CONTRACT: C201427 TIP PROJECT: B-4060

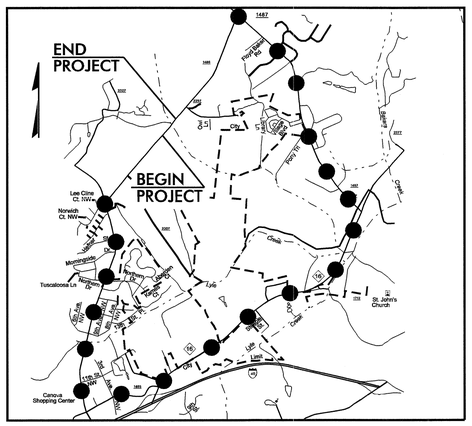
STRUCTURE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CATAWBA COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4060		

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33424.1.1	BRZ-1486(1)	P.E.
33424.3.1	BRZ-1486(1)	R /W & UTIL.
33424.2.2	BRZ-1486(1)	CONST.



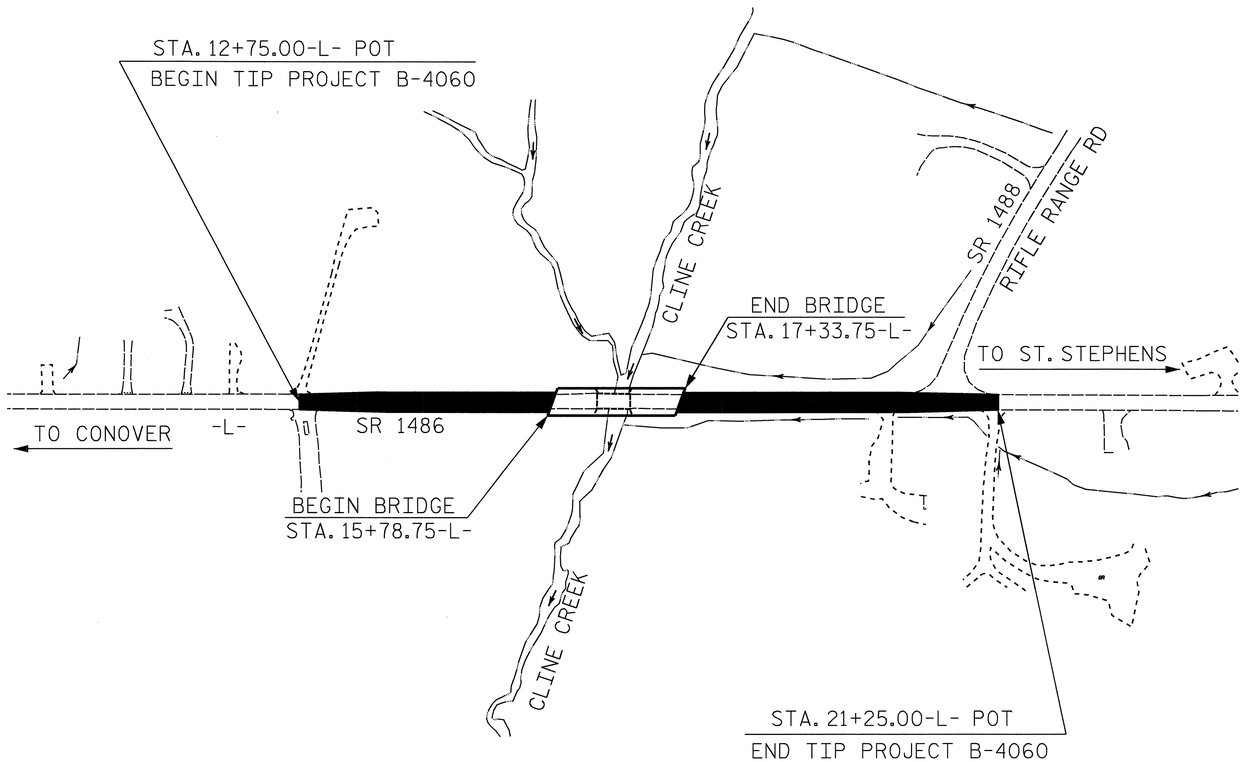
VICINITY MAP

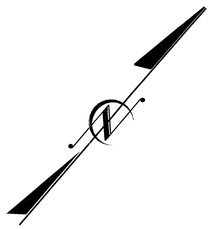
DENOTES OFFSITE DETOUR

NEAREST SPIPPING POINT: CONOVER ON SOUTHERN RAILWAY 2.3 MILES FROM BRIDGE.

LOCATION: BRIDGE NO. 17 OVER CLINE CREEK ON SR 1486 (LEE CLINE RD.)

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE





STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DESIGN DATA

ADT 2006 = 3,870
ADT 2025 = 8,000
DHV = 10 %
D = 70 %
T = 3 % *
V = 60 MPH

* TTST 1% DUAL 2%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4060 = 0.132 mi
LENGTH STRUCTURE TIP PROJECT B-4060 = 0.029 mi

TOTAL LENGTH TIP PROJECT B-4060 = 0.161 mi

Plans prepared in the office of:

DIVISION OF HIGHWAYS

1000 BIRCH RIDGE DRIVE, RALEIGH, N.C. 27610

for the North Carolina Department of Transportation

2006 STANDARD SPECIFICATIONS

LETTING DATE:
APRIL 17, 2007

J. M. BAILEY, P.E.
PROJECT ENGINEER

B. D. KLAPPENBACH, P.E.
PROJECT DESIGN ENGINEER

STRUCTURE DESIGN UNIT

NORTH CAROLINA PROFESSIONAL SEAL 14552 ENGINEER GREGORY R. PERFETTI

3.6.07

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR *DATE*

23-FEB-2007 16:15
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
bklappenbach

F.A PROJECT NO. : BRZ-1486(1)

-6.6444% -.3715%

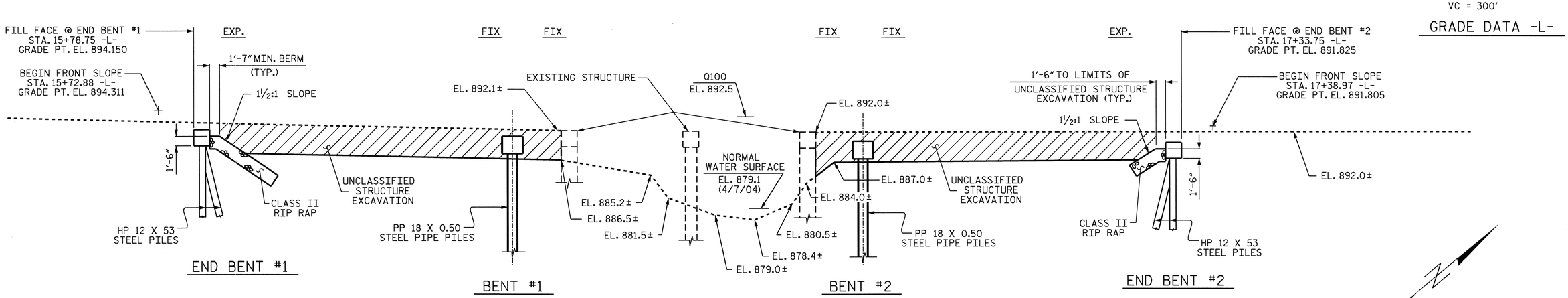
PI = 15+25.00
EL. = 892.60'
VC = 410'

GRADE DATA -L-

-0.3715% +4.2893%

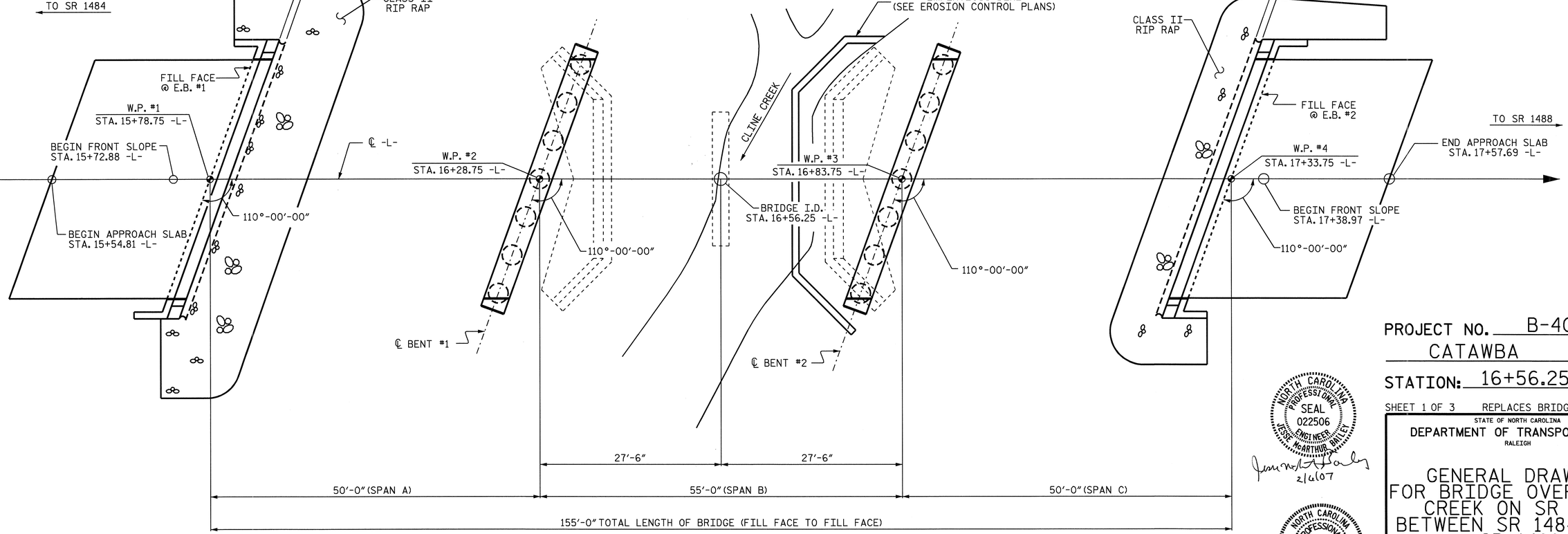
PI = 18+95.00
EL. = 891.23'
VC = 300'

GRADE DATA -L-



SECTION ALONG ℄ -L-

(BENTS ON SECTION AT RIGHT ANGLE TO BENTS)



PLAN

DRAWN BY : J. B. WILSON DATE : 10/26/04
CHECKED BY : D. A. GLADDEN DATE : 11/16/04

06-MAR-2007 12:23
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mshalkh

NORTH CAROLINA PROFESSIONAL SEAL 022506 ENGINEER JESSIE McARTHUR BAILEY
2/6/07

NORTH CAROLINA PROFESSIONAL SEAL 5625 ENGINEER BRUCE LEY D. KLAPPENBACH
3-6-07

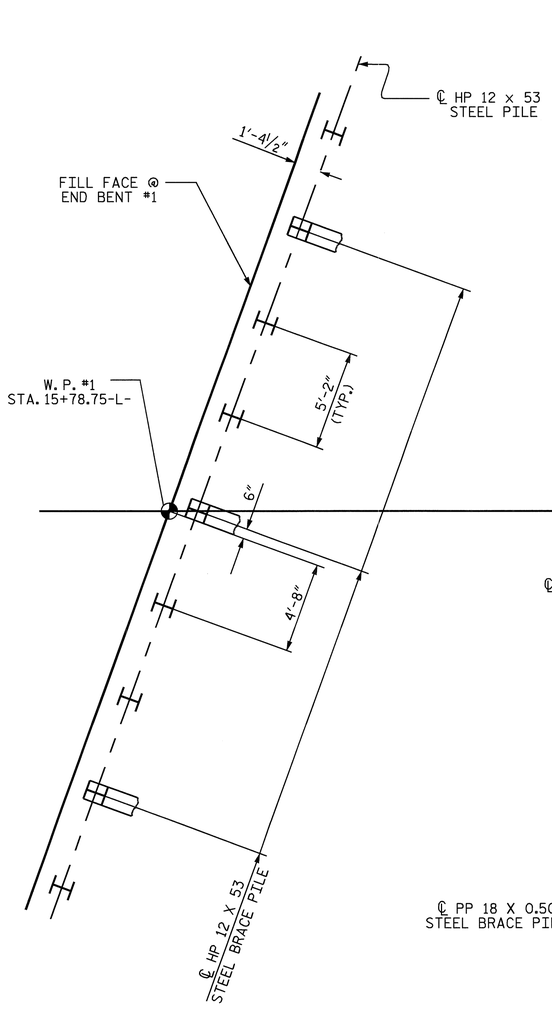
PROJECT NO. B-4060
CATAWBA COUNTY
STATION: 16+56.25 -L-

SHEET 1 OF 3 REPLACES BRIDGE No. 17

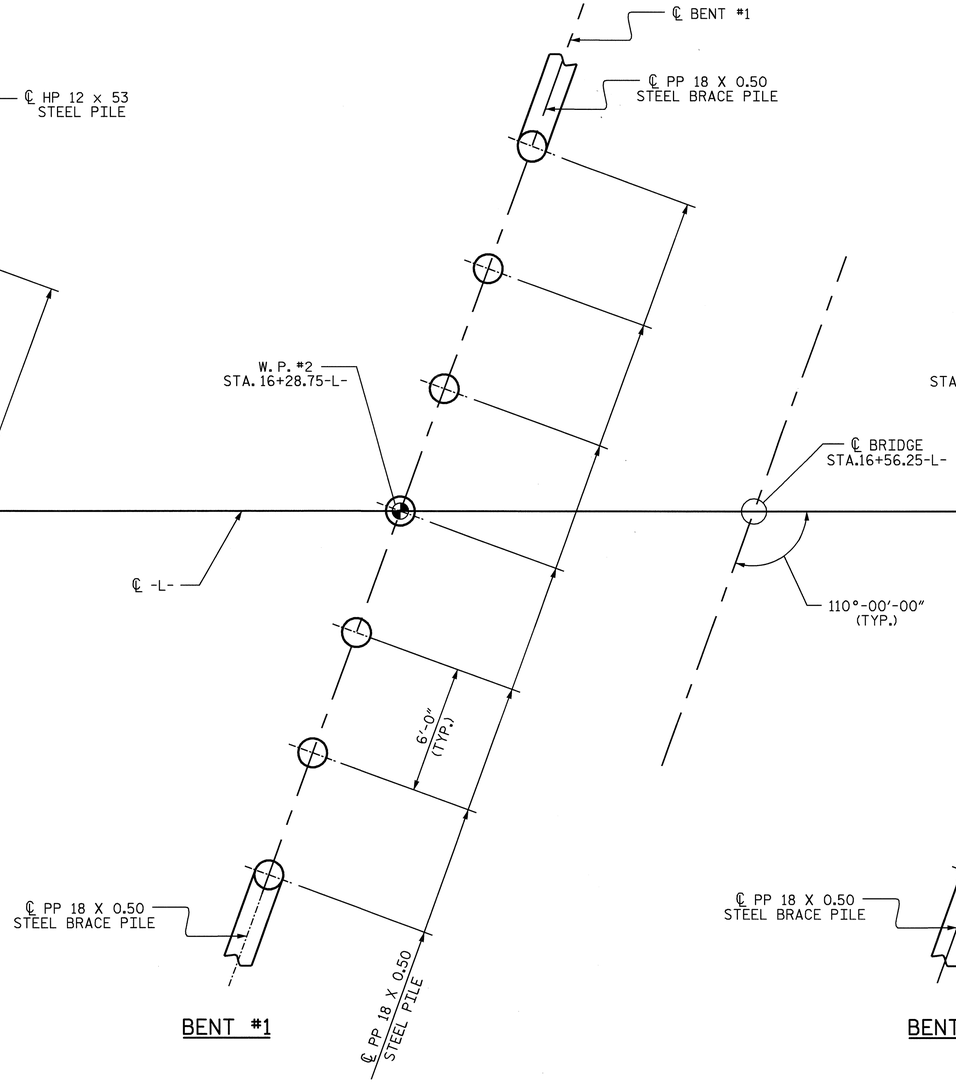
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOR BRIDGE OVER CLINE CREEK ON SR 1486 BETWEEN SR 1484 AND SR 1488

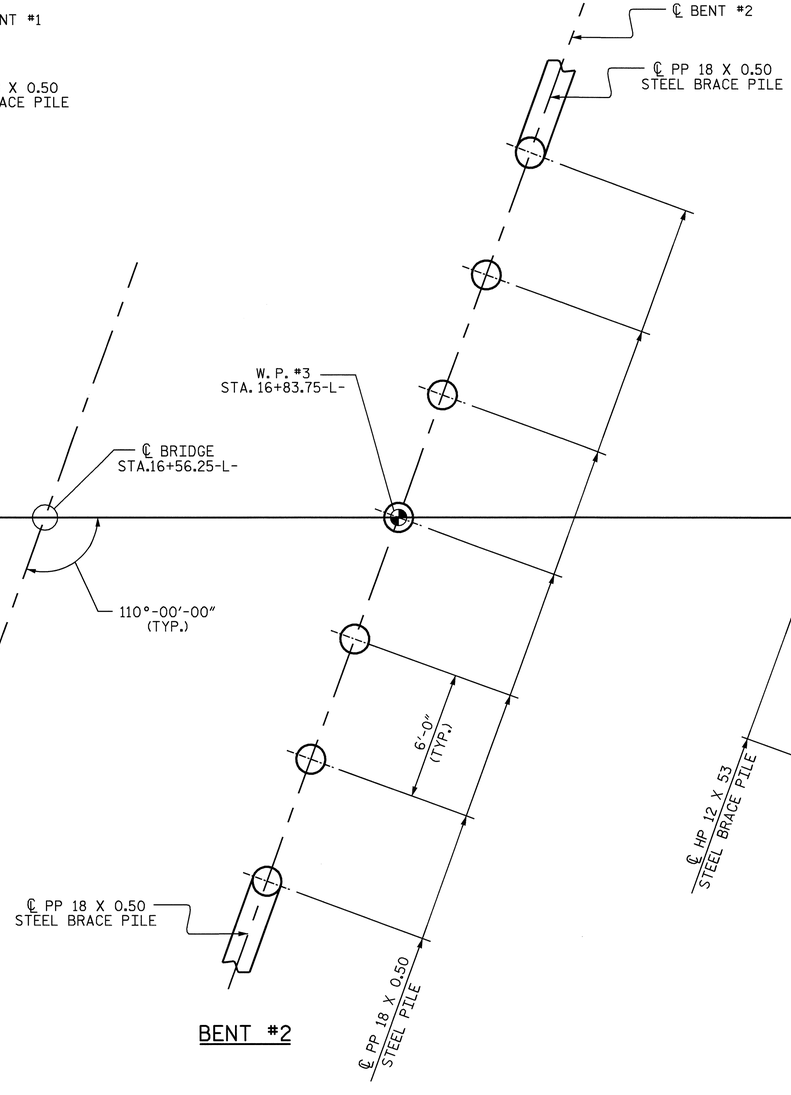
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			25



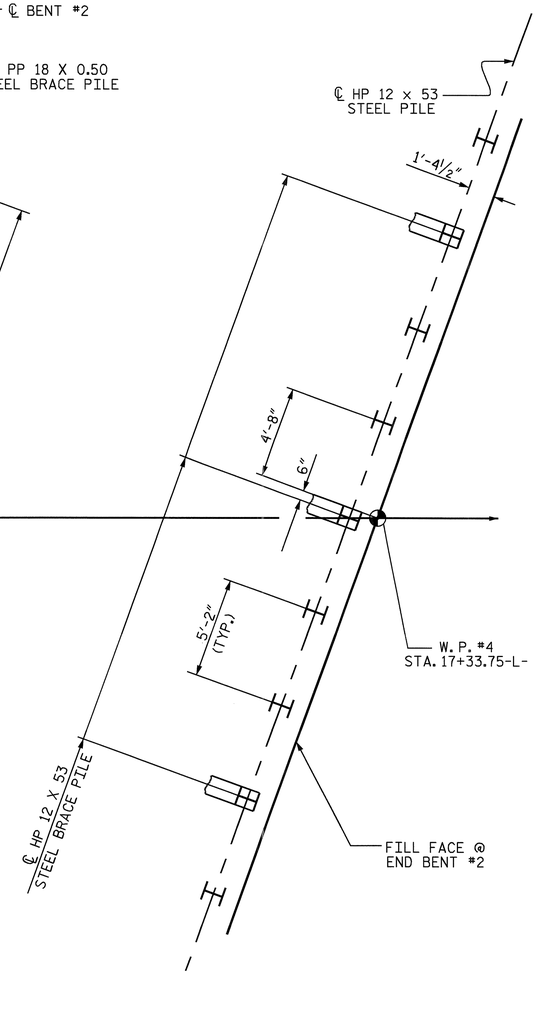
END BENT #1



BENT #1



BENT #2



END BENT #2

FOUNDATION LAYOUT

DIMENSIONS LOCATING END BENT AND BENT PILES ARE TO THE PILE ℄ AND TOP OF PILE.

ALL BRACE PILES IN END BENTS ARE BATTERED 3:12.

BRACE PILES AT BENT NO. 1 & 2 ARE BATTERED 1½:12

PROJECT NO. B-4060

CATAWBA COUNTY

STATION: 16+56.25 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOR BRIDGE OVER CLINE CREEK ON SR 1486 BETWEEN SR 1484 AND SR 1488

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

NORTH CAROLINA PROFESSIONAL SEAL 15825 ENGINEER BRUCE D. KLAPPENBACH
3-6-07

DRAWN BY : M. G. SHAIKH DATE : 01-23-06
CHECKED BY : D. A. GLADDEN DATE : 07-14-06

02-MAR-2007 14:49
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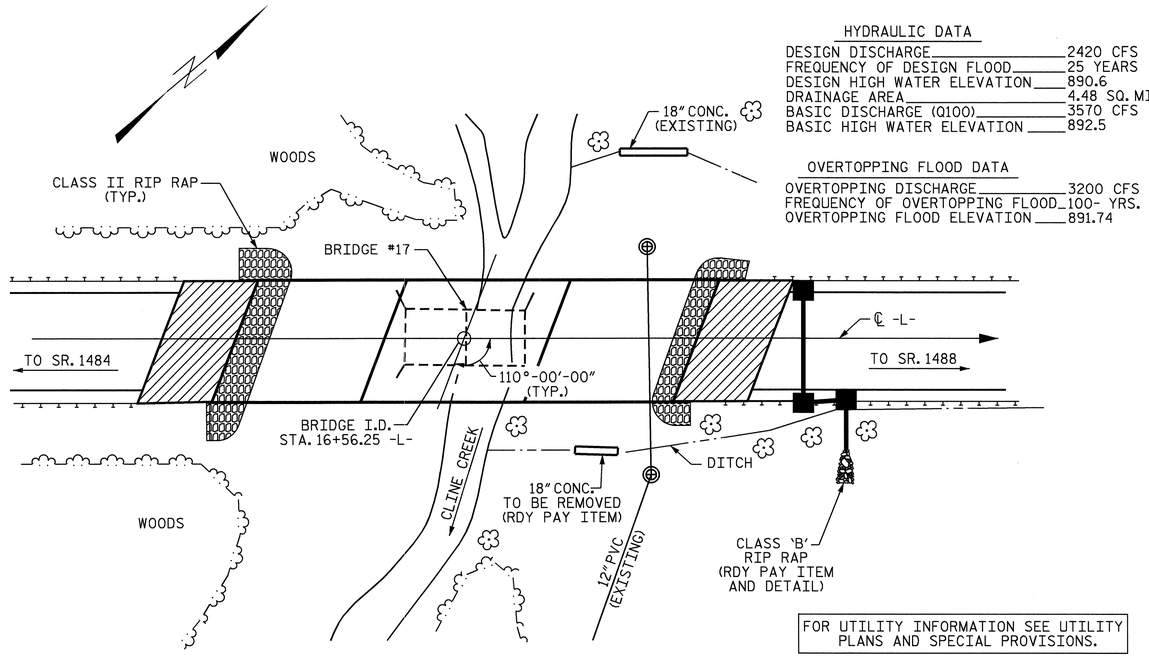
mshaikh

B.M. : BM2 -BL- STA. 15+12, 75' RT. SPIKE IN BASE OF 20" POPLAR, ELEV: 888.34, DATUM : NAVD 88



HYDRAULIC DATA

DESIGN DISCHARGE	2420 CFS
FREQUENCY OF DESIGN FLOOD	25 YEARS
DESIGN HIGH WATER ELEVATION	890.6
DRAINAGE AREA	4.48 SQ. MI.
BASIC DISCHARGE (Q100)	3570 CFS
BASIC HIGH WATER ELEVATION	892.5

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	3200 CFS
FREQUENCY OF OVERTOPPING FLOOD	100- YRS.
OVERTOPPING FLOOD ELEVATION	891.74

FOR UTILITY INFORMATION SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

NOTES

ASSUMED LIVE LOAD = HS 20 OR ALTERNATE LOADING. EXCEPT THAT THE CORED SLABS HAVE BEEN DESIGNED FOR HS 25.

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

THIS BRIDGE HAS BEEN DESIGNED BY THE STRENGTH DESIGN METHOD AS SPECIFIED IN AASHTO STANDARD SPECIFICATIONS.

THE EXISTING STRUCTURE CONSISTING OF 2 CONTINUOUS SPANS OF 20'-6", WITH 4 X 8 TIMBER DECK AND 2" ASPHALT WEARING SURFACE ON 4 LINES OF W16 X 40 AND 5 LINES OF CB 15 X 35 I-BEAM @ VARIOUS CENTERS, WITH A CLEAR ROADWAY WIDTH OF 19.2', ON MASS CONCRETE ABUTMENTS, AND TIMBER CAP AND TIMBER PILES AT THE INTERIOR BENT, LOCATED AT THE SAME LOCATION AS THE PROPOSED STRUCTURE, SHALL BE REMOVED.

THE CONTRACTOR'S ATTENTION IS BROUGHT TO THE FACT THAT PARTIAL REMOVAL OF THE FOOTINGS AT THE EXISTING ABUTMENTS AT BENT #1 AND BENT #2 MAY BE NECESSARY FOR THE INSTALLATION OF THE PILES.

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 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 MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICE PER CUBIC YARD FOR UNCLASSIFIED STRUCTURE EXCAVATION.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

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

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO STANDARD SPECIFICATIONS FOR SEISMIC DESIGN OF HIGHWAY BRIDGES FOR SEISMIC PERFORMANCE CATEGORY A.

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

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 16+56.25 -L-."

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

DRIVE PILES AT END BENT NO. 1 TO A REQUIRED BEARING CAPACITY OF 100 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO. THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENT NO. 1 IS 50 TONS PER PILE.

DRIVE PILES AT BENT NO. 1 TO A REQUIRED BEARING CAPACITY OF 140 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 BENT NO. 1 IS 70 TONS PER PILE.

DRIVE PILES AT BENT NO. 1 TO A TIP ELEVATION NO HIGHER THAN 852 FT.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 1 IS ELEVATION 863 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

DRIVE PILES AT BENT NO. 2 TO A REQUIRED BEARING CAPACITY OF 140 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY TWO. THE ALLOWABLE BEARING CAPACITY FOR PILES AT BENT NO. 2 IS 70 TONS PER PILE.

DRIVE PILES AT BENT NO. 2 TO A TIP ELEVATION NO HIGHER THAN 850 FT.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 2 IS ELEVATION 863 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

PIPE PILE PLATES ARE NOT REQUIRED FOR THE PIPE PILES AT BENT NO. 1 AND BENT NO. 2.

DRIVE PILES AT END BENT NO. 2 TO A REQUIRED BEARING CAPACITY OF 100 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY TWO. THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENT NO. 2 IS 50 TONS PER PILE.

FOR EROSION CONTROL MEASURES, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

THE CONTRACTOR'S ATTENTION IS BROUGHT TO THE FACT THAT PARTIAL REMOVAL OF THE FOOTING MAY BE NECESSARY FOR THE INSTALLATION OF THE PILES.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	UNCLASSIFIED STRUCTURE EXCAVATION	CONCRETE WEARING SURFACE	GROOVING BRIDGE FLOOR	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	HP 12 X 53 STEEL PILES		PP 18 X 0.50 GALVANIZED STEEL PILES		CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	EVAZOTE JOINT SEALS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS	
	LUMP SUM	CU. Y.	SQ.FT.	SQ. FT.	CU.YDS.	LUMP SUM	LBS.	NO.	LIN.FT.	NO.	LIN.FT.	LIN.FT.	TONS	SQ.YDS.	LUMP SUM	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE			5011	5969		LUMP SUM						304.67			LUMP SUM	LUMP SUM	36	1828.00
END BENT NO.1		545.0			15.1		2445	9	360				159	177				
BENT NO.1					14.5		2505			7	280							
BENT NO.2					14.2		2505			7	280							
END BENT NO.2		545.0			15.0		2321	9	315				111	124				
TOTAL	LUMP SUM	1090.0	5011	5969	58.8	LUMP SUM	9776	18	675	14	560	304.67	270	301	LUMP SUM	LUMP SUM	36	1828.00

PROJECT NO. B-4060

CATAWBA COUNTY

STATION: 16+56.25 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOR BRIDGE OVER CLINE CREEK ON SR 1486 BETWEEN SR 1484 AND SR 1488

NORTH CAROLINA PROFESSIONAL SEAL 15825 ENGINEER BRUCE D. KLAPPENBACH
3-6-07

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

DRAWN BY : M. G. SHAIKH DATE : 01-25-06
CHECKED BY : D. A. GLADDEN DATE : 07-14-06

06-MAR-2007 09:56
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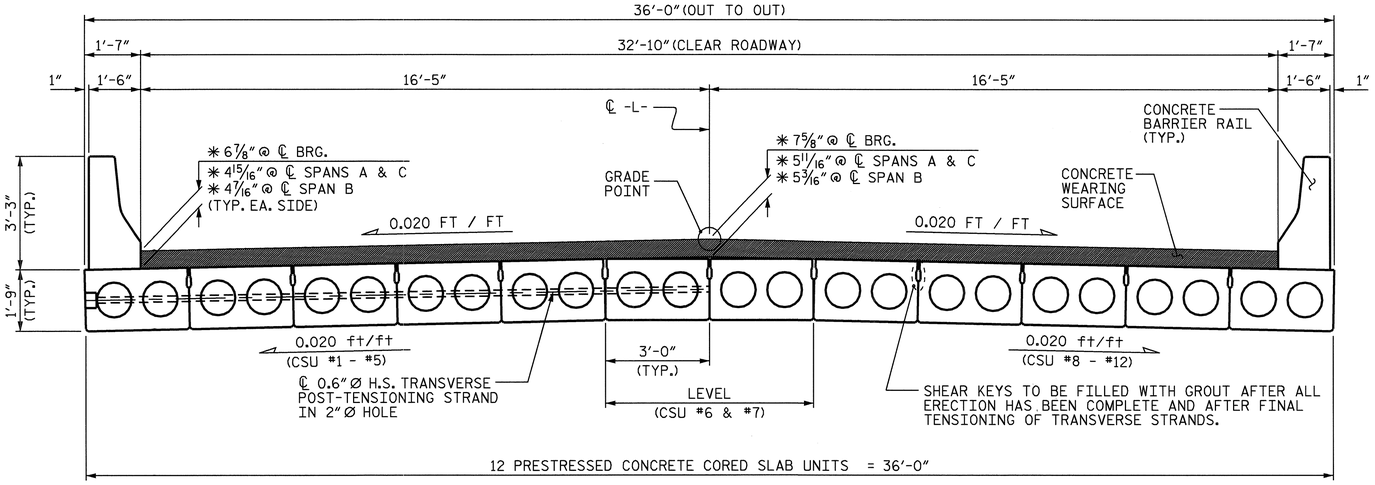
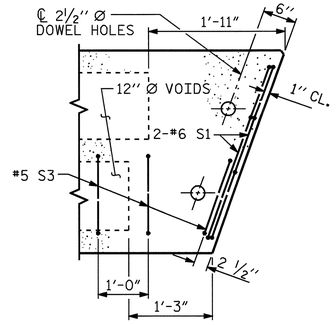
mshaikh



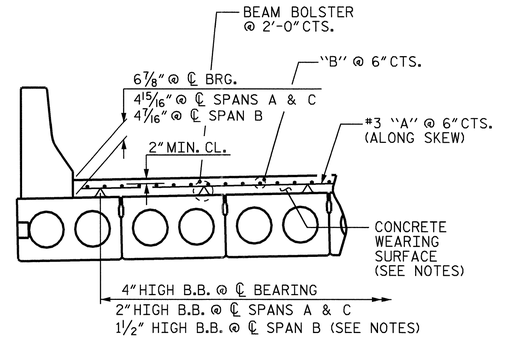
TYPICAL SECTION

✳ NOTE: BASED ON PREDICTED FINAL CAMBER & THEORETICAL GRADE LINE ELEVATIONS.



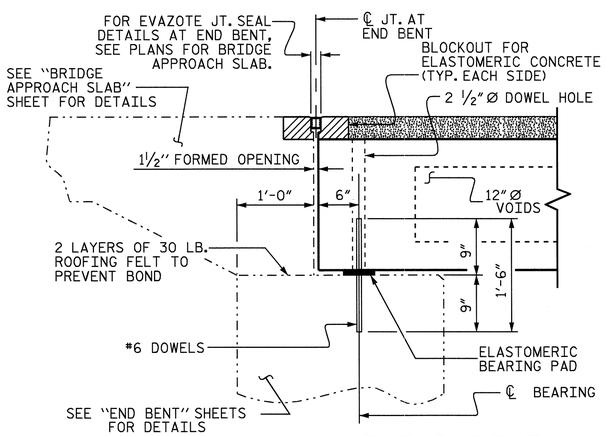
PART PLAN EXTERIOR SECTION

NOTE: EXTERIOR SECTION SHOWN INTERIOR SECTION SIMILAR EXCEPT OMIT S3 BARS.

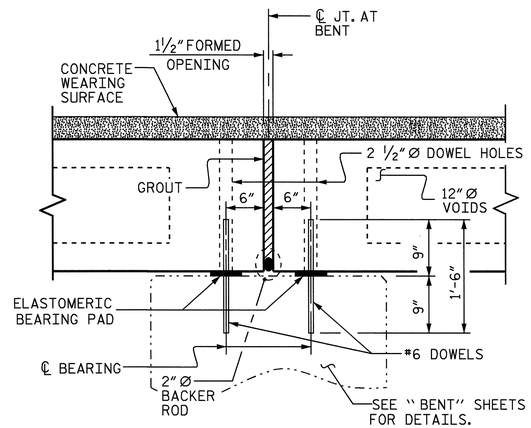


REINFORCING FOR CONCRETE WEARING SURFACE

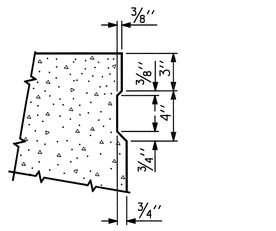
(PARTIAL TYPICAL SECTION)
(SEE "REINFORCING STEEL FOR CONCRETE WEARING SURFACE" SHEET)



SECTION AT END BENT

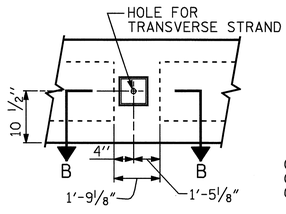


SECTION AT BENT

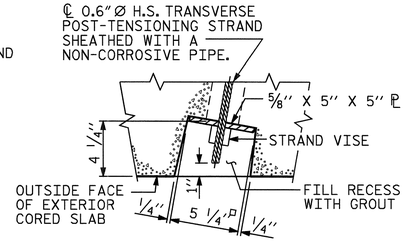


SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLAB UNITS.

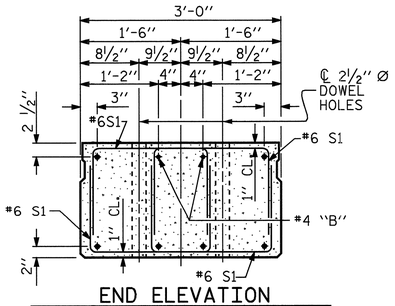


ELEVATION VIEW



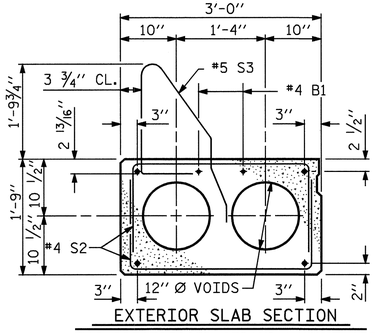
SECTION B-B

GROUTED RECESS AT END OF POST-TENSIONED STRAND CORED SLABS



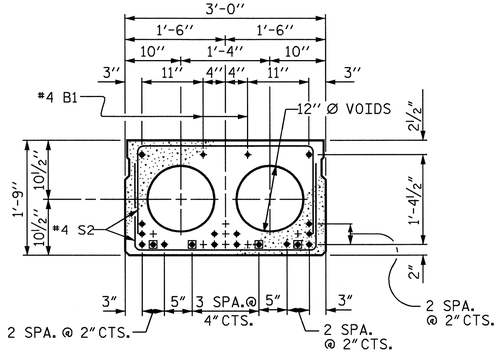
END ELEVATION

SHOWING PLACEMENT OF DOUBLE STIRRUPS & LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN)
INTERIOR SLAB SECTION SHOWN - EXTERIOR SLAB SECTION SIMILAR EXCEPT SHEAR KEY LOCATION.)



EXTERIOR SLAB SECTION

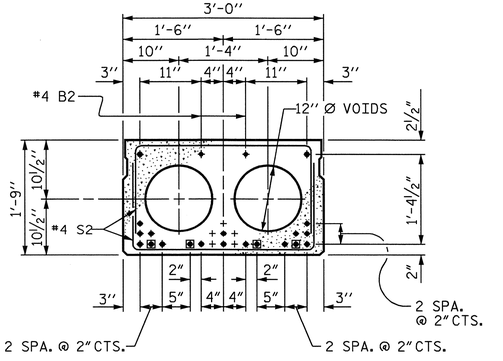
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECITON.)



INTERIOR SLAB SECTION SPAN A & C

0.6" Ø LOW RELAXATION STRAND LAYOUT

⊕ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 4'-0" FROM THE END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATION ARTICLE 1078-7.



INTERIOR SLAB SECTION SPAN B

0.6" Ø LOW RELAXATION STRAND LAYOUT

⊕ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 4'-0" FROM THE END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATION ARTICLE 1078-7.

NORTH CAROLINA PROFESSIONAL SEAL 15825 ENGINEER B. D. KLAPPENBACH 3-6-07

PROJECT NO. B-4060
CATAWBA COUNTY
STATION: 16+56.25 -L-

SHEET 1 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" x 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT

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

ASSEMBLED BY : J.B.W. / K.M.M.	DATE : 11/18/2004	
CHECKED BY : D.A. GLADDEN	DATE : 5/31/05	
DRAWN BY : WJH 4/89	REV. 8/16/99	RWW/LES
CHECKED BY : FCJ 5/89	REV. 10/17/00	RWW/LES
	REV. 7/10/01RR	RWW/LES

06-MAR-2007 09:46
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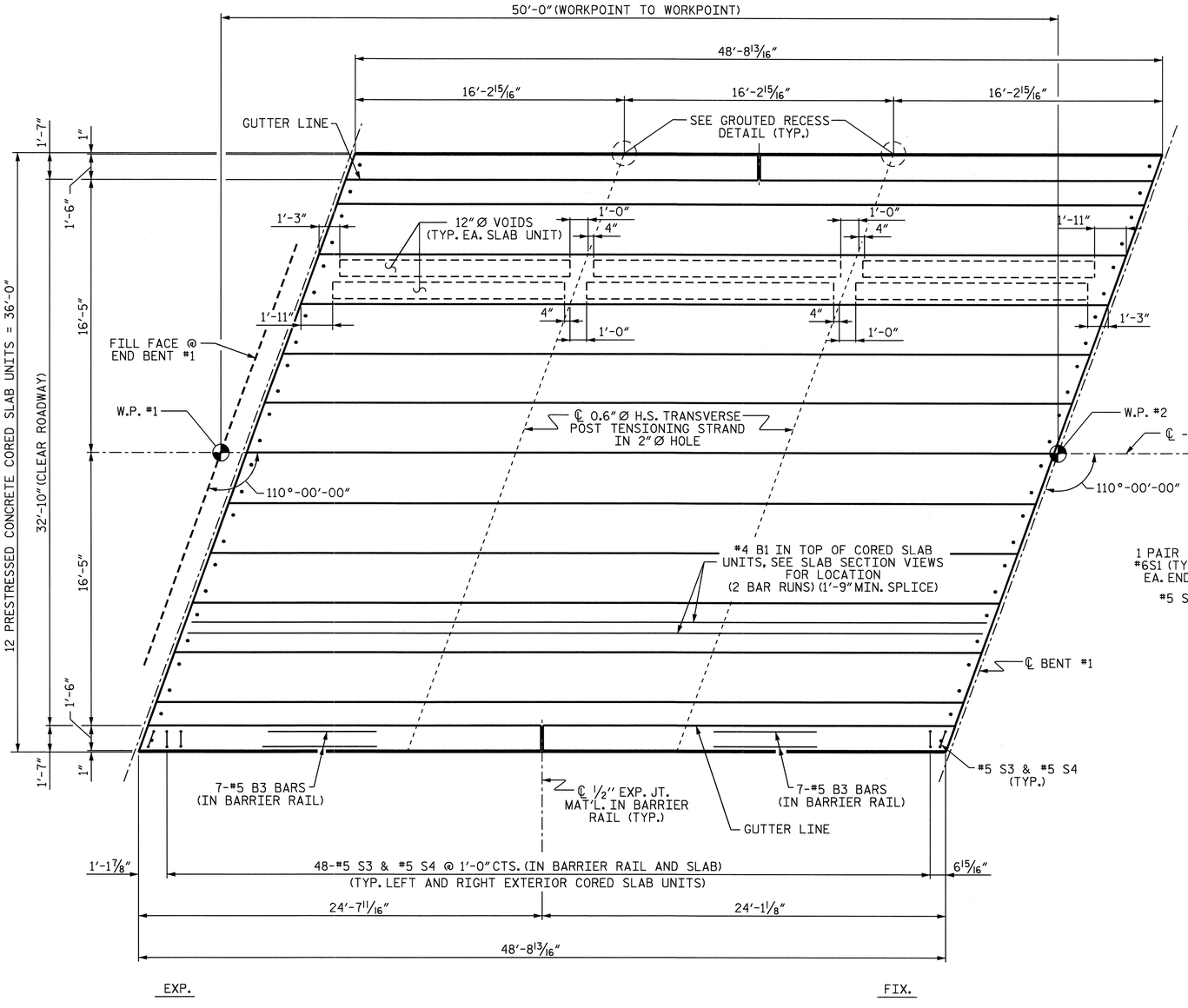
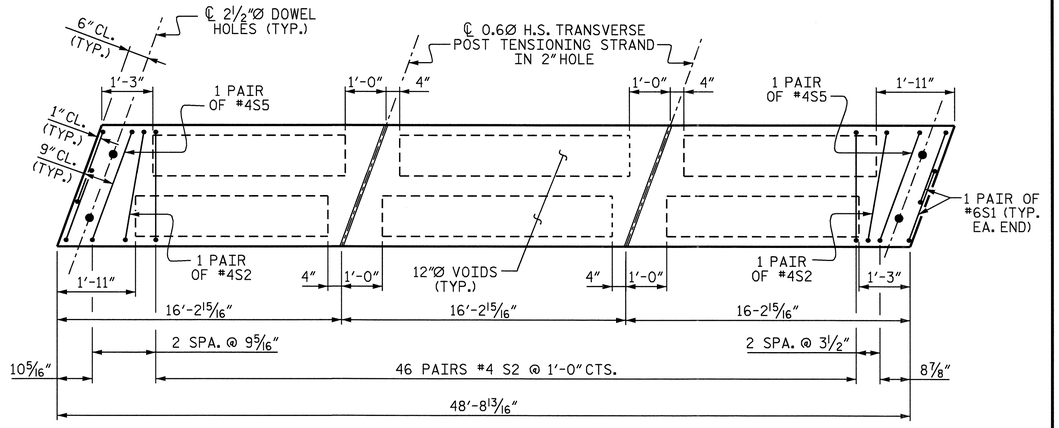
bklappenbach

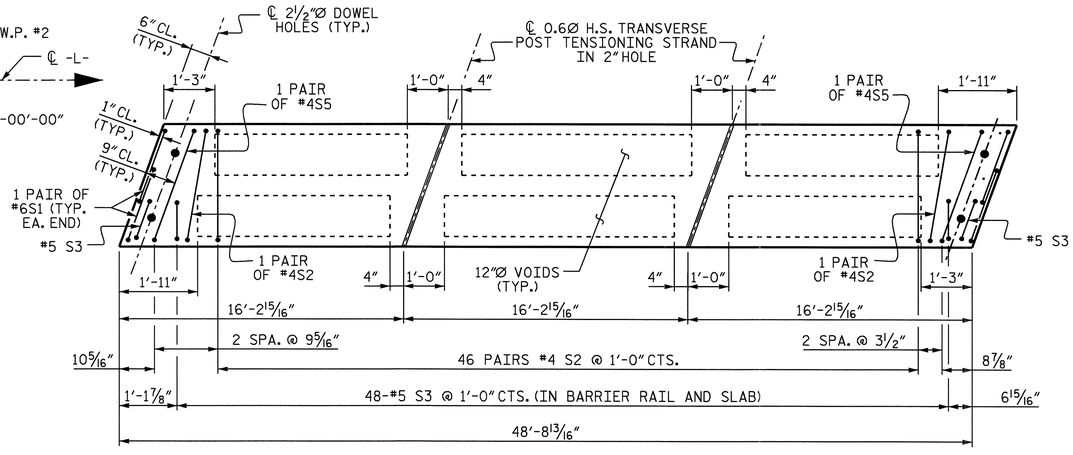
STR. #1 STD. No. PCS2



PLAN OF SPAN A



PLAN OF INTERIOR CORED SLAB UNIT SPAN A



PLAN OF EXTERIOR CORED SLAB UNIT SPAN A

PROJECT NO. B-4060

CATAWBA COUNTY

STATION: 16+56.25 -L-

SHEET 2 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" x 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT PLAN OF SPAN A

NORTH CAROLINA PROFESSIONAL SEAL 15825 ENGINEER BRUCE D. KLAPPERICH
3-6-07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : J.B.W. / K.M.M. DATE : 11/18/04
CHECKED BY : D.A. GLADDEN DATE : 5/31/05

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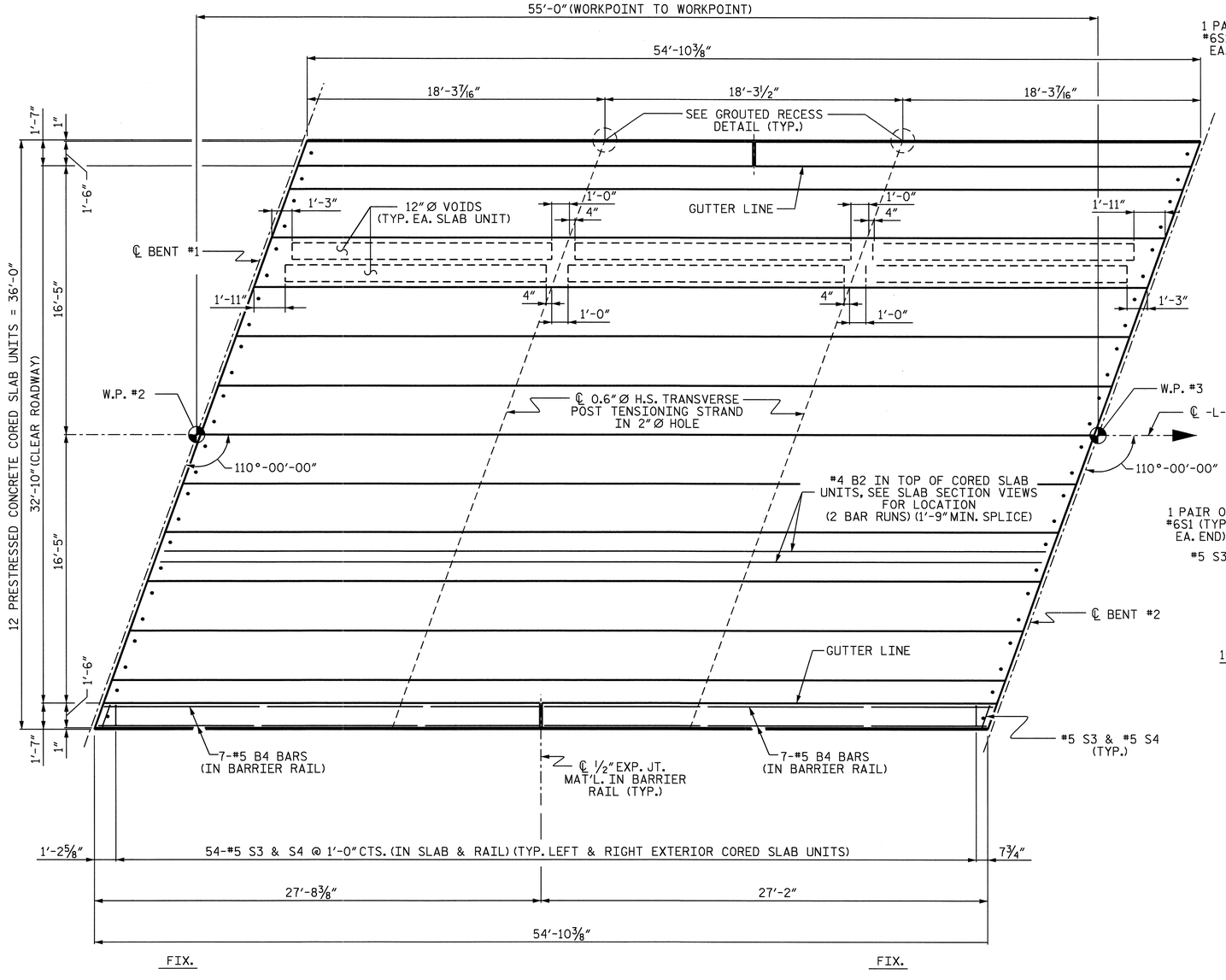
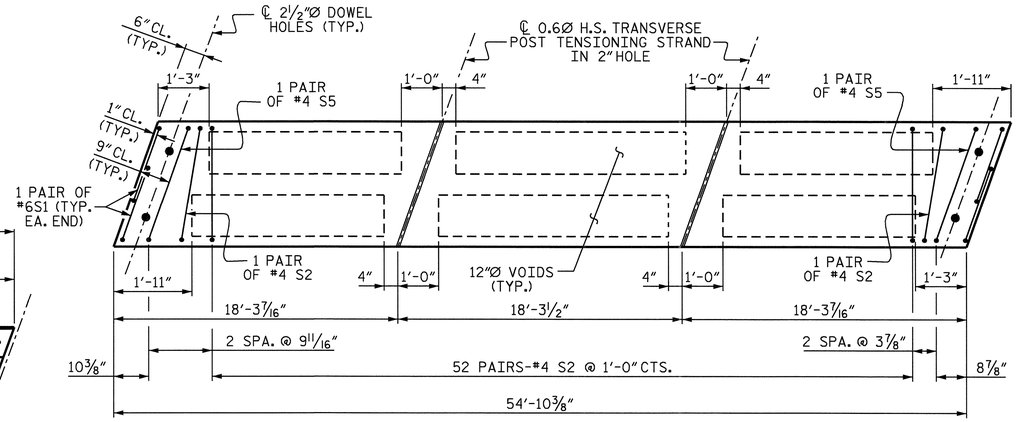


PLAN OF SPAN B



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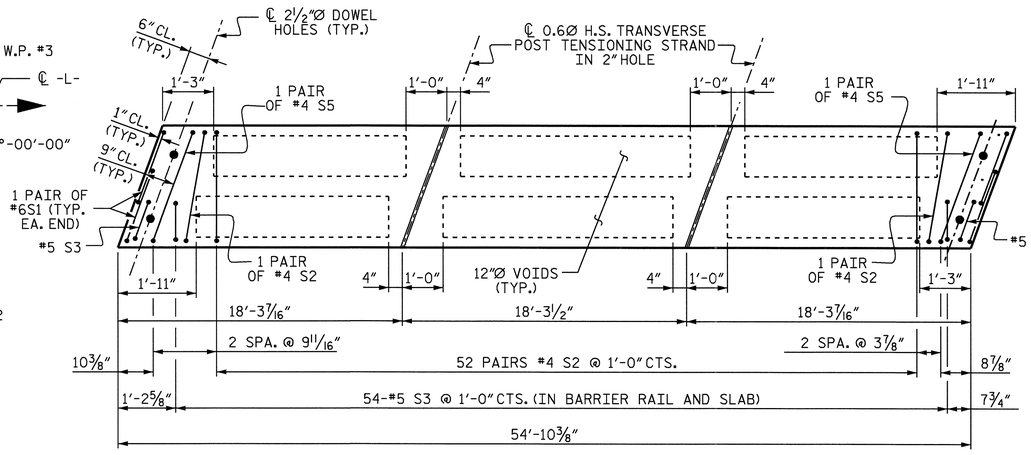

PLAN OF EXTERIOR CORED SLAB UNIT SPAN B

PROJECT NO. B-4060

CATAWBA COUNTY

STATION: 16+56.25 -L-

SHEET 3 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" x 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT PLAN OF SPAN B

NORTH CAROLINA PROFESSIONAL SEAL 19825 ENGINEER BRUCE D. KLAPPENBACH
3-6-07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : J.B.W. / K.M.M. DATE : 11/18/04
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STR. #1

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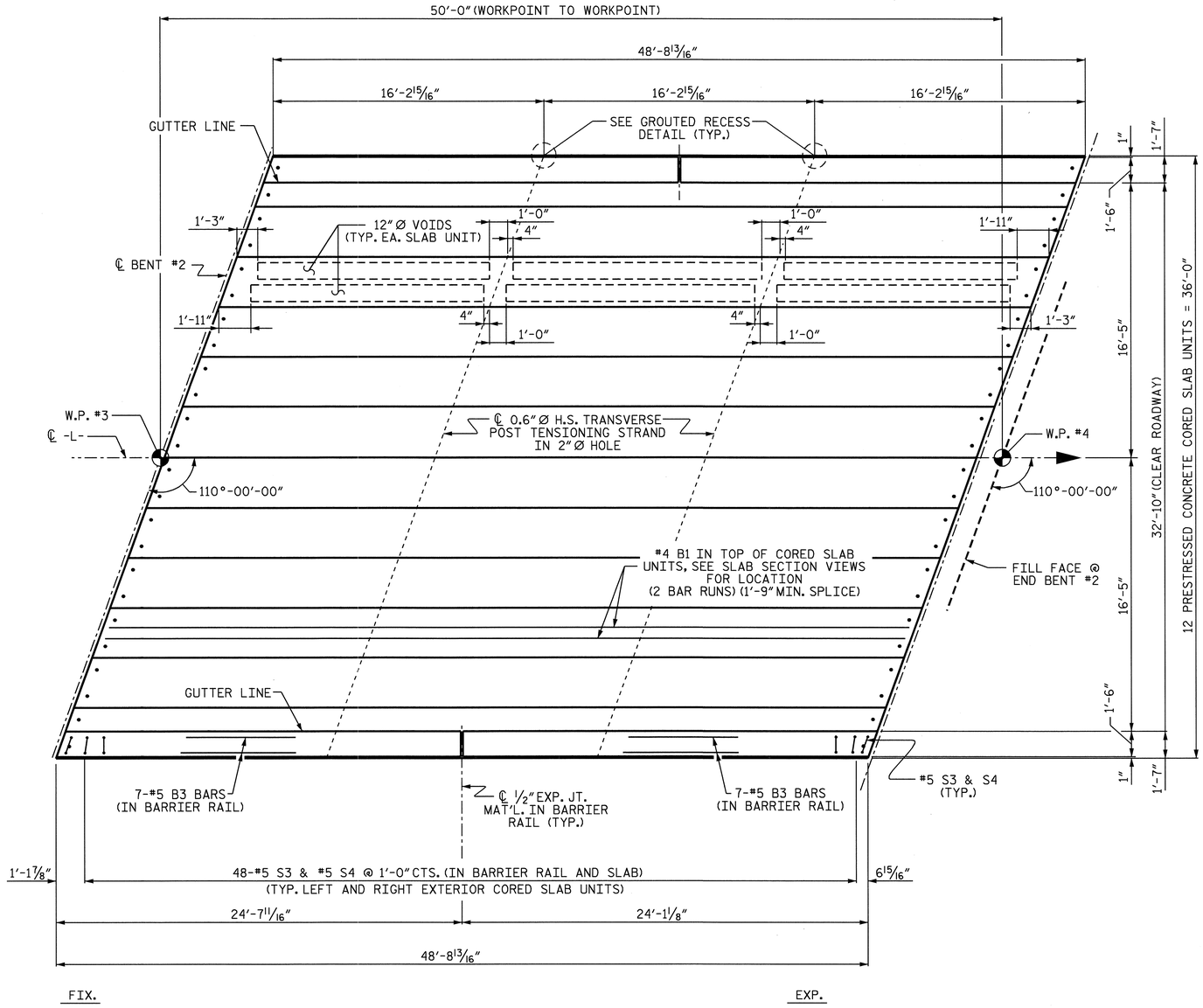
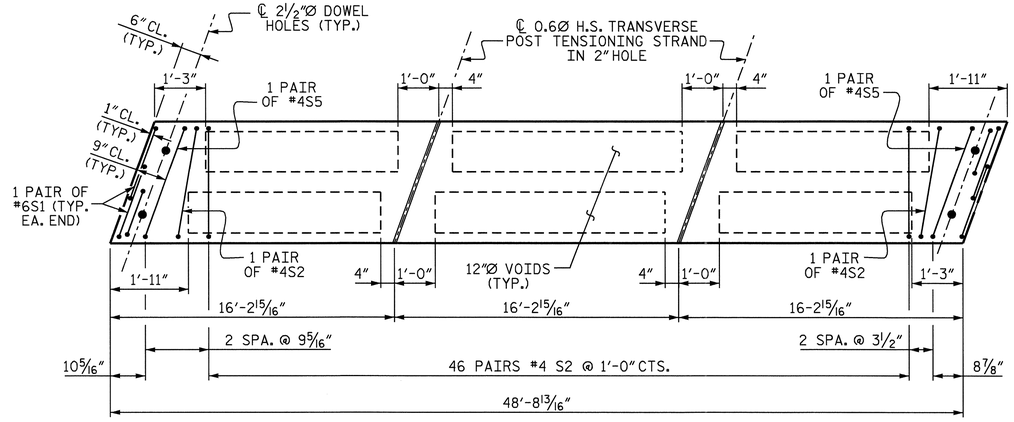


PLAN OF SPAN C



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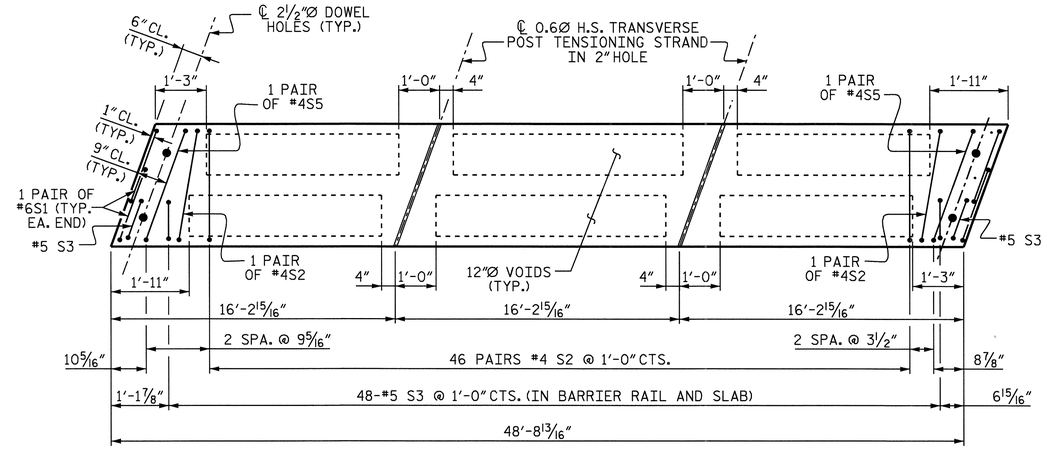

PLAN OF EXTERIOR CORED SLAB UNIT SPAN C

PROJECT NO. B-4060

CATAWBA COUNTY

STATION: 16+56.25 -L-

SHEET 4 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" x 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT PLAN OF SPAN C

NORTH CAROLINA PROFESSIONAL SEAL 15825 ENGINEER B. K. KLAPPENBACH
3-6-07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			25

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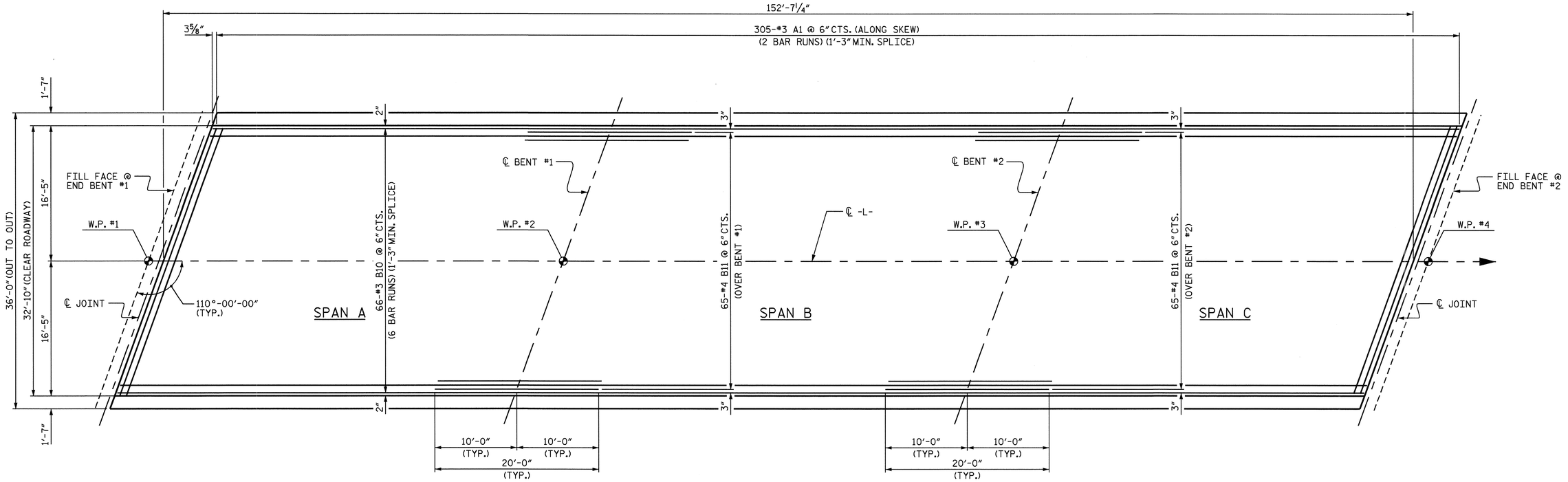

NOTES

PLACEMENT OF THE CONCRETE WEARING SURFACE SHALL OCCUR AFTER CASTING THE CONCRETE BARRIER RAIL. THE COST OF THE REINFORCING STEEL CAST WITH THE CONCRETE WEARING SURFACE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE WEARING SURFACE. FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

PLAN OF REINFORCING STEEL FOR CONCRETE WEARING SURFACE

PROJECT NO. B-4060

CATAWBA COUNTY

STATION: 16+56.25 -L-

SHEET 5 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

REINFORCING STEEL FOR CONCRETE WEARING SURFACE

NORTH CAROLINA PROFESSIONAL SEAL 15825 ENGINEER BRUCE D. KLAPPENBACH

3-6-07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
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DRAWN BY : K. McCAULEY DATE : 2/2/06
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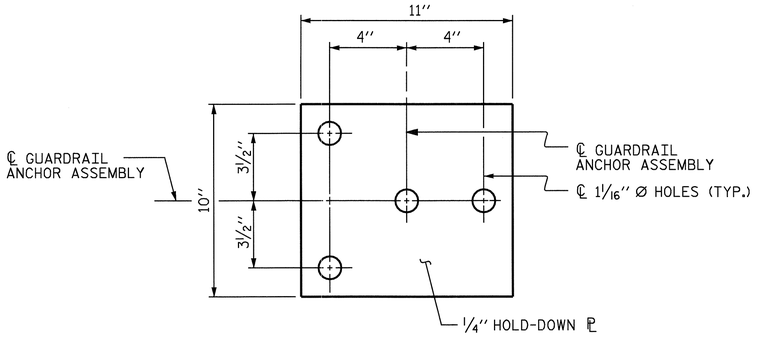
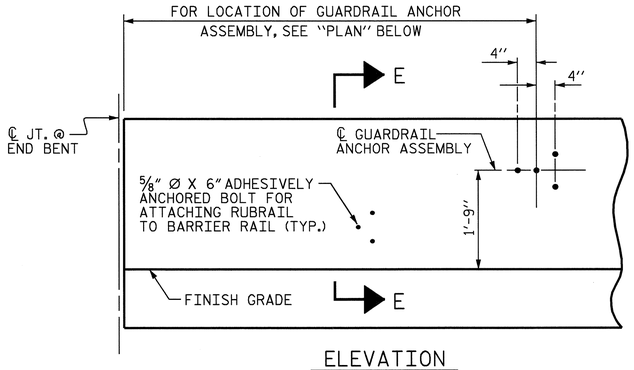
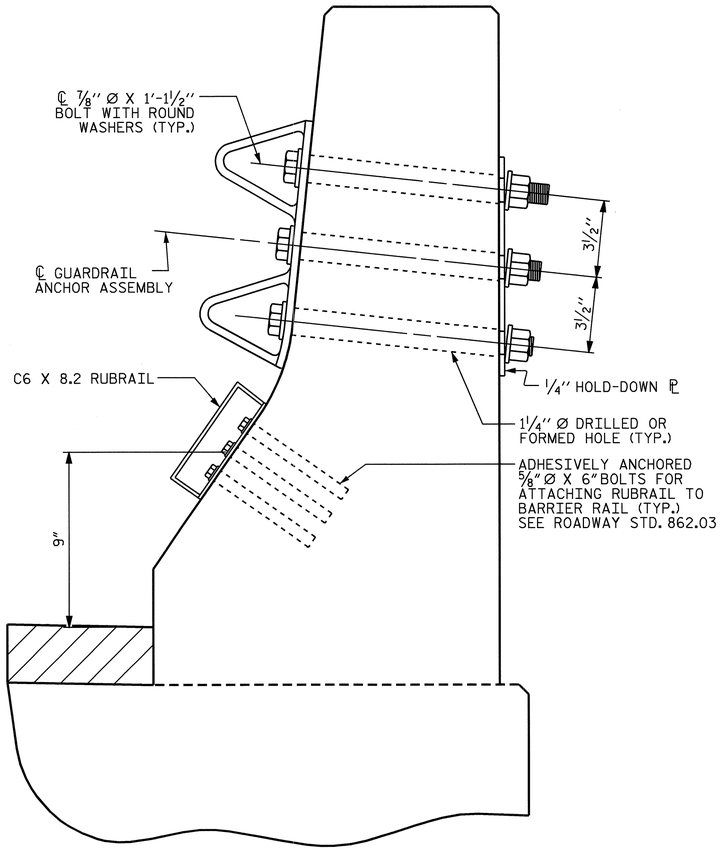


PLAN



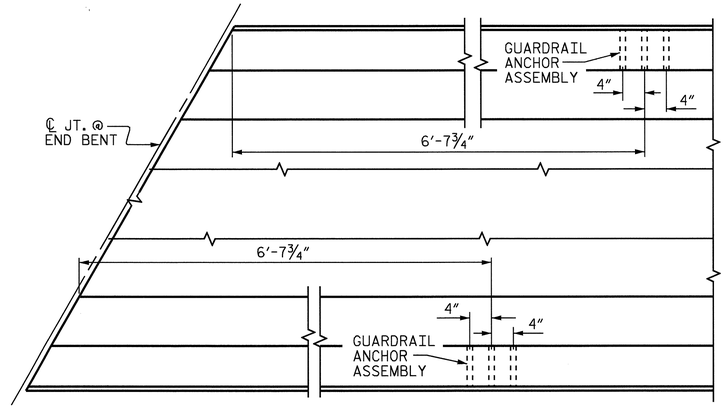
ELEVATION

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.)

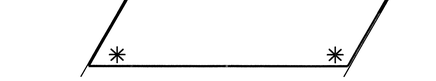
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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 5/8" Ø X 6" BOLTS WITH WASHERS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.



SKETCH SHOWING POINTS OF ATTACHMENTS

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-4060

CATAWBA COUNTY

STATION: 16+56.25 -L-

SHEET 6 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

GUARDRAIL ANCHORAGE FOR BARRIER RAIL

NORTH CAROLINA PROFESSIONAL SEAL 15825 ENGINEER BRUCE D. KLAPPENBACH
3-6-07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			25

STD. NO. GRA2

ASSEMBLED BY : K. McCAULEY DATE : 7/26/06	
CHECKED BY : D. A. GLADDEN DATE : 7/26/06	
DRAWN BY : TLA 5/06	ADDED 5/1/06
CHECKED BY : GM 5/06	

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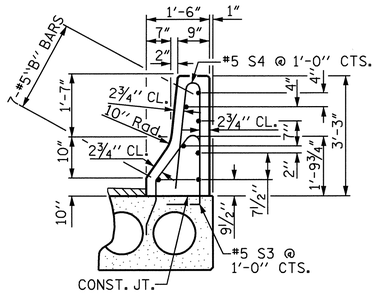
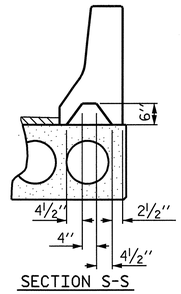
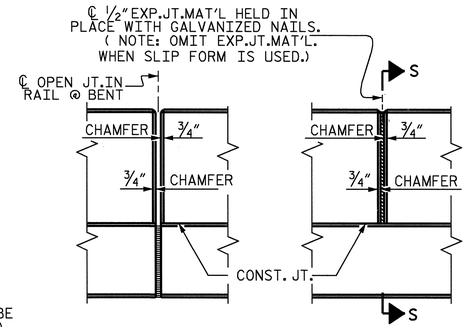


SECTION THRU RAIL



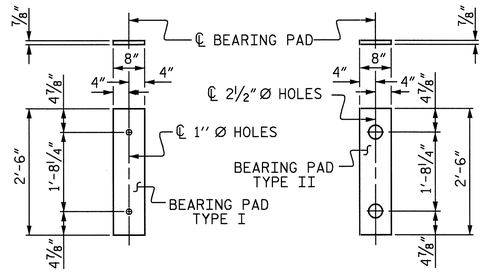
SECTION S-S

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



ELEVATION AT EXPANSION JOINTS

BARRIER RAIL DETAILS



FIXED END
(TYPE I - 48 REQ'D.)

EXPANSION END
(TYPE II - 24 REQ'D.)

ELASTOMERIC BEARING DETAILS

BILL OF MATERIAL FOR REINFORCING STEEL IN CONCRETE OVERLAY

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	610	# 3	STR	17'-11"	4109
✳ B10	396	# 3	STR	26'-5"	3933
✳ B11	130	# 4	STR	20'-0"	1737
✳ EPOXY COATED REINFORCING STEEL					9779 LBS.
CONCRETE WEARING SURFACEN (SQ. FT.)					5011
CONCRETE WEARING SURFACE (APPROX. CU. YDS.)					95.5

DEAD LOAD DEFLECTION AND CAMBER

	3'-0" × 1'-9" 0.6" Ø L.R. STRAND		
	SPAN "A"	SPAN "B"	SPAN "C"
	0.6" Ø L.R. STRAND	0.6" Ø L.R. STRAND	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	2 5/16" ↑	2 15/16" ↑	2 5/16" ↑
DEFLECTION DUE TO CONCRETE OVERLAY	3/16" ↓	1/4" ↓	3/16" ↓
FINAL CAMBER	2 1/8" ↑	2 11/16" ↑	2 1/8" ↑

GROOVING BRIDGE FLOORS

BRIDGE DECK	4515 SQ. FT.
APPPROACH SLABS	1454 SQ. FT.
TOTAL	5969 SQ. FT.

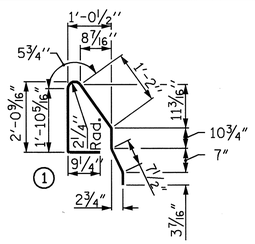
BILL OF MATERIAL FOR CONCRETE BARRIER RAIL

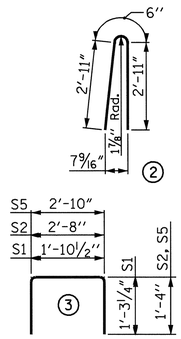
BAR	BARS PER SPAN			TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	SPAN A	SPAN B	SPAN C					
✳ B3	28		28	56	# 5	STR	23'-10"	1392
✳ B4		28		28	# 5	STR	26'-10"	784
✳ S4	100	112	100	312	# 5	2	6'-4"	2061
✳ EPOXY COATED REINFORCING STEEL LBS.								4237
CLASS AA CONCRETE CU.YDS.								40.4
TOTAL LIN. FT. OF CONCRETE BARRIER RAIL								304.67

CORED SLABS REQUIRED

	SPAN 'A'		SPAN 'B'		SPAN 'C'		TOTAL	
	NUMBER	LENGTH	NUMBER	LENGTH	NUMBER	LENGTH	NUMBER	LENGTH
EXTERIOR C.S.	2	48'-8 13/16"	2	54'-10 3/8"	2	48'-8 13/16"	6	304'-8"
INTERIOR C.S.	10	48'-8 13/16"	10	54'-10 3/8"	10	48'-8 13/16"	30	1523'-4"
TOTAL	12	584'-9 3/4"	12	658'-4 1/2"	12	584'-9 3/4"	36	1828'-0"

BAR TYPES





ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE CORED SLAB SECTION (SPAN A & C)

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B1	4	# 4	STR	25'-1"	67	25'-1"	67
S1	8	# 6	3	4'-5"	53	4'-5"	53
S2	96	# 4	3	5'-4"	342	5'-4"	342
✳ S3	50	# 5	1	6'-1"	317		
S5	4	# 4	3	5'-6"	15	5'-6"	15
REINFORCING STEEL			LBS.		477		477
✳ EPOXY COATED REINFORCING STEEL			LBS.		317		
5000 P.S.I. CONCRETE			CU. YDS.		6.9		6.9
0.6" Ø L.R. STRANDS			No.		18		18

BILL OF MATERIAL FOR ONE CORED SLAB SECTION (SPAN B)

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B2	4	# 4	STR	28'-2"	75	28'-2"	75
S1	8	# 6	3	4'-5"	53	4'-5"	53
S2	108	# 4	3	5'-4"	385	5'-4"	385
✳ S3	56	# 5	1	6'-1"	355		
S5	4	# 4	3	5'-6"	15	5'-6"	15
REINFORCING STEEL			LBS.		528		528
✳ EPOXY COATED REINFORCING STEEL			LBS.		355		
5800 P.S.I. CONCRETE			CU. YDS.		7.8		7.7
0.6" Ø L.R. STRANDS			No.		20		20

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 CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

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

THE 2½" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH GROUT. THE 2½" Ø DOWEL HOLES AT EXPANSION ENDS OF SLAB SECTIONS SHALL BE FILLED WITH JOINT SEALER MATERIAL TO 1½" ABOVE THE TOP OF DOWELS AND THEN FILLED WITH GROUT.

WHEN CORED SLABS ARE CAST, A POSITIVE HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. THIS SYSTEM SHALL BE DESIGNED TO BE LEFT IN PLACE UNTIL THE CONCRETE HAS REACHED RELEASE STRENGTH. AT LEAST THREE WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

WHEN A CONCRETE WEARING SURFACE IS DETAILED ON THE CORED SLAB BRIDGE TYPICAL SECTION, THE TOP SURFACE OF THE CORED SLAB UNITS SHALL HAVE A 3/8" RAKED FINISH.

IN SPAN A AND SPAN C, THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4000 PSI.

IN SPAN B, THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4400 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB 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.

PLACEMENT OF THE CONCRETE WEARING SURFACE SHALL OCCUR AFTER CASTING THE CONCRETE RAIL. THE COST OF THE REINFORCING STEEL CAST WITH THE CONCRETE WEARING SURFACE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE WEARING SURFACE. FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

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

PROJECT NO. B-4060

CATAWBA COUNTY

STATION: 16+56.25 -L-

SHEET 7 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			25

ASSEMBLED BY : J.B.W. / K.M.M.	DATE : 11/18/04	
CHECKED BY : D.A. GLADDEN	DATE : 5/31/05	
DRAWN BY : WJH 4/89	REV. 10/17/00	RWW/LES
CHECKED BY : FCJ 5/89	REV. 7/10/01	RWW/LES
	REV. 5/7/03RR	RWW/JTE

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STR. #1

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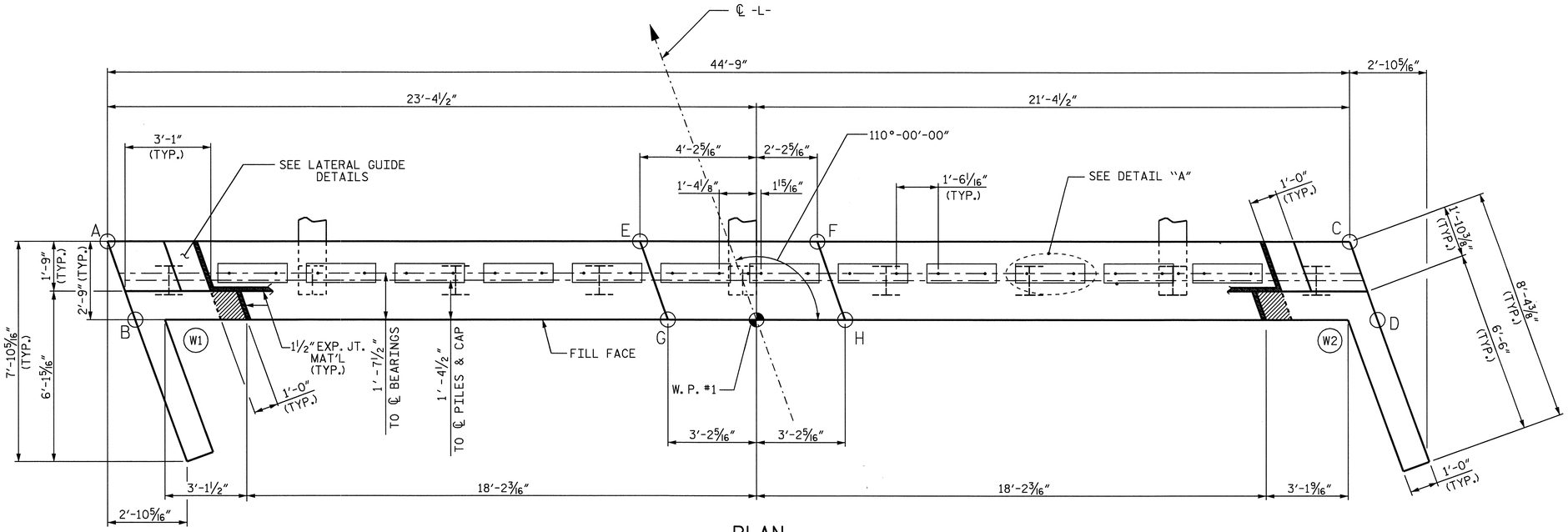

PLAN

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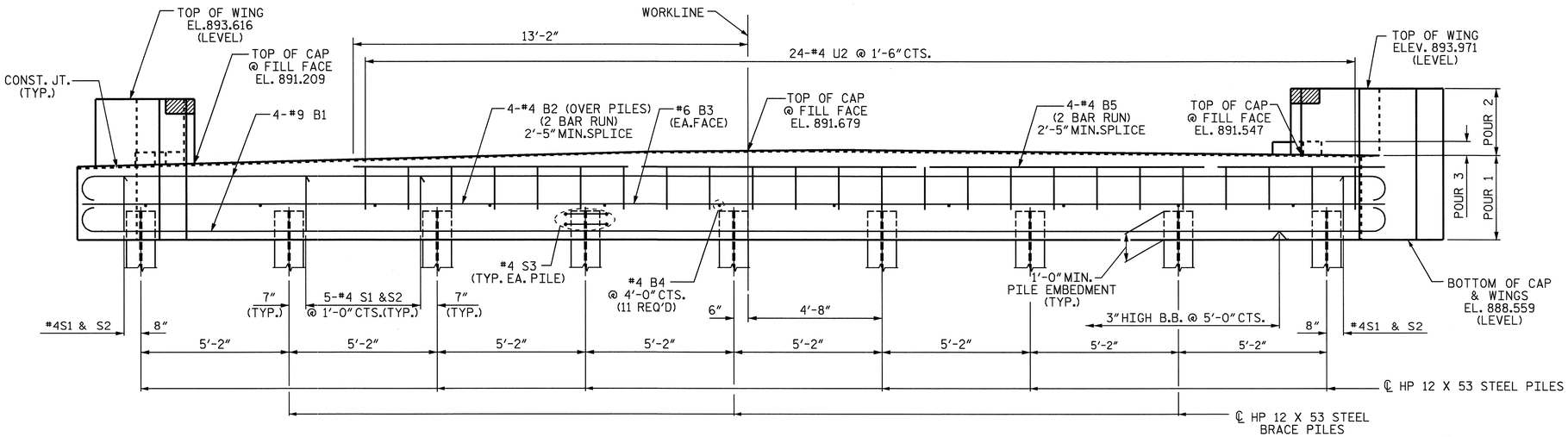


ELEVATION

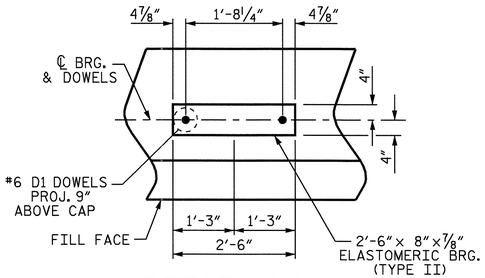
NOTES

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

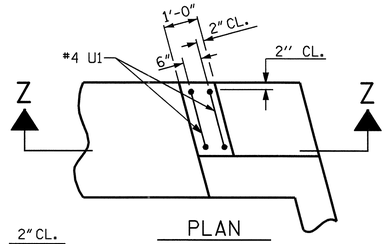
THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.

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

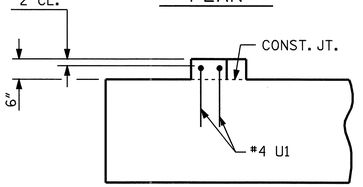
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.



DETAIL "A"



PLAN



SECTION Z-Z

LATERAL GUIDE DETAILS

PROJECT NO. B-4060

CATAWBA COUNTY

16+56.25 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT #1

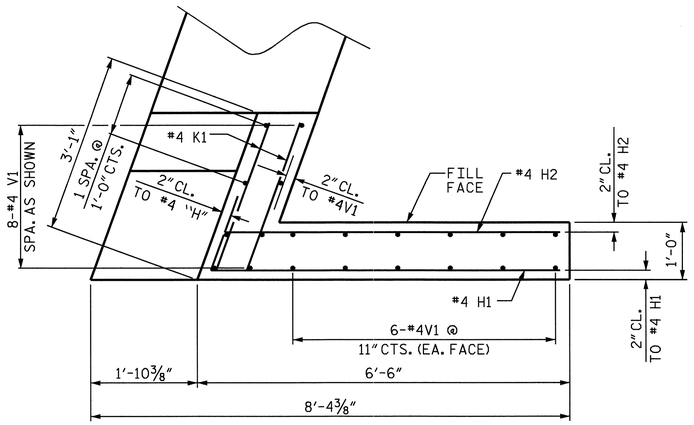
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			25

STR #1

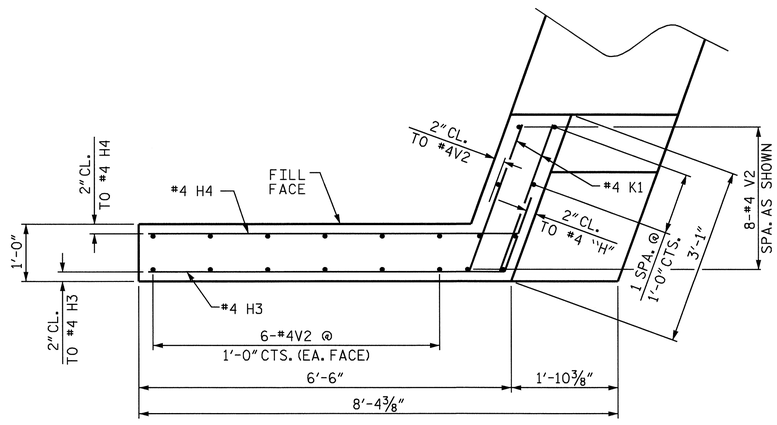
NORTH CAROLINA PROFESSIONAL SEAL 15825 ENGINEER BRUCE D. KLAPPENBACH
2-26-07

DRAWN BY : M. G. SHAIKH DATE : 11-12-04
CHECKED BY : D. A. GLADDEN DATE : 2-16-06

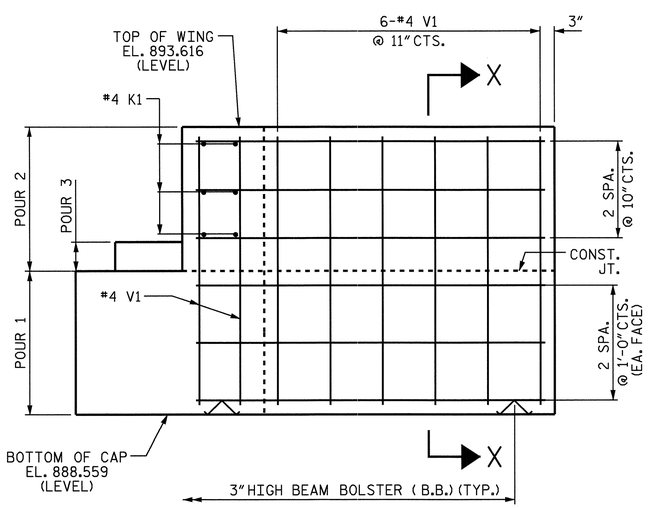
23-FEB-2007 16:09
R:\Structures\mshaikh\Microstation\B-4060_sd_E*_01.dgn
bklappenbach



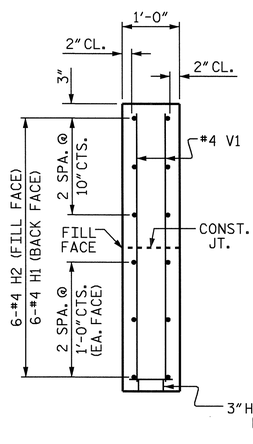
PLAN OF LEFT WING - W1



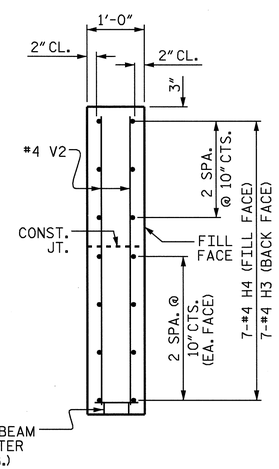
PLAN OF RIGHT WING - W2



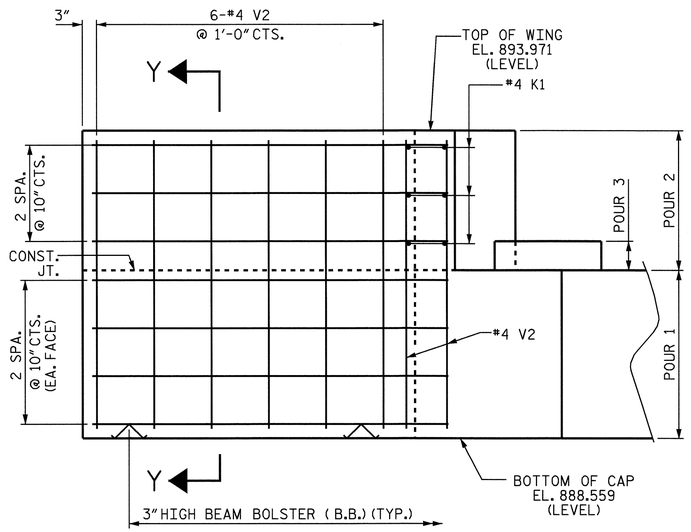
ELEVATION OF LEFT WING - W1



SECTION X-X



SECTION Y-Y



ELEVATION OF RIGHT WING - W2

PROJECT NO. B-4060

CATAWBA COUNTY

STATION: 16+56.25 -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-12
1			3			TOTAL SHEETS
2			4			25

STR #1

DRAWN BY : M. G. SHAIKH DATE : 11-15-04
CHECKED BY : D. A. GLADDEN DATE : 2-16-06

23-FEB-2007 16:09
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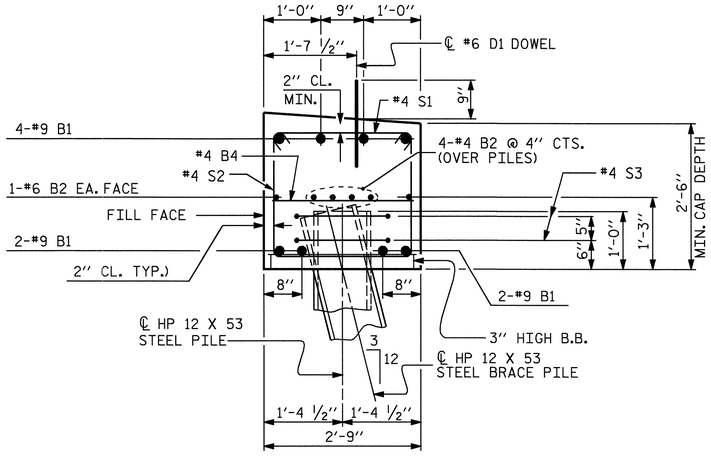
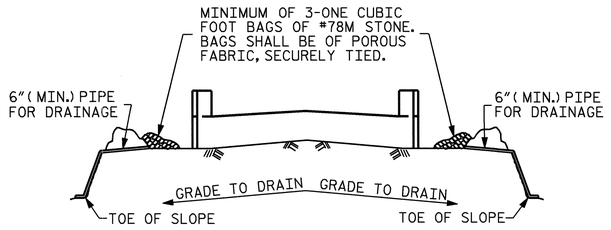
bklappenbach



SECTION THRU CAP



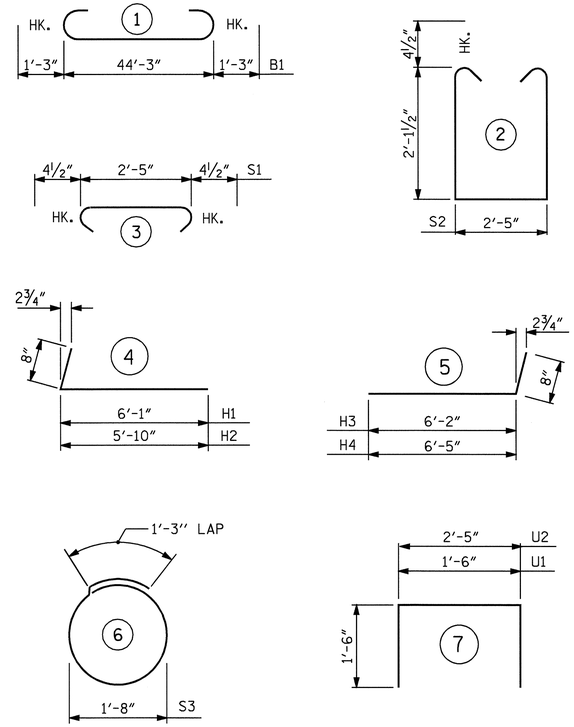
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

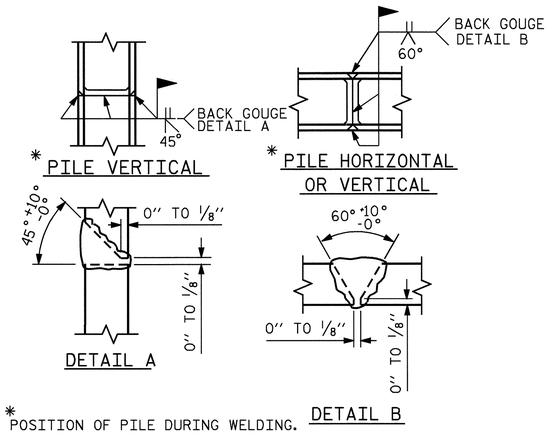
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	9	1	46'-9"	1272
B2	8	4	STR	23'-5"	125
B3	2	6	STR	44'-5"	133
B4	11	4	STR	2'-5"	18
B5	8	4	STR	18'-10"	101
D1	24	6	STR	1'-6"	54
H1	6	4	4	6'-9"	27
H2	6	4	4	6'-6"	26
H3	7	4	5	6'-10"	32
H4	7	4	5	7'-1"	33
K1	12	4	STR	2'-8"	21
S1	42	4	3	3'-2"	89
S2	42	4	2	7'-5"	208
S3	18	4	6	6'-6"	78
U1	4	4	7	4'-6"	12
U2	24	4	7	5'-5"	87
V1	20	4	STR	4'-8"	62
V2	20	4	STR	5'-0"	67

REINFORCING STEEL (LBS) 2445

CLASS A CONCRETE (CU. YDS.)

POUR #1	CAP & LOWER PART OF WINGS	13.5
POUR #2	UPPER PART OF WINGS	1.5
POUR #3	LATERAL GUIDES	0.1
	TOTAL	15.1

HP 12 X 53 STEEL PILES
NO. 9 LIN. FT. 360



* POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

PROJECT NO. B-4060
CATAWBA COUNTY
STATION: 16+56.25 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT #1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			25

NORTH CAROLINA PROFESSIONAL SEAL 15825 ENGINEER BRUCE D. KLAPPENBACH
2-26-07

DRAWN BY : M. G. SHAIKH DATE : 11-16-04
CHECKED BY : D. A. GLADDEN DATE : 2-16-06

23-FEB-2007 16:09
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bklappenbach

STR #1

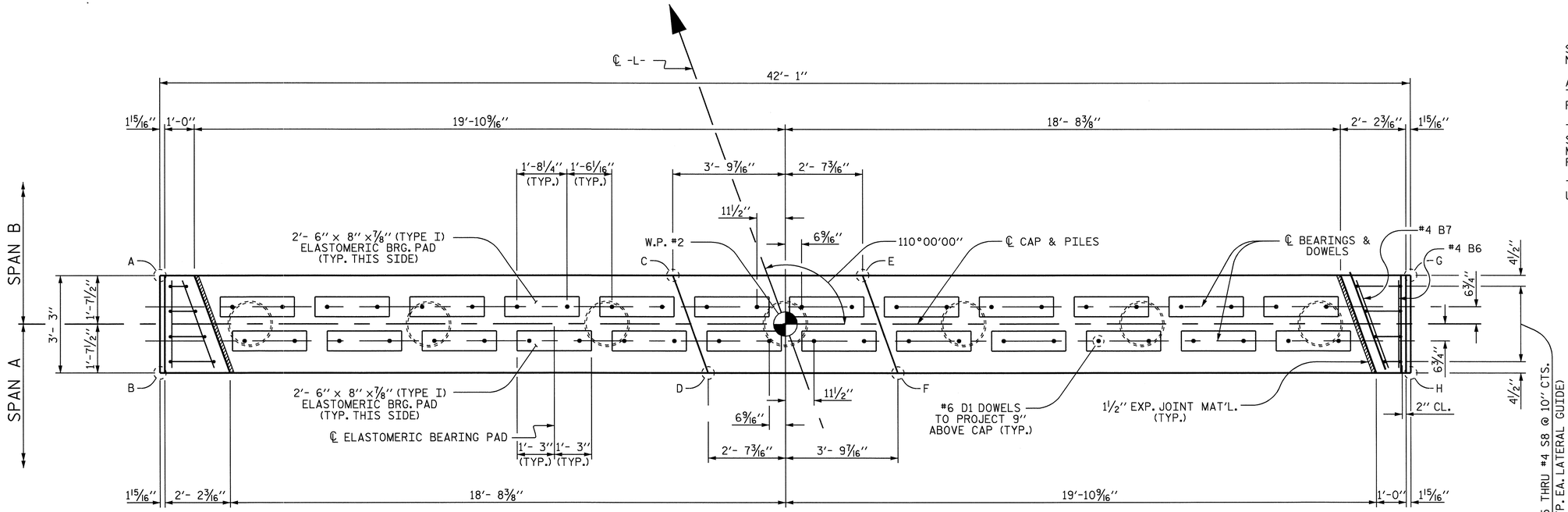
NOTES

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

ALL CONCRETE AND REINFORCING STEEL IN THE PIPE PILES ARE INCLUDED IN THE PAY ITEM FOR PP 18 X 0.50 STEEL PILES.

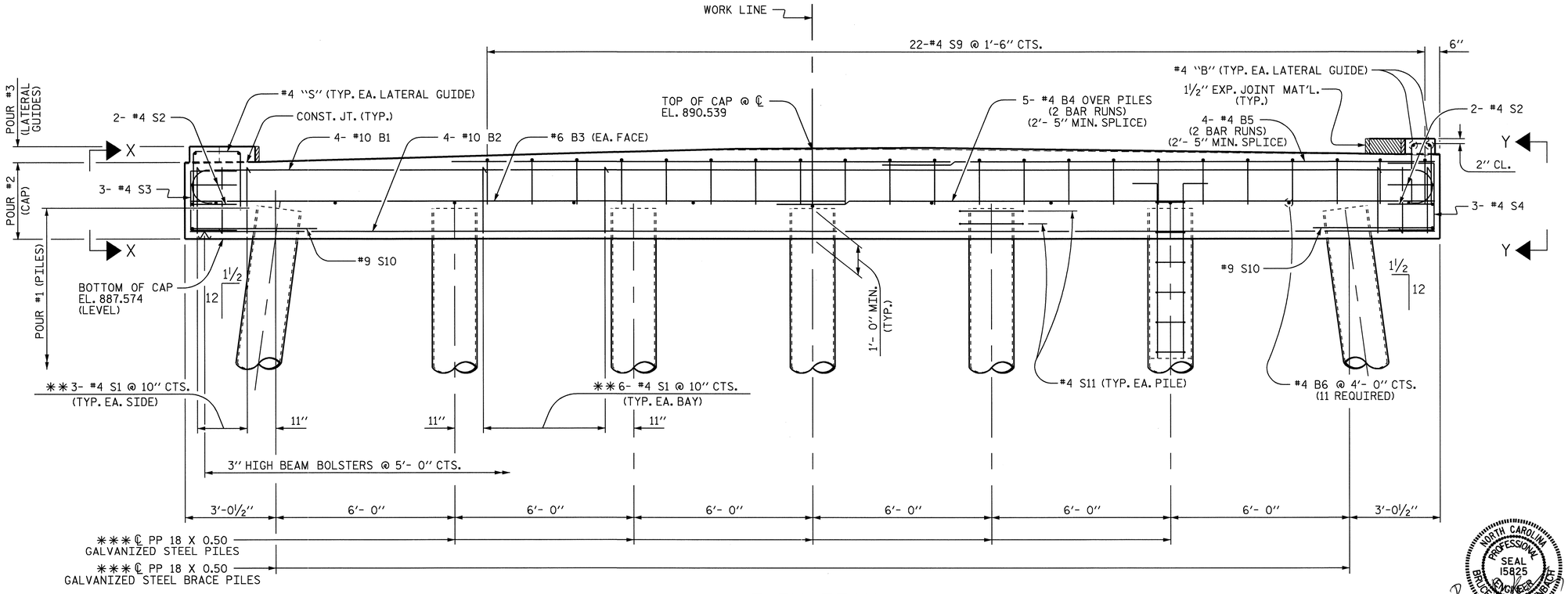
THE CONTRACTOR IS RESPONSIBLE FOR SECURING STEEL IN PIPE PILES TO MAINTAIN CLEARANCES AND CAP EMBEDMENT FOR REINFORCING STEEL.

THE LATERAL GUIDES SHALL NOT BE POURED UNTIL THE CORED SLAB UNITS ARE IN PLACE.



PLAN

CAP ELEVATIONS	
POINT	ELEVATION
A	890.074
B	890.115
C	890.514
D	890.564
E	890.556
F	890.606
G	890.350
H	890.392



ELEVATION

**STIRRUPS ARE AT INVERT ALTERNATE SPACINGS.
***FOR PP 18 X 0.50 STEEL PIPE DETAILS AND REINFORCING STEEL, SEE 18" STEEL PIPE PILE SHEET.

PROJECT NO. B-4060
CATAWBA COUNTY
STATION: 16+56.25 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT #1

NORTH CAROLINA PROFESSIONAL SEAL 15825 ENGINEER BRUCE D. KLAPPENBACH
3-6-07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : D. A. GLADDEN DATE : 7-25-05
CHECKED BY : M. G. SHAIKH DATE : 2-15-06

02-MAR-2007 14:18
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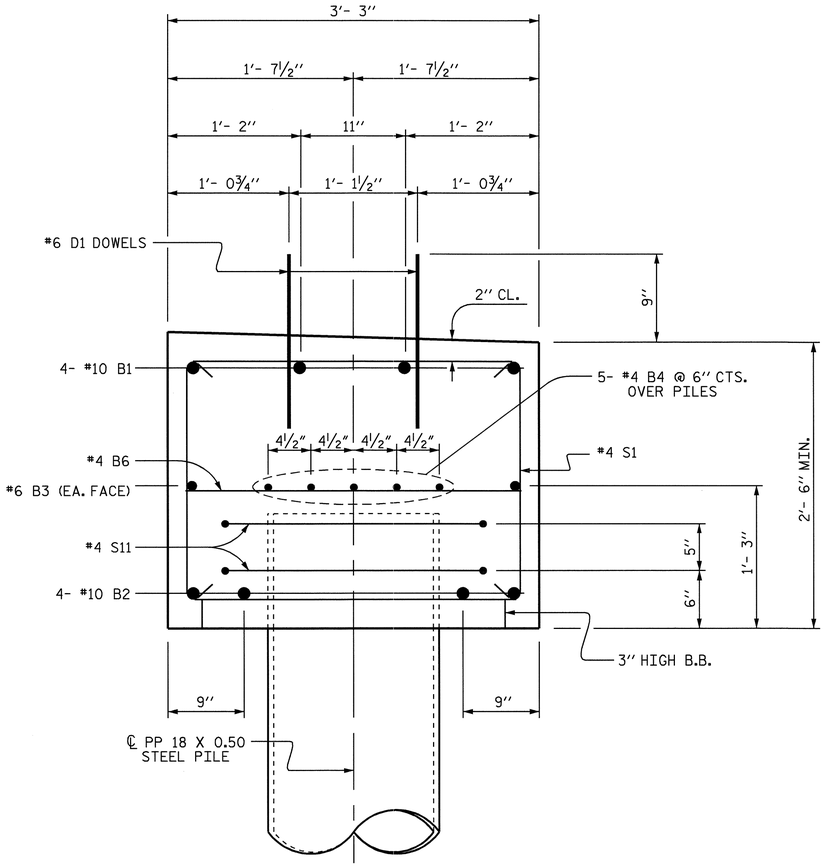
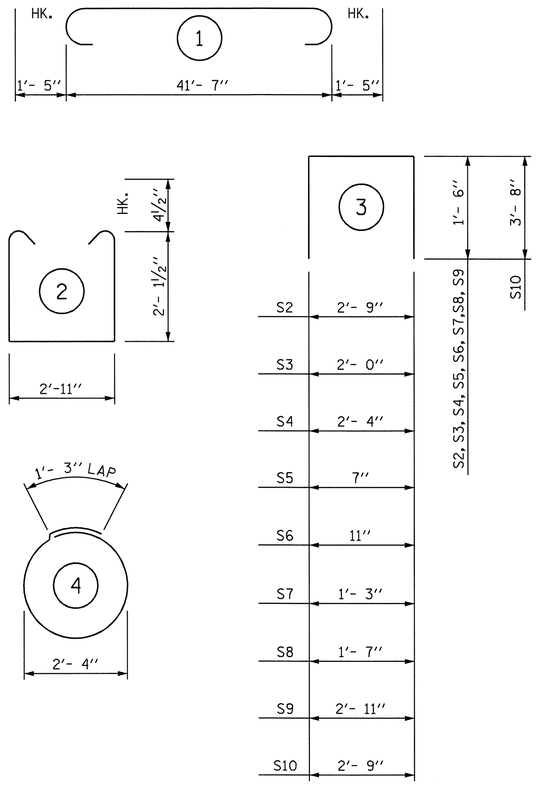
mshaikh



SECTION THRU CAP

REINFORCING STEEL IN PIPE PILE IS NOT SHOWN FOR CLAIRITY.

BAR TYPE



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	44'- 5"	765
B2	4	#10	STR	41'- 9"	719
B3	2	#6	STR	41'- 9"	125
B4	10	#4	STR	22'- 1"	148
B5	8	#4	STR	17'-10"	95
B6	13	#4	STR	2'- 11"	25
B7	2	#4	STR	3'- 1"	4
D1	48	#6	STR	1'- 6"	108
S1	42	#4	2	7'-11"	222
S2	4	#4	3	5'- 9"	15
S3	3	#4	3	5'- 0"	10
S4	3	#4	3	5'- 4"	11
S5	2	#4	3	3'- 7"	5
S6	2	#4	3	3'-11"	5
S7	2	#4	3	4'- 3"	6
S8	2	#4	3	4'- 7"	6
S9	22	#4	3	5'-11"	87
S10	2	#9	3	10'- 1"	69
S11	14	#4	4	8'- 7"	80

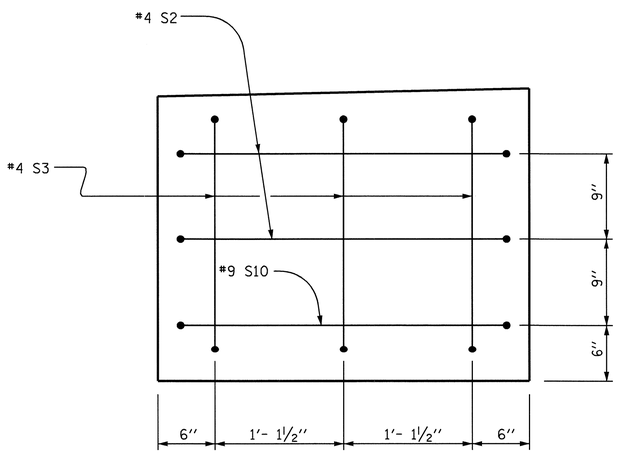
REINFORCING STEEL = 2505 LBS

CLASS A CONCRETE

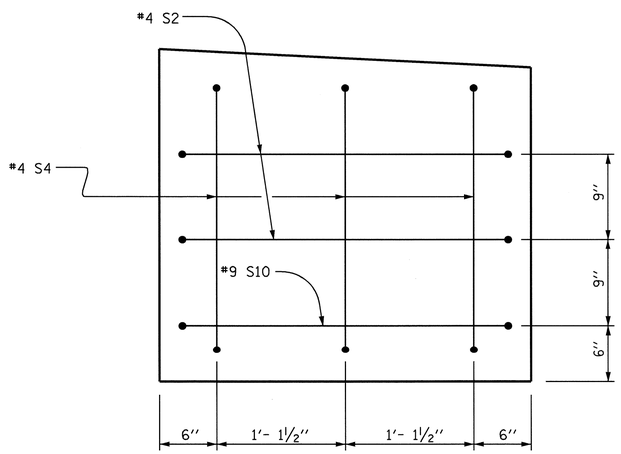
POUR #2 (CAP)	=	14.3 C.Y.
POUR #3 (LATERAL GUIDE)	=	0.2 C.Y.
TOTAL	=	14.5 C.Y.

PP 18 X 0.50 GALVANIZED STEEL PILES

NO. 7	LIN. FT.	280



VIEW "X-X"



VIEW "Y-Y"

NORTH CAROLINA PROFESSIONAL SEAL 15825 ENGINEER BRUCE D. KLAPPENBACH
3-6-07

PROJECT NO. B-4060

CATAWBA COUNTY

STATION: 16+56.25 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT #1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : D. A. GLADDEN DATE : 7-25-05
CHECKED BY : M. G. SHAIKH DATE : 2-15-06

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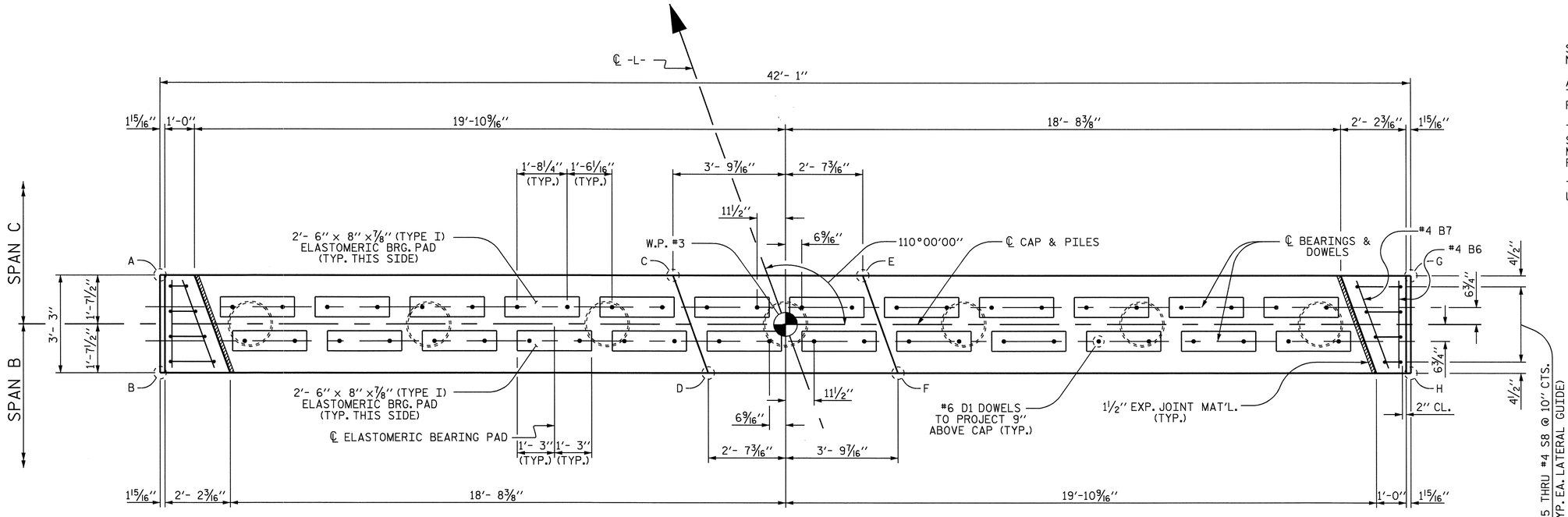
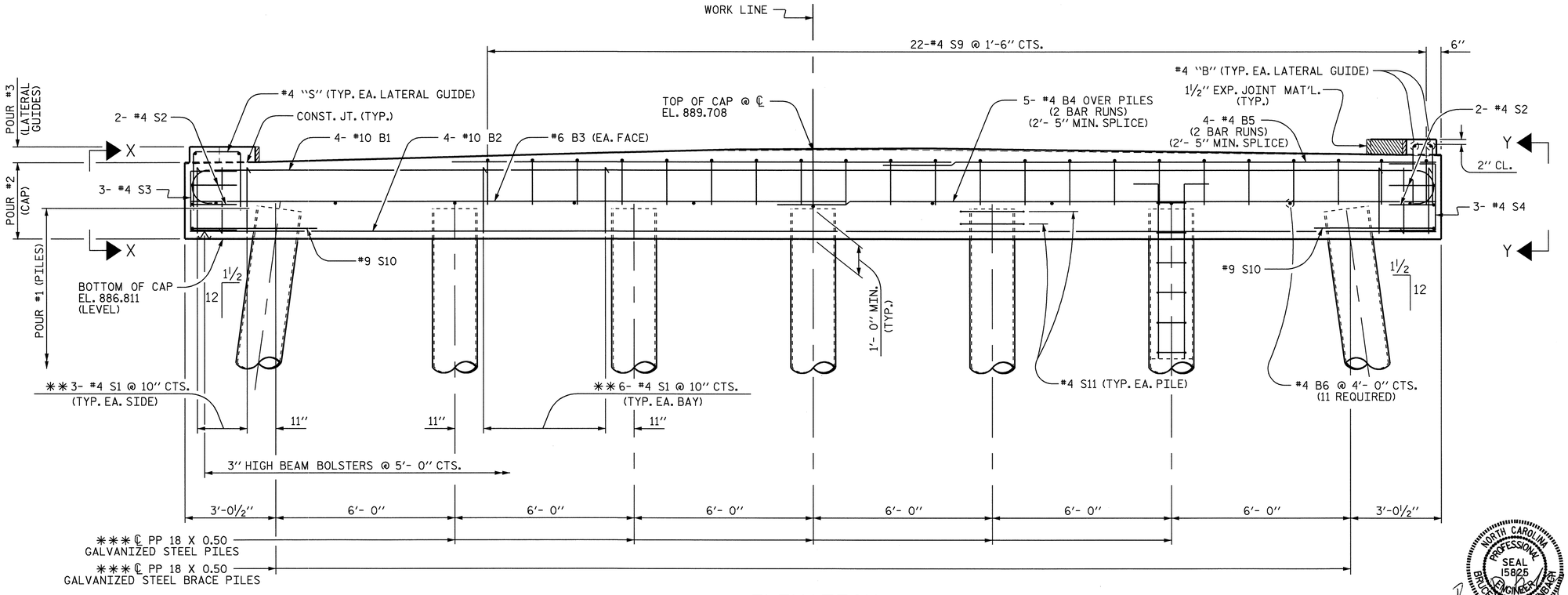


PLAN



ELEVATION

**STIRRUPS ARE AT INVERT ALTERNATE SPACINGS.
***FOR PP 18 X 0.50 STEEL PIPE DETAILS AND REINFORCING STEEL, SEE 18'' STEEL PIPE PILE SHEET.

NOTES

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

ALL CONCRETE AND REINFORCING STEEL IN THE PIPE PILES ARE INCLUDED IN THE PAY ITEM FOR PP 18 X 0.50 STEEL PILES.

THE CONTRACTOR IS RESPONSIBLE FOR SECURING STEEL IN PIPE PILES TO MAINTAIN CLEARANCES AND CAP EMBEDMENT FOR REINFORCING STEEL.

THE LATERAL GUIDES SHALL NOT BE POURED UNTIL THE CORED SLAB UNITS ARE IN PLACE.

CAP ELEVATIONS	
POINT	ELEVATION
A	889.311
B	889.353
C	889.695
D	889.741
E	889.719
F	889.765
G	889.465
H	889.507

PROJECT NO. B-4060
CATAWBA COUNTY
STATION: 16+56.25 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT #2

NORTH CAROLINA PROFESSIONAL SEAL 15825 ENGINEER BRUCE D. KLAPPENBACH
3-6-07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : D. A. GLADDEN DATE : 7-25-05
CHECKED BY : M. G. SHAIKH DATE : 2-15-06

02-MAR-2007 14:19
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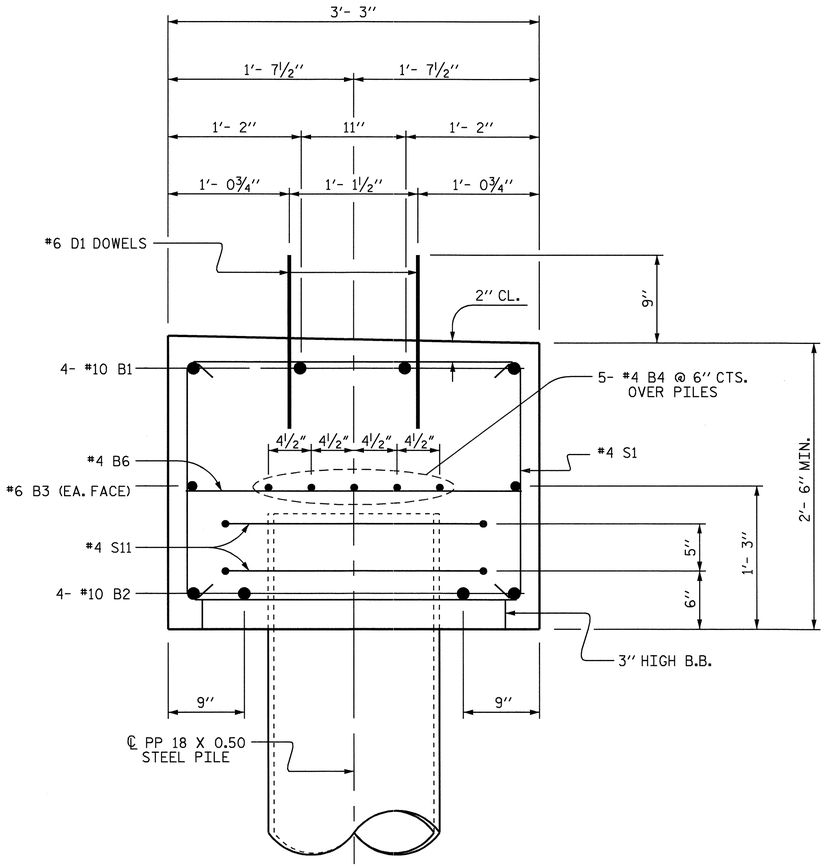
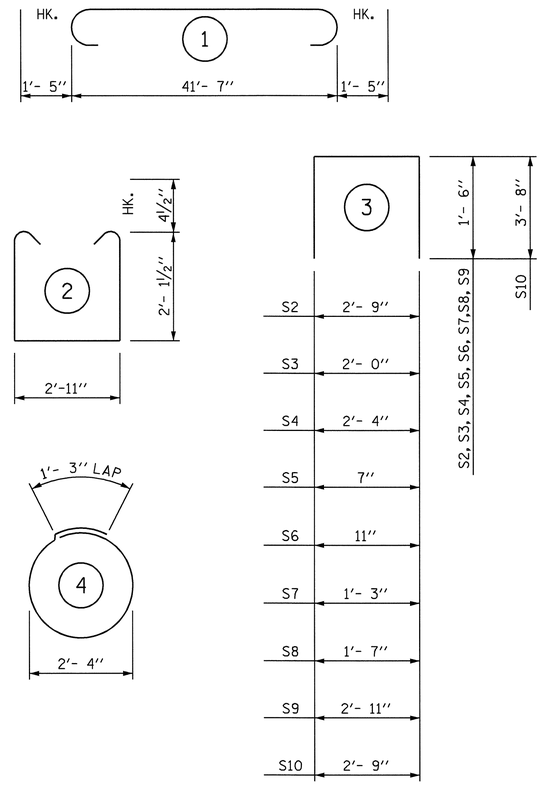


SECTION THRU CAP

REINFORCING STEEL IN PIPE PILE IS NOT SHOWN FOR CLAIRITY.

BAR TYPE



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	44'- 5"	765
B2	4	#10	STR	41'- 9"	719
B3	2	#6	STR	41'- 9"	125
B4	10	#4	STR	22'- 1"	148
B5	8	#4	STR	17'-10"	95
B6	13	#4	STR	2'- 11"	25
B7	2	#4	STR	3'- 1"	4
D1	48	#6	STR	1'- 6"	108
S1	42	#4	2	7'-11"	222
S2	4	#4	3	5'- 9"	15
S3	3	#4	3	5'- 0"	10
S4	3	#4	3	5'- 4"	11
S5	2	#4	3	3'- 7"	5
S6	2	#4	3	3'-11"	5
S7	2	#4	3	4'- 3"	6
S8	2	#4	3	4'- 7"	6
S9	22	#4	3	5'-11"	87
S10	2	#9	3	10'- 1"	69
S11	14	#4	4	8'- 7"	80

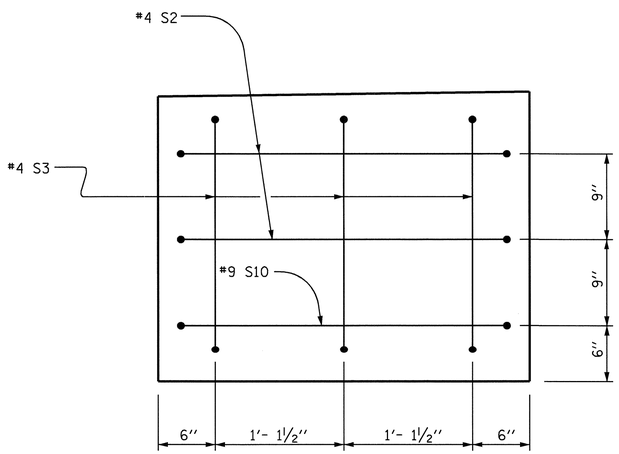
REINFORCING STEEL = 2505 LBS

CLASS A CONCRETE

POUR #2 (CAP)	=	14.0 C.Y.
POUR #3 (LATERAL GUIDE)	=	0.2 C.Y.
TOTAL	=	14.2 C.Y.

PP 18 X 0.50 GALVANIZED STEEL PILES

NO. 7	LIN. FT.	280



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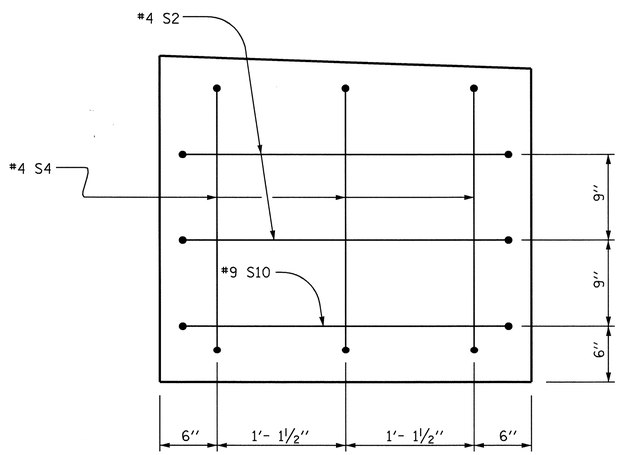

VIEW "Y-Y"

PROJECT NO. B-4060

CATAWBA COUNTY

STATION: 16+56.25 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT #2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : D. A. GLADDEN DATE : 7-25-05
CHECKED BY : M. G. SHAIKH DATE : 2-15-06

02-MAR-2007 14:19
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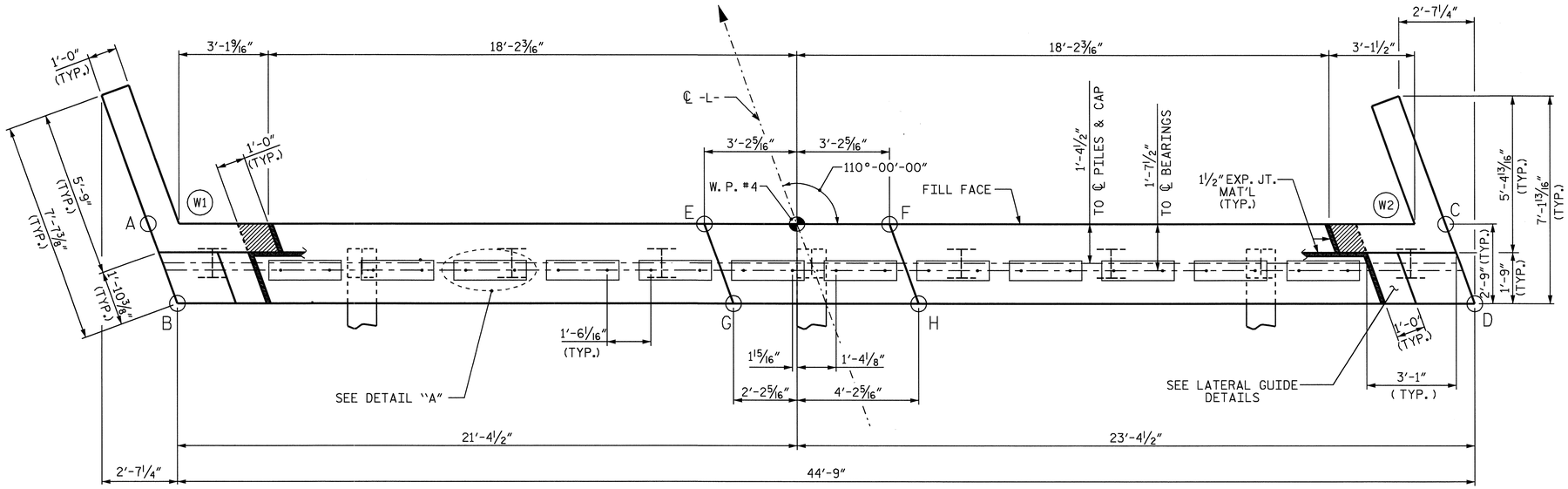
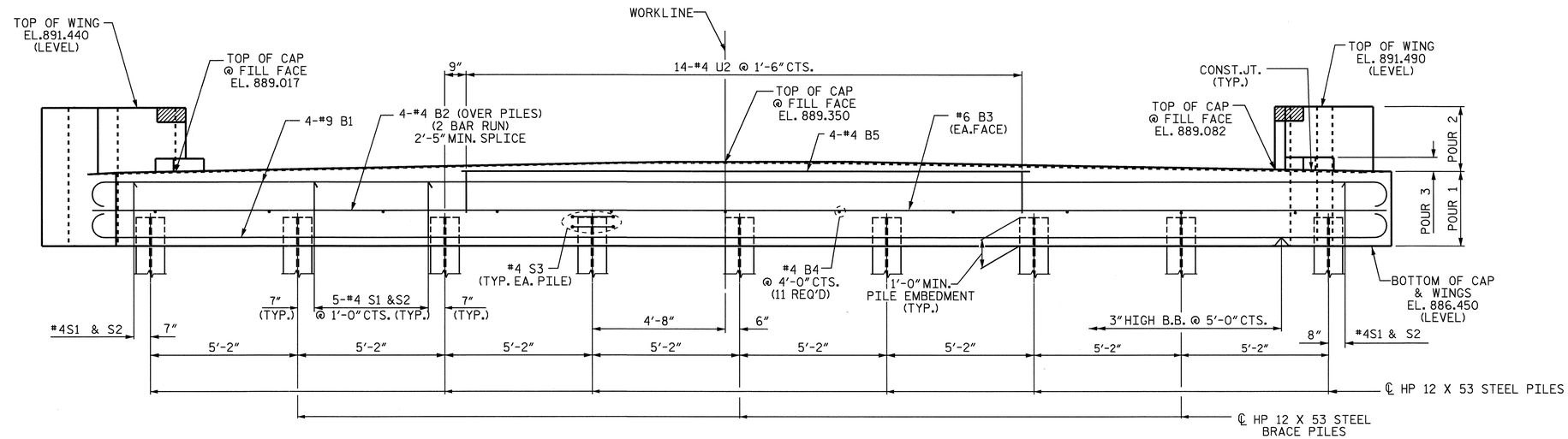
mshaikh



PLAN

CAP ELEVATION	
POINT	ELEVATION
A	888.950
B	889.012
C	889.030
D	889.054
E	889.346
F	889.354
G	889.389
H	889.397



ELEVATION

NOTES

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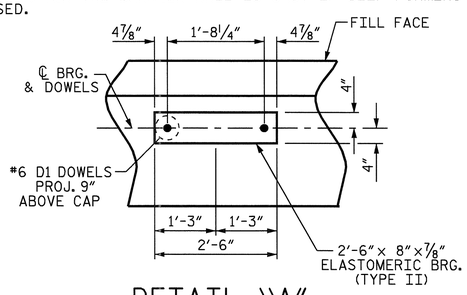
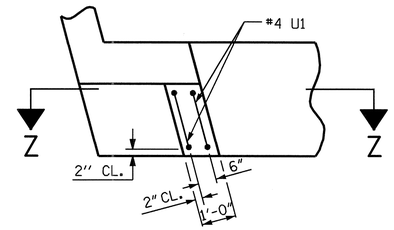
THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.

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

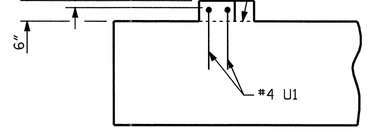
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.



DETAIL "A"



PLAN



SECTION Z-Z

LATERAL GUIDE DETAILS

PROJECT NO. B-4060

CATAWBA COUNTY

STATION: 16+56.25 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT #2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			25

NORTH CAROLINA PROFESSIONAL SEAL 15825 ENGINEER BRUCE D. KLAPPENBACH
2-26-07

DRAWN BY : M. G. SHAIKH DATE : 11-16-04
CHECKED BY : D. A. GLADDEN DATE : 2-16-06

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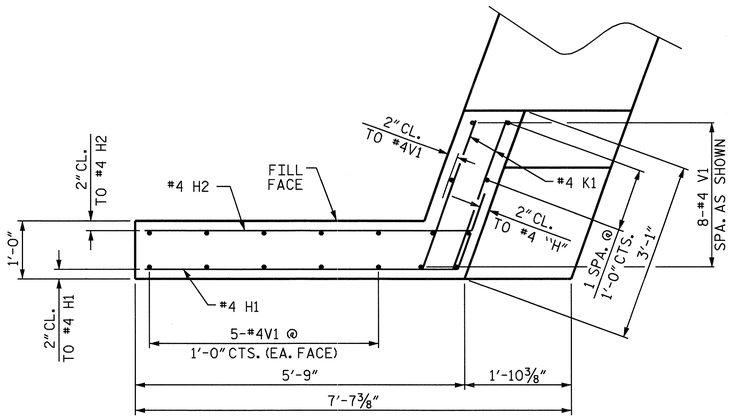
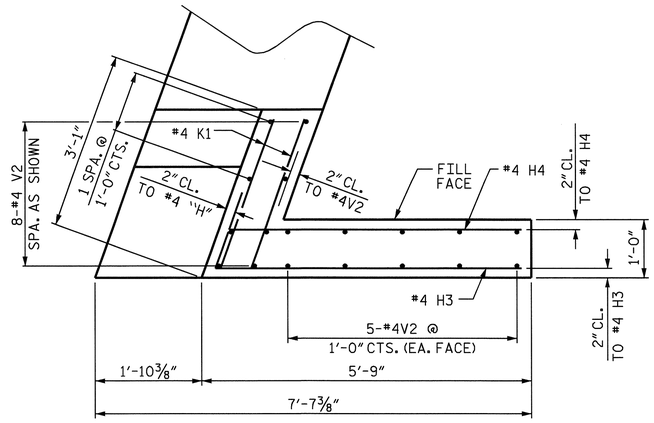
bklappenbach

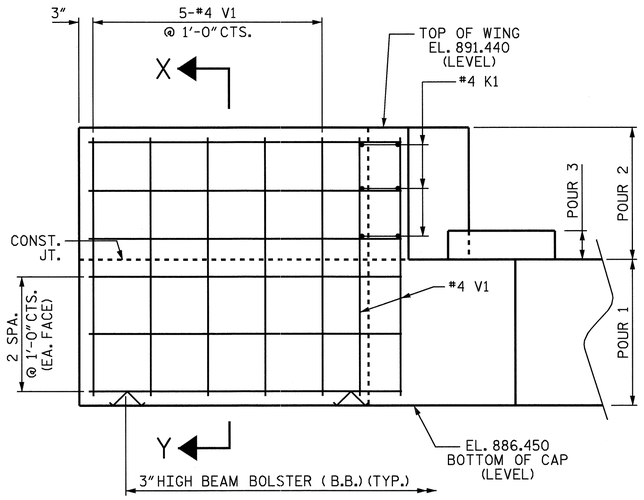
STR #1



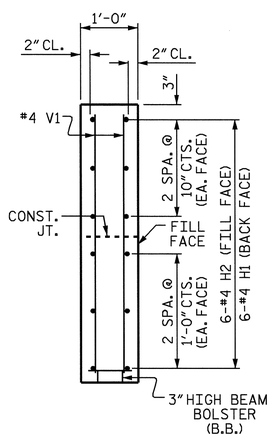
PLAN OF LEFT WING - W1



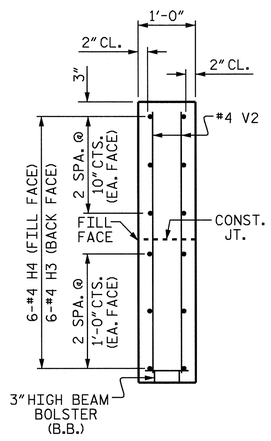
PLAN OF RIGHT WING - W2



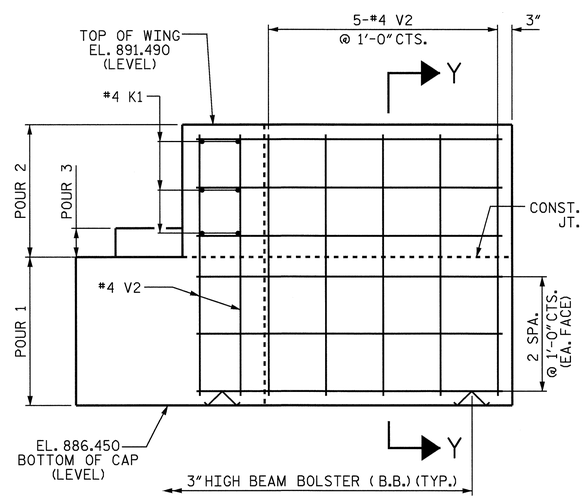
ELEVATION OF LEFT WING - W1



SECTION X-X



SECTION Y-Y



ELEVATION OF RIGHT WING - W2

PROJECT NO. B-4060

CATAWBA COUNTY

STATION: 16+56.25 -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			25

STR #1

DRAWN BY : M. G. SHAIKH DATE : 11/17/04
CHECKED BY : D. A. GLADDEN DATE : 2-16-06

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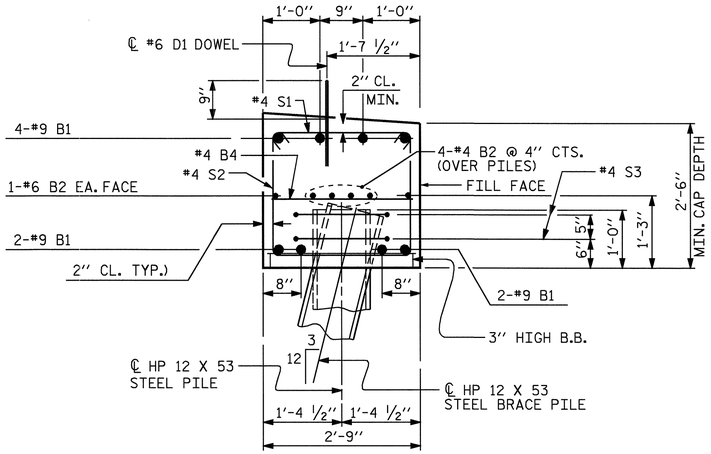
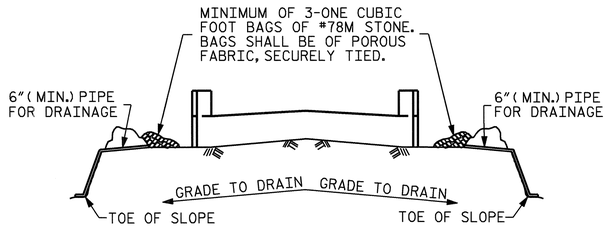


SECTION THRU CAP

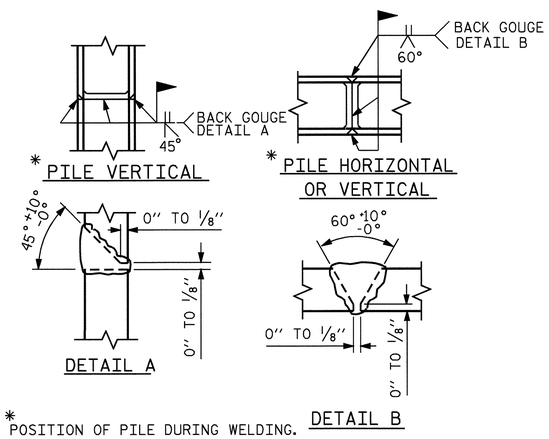


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

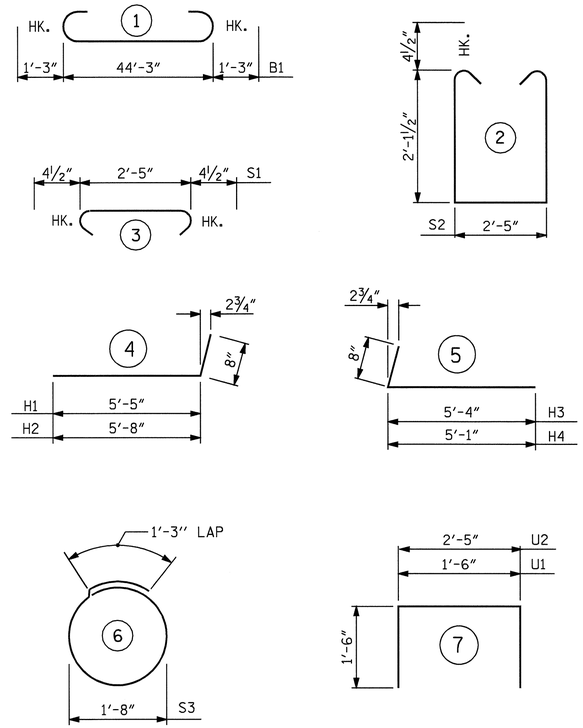
TEMPORARY DRAINAGE AT END BENT



* POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	9	1	46'-9"	1272
B2	8	4	STR	23'-5"	125
B3	2	6	STR	44'-5"	133
B4	11	4	STR	2'-5"	18
B5	4	4	STR	19'-11"	53
D1	24	6	STR	1'-6"	54
H1	6	4	4	6'-1"	24
H2	6	4	4	6'-4"	25
H3	6	4	5	6'-0"	24
H4	6	4	5	5'-9"	23
K1	12	4	STR	2'-8"	21
S1	42	4	3	3'-2"	89
S2	42	4	2	7'-5"	208
S3	18	4	6	6'-6"	78
U1	4	4	7	4'-6"	12
U2	14	4	7	5'-5"	51
V1	18	4	STR	4'-7"	55
V2	18	4	STR	4'-8"	56

REINFORCING STEEL (LBS) 2321

CLASS A CONCRETE (CU. YDS.)

POUR #1	CAP & LOWER PART OF WINGS	13.5
POUR #2	UPPER PART OF WINGS	1.4
POUR #3	LATERAL GUIDES	0.1
	TOTAL	15.0

HP 12 X 53 STEEL PILES
NO. 9 LIN. FT. 315

PROJECT NO. B-4060
CATAWBA COUNTY
STATION: 16+56.25 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT #2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : M. G. SHAIKH DATE : 11-18-04
CHECKED BY : D. A. GLADDEN DATE : 2-16-06

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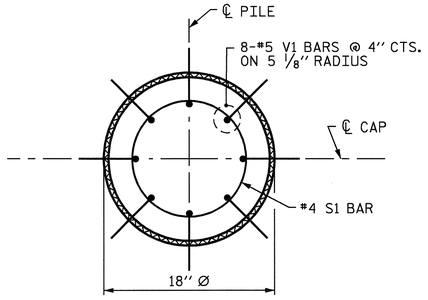
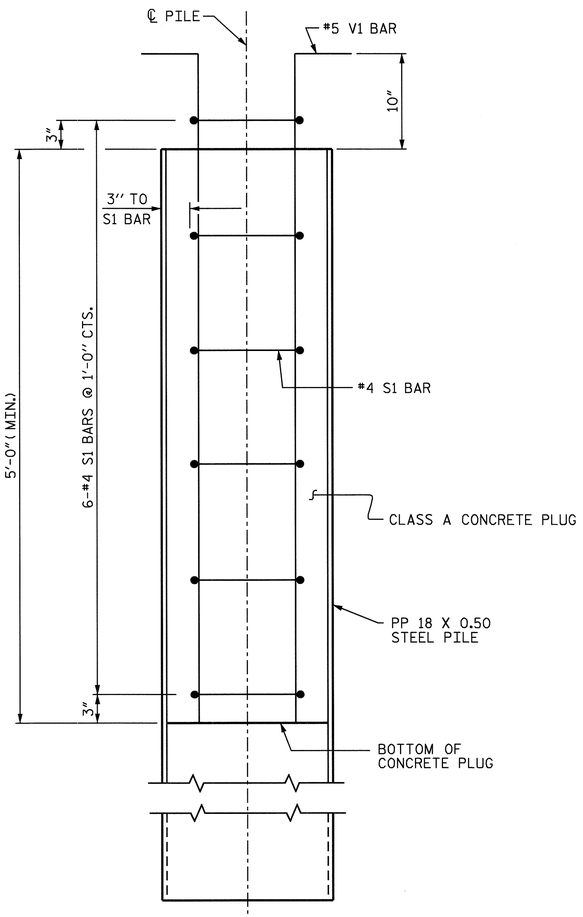
NORTH CAROLINA PROFESSIONAL SEAL 15825 ENGINEER BRUCE D. KLAPPENBACH
2-26-07

STR #1



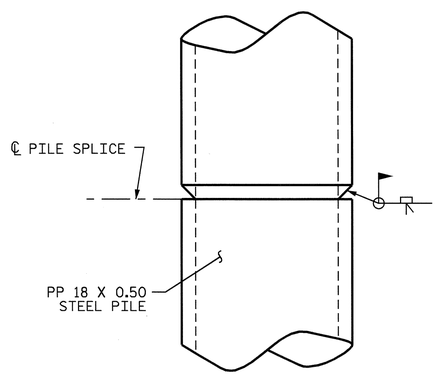
PLAN



ELEVATION

PP 18 X 0.50 GALVANIZED STEEL PILE

(OPEN OR CLOSED END)



PIPE PILE SPLICE DETAIL

NOTES

STEEL PIPE PILES SHALL BE OF UNIFORM DIAMETER AND MEET THE REQUIREMENTS OF ASTM A252, GRADE 3 MODIFIED (50,000 PSI YIELD STRENGTH).

GALVANIZE STEEL PIPE PILES IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS UNLESS METALLIZING IS REQUIRED. GALVANIZING OR METALLIZING PIPE PILE PLATES IS NOT REQUIRED.

REMOVE AND REPLACE OR REPAIR TO THE SATISFACTION OF THE ENGINEER PILES THAT ARE DAMAGED, DEFORMED OR COLLAPSED DURING INSTALLATION OR DRIVING.

PILE SPLICES SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND AWS D1.1.

FOR OPEN END PIPE PILES, REMOVE ENOUGH SOIL AND WATER FROM INSIDE THE PILES TO CONSTRUCT THE CONCRETE PLUG WITHOUT FOULING THE CONCRETE.

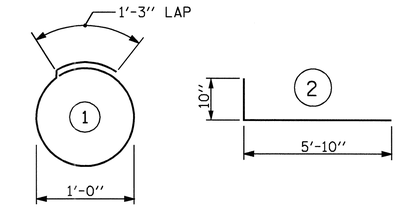
FORM THE CONCRETE PLUG SUCH THAT THE REINFORCING STEEL OR CONCRETE DOES NOT MOVE AND THE CLEARANCE FROM THE REINFORCING STEEL TO THE INSIDE OF THE PILE IS MAINTAINED AFTER CONCRETE PLACEMENT. DO NOT PLACE CONCRETE IN THE BENT CAP UNTIL THE CONCRETE PLUG HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI.

THE REINFORCING STEEL, CLASS A CONCRETE, GALVANIZING, AND THE PIPE PILE PLATES, IF REQUIRED, ARE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE BID PER LINEAR FOOT FOR PP 18 X 0.50 GALVANIZED STEEL PILES.

BILL OF MATERIAL FOR ONE PP 18 X 0.50 STEEL PILE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
S1	6	#4	1	4'-5"	18
V1	8	#5	2	6'-8"	56
REINFORCING STEEL =					74 lbs
CLASS A CONCRETE					
5'-0" MINIMUM PLUG					0.3 CY

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. B-4060

CATAWBA COUNTY

STATION: 16+56.25 -L-

Jesse McArthur Bailey 2/14/07

NORTH CAROLINA PROFESSIONAL SEAL 022506 ENGINEER JESSE McARTHUR BAILEY

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

18" STEEL PIPE PILE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			25

STD. NO. SPP3

ASSEMBLED BY : D. A. GLADDEN DATE : 2-9-06		
CHECKED BY : M. G. SHAIKH DATE : 2-15-06		
DRAWN BY : RWW I/01	REV. 7/10/01	RWW/LES
CHECKED BY : LES I/01	REV. 5/7/03	RWW/JTE
	REV. 10/1/05	LBG/TLA

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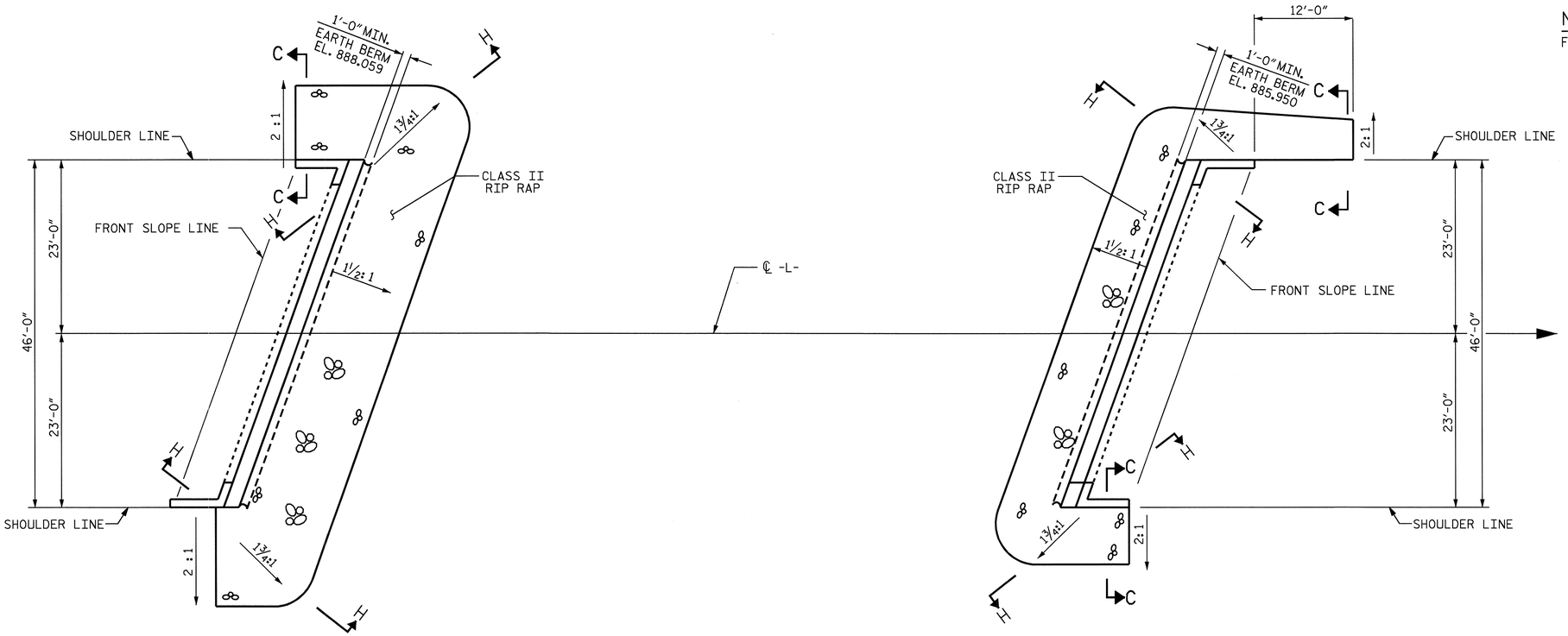
NOTES :

FOR BERM WIDTH DIMENSIONS,SEE GENERAL DRAWING.

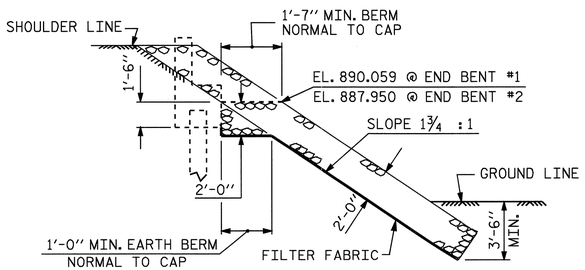


END BENT #1

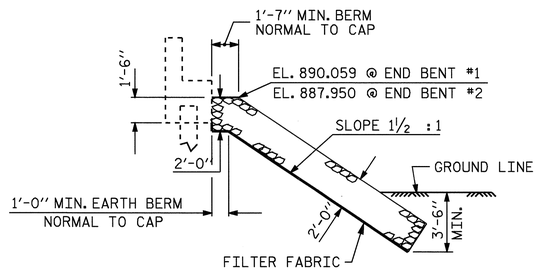
PLAN

END BENT #2

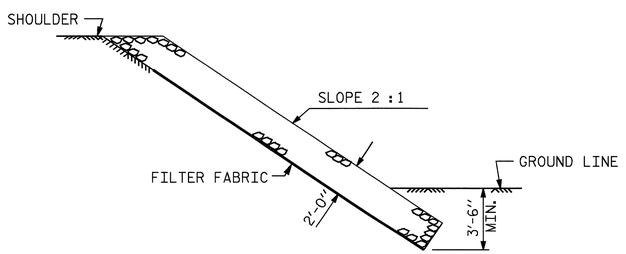
ESTIMATED QUANTITIES		
BRIDGE @ STA. 16+56.25 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	159	177
END BENT 2	111	124



SECTION H-H



℄ SECTION
BERM RIP RAPPED



SECTION C-C

PROJECT NO. B-4060

CATAWBA COUNTY

STATION: 16+56.25 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 15925 ENGINEER BRUCE D. KLAPPENBACH
3-6-07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			25

ASSEMBLED BY : M. G. SHAIKH	DATE :09-06-06	
CHECKED BY :B. D. KLAPPENBACH	DATE :09-06-06	
DRAWN BY : REK 1/84	REV. 7/17/98	REK/RWW
CHECKED BY : RDU 1/84	REV. 8/16/99	RWW/LES
	REV. 10/17/00	RWW/LES

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NOTES

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

TEMPORARY DRAINAGE AND TEMPORARY BERM AND SLOPE DRAINS WILL BE PAID FOR UNDER THE LUMP SUM PRICE FOR BRIDGE APPROACH SLAB.

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 EXTEND 10'-0" BEYOND THE END OF THE APPROACH SLAB AND 1'-0'' OUTSIDE OF EACH EDGE OF THE 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 EXTEND 1'-0" BEYOND THE 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 EXTEND 1'-0" BEYOND THE END OF THE APPROACH SLAB AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER OF 30 LB ROOFING FELT SHALL BE PLACED BETWEEN THE CONCRETE BASE AND THE APPROACH SLAB TO PREVENT BOND. THE APPROACH SLAB SHALL NOT BE CAST UNTIL THE CONCRETE BASE HAS REACHED AN AGE OF THREE CURING DAYS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 2½".

APPROACH SLAB SHALL BE POURED AFTER CONCRETE OVERLAY IS POURED.

THE JOINT SHALL BE SAWED AFTER THE CASTING OF THE BARRIER RAIL.

FOR EVAZOTE JOINT SEAL, SEE SPECIAL PROVISIONS.

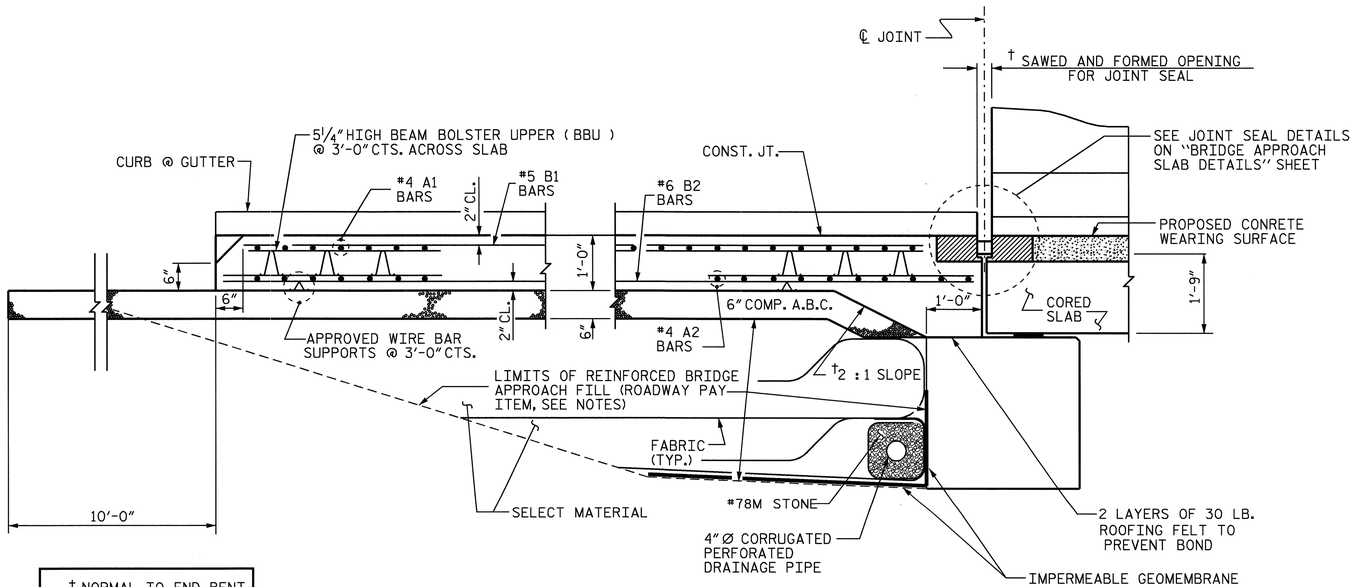
FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL

FOR ONE APPROACH SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳A1	50	#4	STR	19'-0"	635
A2	50	#4	STR	18'-11"	632
✳B1	68	#5	STR	24'-1"	1708
B2	68	#6	STR	24'-7"	2511

REINFORCING STEEL	LBS. 3143
✳EPOXY COATED REINFORCING STEEL	LBS. 2343
CLASS AA CONCRETE BREAKDOWN	
SLAB AND CURB	35.1
CLASS AA CONCRETE	35.1



† NORMAL TO END BENT

SECTION THRU SLAB

PROJECT NO. B-4060

CATAWBA COUNTY

STATION: 16+56.25 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB

NORTH CAROLINA PROFESSIONAL SEAL 15825 ENGINEER D. KLAPPENBACH
3-6-07

ASSEMBLED BY : J.B.W. / K.M.M.	DATE : 12/01/04		
CHECKED BY : D.A. GLADDEN	DATE : 12/04		
DRAWN BY : LES 8/01	REV. 10/17/00	RWW/LES	
CHECKED BY : RDR 8/01	REV. 7/10/01	LES/RDR	
	REV. 5/7/03R	RWW/JTE	

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS
2			4			25

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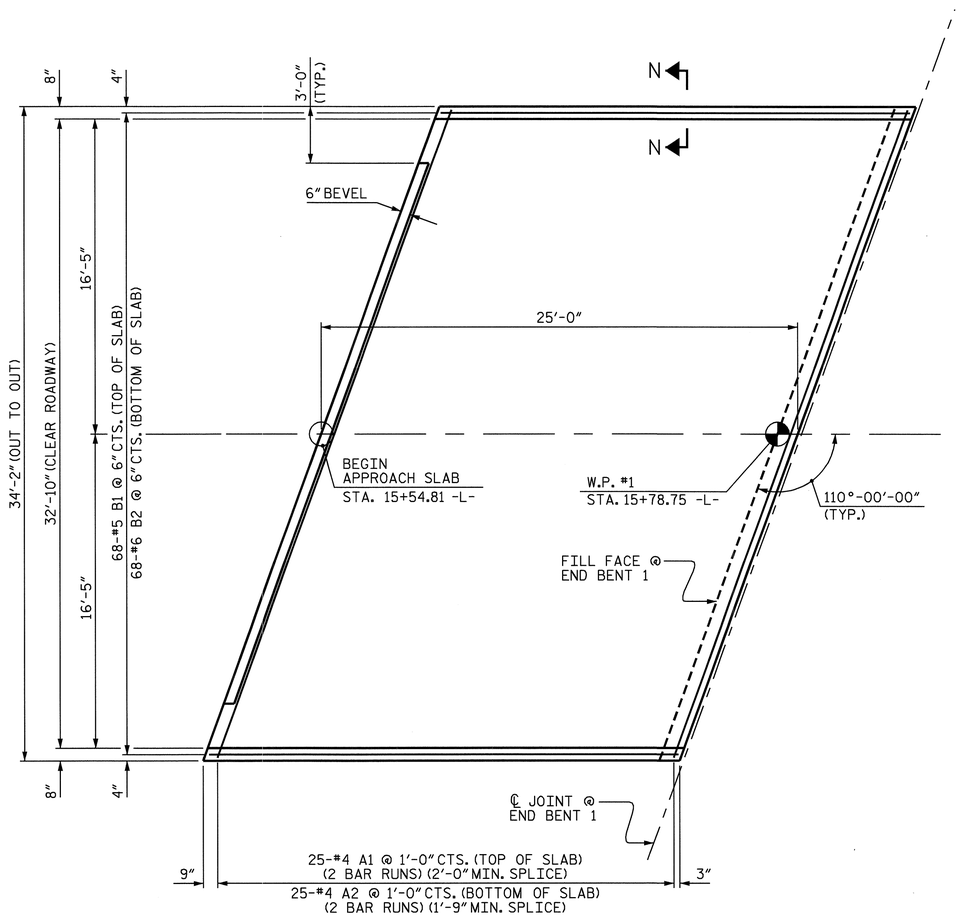
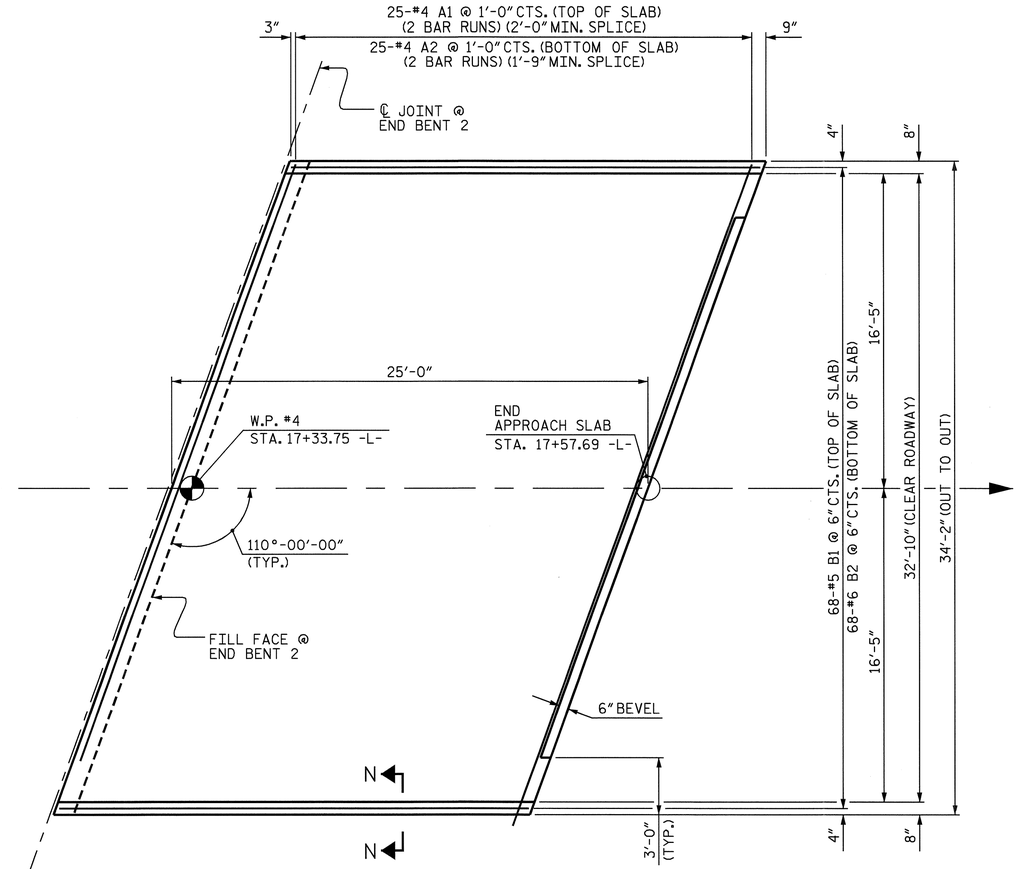
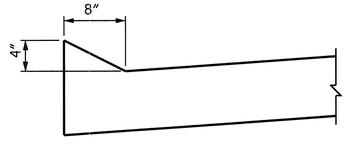


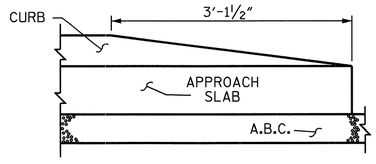
PLAN OF APPROACH SLAB @ END BENT #1



PLAN OF APPROACH SLAB @ END BENT #2



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

PROJECT NO. B-4060

CATAWBA COUNTY

STATION: 16+56.25 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB

NORTH CAROLINA PROFESSIONAL SEAL 15825 ENGINEER D. KLAPPENBACH
2-26-07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : J.B.W. / K.M.M. DATE : 12/01/04
CHECKED BY : D.A. GLADDEN DATE : 12/04

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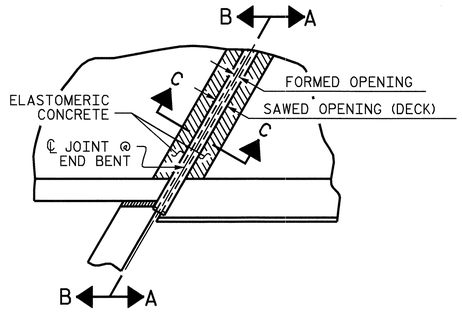
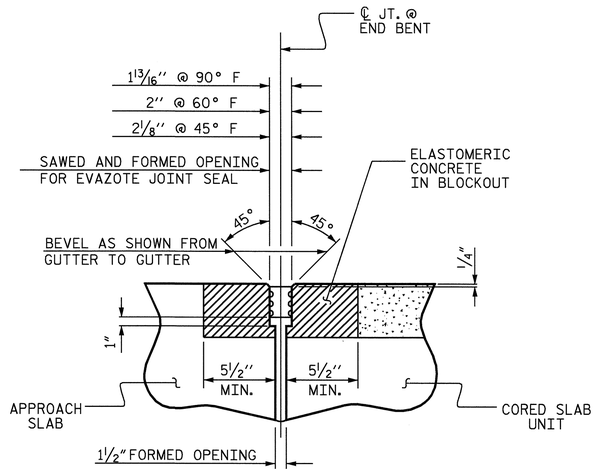
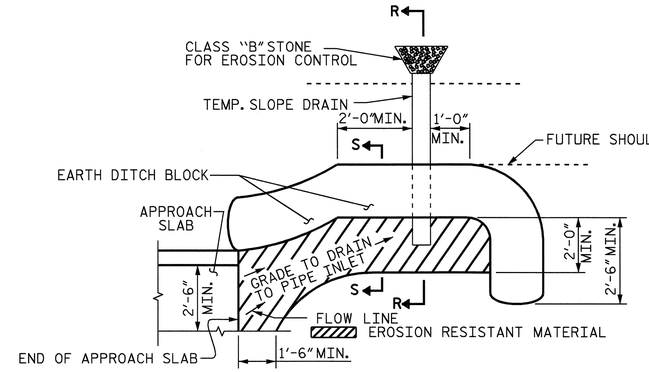


PLAN @ END BENT

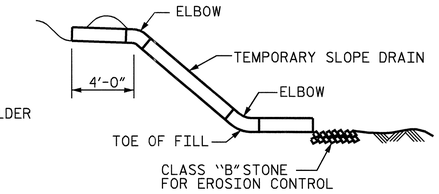


SECTION C-C
EVAZOTE JOINT SEAL

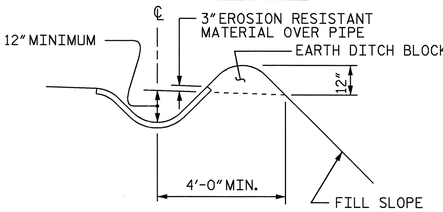


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

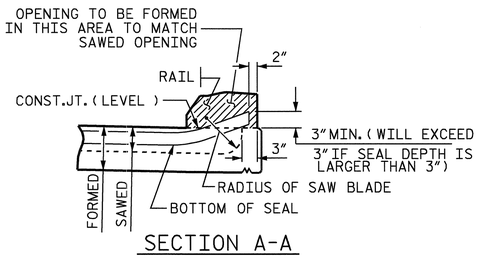


SECTION R-R

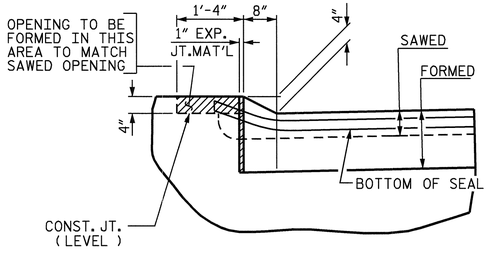


SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS



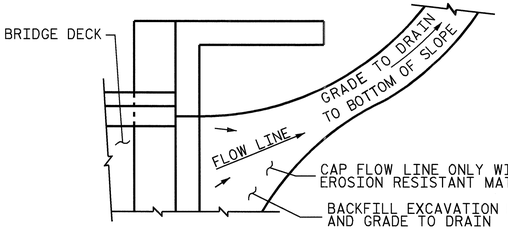
SECTION A-A



SECTION B-B

JOINT SEAL DETAILS @ END BENT

ELASTOMERIC CONCRETE	
	CUBIC FT.
END BENT #1	18.2
END BENT #2	18.2
TOTAL	36.4



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-4060

CATAWBA COUNTY

STATION: 16+56.25 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB DETAILS

1988

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

NORTH CAROLINA PROFESSIONAL SEAL 15825 ENGINEER BRUCE D. KLAPPENBACH
3-6-07

ASSEMBLED BY : J.B.W. / K.M.M.	DATE : 4/4/05		
CHECKED BY : D. A. GLADDEN	DATE : 12/04		
DRAWN BY : FCJ 11/88	REV. 8/16/99	MAB/LES	
CHECKED BY : ARB 11/88	REV. 10/17/00	RWW/LES	
	REV. 5/7/03	RWW/JTE	

06-MAR-2007 10:47
R:\Structures\kmccauley\Microstation\B4060_sd_AS.dgn
bklappenbach

STD. NO. BAS10

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 ω RGW REV. 6-27-02 RWW ω JTE