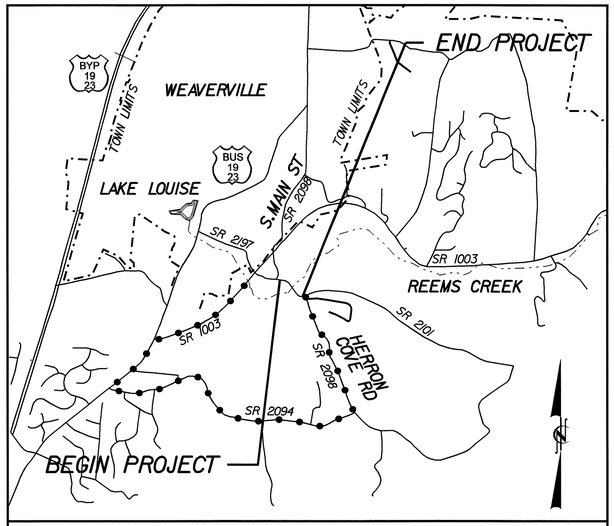
TIP PROJECT: B-4036

CONTRACT: C201850

STRUCTURE



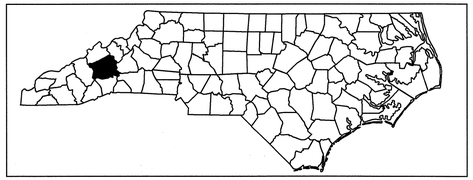
NEAREST SHIPPING POINT: ASHEVILLE ON SOUTHERN RR
APPROX. 8.5 MILES FROM PROJECT

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BUNCOMBE COUNTY

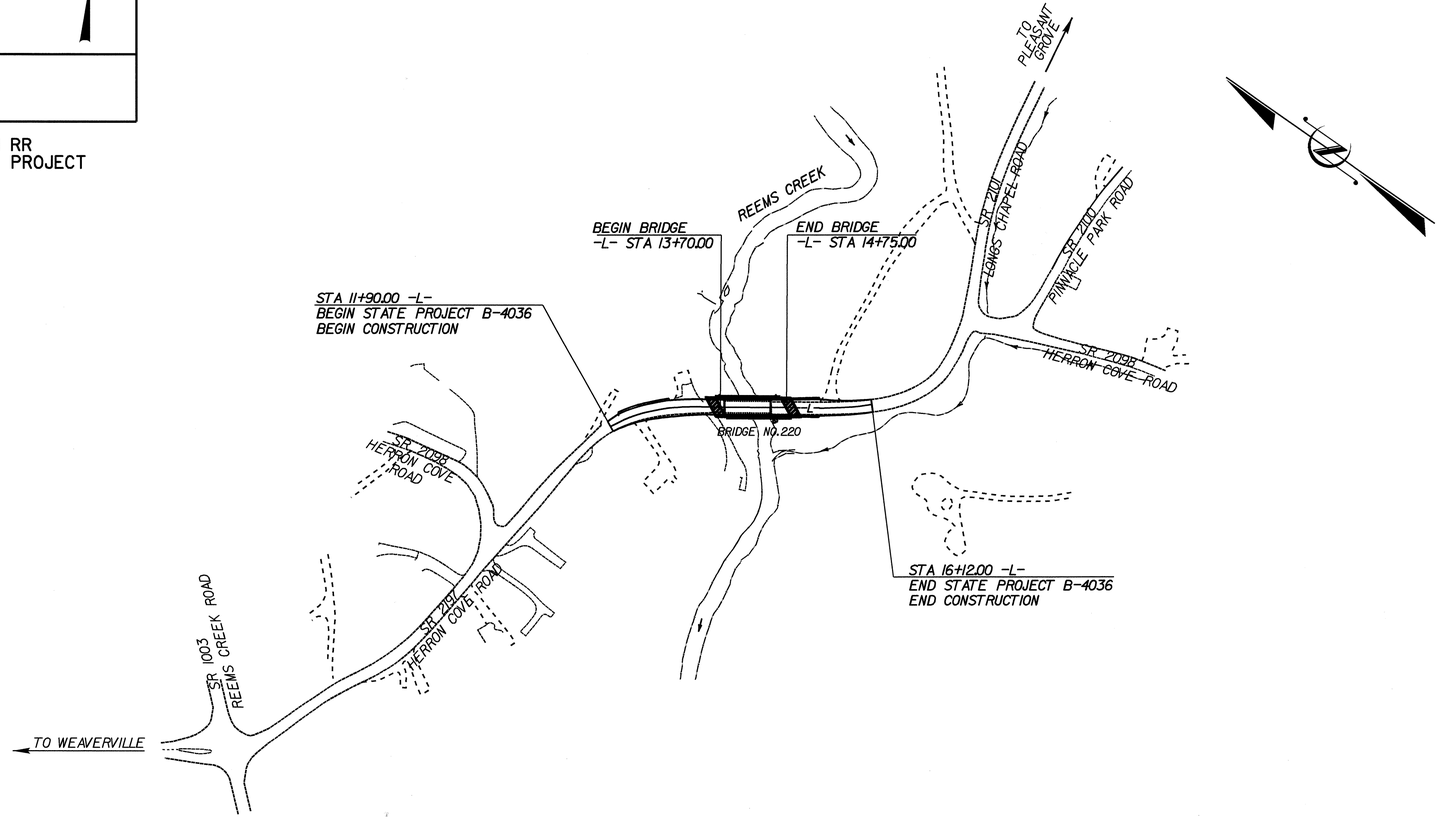
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4036		

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33402.1.1	BRZ-2098(1)	P.E.
33402.2.1	BRZ-2098(1)	R/W & UTIL.
33402.3.1	BRZ-2098(1)	CONSTRUCTION



LOCATION: BRIDGE NO. 220 OVER REEMS CREEK ON SR 2098

TYPE OF WORK: GRADING, PAVING, DRAINAGE, AND STRUCTURE



DESIGN DATA

ADT 2008 = 1,900 VPD
ADT 2030 = 3,100 VPD
DHV = 9%
D = 55%
T = 4% *
V = 25 mph

DESIGN EXCEPTION:
DESIGN SPEED

* (TTST 1% + DUAL 3%)

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-4036 = 0.060 MILE

LENGTH OF STRUCTURE TIP PROJECT B-4036 = 0.020 MILE

TOTAL LENGTH OF TIP PROJECT B-4036 = 0.080 MILE

Prepared In the Office of:
DIVISION OF HIGHWAYS
1000 BIRCH RIDGE DR. RALEIGH, N.C. 27610

2006 STANDARD SPECIFICATIONS

LETTING DATE :
DECEMBER 16, 2008

N.N. BULLOCK, P.E.
PROJECT ENGINEER

A.K. PASCHAL, P.E.
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*

15-SEP-2008 10:58
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kpaschal

F.A. PROJECT NO. : BRZ-2098(1)

13+50 14+00 14+50 15+00

2050 2040 2030 2020 2010

(-)9.0609% (-)3.0000%

PI = 13+05.00
EL = 2036.15'
VC = 230'

GRADE DATA

FIX.

FILL FACE @ END BENT 1
STA. 13+70.00 -L-
GRADE PT. EL. 2034.529

BEGIN FRONT SLOPE
STA. 13+60.55 -L-
GRADE PT. EL. 2034.949

1'-0" MIN. EARTH BERM (TYP.)

EL. 2032.0±

APPROXIMATE NATURAL GROUND

EL. 2033.0±

1'-6" (TYP.)

EL. 2026.0±

HP 14 x 73 STEEL PILES (TYP.)

CLASS II RIP RAP 1½:1 SLOPE NORMAL TO CAP (TYP.)

EXISTING SUBSTRUCTURE (TYP.)

HIGH WATER EL. 2029.0

NORMAL WATER SURFACE EL. 2016.0 (NOVEMBER 30, 2005)

EL. 2017.0±

EL. 2016.0±

EL. 2014.0±

END BENT 1

FIX.

FILL FACE @ END BENT 2
STA. 14+75.00 -L-
GRADE PT. EL. 2031.050

BEGIN FRONT SLOPE
STA. 14+82.88 -L-
GRADE PT. EL. 2030.813

1'-6" (TYP.)

EL. 2031.0±

EL. 2029.0±

EL. 2030.0±

EL. 2018.0±

EL. 2016.0±

END BENT 2

(-)3.0000% (+)0.50000%

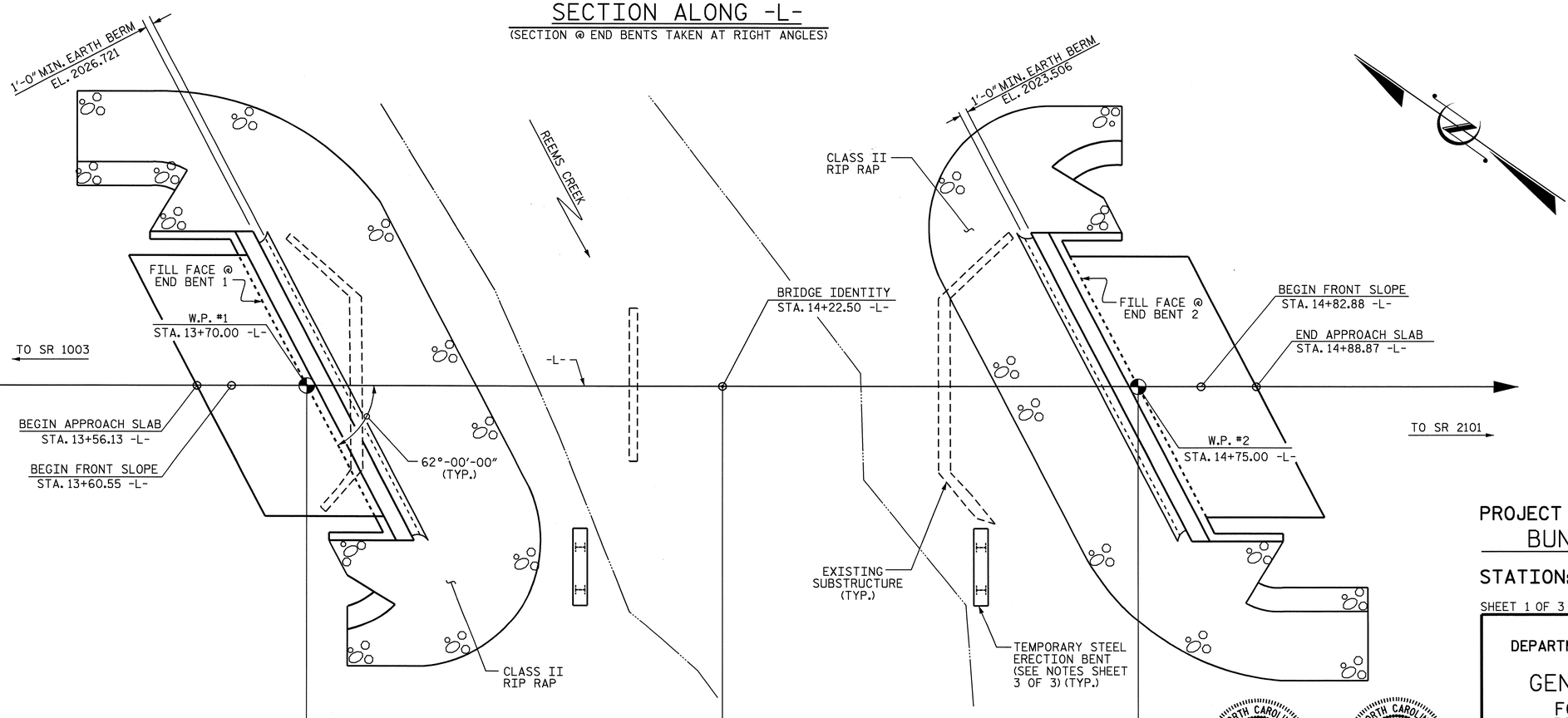
PI = 15+62.00
EL = 2028.44'
VC = 100'

GRADE DATA

UNCLASSIFIED STRUCTURE EXCAVATION (SEE NOTES)

SECTION ALONG -L-

(SECTION @ END BENTS TAKEN AT RIGHT ANGLES)



PLAN

(PILES NOT SHOWN IN PLAN FOR CLARITY)

NORTH CAROLINA PROFESSIONAL SEAL 12929 ENGINEER NORMAN NOBLETT BUCKNER, JR.
10/29/08

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER A. KEITH PASCHAL
10/29/08

PROJECT NO. B-4036

BUNCOMBE COUNTY

STATION: 14+22.50 -L-

SHEET 1 OF 3 REPLACES BRIDGE No. 220

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER
REEMS CREEK ON
SR 2098 BETWEEN
SR 1003 AND SR 2101

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

DRAWN BY : J. G. KHARVA DATE : 01/17/07
CHECKED BY : A. K. PASCHAL DATE : 03/12/08

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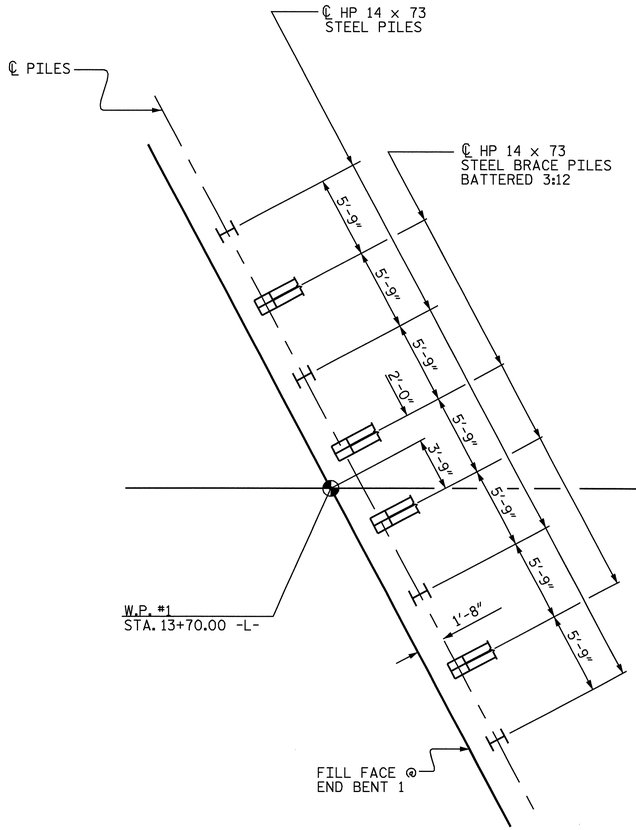
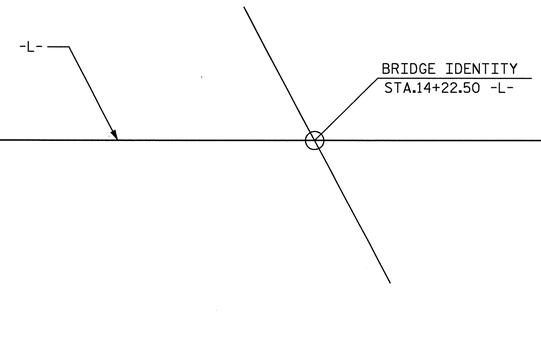
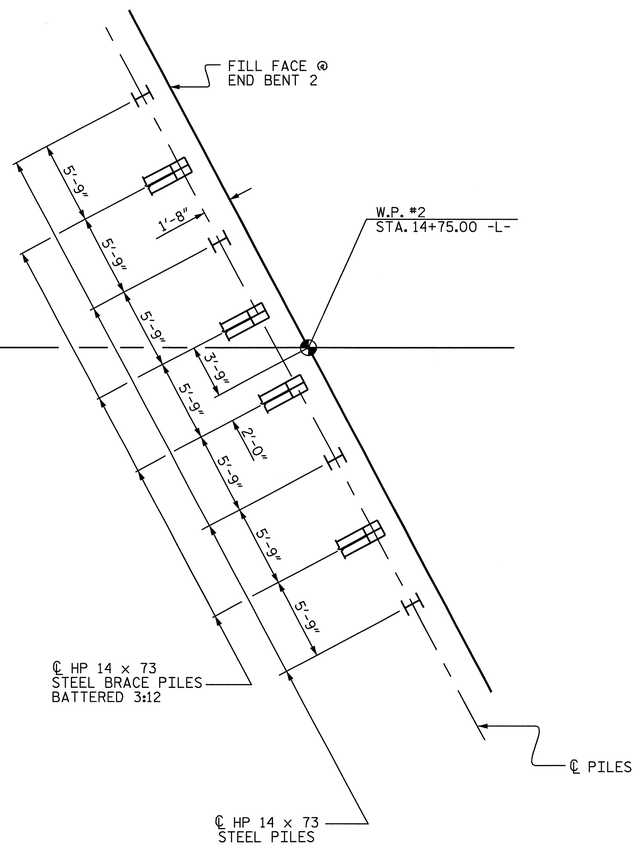
kpaschal



END BENT 1





END BENT 2

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE

FOUNDATION NOTES :

THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENT 1 AND 2 IS 90 TONS PER PILE.

DRIVE PILES AT END BENT 1 AND 2 TO A REQUIRED BEARING CAPACITY OF 180 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER A. KEITH PASCHAL

10/29/08

PROJECT NO. B-4036

BUNCOMBE COUNTY

STATION: 14+22.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE OVER
REEMS CREEK ON
SR 2098 BETWEEN
SR 1003 AND SR 2101

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

DRAWN BY : J. G. KHARVA DATE : 2/22/08
CHECKED BY : A. K. PASCHAL DATE : 3/12/08

15-SEP-2008 10:58
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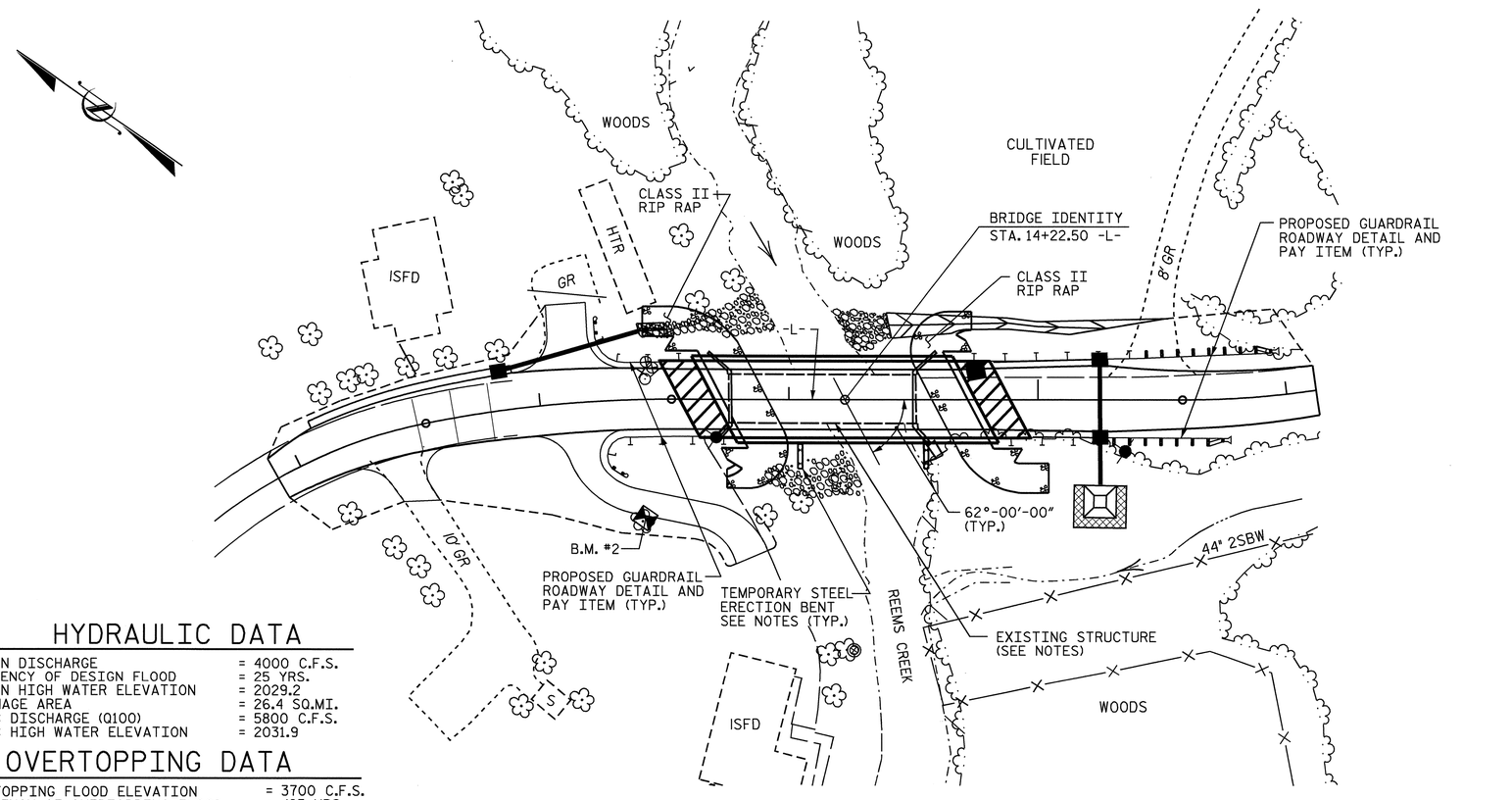
kpaschal

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	HP 14 X 73 STEEL PILES		CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" x 3'-3" PRESTRESSED CONCRETE BOX BEAMS	
	LUMP SUM	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	No.	LIN. FT.
SUPERSTRUCTURE				LUMP SUM				204.83			LUMP SUM	11	1126.58
END BENT 1		LUMP SUM	23.9		3502	8	120		178	198			
END BENT 2		LUMP SUM	23.6		3451	8	120		152	169			
TOTAL	LUMP SUM	LUMP SUM	47.5	LUMP SUM	6953	16	240	204.83	330	367	LUMP SUM	11	1126.58

BENCH MARK #2 : CHISLED SQUARE IN NE CORNER OF CONCRETE PAD 47.64' RT. STA. 13+41.24 ELEV. 2035.78



HYDRAULIC DATA

DESIGN DISCHARGE	= 4000 C.F.S.
FREQUENCY OF DESIGN FLOOD	= 25 YRS.
DESIGN HIGH WATER ELEVATION	= 2029.2
DRAINAGE AREA	= 26.4 SQ.MI.
BASIC DISCHARGE (Q100)	= 5800 C.F.S.
BASIC HIGH WATER ELEVATION	= 2031.9

OVERTOPPING DATA

OVERTOPPING FLOOD ELEVATION	= 3700 C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	= <25 YRS.
OVERTOPPING FLOOD ELEVATION	= 2028.65 FT.

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

NOTES

ASSUMED LIVE LOAD = HS 20 OR ALTERNATE LOADING, EXCEPT THAT THE BOX BEAMS 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.

THE EXISTING STRUCTURE CONSISTING OF TWO (1 @ 35'-10" & 1 @ 40'-9") TIMBER DECK SPANS ON STEEL I-BEAMS WITH A CLEAR ROADWAY WIDTH OF 19'-1" SUPPORTED BY REINFORCED CONCRETE ABUTMENTS AND TIMBER CAP BENT ON TIMBER PILES AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED.

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.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 14+22.50 -L-."

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. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.

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 B.

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.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

TEMPORARY STEEL ERECTION BENTS HAVE BEEN LOCATED ON THE STREAM BANKS SHOULD THE CONTRACTOR DETERMINE THEY ARE NEEDED FOR PLACEMENT OF THE BOX BEAMS. THE TEMPORARY STEEL ERECTION BENTS SHALL COMPLY WITH THE STANDARD SPECIFICATIONS. ANY COST ASSOCIATED WITH THE TEMPORARY STEEL ERECTION BENTS SHALL BE INCLUDED IN THE VARIOUS STRUCTURE PAY ITEMS.

PROJECT NO. B-4036

BUNCOMBE COUNTY

STATION: 14+22.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE OVER REEMS CREEK ON SR 2098 BETWEEN SR 1003 AND SR 2101

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER A. KEITH PASCHAL
10/29/08

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

DRAWN BY : J. G. KHARVA DATE : 1/17/07
CHECKED BY : A. K. PASCHAL DATE : 3/12/08

15-SEP-2008 10:58
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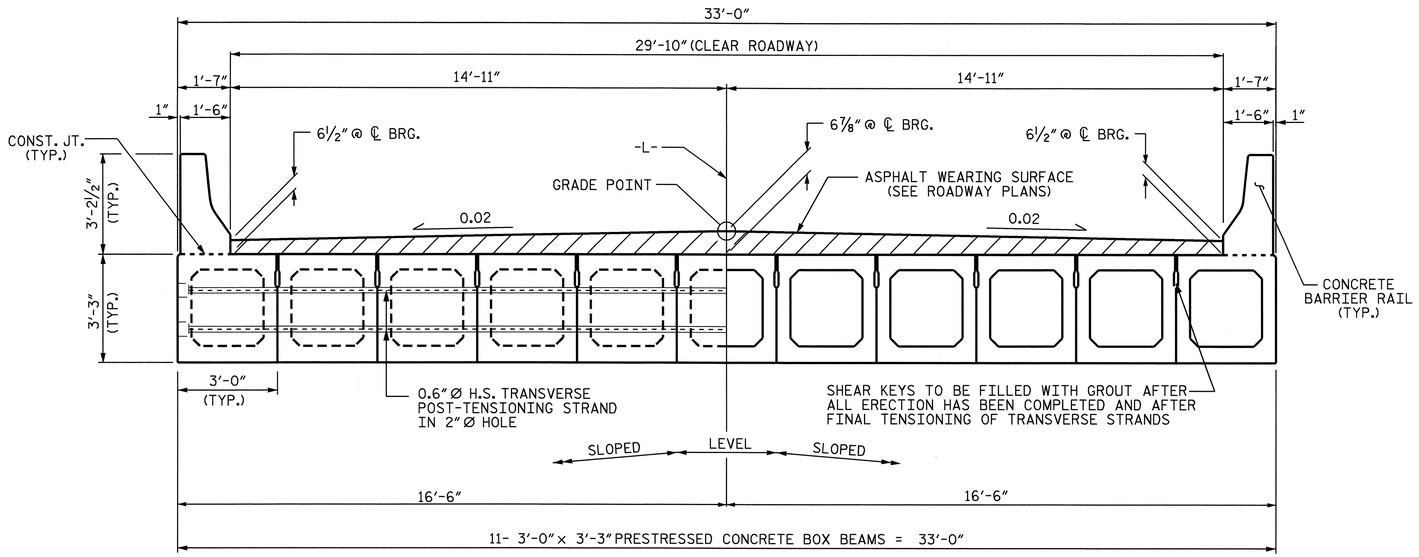
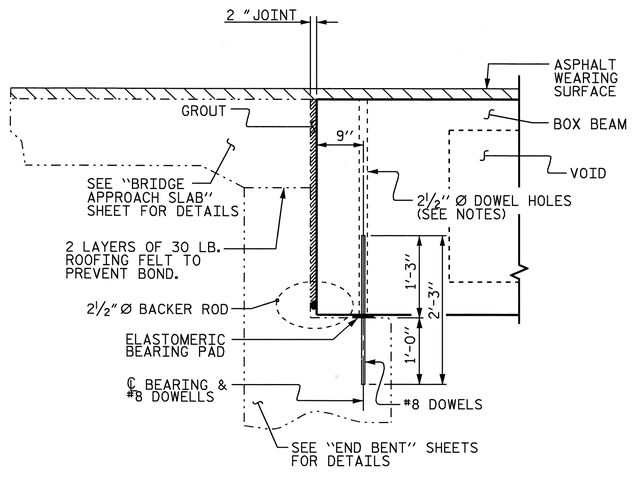


HALF SECTION @ DIAPHRAGMS

HALF SECTION @ VOIDS

TYPICAL SECTION

FIXED END



SECTION AT END BENT

(END BENT 1 SHOWN, END BENT 2 SIMILAR)

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL CAST WITH THE BOX BEAM SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BOX BEAMS.

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

THE 2½" Ø DOWEL HOLES AT FIXED ENDS OF BOX BEAM SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE 2½" Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6000 PSI.

ALL REINFORCING STEEL IN BARRIER RAIL SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE BOX BEAM UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.

VERTICAL GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A VERTICAL 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.

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

THE LOCATION OF THE VOID DRAINS MAY BE SHIFTED SLIGHTLY WHERE NECESSARY TO CLEAR PRESTRESSING STRANDS OR TRANSVERSE REINFORCING STEEL.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

ASSEMBLED BY : J. G. KHARVA	DATE : 7/21/06		
CHECKED BY : A.K. PATEL	DATE : 7/28/06		
DRAWN BY : TLA 5/05	ADDED 7/11/05R		
CHECKED BY : GM 6/05	REV. 5/1/06R	KMM/GM	

PROJECT NO. B-4036

BUNCOMBE COUNTY

STATION: 14+22.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

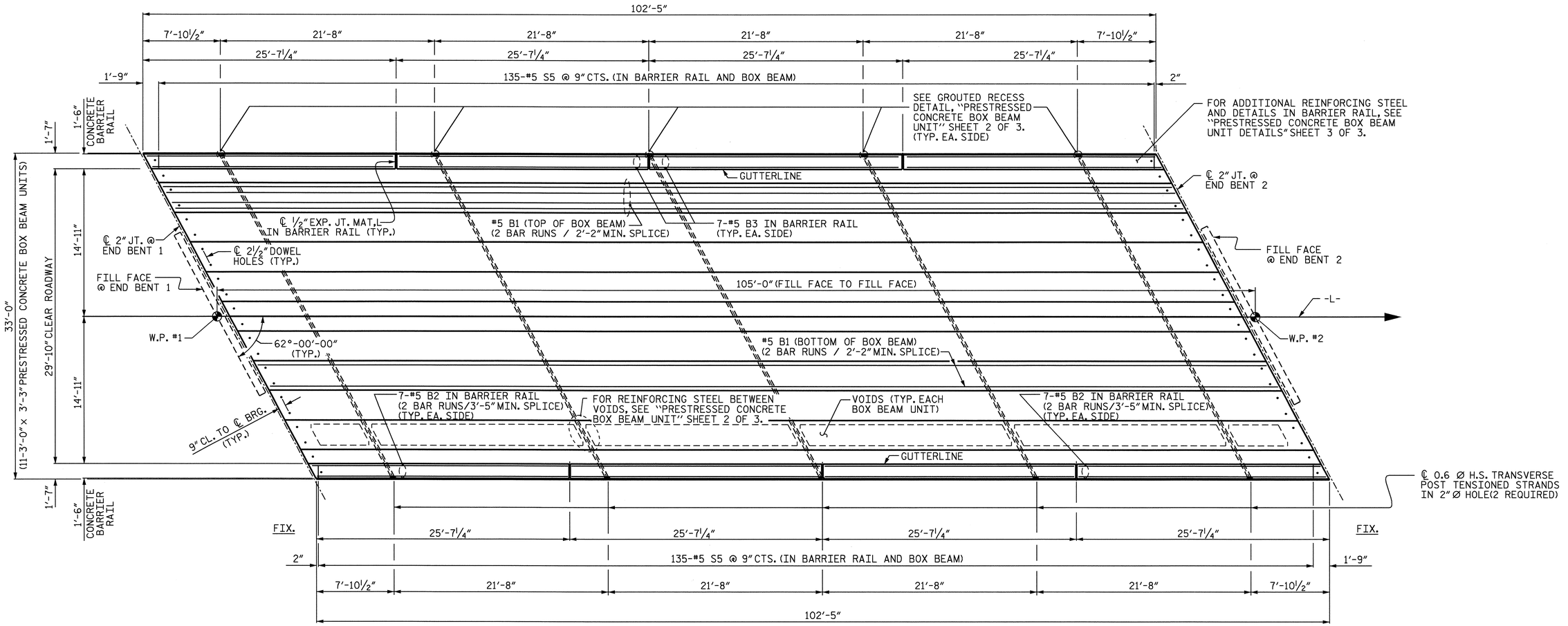
STANDARD
3'-0" X 3'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER A. KEITH PASCHAL

10/29/08

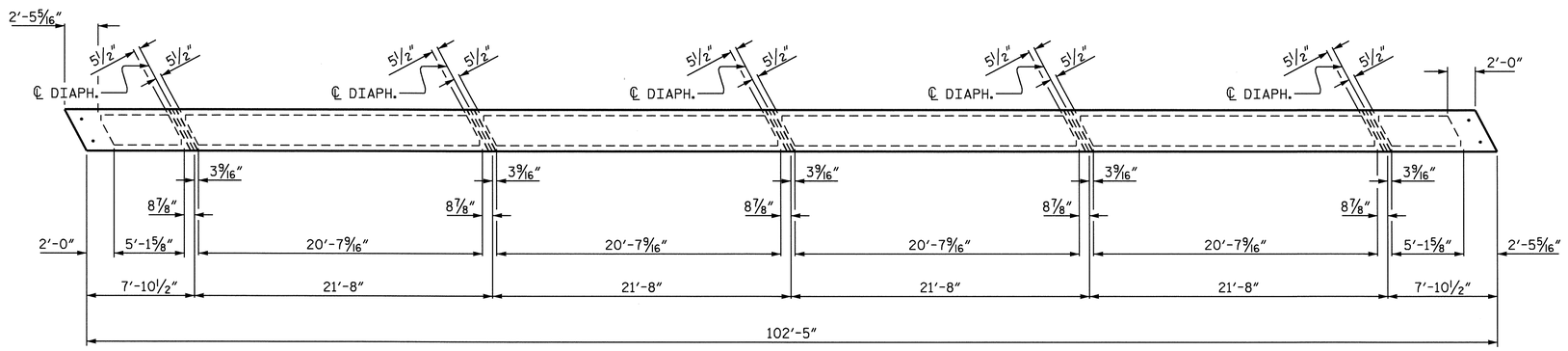
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			18

STD. NO. PCBB1



PLAN OF SPAN

FOR ADDITIONAL REINFORCING STEEL IN THE BOX BEAM UNITS, SEE "3'-0" x 3'-3" PRESTRESSED CONCRETE BOX BEAM" SHEETS.



PLAN OF BOX BEAM UNIT

(SHOWING LOCATION OF VOIDS AND DIAPHRAGMS)

PROJECT NO. B-4036

BUNCOMBE COUNTY

STATION: 14+22.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTURCTURE

PLAN OF SPAN

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER A. KEITH PASCHAL

10/29/08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			18

DRAWN BY : J. G. KHARVA DATE : 7/21/06
CHECKED BY : A.K. PATEL DATE : 8/03/06

15-SEP-2008 10:57
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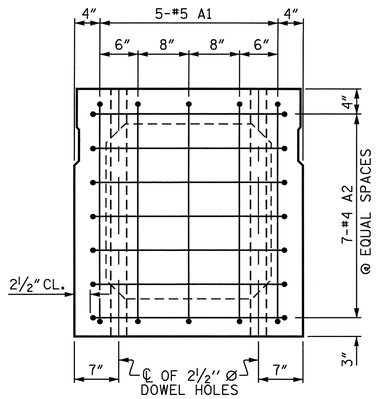
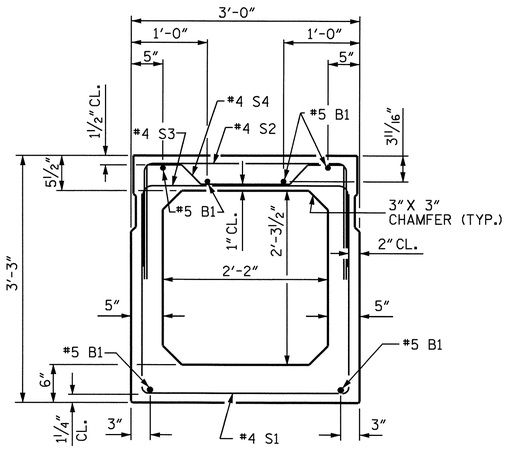


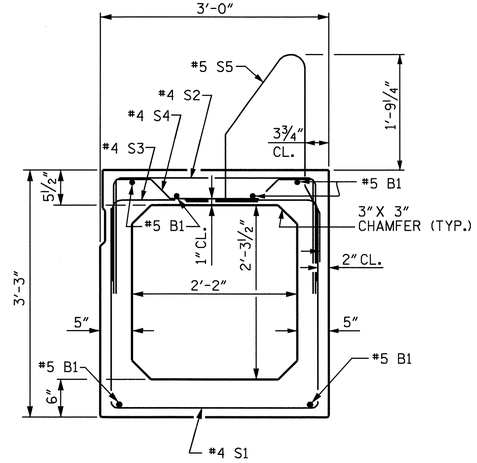
END ELEVATION

SHOWING PLACEMENT OF #5 & #4 "A" BARS AND LOCATION OF DOWEL HOLES. (INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION. STRAND LAYOUT NOT SHOWN.)



INTERIOR BOX BEAM SECTION

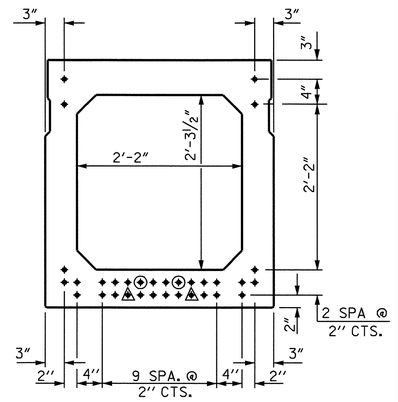
(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

0.6" Ø LOW RELAXATION STRAND LAYOUT



TYPICAL STRAND LOCATION

(32 STRANDS REQUIRED)

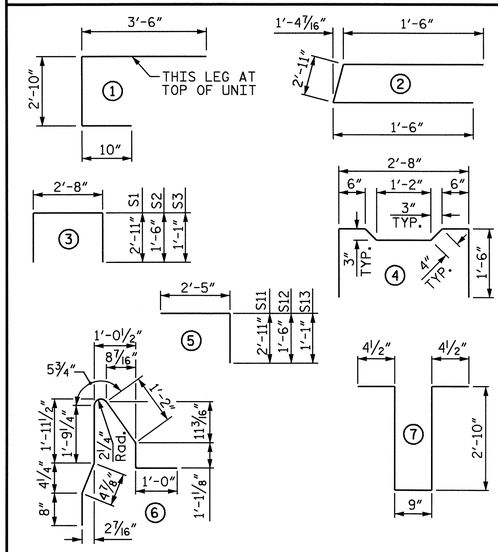
(INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION)

DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ◬ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER
- ◉ STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER

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

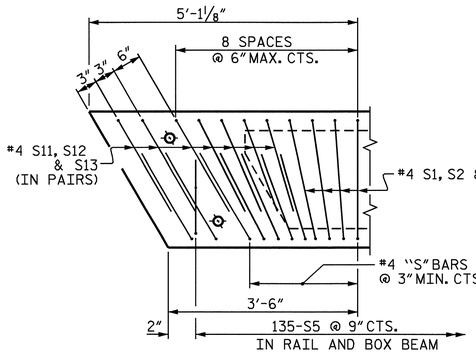
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

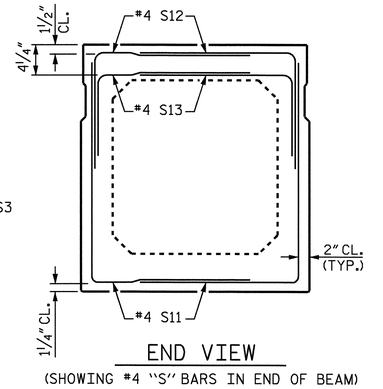
BILL OF MATERIAL FOR ONE BOX BEAM SECTION

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
A1	10	#5	1	7'-2"	75	7'-2"	75
A2	44	#4	2	5'-11"	174	5'-11"	174
B1	12	#5	STR	52'-2"	653	52'-2"	653
K1	15	#4	7	7'-2"	72	7'-2"	72
K2	10	#4	STR	2'-11"	19	2'-11"	19
S1	71	#4	3	8'-6"	403	8'-6"	403
S2	71	#4	3	5'-8"	269	5'-8"	269
S3	133	#4	3	4'-10"	429	4'-10"	429
S4	62	#4	4	5'-10"	242	5'-10"	242
S11	28	#4	5	5'-4"	100	5'-4"	100
S12	28	#4	5	3'-11"	73	3'-11"	73
S13	28	#4	5	3'-6"	65	3'-6"	65
✳ S5	135	#5	6	6'-7"	927	--	--
REINFORCING STEEL					2574 LBS.		2574 LBS.
✳EPOXY COATED REINF. STEEL					927 LBS.		
8000 P.S.I. CONCRETE					20.2 CU. YDS.		20.0 CU. YDS.
0.6" Ø L.R. STRANDS					No. 32		No. 32



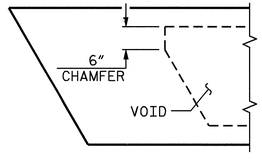
DETAIL "B"

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS. "B" BARS AND "A" BARS NOT SHOWN.



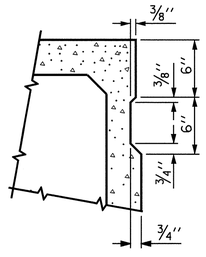
END VIEW

(SHOWING #4 "S" BARS IN END OF BEAM)



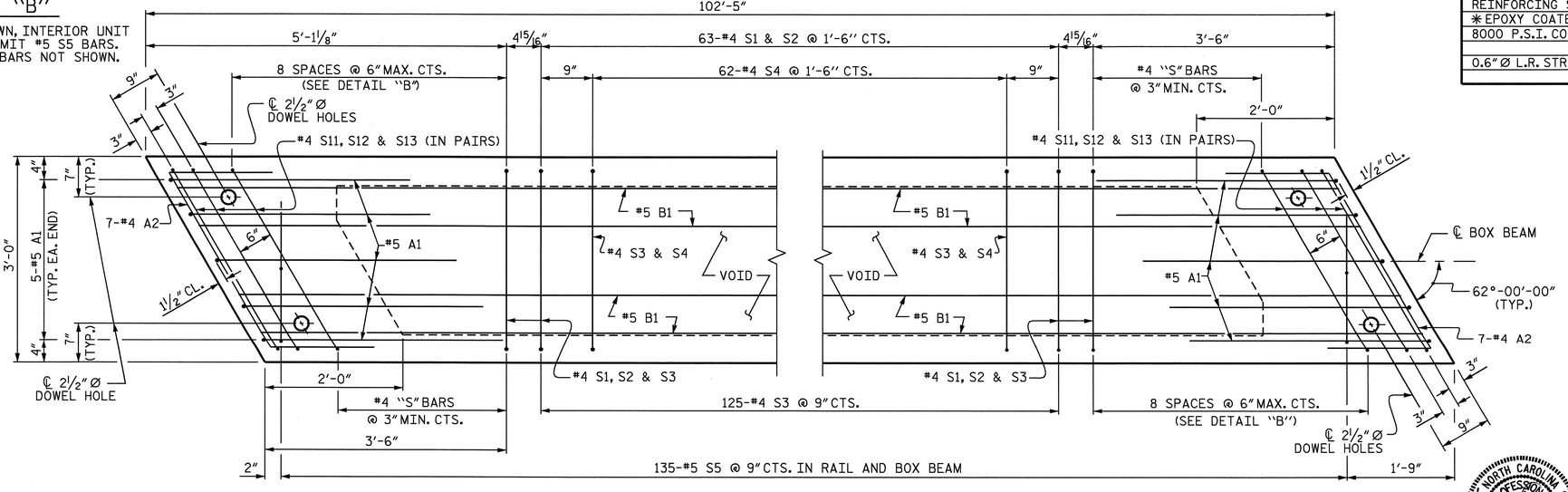
CHAMFER DETAIL

SHOWING 6" VOID CHAMFER



SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR BOX BEAMS.



PLAN OF BOX BEAM

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS.
FOR LOCATION OF DIAPHRAGMS, SEE PLAN OF SPANS.
FOR REINFORCING STEEL IN DIAPHRAGMS, SEE DIAPHRAGM DETAILS.

ASSEMBLED BY : J.B. WILSON	DATE : 7/21/06
CHECKED BY : A.K. PATEL	DATE : 8/03/06
DRAWN BY : TLA 5/05	ADDED 7/11/05
CHECKED BY : GM 6/05	REV. 5/1/06 TLA/GM

PROJECT NO. B-4036

BUNCOMBE COUNTY

STATION: 14+22.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

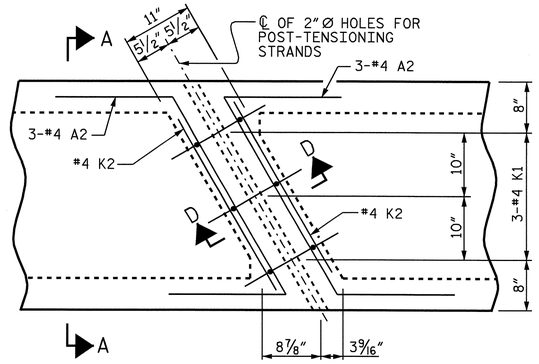
STANDARD
3'-0" X 3'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			18

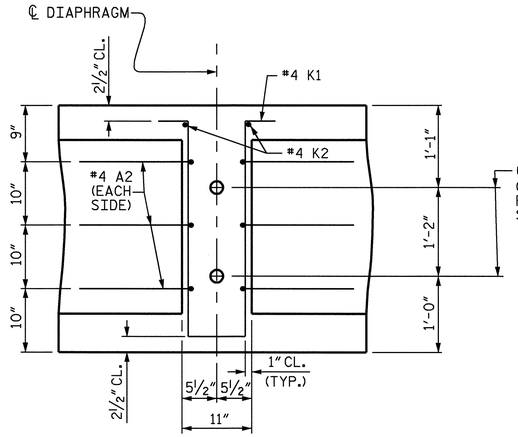
NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER A. KEITH PASCHAL

10/29/08

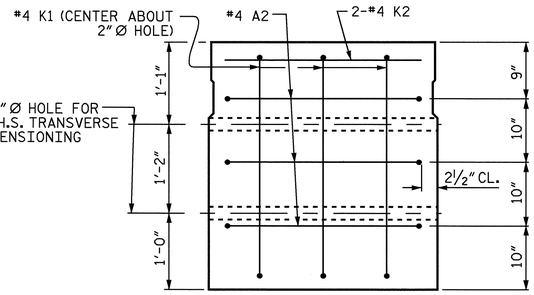
STD. NO. PCBB6



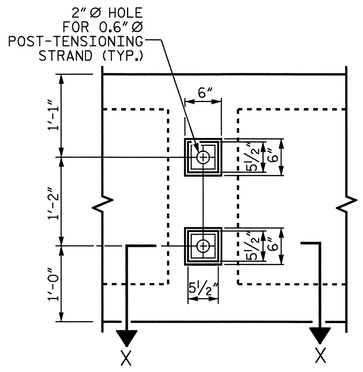
PLAN



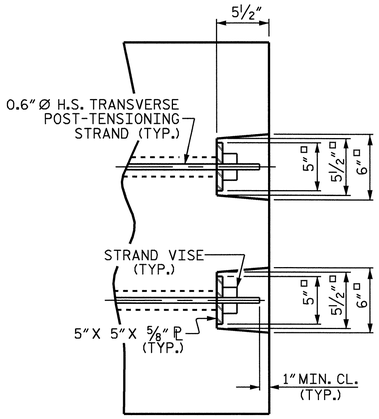
SECTION D-D



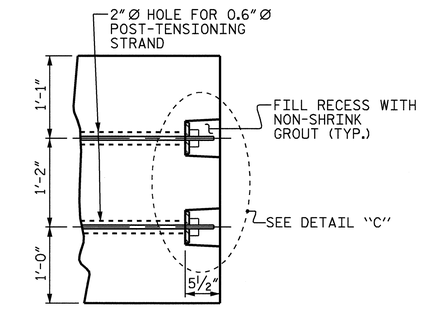
SECTION A-A
VOIDS NOT SHOWN



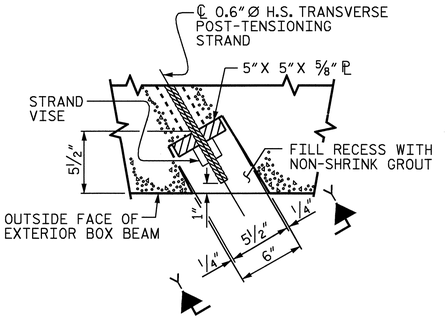
VIEW Y-Y
SHOWING ELEVATION VIEW OF GROUTED RECESS



DETAIL "C"



PART SECTION AT RECESS

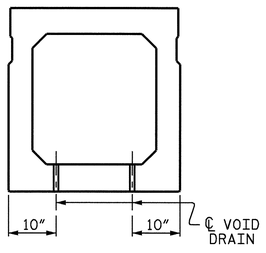


SECTION X-X
SHOWING PLAN VIEW OF GROUTED RECESS

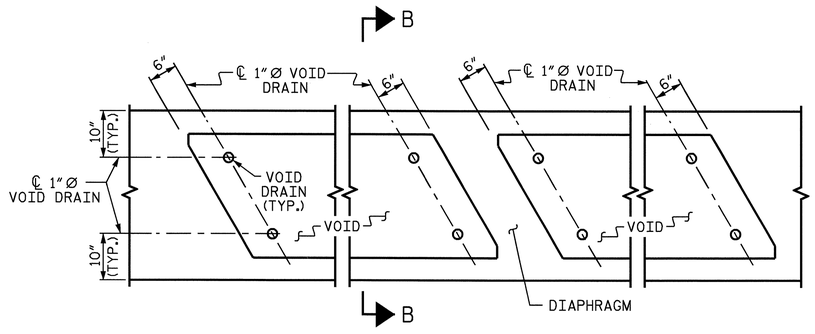
GROUTED RECESS DETAIL AT END OF POST-TENSIONED STRANDS OF EXTERIOR BOX BEAM

DOUBLE DIAPHRAGM DETAILS

#4 "S" BARS NOT SHOWN. #4 "S" BARS MAY BE SHIFTED SLIGHTLY TO CLEAR 2" Ø HOLE.



SECTION B-B



PART PLAN

VOID DRAIN DETAILS

(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)

DEAD LOAD DEFLECTION AND CAMBER	3'-0" x 3'-3"
	0.6"Ø L.R. STRAND
CAMBER (BEAM ALONE IN PLACE)	↑ 4"
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD ✻✻	↓ 1¼"
FINAL CAMBER	↑ 2¾"

✻✻ INCLUDES FUTURE ASPHALT WEARING SURFACE

PROJECT NO. B-4036
BUNCOMBE COUNTY
STATION: 14+22.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

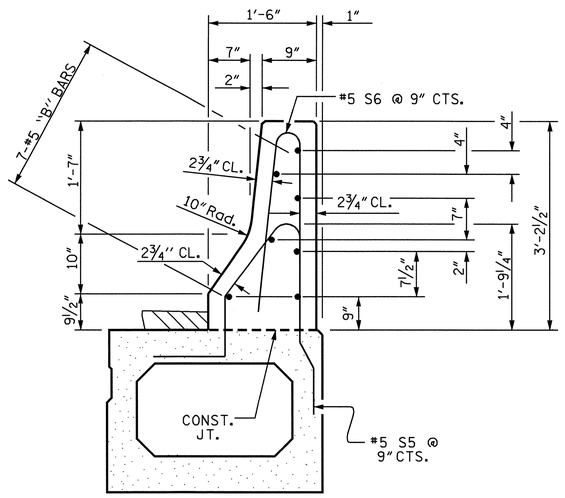
3'-0" X 3'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			18

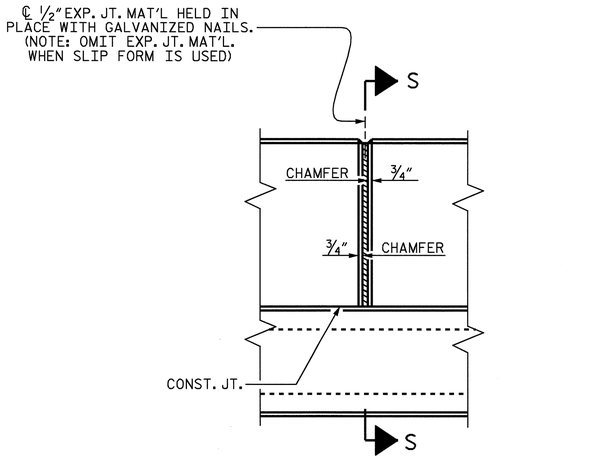
NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER A. KEITH PASCHAL
10/29/08

ASSEMBLED BY : J.B. WILSON	DATE : 7/21/06
CHECKED BY : A.K. PATEL	DATE : 8/01/06
DRAWN BY : TLA 5/05	ADDED 7/11/05
CHECKED BY : GM 6/05	REV. 5/1/06 TLA/GM

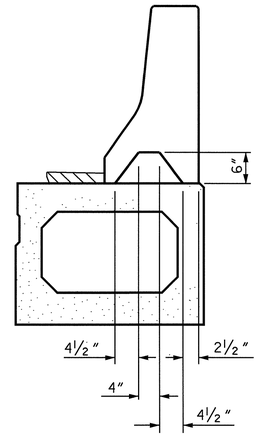
STD. NO. PCBB7



SECTION THRU RAIL

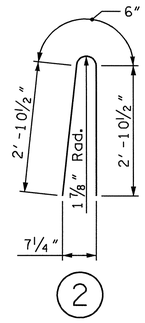


ELEVATION AT EXPANSION JOINTS



SECTION S-S

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

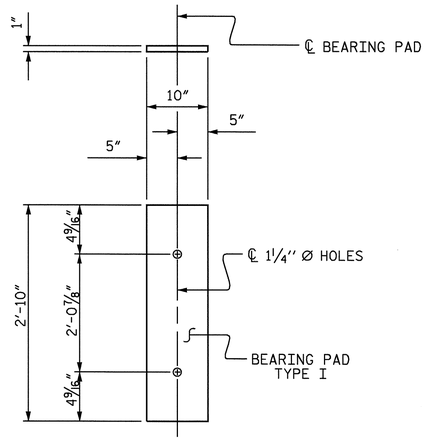


BAR TYPE

BAR DIMENSIONS ARE OUT TO OUT

BARRIER RAIL DETAILS

BILL OF MATERIAL FOR CONCRETE BARRIER RAIL					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
✳B2	56	#5	STR	14'-9"	862
✳B3	28	#5	STR	25'-2"	735
✳S6	270	#5	2	6'-3"	1760
✳EPOXY COATED REINFORCING STEEL LBS. 3357					
CLASS AA CONCRETE CU.YDS. 26.7					
TOTAL LIN. FT. OF CONCRETE BARRIER RAIL 204.83					



FIXED END

(TYPE I - 22 REQ'D)

BOX BEAM UNITS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
TOTAL	11	102'-5"	1126'-7"

ELASTOMERIC BEARING DETAILS

(60 DUROMETER HARDNESS)

PROJECT NO. B-4036

BUNCOMBE COUNTY

STATION: 14+22.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
3'-0" X 3'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT
DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER K. KEITH PASCHAL
10/29/08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			18

ASSEMBLED BY : J. G. KHARVA	DATE : 7/21/06
CHECKED BY : A.K. PATEL	DATE : 8/03/06
DRAWN BY : TLA 5/05	ADDED 7/11/05R
CHECKED BY : GM 6/05	REV. 5/1/06 TLA/GM

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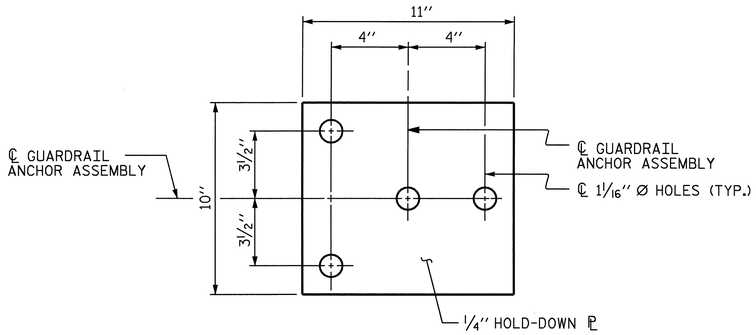
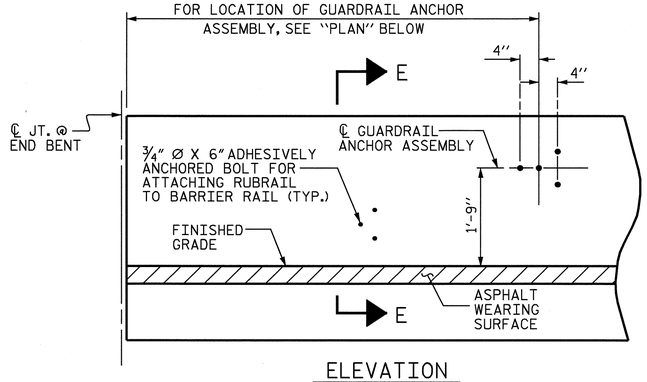
kpaschal

(SHT 8C) STD. NO. PCBB8

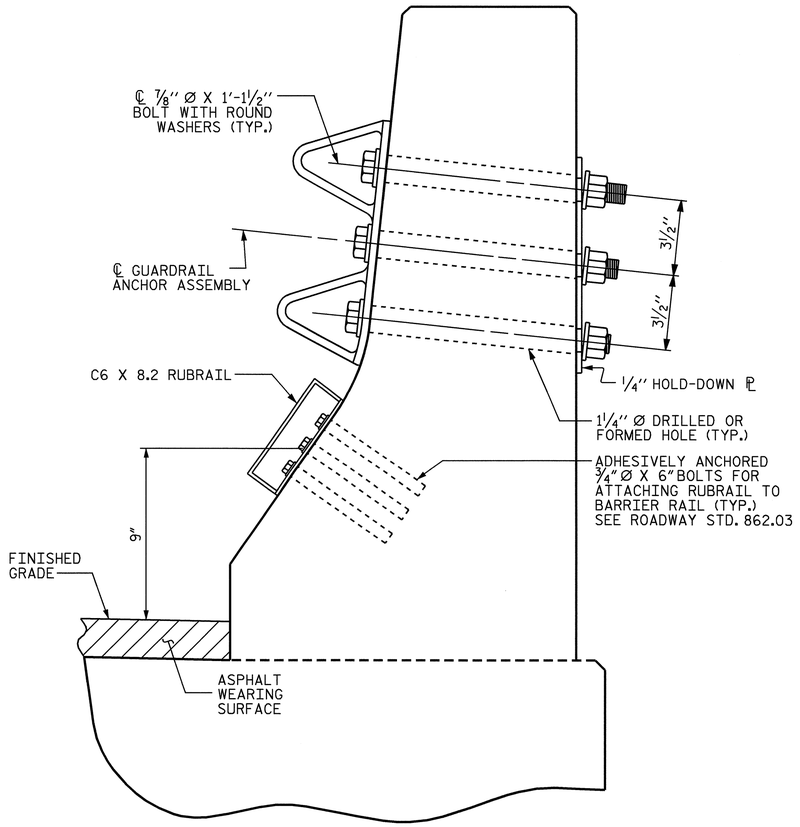


PLAN



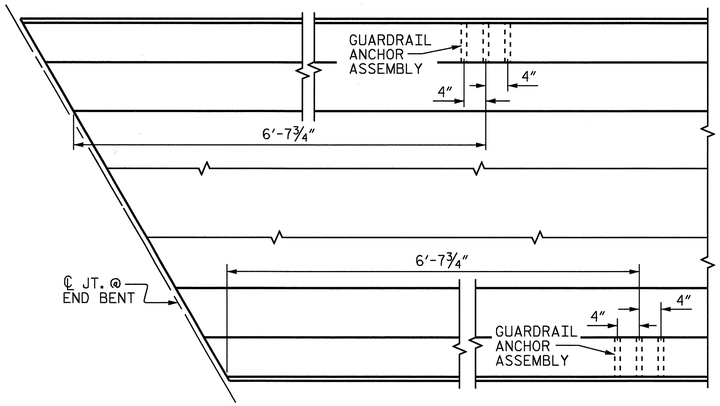
ELEVATION

FOR LOCATION OF RUBRAIL, SEE ROADWAY STD. 862.03



SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR.

NOTES

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

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

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

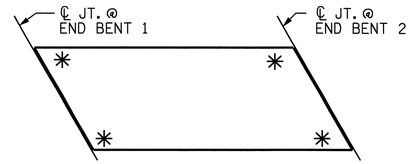
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

THE 1 1/4'' Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

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



SKETCH SHOWING POINTS OF ATTACHMENTS

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-4036

BUNCOMBE COUNTY

STATION: 14+22.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

GUARDRAIL ANCHORAGE FOR BARRIER RAIL

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER A. KEITH PASCHAL

10/29/08

ASSEMBLED BY : J. G. KHARVA	DATE : 03/1/08
CHECKED BY : A. K. PASCHAL	DATE : 03/10/08
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-9
1			3			TOTAL SHEETS
2			4			18

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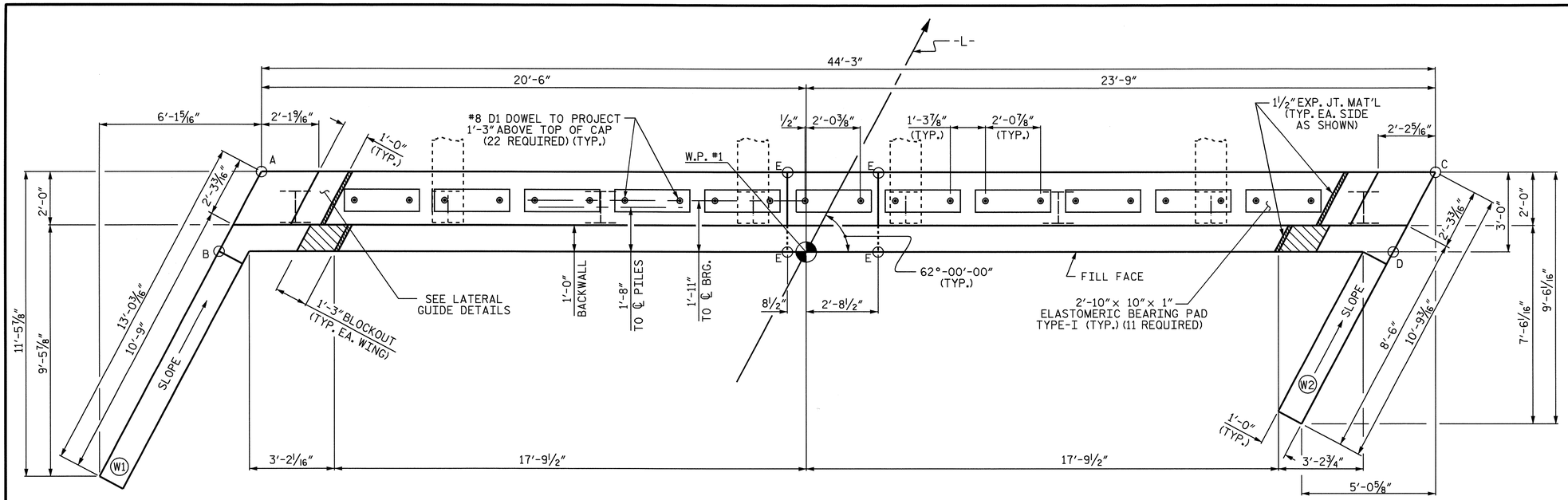
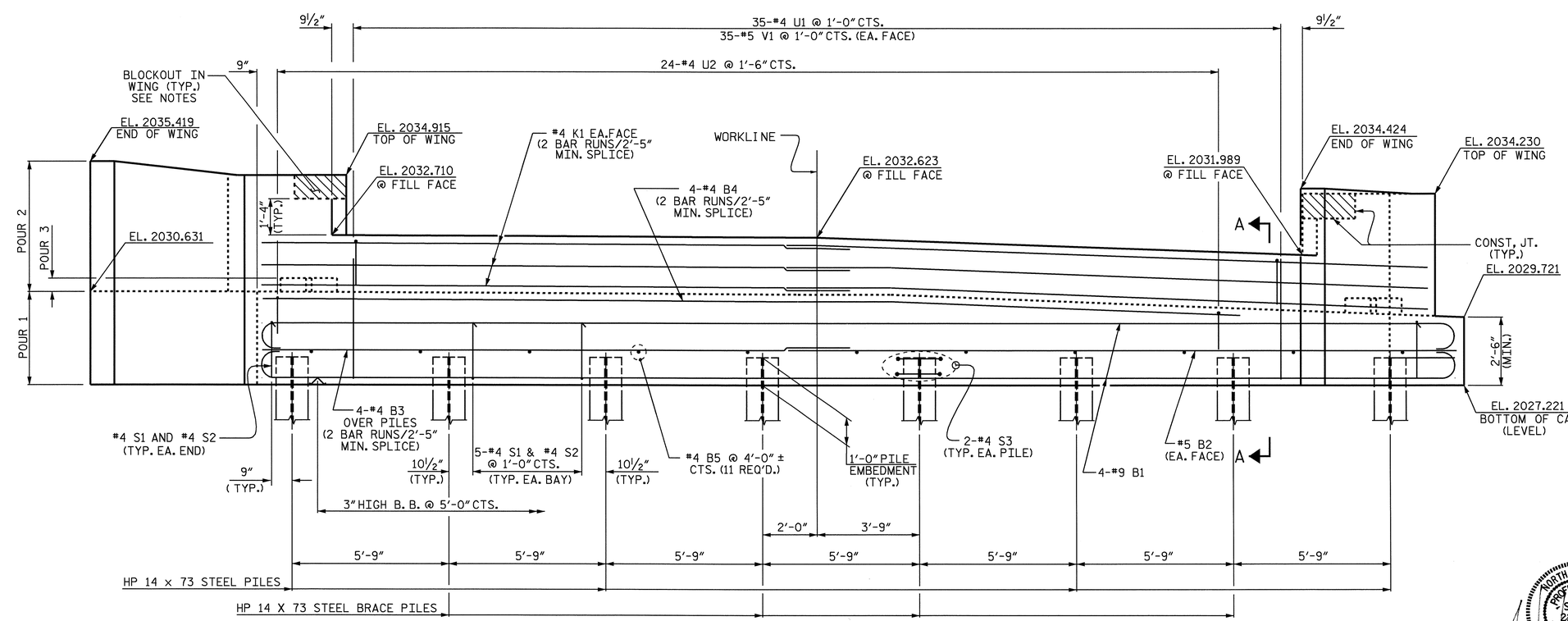
Kpaschal

(SHT 6) STD. NO. GRA2



PLAN



ELEVATION

NOTES

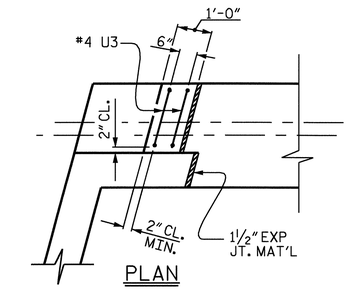
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OFTHE 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.

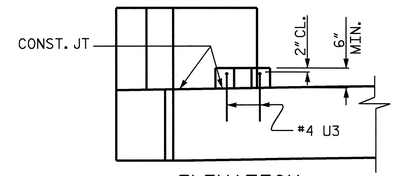
THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER BOX BEAM UNITS ARE IN PLACE.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

TOP OF CAP ELEVATIONS	
A	EL. 2030.625
B	EL. 2030.631
C	EL. 2029.721
D	EL. 2029.778
E	EL. 2030.530



PLAN



ELEVATION

LATERAL GUIDE DETAILS

PROJECT NO. B-4036

BUNCOMBE COUNTY

STATION: 14+22.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER K. KEITH PASCHAL

10/29/08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			18

DRAWN BY : J. G. KHARVA DATE : 03/04/08
CHECKED BY : J. D. HAWK DATE : 03/24/08

15-SEP-2008 10:56
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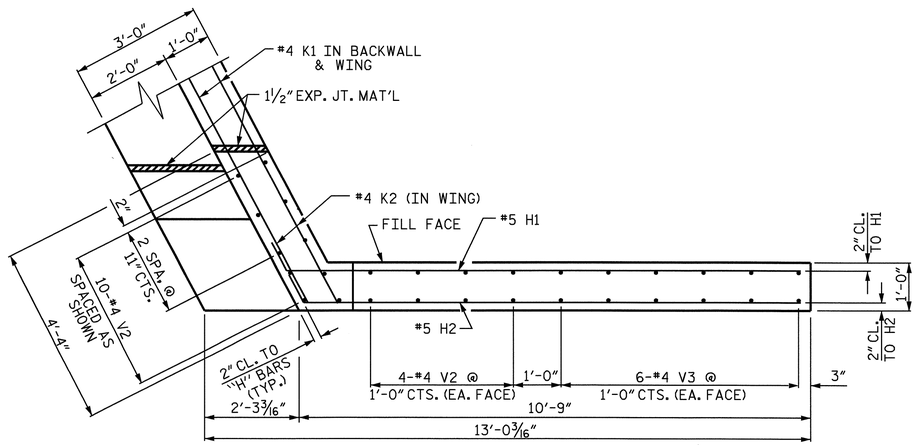
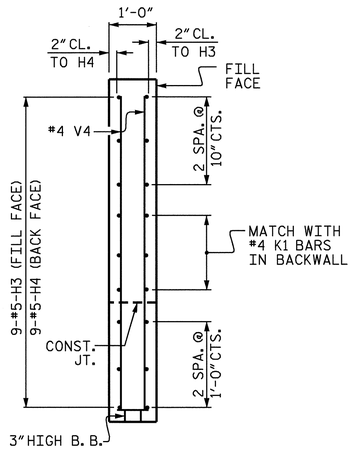
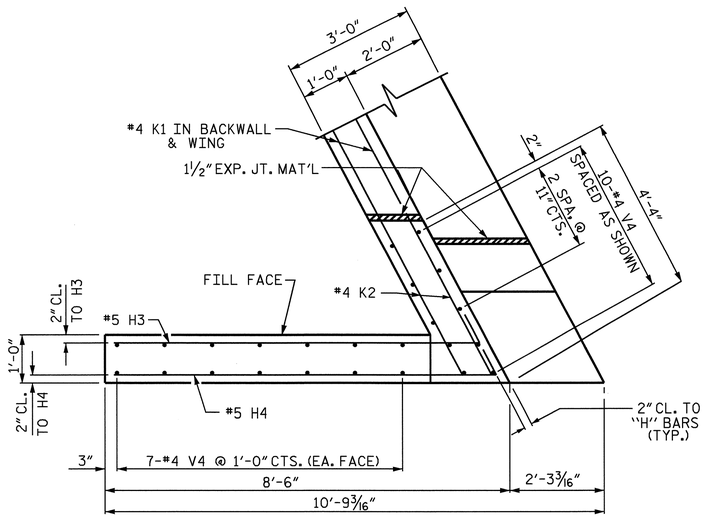
Kpaschal



PLAN OF WING - W1



SECTION Y-Y



PLAN OF WING - W2

ELEVATION OF WING - W1

SECTION X-X

ELEVATION OF WING - W2

PROJECT NO. B-4036

BUNCOMBE COUNTY

STATION: 14+22.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER KEITH PASCHAL

10/29/08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			18

DRAWN BY : J. G. KHARVA DATE : 01/09/08
CHECKED BY : J. D. HAWK DATE : 03/24/08

15-SEP-2008 10:56
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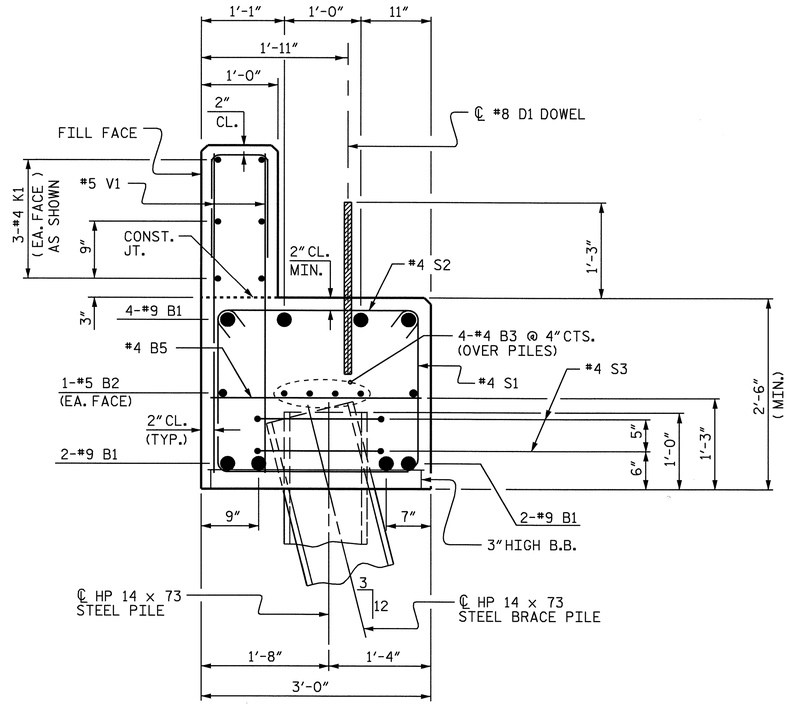
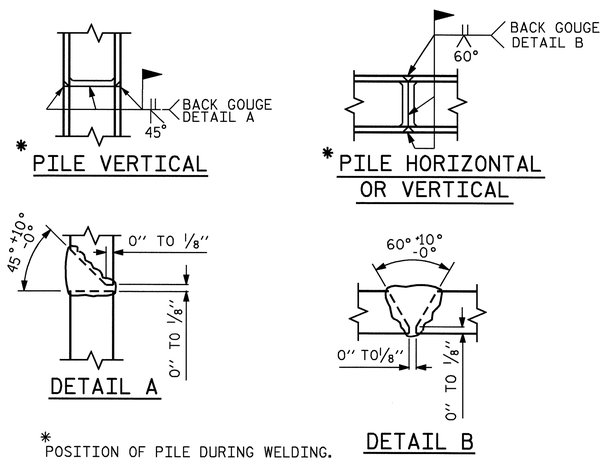
kpaschal

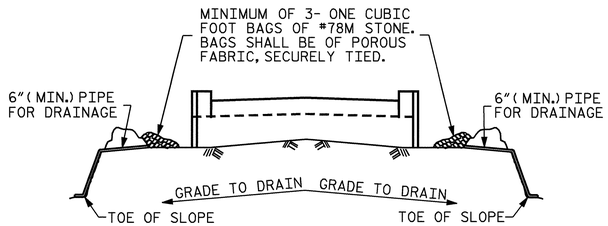


SECTION A-A



* POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



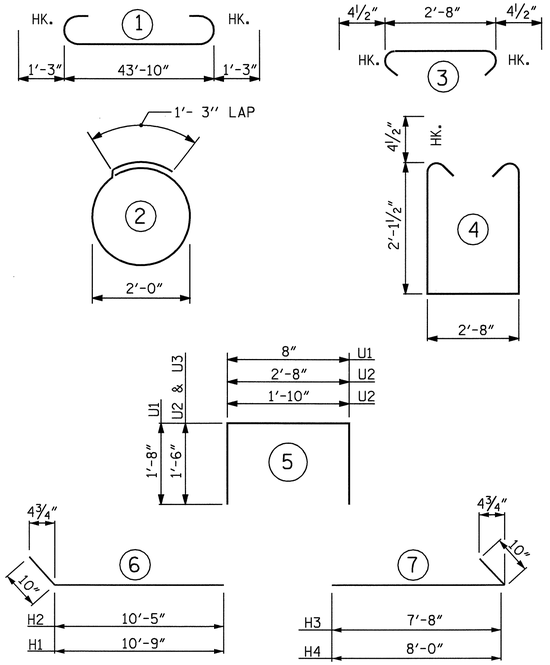
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	46'-4"	1260
B2	2	#5	STR	43'-11"	92
B3	8	#4	STR	23'-2"	124
B4	8	#4	STR	19'-2"	102
B5	11	#4	STR	2'-8"	20
D1	22	#8	STR	2'-3"	132
H1	11	#5	6	11'-7"	133
H2	11	#5	6	11'-3"	129
H3	9	#5	7	8'-6"	80
H4	9	#5	7	8'-10"	83
K1	12	#4	STR	23'-2"	186
K2	12	#4	STR	3'-11"	31
S1	37	#4	4	7'-8"	189
S2	37	#4	3	3'-5"	84
S3	16	#4	2	7'-7"	81
U1	35	#4	5	4'-0"	94
U2	24	#4	5	5'-8"	91
U3	4	#4	5	4'-10"	13
V1	70	#5	STR	4'-5"	322
V2	18	#4	STR	7'-4"	88
V3	12	#4	STR	7'-7"	61
V4	24	#4	STR	6'-8"	107

REINFORCING STEEL	LBS.	3502
CLASS A CONCRETE BREAKDOWN		
POUR 1 (CAP & LOWER PART OF WINGS)	C.Y.	17.2
POUR 2 (UPPER WINGS & BACKWALL)	C.Y.	6.6
POUR 3 LATERAL GUIDES	C.Y.	0.1
TOTAL CLASS A CONCRETE	C.Y.	23.9
HP 14 X 73 STEEL PILES		
NO. 8	LIN. FT.	120

PROJECT NO. B-4036

BUNCOMBE COUNTY

STATION: 14+22.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1

NORTH CAROLINA PROFESSIONAL SEAL 22905 ENGINEER KEITH PASCHAL

10/29/08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			18

DRAWN BY : J. G. KHARVA DATE : 01/16/08
CHECKED BY : J. D. HAWK DATE : 03/24/08

15-SEP-2008 10:56
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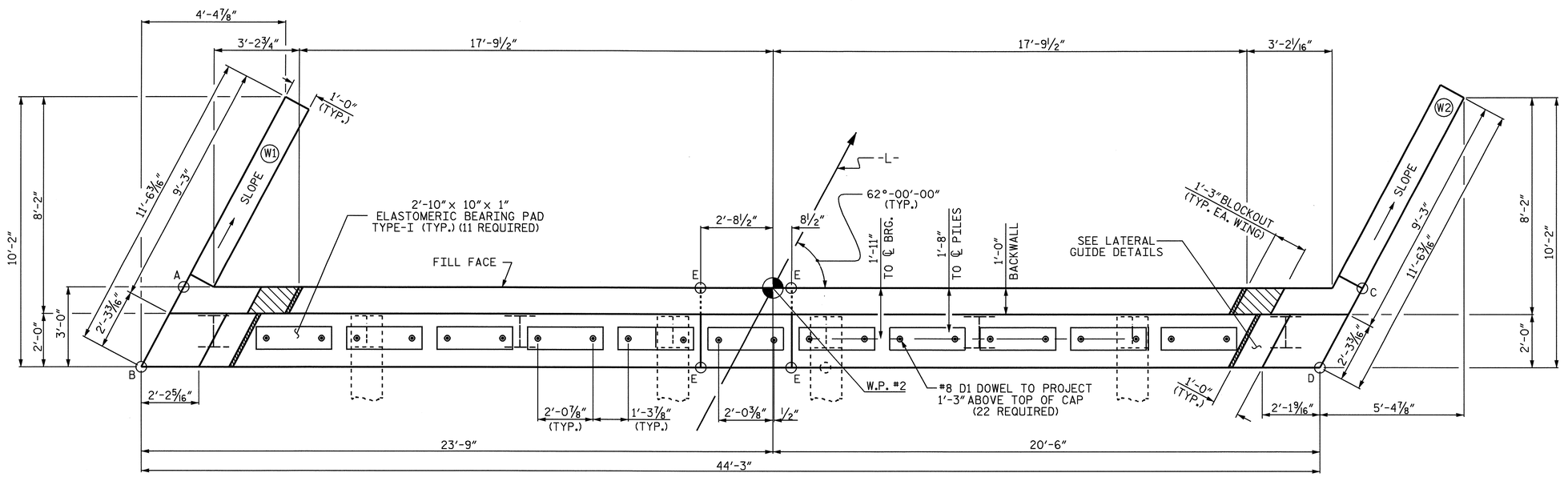
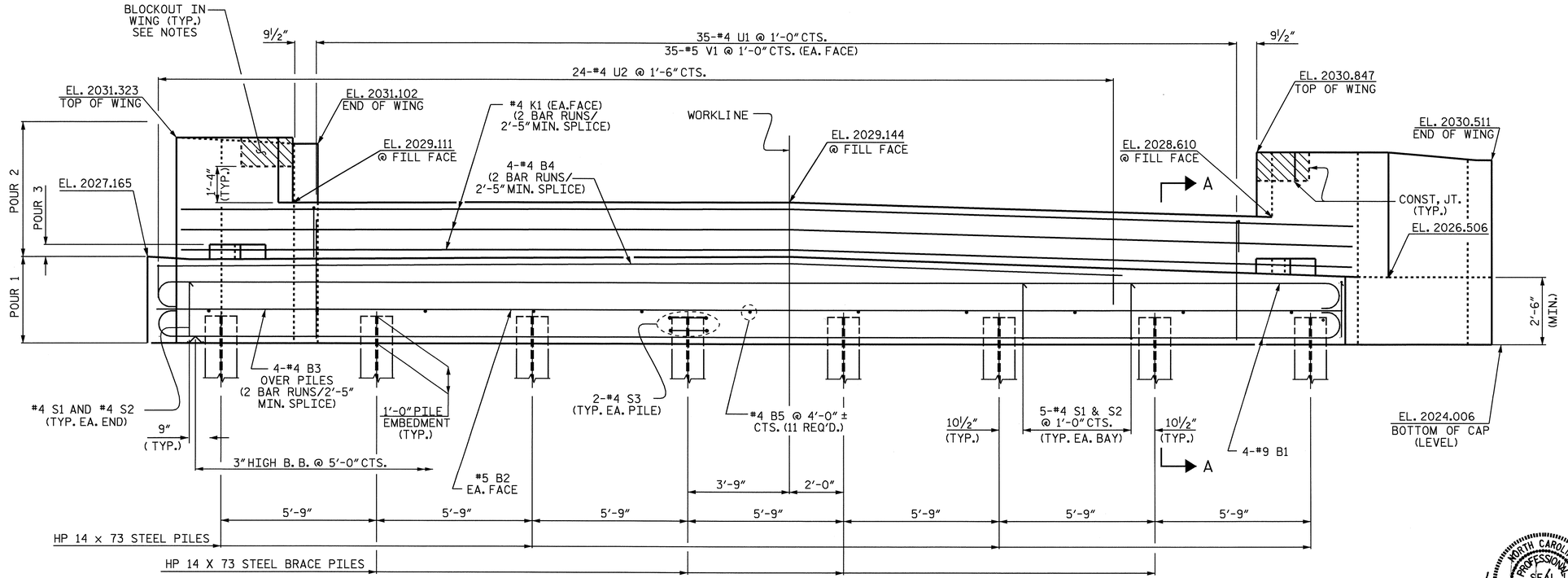


PLAN



ELEVATION

NOTES

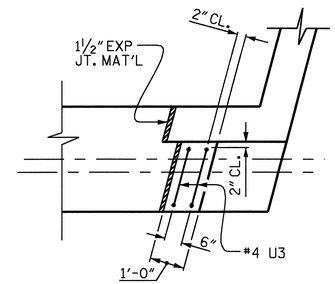
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OFTHE 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 LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER BOX BEAM UNITS ARE IN PLACE.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

TOP OF CAP ELEVATIONS	
A	EL. 2027.165
B	EL. 2027.159
C	EL. 2026.506
D	EL. 2027.209
E	EL. 2027.209



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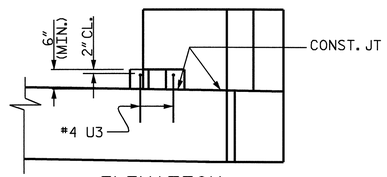

ELEVATION

LATERAL GUIDE DETAILS

PROJECT NO. B-4036

BUNCOMBE COUNTY

STATION: 14+22.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER A. KEITH PASCHAL

10/29/08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			18

DRAWN BY : J. G. KHARVA DATE : 3/6/08
CHECKED BY : J. D. HAWK DATE : 3/24/08

15-SEP-2008 10:56
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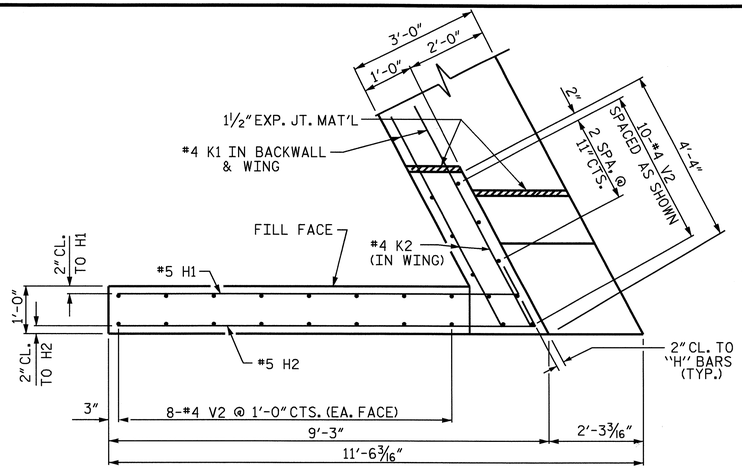
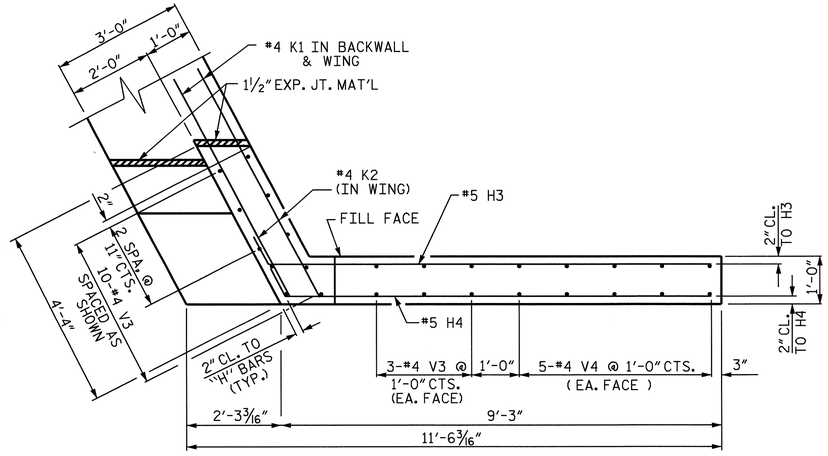
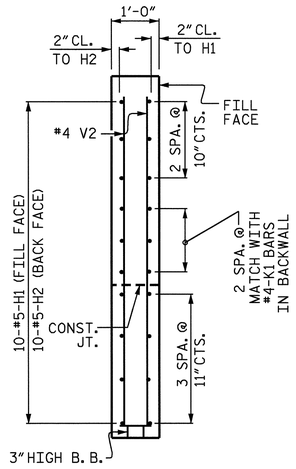
kpaschal



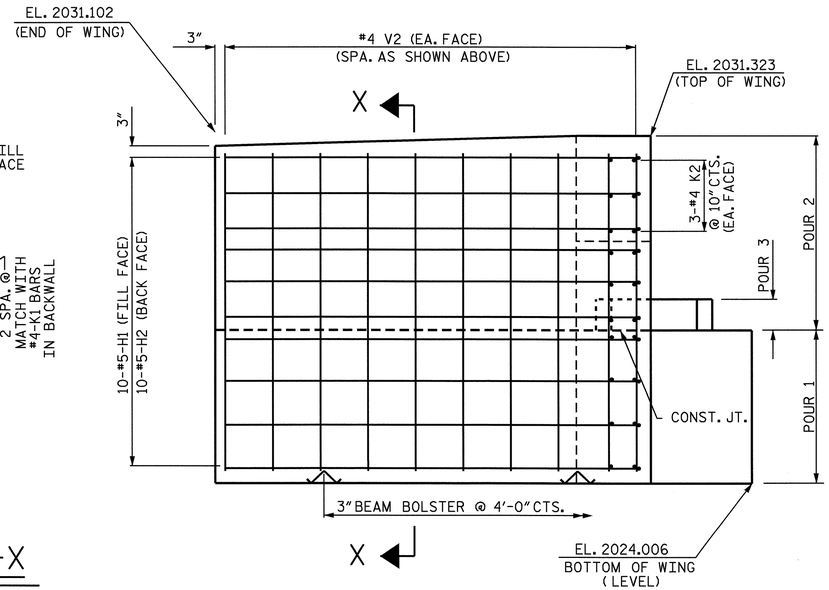
PLAN OF WING - W1



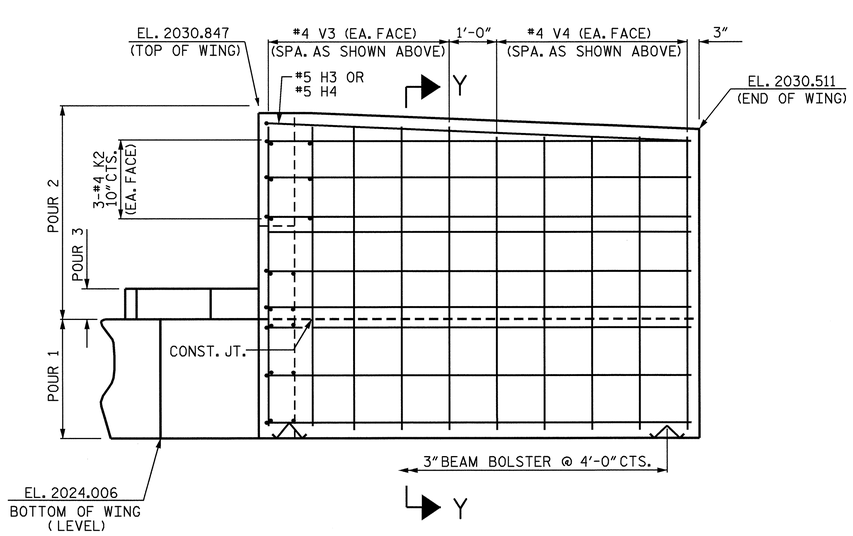
PLAN OF WING - W2



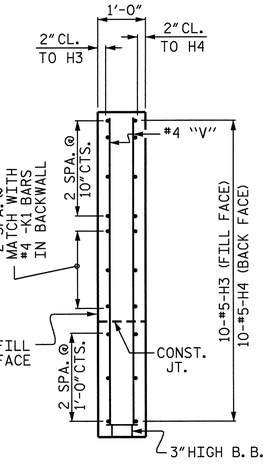
SECTION X-X



ELEVATION OF WING - W1



ELEVATION OF WING - W2



SECTION Y-Y

PROJECT NO. B-4036

BUNCOMBE COUNTY

STATION: 14+22.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER KEITH PASCHAL

10/9/08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			18

DRAWN BY : J. G. KHARVA DATE : 01/09/08
CHECKED BY : J. D. HAWK DATE : 03/24/08

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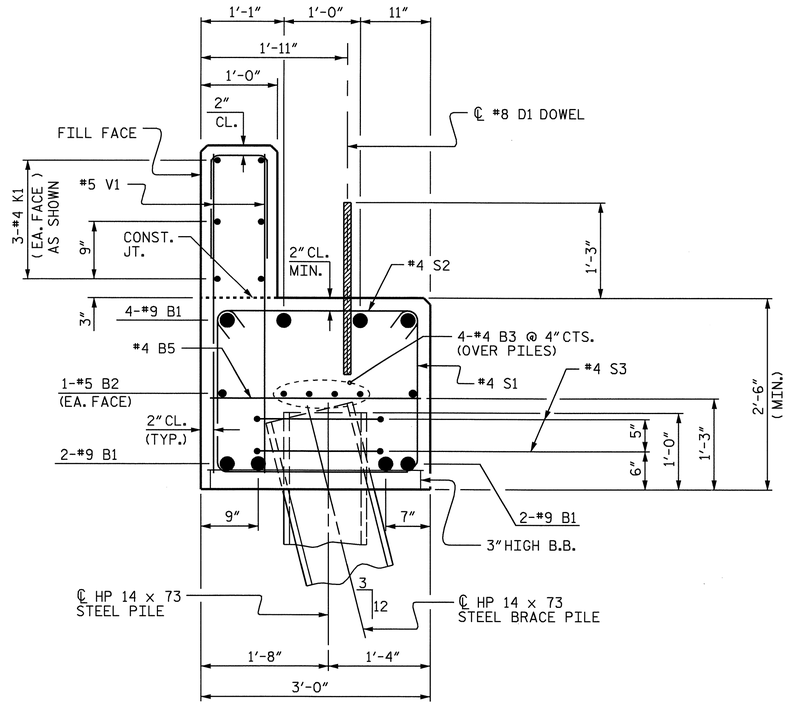
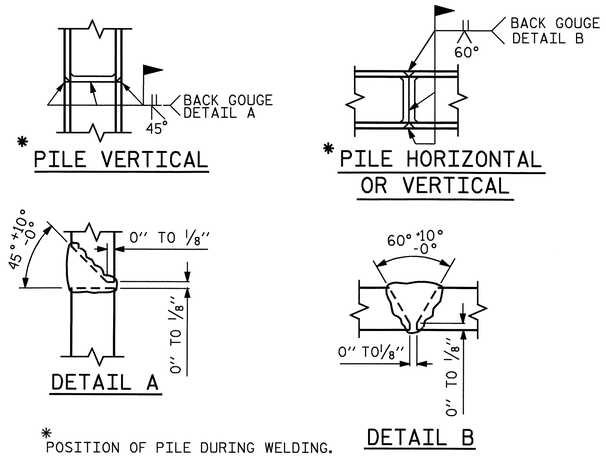


SECTION A-A



* PILE VERTICAL

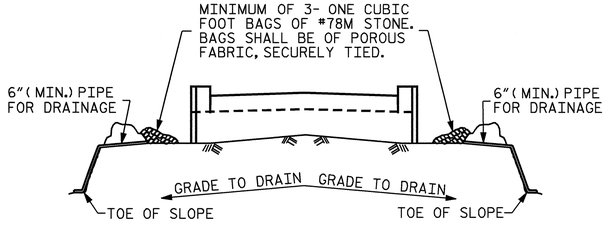
* PILE HORIZONTAL OR VERTICAL

DETAIL A

DETAIL B

* POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



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.

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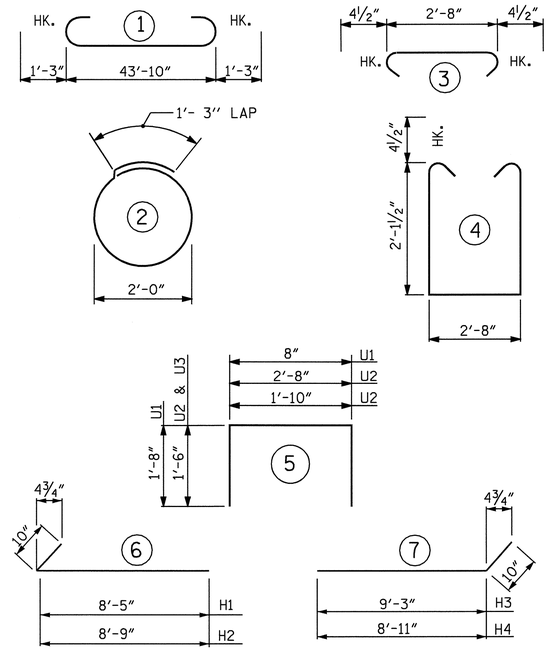
TEMPORARY DRAINAGE AT END BENT

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	46'-4"	1260
B2	2	#5	STR	43'-11"	92
B3	8	#4	STR	23'-2"	124
B4	8	#4	STR	19'-2"	102
B5	11	#4	STR	2'-8"	20
D1	22	#8	STR	2'-3"	132
H1	10	#5	6	9'-3"	96
H2	10	#5	6	9'-7"	100
H3	10	#5	7	10'-1"	105
H4	10	#5	7	9'-9"	102
K1	12	#4	STR	23'-2"	186
K2	12	#4	STR	3'-11"	31
S1	37	#4	4	7'-8"	189
S2	37	#4	3	3'-5"	84
S3	16	#4	2	7'-7"	81
U1	35	#4	5	4'-0"	94
U2	24	#4	5	5'-8"	91
U3	4	#4	5	4'-10"	13
V1	70	#5	STR	4'-5"	322
V2	26	#4	STR	6'-9"	117
V3	16	#4	STR	6'-5"	69
V4	10	#4	STR	6'-2"	41

REINFORCING STEEL	LBS.	3451
CLASS A CONCRETE BREAKDOWN		
POUR 1 (CAP & LOWER PART OF WINGS)	C.Y.	17.2
POUR 2 (UPPER WINGS & BACKWALL)	C.Y.	6.3
POUR 3 LATERAL GUIDES	C.Y.	0.1
TOTAL CLASS A CONCRETE	C.Y.	23.6
HP 14 X 73 STEEL PILES		
NO. 8	LIN. FT.	120

PROJECT NO. B-4036

BUNCOMBE COUNTY

STATION: 14+22.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER KEITH PASCHAL
10/29/08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			18

DRAWN BY : J. G. KHARVA DATE : 01/16/08
CHECKED BY : J. D. HAWK DATE : 03/24/08

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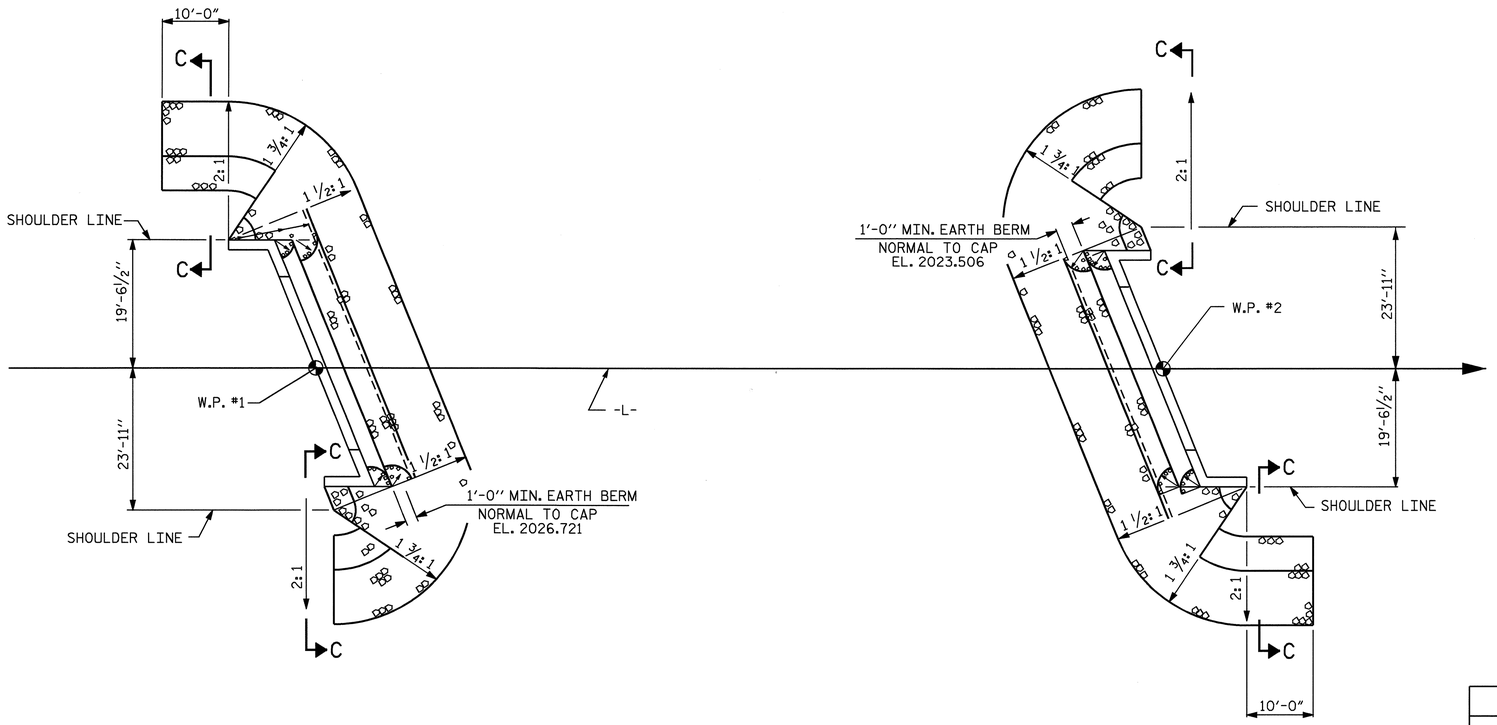
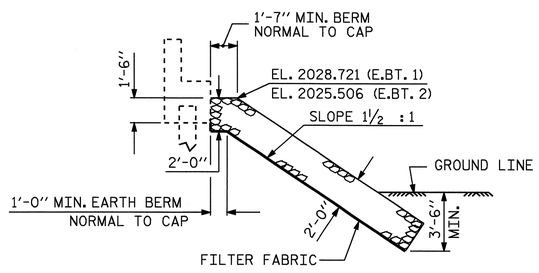


END BENT 1

END BENT 2

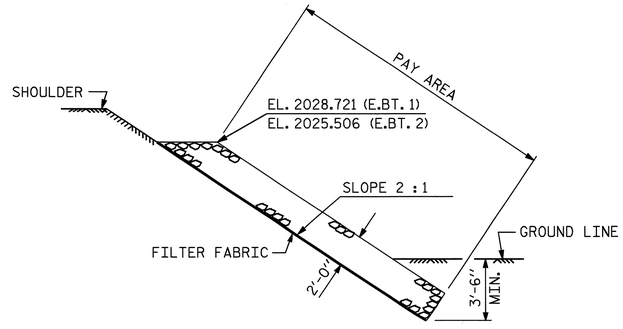
PLAN

ESTIMATED QUANTITIES		
BRIDGE @ STA. 14+22.50 -L-	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	178	198
END BENT 2	152	169
TOTAL	330	367



℄ SECTION

BERM RIP RAPPED



SECTION C-C

PROJECT NO. B-4036

BUNCOMBE COUNTY

STATION: 14+22.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

RIP RAP DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER W. KEITH PASCHAL

10/29/08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			18

ASSEMBLED BY : MARVIN FOWLER		DATE : 01/23/08
CHECKED BY : J. G. KHARVA		DATE : 3/10/08
DRAWN BY : REK 1/84	REV. 8/16/99	RWW/LES
CHECKED BY : RDU 1/84	REV. 10/17/00	RWW/LES
	REV. 5/1/06	TLA/GM

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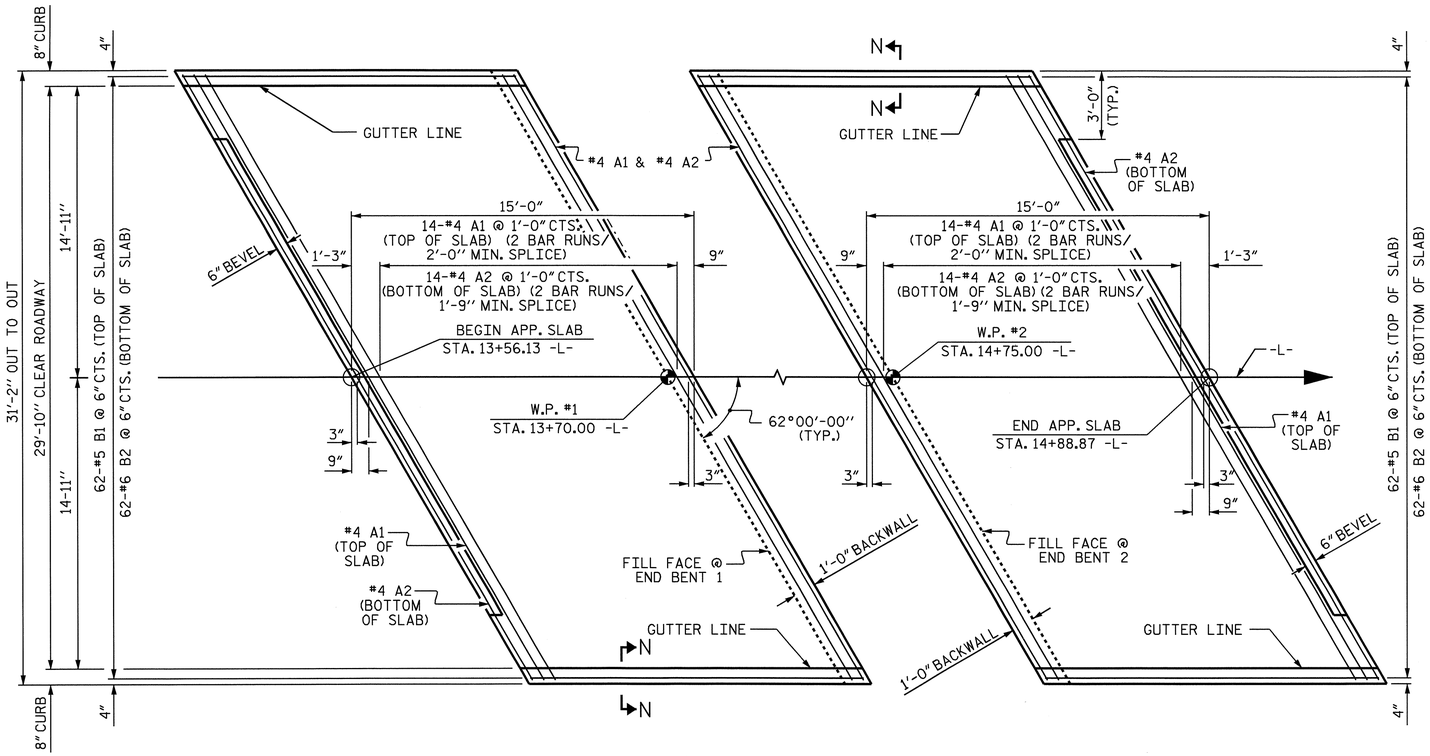
kpaschal

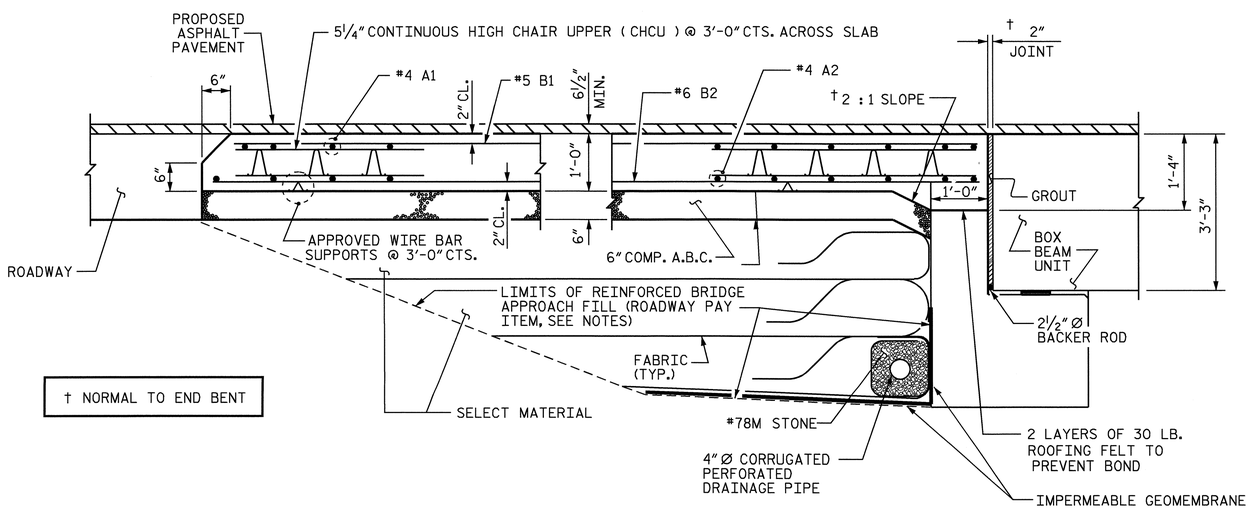
SKEW < 90°

STD. NO. RR1



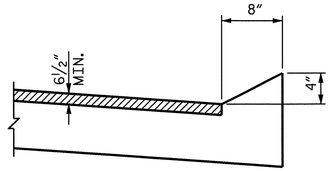
PLAN @ END BENT 1 PLAN @ END BENT 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

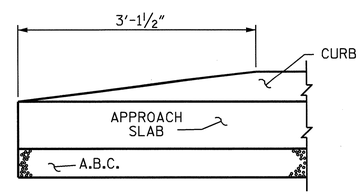


† NORMAL TO END BENT

SECTION THRU SLAB



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

(OMIT TAPER WHEN SHOULDER BERM GUTTER IS REQUIRED)

CURB DETAILS

NOTES

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 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.

FOR JOINT DETAILS, SEE "PRESTRESSED CONCRETE BOX BEAM UNIT" SHEETS.

THE JOINT AT THE END BENT SHALL BE GROUTED AS SOON AS PRACTICAL AFTER THE CONSTRUCTION OF THE APPROACH SLABS.

APPROACH SLAB GROOVING IS NOT REQUIRED.

BILL OF MATERIAL

FOR ONE APPROACH SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳A1	32	#4	STR	18'-6"	395
A2	32	#4	STR	18'-4"	392
✳B1	62	#5	STR	14'-3"	921
B2	62	#6	STR	14'-8"	1366
REINFORCING STEEL				LBS.	1758
✳EPOXY COATED REINFORCING STEEL				LBS.	1316
CLASS AA CONCRETE				C. Y.	18.2

PROJECT NO. B-4036

BUNCOMBE COUNTY

STATION: 14+22.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE BOX BEAM

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER KEITH PASCHAL

10/29/08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			18

ASSEMBLED BY : M.FOWLER	DATE : 4/1/08		
CHECKED BY : J.G. KHARVA	DATE : 4/7/08		
DRAWN BY : FCJ 6/87	REV. 7/10/01	LES/RDR	
CHECKED BY : EGA 6/87	REV. 5/7/03R	RWW/JTE	
	REV. 5/1/06R	KMM/GM	

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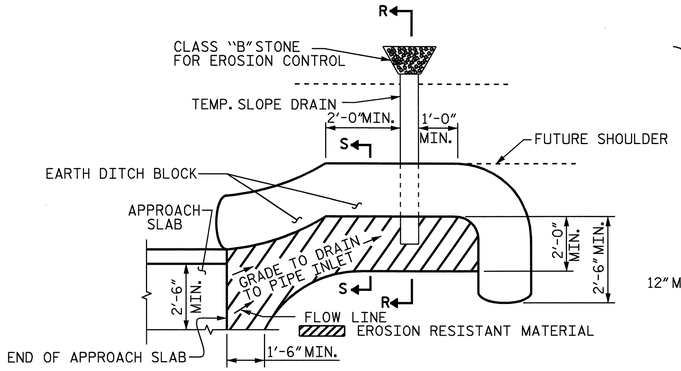
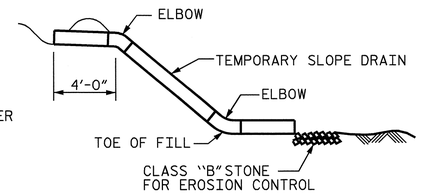
kpaschal

(SHEET 3) STD. NO. BAS7

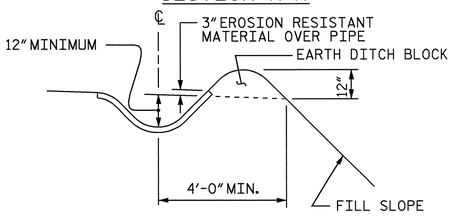


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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



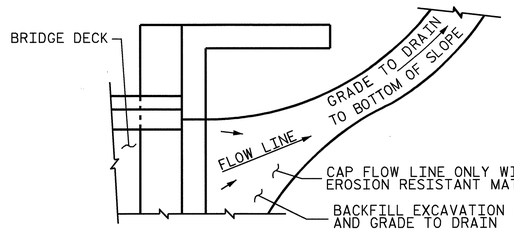
SECTION R-R



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.

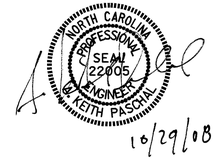
TEMPORARY DRAINAGE DETAIL

PROJECT NO. B-4036

BUNCOMBE COUNTY

STATION: 14+22.50 -L-

SHEET 2 OF 2



10/29/08

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB DETAILS

ASSEMBLED BY : MARVIN FOWLER	DATE : 1/9/08
CHECKED BY : J. G. KHARVA	DATE : 3/12/08

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

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

STD. NO. BAS10

15-SEP-2008 10:55
R:\Structures\FINAL PLANS\B4036_sd_AS.dgn
kpaschal

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. 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 W RGW REV. 6-27-02 RWW W JTE
REV. 9-16-09 RWW W LES