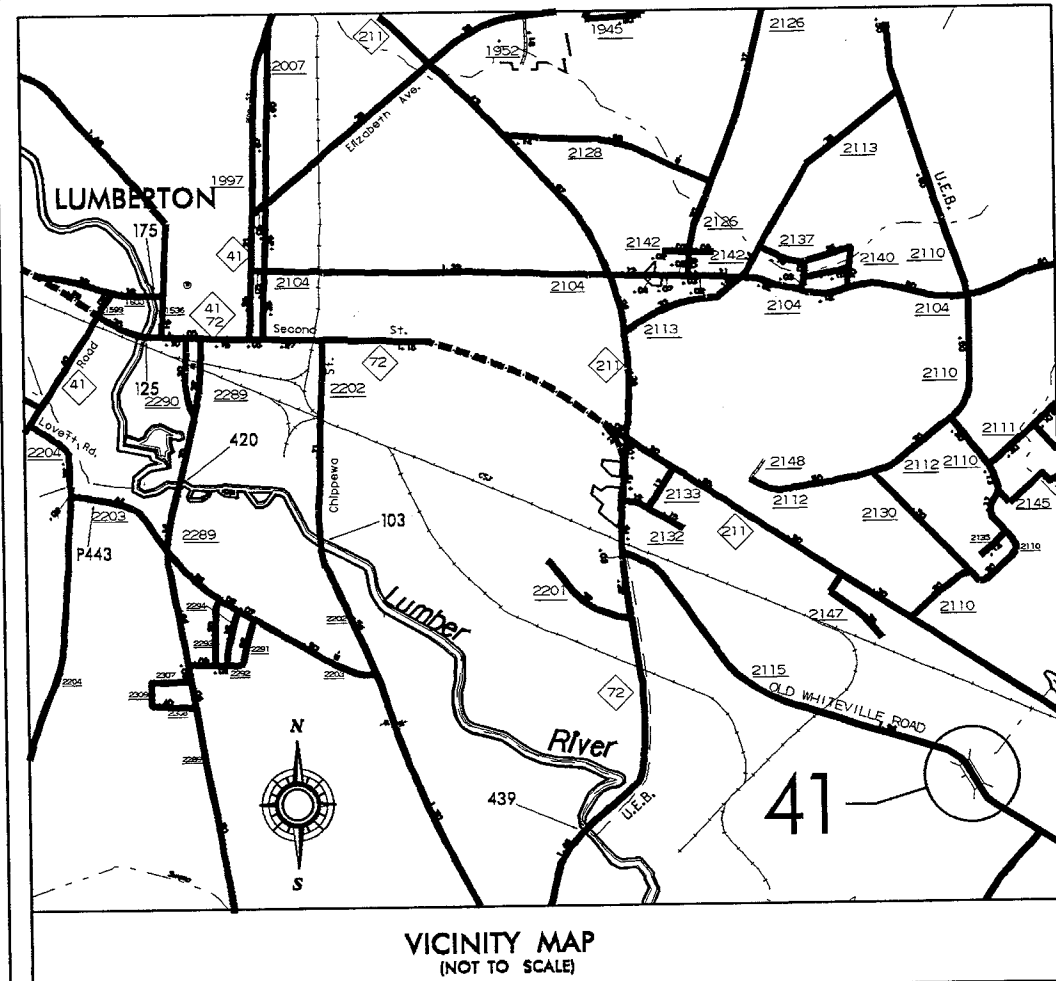
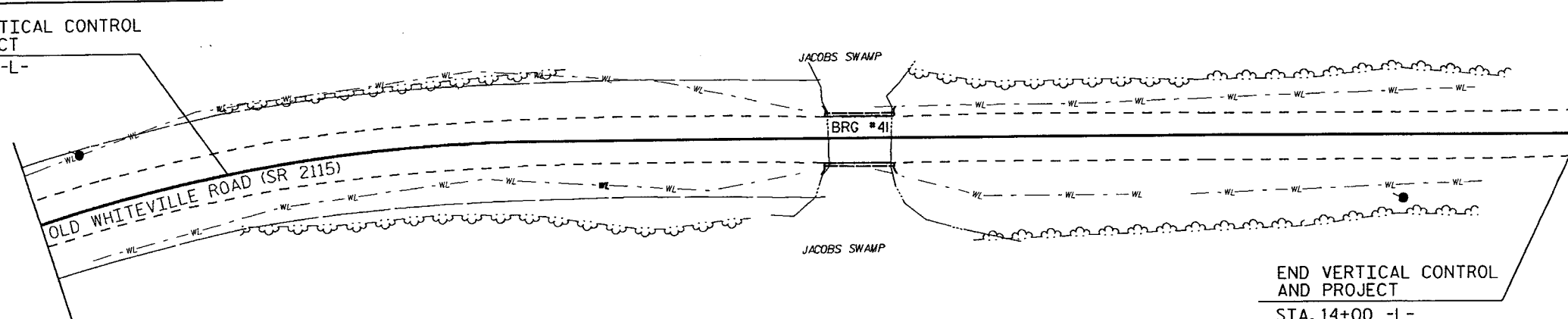




VICINITY MAP
(NOT TO SCALE)

BEGIN VERTICAL CONTROL
AND PROJECT
STA. 7+00 -L-



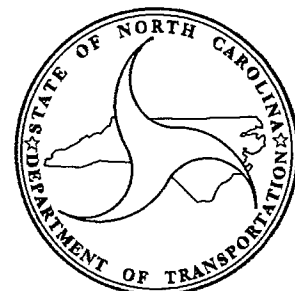
END VERTICAL CONTROL
AND PROJECT
STA. 14+00 -L-

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ROBESON COUNTY

LOCATION: SR 2115 BRIDGE NO. 41 OVER JACOBS SWAMP
TYPE OF WORK: BRIDGE REPLACEMENT WITH PRE-STRESSED
CONCRETE CORED SLABS SUPERSTRUCTURE ON STEEL PILE
END BENTS AND ROADWAY APPROACHES.

STATE	STATE PROJECT REFERENCE NO.	TITLE
N.C.	B-3898	
STATE PROJECT NO.	R.A. PROJECT NO.	DESCRIPTION
35565.1.1		P.E.
35565.2.1		R/W
35565.3.1		CONSTR



DESIGN DATA

ADT 2007 = 4100
ADT 2025 = 8200

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT = 0.152 MILE
LENGTH STRUCTURE TIP PROJECT = 0.025 MILE
TOTAL LENGTH TIP PROJECT = 0.177 MILE

Prepared in the Office of:
BRIDGE MANAGEMENT UNIT
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

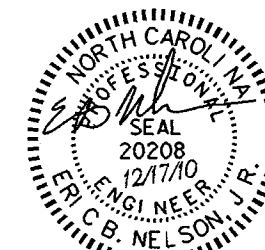
2006 STANDARD SPECIFICATIONS

LETTING DATE:
JAN. 20, 2011

DAN HOLDERMAN, PE
STATE BRIDGE
MANAGEMENT ENGINEER

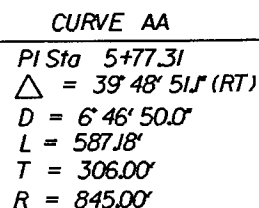
NCDOT CONTACT:

MIKE SUMMERS
BRIDGE MANAGEMENT
PROJECT MANAGER

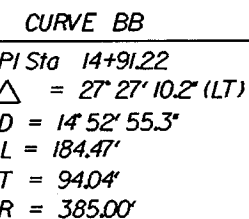


RICK NELSON, PE
DESIGN ENGINEER

ROBESON



PLAN



FOR WATERLINE REPLACEMENT SEE
UTILITY PLANS

EXISTING BRIDGE CONSISTING OF:
2 SPANS, 17'-6" TIMBER AND 24'-0"
CL. RDWY. IS TO BE REMOVED.

NOTES

1. THE QUANTITY OF RIP RAP TO BE PAID FOR WILL BE THE ACTUAL NUMBER OF TONS OF EACH CLASS OF RIP RAP WHICH HAS BEEN INCORPORATED INTO THE COMPLETED AND ACCEPTED WORK. THE RIP RAP WILL BE MEASURED BY BEING WEIGHED IN TRUCKS ON CERTIFIED PLATFORM SCALES OR OTHER CERTIFIED WEIGHING DEVICES. THE QUANTITY OF RIP RAP WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER TON:

PLAIN RIP RAP CLASS I (2' - 0" THICK) WITH FILTER FABRIC

END BENT NO.1 300 TONS
END BENT NO.2 350 TONS
2. THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH FHWA'S TECHNICAL ADVISORY T5140.20 (SCOUR AT BRIDGES).
3. DRIVE PILES AT END BENT No.1 AND END BENT No.2 TO A REQUIRED BEARING CAPACITY OF 90 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.
4. THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENT No.1 AND No.2, IS 45 TONS PER PILE.
5. DRIVE PILES AT BENT No.1 TO A REQUIRED BEARING CAPACITY OF 115 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO PLUS ANY ADDITIONAL CAPACITY TO ACCOUNT FOR DOWN DRAG OR NEGATIVE SKIN FRICTION AND SCOUR.

6. THE ALLOWABLE BEARING CAPACITY FOR PILES AT BENT No.1 IS 50 TONS PER PILE.
 7. INSTALL PILES AT BENT No.1 TO A TIP ELEVATION NO HIGHER THAN 83'.
 8. THE SCOUR CRITICAL ELEVATION FOR BENT No.1 IS 91'. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
 9. TESTING PILES WITH THE PILE DRIVING ANALYZER (PDA) DURING DRIVING, RE -STRIKING OR RE -DRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. SEE PILE DRIVING ANALYZER SPECIAL PROVISION.
 10. IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 25-50 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO.1, BENT NO.1 AND END BENT NO.2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM ARTICLE 450-5 OF THE STANDARD SPECIFICATIONS.
 11. WHEN DRIVING PILES, THE MAXIMUM BLOW COUNT SHALL NOT BE EXCEEDED.
 12. ADT 1800 FOR YEAR 2004.
 13. NO EMBANKMENT CONSTRUCTION RELATED WAITING PERIODS ARE REQUIRED.
 14. THE STEEL PILES SHALL BE GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.
 15. THE CONTRACTOR IS REQUIRED TO VERIFY ALL CABLE LOCATIONS BY CALLING NC ONE CALL -811.
-  GEO TECH BORE HOLES LOCATION



HYDRAULIC DATA

DESIGN DISCHARGE (Q-25) = 1100 CFS.
DESIGN WATER EL. = 110.9'
DRAINAGE AREA = 8.85 SQ. MILES
BASIC DISCHARGE (Q-100) = 1500 CFS.
BASIC HIGH WATER EL. = 112.0'

OVERTOPPING FLOOD DATA

THIS SITE IS NOT LOCATED IN A FLOOD HAZARD
ZONE WITH NO DETAILED STUDY

PRELIMINARY PLANS

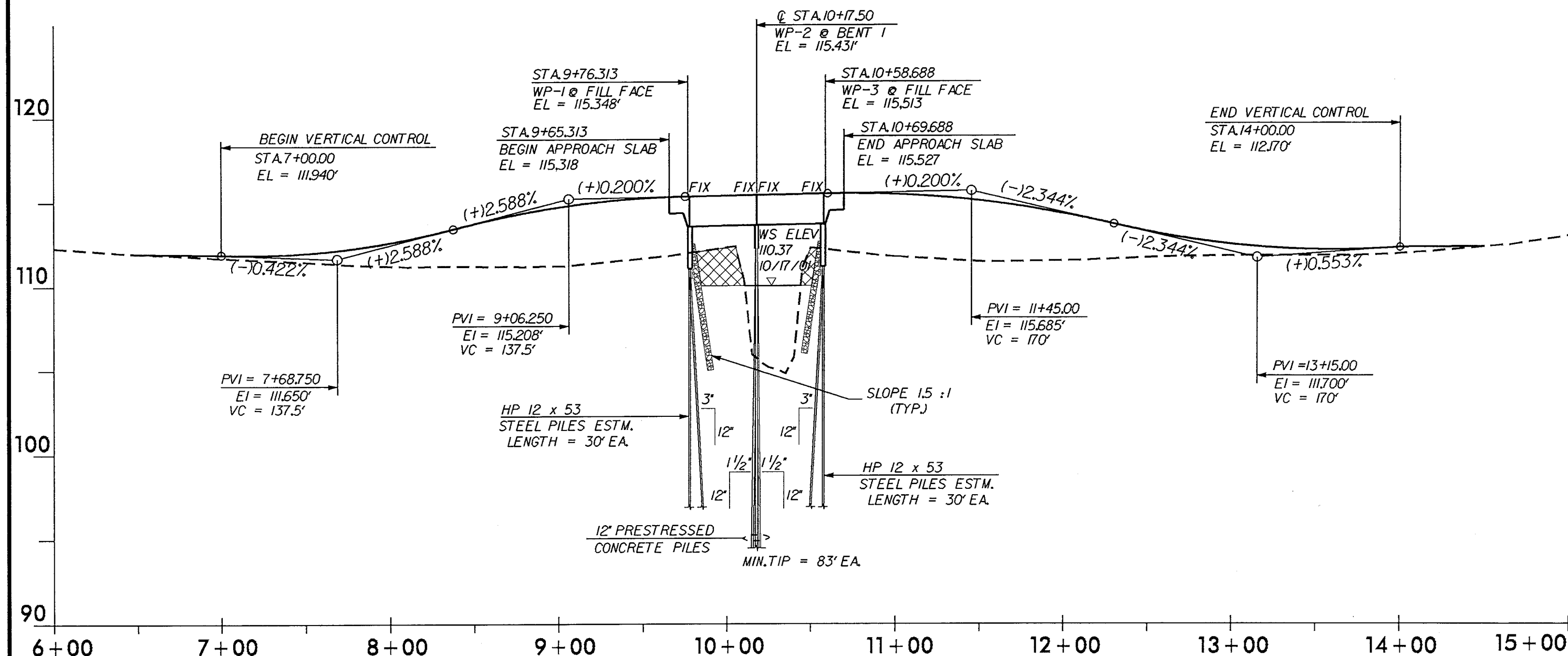
DO NOT USE FOR CONSTRUCTION

PROJECT NO.: 35565.1.1
COUNTY: ROBESON
STATION: 10+17.5
REPLACES BRIDGE NO. 41

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
BRIDGE #41 ON SR 2115
OVER
JACOBS SWAMP

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	1
1			3			TOTAL SHEET
2			4			15

DRAWN BY: CLB	DATE: 11/06
CHECKED BY: RWS	DATE: 11/06



PROFILE ALONG CL SURVEY
SCALE 1" = 60'

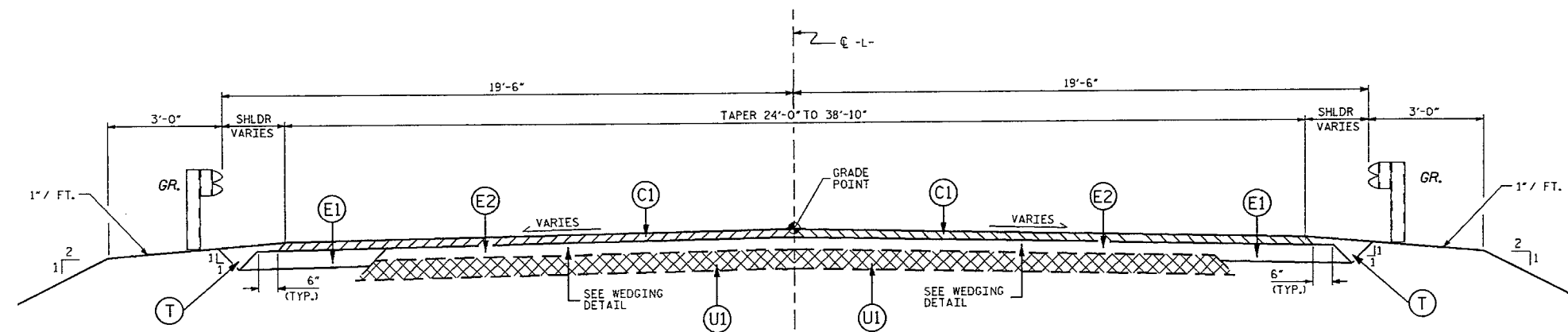
PROJECT NO.: 35565.1.1
COUNTY: ROBESON
STATION: 10+17.5
REPLACES BRIDGE NO. 41

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
BRIDGE #41 ON SR 2115
OVER
JACOBS SWAMP

DRAWN BY: CL BRIGHT DATE: 11/06
CHECKED BY: RWS DATE: 11/06

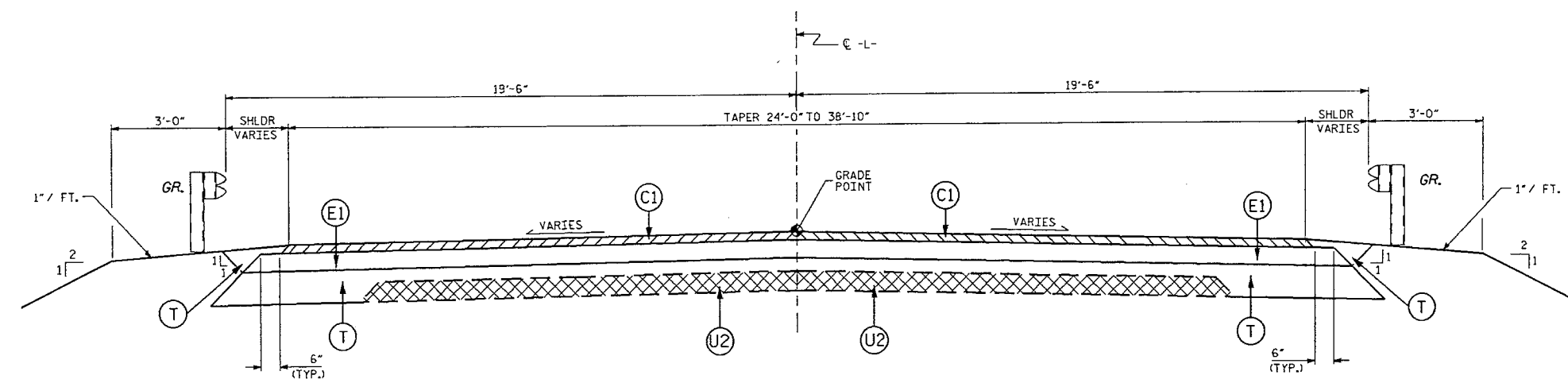
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			2			2
2			4			

TOTAL SHEETS
15



TYPICAL ROADWAY SECTION

USE WHEN PROP. GRADE ELEVATIONS ARE LESS
THAN 8" ABOVE THE EXISTING GRADE.



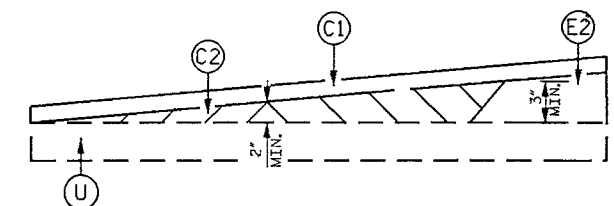
TYPICAL ROADWAY SECTION

USE WHEN PROP. GRADE ELEVATIONS ARE 8"
OR MORE ABOVE THE EXISTING GRADE.

C1	PROP. APPROX. 2" MIN. ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. IN EACH OF THE TWO LAYERS
C2	PROP. VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1" IN DEPTH OR GREATER THAN 2" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VARIABLE DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH TO OR GREATER THAN 6" IN DEPTH
T	EMBANKMENT MATERIAL.
U1	EXISTING PAVEMENT.
U2	EXISTING PAVEMENT TO BE REMOVED.

NOTES

- PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.
- FOR METHOD OF SHOULDER CONSTRUCTION, SEE STD. DWG. 560.01



WEDGING DETAIL FOR RESURFACING

PROJECT NO. 35565.1.1
COUNTY: ROBESON
STATION: 10+17.5
REPLACES BRIDGE NO. 41

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL ROADWAY SECTION

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			3
2			4			15

DRAWN BY: CLB DATE: 02/08
CHECKED BY: JAY DATE: 03/08

NOTES

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

CONCRETE: $f'_c = 5000$ psi (MINIMUM COMPRESSIVE STRENGTH @ 28 DAYS)
 $f'_ci = 4000$ psi (MINIMUM COMPRESSIVE STRENGTH @ TRANSFER OF STRESSING FORCE)

ALL PRESTRESSING STRANDS SHALL BE 7 WIRE, LOW RELAXATION, GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M 203, EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

SIZE TYPE	AREA	ULTIMATE STR.	APPLIED FORCE
0.6" Ø HIGH STR.	0.217"²	58,600*	43,950*
L.R.			PER CABLE

EXP. JT. MAT'L. SHALL MEET THE REQUIREMENTS OF AASHTO SPECIFICATION M153 TYPE I, TYPE II, OR TYPE III.

STRUCTURAL STEEL ITEMS SHALL BE OF A GRADE CONFORMING TO EITHER ASTM A36 OR A373, EXCEPT HIGH STRENGTH BOLTS. HIGH STRENGTH BOLTS SHALL BE ASTM A325. ALL STRUCTURAL STEEL EXCEPT PILE CAP PLATES SHALL BE GALVANIZED AS PER THE SPECIFICATIONS.

ALL MATERIAL AND WORKMANSHIP SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES OF THE NC DEPARTMENT OF TRANSPORTATION DATED JULY 2006 AND THE SPECIAL PROVISIONS.

A POSITIVE HOLD DOWN SYSTEM MUST BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS.

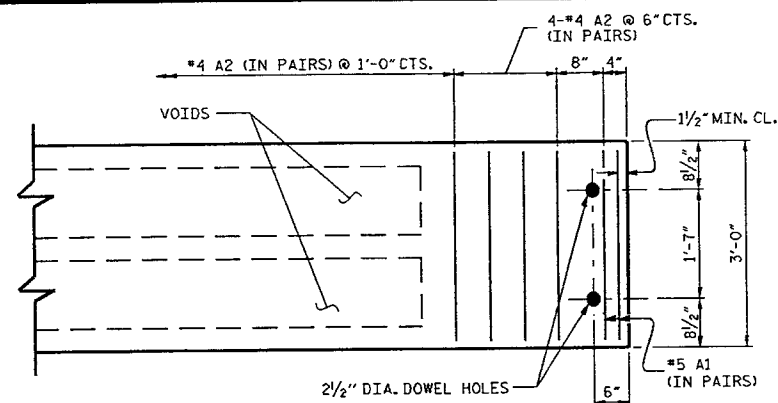
PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNITS ENDS.

UNLESS OTHERWISE NOTED ON PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED $\frac{3}{4}$ ".

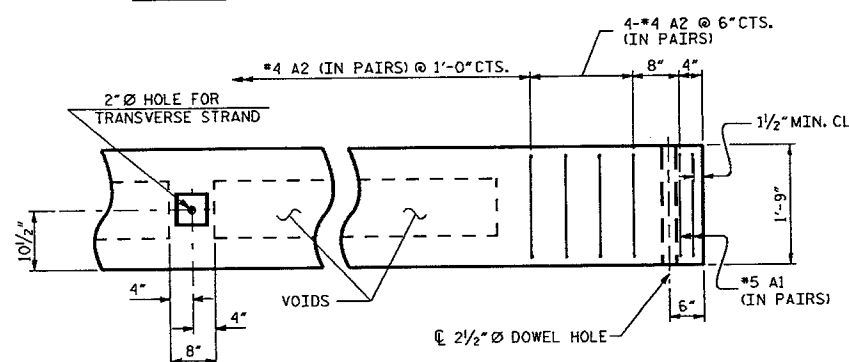
EPOXY PROTECTIVE COATING SHALL BE APPLIED TO ENDS OF CORED SLABS.

S1 BAR SHALL BE EPOXY COATED. FOR BENDING DIAGRAM, SEE SHEET NO. 6.

*ALL REINFORCING STEEL CAST WITH CORED SLAB SECTION SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.



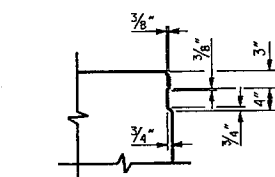
PART PLAN - SLAB SECTION



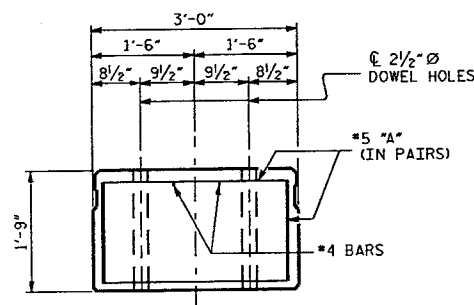
SLAB ELEVATION

SHEATH CHART		
SPAN LENGTH	NUMBER OF SHEATHED STRANDS PER EXTERIOR SLAB SECTIONS	NUMBER OF SHEATHED STRANDS PER INTERIOR SLAB SECTIONS
40'	* 2	* 2

* BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 4 FEET 0 INCHES

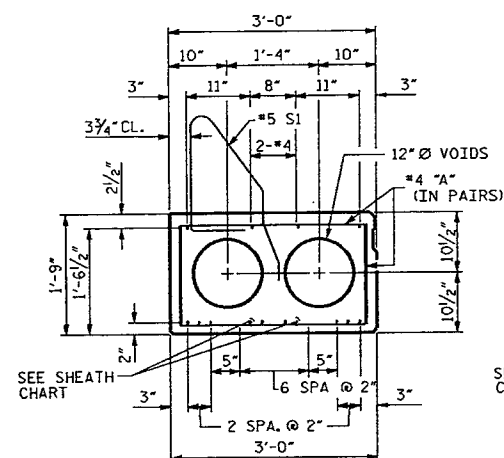


SHEAR KEY DETAIL



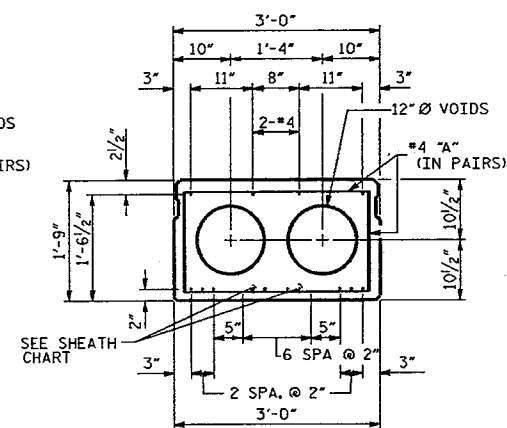
SLAB END ELEVATION

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



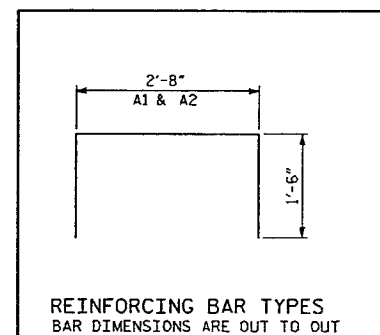
40' SPAN

12 - 0.6" Ø H.S. STRANDS L.R.
EXTERIOR SLAB SECTIONS
FINAL DEFLECTION 0.926" (UP)

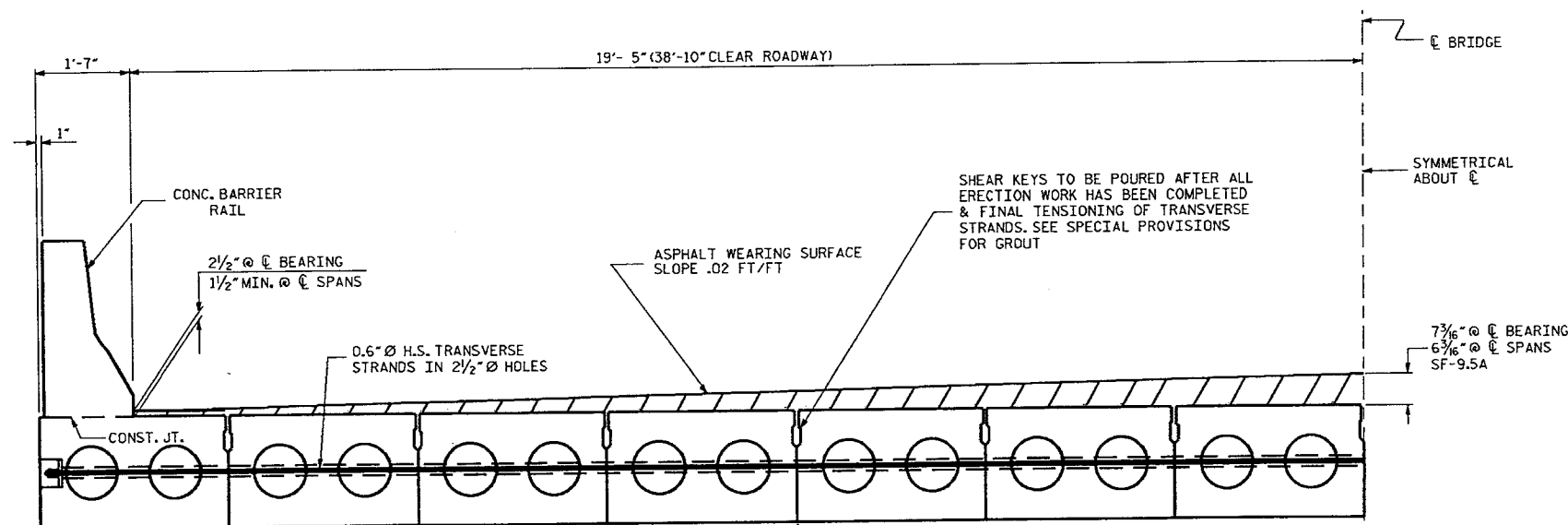


40' SPAN

12 - 0.6" Ø H.S. STRANDS L.R.
INTERIOR SLAB SECTIONS
FINAL DEFLECTION 0.926" (UP)



REINFORCING BAR TYPES
BAR DIMENSIONS ARE OUT TO OUT



TYPICAL HALF SECTION

DRAWN BY: CL BRIGHT DATE: 10/10
CHECKED BY: PDB4GA DATE: 10/10

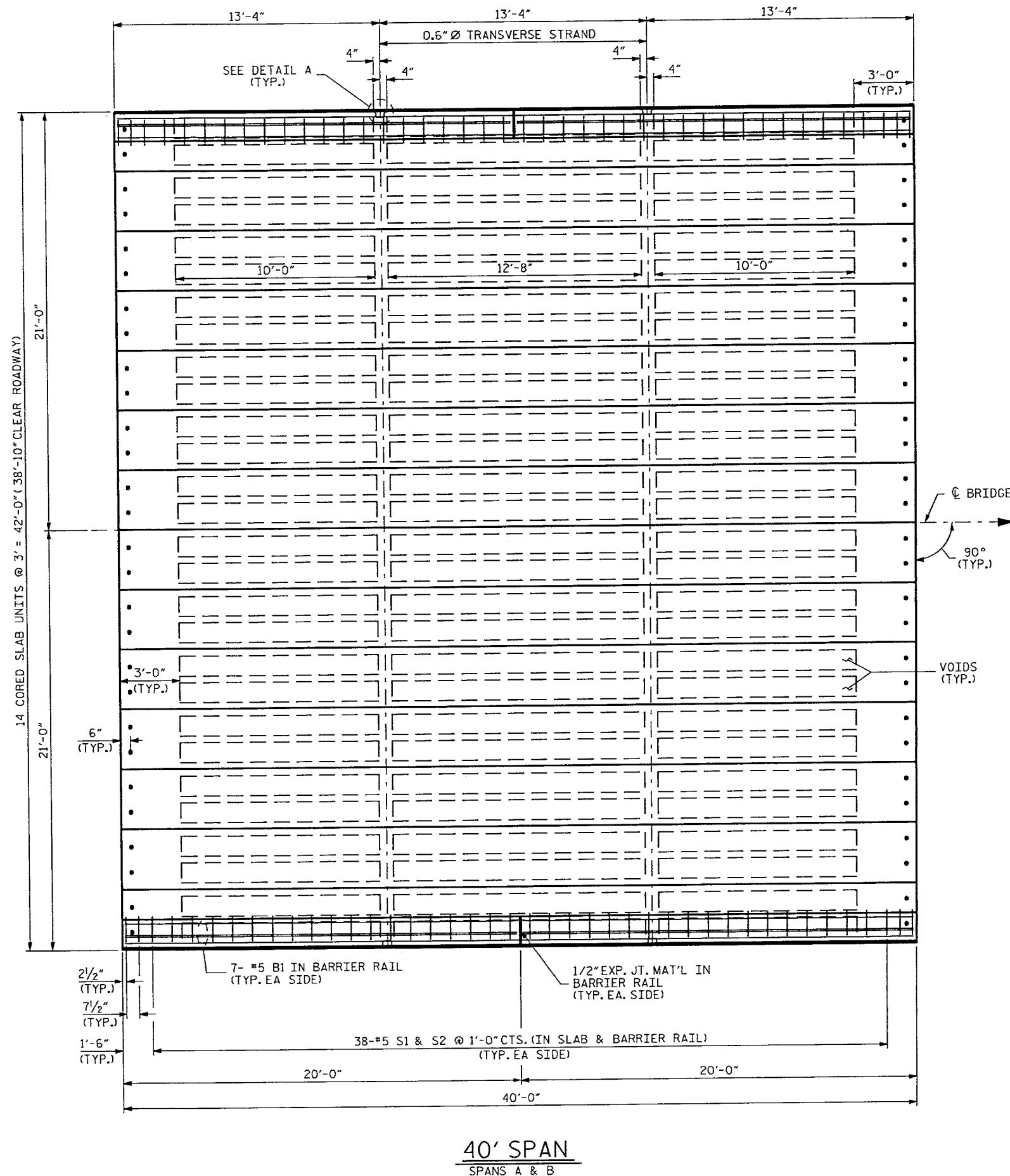
Copyright AT BGM24555C-2010 10/04

PROJECT NO.: 35565.1.1
COUNTY: ROBESON
STATION: 10+17.5
REPLACES BRIDGE NO. 41

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
CORED SLAB DETAILS
40' SPANS
38'-10" CL. ROADWAY
90° SKEW

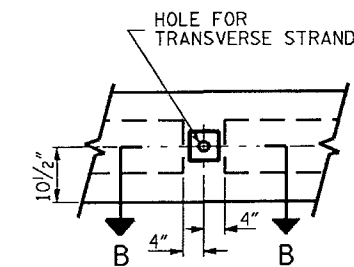
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			4
2			4			

TOTAL SHEETS
15

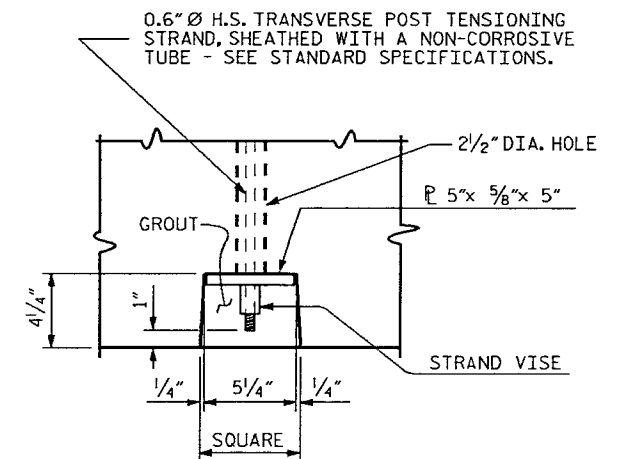


NOTES

- S1 BARS MAY BE SHIFTED AS NECESSARY TO CLEAR 2" DIA. HOLE FOR TRANSVERSE STRAND.



ELEVATION



SECTION B-B

DETAIL -A-

NOT TO SCALE

PROJECT NO.: 35565.1.1
COUNTY: ROBESON
STATION: 10+17.5
REPLACES BRIDGE NO. 41

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
PLAN OF SPANS
90° SKEW
40' SPAN

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			5
2			4			15

DRAWN BY: CLB DATE: 10/00
CHECKED BY: PDBAGA DATE: 10/00

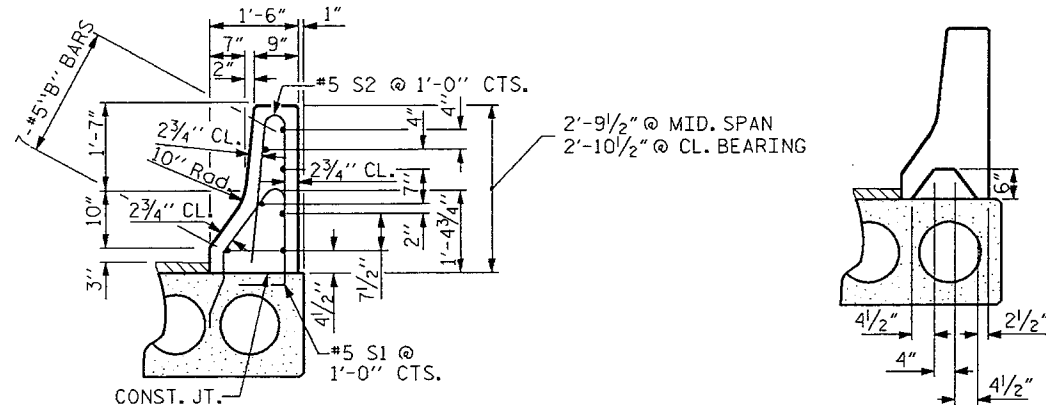
NOTES

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.
GROUT SHALL BE 5" ABOVE GUTTERLINE BETWEEN RAIL SECTIONS AT BENTS.
JOINT SEALER SHALL BE LOW MODULUS SILICONE SEALANT. THE BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF THE TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

VERTICAL GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. 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.

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 ON PLANS.

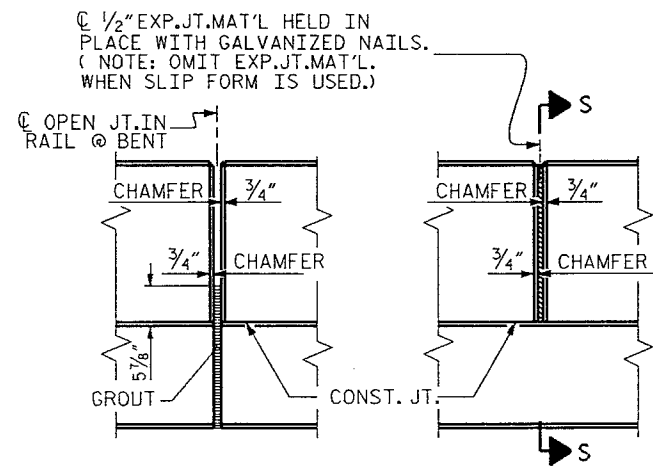
THE 2 1/2" Ø DOWEL HOLES AT EACH END OF THE SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT. SEE SPECIAL PROVISIONS.
CONCRETE BARRIER RAIL WILL BE PAID FOR UNDER THE LUMP SUM PRICE FOR CONSTRUCTION OF SUPERSTRUCTURE.



SECTION THRU RAIL

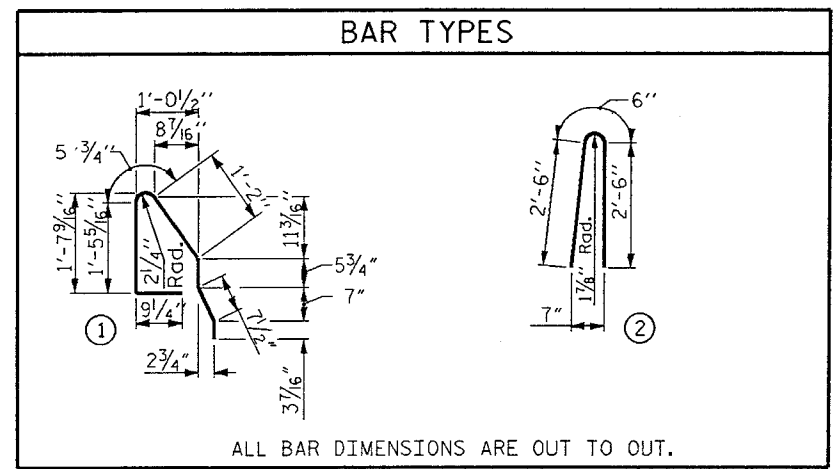
SECTION S-S

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

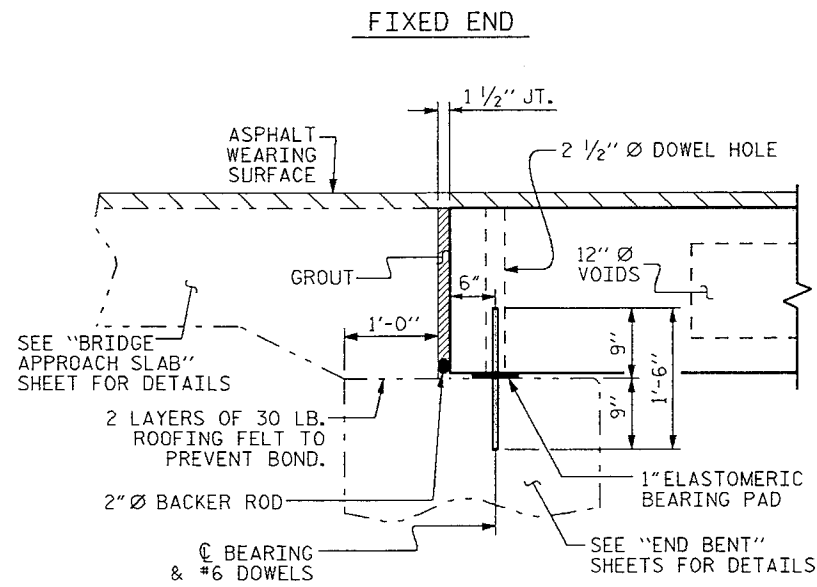


ELEVATION AT EXPANSION JOINTS

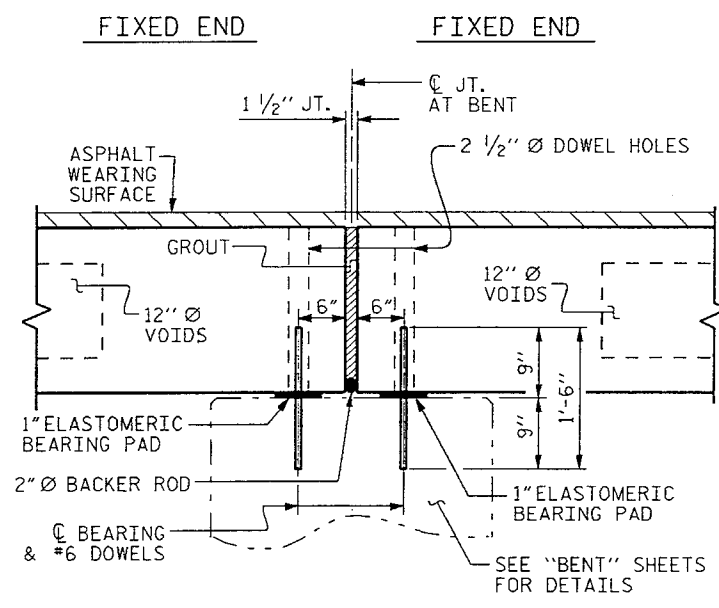
BARRIER RAIL DETAILS



ALL BAR DIMENSIONS ARE OUT TO OUT.



SECTION AT END BENT



SECTION AT BENT

BILL OF MATERIAL FOR CONCRETE BARRIER RAIL								
BAR	BARS PER SPAN		TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT	
	SPAN A	SPAN B						
* B1	28	28	56	#5	STR	19'-7"	1144	
* S1	42	42	84	#5	1	5'-3"	460	
* S2	42	42	84	#5	2	5'-6"	482	
* EPOXY COATED REINFORCING STEEL							LBS.	2086
CLASS AA CONCRETE							CU.YDS.	17.5
TOTAL LIN. FT. OF CONCRETE BARRIER RAIL							159'-10"	

PROJECT NO.: 35565.1.1
COUNTY: ROBESON
STATION: 10+17.5
REPLACES BRIDGE NO. 41

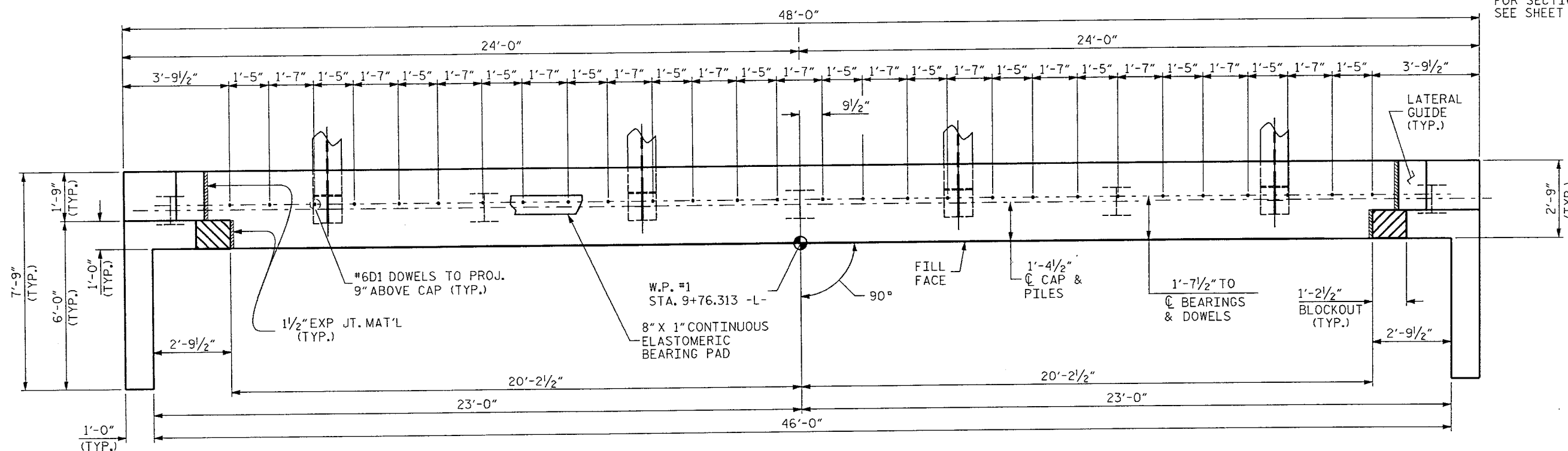
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
CONCRETE BARRIER
RAIL SECTION

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	6
1			3			TOTAL SHEETS 15
2			4			

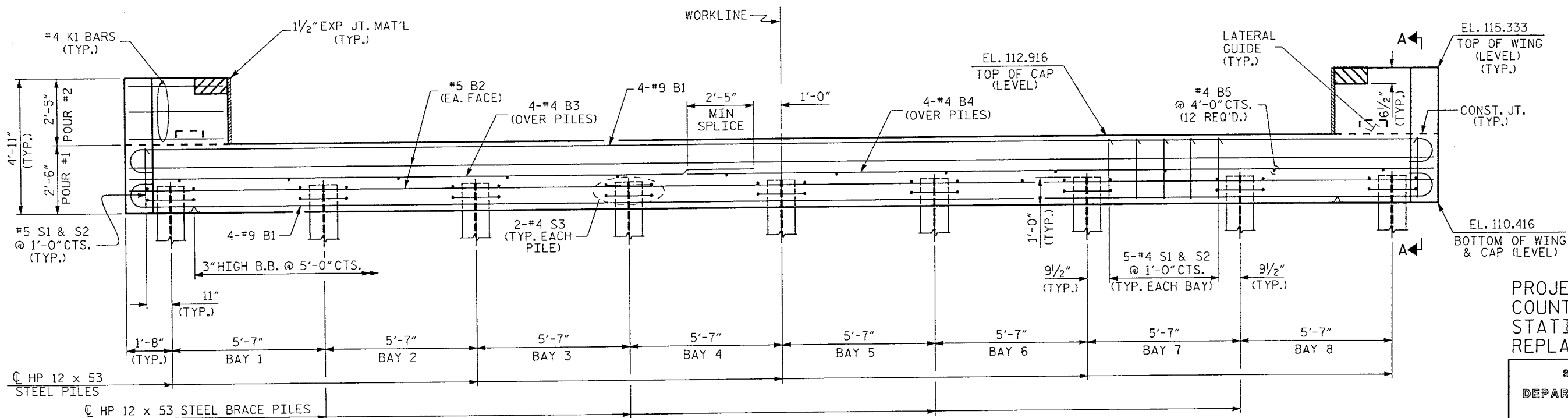
DRAWN BY: GLB
CHECKED BY: PDB/AGA
DATE: 10/10
DATE: 10/10

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #6 D1 DOWELS.
FOR PILE SPLICE DETAILS, SEE SHEET 13.
FOR SECTION A-A AND LATERAL GUIDE DETAILS, SEE SHEET 8.



PLAN



ELEVATION

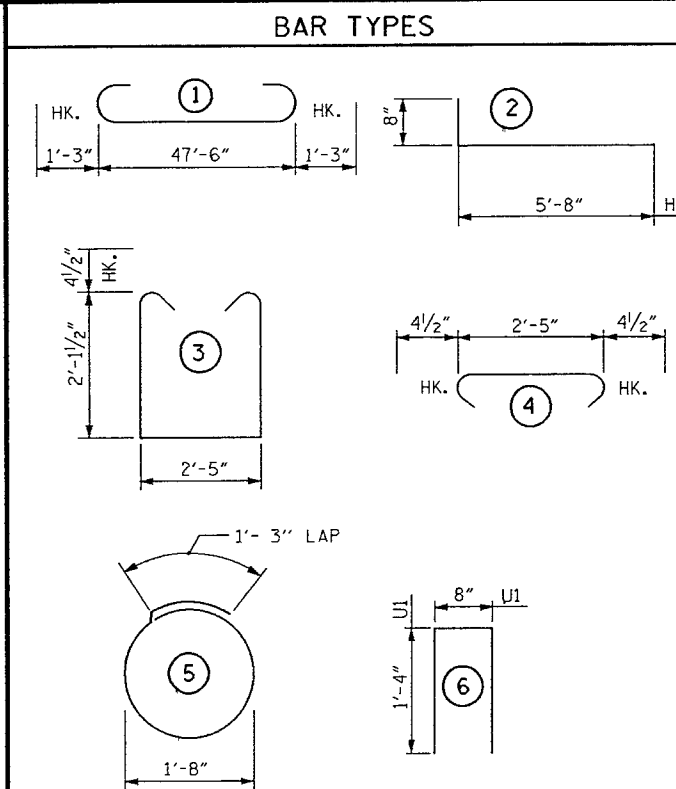
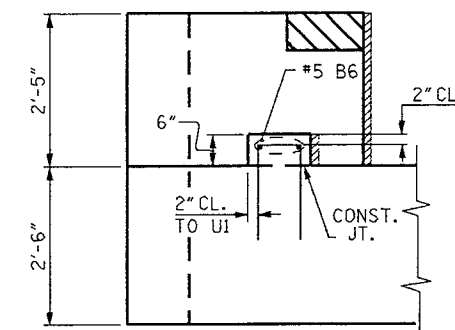
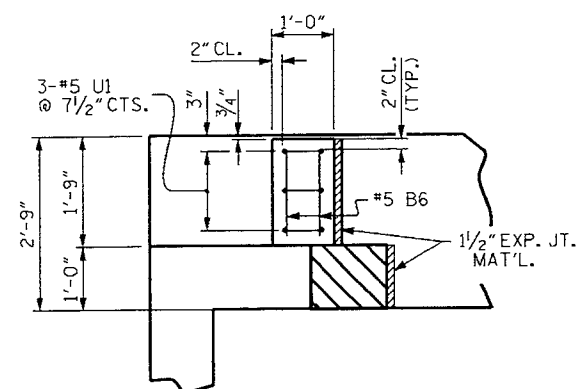
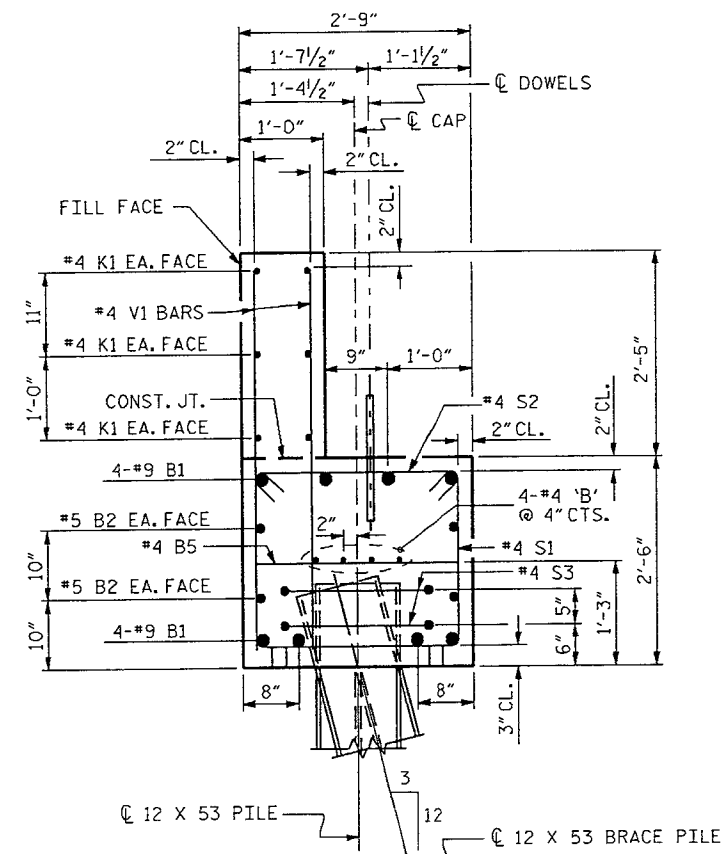
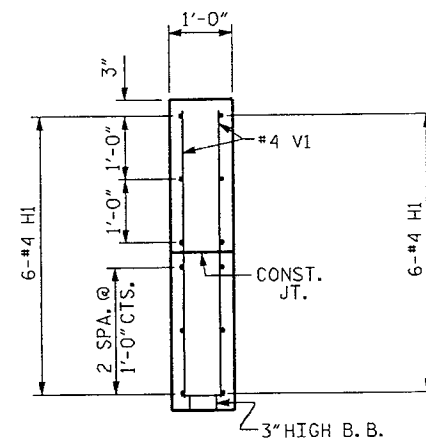
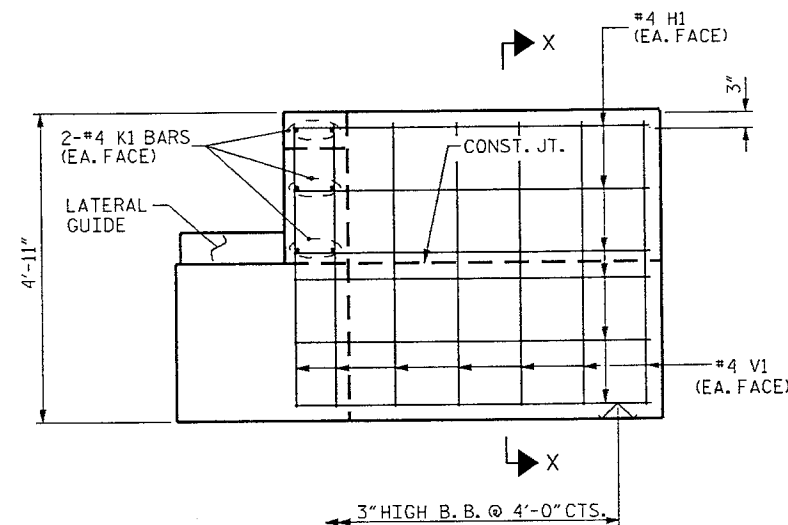
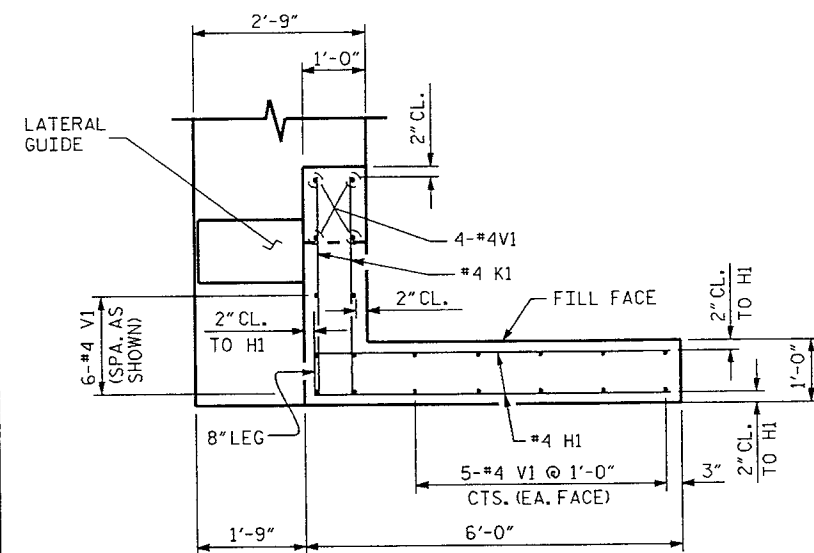
PROJECT NO.: 35565.1.1
COUNTY: ROBESON
STATION: 10+17.5
REPLACES BRIDGE NO. 41

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT NO. 1
38'-10" CL. ROADWAY

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			7
2			4			15

DRAWN BY: C.L. BRIGHT DATE: 10/10
CHECKED BY: AGA DATE: 10/10



BILL OF MATERIAL					
END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	9	1	50-0	1360
B2	4	5	STR	47-8	199
B3	4	4	STR	22-9	61
B4	4	4	STR	27-2	73
B5	12	4	STR	2-5	19
B6	4	5	STR	1-5	6
D1	28	6	STR	1-6	63
H1	24	4	2	6-4	101
K1	12	4	STR	3-5	27
S1	42	4	3	7-5	208
S2	42	4	4	3-2	89
S3	18	4	5	6-6	78
U1	6	5	6	3-4	30
V1	40	4	STR	4-7	122
REINFORCING STEEL				=	2436 LBS
CLASS A CONCRETE					
POUR 1 CAP & LOWER PART OF WINGS				C.Y.	13.1
POUR 2 UPPER PART OF WINGS				C.Y.	1.5
POUR 3 LATERAL GUIDE & BLOCKOUT				C.Y.	0.1
TOTAL				C.Y.	14.7
HP 12 X 53 STEEL PILE = 270 +/- LN.FT.					

PROJECT NO.: 35565.1.1
COUNTY: ROBESON
STATION: 10+17.5
REPLACES BRIDGE NO. 41

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

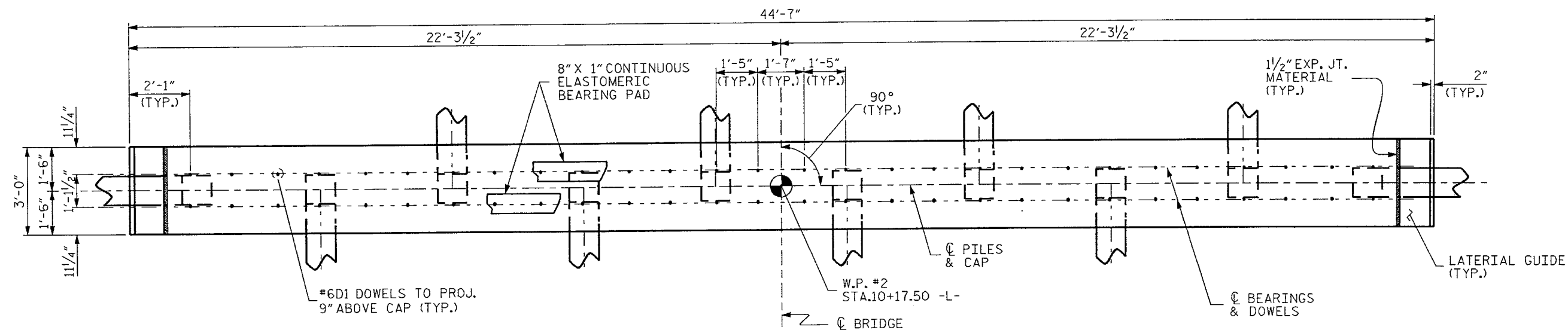
SUBSTRUCTURE
END BENT NO. 1

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	8
1			3			TOTAL SHEETS
2			4			15

NOTES

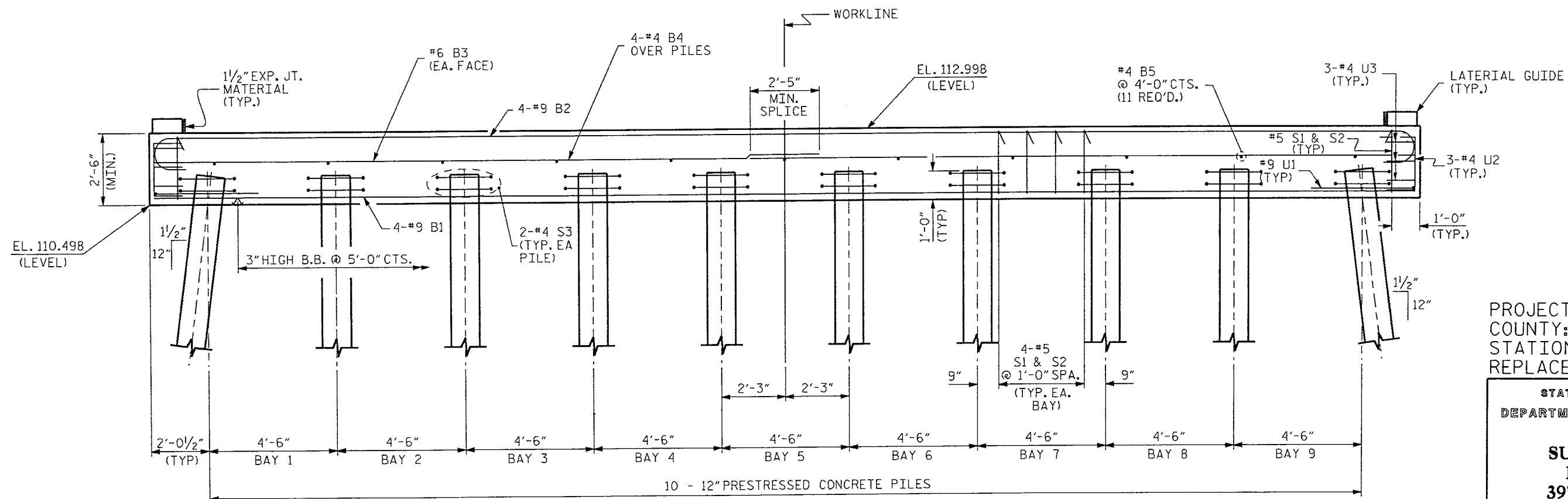
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #6D1 DOWELS.
FOR LATERAL GUIDE DETAILS SEE SHEET #10.

SPAN B



SPAN A

PLAN



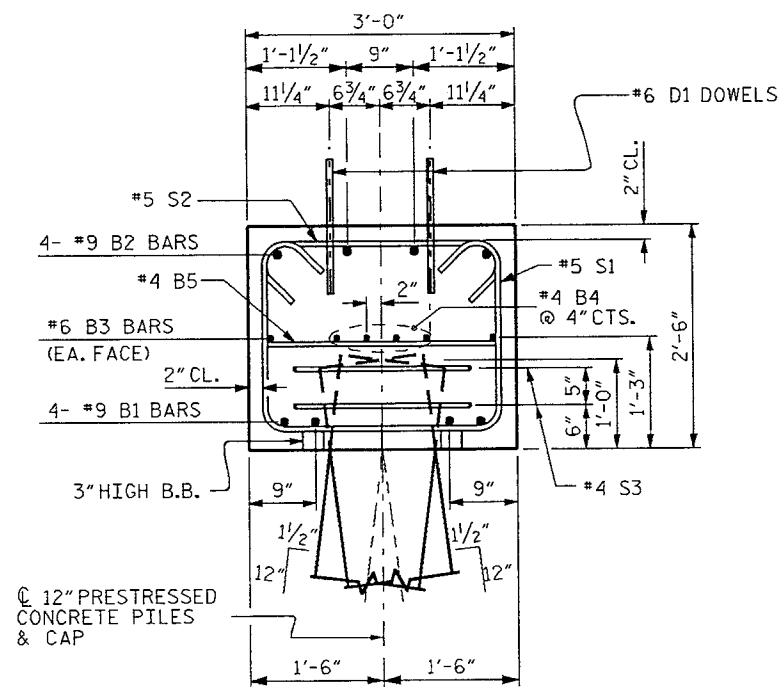
ELEVATION

PROJECT NO.: 35565.1.1
COUNTY: ROBESON
STATION: 10+17.5
REPLACES BRIDGE NO. 41

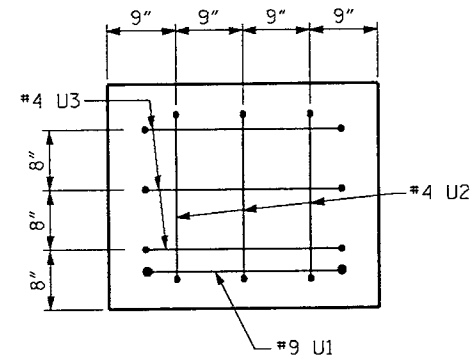
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
**SUBSTRUCTURE
BENT NO. 1
39' CL. ROADWAY**

REVISIONS						SHEET NO. 9
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 15
2			4			

DRAWN BY: CL BRIGHT DATE: 10/10
CHECKED BY: AGA DATE: 10/10

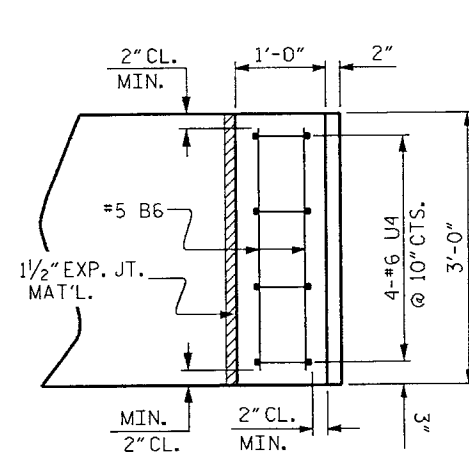


SECTION THRU CAP

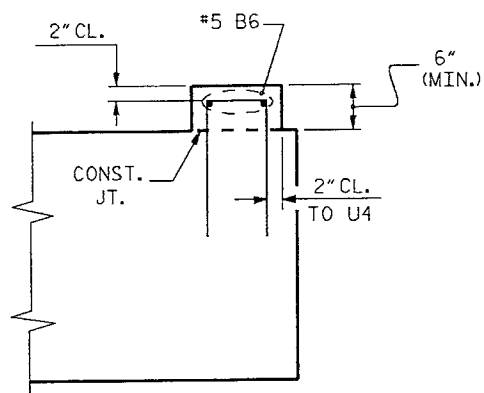


END VIEW

(TYP. BOTH ENDS)

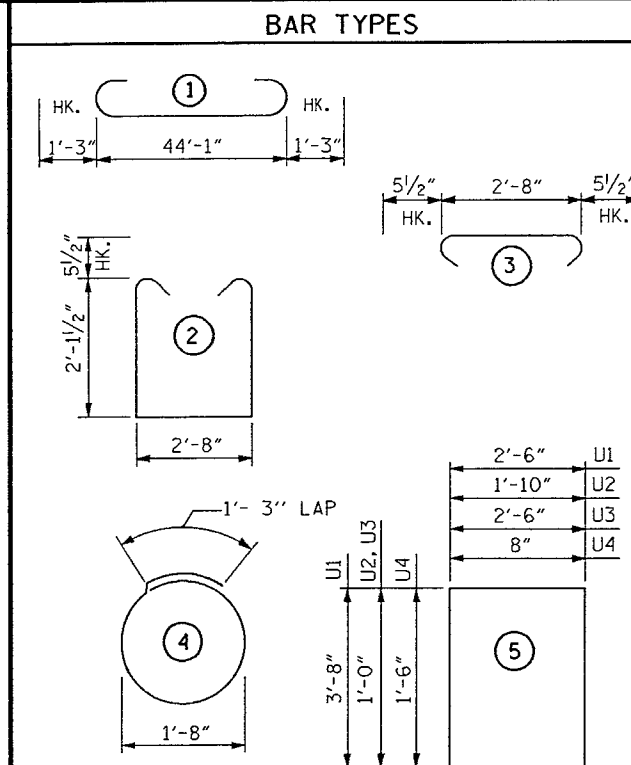


PLAN



ELEVATION

LATERAL GUIDE DETAILS



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	9	STR	44-3	602
B2	4	9	1	46-7	634
B3	2	6	STR	44-2	133
B4	8	4	STR	23-4	125
B5	11	4	STR	2-8	20
B6	4	5	STR	2-8	11
D1	56	6	STR	1-6	126
S1	38	5	2	7-10	310
S2	38	5	3	3-7	142
S3	20	4	4	6-6	87
U1	2	9	5	9-10	67
U2	6	4	5	3-10	15
U3	6	4	5	4-6	18
U4	8	6	5	3-8	44

REINFORCING STEEL = 2334 LBS
CLASS A CONCRETE
POUR 1 CAP 12.4

POUR 2 LATERAL GUIDE 0.1
TOTAL C.Y. 12.5

12" CONCRETE PILE = 350 +/- LN. FT.

PROJECT NO.: 35565.1.1
COUNTY: ROBESON
STATION: 10+17.5
REPLACES BRIDGE NO. 41

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT NO. 1

REVISIONS						SHEET NO.	
NO.	BY	DATE	NO.	BY	DATE	10	TOTAL SHEETS
1			3			15	
2			4				

NOTES

CONCRETE DESIGN DATA : $f'_c = 5,000$ PSI ; $f_c = 2,000$ PSI

IMPACT IN HANDLING = 50%

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE PILE SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 3,500 PSI.

IN DRIVING PILES, A METHOD APPROVED BY THE ENGINEER SHALL BE USED, WHEREBY THE HEAD OF THE PILE IS NOT DAMAGED.

PROPOSED DEVICES FOR LIFTING PILES, RECESS DETAILS, AND PATCHING MATERIAL SHALL BE DETAILED IN SHOP DRAWINGS. AFTER ATTACHMENTS HAVE BEEN REMOVED, OPENINGS SHALL BE REPAIRED SUCH THAT THE APPEARANCE OF THE PILE IS UNIFORM.

WHERE CAST-IN-PLACE LIFTING DEVICES ARE NOT USED, PICK-UP POINTS TO BE INDICATED WITH A BLACK MARK 2" WIDE.

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 STANDARD SPECIFICATIONS.

THE CONTRACTOR MAY USE EITHER OF THE FOLLOWING STRAND CONFIGURATIONS:

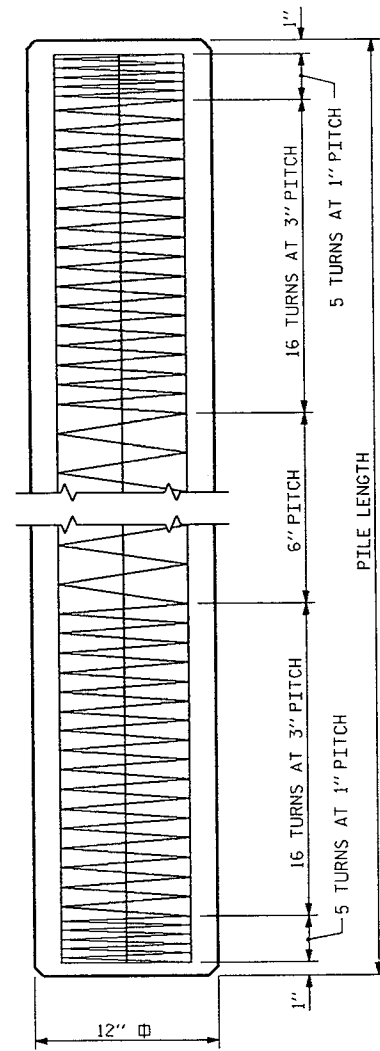
SIZE	GRADE	NUMBER OF STRANDS	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS FORCE
1/2"	270 L.R.	4	0.153	41,300* PER STRAND	30,980* PER STRAND
1/2"	270 L.R.	5	0.153	41,300* PER STRAND	30,980* PER STRAND

THE SLIP-FORM METHOD OF CASTING PILES WILL NOT BE PERMITTED.

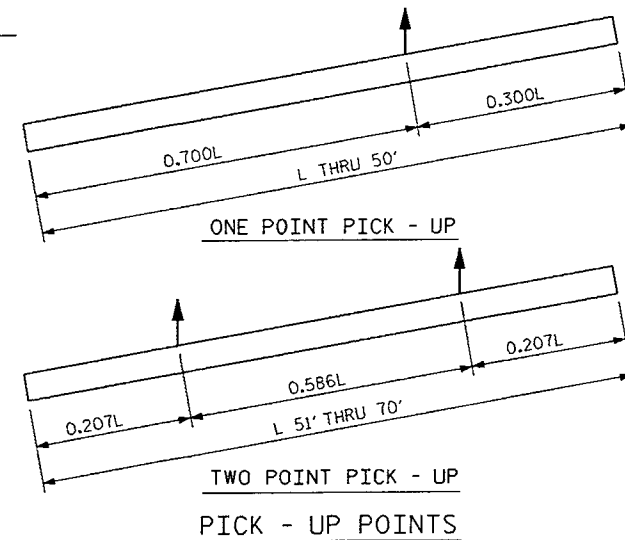
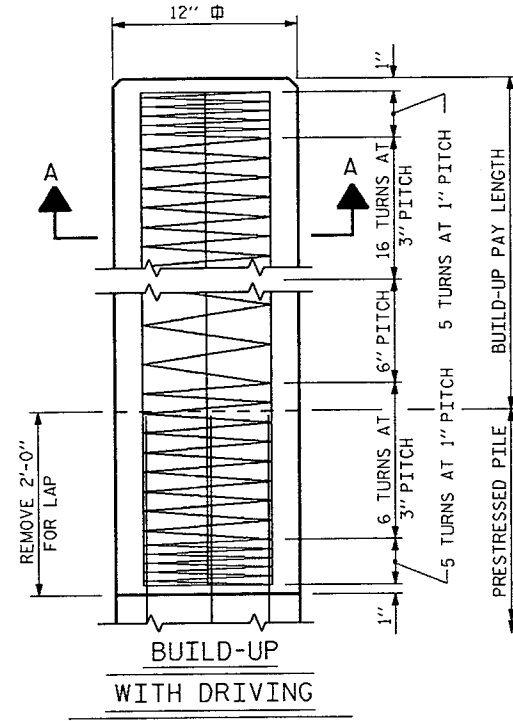
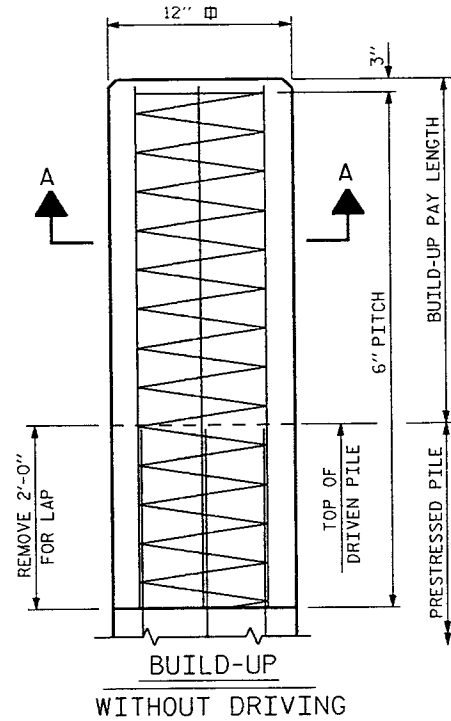
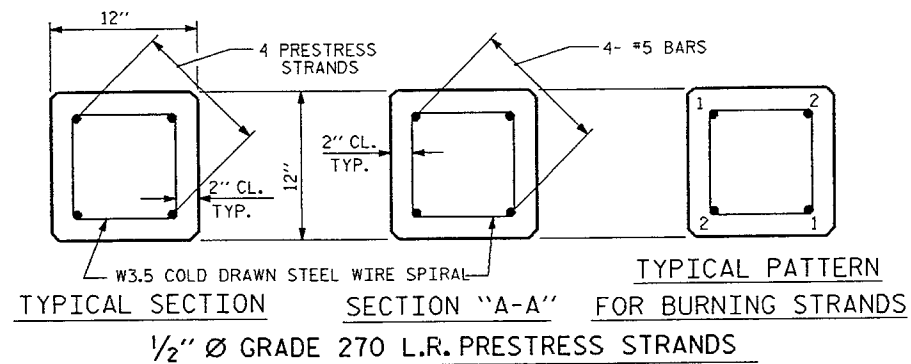
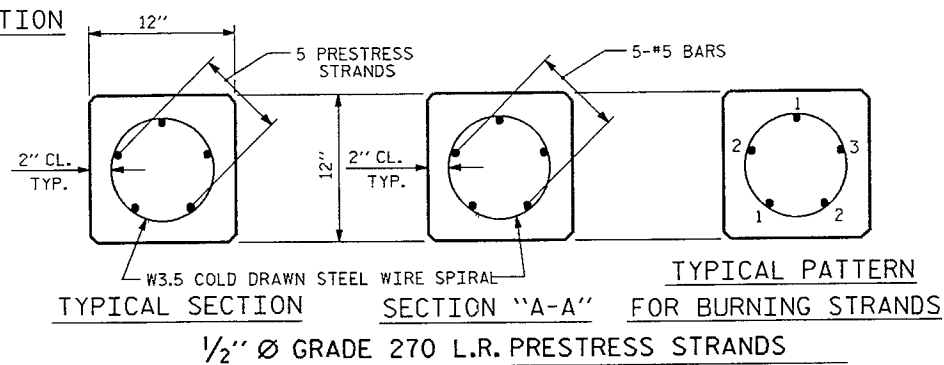
IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN PAIRS, EXCEPT WHERE 5 STRANDS ARE USED THE LAST STRAND MAY BE BURNED SINGLY, ACCORDING TO BURNING PATTERNS SHOWN. NOT MORE THAN 4 STRANDS MAY BE BURNED AT ANY ONE SECTION BEFORE THE SAME STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

BUILD-UPS SHALL BE 'CLASS A' CONCRETE WITH 20% ADDITIONAL CEMENT. NO DRIVING OF THE BUILT-UP PILE WILL BE PERMITTED UNTIL THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF 3,000 PSI AND UNTIL A PERIOD OF SEVEN DAYS HAS ELAPSED SINCE CASTING OF THE BUILD-UP.

ALL CORNERS TO BE CHAMFERED 3/4".



ELEVATION



QUANTITIES FOR ONE 12" PRESTRESSED PILE						
LENGTH	CONCRETE CU. YDS.	PILE WT. TONS	ONE PICK-UP POINT		TWO PICK-UP POINT	
			0.300L	0.700L	0.207L	0.586L
25'-0"	0.91	1.85	7'-6"	17'-6"		
30'-0"	1.10	2.22	9'-0"	21'-0"		
35'-0"	1.28	2.59	10'-6"	24'-6"		
40'-0"	1.46	2.96	12'-0"	28'-0"		
45'-0"	1.64	3.33	13'-6"	31'-6"		
50'-0"	1.83	3.70	15'-0"	35'-0"		
55'-0"	2.01	4.07			11'-4 1/2"	32'-3"
60'-0"	2.19	4.44			12'-5"	35'-2"
65'-0"	2.37	4.81			13'-5 1/2"	38'-1"
70'-0"	2.56	5.18			14'-6"	41'-0"

PROJECT NO.: 35565.1.1
COUNTY: ROBESON
STATION: 10+17.5
REPLACES BRIDGE NO. 41

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

12" PRESTRESSED
CONCRETE PILE

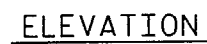
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			11
2			4			15

STD. NO. PCP1

ASSEMBLED BY : CLB	DATE : 02/08
CHECKED BY : JAY	DATE : 03/08
DRAWN BY : FCJ 7/88	REV. 7/17/98 RWW/LES
CHECKED BY : CRK 3/89	REV. 8/16/99R RWW/LES
	REV. 5/1/06 TLA/GM

30-NOV-2010 15:04
*****DGN*****
cbr/tynt AT BOMU240325

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY
TO CLEAR #6 D1 DOWELS.
FOR PILE SPLICE DETAILS, SEE SHEET 13.
FOR SECTION A-A AND LATERAL GUIDE DETAILS,
SEE SHEET 8.

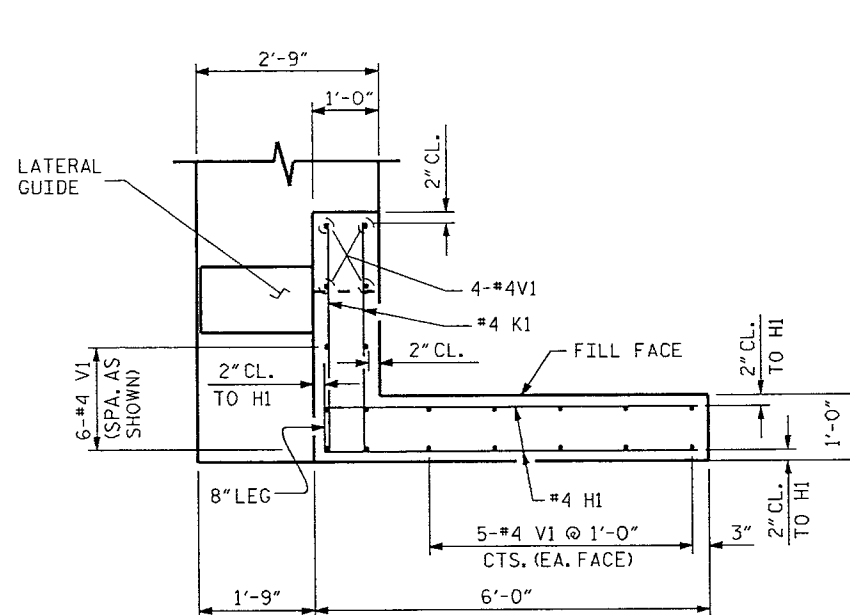


PROJECT NO.: 35565.1.1
COUNTY: ROBESON
STATION: 10+17.5
REPLACES BRIDGE NO. 41

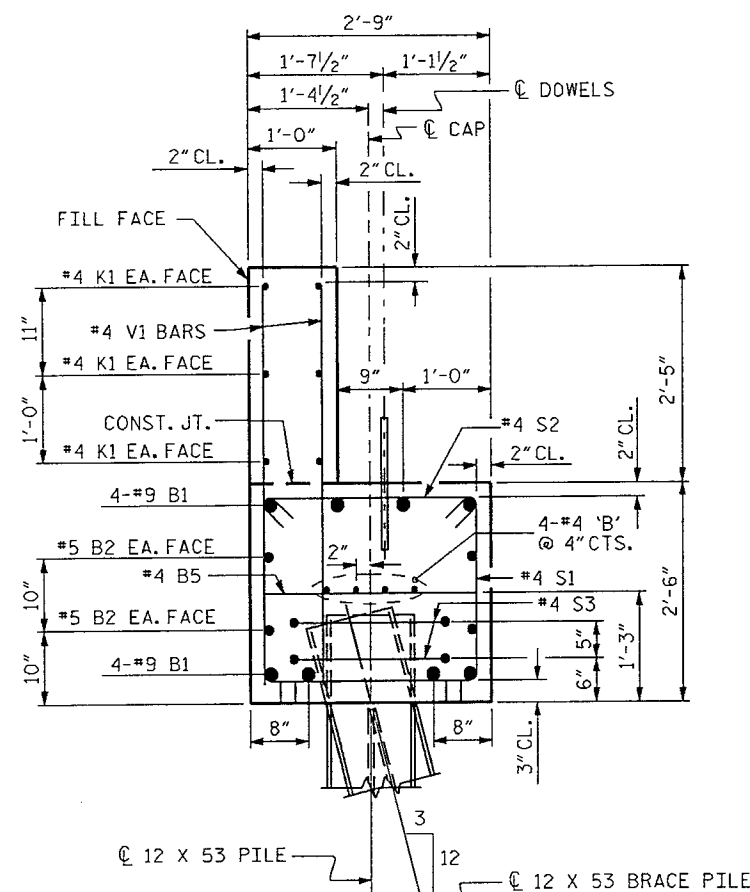
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT NO. 2
38'-10" CL. ROADWAY

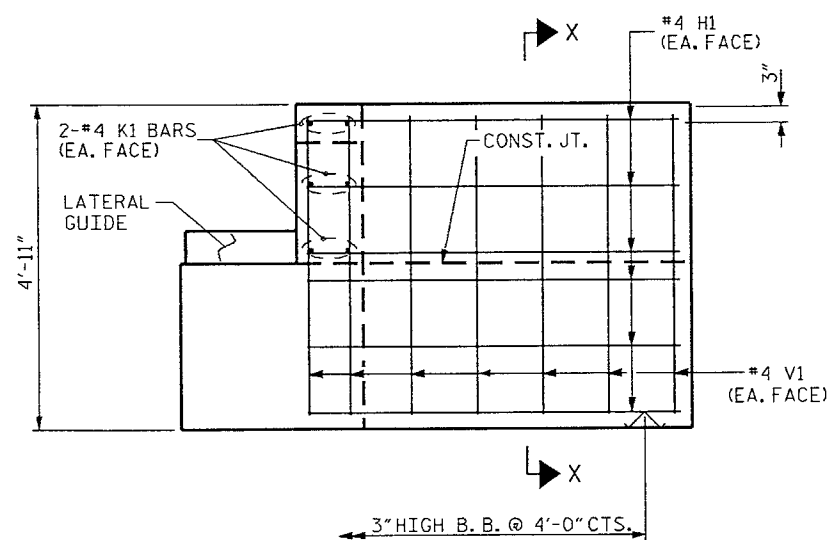
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	12
1			3			TOTAL SHEETS
2			4			15



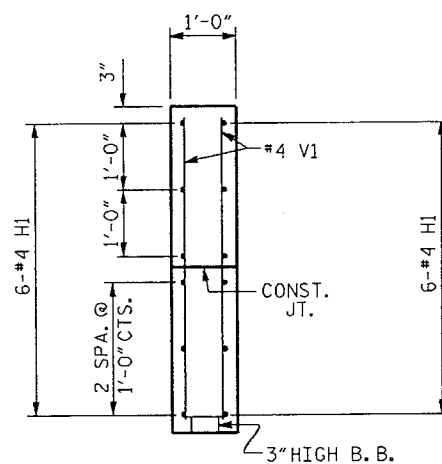
PLAN OF WING



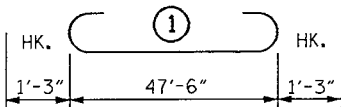
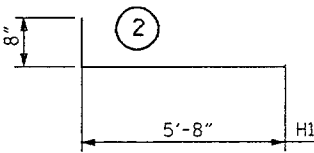
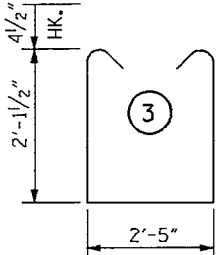
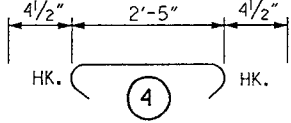
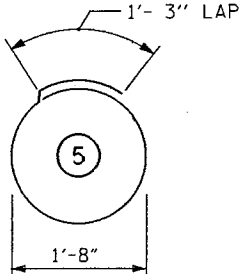
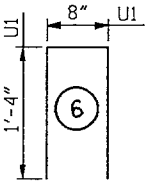
SECTION A-A



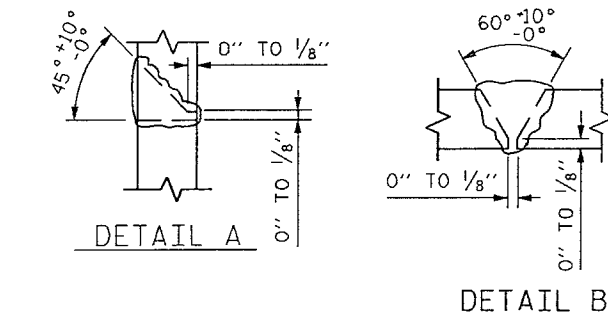
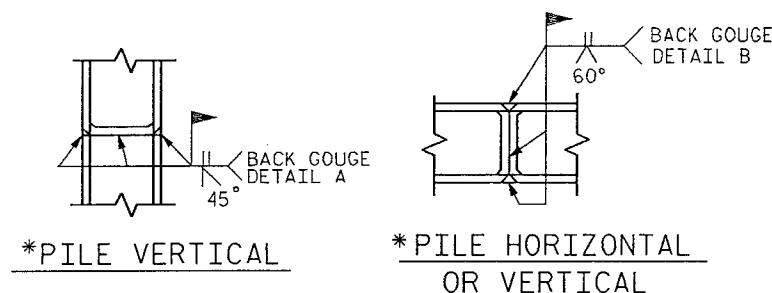
ELEVATION OF WING



SECTION X-X

BAR TYPES		BILL OF MATERIAL					
     		END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT		
B1	8	9	1	50-0	1360		
B2	4	5	STR	47-8	199		
B3	4	4	STR	22-9	61		
B4	4	4	STR	27-2	73		
B5	12	4	STR	2-5	19		
B6	4	5	STR	1-5	6		
D1	28	6	STR	1-6	63		
H1	24	4	2	6-4	101		
K1	12	4	STR	3-5	27		
S1	42	4	3	7-5	208		
S2	42	4	4	3-2	89		
S3	18	4	5	6-6	78		
U1	6	5	6	3-4	30		
V1	40	4	STR	4-7	122		
REINFORCING STEEL						= 2436 LBS	
CLASS A CONCRETE							
POUR 1 CAP & LOWER PART OF WINGS						C.Y. 13.1	
POUR 2 UPPER PART OF WINGS						C.Y. 1.5	
POUR 3 LATERAL GUIDE & BLOCKOUT						C.Y. 0.1	
TOTAL						C.Y. 14.7	
HP 12 X 53 STEEL PILE = 270 +/- LN.FT.							

ALL BAR DIMENSIONS ARE OUT TO OUT.



*POSITION OF PILE DURING WELDING.

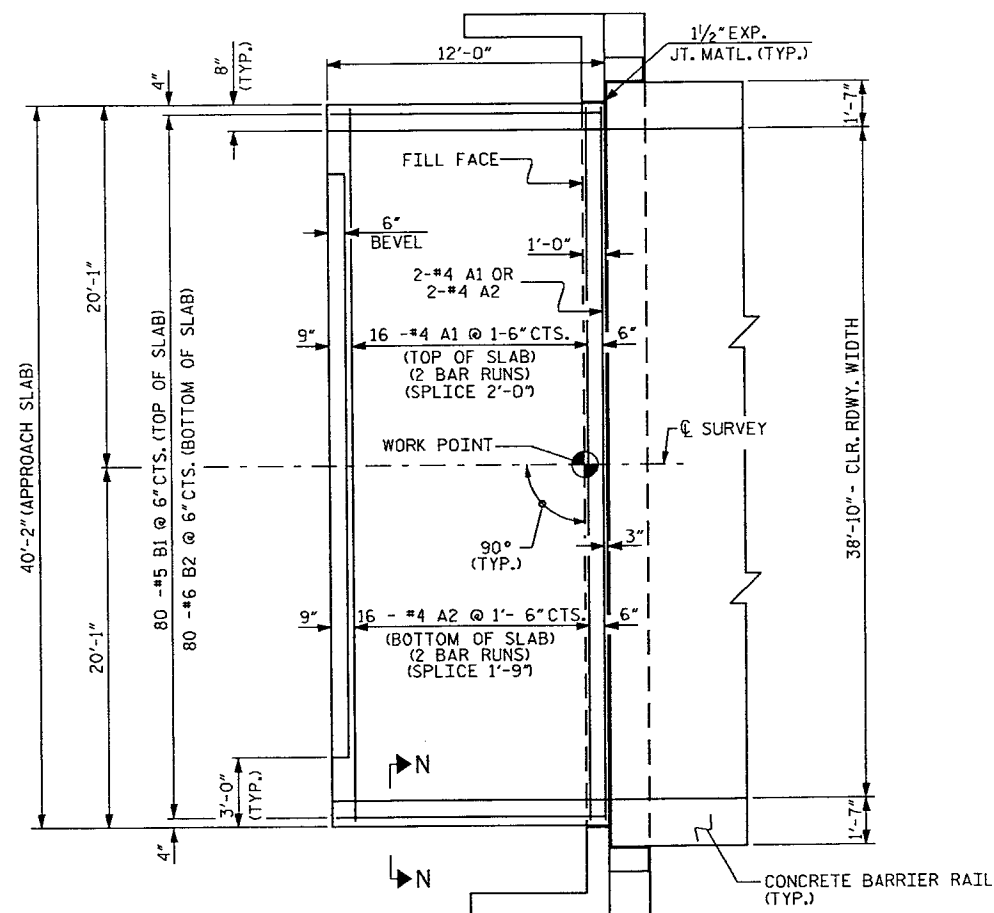
PILE SPLICE DETAILS

PROJECT NO.: 35565.1.1
COUNTY: ROBESON
STATION: 10+17.5
REPLACES BRIDGE NO. 41

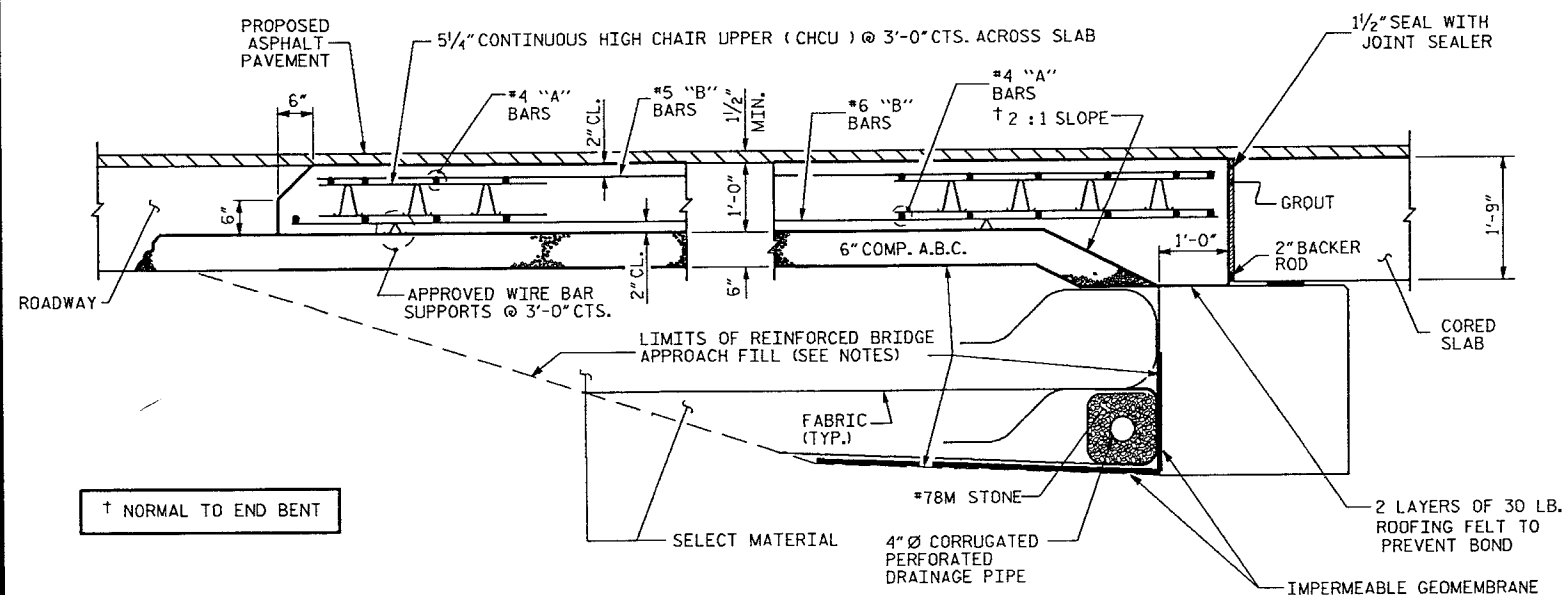
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT NO. 2

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			13
2			4			15



PLAN OF APPROACH SLAB



SECTION THRU SLAB

ASSEMBLED BY : CLB		DATE : 02/08	
CHECKED BY : JAY		DATE : 03/08	
DRAWN BY : FCJ 6/87		REV. 7/10/01	LES/RDR
CHECKED BY : EGA 6/87		REV. 5/7/03R	RWW/JT
		REV. 5/1/06	TLA/GM

NOTES

WORK SHOWN ON THIS DRAWING AND ROADWAY STANDARD 422.10 WILL BE PAID FOR UNDER THE LUMP SUM PRICE FOR APPROACH SLABS. EXCEPT FOR BRIDGE APPROACH FILL WILL BE PAID SEPARATELY.

FOR REINFORCED BRIDGE APPROACH FILL INCLUDING FABRIC, IMPERMEABLE
NONMEMBER, 4" Ø DRAINAGE PIPE, #78M STONE, AND SELECT MATERIAL,
SEE ROADWAY STANDARD 422.10.

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 WITH 4" OF INTERMEDIATE OR SURFACE COURSE ASPHALT.

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 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.

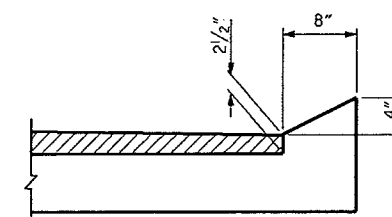
THE CONTRACTOR MAY USE 5" CLASS "A" CONCRETE BASE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL EXTEND 1'-0" BEYOND THE END OF THE APPROACH SLAB AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER OF 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.

TEMPORARY DRAINAGE AND TEMPORARY BERM AND SLOPE DRAINS WILL BE PAID FOR UNDER THE LUMP SUM PRICE FOR APPROACH SLABS. SEE ROADWAY STANDARD 1622.01.

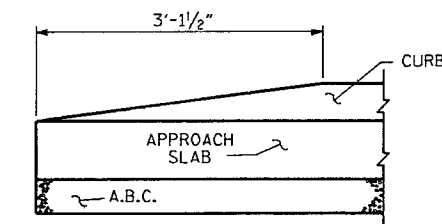
FOR JOINT DETAILS, SEE SHEET NO. 6.

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.



SECTION N-N



END OF CURB WITHOUT
SHOULDER BERM GUTTER

PROJECT NO. 35565.1.1
COUNTY ROBESON
STATION: 10+17.500
REPLACES BRIDGE NO. 41

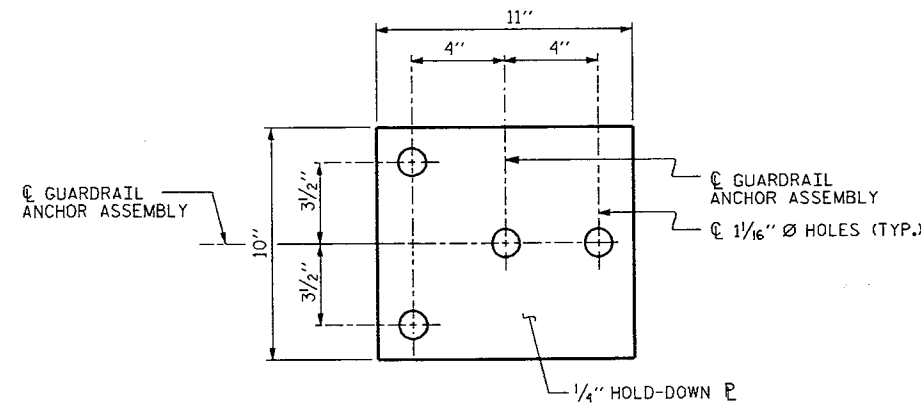
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
BRIDGE APPROACH SLAB
BRIDGE # 41 ON SR-2115
OVER JACOBS SWAMP

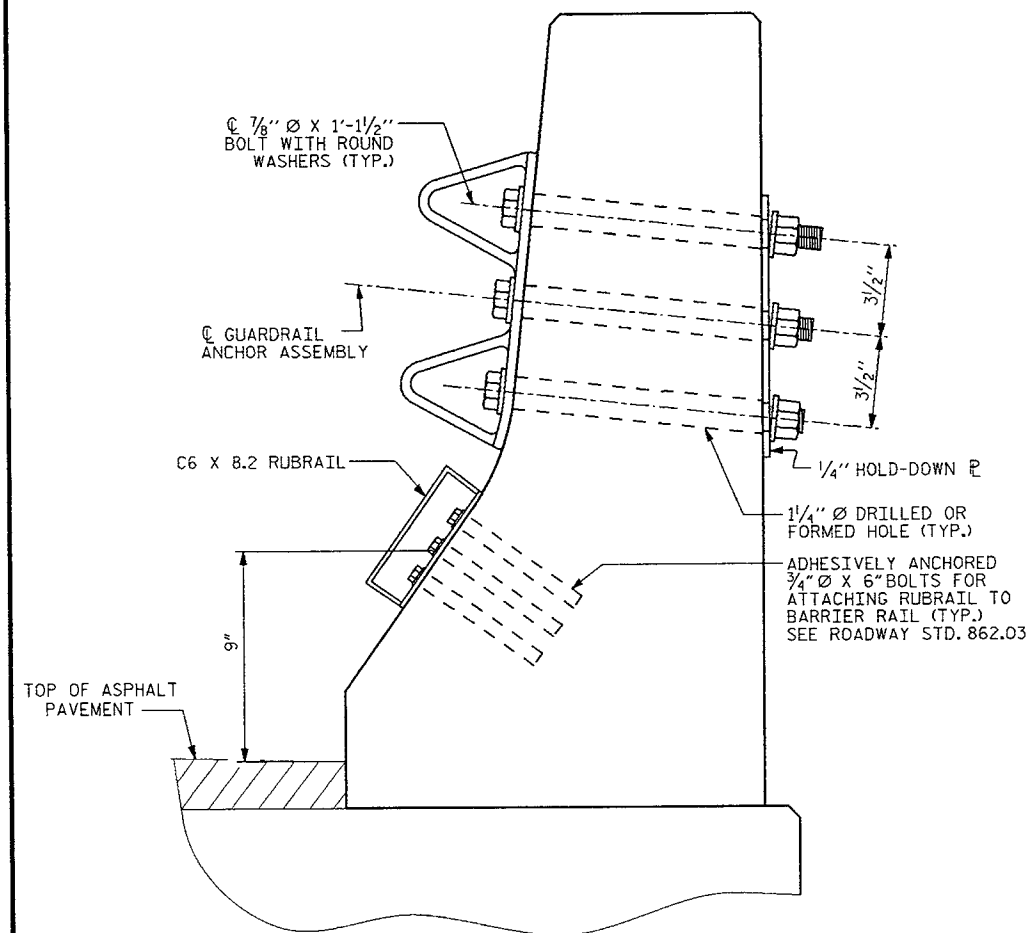
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	14 TOTAL SHEETS 15
1			3			
2			4			

NOT TO SCALE

STD. NO. BAS7

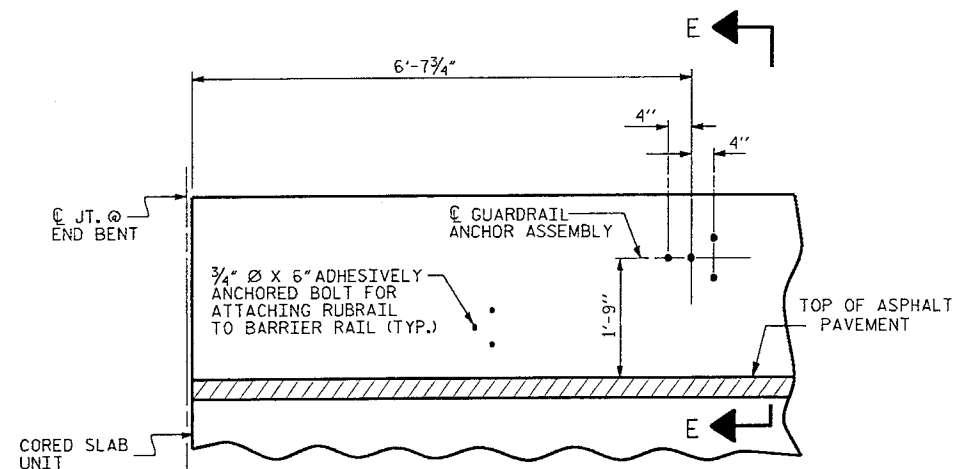


PLAN



SECTION E-E

TYPE B-77 GUARDRAIL ANCHOR ASSEMBLY DETAILS

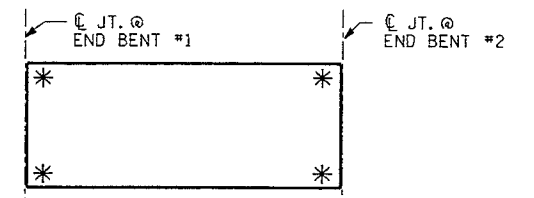


ELEVATION

FOR LOCATION OF RUBRAIL, SEE ROADWAY STD. 862.03

LOCATION OF ANCHORS FOR GUARDRAIL

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



SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

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 1/4" 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.

SHIFT FIRST GUARDRAIL POST AS NECESSARY TO CLEAR END BENT CAP.

PROJECT NO. 35565.1.1
COUNTY ROBESON
STATION: 10+17.500
REPLACES BRIDGE NO. 41

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
GUARDRAIL ANCHORAGE
FOR BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			15
2			4			15

NOT TO SCALE

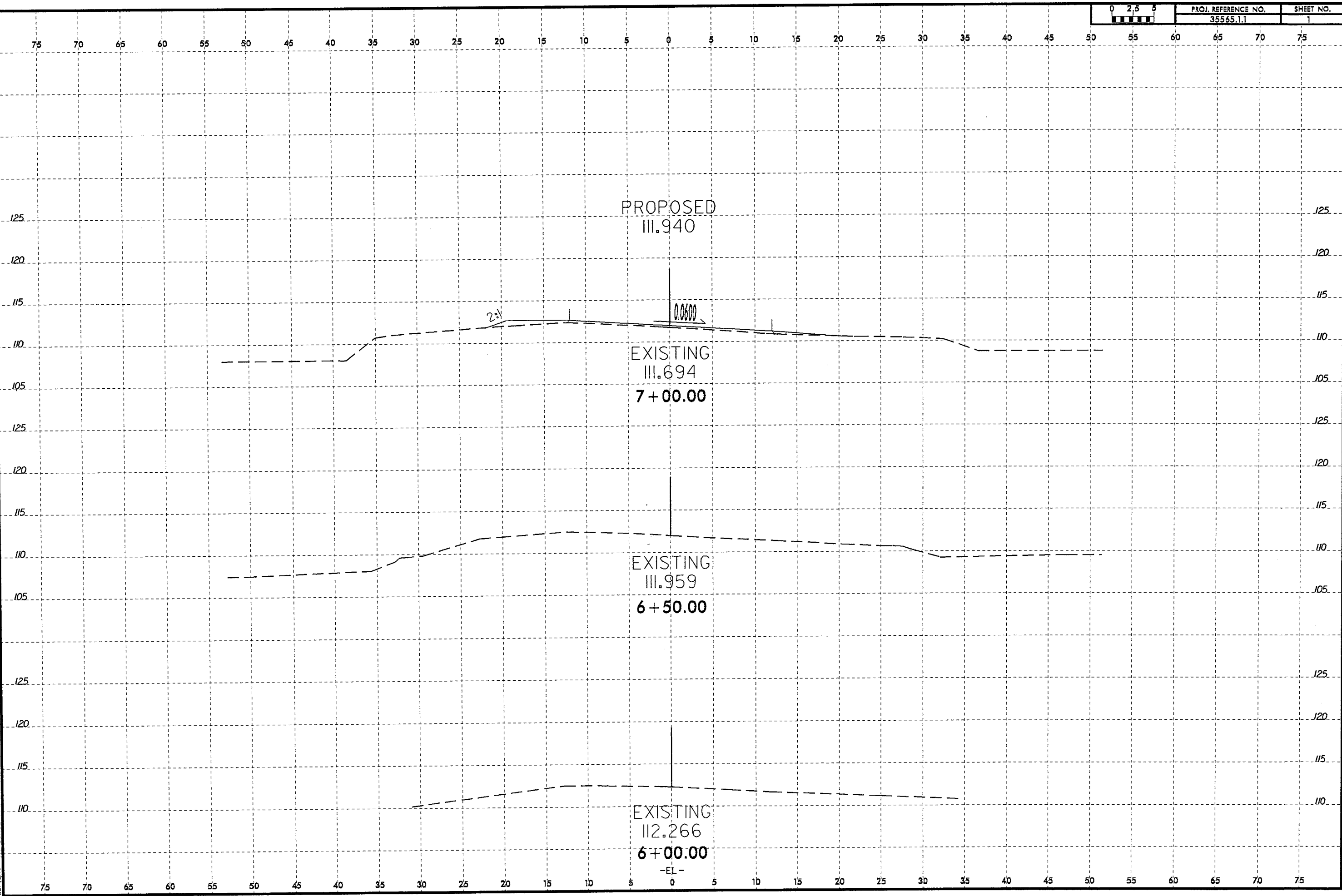
STD. NO. GRA2

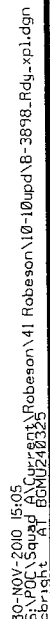
ASSEMBLED BY : CLB	DATE : 02/08
CHECKED BY : JAY	DATE : 03/08
DRAWN BY : TLA 5/06	ADDED 5/1/06
CHECKED BY : GM 5/06	

30-NOV-2010 15:04
*****DCN*****
cbright AT BGMU240325

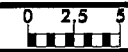
8/22/99

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BRIGHT AT BGR0240325



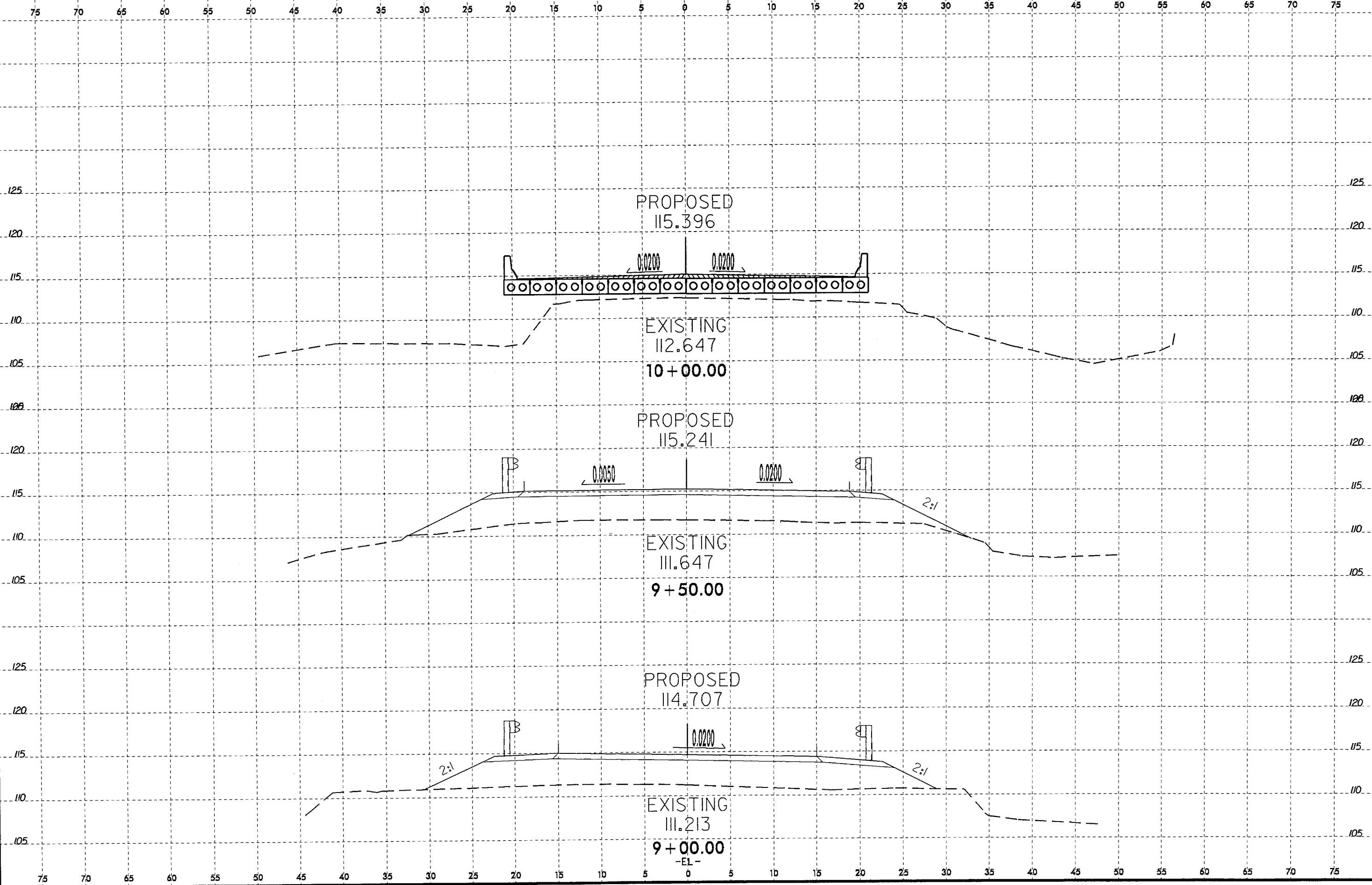


8/23/99



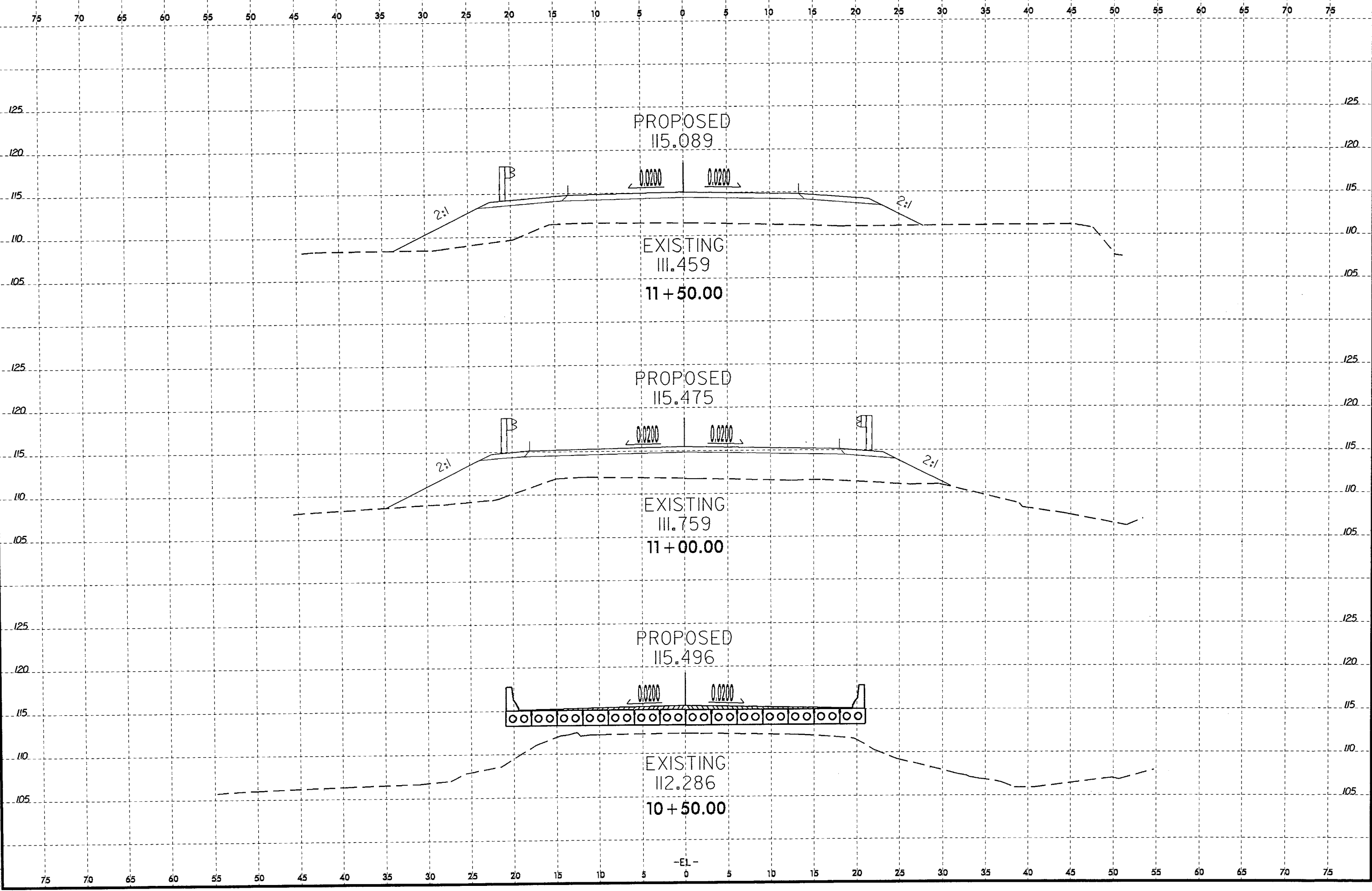
PROJ. REFERENCE NO.
35565.1.1

SHEET NO.
3



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B-3898

8/23/99
30-NOV-2010 15:06
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cbrt AT BOM248323



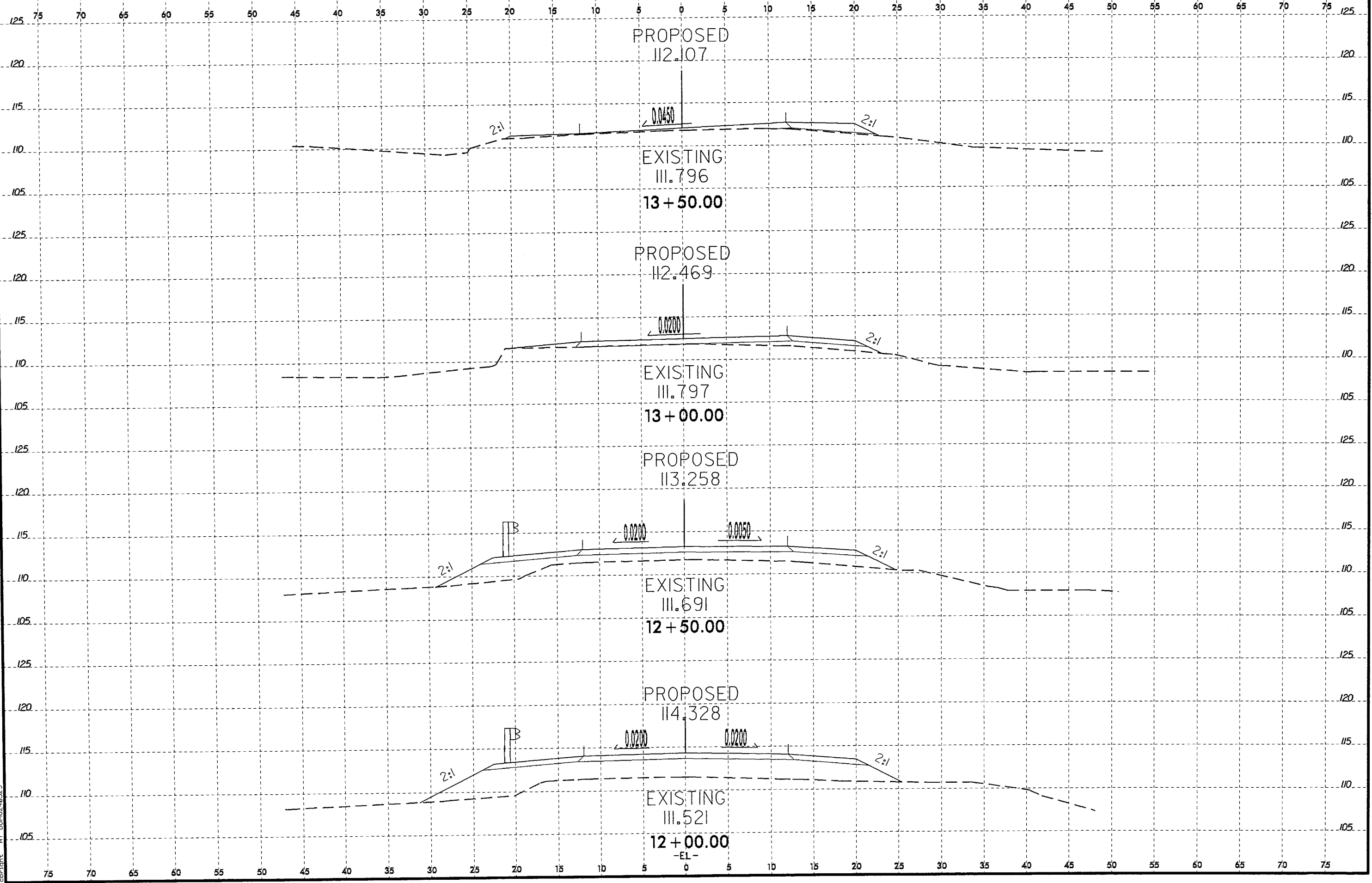
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BGM1248325
Bentley

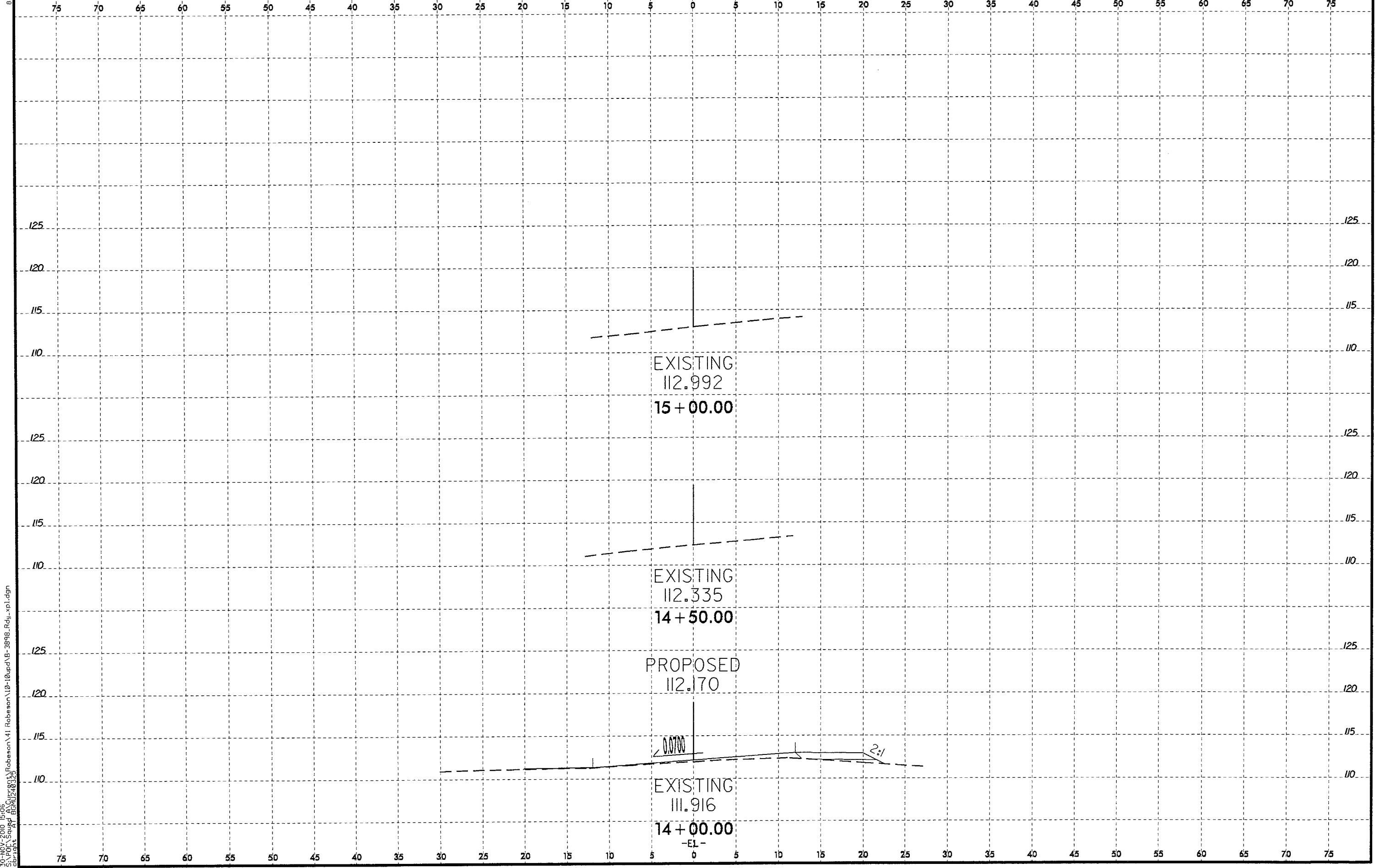


PROJ. REFERENCE NO.
35565.1.1

SHEET NO.
5



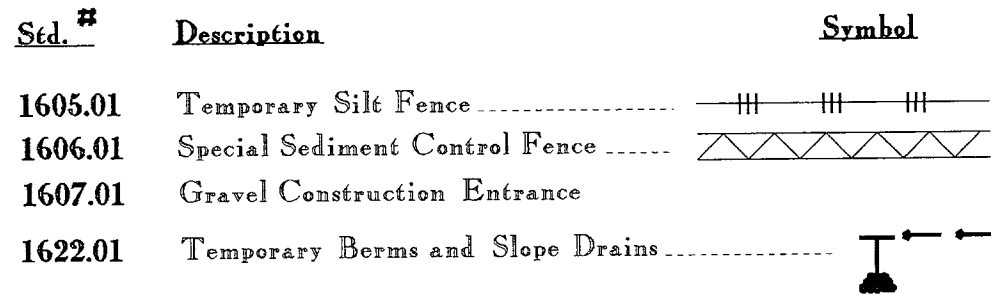
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ROBESON

EROSION CONTROL PLAN

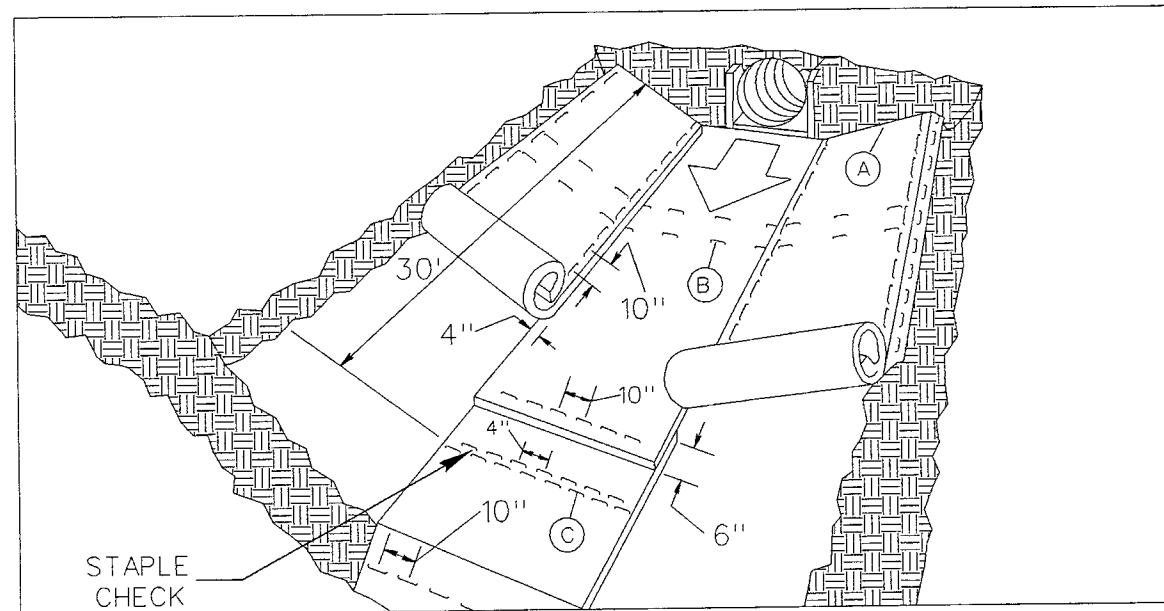


GRAPHIC SCALE

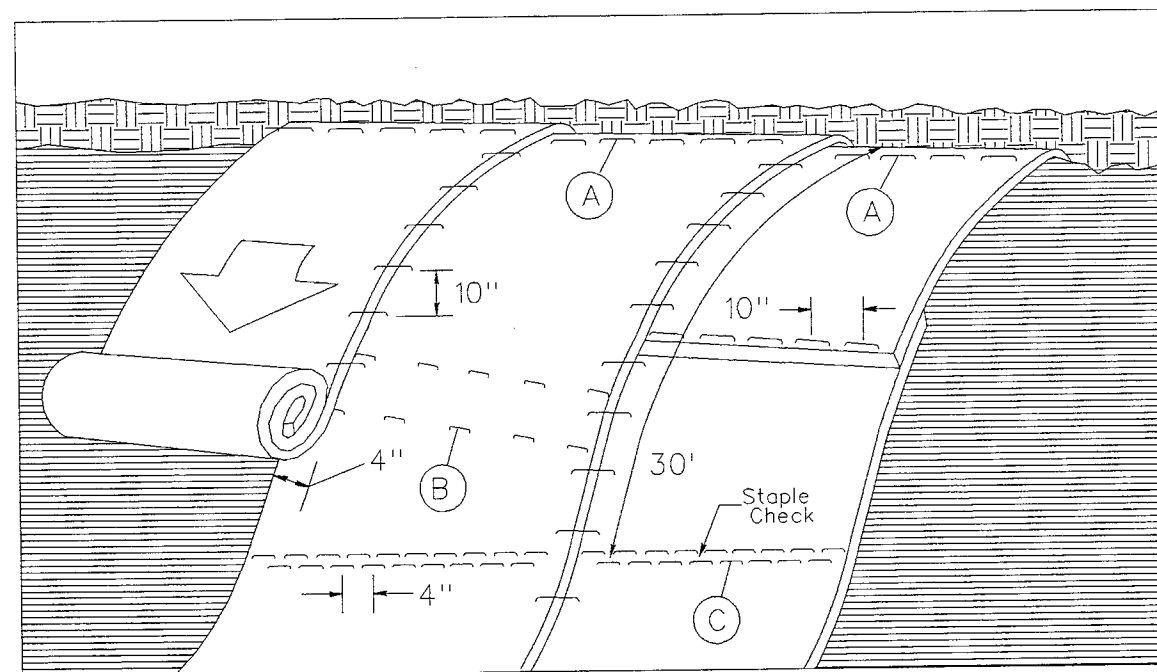
60 30 0 60 120

REVISIONS						SHEET NO. EC-1
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS
2			4			

MATting INSTALLATION DETAIL



MATting IN DITCHES



MATting ON SLOPES

NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

ROADSIDE ENVIRONMENTAL UNIT
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

2006 STANDARD SPECIFICATIONS

NOTES:

THIS DETAIL APPLIES TO STRAW, EXCELSIOR, AND PERMANENT SOIL REINFORCEMENT MAT (PSRM) INSTALLATION.

STAPLES SHALL BE NO. 11 GAUGE STEEL WIRE FORMED INTO A "U" SHAPE WITH A MINIMUM THROAT WIDTH OF 1 INCH AND NOT LESS THAN 6 INCHES IN LENGTH.

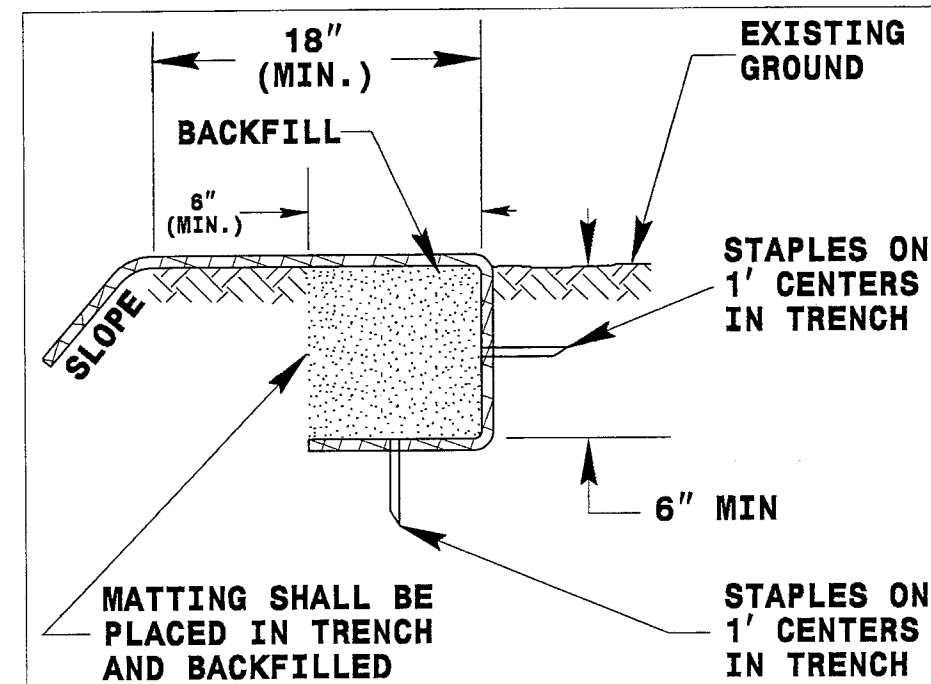


DIAGRAM (A)

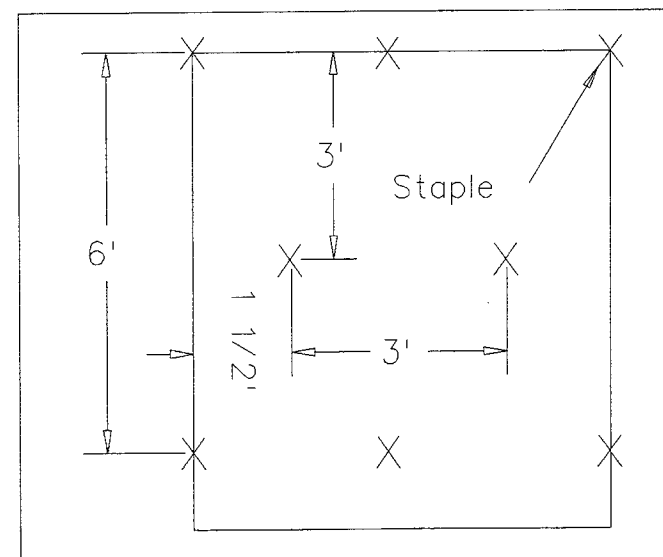


DIAGRAM (B)

Staple Check Pattern

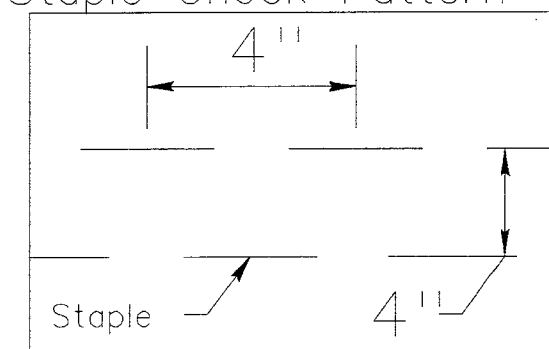


DIAGRAM (C)

PROJECT NO.: 35565.1.1
COUNTY: ROBESON
STATION: 10+17.5
REPLACES BRIDGE NO. 41

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
BRIDGE #41 ON SR 2115
OVER
JACOBS SWAMP

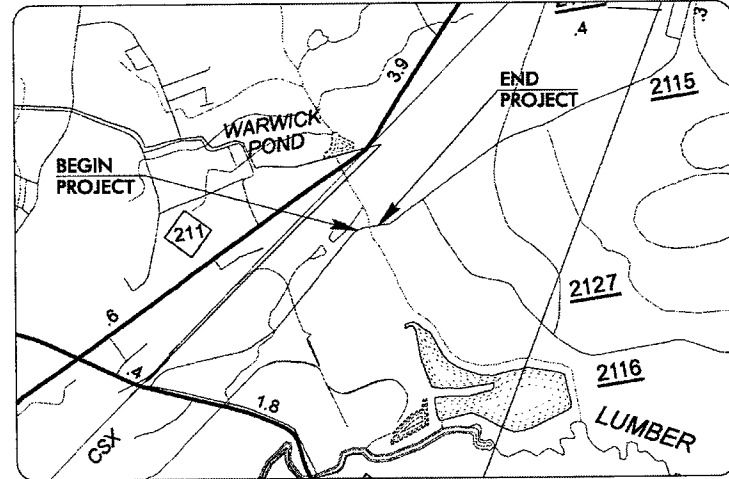
REVISIONS						SHEET NO. EC-2 TOTAL SHEETS
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			

10/13/2010
m:\projects\2008\0816\ad01 - b-3898 div 6\design\utilities\rdy-ut\proj\b3898-utl-tsh.dgn
hwoodall

09/08/99

TIP PROJECT: B-3898

CONTRACT: 35565.1.1



VICINITY MAP

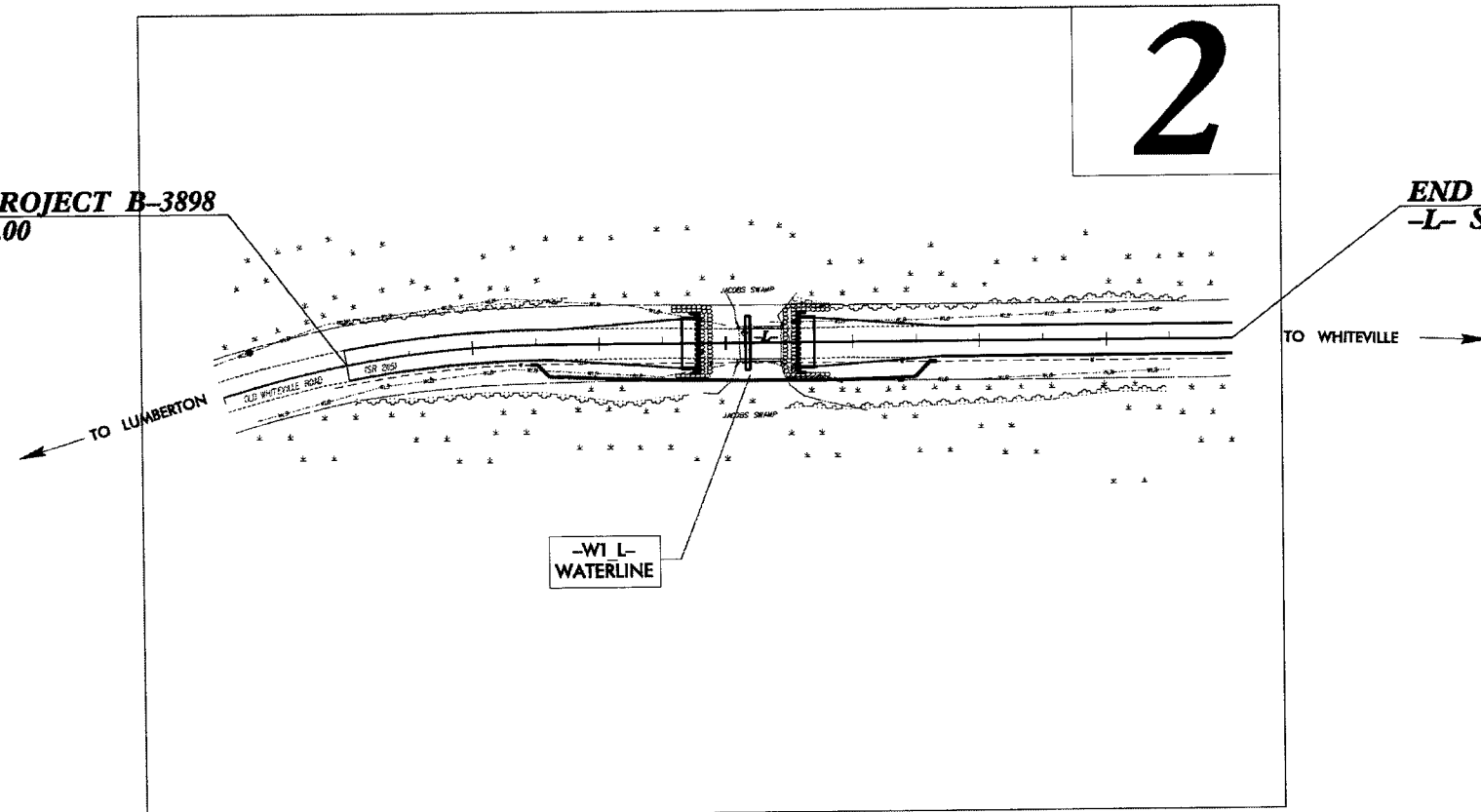
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ROBESON COUNTY

LOCATION: BRIDGE #41 ON SR 2115 (OLD WHITEVILLE ROAD) OVER
JACOBS SWAMP
TYPE OF WORK: UTILITY RELOCATION

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3898	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
35565.1.1			

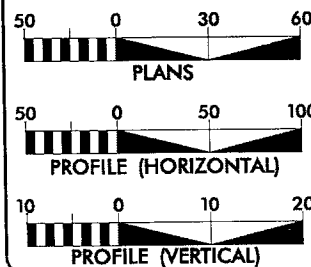
BEGIN TIP PROJECT B-3898
-L- STA. 7+00.00



END TIP PROJECT B-3898
-L- STA. 14+00.00

- NOTES:
1. CLEARING FOR THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
 2. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH NCDOT STANDARDS AND SPECIFICATIONS.

GRAPHIC SCALES



INDEX OF SHEETS

- 1 - TITLE SHEET
- UO-2 - UTILITIES BY OTHERS
- UC-2 - UTILITY CONSTRUCTION
- UC-3 - 8" WATER PROFILE
- UC-4 - DETAILS

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3898.....	0.117 mi
LENGTH STRUCTURE TIP PROJECT B-3898.....	0.016 mi
TOTAL LENGTH TIP PROJECT B-3898.....	0.133 mi

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE, SUITE 350
RALEIGH, NORTH CAROLINA 27609
NC LICENSE NO. T-0112
FOR
DIVISION OF HIGHWAYS

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:

PROJECT ENGINEER

PROJECT DESIGN ENGINEER

NCDOT CONTACT:

PROJECT ENGINEER - PROJECT SERVICES

UTILITIES ENGINEER
(WATER LINE ONLY)



SIGNATURE: *Howard T. Woodall, III* P.E.
10/12/10

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA



STATE HIGHWAY DESIGN ENGINEER P.E.

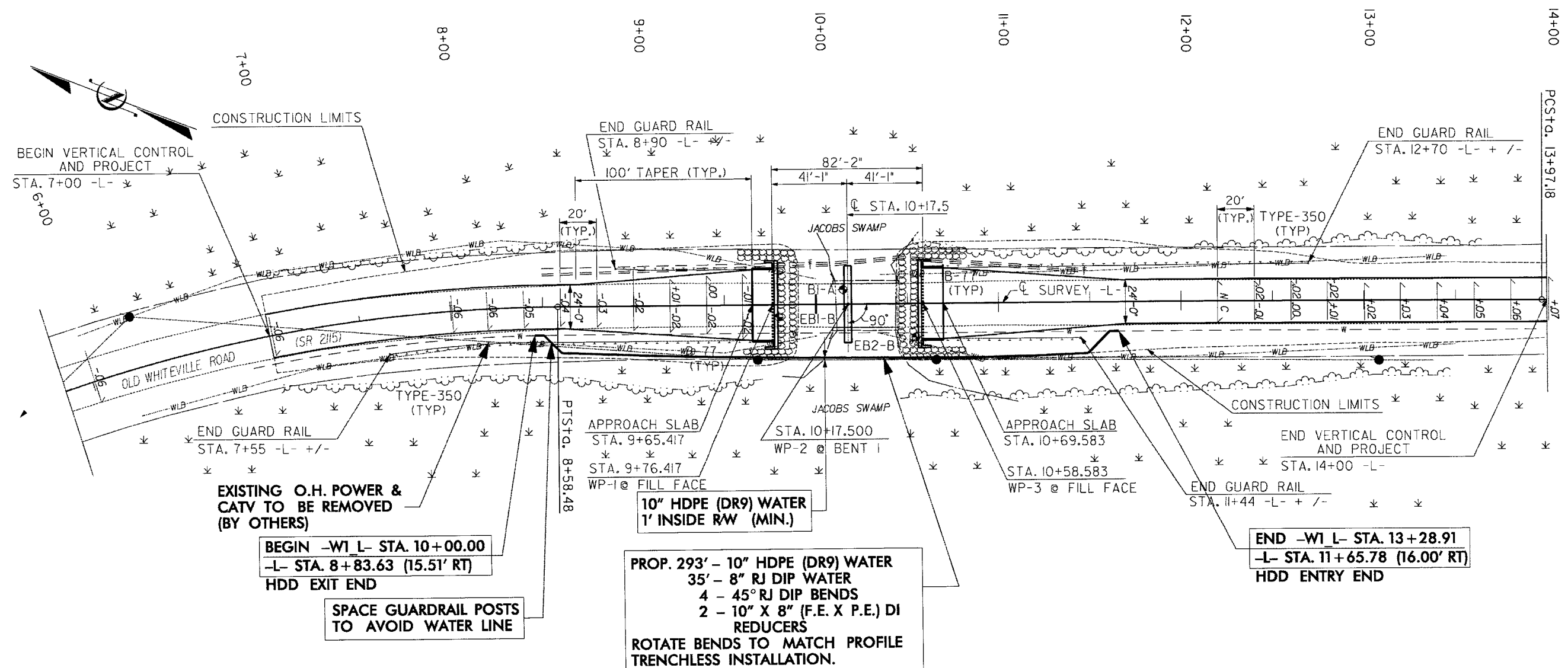
B-17/99
TIME
DATE
BY
CHECKED
DATE
BY

UTILITY OWNERS

PROGRESS ENERGY - POWER
AT&T BELL SOUTH - TELECOMMUNICATIONS
TIME WARNER - CATV
ROBESON COUNTY - WATER

PROJECT REFERENCE NO. B-3898	SHEET NO. UC-2
RW SHEET NO.	
UTILITY ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 25881 HOWARD E. WOODALL III 10/13/10	

UTILITY CONSTRUCTION



NOTES:

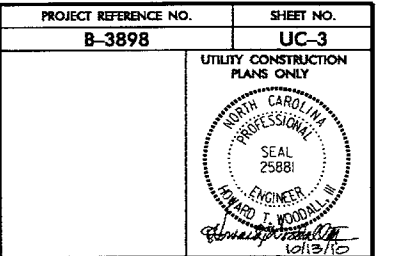
- EXISTING UTILITIES SHOWN WERE PLOTTED FROM DATA FURNISHED BY NCDOT.
- HDD ENTRY AND EXIT AREAS SHALL REMAIN OUT OF DELINEATED WETLANDS. EXISTING ROAD IS TO BE CLOSED DURING PROJECT CONSTRUCTION AND MAY BE USED FOR THE HDD OPERATION.
- THE SCOUR CRITICAL ELEVATION IS 9'.
- ADT 1800 FOR YEAR 2004
- ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE PERFORMED BY OTHERS EXCEPT THE WATER LINE RELOCATION.

GRAPHIC SCALE

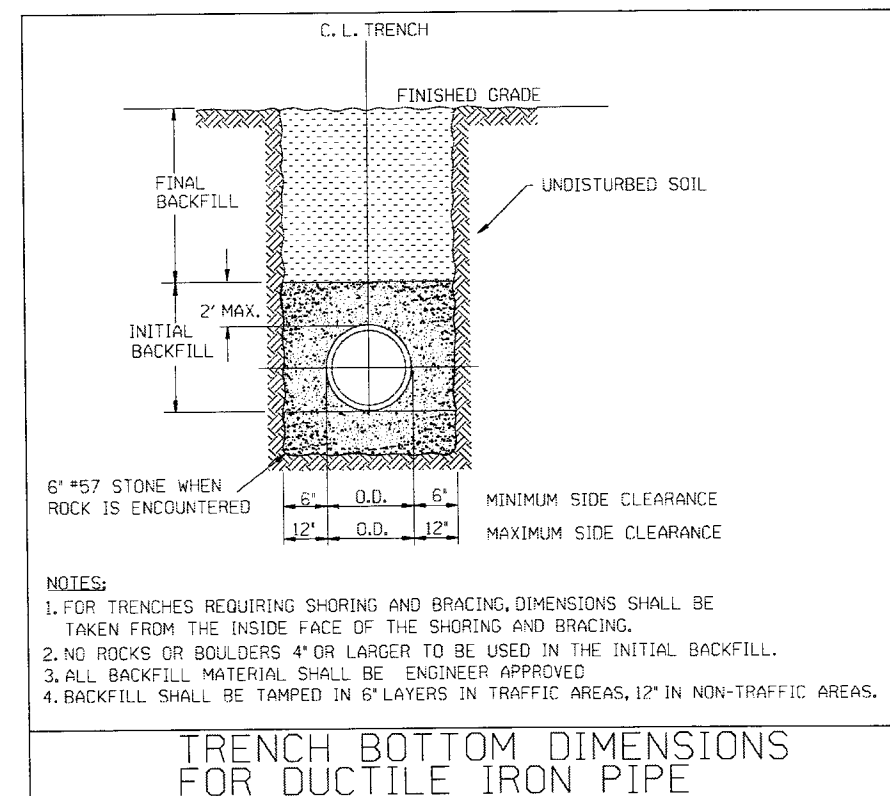
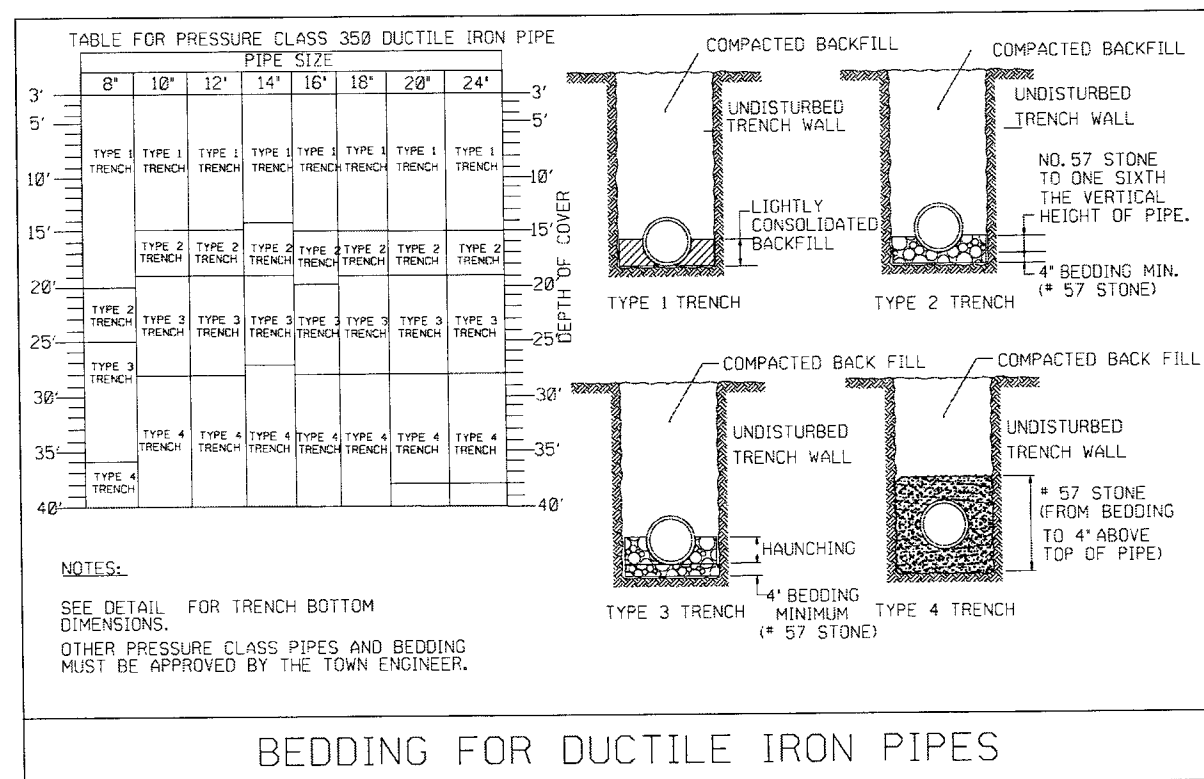
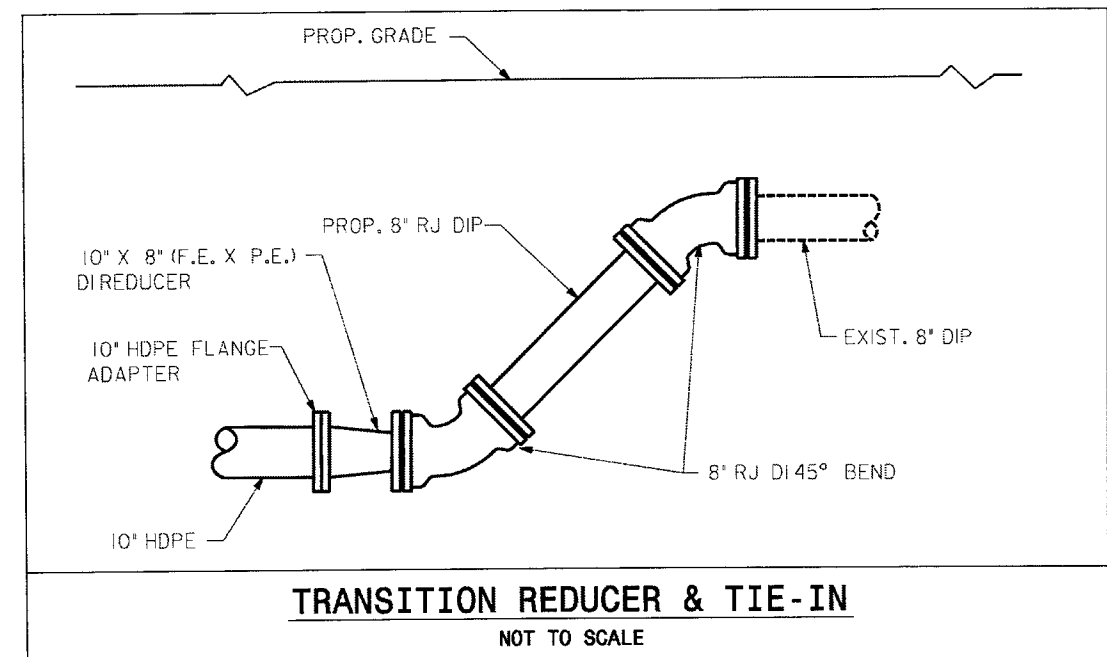
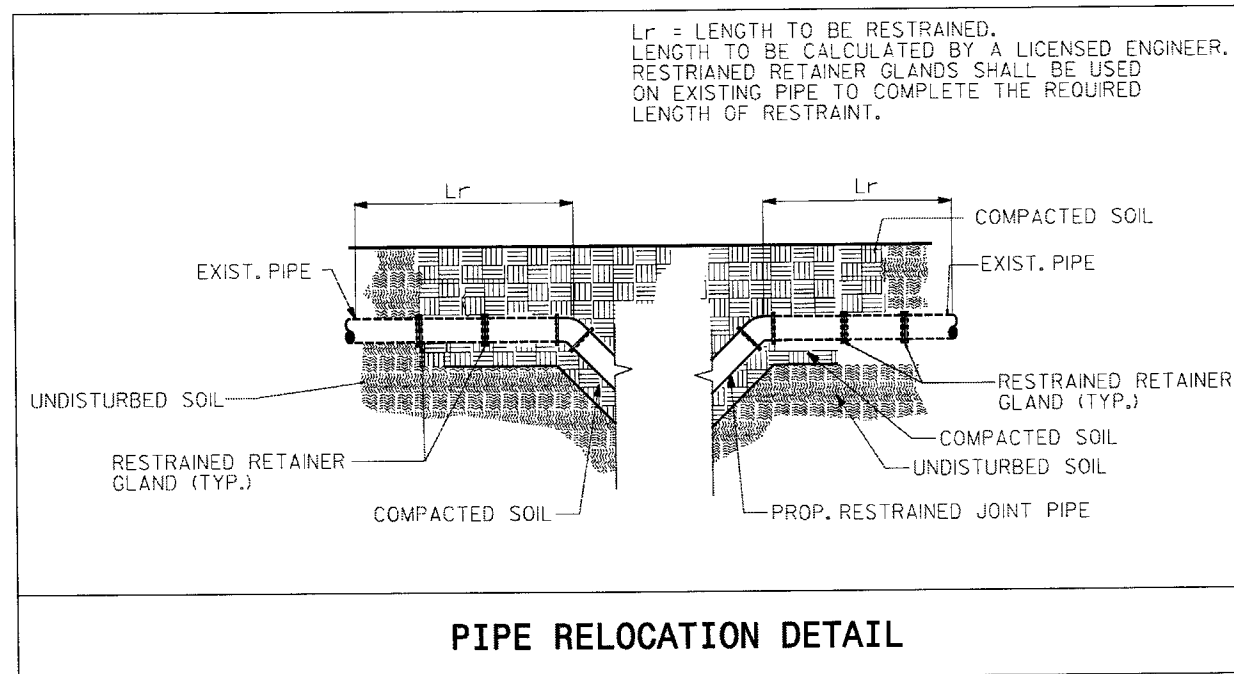


PLANS PREPARED BY :

RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560
FOR
THE NORTH CAROLINA
TURNPIKE AUTHORITY



PROJECT REFERENCE NO. B-3898	SHEET NO. UC-4
RAW SHEET NO.	
UTILITY ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 25881 FORWARD T. WOODALL 10/13/2000	



PLANS PREPARED BY:
RK&K
 RUMMEL, KLEPPER & KAHL, LLP
 900 RIDGEFIELD DRIVE SUITE 350
 RALEIGH, NORTH CAROLINA 27609-3960
 NC LICENSE NO. F-0112 • (919) 878-9560
 FOR
 THE NORTH CAROLINA
 TURNPIKE AUTHORITY