPE	LENGTH	WEIGHT	
B1	4	10	1	43'-5"	747
B2	5	9	1	43'-1"	732
B3	4	5	STR	40'-8"	170
B4	8	4	STR	21'-7"	115
B5	20	4	STR	2'-8"	36
B6	10	4	STR	3'-2"	21
H1	11	4	2	7'-6"	55
H2	11	4	2	7'-8"	56
H3	11	4	3	9'-4"	69
H4	11	4	3	9'-1"	67
K1	20	4	STR	21'-7"	288
K2	4	4	STR	3'-7"	10
K3	4	4	STR	3'-10"	10
S1	42	4	4	9'-2"	257
S2	42	4	5	3'-11"	110
S3	20	4	6	6'-6"	87
U1	33	4	7	3'-2"	70
U2	12	4	7	5'-8"	45
V1	66	5	STR	7'-5"	511
V2	24	5	STR	8'-10"	221
V3	26	5	STR	9'-4"	253

REINFORCING STEEL LBS. 3930

CLASS A CONCRETE BREAKDOWN

ITEM	UNIT	AMOUNT
POUR 1 (CAP & LOWER PART OF WING)	C.Y.	17.9
POUR 2 (BACKWALL & UPPER PART OF WING)	C.Y.	11.2
TOTAL	C.Y.	29.1

HP 12 X 53 STEEL PILES : NO. 10 FT. 300

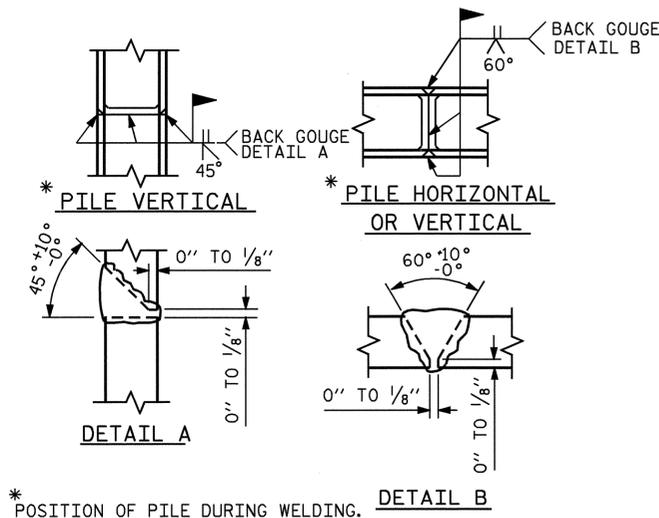


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

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TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

PROJECT NO. B-4032
 BUNCOMBE COUNTY
 STATION: 19+57.50 -L-

SHEET 3 OF 3

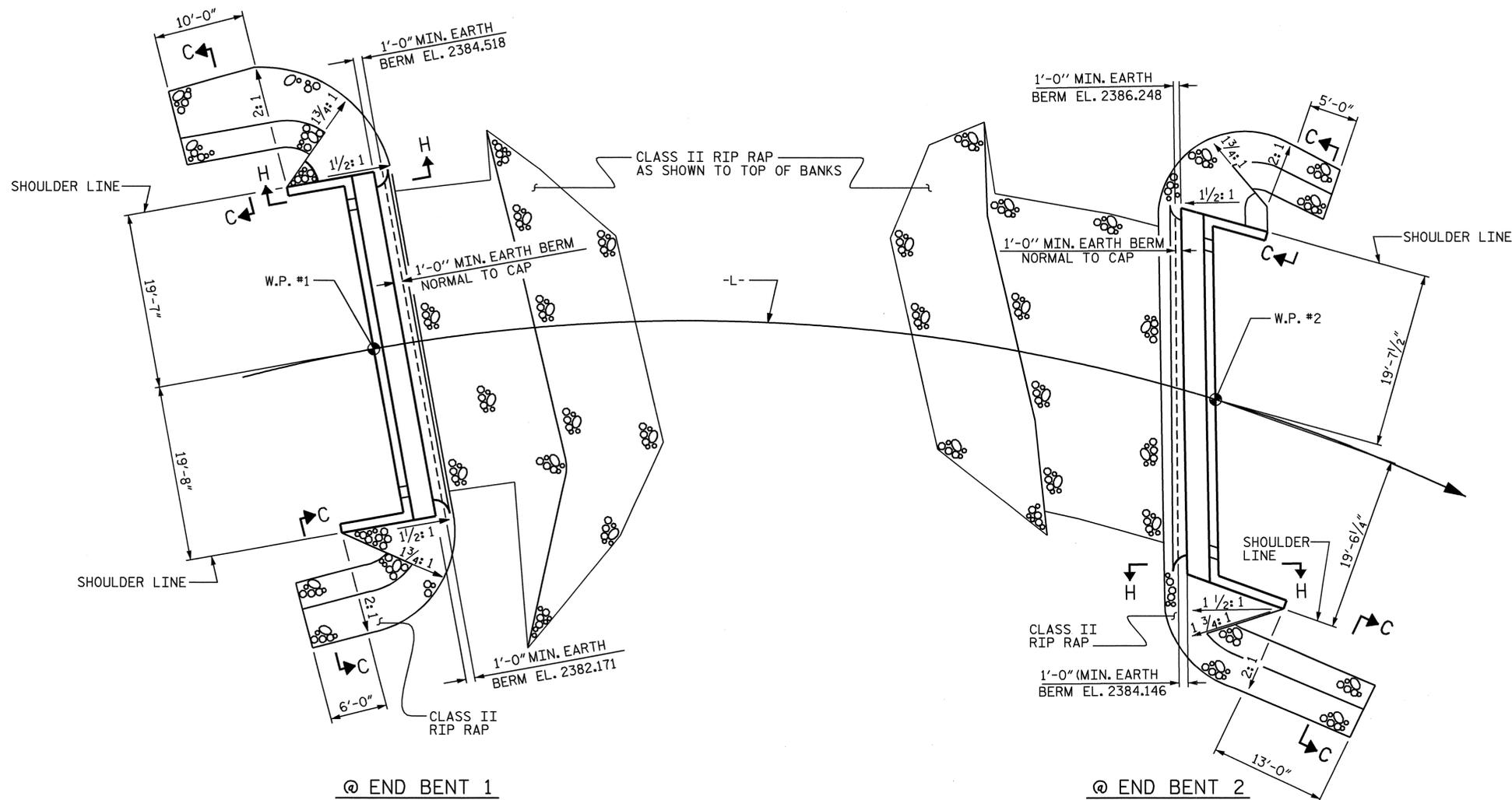
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 2



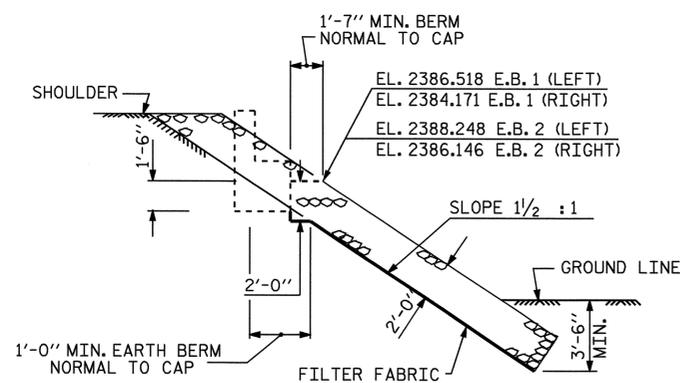
DRAWN BY : A. K. PATEL DATE : 5/28/07
 CHECKED BY : K. P. SEDAI DATE : 6/27/07

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NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
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2			4			22

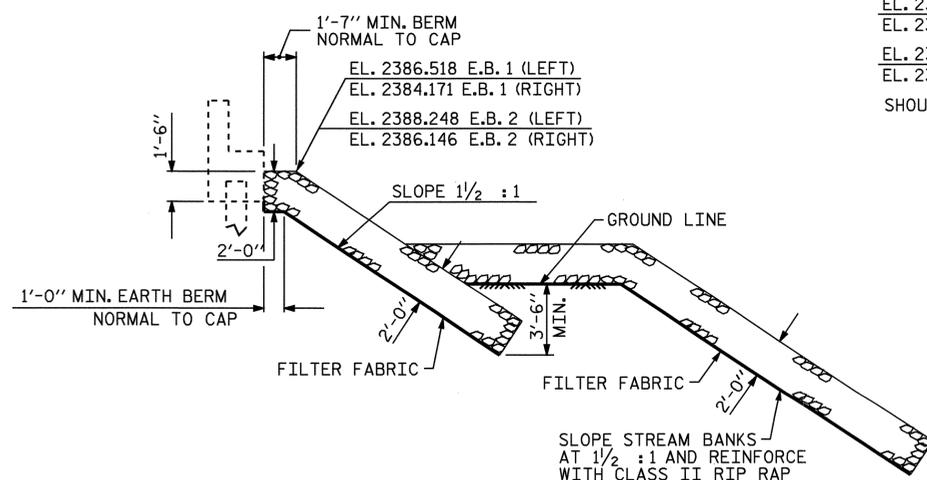


PLAN OF RIP RAP

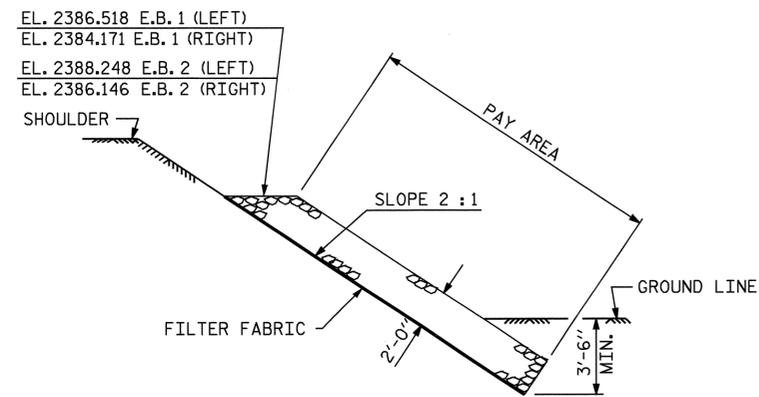
ESTIMATED QUANTITIES		
BRIDGE @ STA. 19+57.50 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	144	160
END BENT 2	145	161



SECTION H-H



SECTION C-C
BERM RIP RAPPED



SECTION C-C

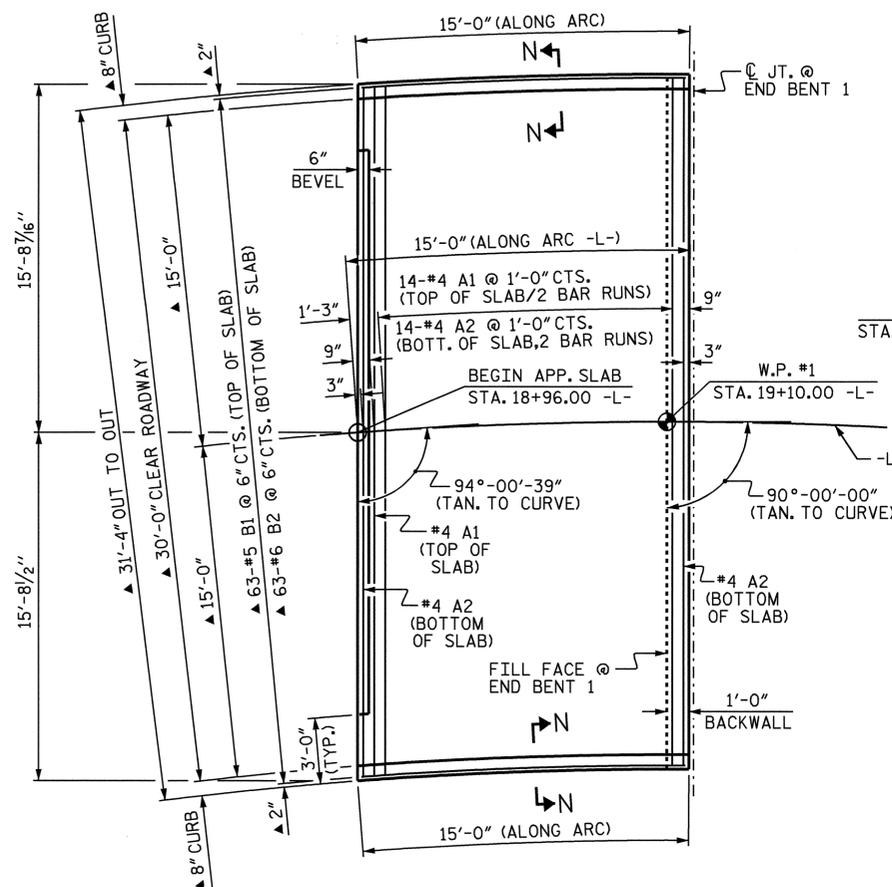
PROJECT NO. B-4032
BUNCOMBE COUNTY
 STATION: 19+57.50 -L-



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

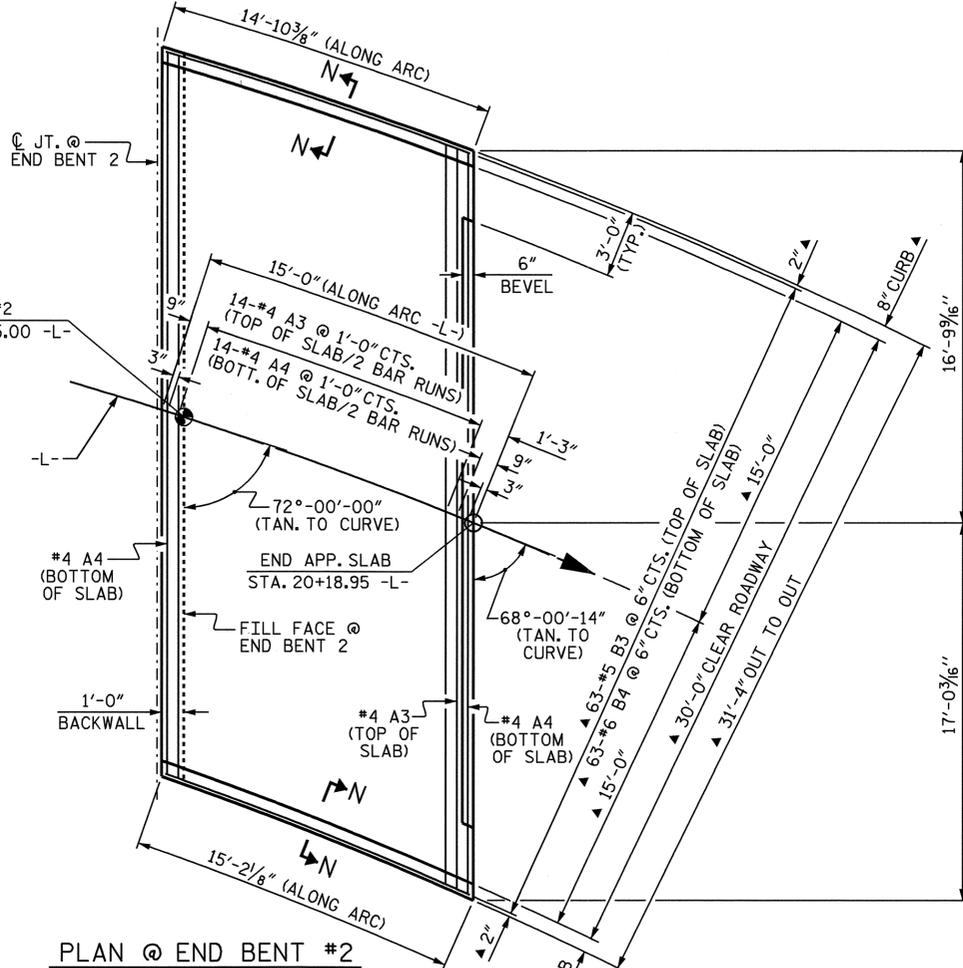
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 DRAWN BY : FCJ 2/88 REV. 8/16/99 RWW/LES
 CHECKED BY : ARB 8/88 REV. 10/17/00 RWW/LES
 REV. 5/1/06 TLA/GM

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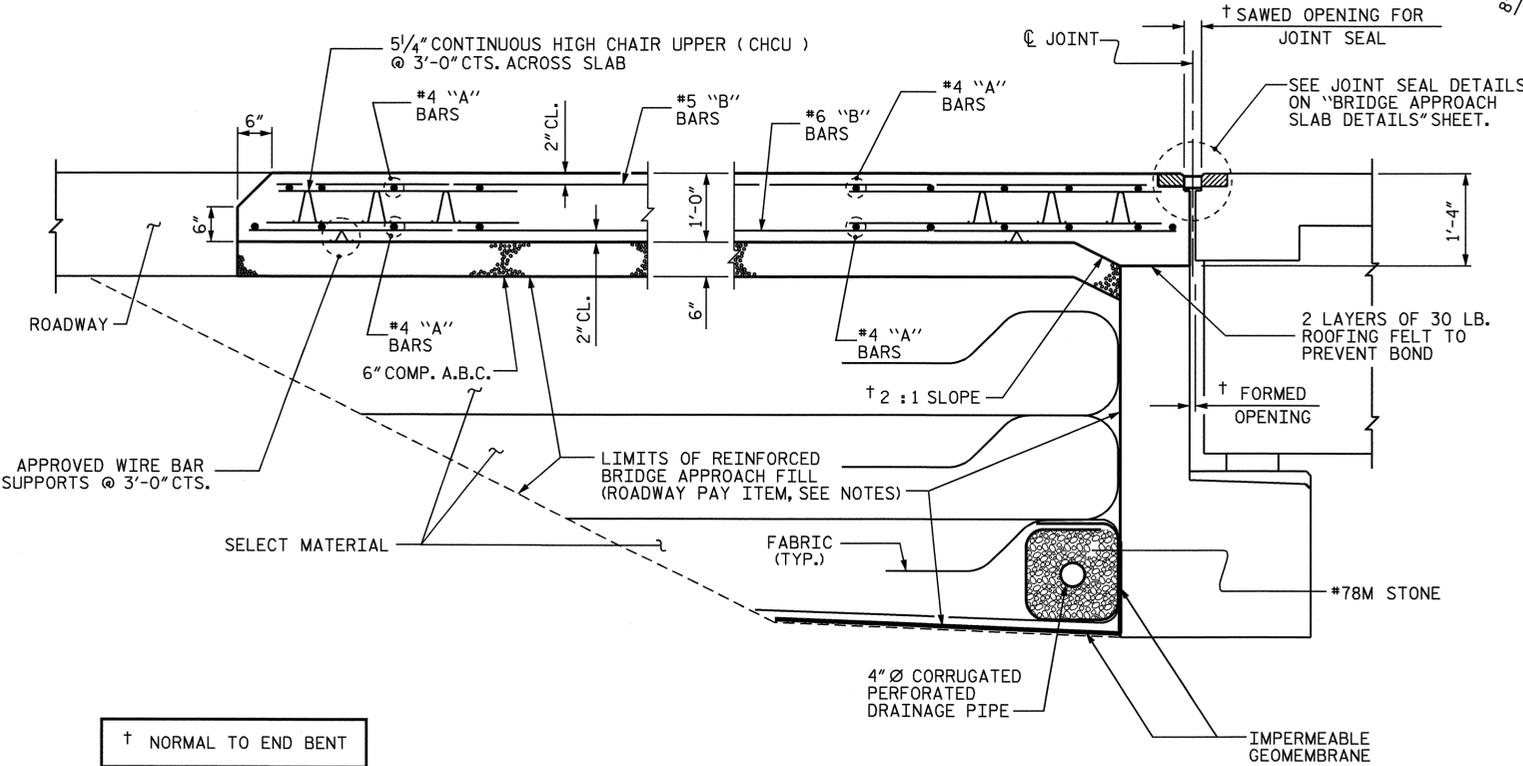


PLAN @ END BENT #1

▲ DIMENSIONS SHOWN ARE RADIAL

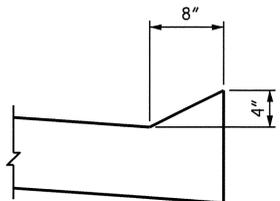


PLAN @ END BENT #2

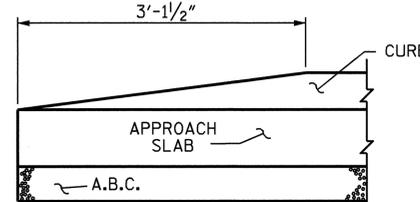


SECTION THRU SLAB

SHOWING SECTION WITHOUT CONCRETE WEARING SURFACE



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

(OMIT WHEN SHOULDER BERM GUTTER IS REQUIRED)

BILL OF MATERIAL					
APPROACH SLAB AT EB 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	30	#4	STR	16'-7"	332
A2	32	#4	STR	16'-5"	351
*B1	63	#5	STR	13'-11"	914
B2	63	#6	STR	14'-8"	1388
REINFORCING STEEL				LBS.	1739
*EPOXY COATED REINFORCING STEEL				LBS.	1246
CLASS AA CONCRETE				C.Y.	18.0
APPROACH SLAB AT EB 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A3	30	#4	STR	17'-9"	356
A4	32	#4	STR	17'-8"	378
*B3	63	#5	STR	14'-2"	931
B4	63	#6	STR	14'-7"	1380
REINFORCING STEEL				LBS.	1758
*EPOXY COATED REINFORCING STEEL				LBS.	1287
CLASS AA CONCRETE				C.Y.	18.1
SPLICE CHART					
#4 A1					2'-0"
#4 A2					1'-9"

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 SAWS PRIOR TO THE CASTING OF THE BARRIER RAIL.
- 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.

PROJECT NO. B-4032
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 STATION: 19+57.50 -L-

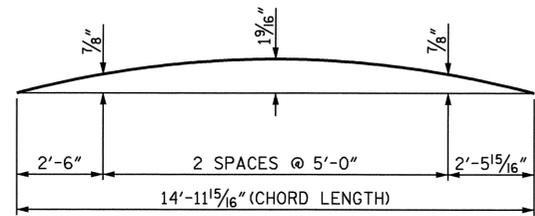
SHEET 1 OF 2

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

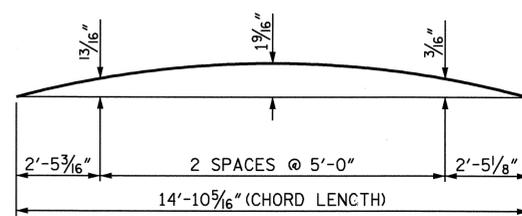
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NO.	BY:	DATE:	NO.	BY:	DATE:	
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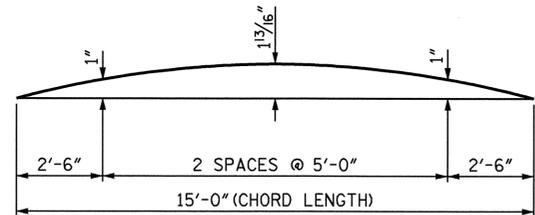
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DRAWN BY: EEM 3/95	REV. 7/10/01 LES/RDR
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	REV. 5/1/06R KMM/GM



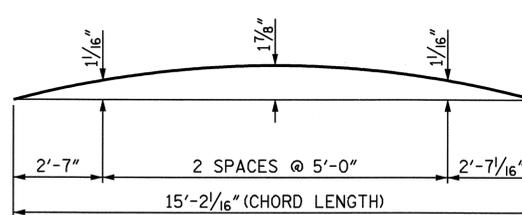
LEFT SIDE



LEFT SIDE



RIGHT SIDE

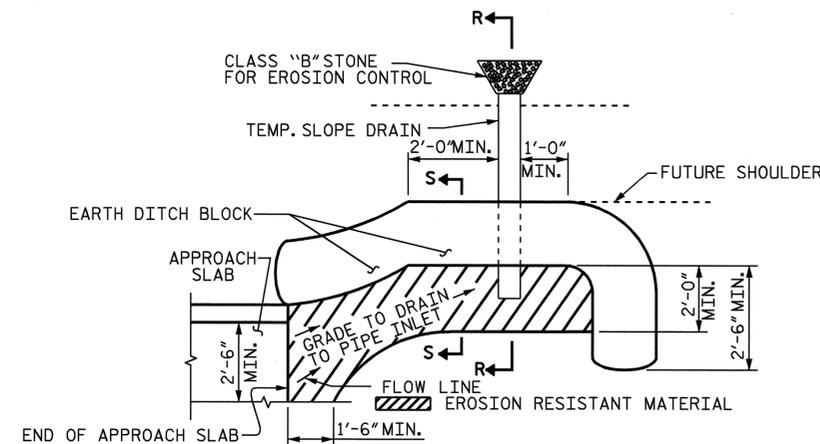


RIGHT SIDE

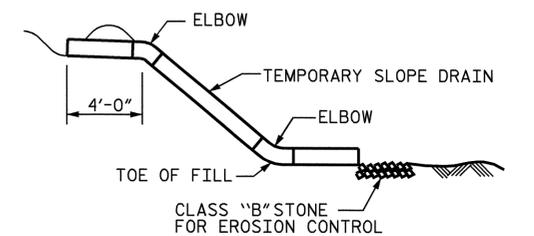
APPROACH SLAB @
END BENT 1

APPROACH SLAB @
END BENT 2

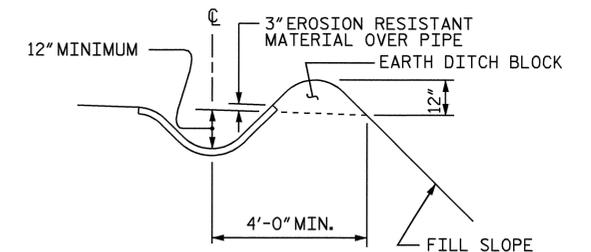
ARC OFFSETS



PLAN VIEW



SECTION R-R

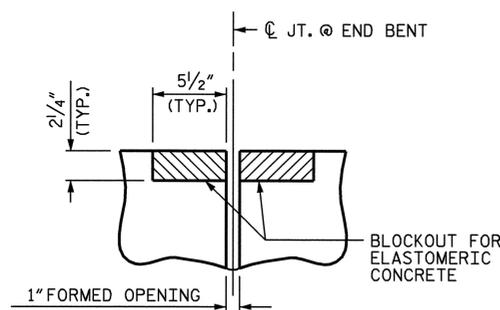


SECTION S-S

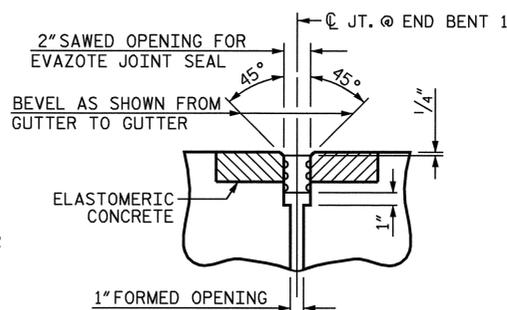
NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 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

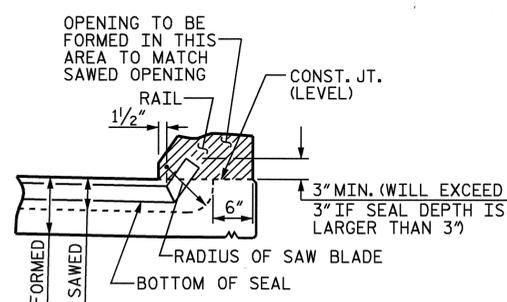
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



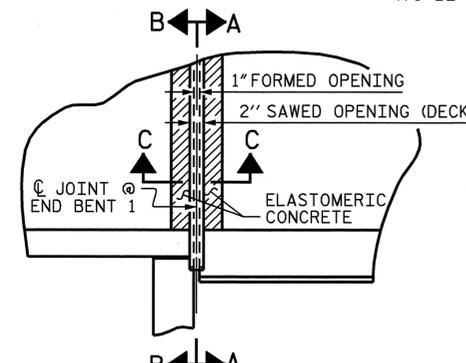
SECTION C-C
EVAZOTE JOINT SEAL
(PRE-SAWED ELASTOMERIC
CONCRETE DIMENSIONS)



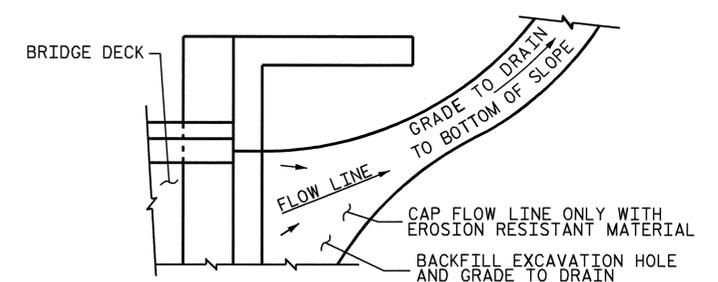
SECTION C-C
EVAZOTE JOINT SEAL
(FIXED)



SECTION A-A

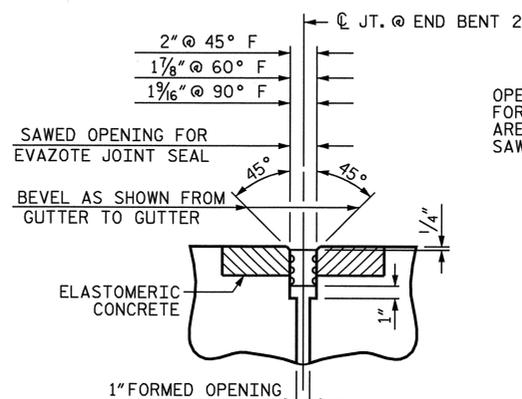


PLAN @ END BENT 1

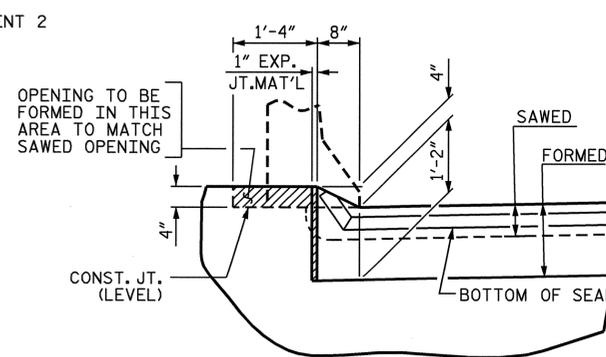


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

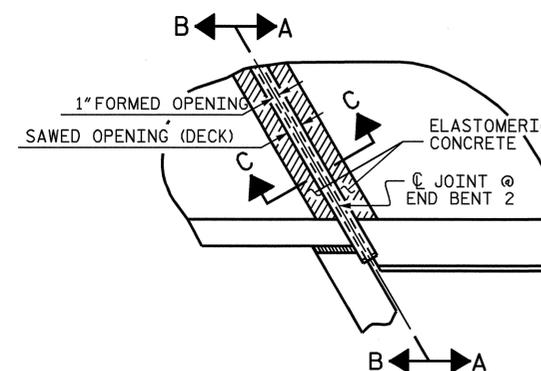
TEMPORARY DRAINAGE DETAIL



SECTION C-C
EVAZOTE JOINT SEAL
(EXPANSION)



SECTION B-B



PLAN @ END BENT 2

ELASTOMERIC CONCRETE	
END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
1	5.2
2	5.4
TOTAL	10.6

* BASED ON THE MINIMUM BLOCKOUT SHOWN.



PROJECT NO. B-4032
BUNCOMBE COUNTY
 STATION: 19+57.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD					
BRIDGE APPROACH SLAB DETAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
3					
4					
					TOTAL SHEETS
					22

STD. NO. BAS10

ASSEMBLED BY : A. K. PATEL DATE : 8/14/07
 CHECKED BY : B. N. GRADY DATE : 8/16/07
 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

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 2002 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; CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP; AND CLASS S SHALL BE USED FOR UNDERWATER FOOTING SEALS.

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 WITH THE EXCEPTION OF #2 BARS WHICH MAY BE FABRICATED FROM COLD DRAWN STEEL WIRE. 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.

PLACEMENT OF BEAM OR GIRDER MEMBERS ON TRUCKS FOR HAULING SHALL BE DONE IN COMPLIANCE WITH LIMITS SHOWN ON SKETCHES PROVIDED TO THE MATERIALS AND TEST UNIT APPROVED BY THE STRUCTURE DESIGN UNIT DATED MAY 8, 1991. THESE SKETCHES PRIMARILY LIMIT THE UNSUPPORTED CANTILEVER LENGTH OF MEMBERS. WHEN THE CONTRACTOR WISHES TO PLACE MEMBERS ON TRUCKS NOT IN ACCORDANCE WITH THESE LIMITS, TO SHIP BY RAIL, TO ATTACH SHIPPING RESTRAINTS TO THE MEMBERS OR TO INVERT MEMBERS, HE SHALL SUBMIT A SKETCH FOR APPROVAL PRIOR TO SHIPPING. SEE ALSO ARTICLE 1072-11.

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