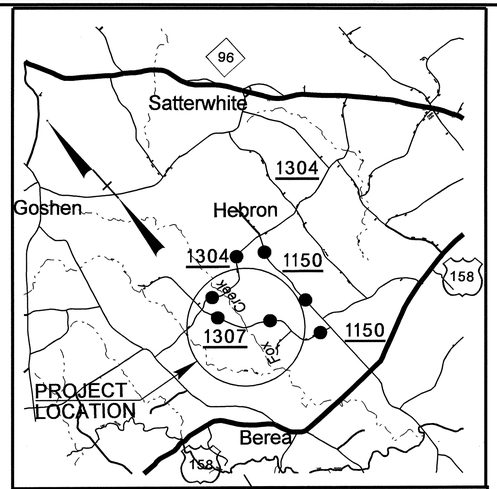
TIP PROJECT: B-4523

CONTRACT: C202126



VICINITY MAP

Offsite Detour Route

STATE OF NORTH CAROLINA

DIVISION OF HIGHWAYS

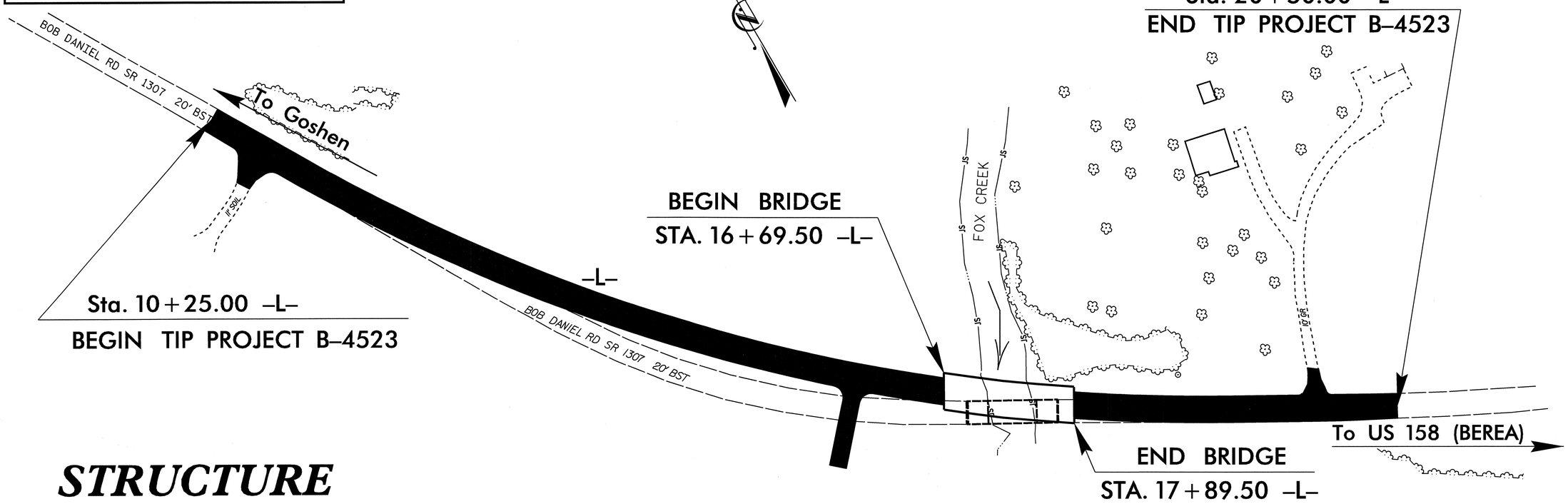
GRANVILLE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4523		

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33747.1.1	BRZ-1307(3)	PE
33747.2.1	BRZ-1307(3)	R/W & UTILITIES
33747.3.1	BRZ-1307(3)	CONST.

LOCATION: BRIDGE No. 164 on SR 1307 (BOB DANIEL ROAD) OVER FOX CREEK

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE



STRUCTURE

STATE OF NORTH CAROLINA ☆ DEPARTMENT OF TRANSPORTATION ☆

DESIGN DATA

ADT 2006 = 450 vpd

ADT 2030 = 900 vpd

DHV = 13 %

D = 60 %

T = 3 % *

V = 55 MPH

* TTST 1% * DUAL 2%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4523 = 0.171 MI.

LENGTH STRUCTURE TIP PROJECT B-4523 = 0.023 MI.

TOTAL LENGTH TIP PROJECT B-4523 = 0.194 MI.

Prepared In the Office of:

DIVISION OF HIGHWAYS

2006 STANDARD SPECIFICATIONS

LETTING DATE :

June 16, 2009

B. C. HUNT, P. E.
PROJECT ENGINEER

W. K. FISCHER, P.E.
PROJECT DESIGN ENGINEER

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

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

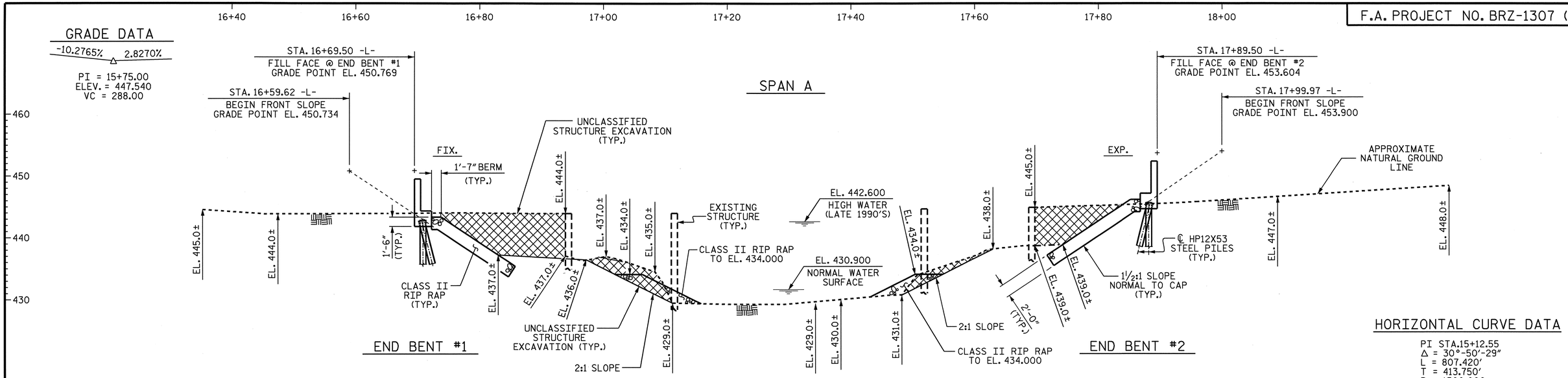
APPROVED
DIVISION ADMINISTRATOR *DATE*

F.A. PROJECT NO. BRZ-1307 (3)

GRADE DATA

-10.2765% 2.8270%

PI = 15+75.00
ELEV. = 447.540
VC = 288.00

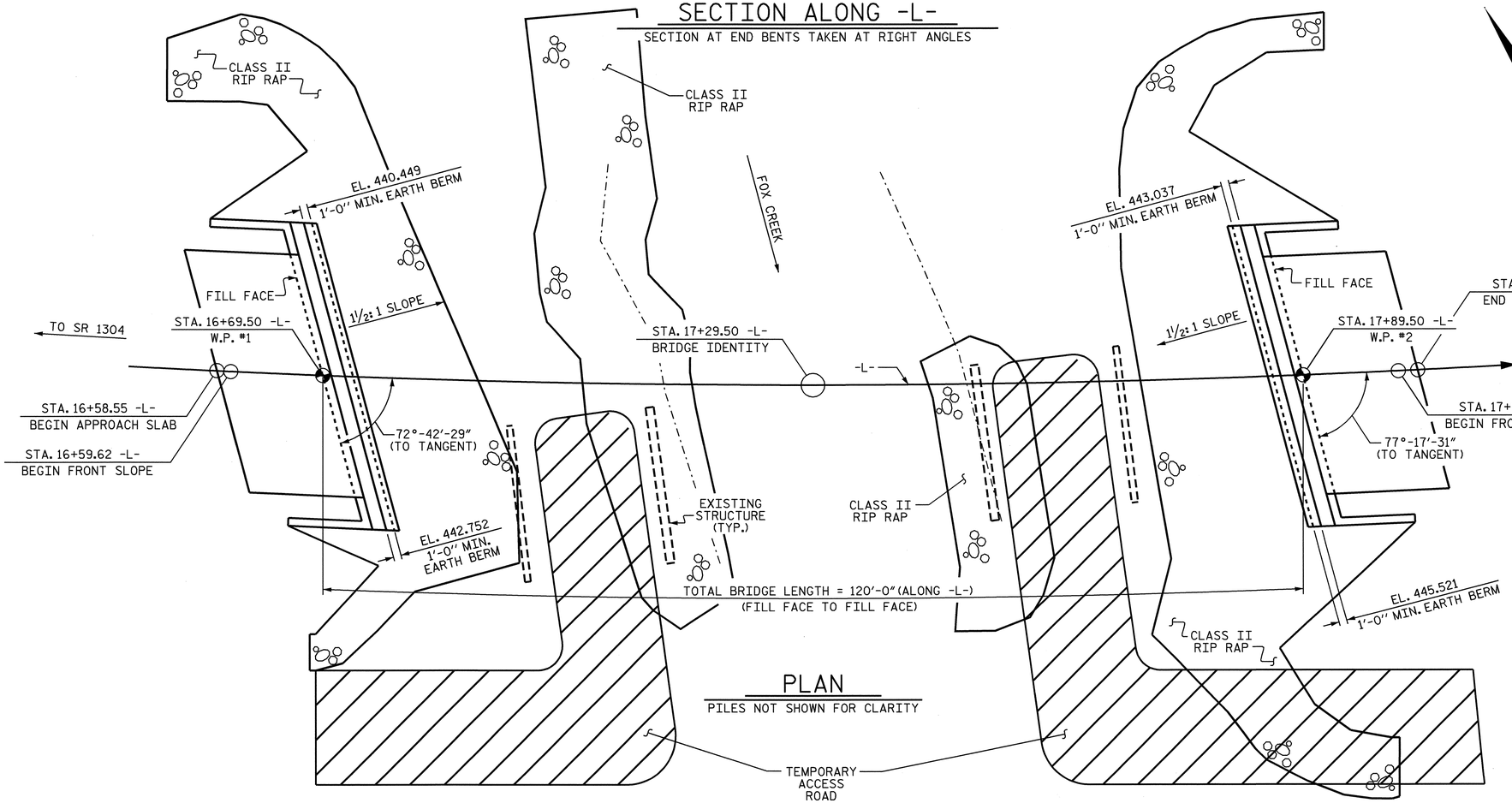


HORIZONTAL CURVE DATA

PI STA.15+12.55
Δ = 30°-50'-29"
L = 807.420'
T = 413.750'
R = 1500.000

SECTION ALONG -L-

SECTION AT END BENTS TAKEN AT RIGHT ANGLES



PLAN

PILES NOT SHOWN FOR CLARITY

NORTH CAROLINA PROFESSIONAL SEAL 030878 ENGINEER BUCK CHARLES HUNT
3/6/09

NORTH CAROLINA PROFESSIONAL SEAL 30878 ENGINEER W. KEVIN FISCHER
3/6/09

PROJECT NO. B-4523
GRANVILLE COUNTY
STATION: 17+29.50-L-

SHEET 1 OF 3 REPLACES BRIDGE #164

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1307
(BOB DANIEL ROAD) OVER
FOX CREEK BETWEEN
SR 1304 AND SR 1150

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

DRAWN BY : J.P. ADAMS DATE : 8/18/08
CHECKED BY : M.K. BEARD DATE : 9/10/08

06-MAR-2009 12:53
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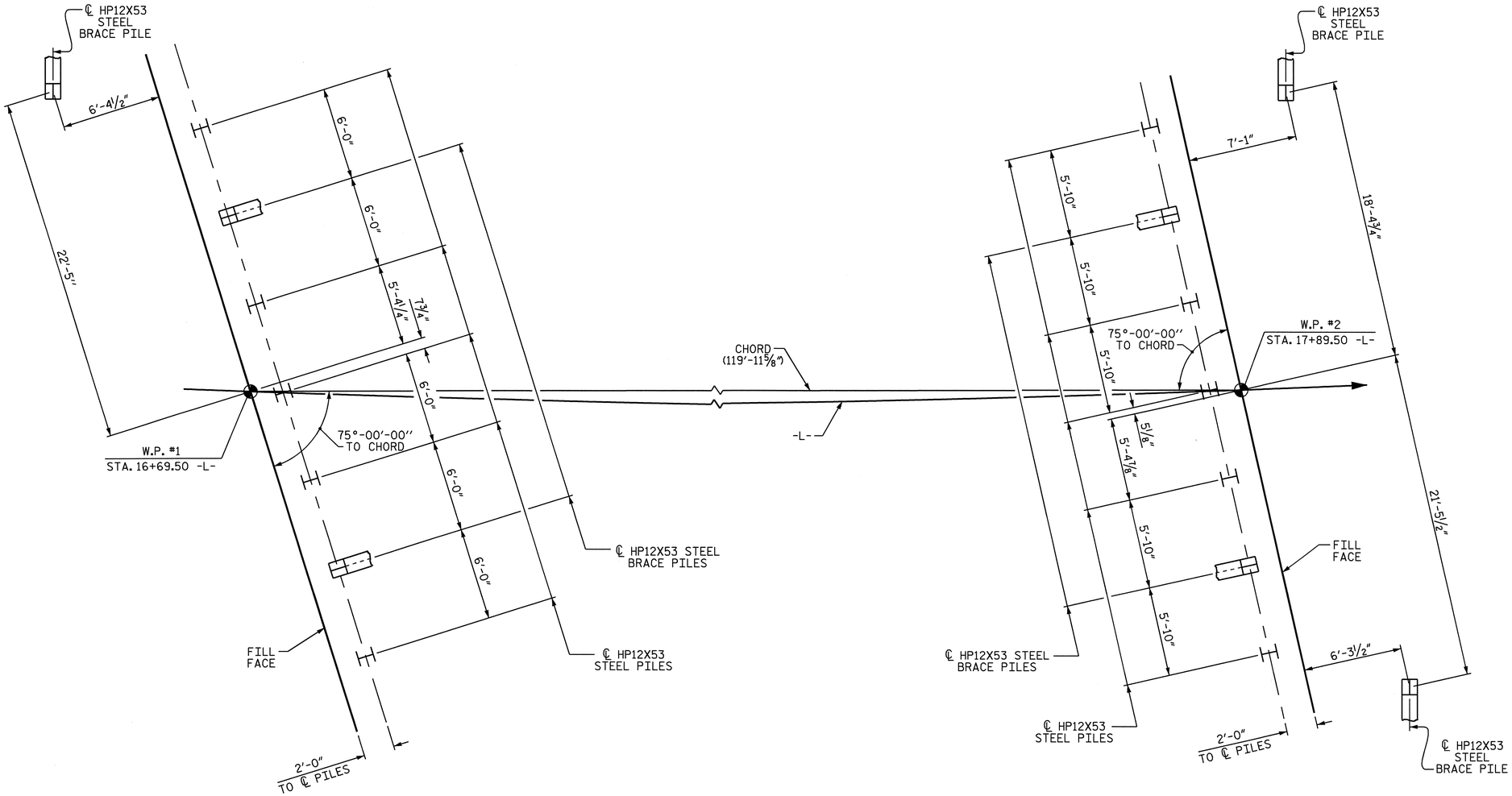
wkfischer



END BENT #1

END BENT #2

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE TO THE CENTERLINE OF PILE.
ALL END BENT BRACE PILES ARE BATTERED 3:12.
ALL PILES ARE HP12X53.

NOTES

DRIVE PILES AT END BENT #1 AND END BENT #2 TO A REQUIRED BEARING CAPACITY OF 120 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.

THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENT #1 AND END BENT #2 IS 60 TONS PER PILE.

NORTH CAROLINA PROFESSIONAL SEAL 30878 ENGINEER W. KEVIN FISCHER
3/5/09

PROJECT NO. B-4523
GRANVILLE COUNTY
STATION: 17+29.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1307 (BOB DANIEL ROAD) OVER FOX CREEK BETWEEN SR 1304 AND SR 1150

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

DRAWN BY : J.P. ADAMS DATE : 9/2/08
CHECKED BY : M.K. BEARD DATE : 9/10/08

05-MAR-2009 10:59
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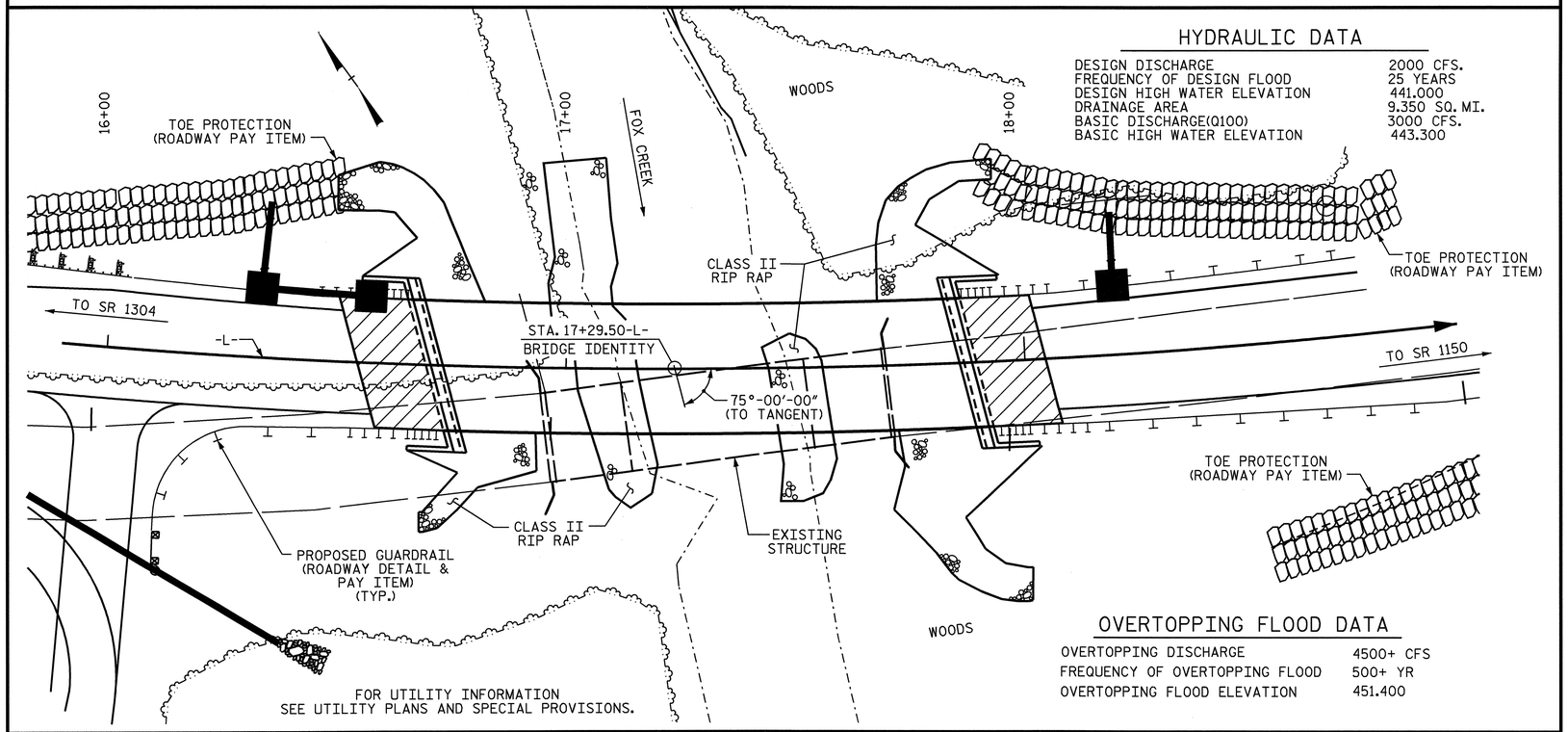
klayne

BM #20 R/R SPIKE SET IN 15"POPLAR, 162' RT. OF STA. 18+11.00 -L-, EL. 441.710



HYDRAULIC DATA

DESIGN DISCHARGE	2000 CFS.
FREQUENCY OF DESIGN FLOOD	25 YEARS
DESIGN HIGH WATER ELEVATION	441.000
DRAINAGE AREA	9.350 SQ. MI.
BASIC DISCHARGE(Q100)	3000 CFS.
BASIC HIGH WATER ELEVATION	443.300

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	4500+ CFS
FREQUENCY OF OVERTOPPING FLOOD	500+ YR
OVERTOPPING FLOOD ELEVATION	451.400

LOCATION SKETCH

NOTES

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

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 @ 17'-10", 1 @ 40'-0" & 1 @ 17'-10") AND A CLEAR ROADWAY WIDTH OF 19.2 FT. AND HAVING AN ASPHALT WEARING SURFACE ON 10 LINES 6"X 12" TIMBER JOISTS (SPANS A & C) AND 8 LINES W16 X 45 I-BEAMS (SPAN B) SUPPORTED BY TIMBER CAPS AND PILES WITH CONCRETE MUD SILLS AND LOCATED AT THE PROPOSED STRUCTURE SITE 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.

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.

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.

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."

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-1 SHALL BE EXCAVATED FOR A DISTANCE OF 60 FT. RIGHT AND 20 FT. LEFT OF CENTERLINE ROADWAY @ END BENT #1 AND 35 FT. ON EACH SIDE OF CENTERLINE @ END BENT #2, AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE MEASURED AND PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

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.

ASSUMED LIVE LOAD = HS 20 OR ALTERNATE LOADING, EXCEPT THAT GIRDERS HAVE BEEN DESIGNED FOR HS 25.

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 STANDARD SPECIFICATIONS FOR SEISMIC DESIGN OF HIGHWAY BRIDGES FOR SEISMIC PERFORMANCE CATEGORY A.

FOR SHIPPING OF STRUCTURAL STEEL MEMBERS, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	UNCLASSIFED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	STRUCTURAL STEEL	HP12X53 STEEL PILES		CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	EVAZOTE JOINT SEALS
	LUMP SUM	LUMP SUM	SQ.FT.	SQ.FT.	CU.YDS.	LUMP SUM	LBS.	APPROX.LBS.	NO.	LIN.FT.	LIN.FT.	TONS	SQ. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE			3683	3446		LUMP SUM		137500			235.69			LUMP SUM	LUMP SUM
END BENT #1		LUMP SUM			27.7		3891		8	120		242	269		
END BENT #2		LUMP SUM			28.4		3961		9	180		220	244		
TOTAL	LUMP SUM	LUMP SUM	3683	3446	56.1	LUMP SUM	7852	137500	17	300	235.69	462	513	LUMP SUM	LUMP SUM

NORTH CAROLINA PROFESSIONAL SEAL 30878 ENGINEER W. KEVIN FISCHER
3/5/09

DRAWN BY : J.P. ADAMS DATE : 8/18/08
CHECKED BY : M.K. BEARD DATE : 9/10/08

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PROJECT NO. B-4523
GRANVILLE COUNTY
STATION: 17+29.50-L-

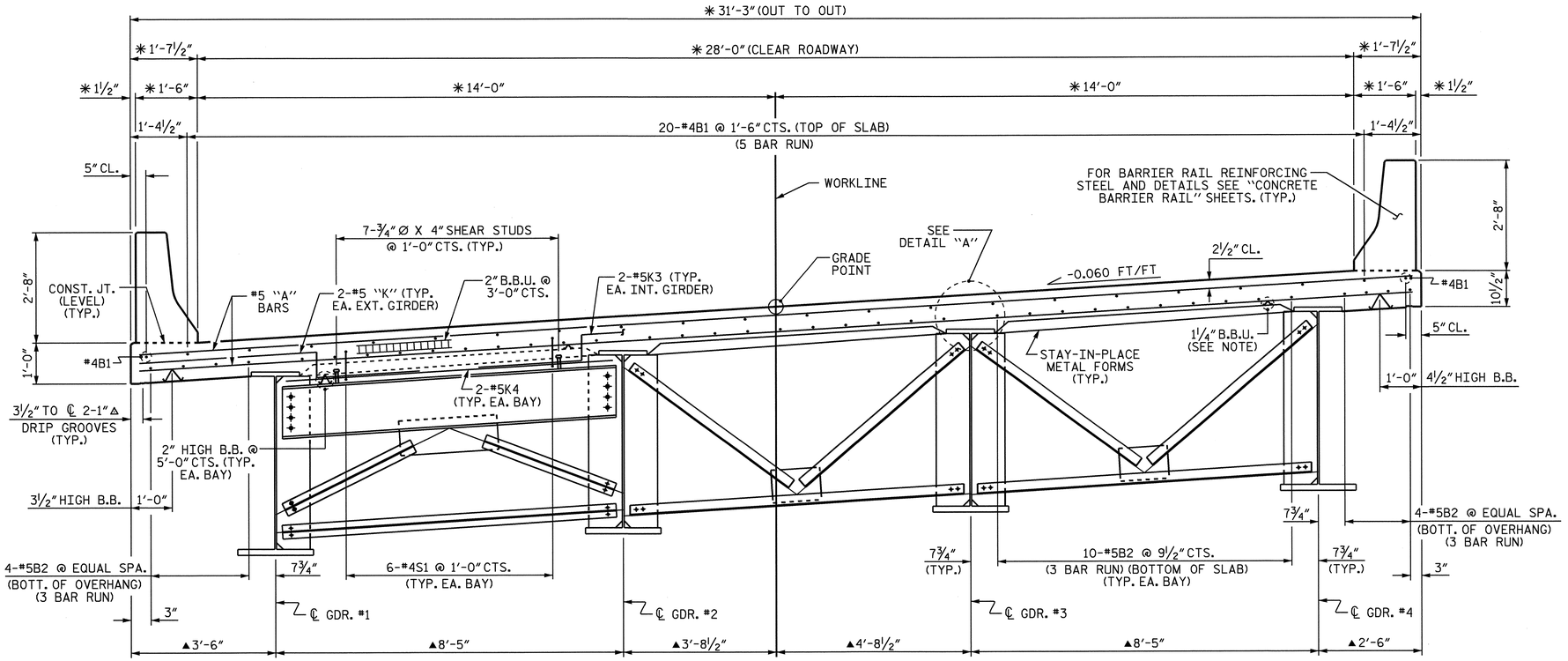
SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1307
(BOB DANIEL ROAD) OVER
FOX CREEK BETWEEN
SR 1304 AND SR 1150

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



TYPICAL END BENT DIAPHRAGM

TYPICAL INTERMEDIATE DIAPHRAGM

✳ RADIAL DIMENSIONS

▲ RADIAL THROUGH WORKPOINT

NOTES

PROVIDE 1¼" 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 2½" ABOVE THE TOP OF THE REMOVABLE FORM.

BARRIER RAIL 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.

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

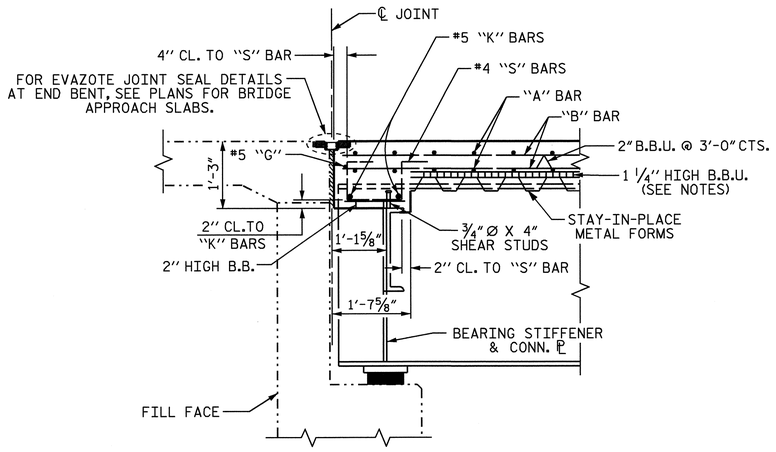
THE CONTRACTOR MAY, WHEN NECESSARY, PROPOSE A SCHEME FOR AVOIDING INTERFERENCE BETWEEN METAL STAY-IN-PLACE FORM SUPPORTS OR FORMS AND GIRDER STIFFENERS OR CONNECTOR PLATES. THE PROPOSAL SHALL BE INDICATED, AS APPROPRIATE, ON EITHER THE STEEL WORKING DRAWINGS OR THE METAL STAY-IN-PLACE FORM WORKING DRAWINGS.

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

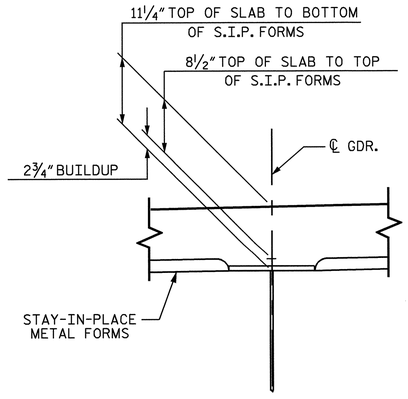
1. ONCE THE DECK HAS CURED, THE GIRDERS SHALL BE JACKED AND THE ELASTOMERIC BEARING SLOTS CENTERED AS NEARLY AS PRACTICAL ABOUT THE BEARING STIFFENER. THIS OPERATION SHALL BE PERFORMED AT APPROXIMATELY 60° F.

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

TYPICAL SECTION



SECTION THRU END BENT DIAPHRAGM



DETAIL "A"

PROJECT NO. B-4523

GRANVILLE COUNTY

STATION: 17+29.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

NORTH CAROLINA PROFESSIONAL SEAL 30878 ENGINEER W. KEVIN FISCHER
4/7/09

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

DRAWN BY : M.K. BEARD DATE : 11/16/07
CHECKED BY : R.G. EMERSON DATE : 04/08

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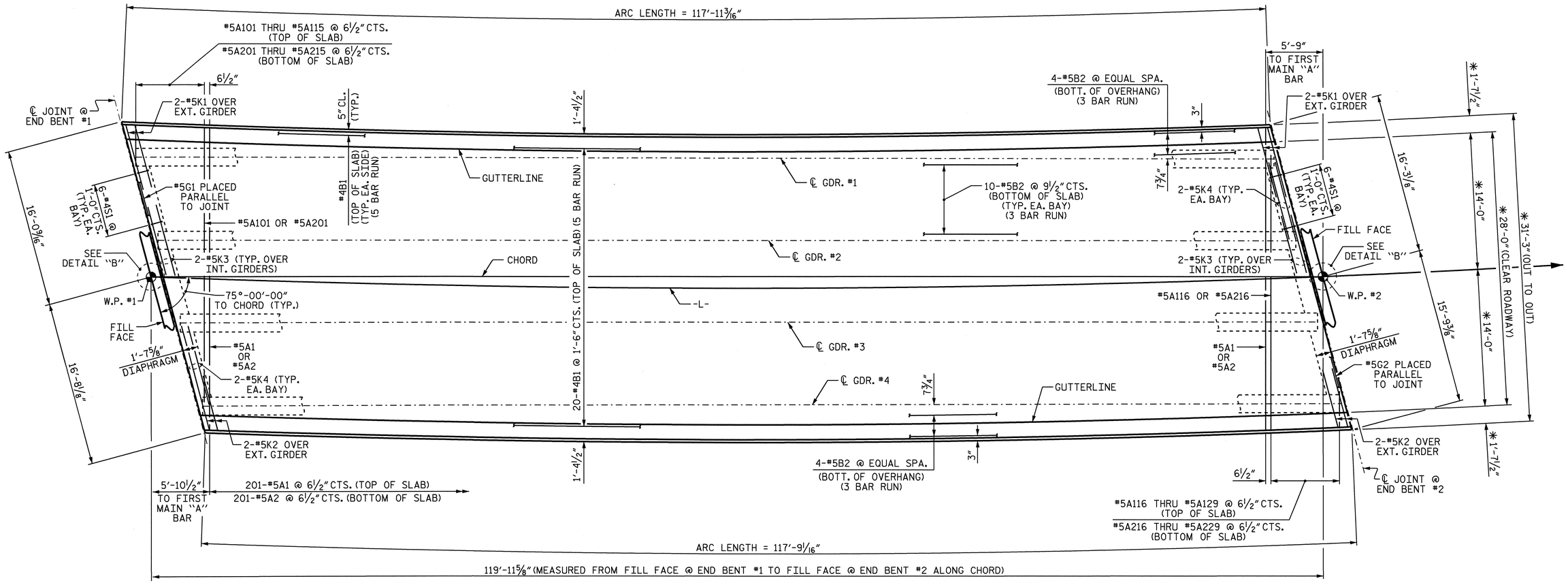
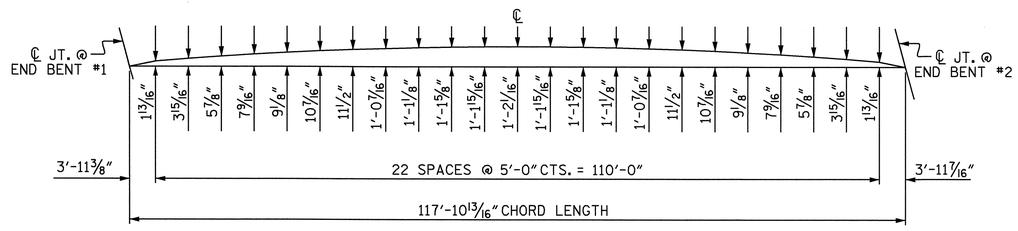


PLAN OF SPAN

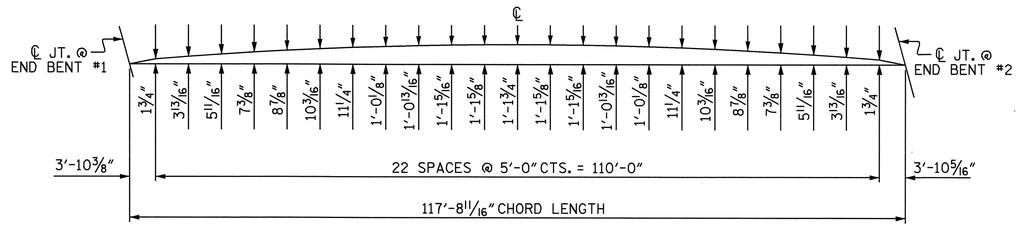
*RADIAL DIMENSIONS

"A" BARS TO BE PLACED PERPENDICULAR TO CHORD AND SPACED ALONG CHORD



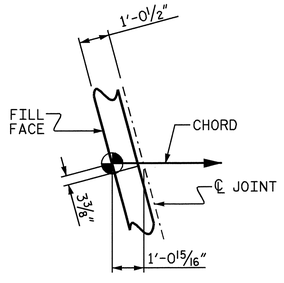
ARC OFFSETS - LEFT SIDE

ALONG OUTSIDE EDGE OF SUPERSTRUCTURE



ARC OFFSETS - RIGHT SIDE

ALONG OUTSIDE EDGE OF SUPERSTRUCTURE



DETAIL "B"

SHOWING END BENT #1, END BENT #2 SIMILAR

PROJECT NO. B-4523

GRANVILLE COUNTY

STATION: 17+29.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN

NORTH CAROLINA PROFESSIONAL SEAL 30878 ENGINEER W. KEVIN EISCHEN
3/5/09

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			23

DRAWN BY : M.K. BEARD DATE : 11/20/07
CHECKED BY : R.G. EMERSON DATE : 04/08

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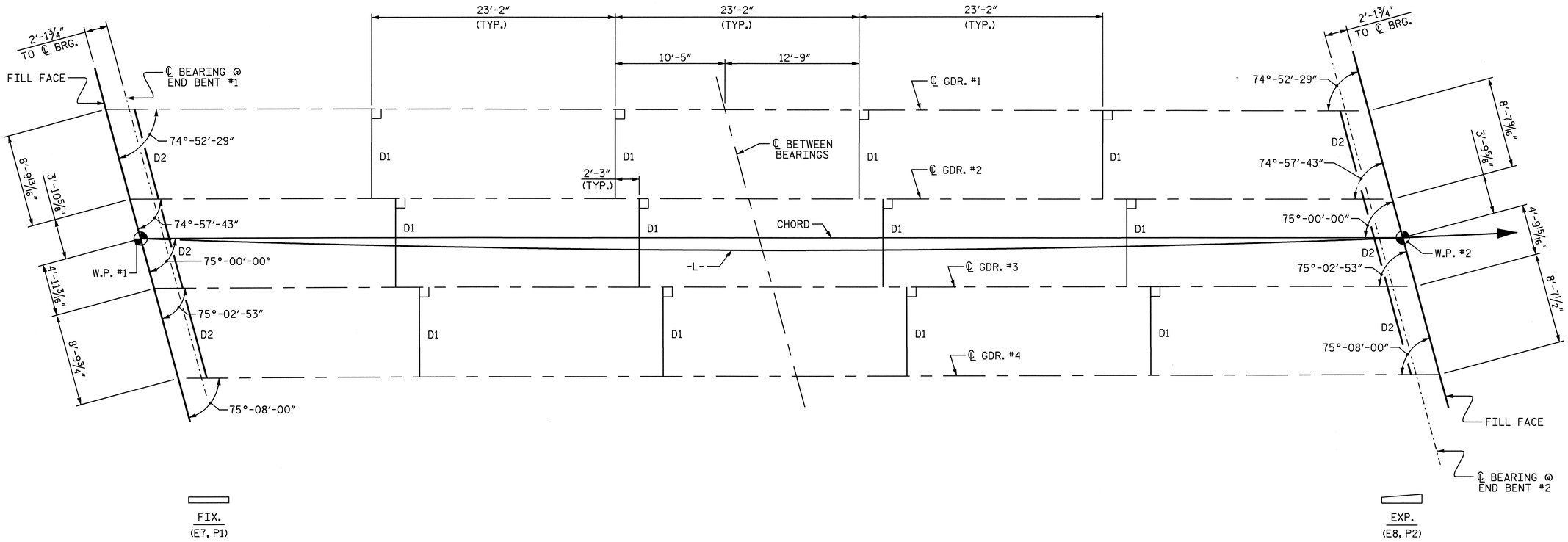

FIX.
(E7, P1)

EXP.
(E8, P2)

FRAMING PLAN

PROJECT NO. B-4523

GRANVILLE COUNTY

STATION: 17+29.50 -L-

NORTH CAROLINA PROFESSIONAL SEAL 30878 ENGINEER W. KEVIN FISCHER
3/5/09

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

FRAMING PLAN

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			23

DRAWN BY : M.K. BEARD DATE : 11/20/07
CHECKED BY : R.G. EMERSON DATE : 04/08

05-MAR-2009 10:59
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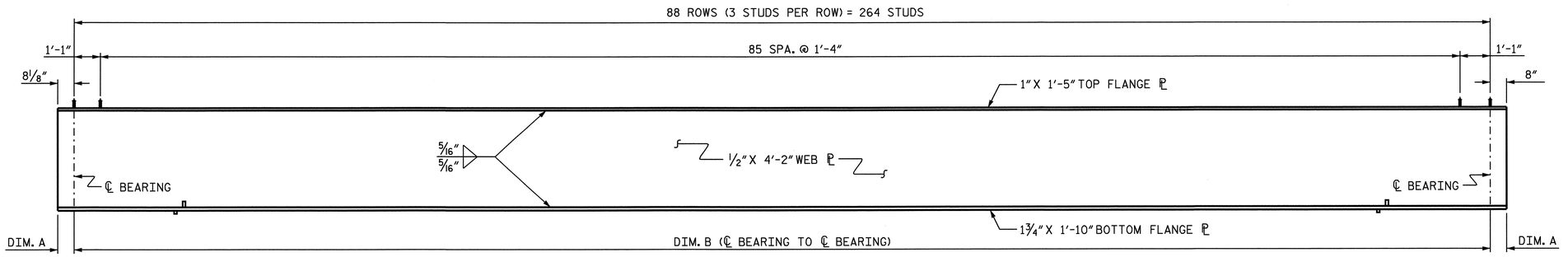
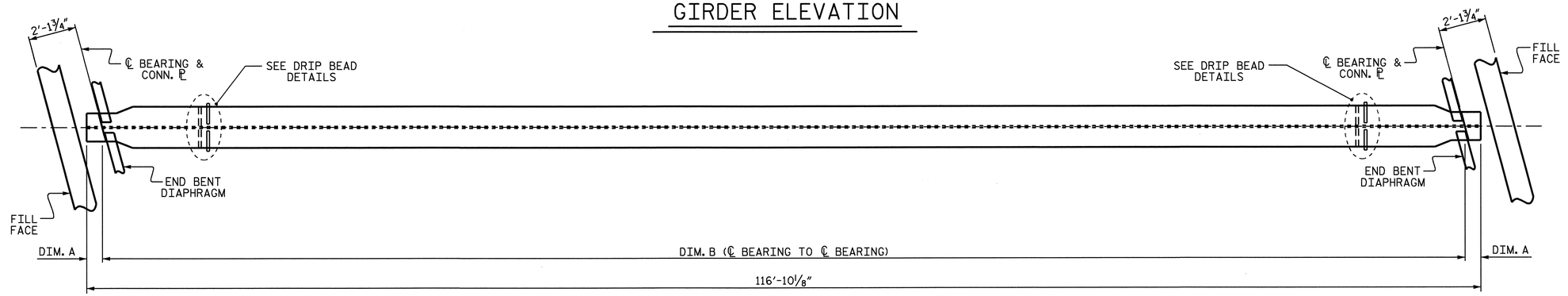
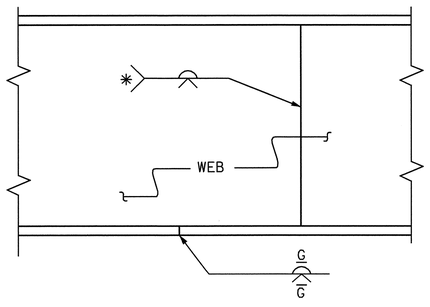


GIRDER ELEVATION



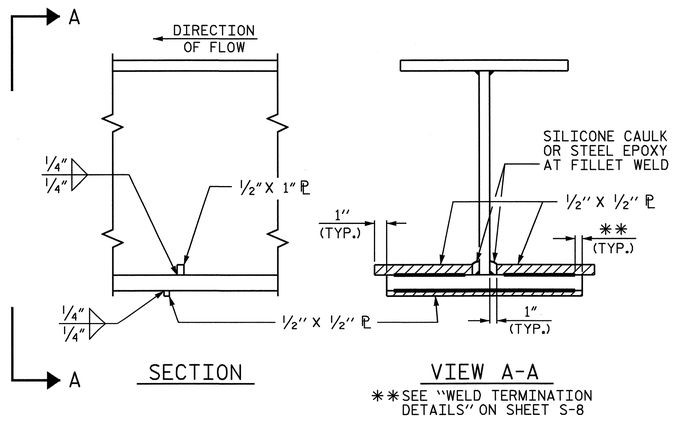
BOTTOM FLANGE DETAIL



ELEVATION

TYPICAL FLANGE AND WEB BUTT JOINT

* GRIND SMOOTH AND FLUSH ON OUTER FACE OF EXTERIOR GIRDERS

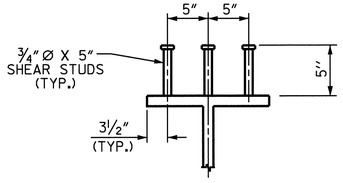


SECTION

VIEW A-A

**SEE "WELD TERMINATION DETAILS" ON SHEET S-8

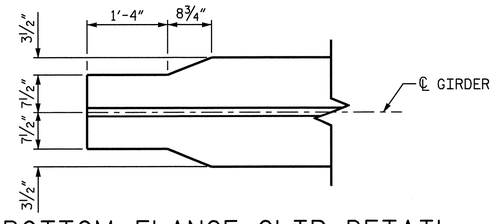
DRIP BEAD DETAILS



SHEAR STUD DETAILS

GIRDER No.	DIM. A	DIM. B
GIRDER #1	7 1/2"	115'-7 1/8"
GIRDER #2	7 13/16"	115'-6 1/2"
GIRDER #3	8 1/16"	115'-6"
GIRDER #4	8 5/16"	115'-5 1/2"

BEARING STIFFENER LAYOUT CHART



BOTTOM FLANGE CLIP DETAIL

PROJECT NO. B-4523

GRANVILLE COUNTY

STATION: 17+29.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

STRUCTURAL STEEL DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			23

NORTH CAROLINA PROFESSIONAL SEAL 30878 ENGINEER W. KEVAN FISCHER
4/7/09

DRAWN BY : M.K. BEARD DATE : 12/07
CHECKED BY : R.G. EMERSON DATE : 04/08

06-APR-2009 15:02
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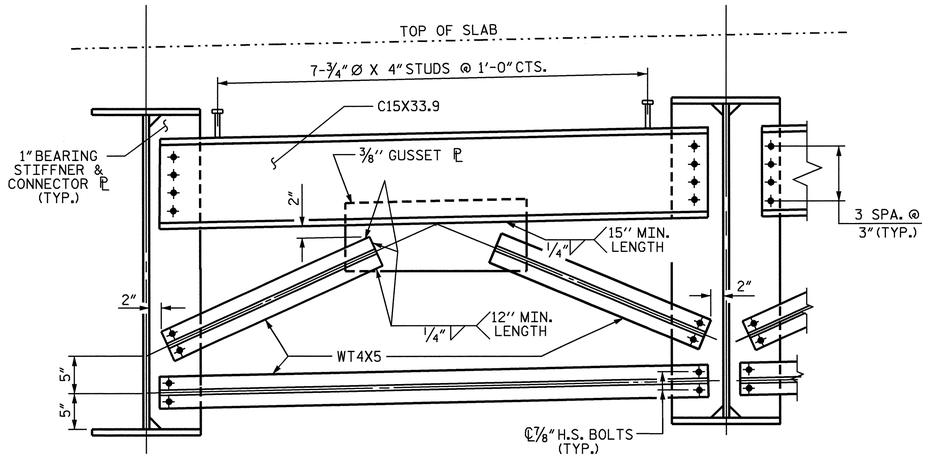
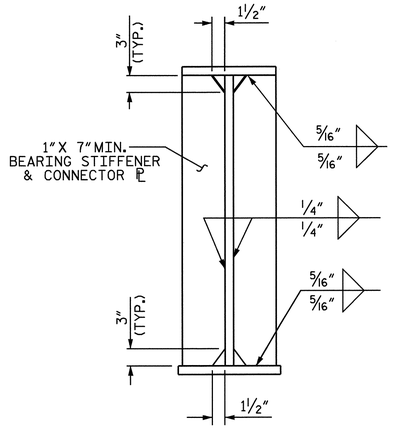
kbeard



TYPICAL END BENT DIAPHRAGM - D2



BEARING STIFFENER & CONNECTOR ℄

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 ⅞" DIA. HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED.

BEARING STIFFENERS SHALL BE PLUMB.

A CHARPY V-NOTCH TEST IS REQUIRED FOR WEB PLATES AND BOTTOM FLANGE PLATES AND WEB SPLICE PLATES (IF USED) FOR ALL GIRDERS AND IN ACCORDANCE WITH ARTICLE 1072-9 OF THE STANDARD SPECIFICATIONS.

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

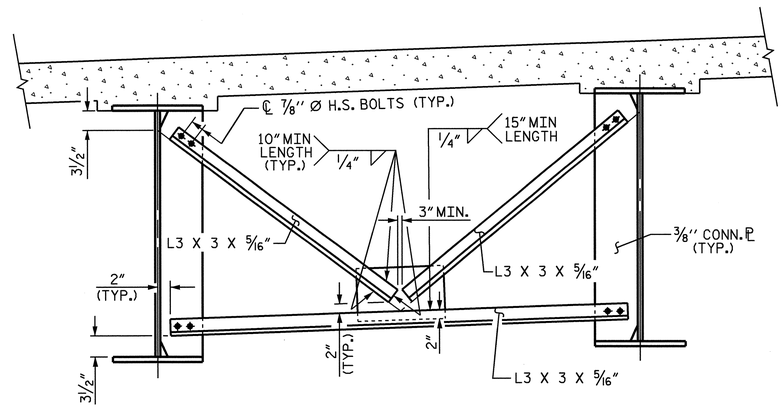
SHOP SPLICES ARE PERMITTED TO LIMIT THE MAXIMUM REQUIRED FLANGE PIECE LENGTHS TO 60 FEET AND WEB PIECE LENGTHS TO 45 FEET. PERMITTED FLANGE AND WEB SHOP SPLICES SHALL NOT BE LOCATED WITHIN 15 FEET OF MAXIMUM DEAD LOAD DEFLECTION. KEEP 2 FEET MINIMUM BETWEEN WEB AND FLANGE SHOP SPLICES. KEEP 6" MINIMUM BETWEEN CONNECTOR PLATE OR TRANSVERSE STIFFENER WELDS AND WEB OR FLANGE SHOP SPLICES.

END OF BEAMS AND GIRDERS SHALL BE PLUMB.

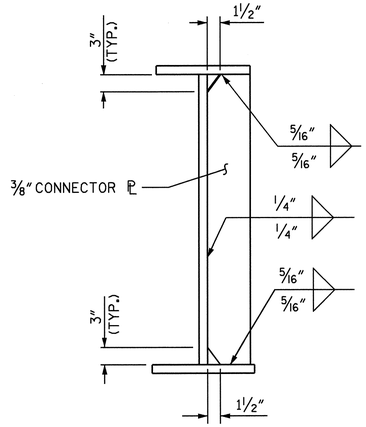
BEARING STIFFENER MAY REQUIRE COPING IF WIDER THAN BOTTOM FLANGE.

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

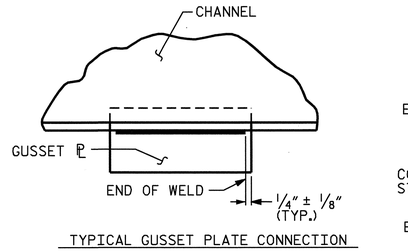
FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.



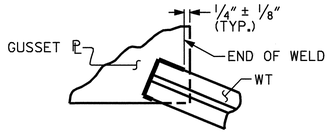
TYPICAL INTERMEDIATE DIAPHRAGM - D1



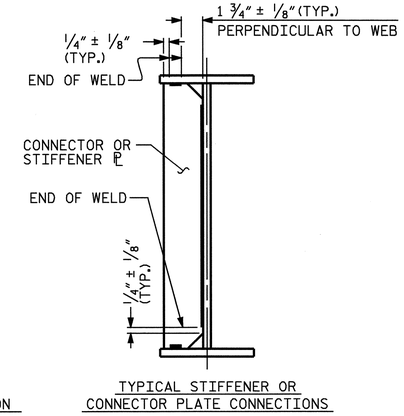
CONNECTOR ℄



TYPICAL GUSSET PLATE CONNECTION

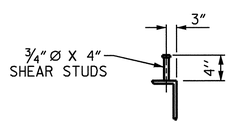


TYPICAL "TEE" TO GUSSET PLATE CONNECTION



TYPICAL STIFFENER OR CONNECTOR PLATE CONNECTIONS

WELD TERMINATION DETAILS



SHEAR STUD DETAILS

PROJECT NO. B-4523

GRANVILLE COUNTY

STATION: 17+29.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

STRUCTURAL STEEL DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 30878 ENGINEER W. KEVIN EISCHEN
4/7/09

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			23

DRAWN BY : M.K. BEARD DATE : 12/07
CHECKED BY : R.G. EMERSON DATE : 04/08

06-APR-2009 15:03
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kbeard

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

	GIRDER #1																				
TWENTIETH POINTS	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	-0.016	-0.032	-0.046	-0.059	-0.071	-0.081	-0.089	-0.095	-0.098	-0.100	-0.098	-0.095	-0.089	-0.081	-0.071	-0.059	-0.046	-0.032	-0.016	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	-0.029	-0.077	-0.122	-0.164	-0.201	-0.232	-0.257	-0.275	-0.286	-0.290	-0.286	-0.275	-0.257	-0.232	-0.201	-0.164	-0.122	-0.077	-0.029	0.000
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.000	-0.005	-0.011	-0.015	-0.020	-0.024	-0.027	-0.030	-0.032	-0.033	-0.034	-0.033	-0.032	-0.030	-0.027	-0.024	-0.020	-0.015	-0.011	-0.005	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	-0.050	-0.119	-0.183	-0.243	-0.295	-0.340	-0.376	-0.402	-0.418	-0.423	-0.418	-0.402	-0.376	-0.340	-0.295	-0.243	-0.183	-0.119	-0.050	0.000
VERTICAL CURVE ORDINATE	0.000	-0.098	-0.181	-0.248	-0.300	-0.336	-0.357	-0.362	-0.352	-0.326	-0.297	-0.267	-0.237	-0.207	-0.178	-0.148	-0.118	-0.089	-0.059	-0.030	0.000
ORDINATE DUE TO SUPERELEVATION	0.000	-0.013	-0.024	-0.034	-0.043	-0.051	-0.057	-0.061	-0.065	-0.067	-0.067	-0.067	-0.065	-0.061	-0.057	-0.051	-0.043	-0.034	-0.024	-0.013	0.000
REQUIRED CAMBER	0	-3/4"	-1"	-1 3/16"	-1 3/16"	-1 1/8"	-7/8"	-9/16"	-3/16"	5/16"	11/16"	1"	1 3/16"	1 5/16"	1 1/4"	1 1/8"	1"	3/4"	7/16"	1/16"	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).

SIGN CONVENTION FOR FINAL REQUIRED CAMBER + 0 −

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

	GIRDER#2																				
TWENTIETH POINTS	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	-0.016	-0.031	-0.046	-0.059	-0.071	-0.081	-0.089	-0.095	-0.098	-0.099	-0.098	-0.095	-0.089	-0.081	-0.071	-0.059	-0.046	-0.031	-0.016	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	-0.029	-0.078	-0.123	-0.165	-0.202	-0.233	-0.258	-0.277	-0.288	-0.292	-0.288	-0.277	-0.258	-0.233	-0.202	-0.165	-0.123	-0.078	-0.029	0.000
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.000	-0.005	-0.010	-0.015	-0.019	-0.023	-0.026	-0.029	-0.031	-0.032	-0.032	-0.032	-0.031	-0.029	-0.026	-0.023	-0.019	-0.015	-0.010	-0.005	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	-0.050	-0.119	-0.184	-0.243	-0.296	-0.341	-0.376	-0.402	-0.418	-0.423	-0.418	-0.402	-0.376	-0.341	-0.296	-0.243	-0.184	-0.119	-0.050	0.000
VERTICAL CURVE ORDINATE	0.000	-0.093	-0.172	-0.234	-0.282	-0.314	-0.331	-0.333	-0.319	-0.294	-0.267	-0.240	-0.213	-0.187	-0.160	-0.133	-0.106	-0.080	-0.053	-0.027	0.000
ORDINATE DUE TO SUPERELEVATION	0.000	-0.013	-0.024	-0.034	-0.043	-0.050	-0.056	-0.061	-0.064	-0.066	-0.067	-0.066	-0.064	-0.061	-0.056	-0.050	-0.043	-0.034	-0.024	-0.013	0.000
REQUIRED CAMBER	0	-11/16"	-15/16"	-1"	-1"	-13/16"	-9/16"	-3/16"	1/4"	11/16"	1 1/16"	1 3/8"	1 1/2"	1 9/16"	1 1/2"	1 3/8"	1 1/8"	13/16"	1/2"	1/8"	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).

SIGN CONVENTION FOR FINAL REQUIRED CAMBER + 0 −

PROJECT NO. B-4523
GRANVILLE COUNTY
STATION: 17+29.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

DEAD LOAD DEFLECTIONS

NORTH CAROLINA PROFESSIONAL SEAL 30878 ENGINEER W. KEVIN FISCHER
4/13/09

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			23

DRAWN BY : M.K BEARD DATE : 2/5/08
CHECKED BY : R.G. EMERSON DATE : 04/08

13-APR-2009 16:26
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wkfischer

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

	GIRDER #3																				
TWENTIETH POINTS	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	-0.016	-0.031	-0.046	-0.059	-0.071	-0.081	-0.089	-0.095	-0.098	-0.099	-0.098	-0.095	-0.089	-0.081	-0.071	-0.059	-0.046	-0.031	-0.016	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	-0.029	-0.078	-0.123	-0.165	-0.202	-0.233	-0.258	-0.277	-0.288	-0.292	-0.288	-0.277	-0.258	-0.233	-0.202	-0.165	-0.123	-0.078	-0.029	0.000
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.000	-0.005	-0.010	-0.015	-0.019	-0.023	-0.026	-0.029	-0.031	-0.032	-0.032	-0.032	-0.031	-0.029	-0.026	-0.023	-0.019	-0.015	-0.010	-0.005	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	-0.050	-0.119	-0.184	-0.243	-0.296	-0.341	-0.376	-0.402	-0.418	-0.423	-0.418	-0.402	-0.376	-0.341	-0.296	-0.243	-0.184	-0.119	-0.050	0.000
VERTICAL CURVE ORDINATE	0.000	-0.089	-0.162	-0.221	-0.264	-0.293	-0.306	-0.304	-0.287	-0.263	-0.239	-0.215	-0.191	-0.167	-0.143	-0.119	-0.095	-0.071	-0.048	-0.024	0.000
ORDINATE DUE TO SUPERELEVATION	0.000	-0.013	-0.024	-0.034	-0.043	-0.050	-0.056	-0.061	-0.064	-0.066	-0.067	-0.066	-0.064	-0.061	-0.056	-0.050	-0.043	-0.034	-0.024	-0.013	0.000
REQUIRED CAMBER	0	-5/8"	-13/16"	-7/8"	-3/4"	-9/16"	-1/4"	1/8"	5/8"	1 1/16"	1 3/8"	1 5/8"	1 3/4"	1 3/4"	1 11/16"	1 1/2"	1 1/4"	1 5/16"	9/16"	1/8"	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).

SIGN CONVENTION FOR FINAL REQUIRED CAMBER + 0 −

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

	GIRDER #4																				
TWENTIETH POINTS	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	-0.016	-0.032	-0.046	-0.059	-0.071	-0.081	-0.089	-0.095	-0.098	-0.100	-0.098	-0.095	-0.089	-0.081	-0.071	-0.059	-0.046	-0.032	-0.016	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	-0.029	-0.077	-0.122	-0.164	-0.201	-0.232	-0.257	-0.275	-0.286	-0.290	-0.286	-0.275	-0.257	-0.232	-0.201	-0.164	-0.122	-0.077	-0.029	0.000
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.000	-0.005	-0.011	-0.015	-0.020	-0.024	-0.027	-0.030	-0.032	-0.033	-0.034	-0.033	-0.032	-0.030	-0.027	-0.024	-0.020	-0.015	-0.011	-0.005	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	-0.050	-0.119	-0.183	-0.243	-0.295	-0.340	-0.376	-0.402	-0.418	-0.423	-0.418	-0.402	-0.376	-0.340	-0.295	-0.243	-0.183	-0.119	-0.050	0.000
VERTICAL CURVE ORDINATE	0.000	-0.084	-0.153	-0.207	-0.246	-0.271	-0.280	-0.275	-0.256	-0.234	-0.213	-0.191	-0.170	-0.149	-0.127	-0.106	-0.085	-0.064	-0.042	-0.021	0.000
ORDINATE DUE TO SUPERELEVATION	0.000	-0.013	-0.024	-0.034	-0.042	-0.050	-0.056	-0.060	-0.064	-0.065	-0.066	-0.065	-0.064	-0.060	-0.056	-0.050	-0.042	-0.034	-0.024	-0.013	0.000
REQUIRED CAMBER	0	-9/16"	-11/16"	-11/16"	-9/16"	-5/16"	1/16"	1/2"	1"	1 7/16"	1 3/4"	1 15/16"	2"	2"	1 7/8"	1 11/16"	1 3/8"	1"	5/8"	3/16"	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).

SIGN CONVENTION FOR FINAL REQUIRED CAMBER + 0 −

PROJECT NO. B-4523
GRANVILLE COUNTY
STATION: 17+29.50 -L-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 30878 ENGINEER W. KEVIN FISCHER
4/13/09

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

DEAD LOAD DEFLECTIONS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			23

DRAWN BY : M.K BEARD DATE : 2/5/08
CHECKED BY : R.G. EMERSON DATE : 04/08

13-APR-2009 16:26
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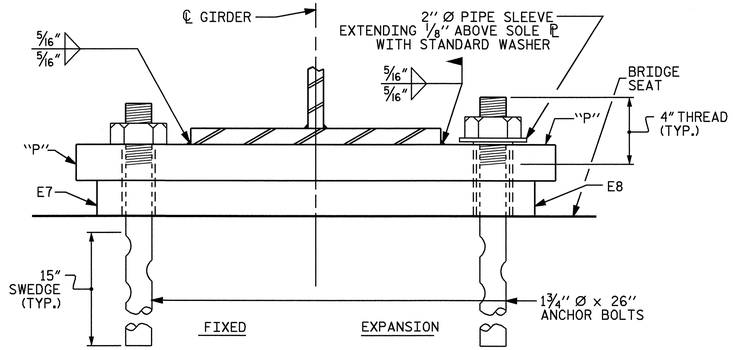
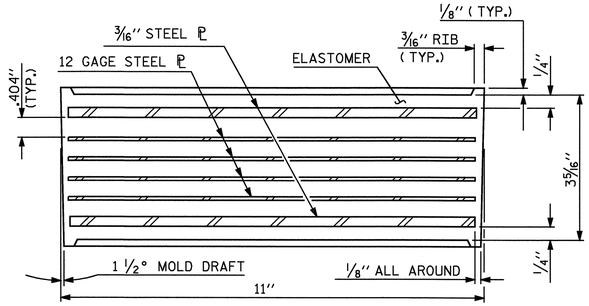
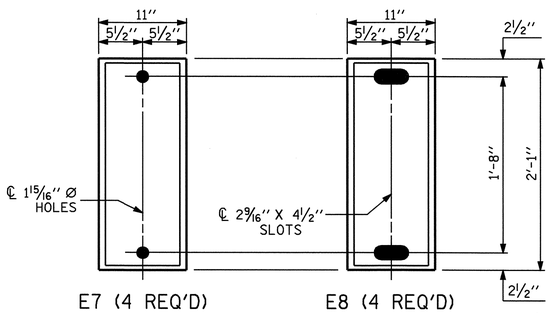
wkfischer



END VIEW

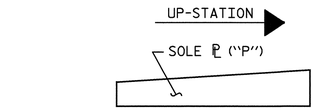


TYPICAL SECTION OF ELASTOMERIC BEARING

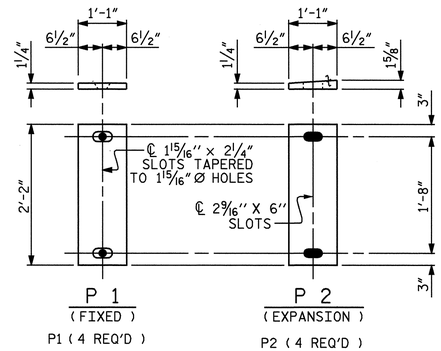


PLAN VIEW OF ELASTOMERIC BEARING

TYPE IV



SOLE ℙ PLACEMENT DETAIL



SOLE PLATE DETAILS ("P")

NOTES

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF ½ 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.

-LOAD RATINGS-

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

PROJECT NO. B-4523

GRANVILLE COUNTY

STATION: 17+29.50 -L-

ASSEMBLED BY : M.K. BEARD	DATE : 12/07
CHECKED BY : R.G. EMERSON	DATE : 04/08
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

05-MAR-2009 10:58
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klayne

NORTH CAROLINA PROFESSIONAL SEAL 30878 ENGINEER W. KENNY FISCHER
3/5/09

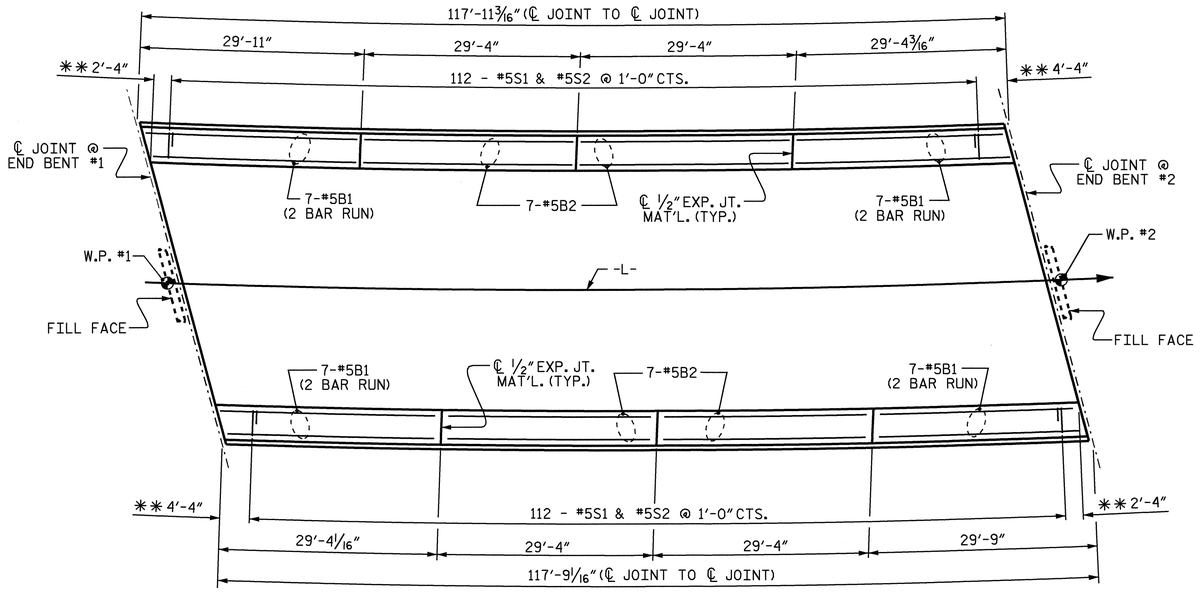
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

ELASTOMERIC BEARING DETAILS

(STEEL SUPERSTRUCTURE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			23

STD. NO. EB2



PLAN OF BARRIER RAIL

MEASUREMENTS TAKEN ALONG OUTSIDE EDGE OF BRIDGE.
**FOR REINFORCING STEEL AT END OF BARRIER RAIL, SEE "END OF 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.

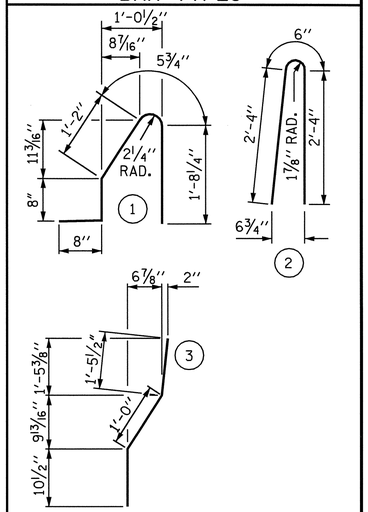
WHEN EVAZOTE JOINT SEAL IS REQUIRED, THE JOINT IN THE DECK SHALL BE SAWED PRIOR TO THE CASTING OF BARRIER RAIL.

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.

BAR TYPES



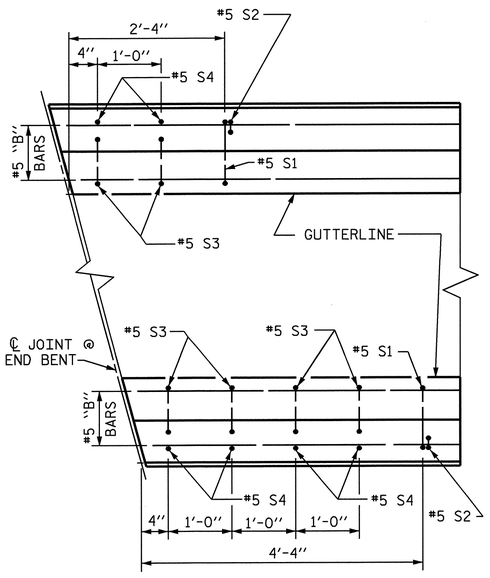
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

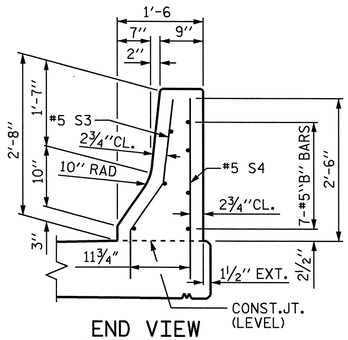
FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	56	#5	STR.	16′-5″	959
* B2	28	#5	STR.	28′-11″	844
* S1	224	#5	1	4′-8″	1090
* S2	224	#5	2	5′-2″	1207
* S3	12	#5	3	3′-4″	42
* S4	12	#5	STR	3′-2″	40

* EPOXY COATED REINFORCING STEEL	4182 LBS.
CLASS AA CONCRETE	23.6 CU. YDS.
CONCRETE BARRIER RAIL	235.69 LIN. FT.



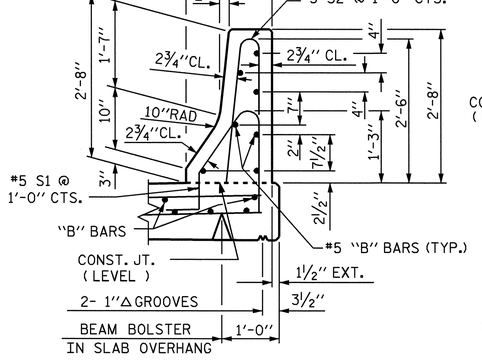
PLAN



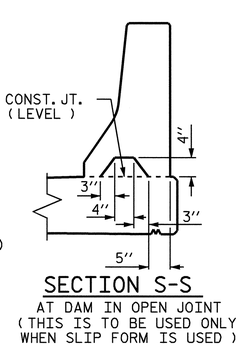
END VIEW

END OF RAIL DETAILS

FOR ADHESIVE ANCHORING AT SAWED JOINTS

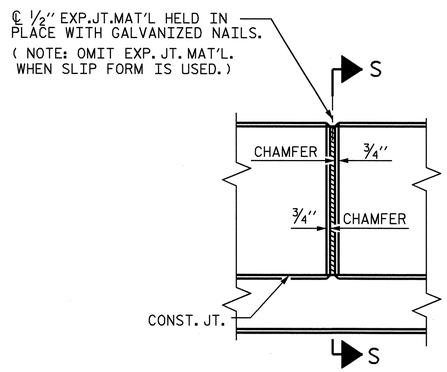


SECTION THRU RAIL



SECTION S-S

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



ELEVATION AT EXPANSION JOINTS

BARRIER RAIL DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 30878 ENGINEER W. KEVIN FISCHER
3/5/09

PROJECT NO. B-4523
GRANVILLE COUNTY
STATION: 17+29.50 -L-

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			23

ASSEMBLED BY : M.K. BEARD	DATE : 12/07		
CHECKED BY : R.G. EMERSON	DATE : 04/08		
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	

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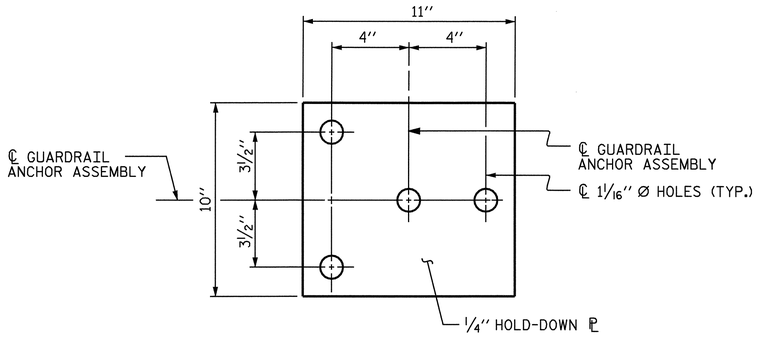
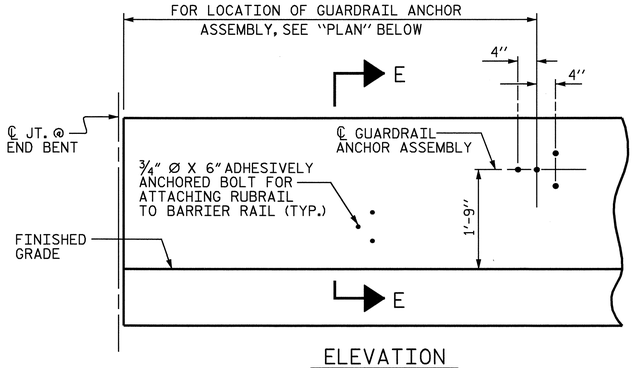
STD. NO. CBR1



PLAN



ELEVATION

FOR LOCATION OF RUBRAIL, SEE ROADWAY STD. 862.03

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.)

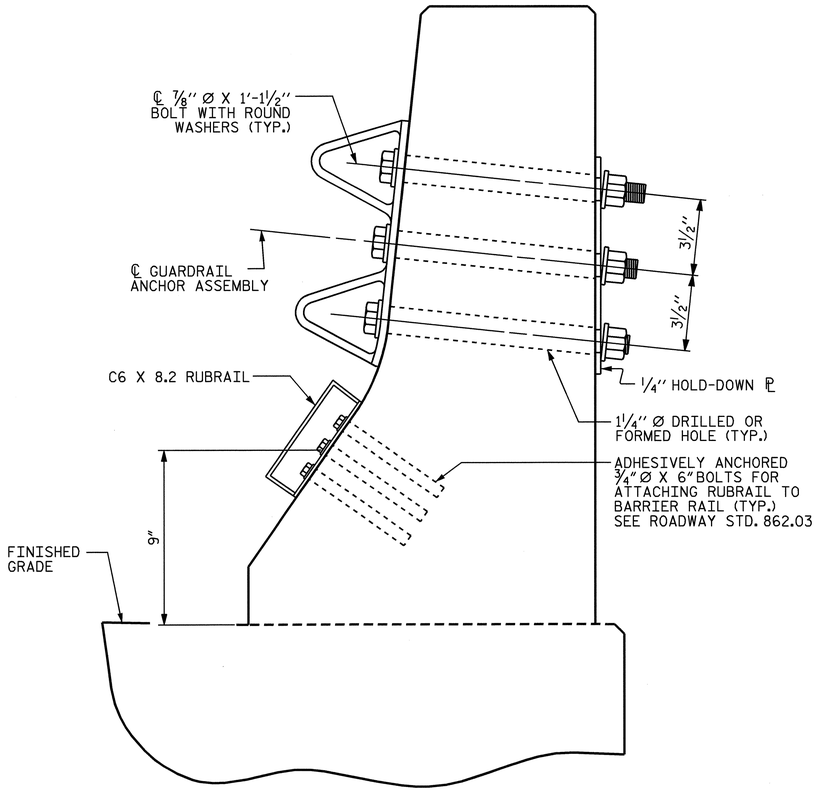
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

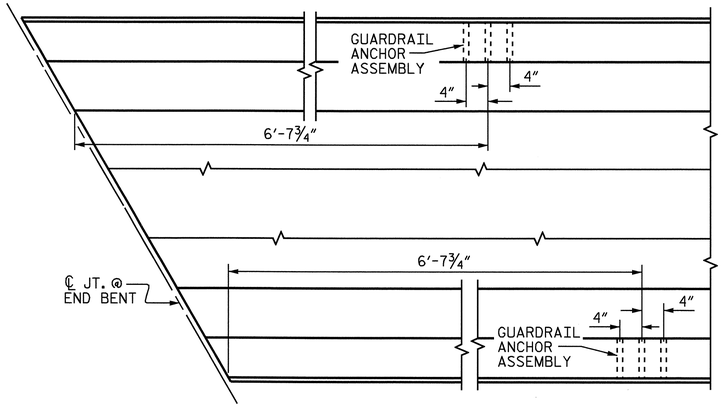
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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.



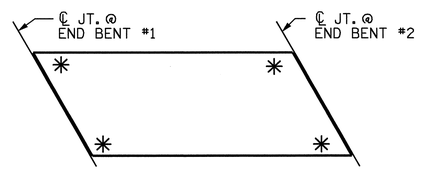
SECTION E-E



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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



SKETCH SHOWING POINTS OF ATTACHMENTS

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

GUARDRAIL ANCHOR ASSEMBLY DETAILS

PROJECT NO. B-4523

GRANVILLE COUNTY

STATION: 17+29.50 -L-

NORTH CAROLINA PROFESSIONAL SEAL 30878 ENGINEER KEVIN FISCHER
3/5/09

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

GUARDRAIL ANCHORAGE FOR BARRIER RAIL

ASSEMBLED BY : M.K. BEARD	DATE : 12/07
CHECKED BY : R.G. EMERSON	DATE : 04/08
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-13
1			3			TOTAL SHEETS
2			4			23

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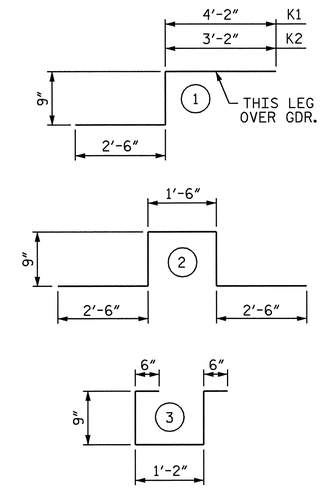
STD. NO. GRA2

BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳A1	201	#5	STR.	30′-11″	6481	✳A117	1	#5	STR.	28′-2″	29	A206	1	#5	STR.	20′-3″	21	A225	1	#5	STR	11′-9″	12
A2	201	#5	STR.	30′-11″	6481	✳A118	1	#5	STR.	26′-1″	27	A207	1	#5	STR.	18′-3″	19	A226	1	#5	STR	9′-9″	10
						✳A119	1	#5	STR.	24′-1″	25	A208	1	#5	STR.	16′-2″	17	A227	1	#5	STR	7′-8″	8
✳A101	1	#5	STR.	30′-3″	32	✳A120	1	#5	STR.	22′-0″	23	A209	1	#5	STR.	14′-2″	15	A228	1	#5	STR	5′-8″	6
✳A102	1	#5	STR.	28′-3″	29	✳A121	1	#5	STR.	19′-11″	21	A210	1	#5	STR.	12′-2″	13	A229	1	#5	STR	3′-7″	4
✳A103	1	#5	STR.	26′-3″	27	✳A122	1	#5	STR.	17′-11″	19	A211	1	#5	STR.	10′-2″	11						
✳A104	1	#5	STR.	24′-3″	25	✳A123	1	#5	STR.	15′-10″	17	A212	1	#5	STR.	8′-2″	9	✳ B1	110	#4	STR.	25′-1″	1843
✳A105	1	#5	STR.	22′-3″	23	✳A124	1	#5	STR.	13′-10″	14	A213	1	#5	STR.	6′-2″	6	B2	114	#5	STR.	40′-7″	4825
✳A106	1	#5	STR.	20′-3″	21	✳A125	1	#5	STR.	11′-9″	12	A214	1	#5	STR.	4′-2″	4						
✳A107	1	#5	STR	18′-3″	19	✳A126	1	#5	STR	9′-9″	10	A215	1	#5	STR	2′-2″	2	✳ G1	1	#5	STR.	32′-4″	34
✳A108	1	#5	STR	16′-2″	17	✳A127	1	#5	STR	7′-8″	8	A216	1	#5	STR	30′-2″	31	✳ G2	1	#5	STR.	31′-8″	33
✳A109	1	#5	STR	14′-2″	15	✳A128	1	#5	STR	5′-8″	6	A217	1	#5	STR	28′-2″	29						
✳A110	1	#5	STR	12′-2″	13	✳A129	1	#5	STR	3′-7″	4	A218	1	#5	STR	26′-1″	27	✳ K1	4	#5	1	7′-5″	31
✳A111	1	#5	STR	10′-2″	11							A219	1	#5	STR	24′-1″	25	✳ K2	4	#5	1	6′-5″	27
✳A112	1	#5	STR	8′-2″	9	A201	1	#5	STR	30′-3″	32	A220	1	#5	STR	22′-0″	23	✳ K3	8	#5	2	8′-0″	67
✳A113	1	#5	STR	6′-2″	6	A202	1	#5	STR	28′-3″	29	A221	1	#5	STR	19′-11″	21	✳ K4	12	#5	STR.	8′-3″	103
✳A114	1	#5	STR.	4′-2″	4	A203	1	#5	STR.	26′-3″	27	A222	1	#5	STR.	17′-11″	19						
✳A115	1	#5	STR.	2′-2″	2	A204	1	#5	STR.	24′-3″	25	A223	1	#5	STR.	15′-10″	17	✳ S1	36	#4	3	3′-8″	88
✳A116	1	#5	STR.	30′-2″	31	A205	1	#5	STR.	22′-3″	23	A224	1	#5	STR.	13′-10″	14						

REINFORCING STEEL	11805 LBS
✳ EPOXY COATED REINFORCING STEEL	9206 LBS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

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″			

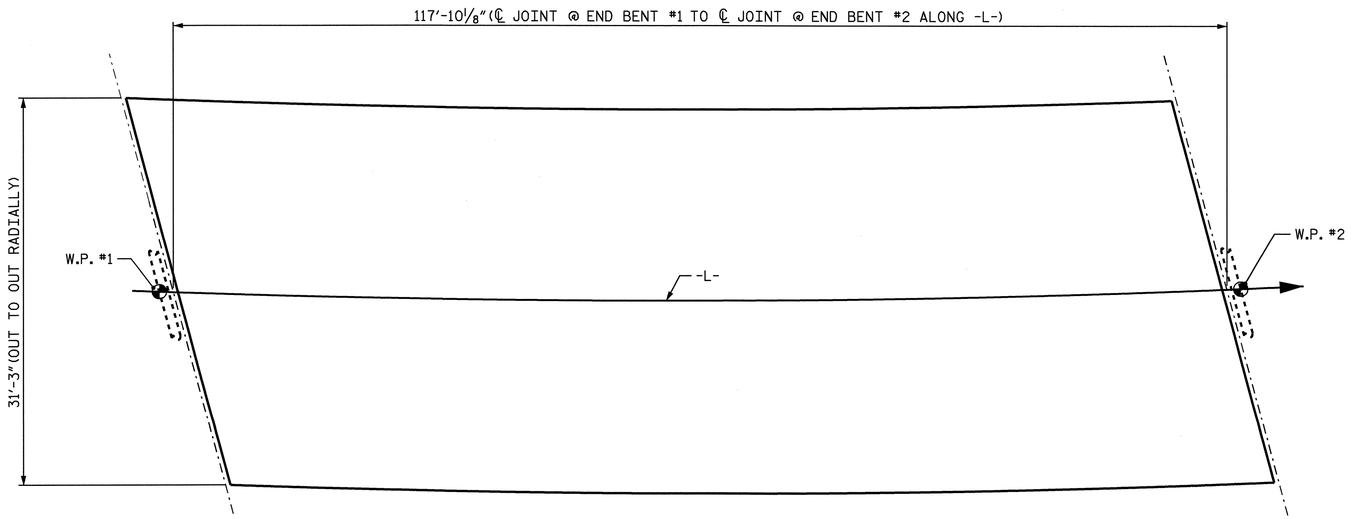
SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
SPAN "A"	126.7	11805	9206
TOTALS ✳✳	126.7	11805	9206

✳✳QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

GROOVING BRIDGE FLOORS

APPROACH SLABS	535 SQ. FT.
BRIDGE DECK	2911 SQ. FT.
TOTAL	3446 SQ. FT.



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB (SQ. FT. = 3683)

PROJECT NO. B-4523

GRANVILLE COUNTY

STATION: 17+29.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

BILL OF MATERIAL

NORTH CAROLINA PROFESSIONAL SEAL 30878 ENGINEER W. KEVIN EISOKER
3/5/09

ASSEMBLED BY : M.K. BEARD	DATE : 12/07		
CHECKED BY : R.G. EMERSON	DATE : 04/08		
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	

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			23

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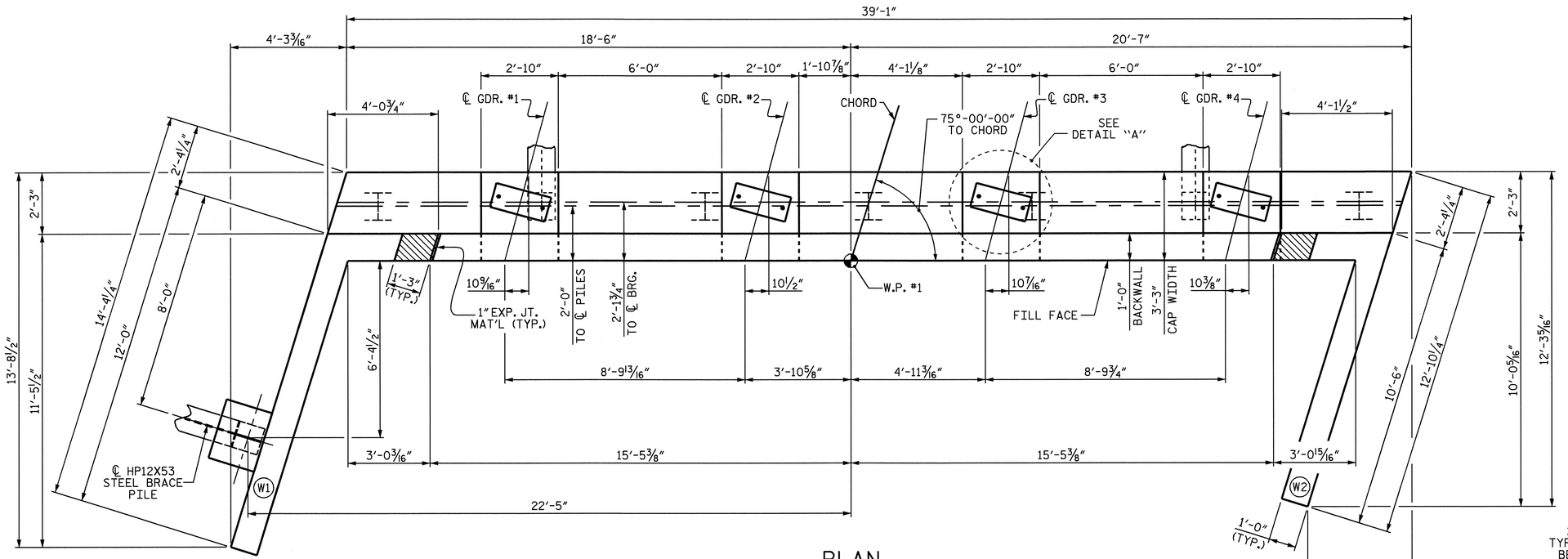
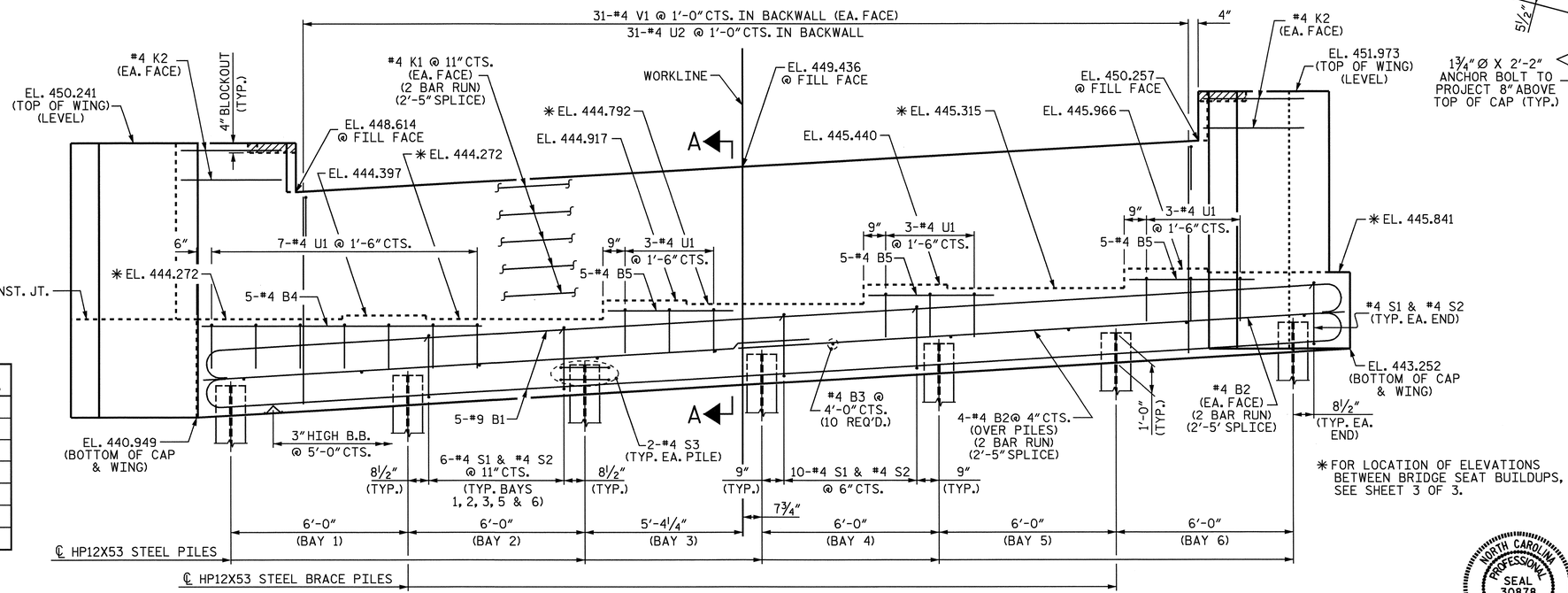


PLAN

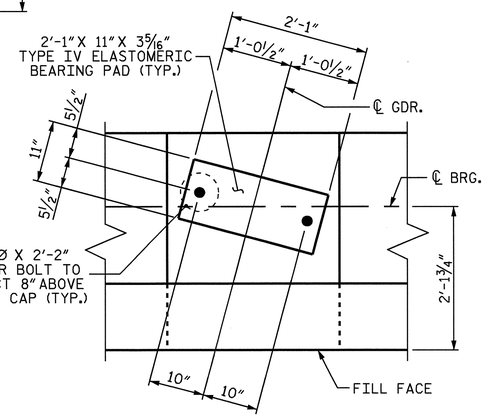


ELEVATION

WING BRACE PILE NOT SHOWN FOR CLARITY

PILE #	TOP OF PILE EL.
1	442.046
2	442.400
3	442.753
4	443.107
5	443.461
6	443.841
7	444.168

✱ FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT BUILDUPS, SEE SHEET 3 OF 3.



DETAIL "A"

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 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 IS CAST IF SLIP FORMING IS USED.

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.

PROJECT NO. B-4523

GRANVILLE COUNTY

STATION: 17+29.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT #1

NORTH CAROLINA PROFESSIONAL SEAL 30878 ENGINEER W. KEVAN FISCHER

3/6/09

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			23

DRAWN BY : S. DOMBROWSKI DATE : 04/08
CHECKED BY : M.K. BEARD DATE : 07/08

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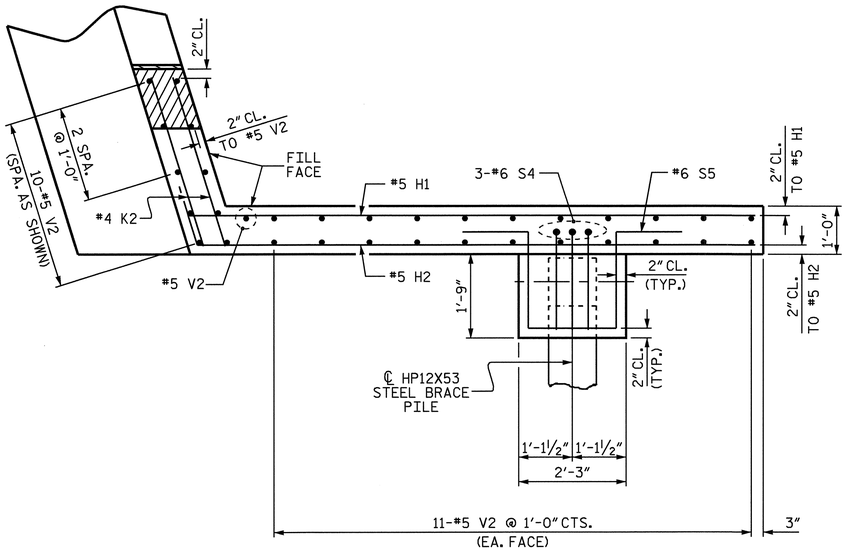
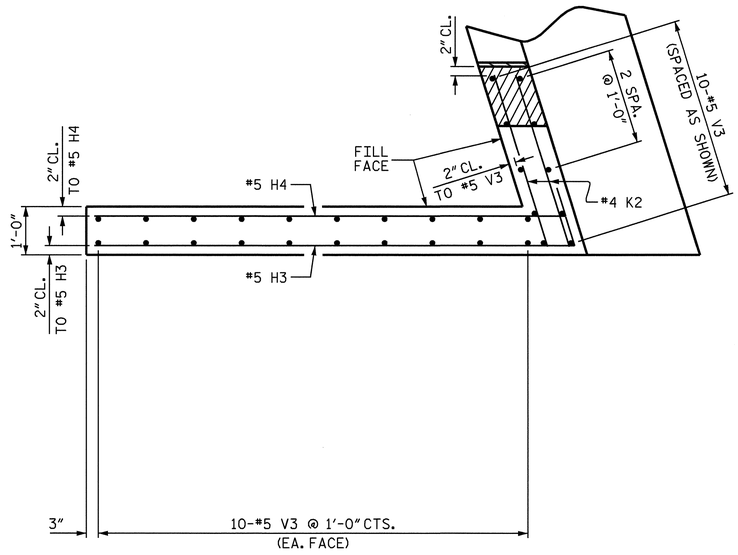
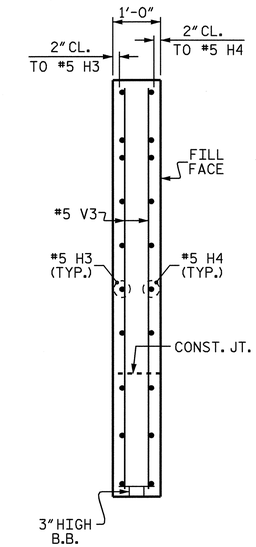


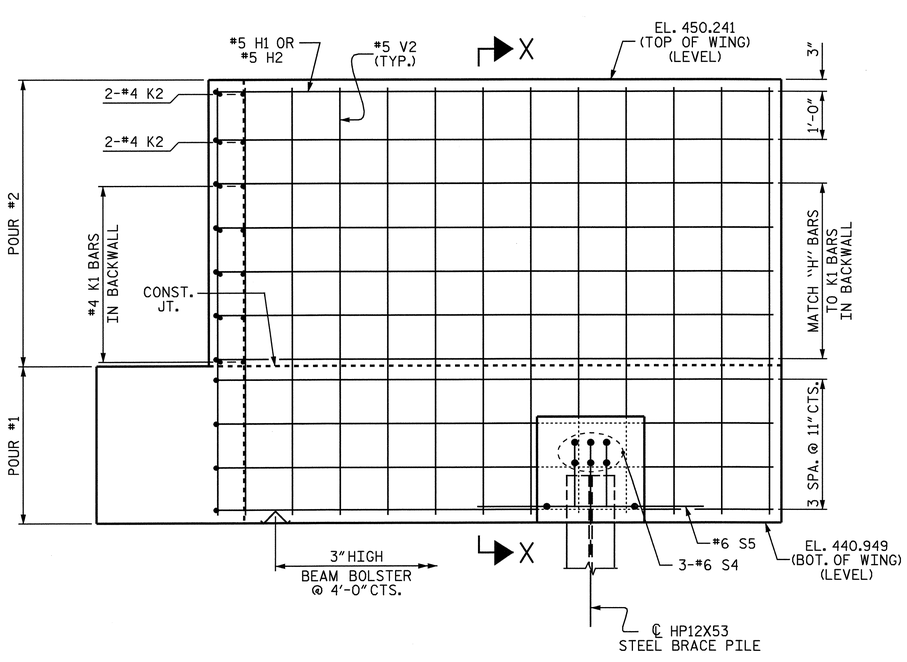
PLAN OF WING - W1



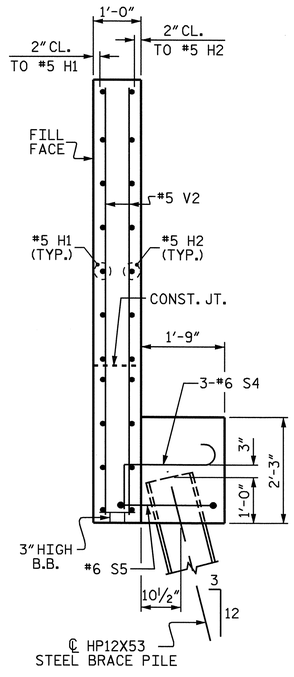
PLAN OF WING - W2



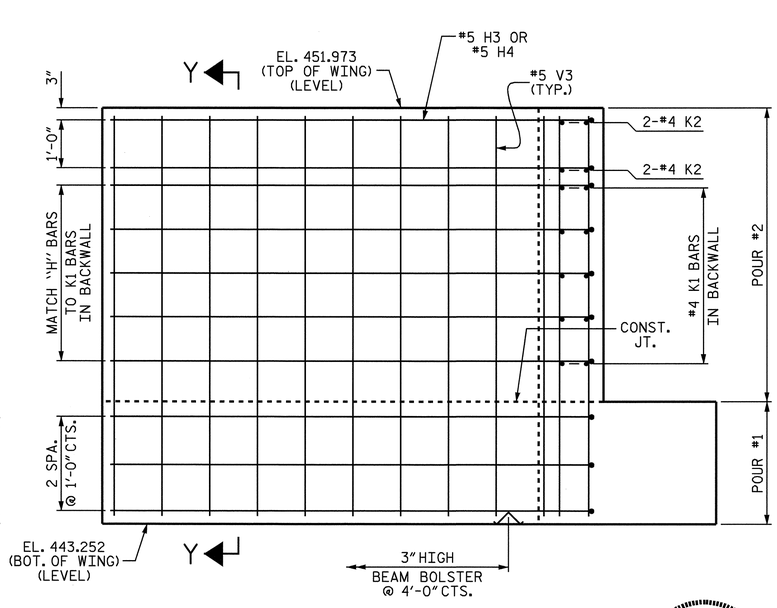
SECTION Y-Y



ELEVATION OF WING - W1



SECTION X-X



ELEVATION OF WING - W2

PROJECT NO. B-4523

GRANVILLE COUNTY

STATION: 17+29.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT #1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			23

NORTH CAROLINA PROFESSIONAL SEAL 30878 ENGINEER W. KEENAN FISCHER
3/5/09

DRAWN BY : S. DOMBROWSKI DATE : 04/08
CHECKED BY : M.K. BEARD DATE : 07/08

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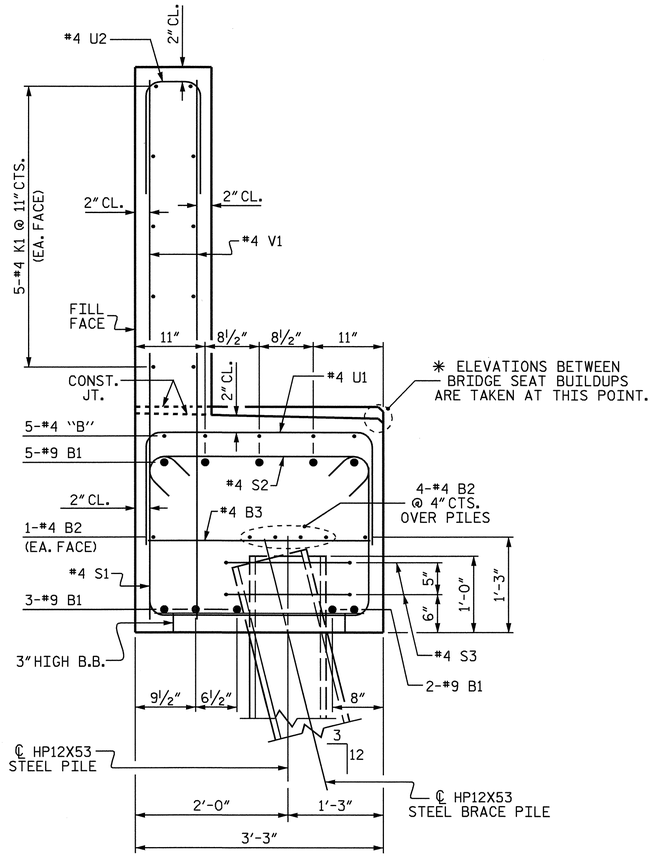
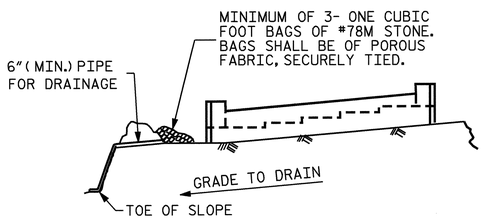


SECTION A-A

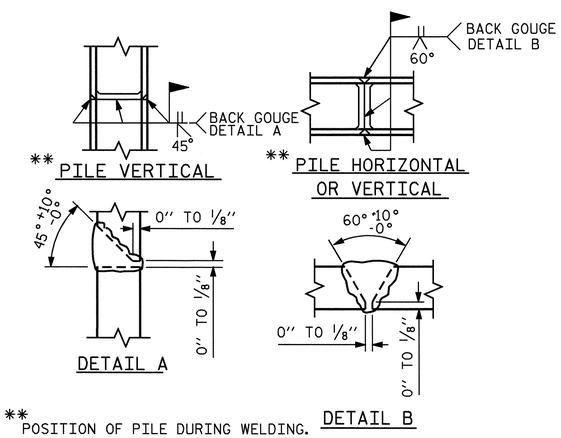


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

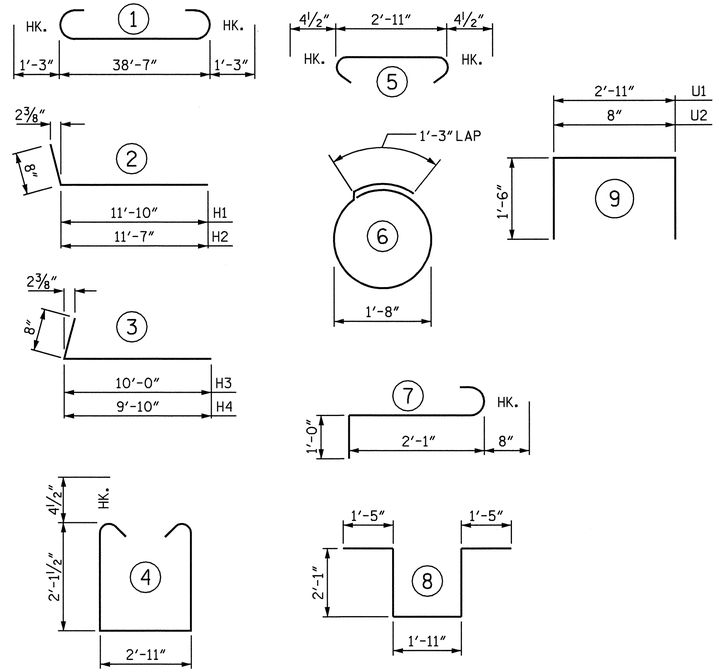
TEMPORARY DRAINAGE AT END BENT



** 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	10	#9	1	41'-1"	1397
B2	12	#4	STR	20'-7"	165
B3	10	#4	STR	2'-11"	19
B4	5	#4	STR	9'-6"	32
B5	15	#4	STR	4'-3"	43
H1	11	#5	2	12'-6"	143
H2	11	#5	2	12'-3"	141
H3	10	#5	3	10'-8"	111
H4	10	#5	3	10'-6"	110
K1	20	#4	STR	20'-7"	275
K2	8	#4	STR	3'-8"	20
S1	42	#4	4	7'-11"	222
S2	42	#4	5	3'-8"	103
S3	14	#4	6	6'-6"	61
S4	3	#6	7	3'-9"	34
S5	1	#6	8	8'-11"	27
U1	16	#4	9	5'-11"	63
U2	31	#4	9	3'-8"	76
V1	62	#4	STR	7'-0"	290
V2	33	#5	STR	8'-8"	298
V3	30	#5	STR	8'-4"	261

REINFORCING STEEL Lbs. 3891

CLASS "A" CONCRETE
POUR #1 CAP & LOWER PART OF WINGS CU.YDS. 16.1
POUR #2 UPPER WINGS & BACKWALL CU.YDS. 11.6
TOTAL CU.YDS. 27.7

HP12X53 STEEL PILES
No. 8 LIN. FT. 120.0

PROJECT NO. B-4523
GRANVILLE COUNTY
STATION: 17+29.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT #1

NORTH CAROLINA PROFESSIONAL SEAL 30878 ENGINEER W. KENNY FISCHER
3/5/09

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			23

DRAWN BY : S. DOMBROWSKI DATE : 04/08
CHECKED BY : M.K. BEARD DATE : 07/08

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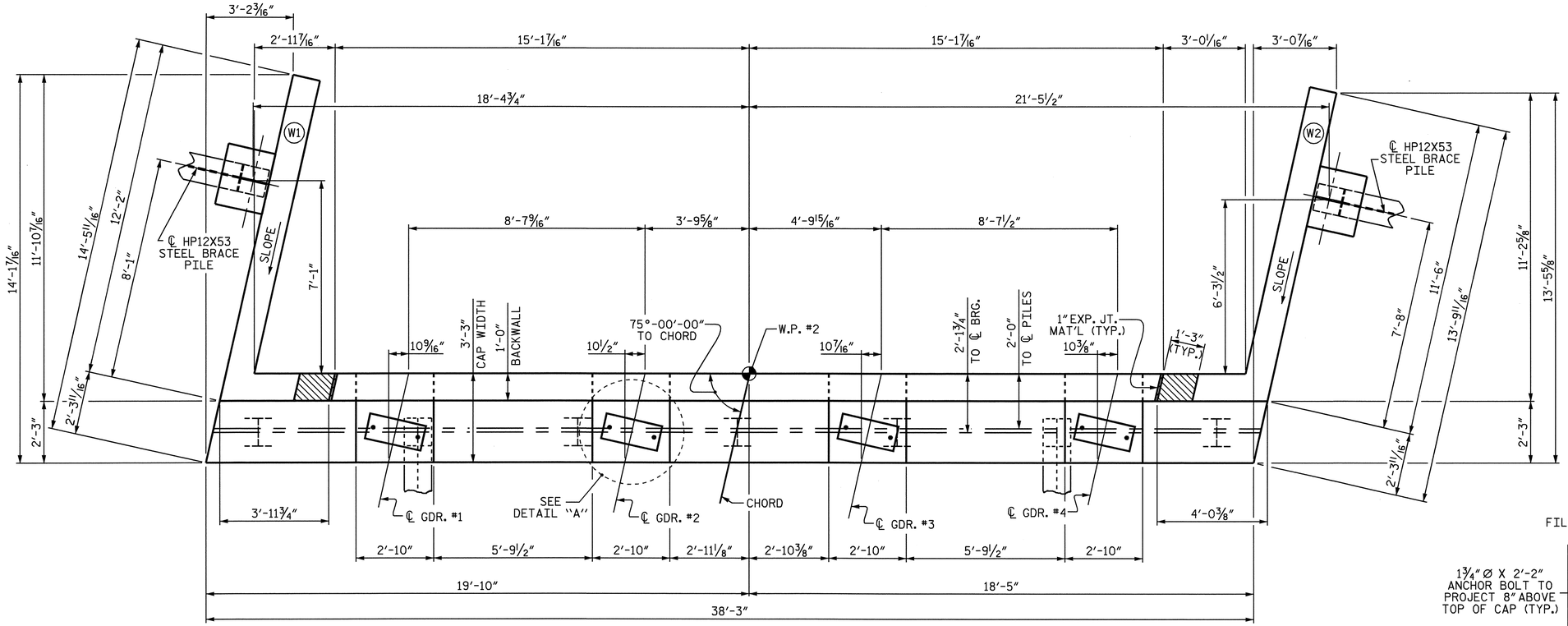
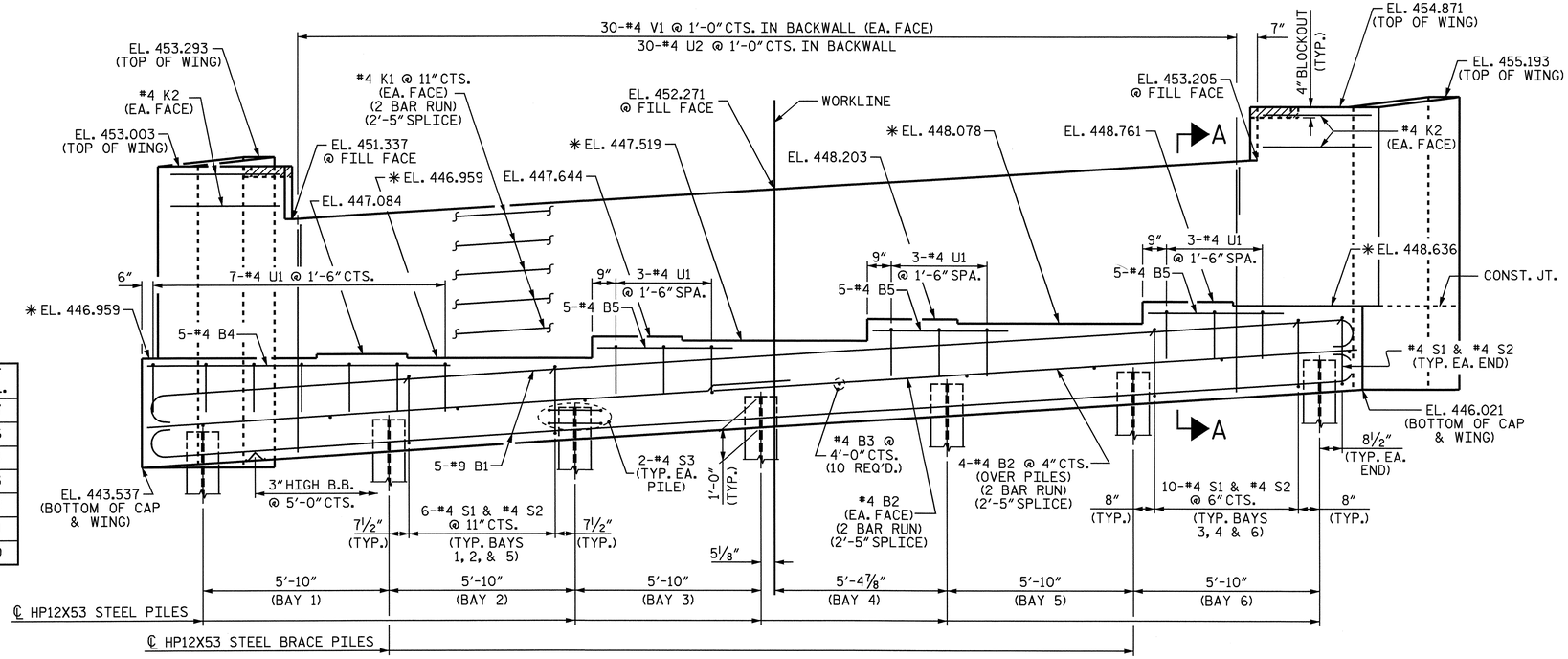
Klayne

NCDOT



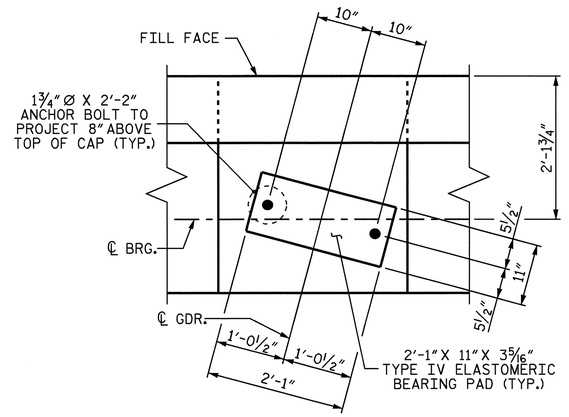
PLAN



ELEVATION

WING BRACE PILES NOT SHOWN FOR CLARITY

PILE #	TOP OF PILE EL.
1	444.657
2	445.036
3	445.414
4	445.793
5	446.172
6	446.551
7	446.930



DETAIL "A"

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 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 IS CAST IF SLIP FORMING IS USED.

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.

PROJECT NO. B-4523

GRANVILLE COUNTY

STATION: 17+29.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT #2

NORTH CAROLINA PROFESSIONAL SEAL 30878 ENGINEER W. KEVIN EISCHEN
3/5/09

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			23

DRAWN BY : S. DOMBROWSKI DATE : 04/08
CHECKED BY : M.K. BEARD DATE : 07/08

05-MAR-2009 10:58
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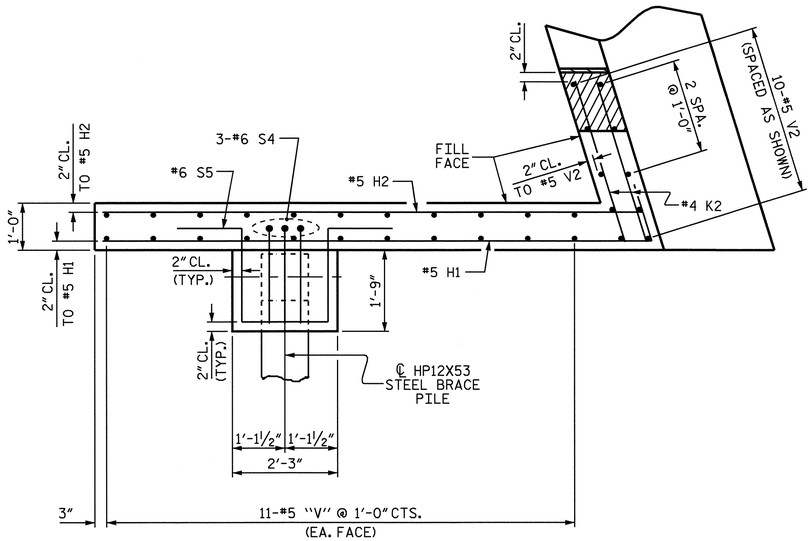
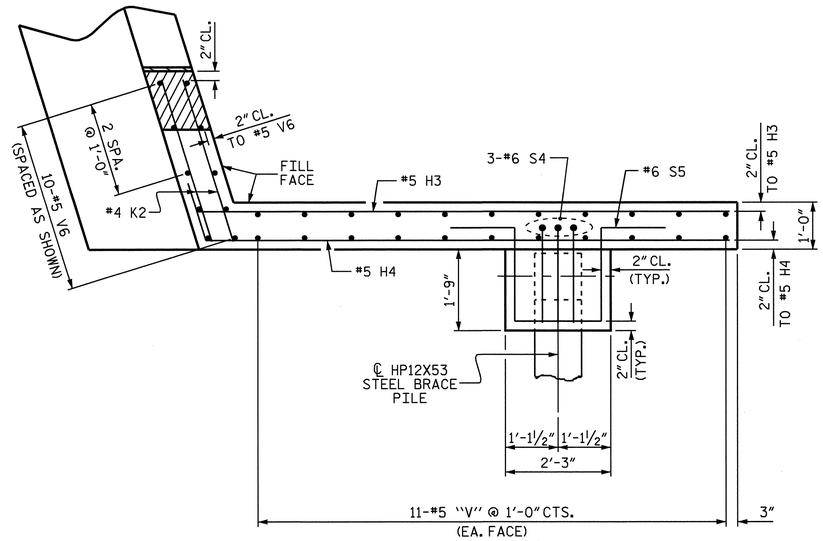
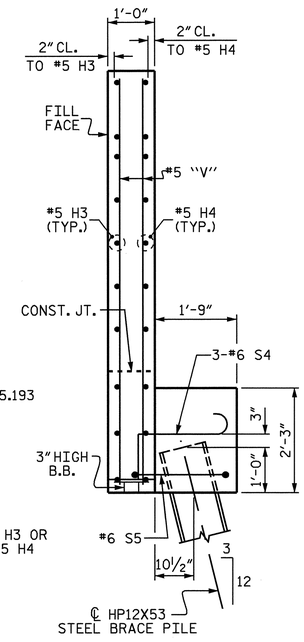
Kayne



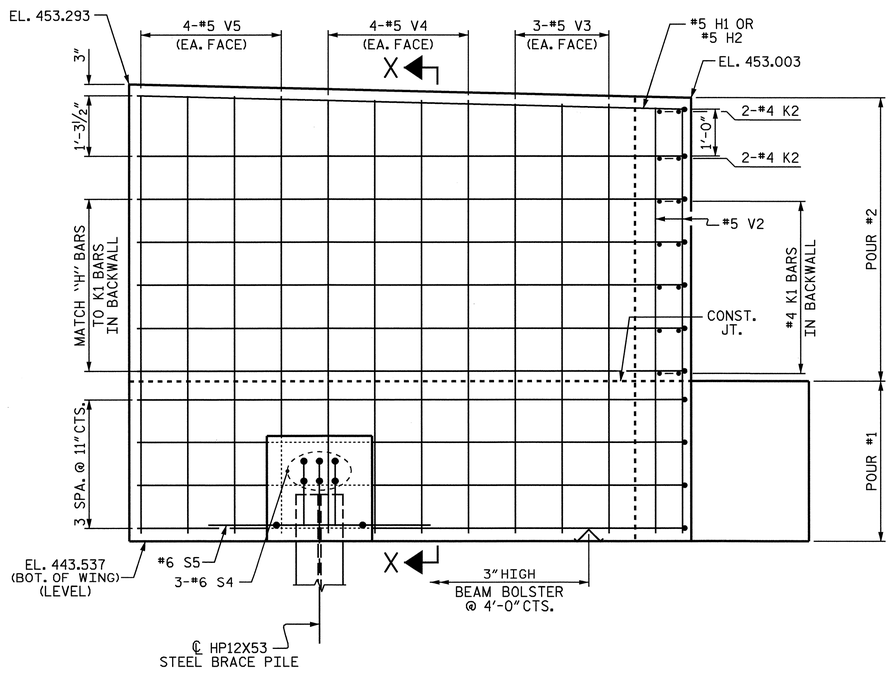
PLAN OF WING - W1



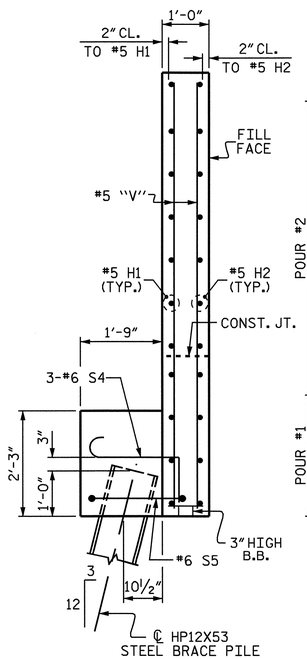
PLAN OF WING - W2



SECTION Y-Y



ELEVATION OF WING - W1



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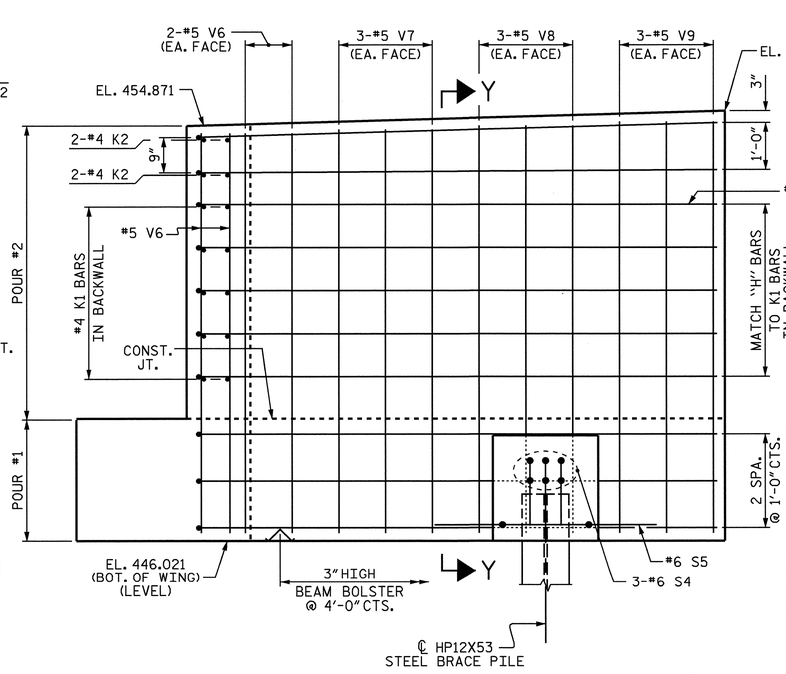

ELEVATION OF WING - W2

PROJECT NO. B-4523

GRANVILLE COUNTY

STATION: 17+29.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT #2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			23

NORTH CAROLINA PROFESSIONAL SEAL 30878 ENGINEER W. KEVIN FISCHER
3/6/09

DRAWN BY : S. DOMBROWSKI DATE : 04/08
CHECKED BY : M.K. BEARD DATE : 07/08

06-MAR-2009 09:41
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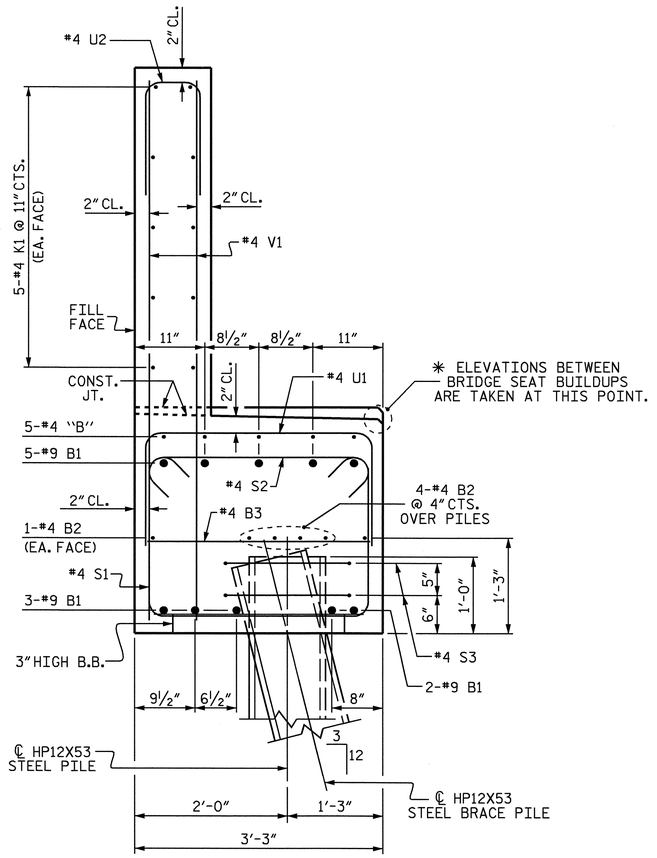
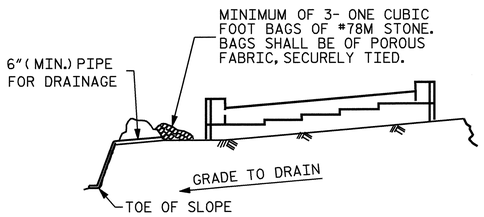
kbeard



SECTION A-A

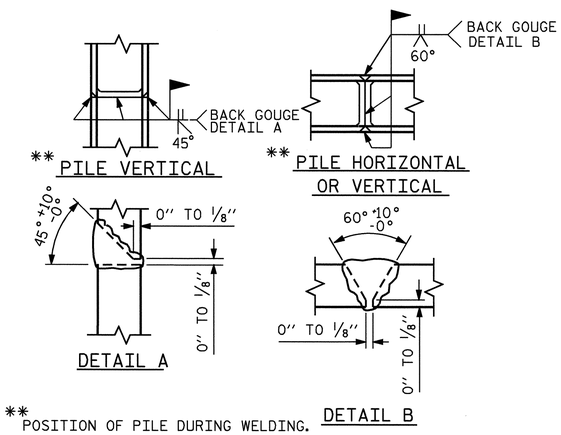


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

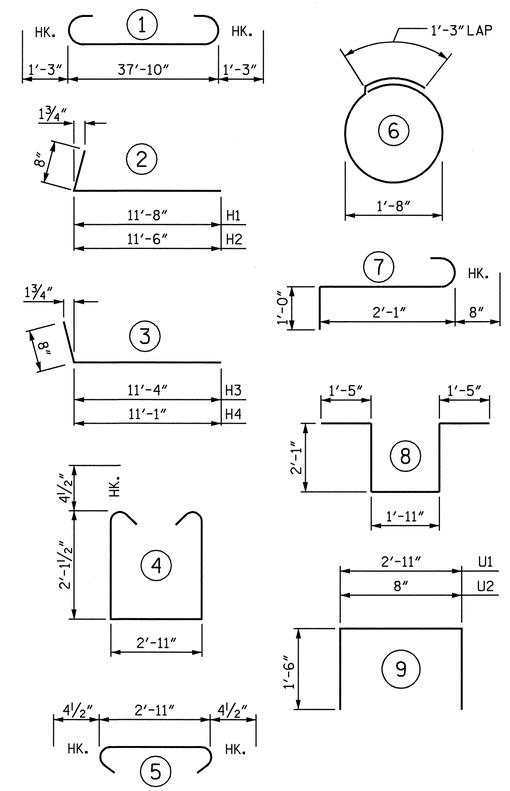
TEMPORARY DRAINAGE AT END BENT



** POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#9	1	40'-4"	1371
B2	12	#4	STR	20'-2"	162
B3	10	#4	STR	2'-11"	19
B4	5	#4	STR	9'-6"	32
B5	15	#4	STR	4'-3"	43
H1	11	#5	2	12'-4"	142
H2	11	#5	2	12'-2"	140
H3	10	#5	3	12'-0'	125
H4	10	#5	3	11'-9"	123
K1	20	#4	STR	20'-2"	269
K2	8	#4	STR	3'-7"	19
S1	50	#4	4	7'-11"	264
S2	50	#4	5	3'-8"	122
S3	14	#4	6	6'-6"	61
S4	3	#6	7	3'-9"	34
S5	1	#6	8	8'-11"	27
U1	16	#4	9	5'-11"	63
U2	30	#4	9	3'-8"	73
V1	60	#4	STR	7'-0"	281
V2	33	#5	STR	8'-8"	92
V3	30	#5	STR	9'-2"	57
V4	8	#5	STR	9'-3"	77
V5	8	#5	STR	9'-4"	78
V6	14	#5	STR	8'-6"	124
V7	6	#5	STR	8'-7"	54
V8	6	#5	STR	8'-8"	54
V9	6	#5	STR	8'-9"	55

REINFORCING STEEL Lbs. 3961

CLASS "A" CONCRETE
POUR #1 CAP & LOWER PART OF WINGS CU.YDS. 16.4
POUR #2 UPPER WINGS & BACKWALL CU.YDS. 12.0
TOTAL CU.YDS. 28.4

HP12X53 STEEL PILES
No. 9 LIN. FT. 180.0

PROJECT NO. B-4523
GRANVILLE COUNTY
STATION: 17+29.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT #2

NORTH CAROLINA PROFESSIONAL SEAL 30878 ENGINEER KEVIN M. FISCHER
3/5/09

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			23

DRAWN BY : S. DOMBROWSKI DATE : 04/08
CHECKED BY : M.K. BEARD DATE : 07/08

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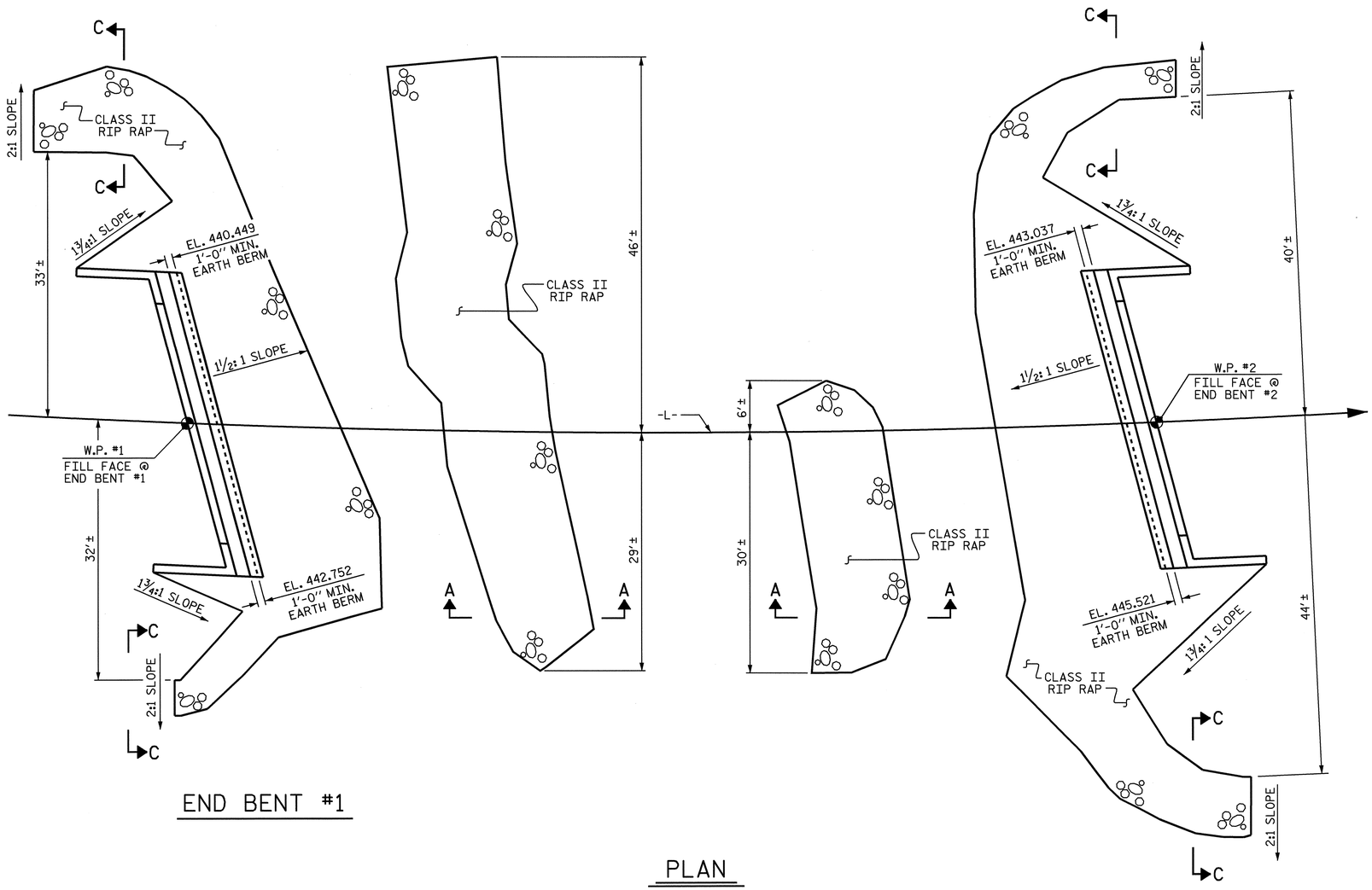
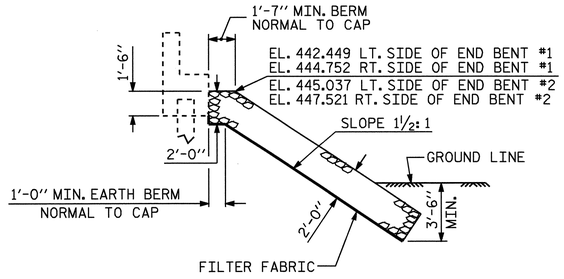


END BENT #1

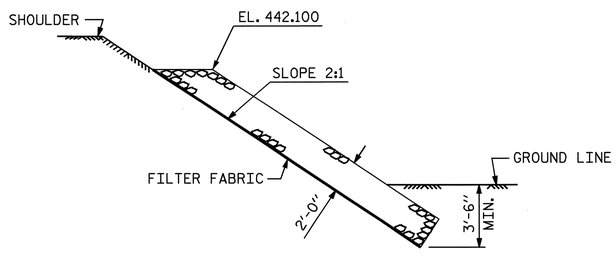
PLAN

END BENT #2

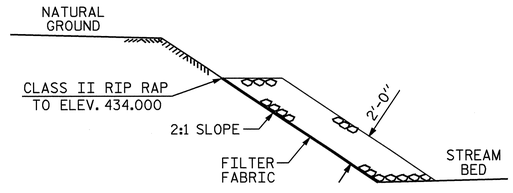
ESTIMATED QUANTITIES		
BRIDGE @ STA. 17+29.50 -L-	CLASS II RIP RAP (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT #1	242	269
END BENT #2	220	244



℄ SECTION BERM RIP RAPPED



SECTION C-C



SECTION A-A

NORTH CAROLINA PROFESSIONAL SEAL 30878 ENGINEER W. KEVAN ELSCHER
3/6/09

PROJECT NO. B-4523
GRANVILLE COUNTY
STATION: 17+29.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			23

ASSEMBLED BY : M.K. BEARD DATE : 8/28/08
CHECKED BY : J.P. ADAMS DATE : 9/9/08

DRAWN BY : REK 1/84
CHECKED BY : RDU 1/84

REV. 8/16/99 RWW/LES
REV. 10/17/00 RWW/LES
REV. 5/1/06 TLA/GM

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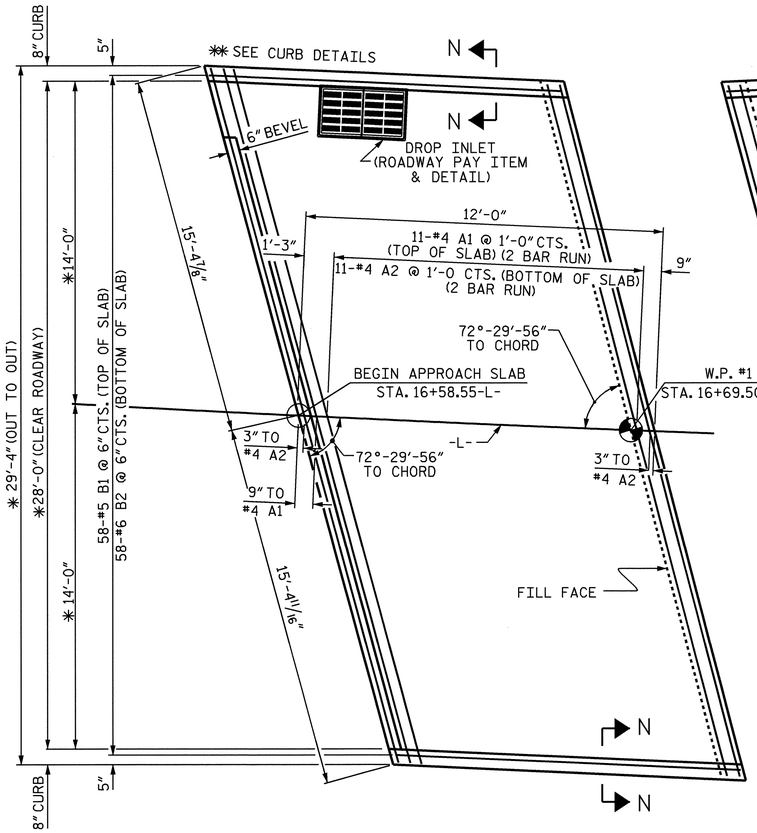
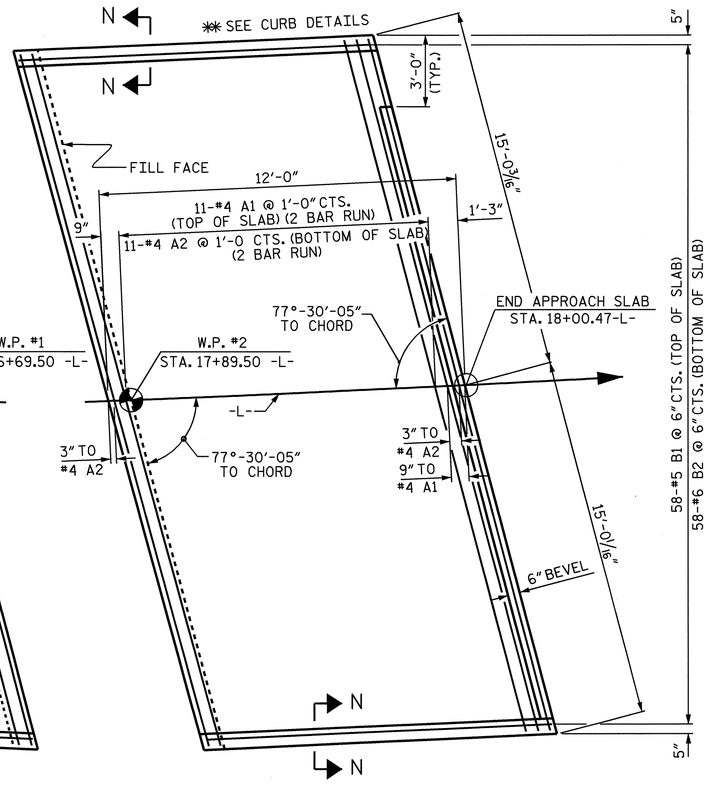
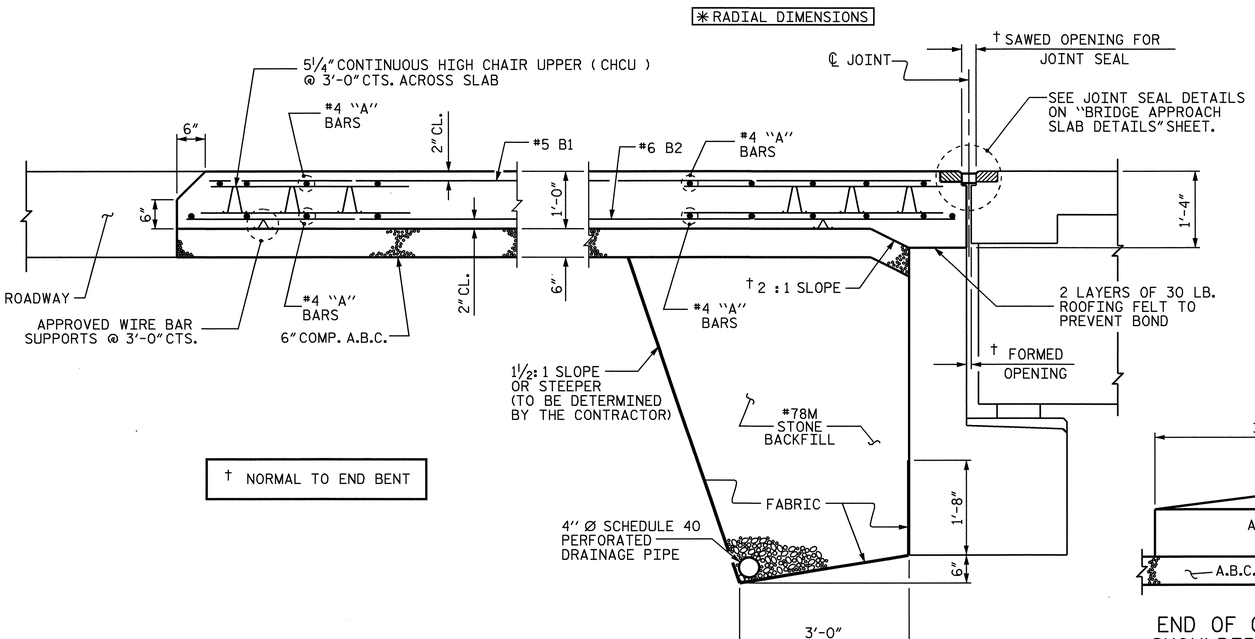


PLAN @ END BENT #1



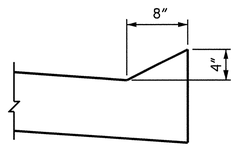
PLAN @ END BENT #2

✱ RADIAL DIMENSIONS



† NORMAL TO END BENT

SECTION THRU SLAB



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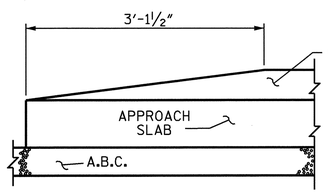
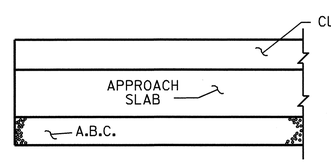


END OF CURB WITHOUT
SHOULDER BERM GUTTER



✱✱ END OF CURB WITH
SHOULDER BERM GUTTER

CURB DETAILS

NOTES

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

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

FABRIC SHALL BE TYPE 1 ENGINEERING FABRIC IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

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

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

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

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 OF 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.

ARC OFFSETS ARE NEGLIGIBLE.

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.

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

FOR LOCATION AND DETAILS OF DROP INLET STRUCTURE ON APPROACH SLAB, SEE ROADWAY PLANS. STEEL LOCATED IN APPROACH SLAB, WHICH INTERFERES WITH THE DRAINAGE STRUCTURE, MAY BE FIELD CUT OR BENT.

BILL OF MATERIAL

FOR ONE APPROACH SLAB
(2 REQ'D.)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱A1	24	#4	STR	16'-3"	261
A2	26	#4	STR	16'-2"	281
✱B1	58	#5	STR	10'-9"	650
B2	58	#6	STR	11'-8"	1016
REINFORCING STEEL				LBS.	1297
✱EPOXY COATED REINFORCING STEEL				LBS.	911
CLASS AA CONCRETE				C. Y.	13.5

SPLICE CHART

BAR	SIZE	SPLICE LENGTH
A1	#4	2'-0"
A2	#4	1'-9"

PROJECT NO. B-4523

GRANVILLE COUNTY

STATION: 17+92.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

(SUB-REGIONAL TIER)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			23

NORTH CAROLINA PROFESSIONAL SEAL 30878 ENGINEER W. KEVAN FISCHER
4/7/09

ASSEMBLED BY : R. G. EMERSON	DATE : 09/07	
CHECKED BY : K. D. LAYNE	DATE : 08/08	
DRAWN BY : EEM 3/95	REV. 7/10/01	LES/RDR
CHECKED BY : VAP 3/95	REV. 5/7/03R	RWW/JTE
	REV. 5/1/06R	KMM/GM

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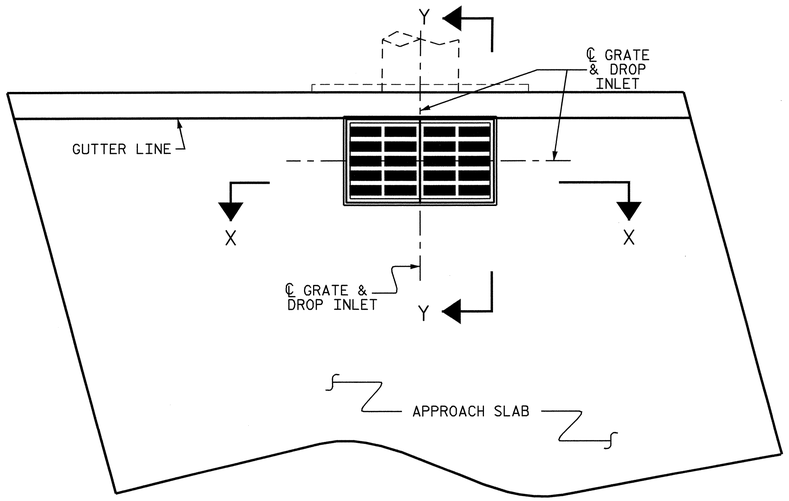
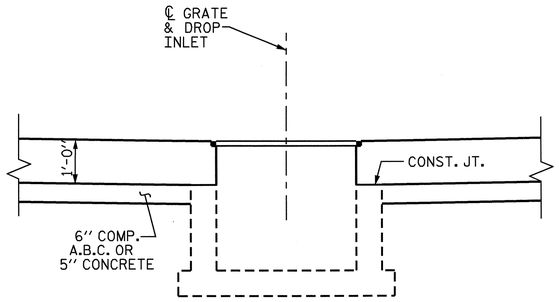
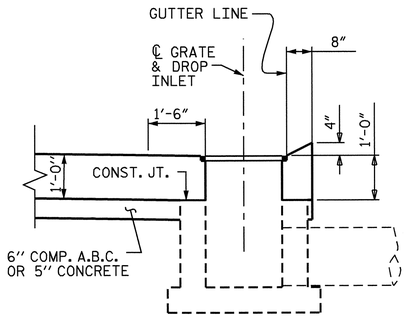
(SHT 3)



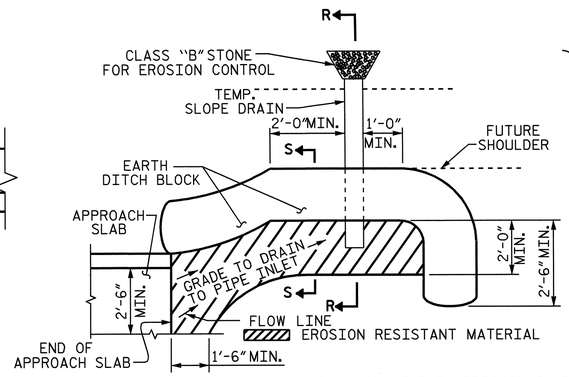
TYPICAL PART PLAN



SECTION X-X

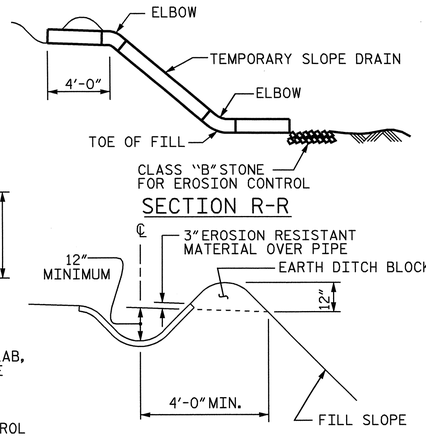


SECTION Y-Y



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.

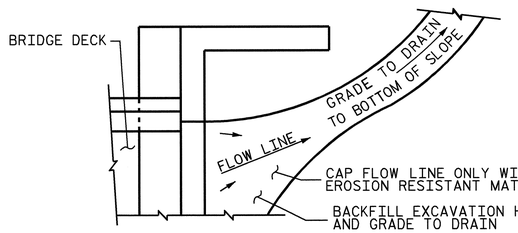
PLAN VIEW



SECTION S-S

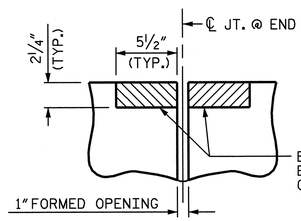
TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



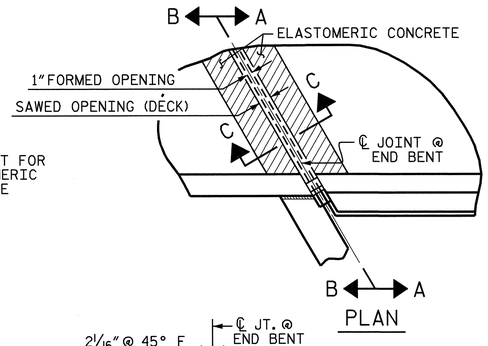
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

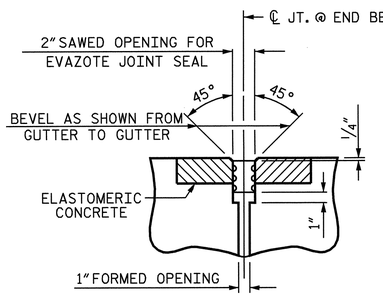


SECTION C-C

EVAZOTE JOINT SEAL
(PRE-SAWED ELASTOMERIC CONCRETE DIMENSIONS)

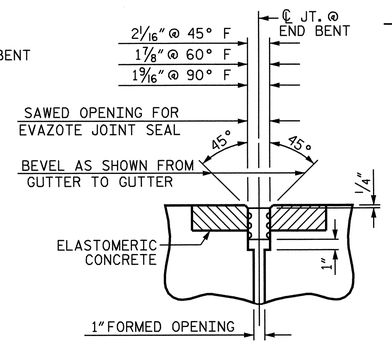


PLAN



SECTION C-C

EVAZOTE JOINT SEAL
(FIXED)
(AT END BENT #1)

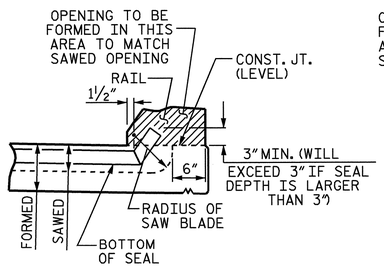


SECTION C-C

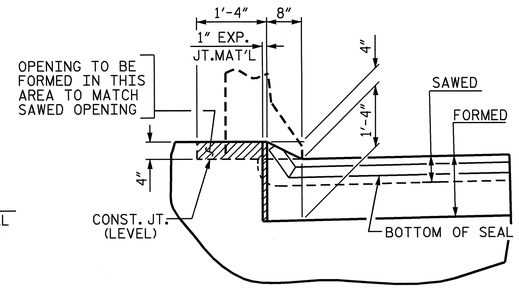
EVAZOTE JOINT SEAL
(EXPANSION)
(AT END BENT #2)

ELASTOMERIC CONCRETE	
END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
1	5.0
2	4.9
TOTAL	9.9

* BASED ON THE MINIMUM BLOCKOUT SHOWN.



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.

NORTH CAROLINA PROFESSIONAL SEAL 30878 ENGINEER W. KIRKMAN FISCHER

4/15/09

PROJECT NO. B-4523

GRANVILLE COUNTY

STATION: 17+92.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB DETAILS

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

ASSEMBLED BY : R. G. EMERSON	DATE : 09/07		
CHECKED BY : K. D. LAYNE	DATE : 08/08		
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	

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(SHT 4)

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. FINS 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

REV. 6-16-95 EEM @ RGW REV. 5-7-03 RWW @ JTE
REV. 8-16-99 RWW @ LES REV. 5-1-06 TLA @ GM

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