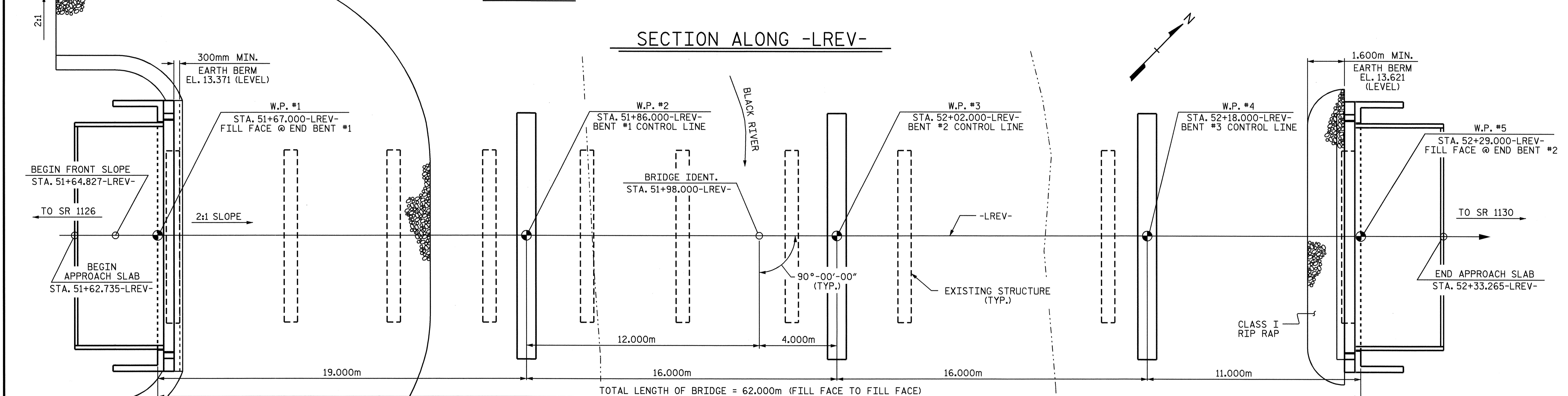
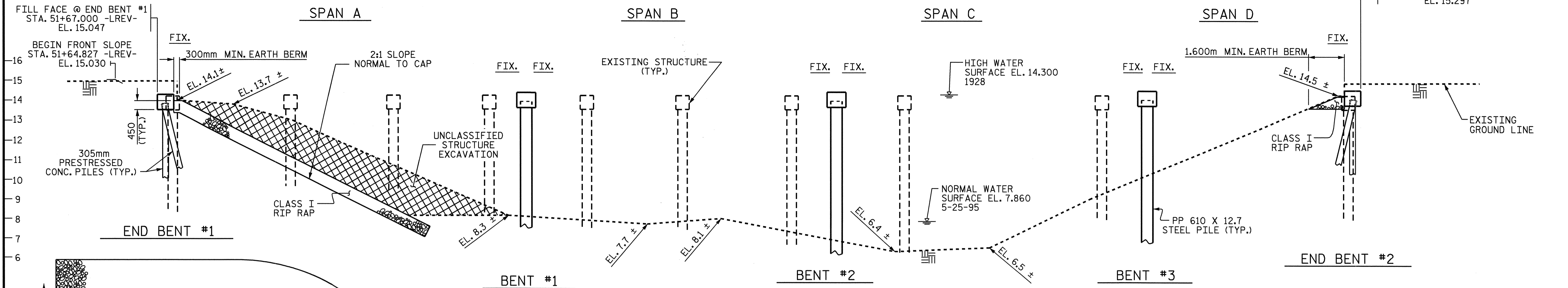




**GRADE DATA**

+1.7773% Δ +0.3003%  
 PI = 51+50.000 -LREV-  
 ELEV. 15.060  
 VC = 90.000m

F.A. PROJECT NO.: BRSTP-411 (15)



**PLAN**  
 PILES NOT SHOWN FOR CLARITY

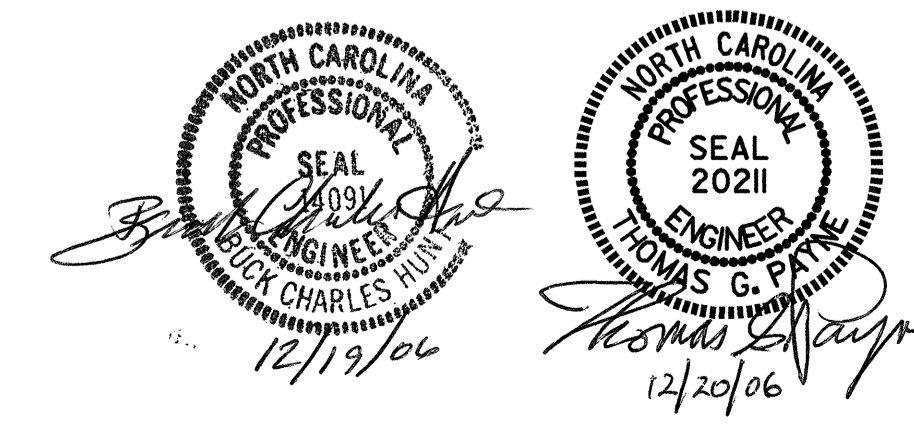
PROJECT NO. B-1381  
SAMPSON COUNTY  
 STATION: 51+98.000-LREV-

SHEET 1 OF 3 REPLACES BRIDGE No. 14

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
**BRIDGE ON NC 411 OVER**  
**BLACK RIVER BETWEEN**  
**SR 1126 AND SR 1130**

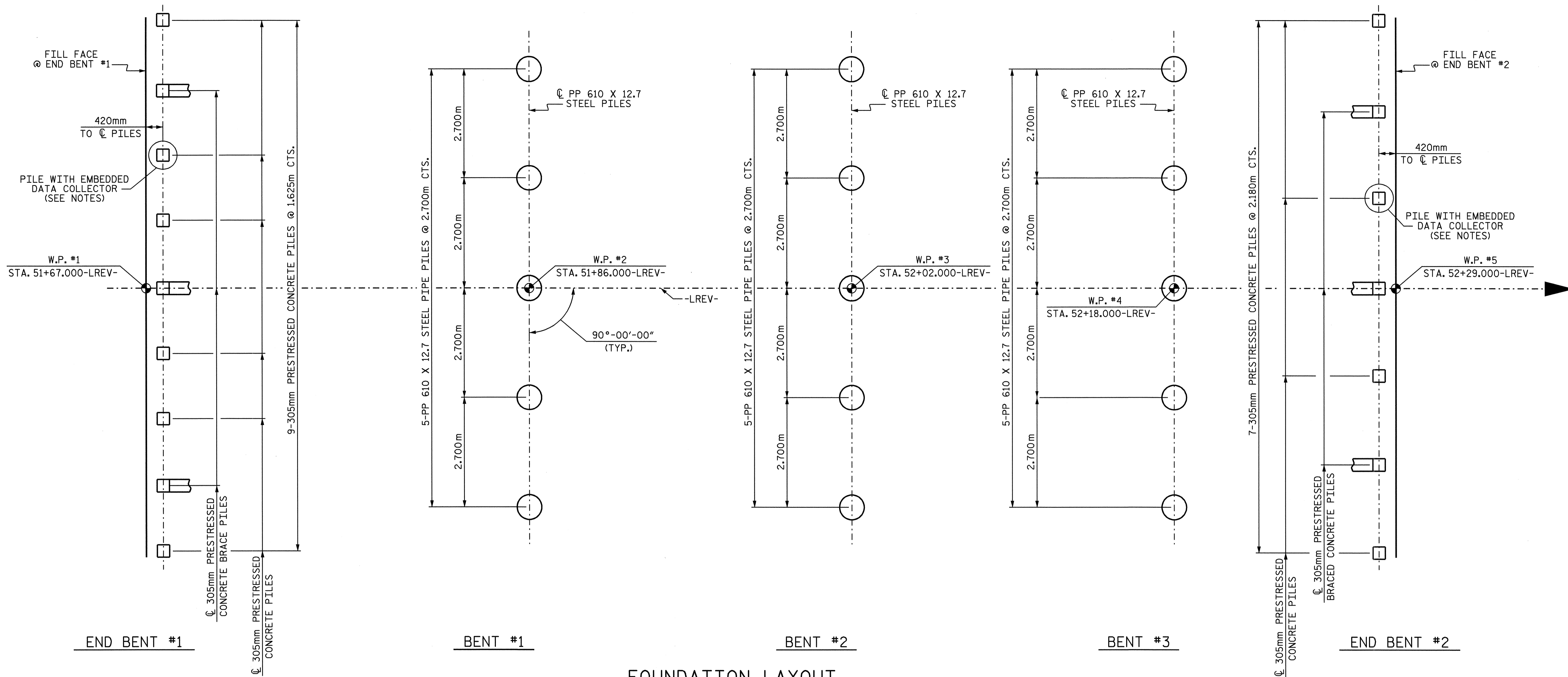
DRAWN BY: S.H. SOCKWELL DATE: 10/13/05  
 CHECKED BY: J.P. ADAMS DATE: 11/1/05

19-DEC-2006 08:50  
 F:\Structures\bi381\finalplans\bi381.sd\_gd.dgn  
 Klayne



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			29





**FOUNDATION LAYOUT**

DRIVE PILES AT END BENT #1 AND END BENT #2 TO A REQUIRED BEARING CAPACITY OF 900 KILONEWTONS EACH. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 31 TO 67 KN-m PER BLOW WILL BE REQUIRED TO DRIVE THE PILES AT END BENT #1 AND END BENT #2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM THE BEARING PILE SPECIAL PROVISION (NOVEMBER 20, 2006).

DRIVE PILES AT BENT #1 TO A REQUIRED BEARING CAPACITY OF 2430 KILONEWTONS. 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.

DRIVE PILES AT BENT #2 TO A REQUIRED BEARING CAPACITY OF 2170 KILONEWTONS. 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.

DRIVE PILES AT BENT #3 TO A REQUIRED BEARING CAPACITY OF 1920 KILONEWTONS. 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.

DRIVE PILES AT BENT #1, BENT #2, AND BENT #3 TO A TIP ELEVATION NO HIGHER THAN -1.000.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 31 TO 64 KN-m PER BLOW WILL BE REQUIRED TO DRIVE THE PILES AT BENT #1, BENT #2, AND BENT #3. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM THE BEARING PILE SPECIAL PROVISION (NOVEMBER 20, 2006).

THE SCOUR CRITICAL ELEVATION FOR BENT #1, BENT #2, AND BENT #3 IS ELEVATION 3.000. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

THE BEARING PILE SPECIAL PROVISION (NOVEMBER 20, 2006) REPLACES SECTION 450 OF THE 2002 STANDARD SPECIFICATIONS.

GALVANIZED STEEL PILES ARE REQUIRED IN ACCORDANCE WITH THE BEARING PILE SPECIAL PROVISION (NOVEMBER 20, 2006) FOR PILES AT BENT #1, BENT #2, AND BENT #3.

DRIVING PRESTRESSED CONCRETE PILES MAY REQUIRE RESTRIKING OR REDRIVING AT END BENT #1 AND END BENT #2. SEE BEARING PILE SPECIAL PROVISION (NOVEMBER 20, 2006).

DRIVING PIPE PILES MAY REQUIRE RESTRIKING OR REDRIVING AT BENT #1, BENT #2, OR BENT #3. SEE BEARING PILE SPECIAL PROVISION (NOVEMBER 20, 2006).

TESTING THE PRODUCTION 305mm PRESTRESSED CONCRETE PILE CONTAINING EMBEDDED DATA COLLECTORS WITH THE PILE DRIVING ANALYZER (PDA) DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT END BENT #1 AND END BENT #2. SEE EMBEDDED DATA COLLECTORS SPECIAL PROVISION AND PILE DRIVING ANALYZER SPECIAL PROVISION.

TESTING THE FIRST PRODUCTION PP 610 x 12.7 STEEL PILE WITH THE PILE DRIVING ANALYZER (PDA) DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT BENT #1, BENT #2, OR BENT #3. SEE PILE DRIVING SPECIAL PROVISIONS.

PIPE PILE PLATES MAY BE REQUIRED FOR THE PIPE PILES AT BENT #1, BENT #2, AND BENT #3. THE ENGINEER WILL DETERMINE THE NEED FOR PIPE PILE PLATES AFTER DRIVING TEST PILES OR A FEW INITIAL PRODUCTION PILES AS DIRECTED BY THE ENGINEER. USE PIPE PILE PLATES WITH A DIAMETER EQUAL TO THE PIPE PILE DIAMETER. SEE THE BEARING PILE SPECIAL PROVISION (NOVEMBER 20, 2006).

A WAITING PERIOD IS NOT REQUIRED BEFORE BEGINNING ANY WORK FOR END BENT CONSTRUCTION AFTER COMPLETION OF THE EMBANKMENT AT EACH END BENT.

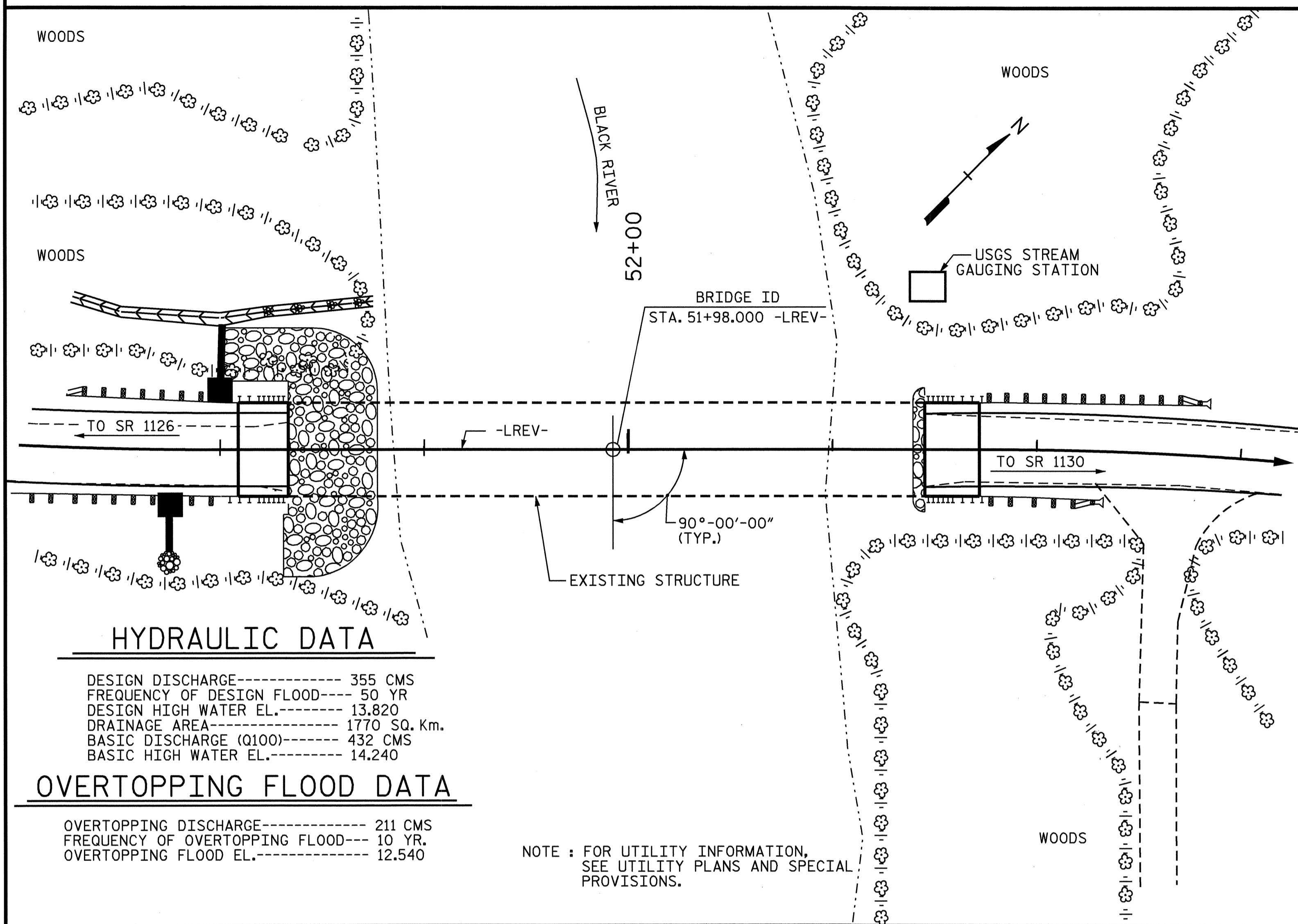


PROJECT NO. B-1381  
SAMPSON COUNTY  
 STATION: 51+98.000-LREV-

SHEET 2 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
<b>FOUNDATION LAYOUT</b>					
SHEET NO. <b>S-2</b>					
TOTAL SHEETS <b>29</b>					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

DRAWN BY : S.H. SOCKWELL DATE : 10/13/05  
 CHECKED BY : J.P. ADAMS DATE : 11/1/05



LOCATION SKETCH

**HYDRAULIC DATA**

DESIGN DISCHARGE----- 355 CMS  
 FREQUENCY OF DESIGN FLOOD---- 50 YR  
 DESIGN HIGH WATER EL.----- 13.820  
 DRAINAGE AREA----- 1770 SQ. Km.  
 BASIC DISCHARGE (Q100)----- 432 CMS  
 BASIC HIGH WATER EL.----- 14.240

**OVERTOPPING FLOOD DATA**

OVERTOPPING DISCHARGE----- 211 CMS  
 FREQUENCY OF OVERTOPPING FLOOD---- 10 YR.  
 OVERTOPPING FLOOD EL.----- 12.540

**NOTES**

ASSUMED LIVE LOAD = MS18 OR ALTERNATE LOADING, EXCEPT THAT CORED SLAB UNITS IN SPANS B, C, AND D HAVE BEEN DESIGNED FOR MS22.5.  
 ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.  
 ALL ELEVATIONS ARE IN METERS.  
 FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SNSM.  
 FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.  
 THIS BRIDGE HAS BEEN DESIGNED BY THE STRENGTH DESIGN METHOD AS SPECIFIED IN AASHTO STANDARD SPECIFICATIONS.

ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.  
 THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, "EVALUATING SCOUR AT BRIDGES", NOVEMBER, 1995.

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 360,000 KG OF REINFORCING STEEL, ONE 760mm SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 360,000 KG OF REINFORCING STEEL, TWO 760mm SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

THIS BRIDGE SHALL BE CONSTRUCTED USING TOP-DOWN CONSTRUCTION METHODS. TOP-DOWN CONSTRUCTION SHALL PROCEED FROM SPAN D TOWARD SPAN A. A CRANE WILL NOT BE ALLOWED ON SPAN A AT ANY TIME DURING CONSTRUCTION. THE USE OF A TEMPORARY CAUSEWAY OR WORK BRIDGE IS NOT PERMITTED.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR CONSTRUCTION OF SUPERSTRUCTURE, SEE SPECIAL PROVISIONS.

FOR CONSTRUCTION OF SUBSTRUCTURE, SEE SPECIAL PROVISIONS.

UNITED STATES GEOLOGICAL SURVEY HAS A GAUGING STATION LOCATED IN THE PROJECT AREA. THE CONTRACTOR WILL CONTACT GEOFFREY CARTANO AT 919-571-4064 OF USGS AND DOUG WALTERS AT 919-571-4069 OF USGS TWO WEEKS PRIOR TO BEGINNING WORK IN ORDER TO DISCUSS ANY POTENTIAL IMPACTS TO THE GAUGING STATION.

\* PILES WITH EMBEDDED DATA COLLECTORS ARE INCLUDED IN THESE TOTALS.

GALVANIZED STEEL PILES ARE REQUIRED IN ACCORDANCE WITH THE BEARING PILE SPECIAL PROVISION (NOVEMBER 20, 2006) FOR PILES AT BENT #1, BENT #2, AND BENT #3.

THE EXISTING STRUCTURE, 59.740m TOTAL LENGTH, CONSISTING OF 9 SPANS (1 @ 5.480m, 1 @ 5.080m, 2 @ 5.280m, 1 @ 5.180m, 1 @ 5.200m, 1 @ 5.120m, 1 @ 10.780m, AND 1 @ 12.340m); WITH A BRIDGE DECK WIDTH OF 7.700m WITH A REINFORCED CONCRETE DECK ON TIMBER JOISTS AND I-BEAMS ON TIMBER END BENTS AND TIMBER BENTS 1-6, REINFORCED CONCRETE CAP/TIMBER PILES AT BENT 7, AND STEEL CAP/STEEL PILES AT BENT 8 AND LOCATED AT THE PROPOSED SITE SHALL BE REMOVED. EXISTING TIMBER PILES AND A TIMBER RETAINING WALL FROM A PREEXISTING BRIDGE LOCATED AT THE SITE OF THE PROPOSED BRIDGE SHALL ALSO BE REMOVED AS PART OF THE REMOVAL OF EXISTING STRUCTURE PAY ITEM.

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 COST RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID FOR "REMOVAL ON EXISTING STRUCTURE".

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 9.000m EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE MEASURED AND PAID FOR AS 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.

**TOTAL BILL OF MATERIAL**

	REMOVAL OF EXISTING STRUCTURE	UNCLASSIFIED STRUCTURE EXCAVATION	BRIDGE APPROACH SLABS	305mm PRESTRESSED CONC PILES		PP 610 X 12.7 STEEL PILES		RIP RAP CLASS I	CONSTRUCTION OF SUBSTRUCTURE	CONSTRUCTION OF SUPERSTRUCTURE	PDA TESTING	PDA ASSISTANCE	PIPE PILE PLATES	PILE REDRIVES
	LUMP SUM	CU. METERS	LUMP SUM	NO.	METERS	NO.	METERS	METRIC TONS	LUMP SUM	LUMP SUM	EACH	EACH	EACH	EACH
SUPERSTRUCTURE										LUMP SUM				
END BENT #1		435.0		* 9	76.5			427	LUMP SUM					9
BENT #1						5	92.5		LUMP SUM				5	5
BENT #2						5	85.0		LUMP SUM				5	5
BENT #3						5	82.5		LUMP SUM				5	5
END BENT #2				* 7	45.5			30	LUMP SUM					7
TOTAL	LUMP SUM	435.0	LUMP SUM	* 16	122.0	15	260.0	457	LUMP SUM	LUMP SUM	4	4	15	31

PROJECT NO. B-1381  
SAMPSON COUNTY  
 STATION: 51+98.000-LREV-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

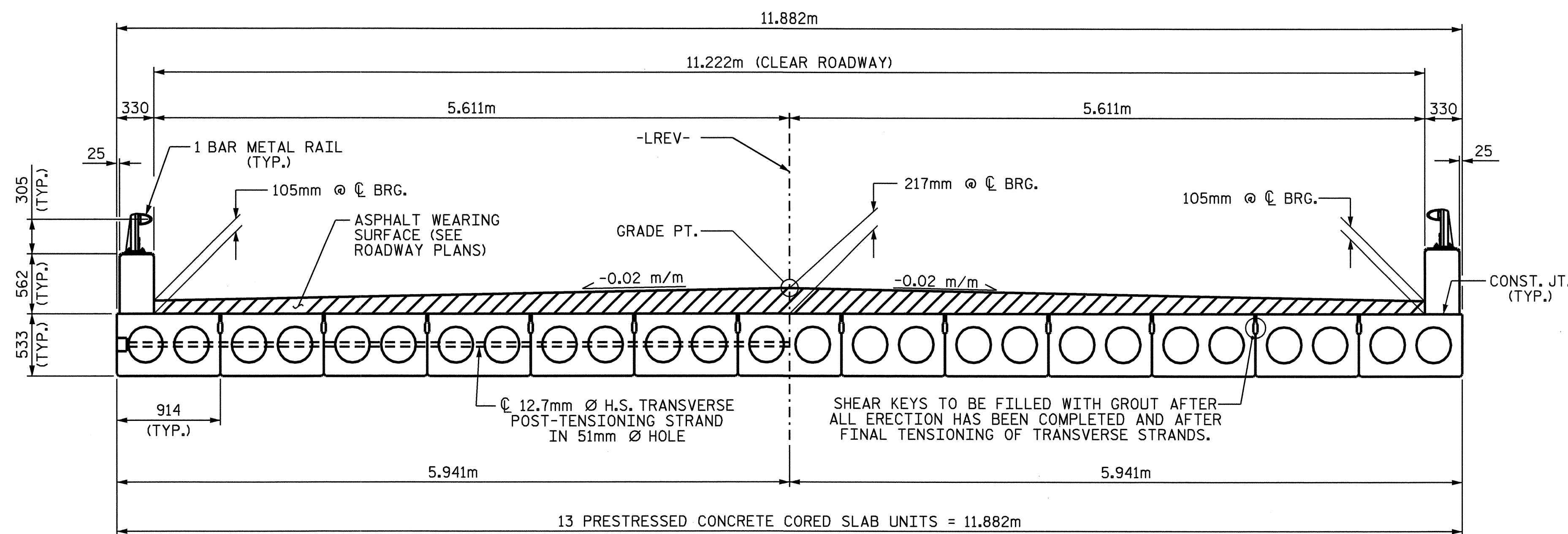
GENERAL DRAWING  
 BRIDGE ON NC 411 OVER  
 BLACK RIVER BETWEEN  
 SR 1126 AND SR 1130



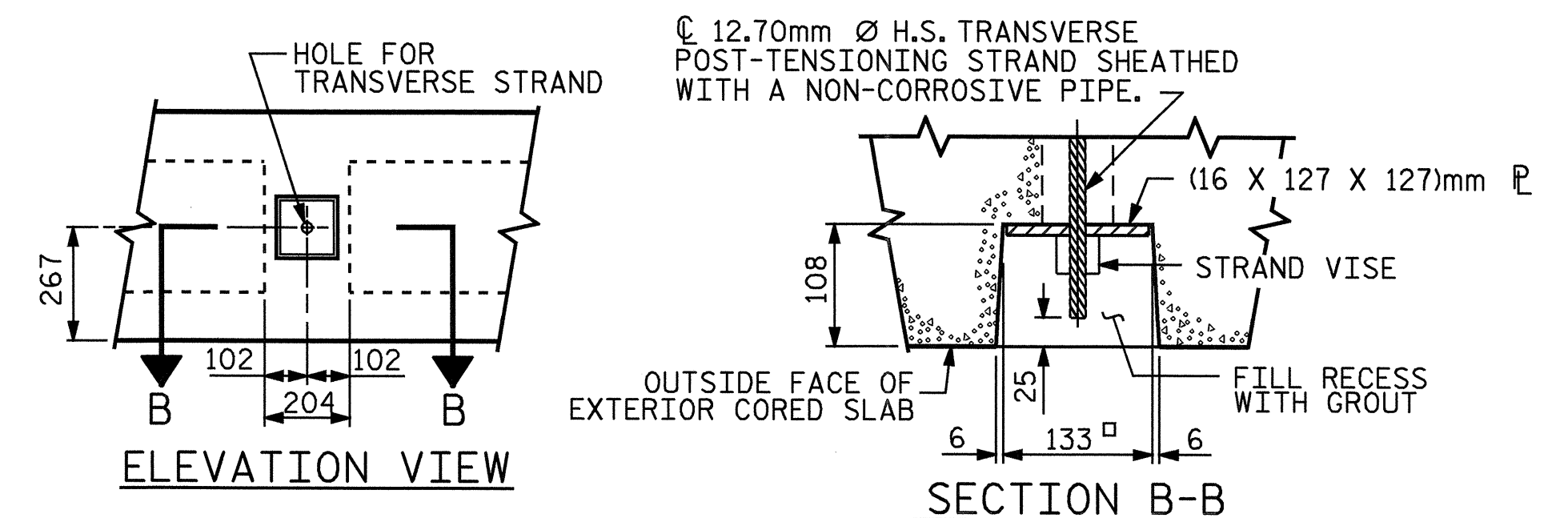
DRAWN BY : S.H. SOCKWELL DATE : 5/10/05  
 CHECKED BY : J.P. ADAMS DATE : 11/1/05

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-3
2			4			TOTAL SHEETS 29

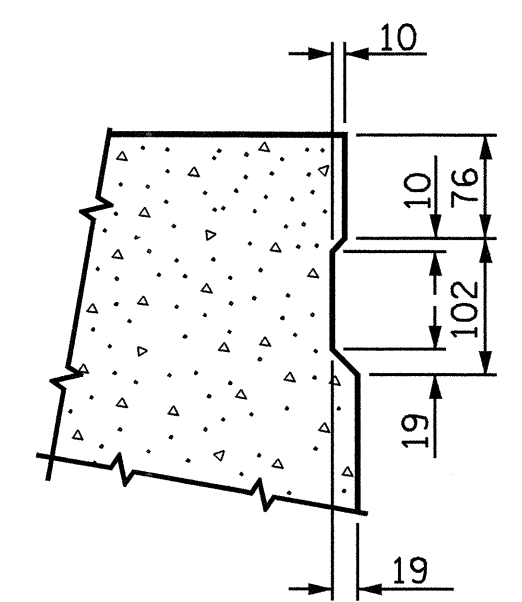




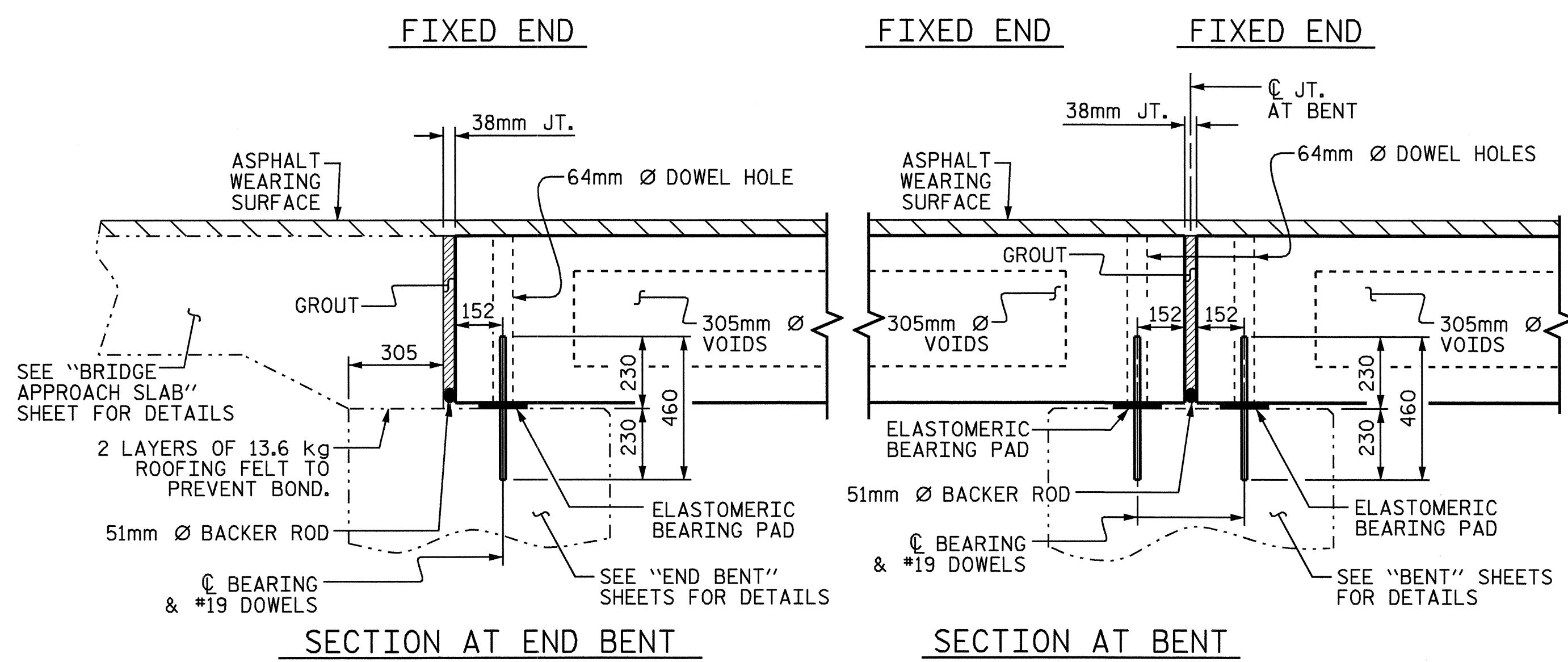
TYPICAL SECTION



GROUTED RECESS AT END OF POST-TENSIONED STRAND CORED SLABS

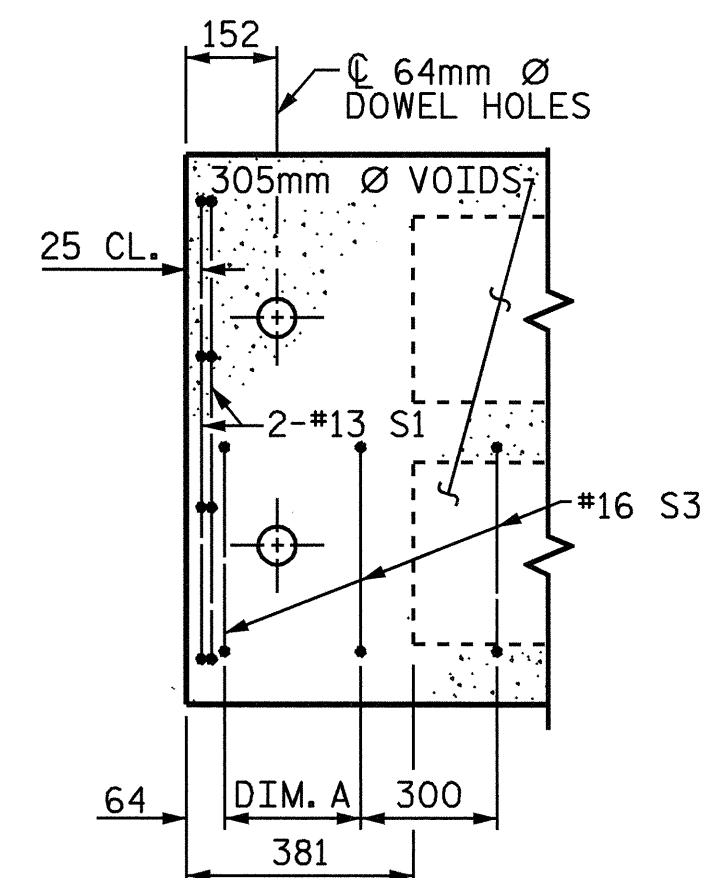


SHEAR KEY DETAIL

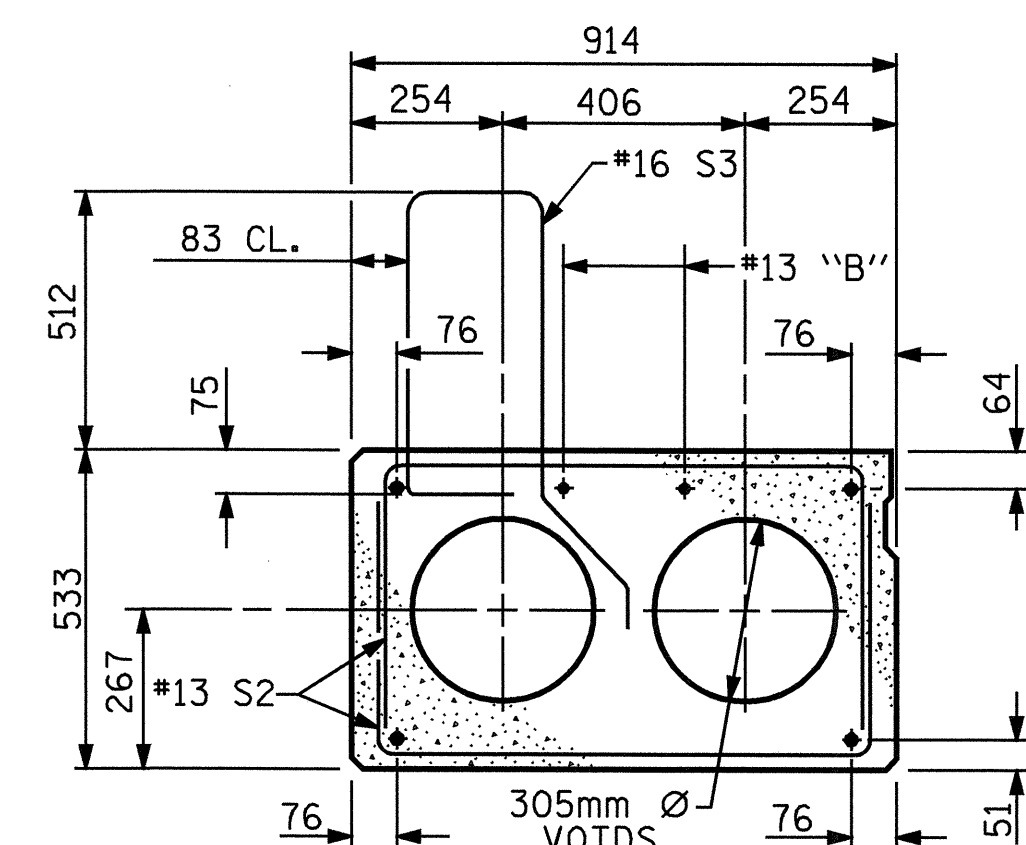


SECTION AT END BENT

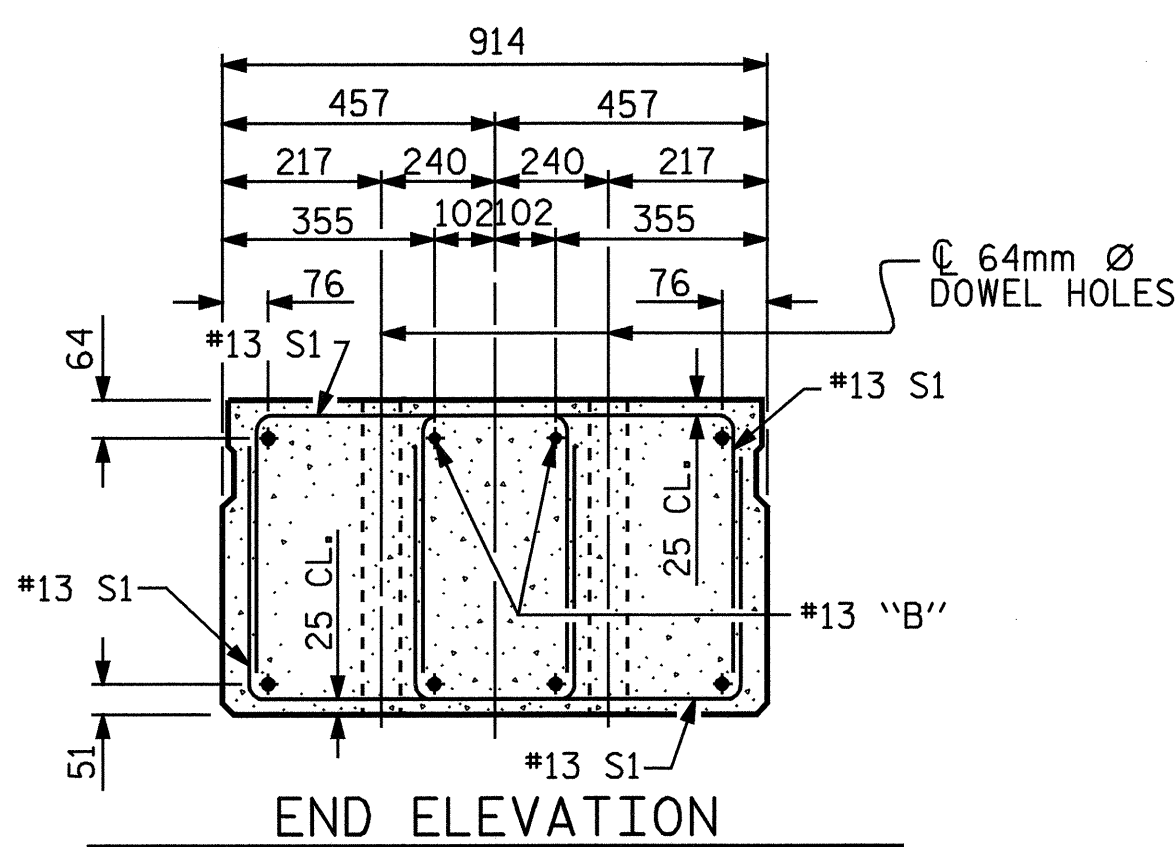
SECTION AT BENT



PART PLAN EXTERIOR SECTION EXTERIOR SECTION SHOWN, INTERIOR SECTION SIMILAR EXCEPT OMIT S3 BARS. SEE 'PLAN OF EXTERIOR CORED SLAB UNIT' FOR DIM. A.

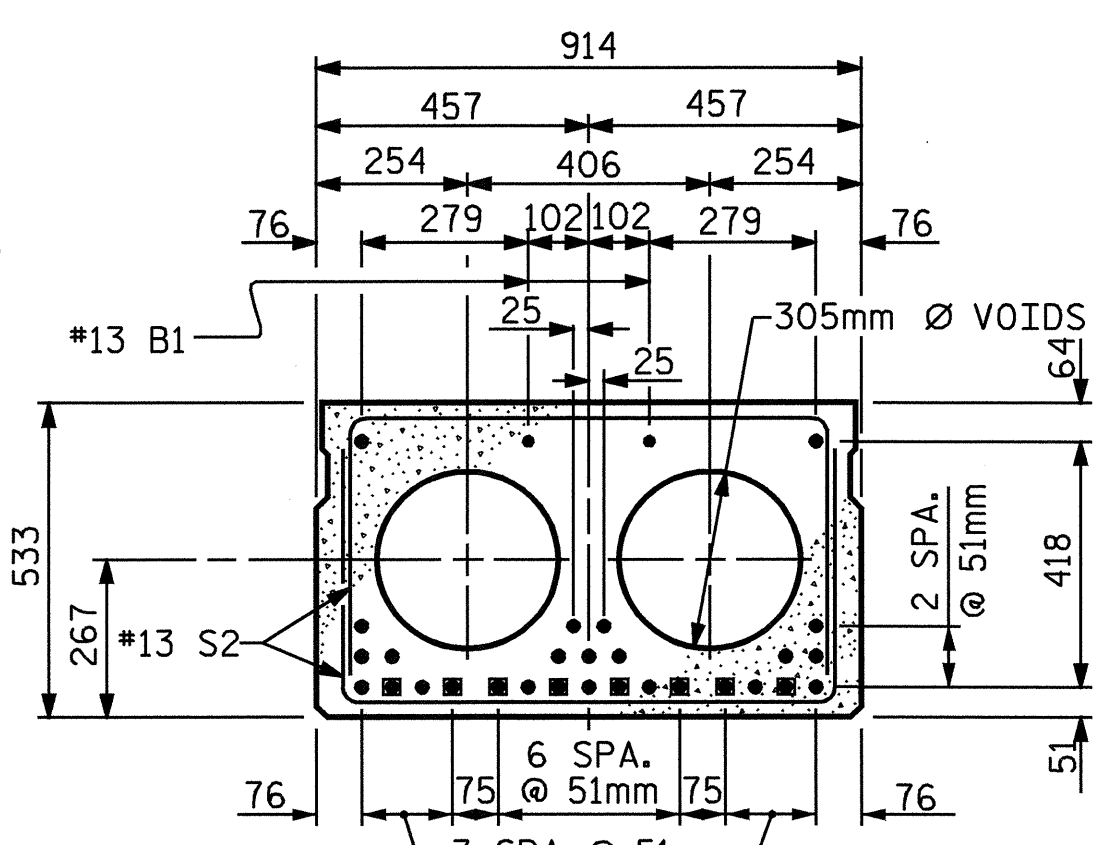


EXTERIOR SLAB SECTION (FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTIONS.)



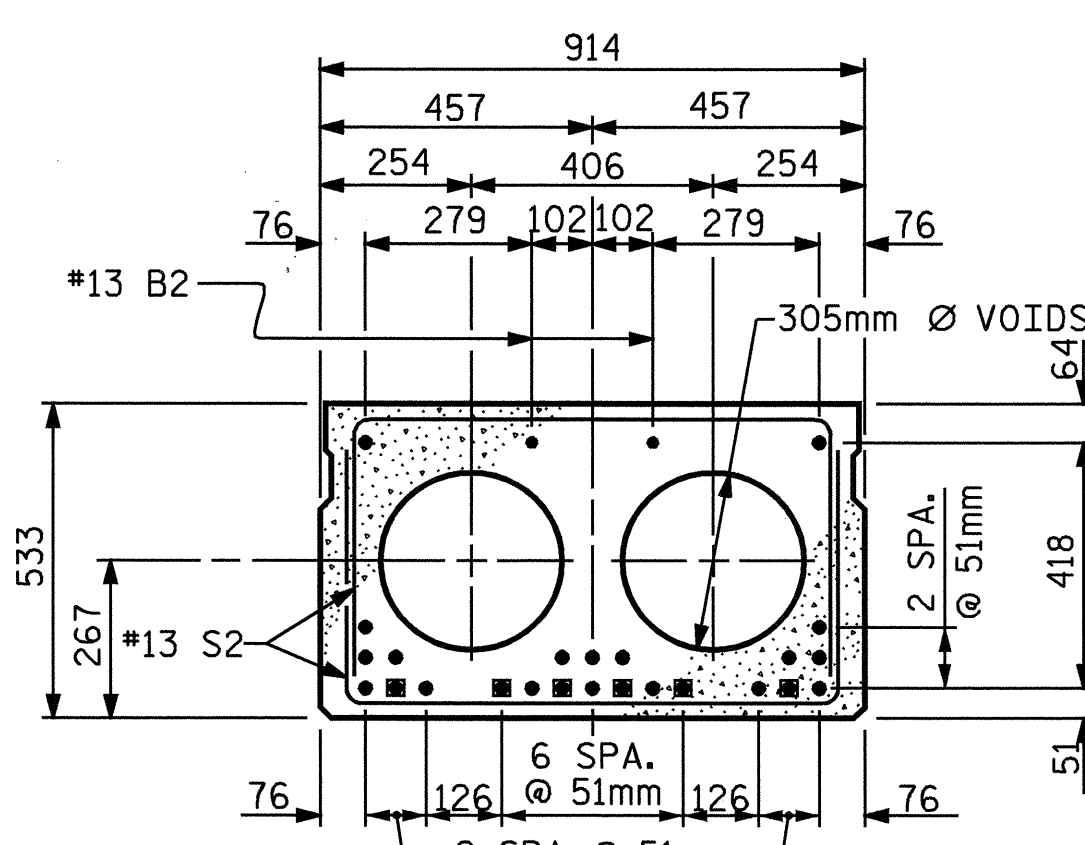
END ELEVATION

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



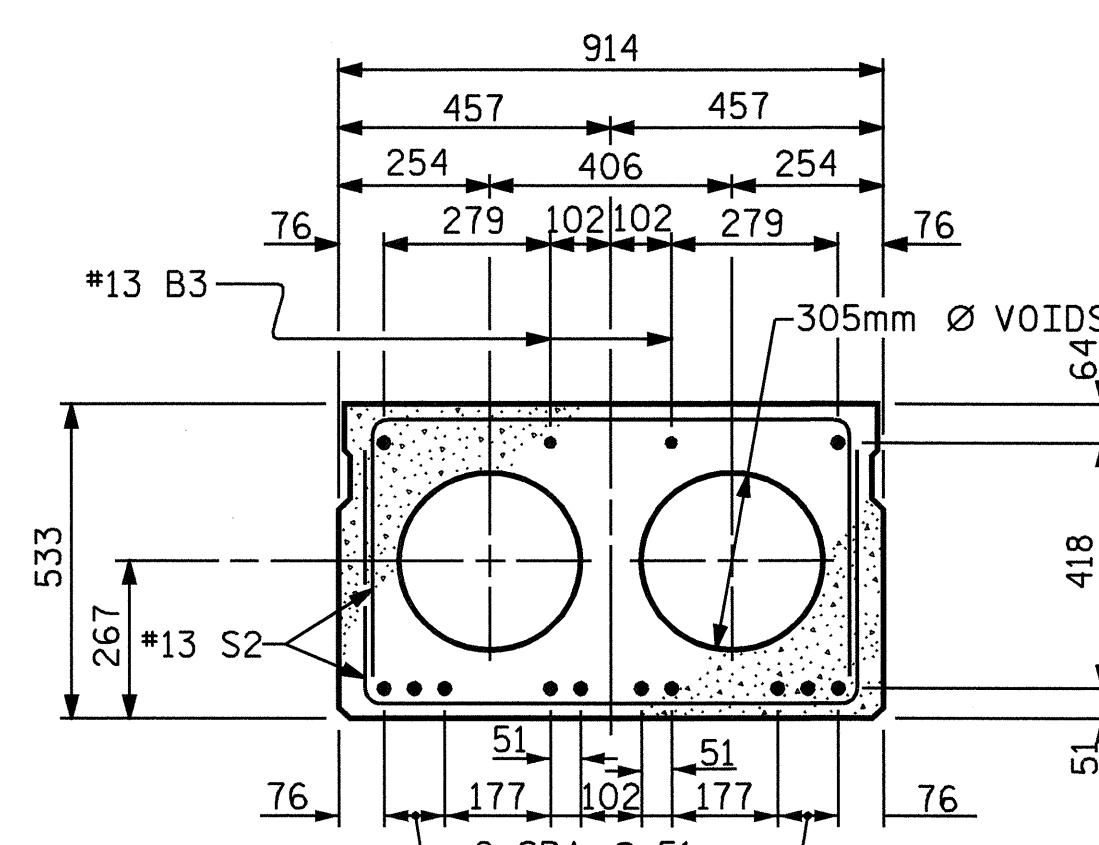
INTERIOR SLAB SECTION - SPAN A 12.70mm Ø LOW RELAXATION STRAND LAYOUT

BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 1.470m FROM END OF CORED SLAB UNIT, SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.



INTERIOR SLAB SECTION - SPANS B & C 12.70mm Ø LOW RELAXATION STRAND LAYOUT

BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 1.350m FROM END OF CORED SLAB UNIT, SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.



INTERIOR SLAB SECTION - SPAN D 12.70mm Ø LOW RELAXATION STRAND LAYOUT

PROJECT NO. B-1381  
SAMPSON COUNTY  
STATION: 51+98.000-LREV-

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
914mm X 533mm  
PRESTRESSED CONCRETE  
CORED SLAB UNIT



ASSEMBLED BY: J.P. ADAMS	DATE: 6/15/05
CHECKED BY: S.H. SOCKWELL	DATE: 7/15/05
DRAWN BY: W.J.H. 4/89	REV. 10/17/00 R.W.M./L.S.
CHECKED BY: F.C.J. 5/89	REV. 7/10/01 R.W.M./L.S.
	REV. 5/1/06 T.L.A./G.M.

REVISIONS				SHEET NO.	
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2			4		

S-4  
TOTAL SHEETS 29

19.000m (WORKPOINT TO WORKPOINT)

18.638m

6.213m

6.212m

6.213m

SEE GROUDED RECESS  
DETAIL (TYP. EA. SIDE)

SEE GROUDED RECESS  
DETAIL (TYP. EA. SIDE)

GUTTERLINE

152  
(TYP.)

Ø 38mm JT.  
& BENT #1  
CONTROL  
LINE

Ø 12.7mm Ø H.S. TRANSVERSE  
POST-TENSIONING STRAND  
IN 51mm Ø HOLE

13 PRESTRESSED CONCRETE CORED SLAB UNITS = 11.882m

11.222m (CLEAR ROADWAY)

FILL FACE @  
END BENT #1

W.P. #1

90°-00'-00"

-LREV-

W.P. #2

1-#13B1 IN TOP OF CORED SLAB  
UNITS, SEE SLAB SECTION VIEWS  
FOR LOCATION,  
(3 BAR RUNS, 540mm SPLICE)

Ø 38mm JT.

305mm Ø VOIDS  
(TYP. EA. SLAB UNIT)

GUTTERLINE

SEE "END POSTS AND  
PARAPET DETAILS" SHEET  
FOR REINFORCING IN  
END POST (TYP.)

6-#16B4 IN PARAPET  
(TYP. EA. SIDE)  
(2 BAR RUNS, 1.050m SPLICE)  
(SEE SECTION THRU PARAPET)

PROJECT NO. B-1381  
SAMPSON COUNTY  
STATION: 51+98.000-LREV-

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUPERSTRUCTURE  
PLAN OF SPAN A



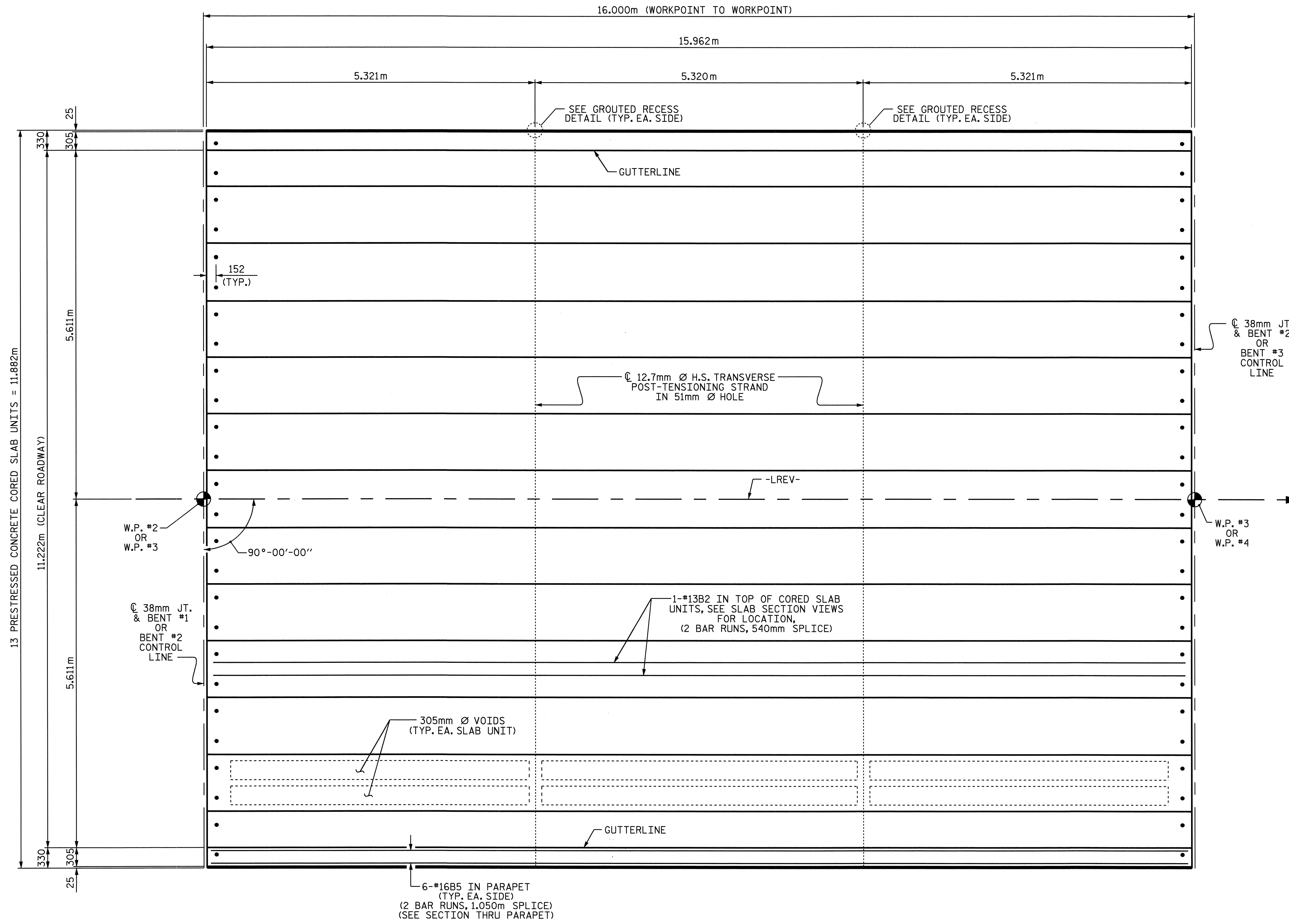
SPAN A

DRAWN BY: J.P. ADAMS DATE: 6/21/05  
CHECKED BY: S.H. SOCKWELL DATE: 7/15/05

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REVISIONS						SHEET NO.
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SPAN B OR SPAN C

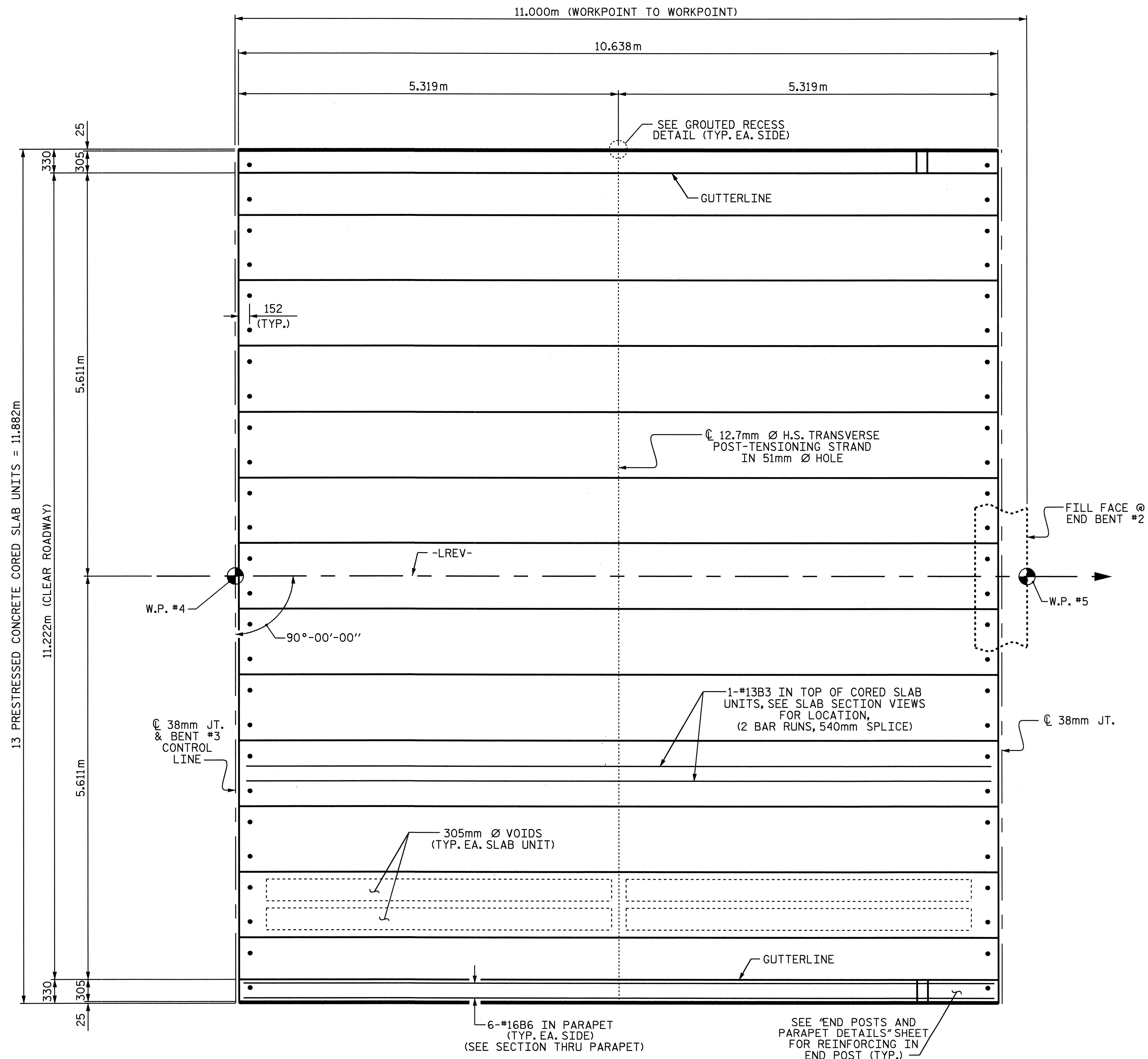
PROJECT NO. B-1381  
SAMPSON COUNTY  
 STATION: 51+98.000-LREV-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 PLAN OF SPAN B  
 OR  
 PLAN OF SPAN C



DRAWN BY : J.P. ADAMS DATE : 6/21/05  
 CHECKED BY : S.H. SOCKWELL DATE : 7/15/05

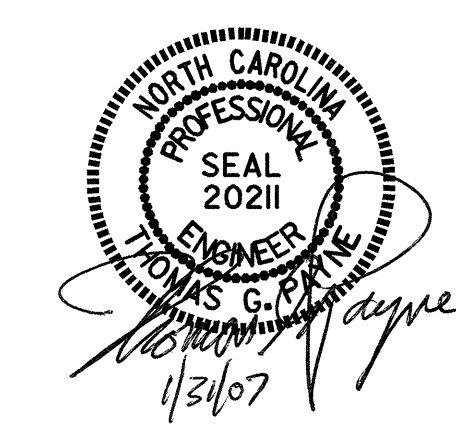
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			29
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SPAN D

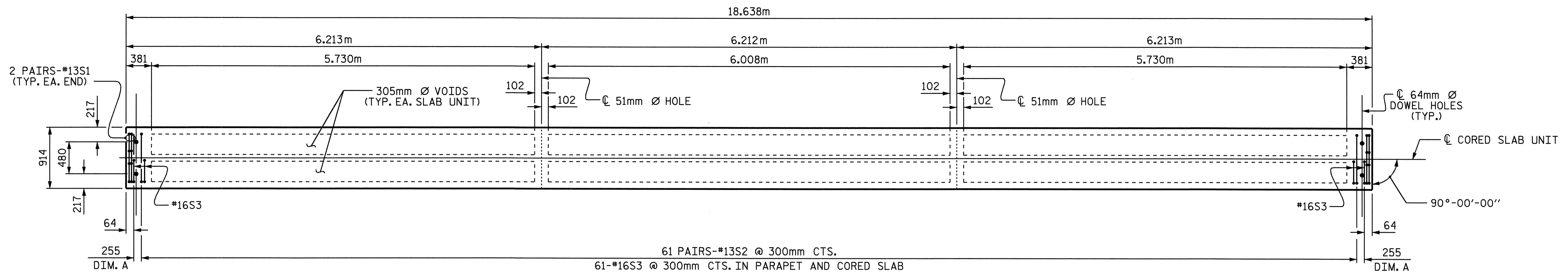
PROJECT NO. B-1381  
SAMPSON COUNTY  
 STATION: 51+98.000-LREV-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE PLAN OF SPAN D					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
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SHEET NO. S-7					TOTAL SHEETS 29

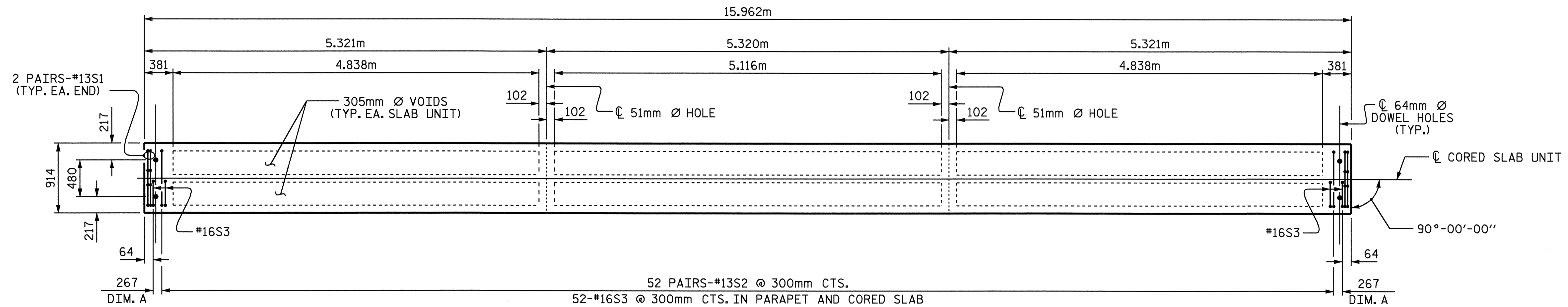


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 CHECKED BY: S.H. SOCKWELL DATE: 7/15/05

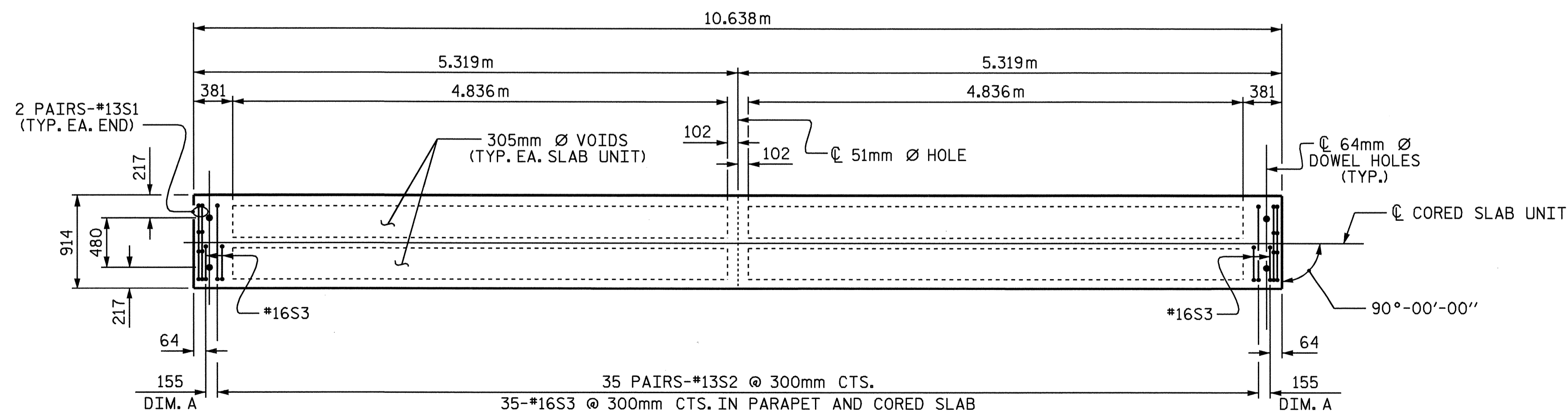




PLAN OF EXTERIOR CORED SLAB UNIT - SPAN A



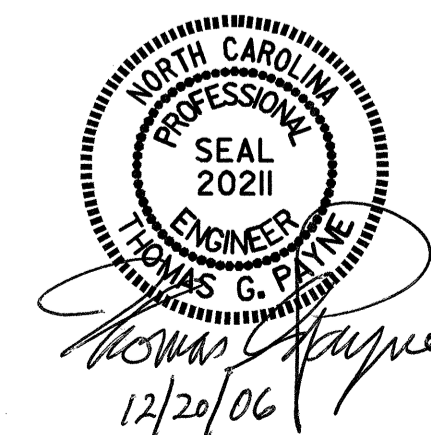
PLAN OF EXTERIOR CORED SLAB UNIT - SPAN B OR SPAN C



PLAN OF EXTERIOR CORED SLAB UNIT - SPAN D

NOTE: EXTERIOR CORED SLAB UNIT SHOWN, INTERIOR CORED SLAB UNIT SIMILAR EXCEPT #16S3 BARS ARE OMITTED. SEE PART PLAN-EXTERIOR SECTION FOR ADDITIONAL REINFORCEMENT (#13S1 BARS).

PROJECT NO. B-1381  
SAMPSON COUNTY  
 STATION: 51+98.000-LREV-



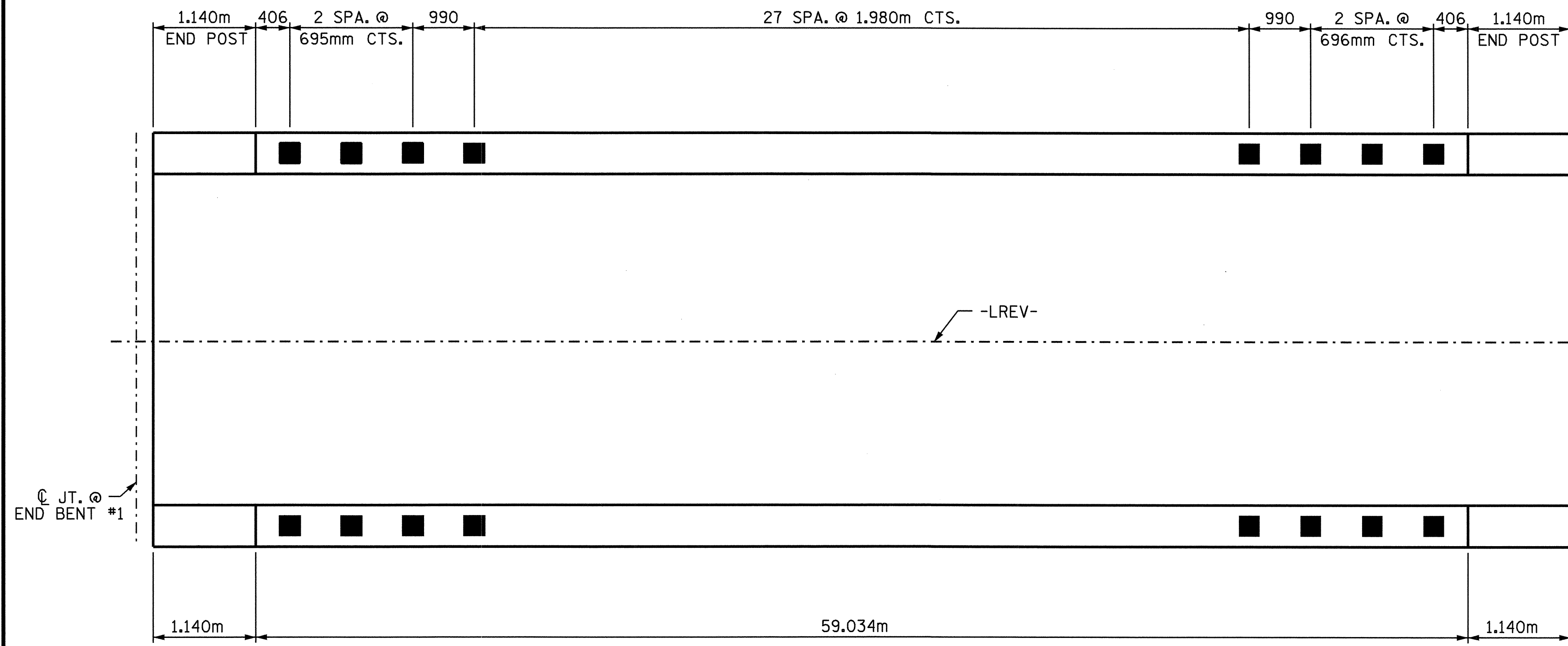
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE					
PLAN OF EXTERIOR CORED SLAB UNIT					
SPAN A, B, C & D					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					29

DRAWN BY: J.P. ADAMS DATE: 6/21/05  
 CHECKED BY: S.H. SOCKWELL DATE: 7/15/05

19-DEC-2006 08:49  
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 Klayne







**PLAN OF RAIL POST SPACINGS**  
(TYPICAL FOR EACH SIDE)

**NOTES**  
STRUCTURAL CONCRETE INSERT

- THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 38mm.
  - 1 - 19.05mm Ø X 41mm BOLT WITH WASHER, BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 19.05mm Ø X 41mm GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
  - WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 689 MPa. AS AN OPTION, A 11mm Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 620 MPa. IS ACCEPTABLE.

**NOTES**  
METAL RAIL TO END POST CONNECTION

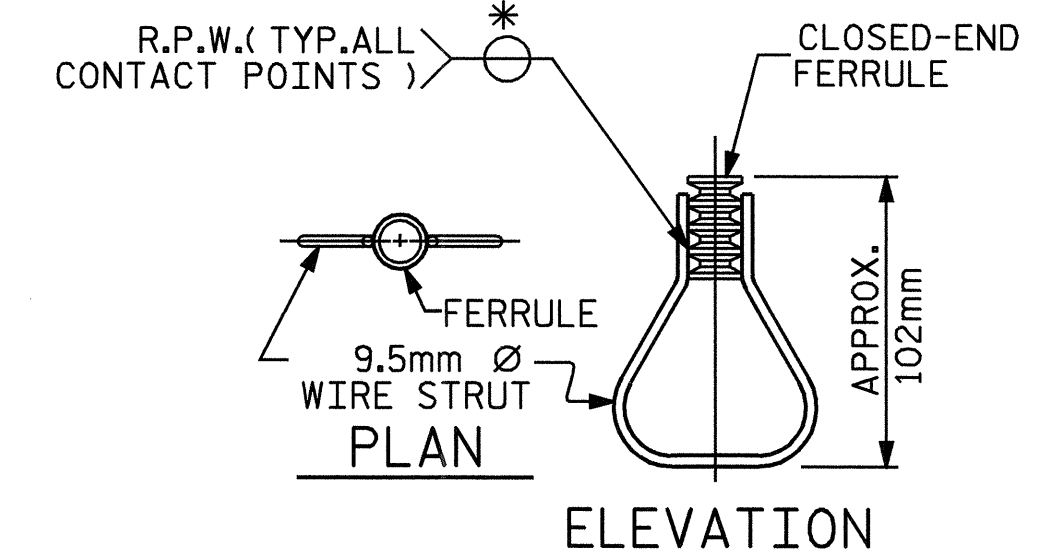
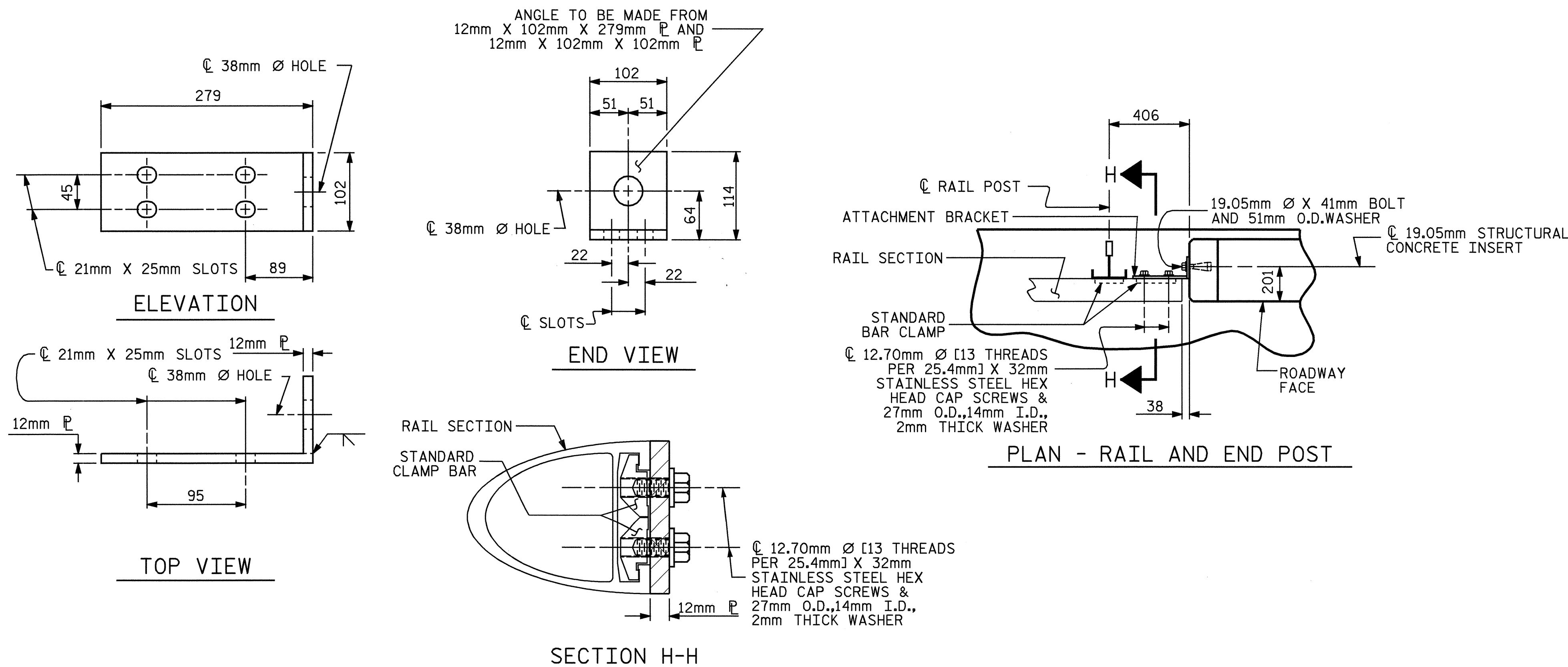
- THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS :
- 12mm PLATES SHALL CONFORM TO AASHTO M270 GRADE 250 AND SHALL BE GALVANIZED AFTER FABRICATION.
  - 19.05mm STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 21.4 kN. THE FERRULES SHALL ENGAGE A 19.05mm Ø X 41mm BOLT WITH 51mm O.D. WASHER IN PLACE. THE 19.05mm Ø X 41mm BOLT SHALL HAVE N. C. THREADS.
  - CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 16°C.
  - STANDARD CLAMP BARS (SEE METAL RAIL SHEET ).
  - 13mm Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR METERS OF 1 OR 2 BAR METAL RAILS.

THE 19.05mm STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE 19.05mm STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 12mm PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 19.05mm Ø X 41mm BOLT WITH WASHER SHALL BE REPLACED WITH A 19.05mm Ø X 165mm BOLT AND 51mm O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 19.05mm Ø X 41mm BOLT SHALL APPLY TO THE 19.05mm Ø X 165mm BOLT. SEE SPECIAL PROVISIONS FOR "ADHESIVELY ANCHORED ANCHOR BOLTS AND DOWELS". FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



**STRUCTURAL CONCRETE INSERT**

\* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

PROJECT NO. B-1381  
SAMPSON COUNTY  
STATION: 51+98.000-LREV-

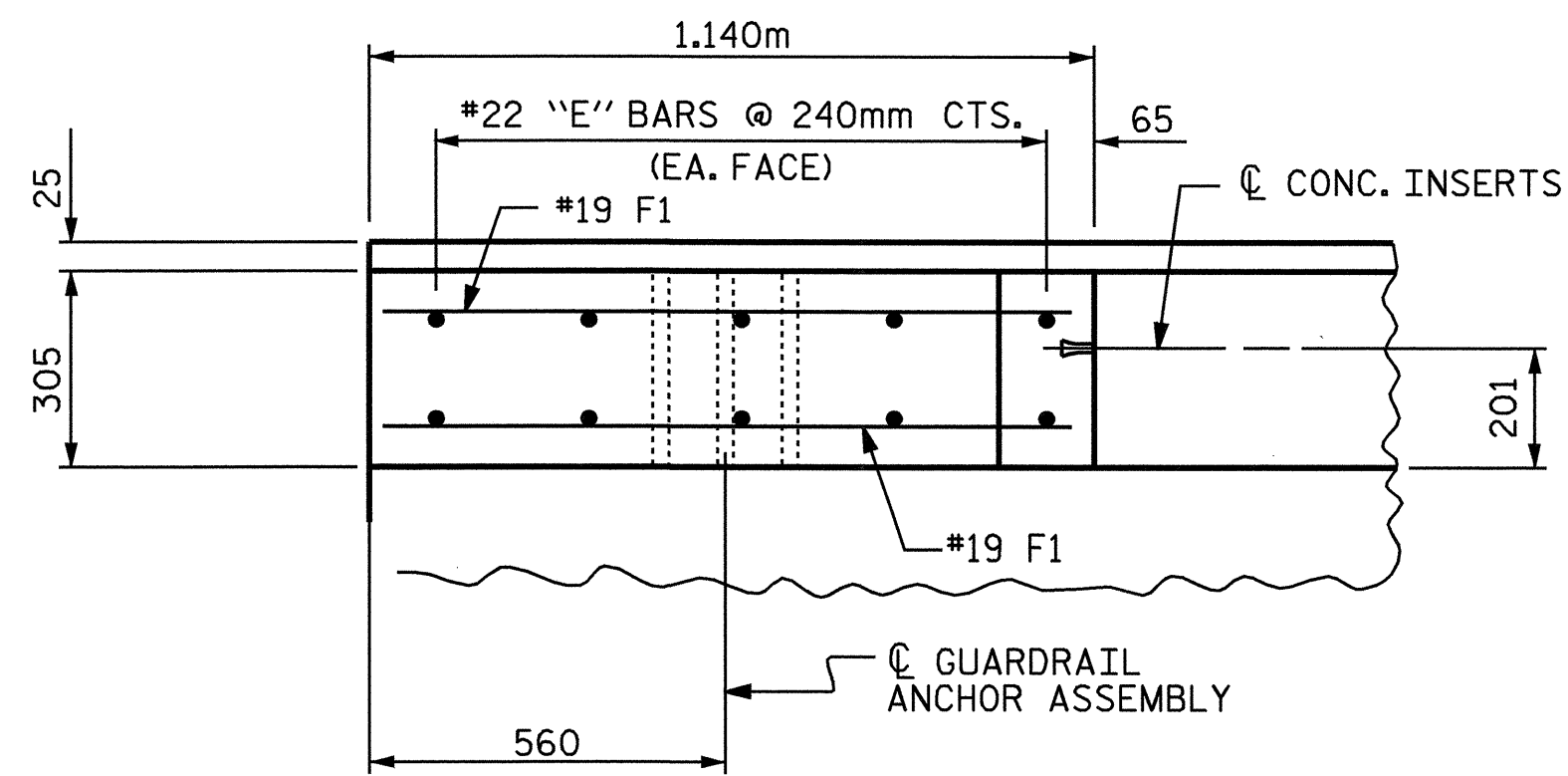


STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
RAIL POST SPACINGS  
AND  
END OF RAIL DETAILS  
FOR ONE BAR METAL RAILS

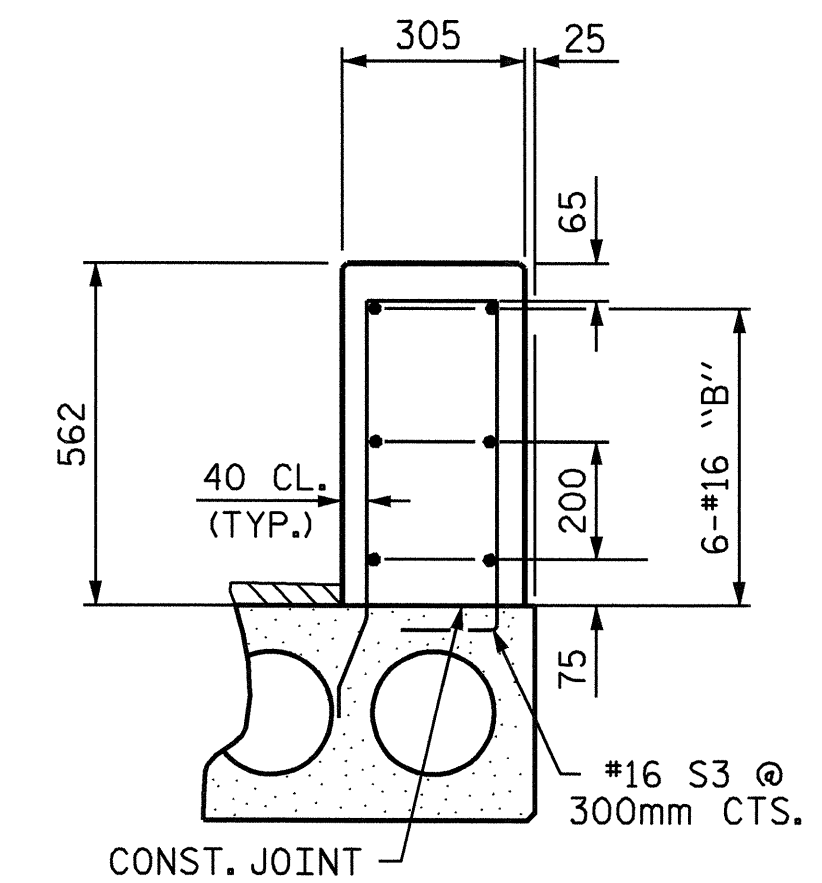
ASSEMBLED BY : J.P. ADAMS	DATE : 6/24/05
CHECKED BY : S.H. SOCKWELL	DATE : 7/15/05
DRAWN BY : WJH 3/89	REV. 10/17/00 LES/RDR
CHECKED BY : CRK 3/89	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM

**DETAILS FOR ATTACHING METAL RAIL TO END POST**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			29
2			4			

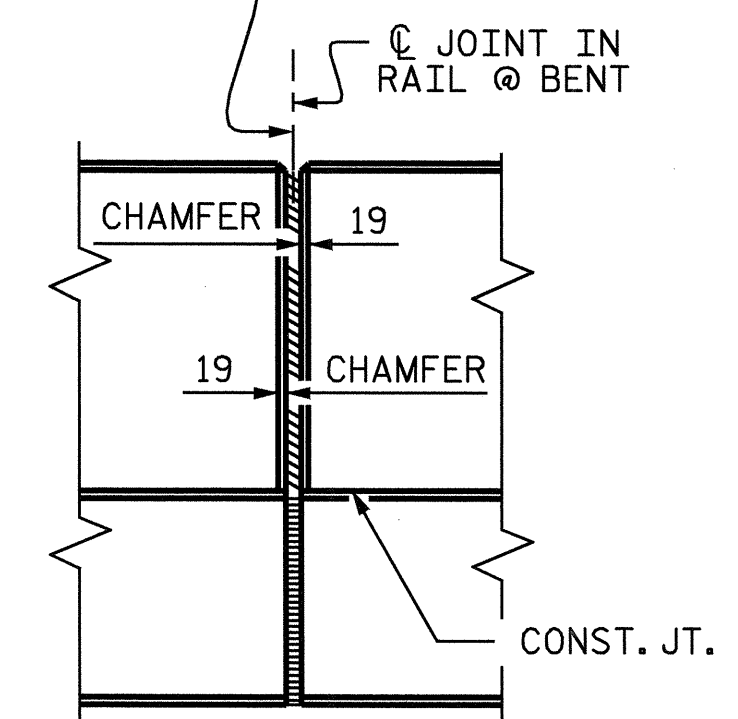


PLAN OF END POST

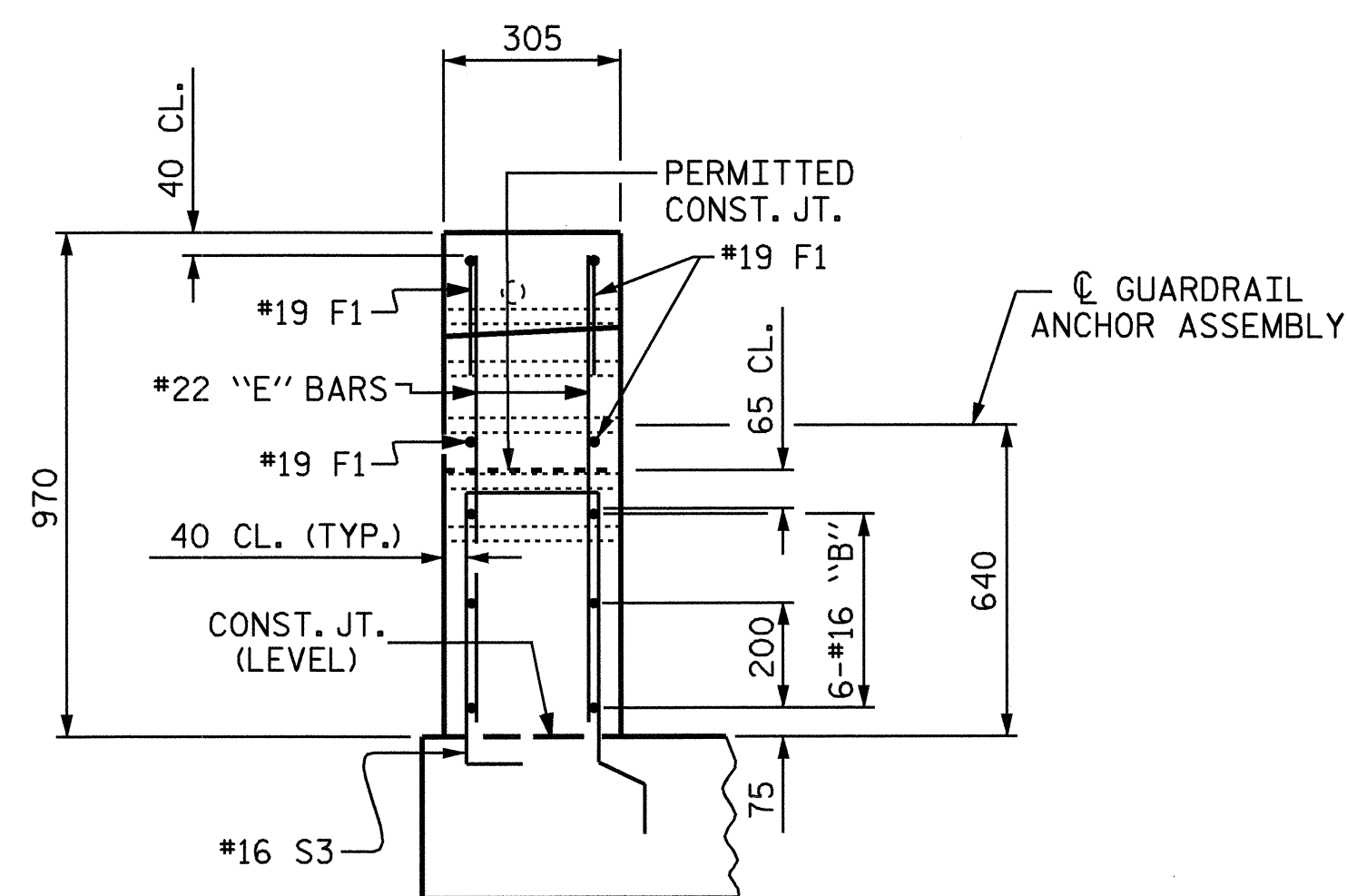


SECTION THRU PARAPET

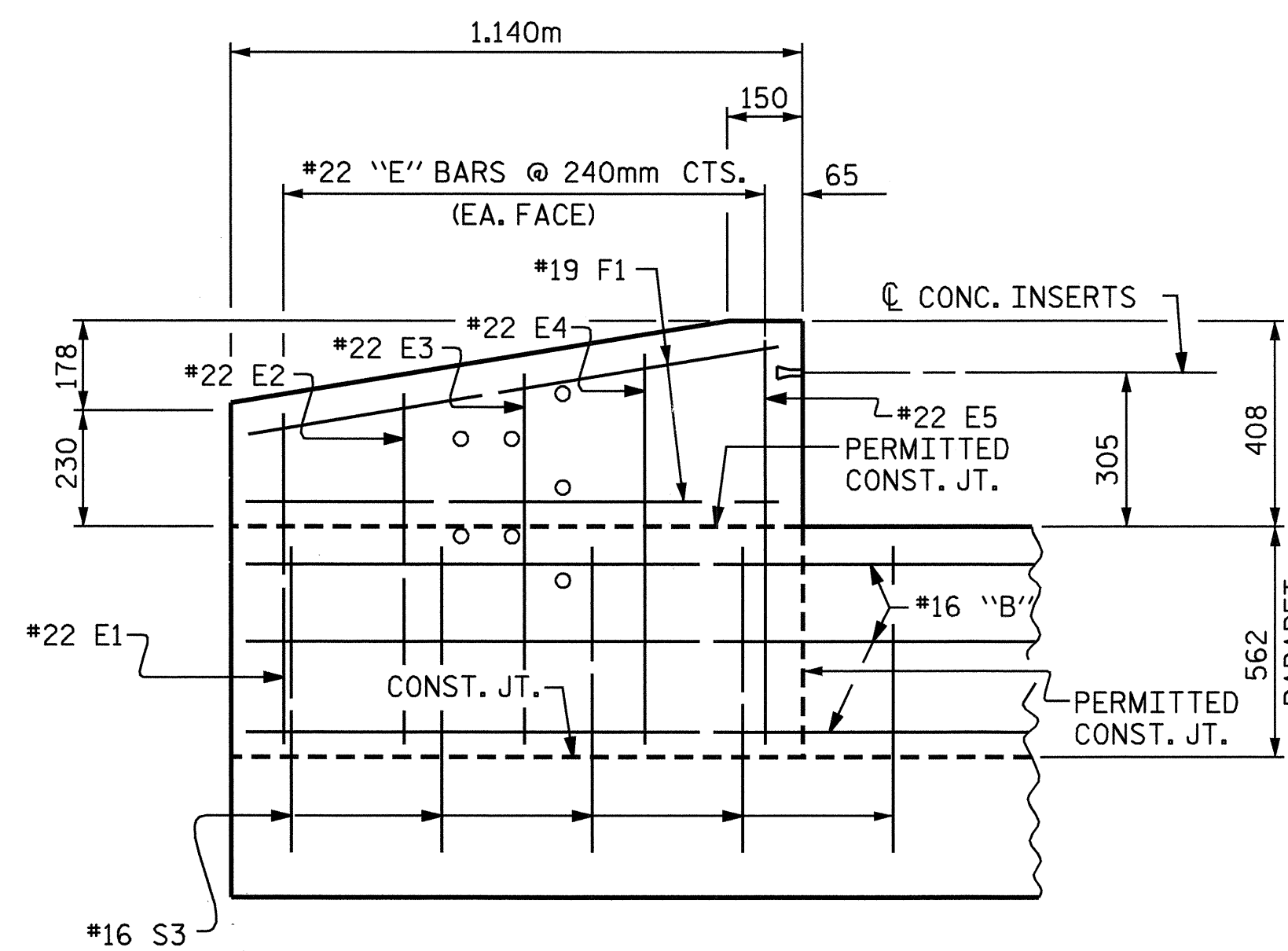
13mm EXP. JOINT MAT'L HELD IN PLACE WITH GALVANIZED NAILS. (NOTE: OMIT EXP. JOINT MAT'L WHEN SLIP FORM IS USED.)



ELEVATION AT BENTS  
PARAPET DETAILS



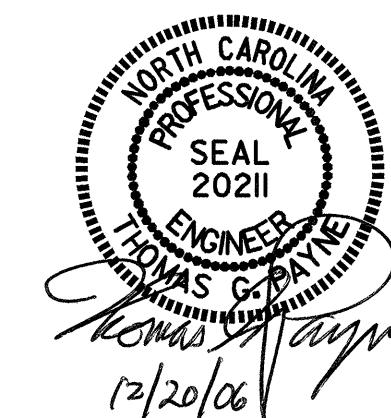
END VIEW



ELEVATION

PARAPET AND END POST FOR ONE BAR RAIL

PROJECT NO. B-1381  
SAMPSON COUNTY  
STATION: 51+98.000-LREV-



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
END POSTS AND PARAPET DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-II					TOTAL SHEETS 29

DRAWN BY: J.P. ADAMS DATE: 6/27/05  
CHECKED BY: S.H. SOCKWELL DATE: 7/15/05



NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 6mm HOLD DOWN PLATE AND 7 - 22.23mm Ø BOLTS WITH NUTS AND WASHERS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 250. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

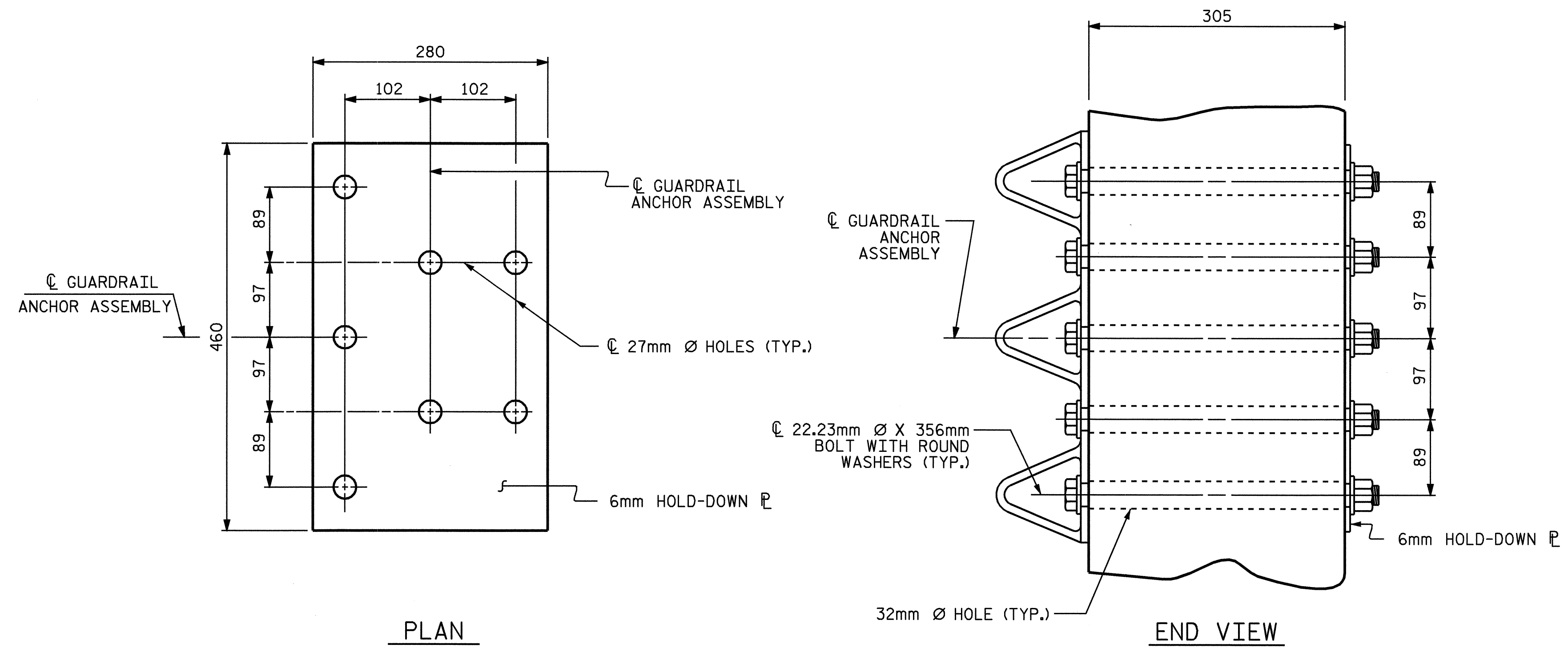
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291M. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 22.23mm Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

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

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

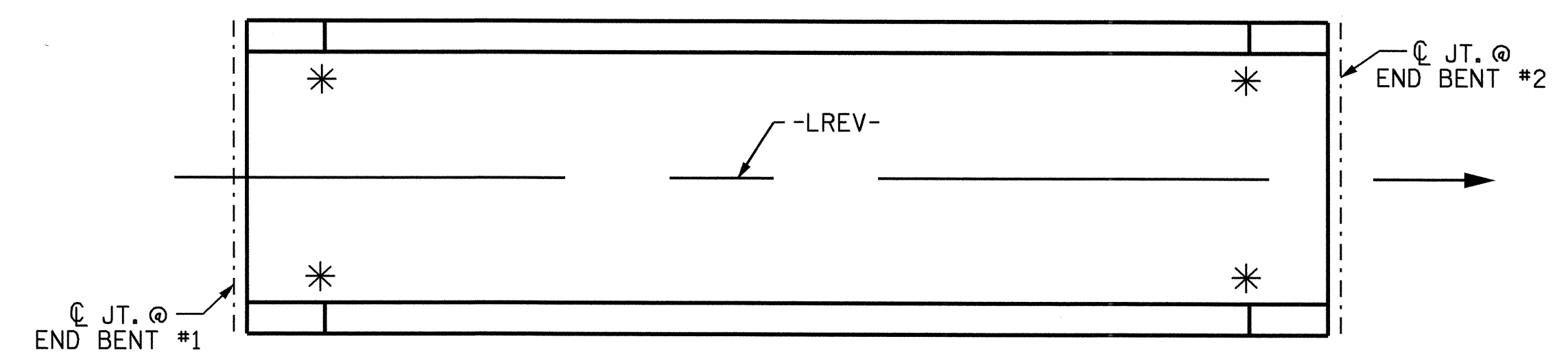
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

THE 32mm 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.

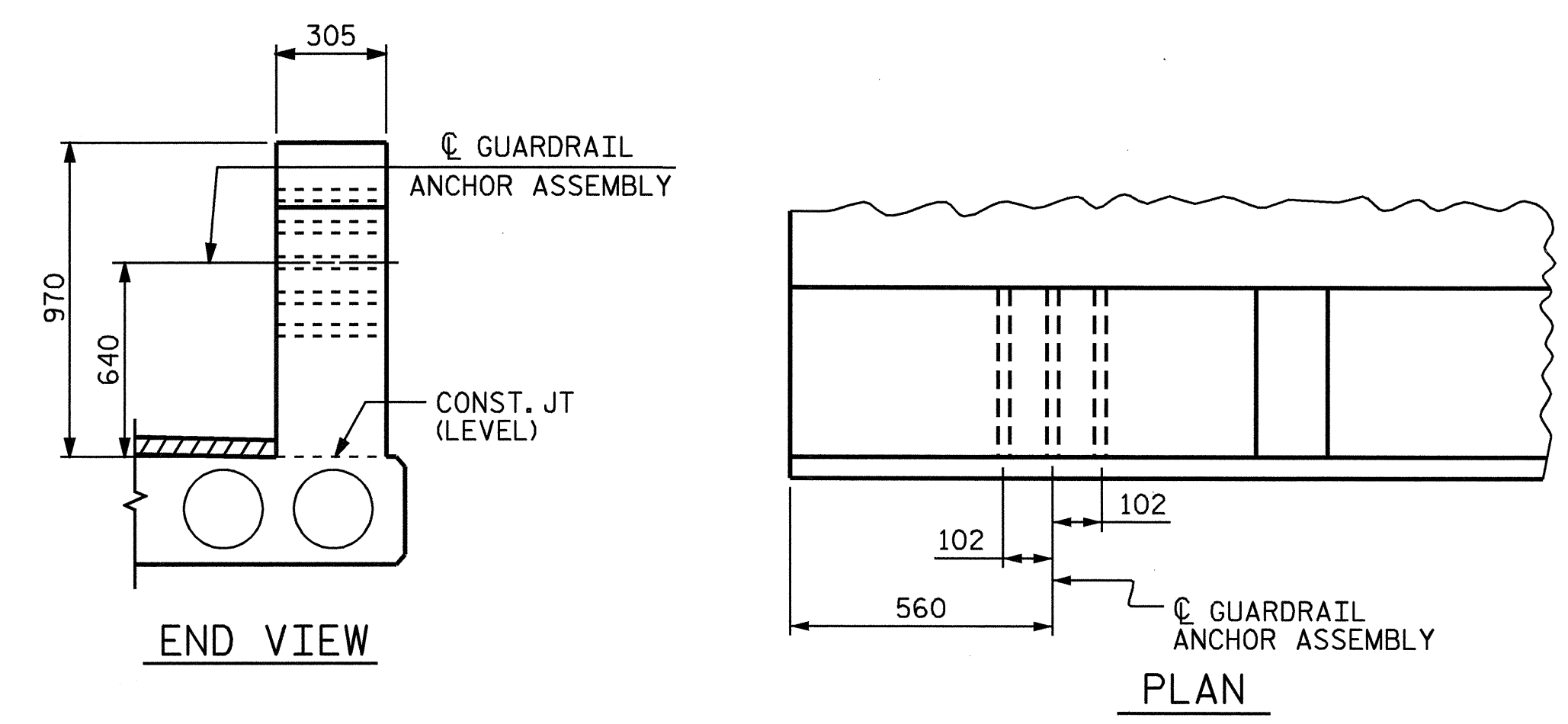


PLAN  
END VIEW

GUARDRAIL ANCHOR ASSEMBLY DETAILS

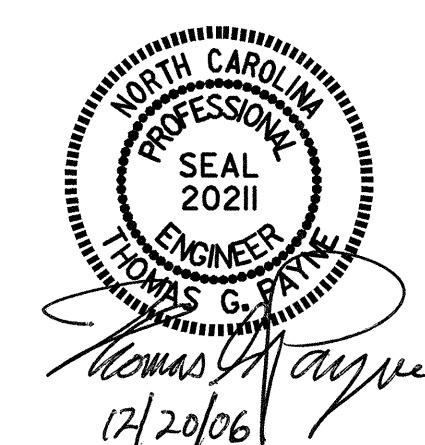


SKETCH SHOWING POINTS OF ATTACHMENT  
\* LOCATION OF GUARDRAIL ATTACHMENT



END VIEW  
PLAN  
LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. B-1381  
SAMPSON COUNTY  
STATION: 51+98.000-LREV-



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
GUARDRAIL ANCHORAGE  
DETAILS  
FOR METAL RAILS

ASSEMBLED BY : J. P. ADAMS	DATE : 6/27/05
CHECKED BY : S.H. SOCKWELL	DATE : 7/15/05
DRAWN BY : EEM 6/94	REV. 10/17/00 RWW/LES
CHECKED BY : RGW 6/94	REV. 5/7/03 RWW/JTE
	REV. 5/11/06 TLA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			29
2			4			

**NOTES**

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203M 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 420 AND SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR CONSTRUCTION OF SUPERSTRUCTURE.

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

THE 64mm Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH GROUT.

THE 51mm Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, A POSITIVE HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDWAYS. 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.

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 34.5MPa FOR SPAN A AND 27.6 MPa FOR SPANS B, C AND D.

ALL REINFORCING STEEL IN PARAPET AND END POSTS SHALL BE EPOXY COATED.

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS. FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

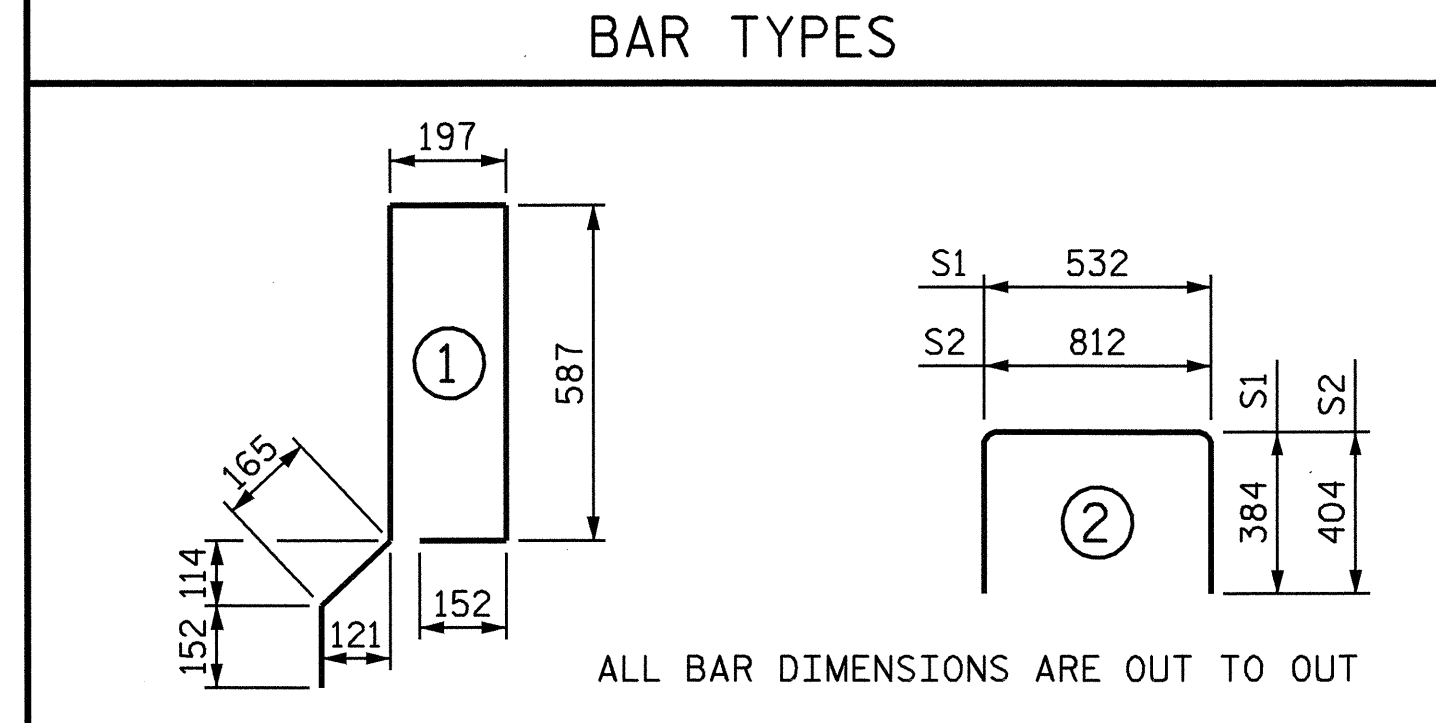
FOR ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL FOR ONE CORED SLAB UNIT								BILL OF MATERIAL FOR ONE CORED SLAB UNIT								BILL OF MATERIAL FOR ONE CORED SLAB UNIT							
SPAN A								SPAN B OR C								SPAN D							
				EXTERIOR UNIT		INTERIOR UNIT						EXTERIOR UNIT		INTERIOR UNIT						EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT	BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT	BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B1	6	#13	STR	6560	39	6560	39	B2	4	#13	STR	8240	33	8240	33	B3	4	#13	STR	5580	22	5580	22
S1	8	#13	2	1300	10	1300	10	S1	8	#13	2	1300	10	1300	10	S1	8	#13	2	1300	10	1300	10
S2	122	#13	2	1620	196	1620	196	S2	104	#13	2	1620	167	1620	167	S2	70	#13	2	1620	113	1620	113
* S3	63	#16	1	1840	180			* S3	54	#16	1	1840	154			* S3	37	#16	1	1840	106		
REINFORCING STEEL				245kg		245kg		REINFORCING STEEL				210kg		210kg		REINFORCING STEEL				145kg		145kg	
* EPOXY COATED REINFORCING STEEL				180kg				* EPOXY COATED REINFORCING STEEL				154kg				* EPOXY COATED REINFORCING STEEL				106kg			
43.1 MPa CONCRETE				6.5 CU. METERS		6.5 CU. METERS		34.5 MPa CONCRETE				5.6 CU. METERS		5.6 CU. METERS		34.5 MPa CONCRETE				3.8 CU. METERS		3.8 CU. METERS	
12.70mm Ø L.R. STRANDS				No. 28		No. 28		12.70mm Ø L.R. STRANDS				No. 24		No. 24		12.70mm Ø L.R. STRANDS				No. 12		No. 12	

DEAD LOAD DEFLECTION AND CAMBER			
	SPAN A	SPAN B OR C	SPAN D
	12.70mm Ø L.R. STRAND	12.70mm Ø L.R. STRAND	12.70mm Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	77 ↑	62 ↑	14 ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD **	15 ↓	9 ↓	2 ↓
FINAL CAMBER	62 ↑	53 ↑	12 ↑

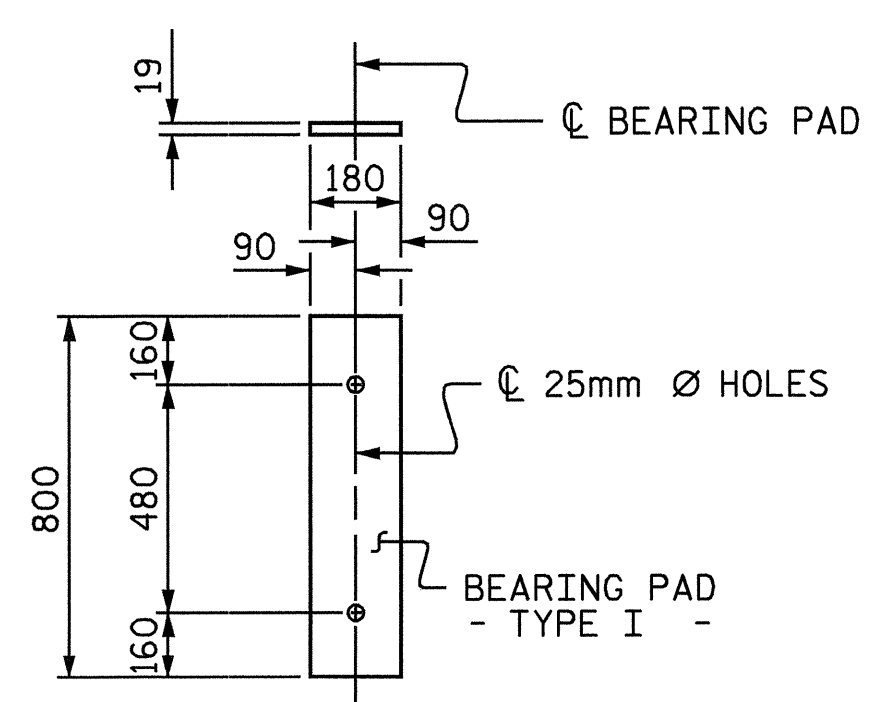
\*\* INCLUDES FUTURE WEARING SURFACE



CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
SPAN A-EXTERIOR	2	18.638m	37.276m
SPAN A-INTERIOR	11	18.638m	205.018m
SPAN B-EXTERIOR	2	15.962m	31.924m
SPAN B-INTERIOR	11	15.962m	175.582m
SPAN C-EXTERIOR	2	15.962m	31.924m
SPAN C-INTERIOR	11	15.962m	175.582m
SPAN D-EXTERIOR	2	10.638m	21.276m
SPAN D-INTERIOR	11	10.638m	117.018m
TOTAL	52		795.600m

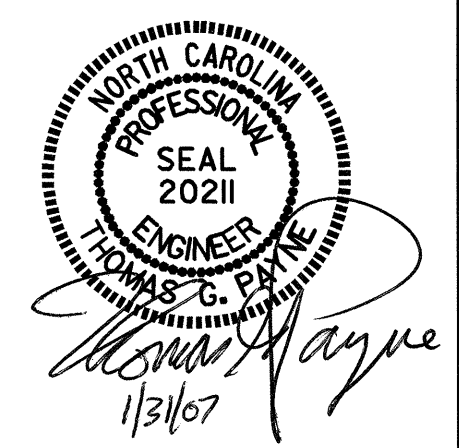
BILL OF MATERIAL FOR PARAPET AND END POSTS					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B4	24	16	STR	9800	365
* B5	48	16	STR	8460	630
* B6	12	16	STR	10520	196
* E1	8	22	STR	700	17
* E2	8	22	STR	760	18
* E3	8	22	STR	820	20
* E4	8	22	STR	860	21
* E5	8	22	STR	880	21
* F1	16	19	STR	1040	37
* EPOXY COATED REINFORCING STEEL				1325kg	
CLASS "AA" CONCRETE				21.5 m³	
CONCRETE PARAPET				122.628 METERS	

GRADE 270 STRANDS	
	12.70mm Ø L.R.
AREA (mm²)	98.71
ULTIMATE STRENGTH (KN PER STRAND)	183.7
APPLIED PRESTRESS (KN PER STRAND)	137.8



**FIXED END**  
(TYPE I - 104 REQ'D)  
**ELASTOMERIC BEARING DETAILS**

PROJECT NO. B-1381  
SAMPSON COUNTY  
STATION: 51+98.000-LREV-



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD 914mm X 533mm PRESTRESSED CONCRETE CORED SLAB UNIT					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

ASSEMBLED BY : J.P. ADAMS	DATE : 7/6/05
CHECKED BY : S.H. SOCKWELL	DATE : 7/15/05
DRAWN BY : WJH 4/89	REV. 7/10/01 RWW/LES
CHECKED BY : FCJ 5/89	REV. 5/7/03RR RWW/JTE
	REV. 5/1/06 TLA/GM



NOTES

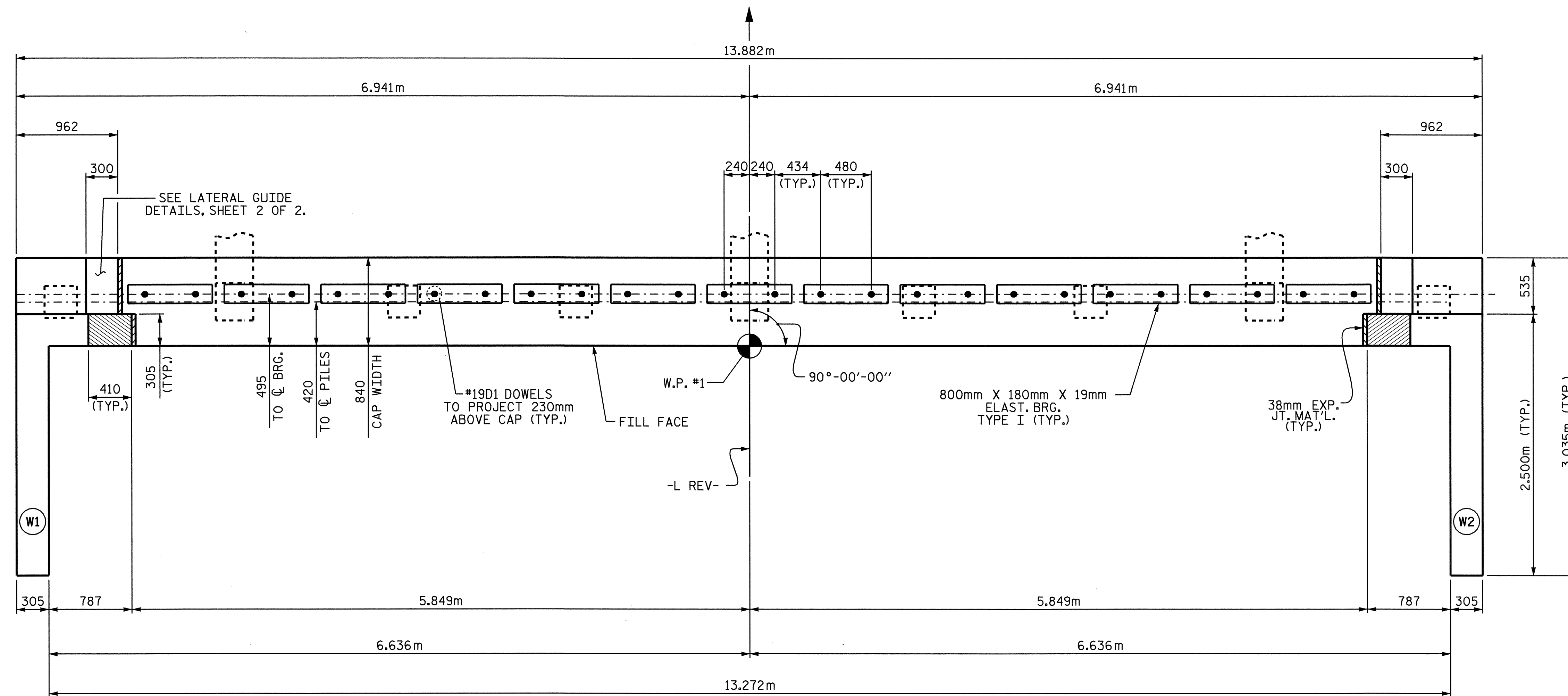
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

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.

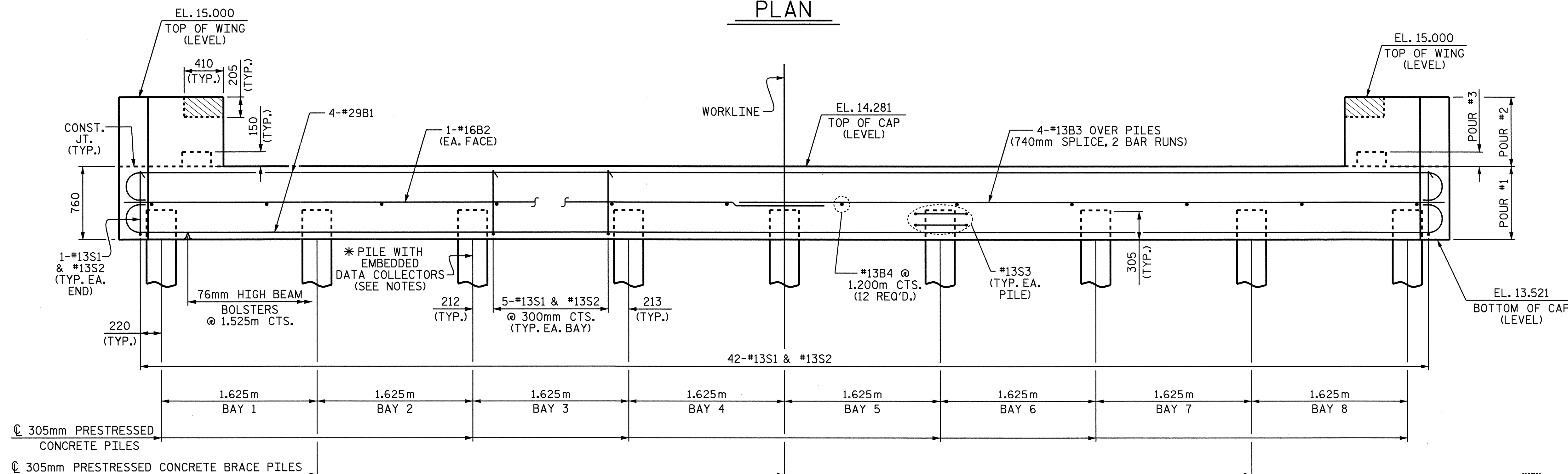
THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER CORED SLAB UNITS ARE IN PLACE.

\* INDICATED PILE WILL CONTAIN EMBEDDED DATA COLLECTORS. SEE SPECIAL PROVISIONS AND SHEET ENTITLED "305mm PRESTRESSED CONCRETE TEST PILE WITH EMBEDDED DATA COLLECTORS".

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



PLAN



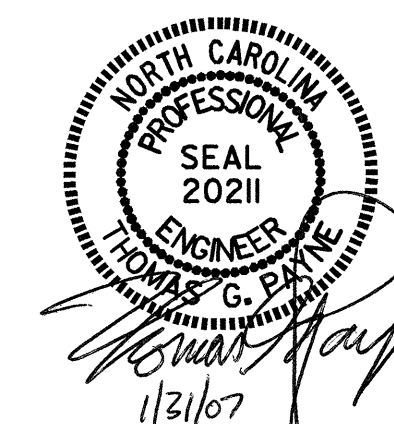
ELEVATION

PROJECT NO. B-1381  
SAMPSON COUNTY  
 STATION: 51+98.000-LREV-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

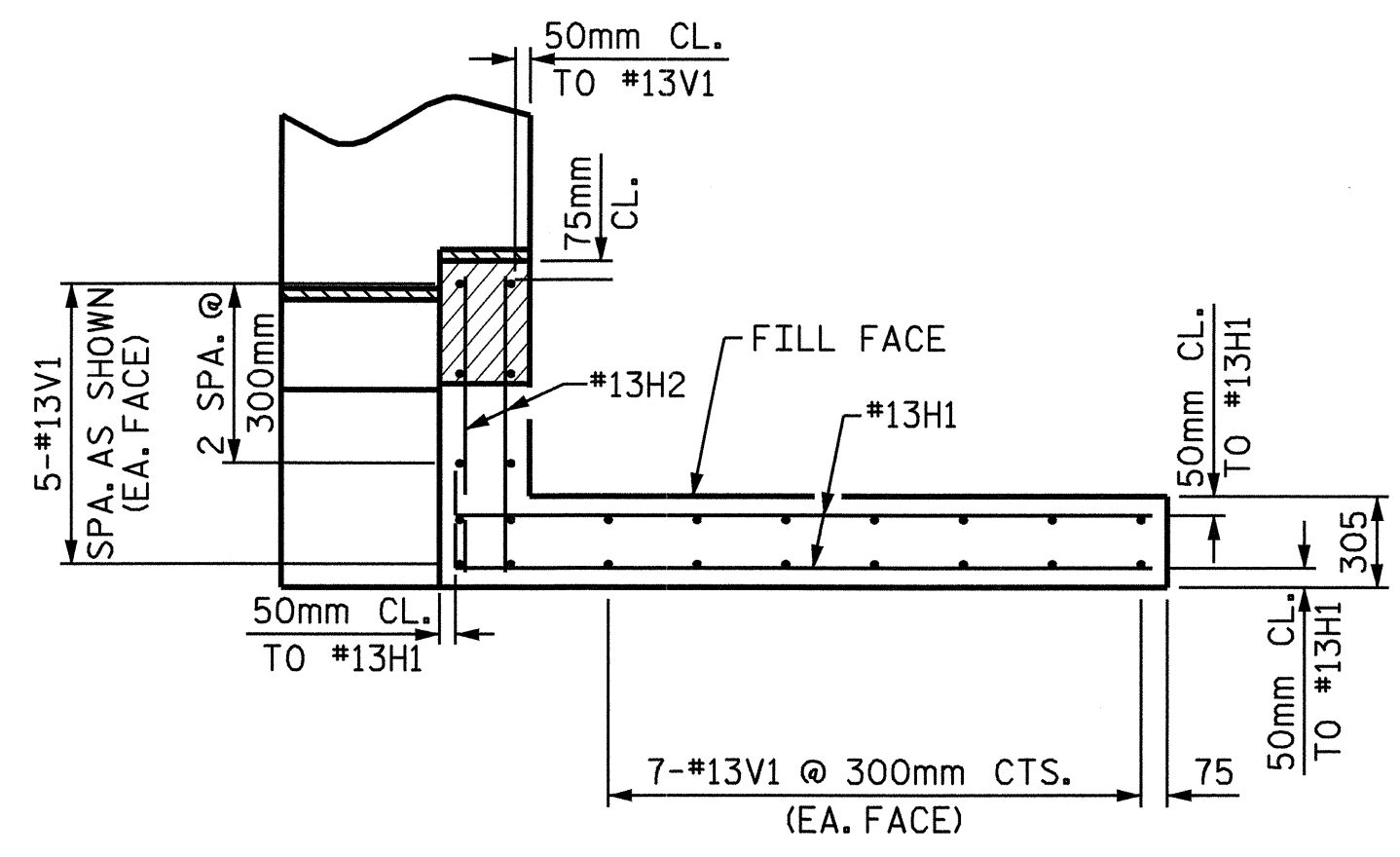
SUBSTRUCTURE  
 END BENT #1



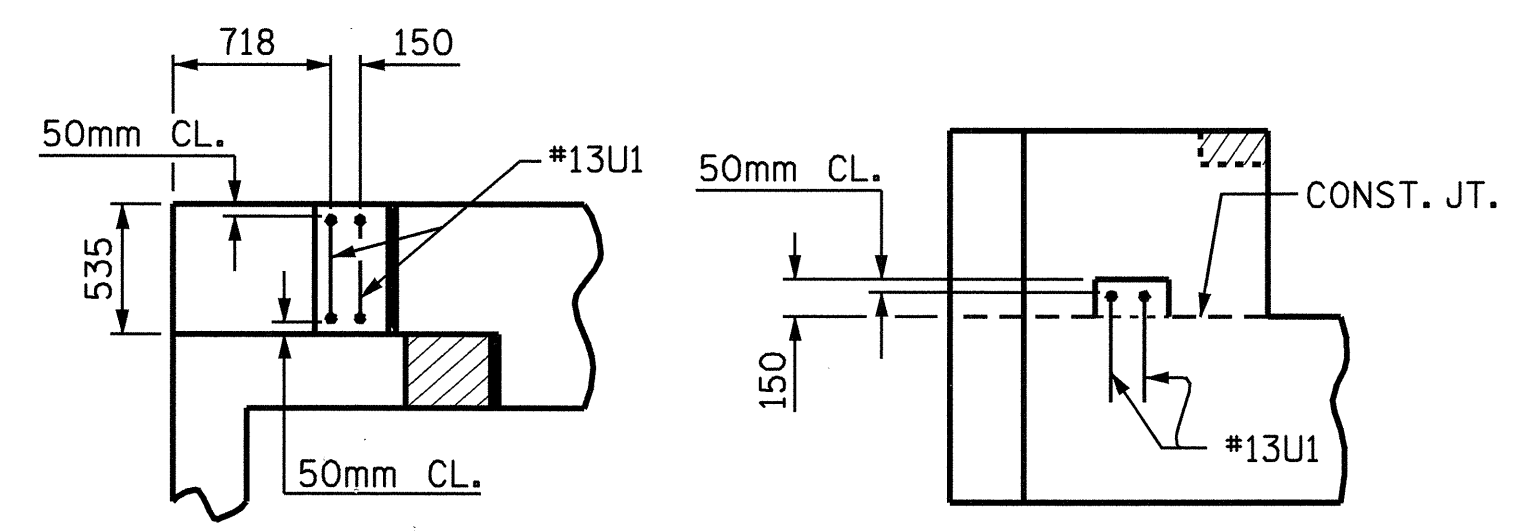
DRAWN BY: J.P. ADAMS DATE: 7/27/05  
 CHECKED BY: S.H. SOCKWELL DATE: 8/9/05

30-JAN-2007 13:57  
 R:\Structures\B1381\finalplans\B-1381.sd.E\*.dgn  
 tpayne

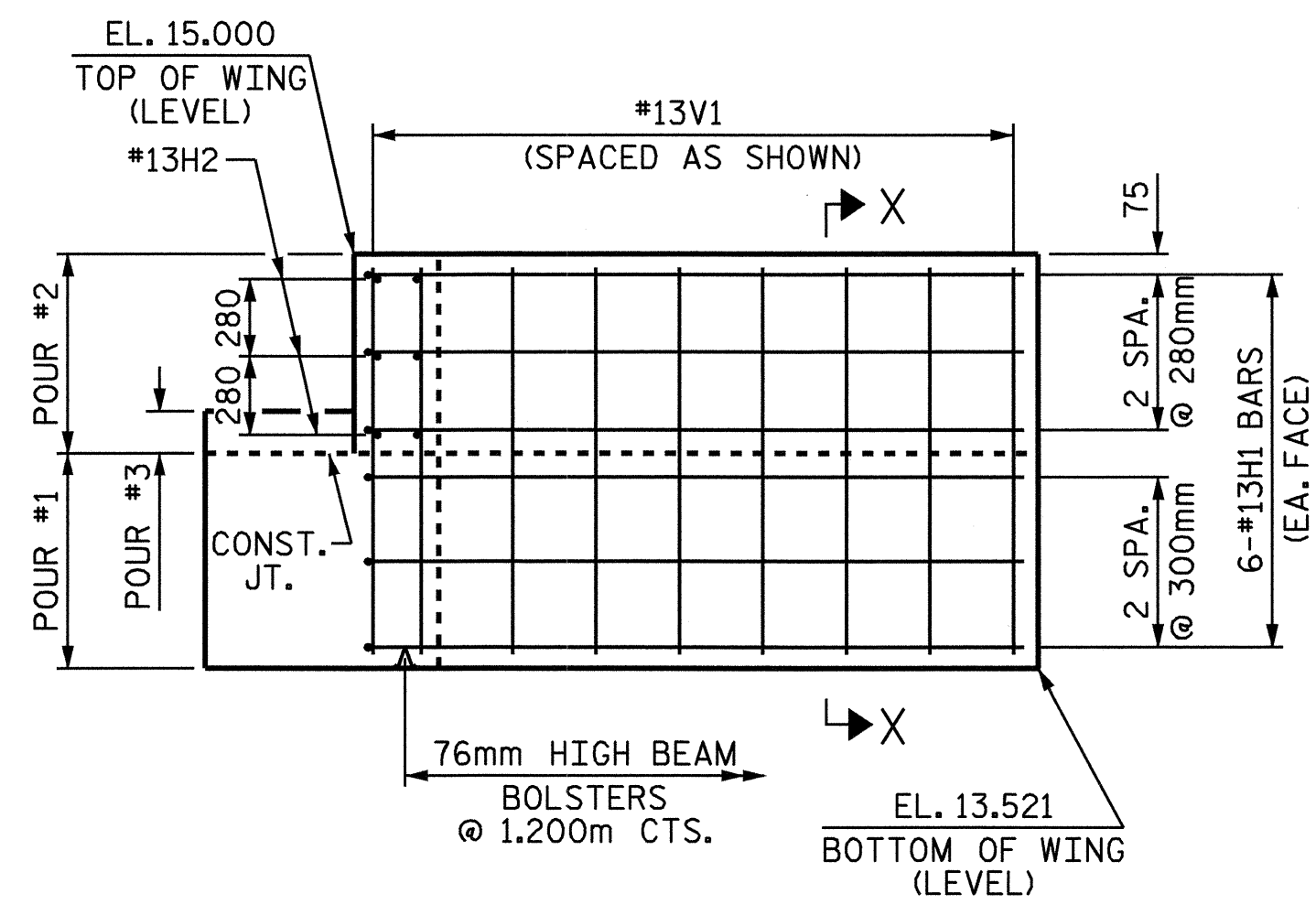
REVISIONS						SHEET NO. S-14
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 29
2			4			



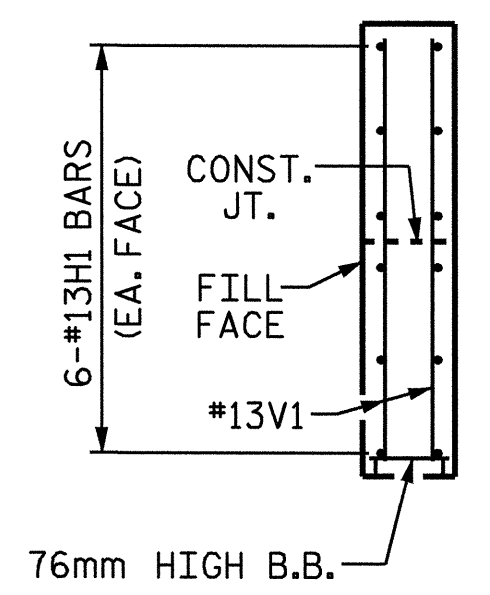
**PLAN OF WING**  
WING 1 SHOWN, WING 2 SIMILAR.



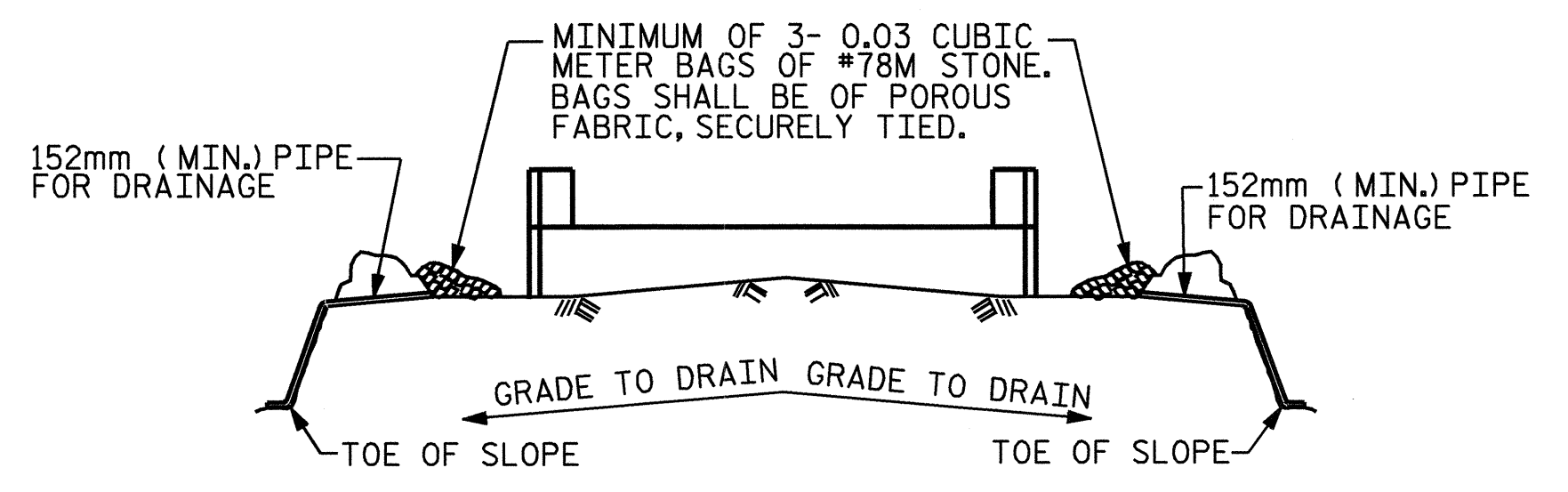
**LATERAL GUIDE DETAILS**  
(EACH END SIMILAR)



**ELEVATION OF WING**  
WING 1 SHOWN, WING 2 SIMILAR.



**SECTION X-X**

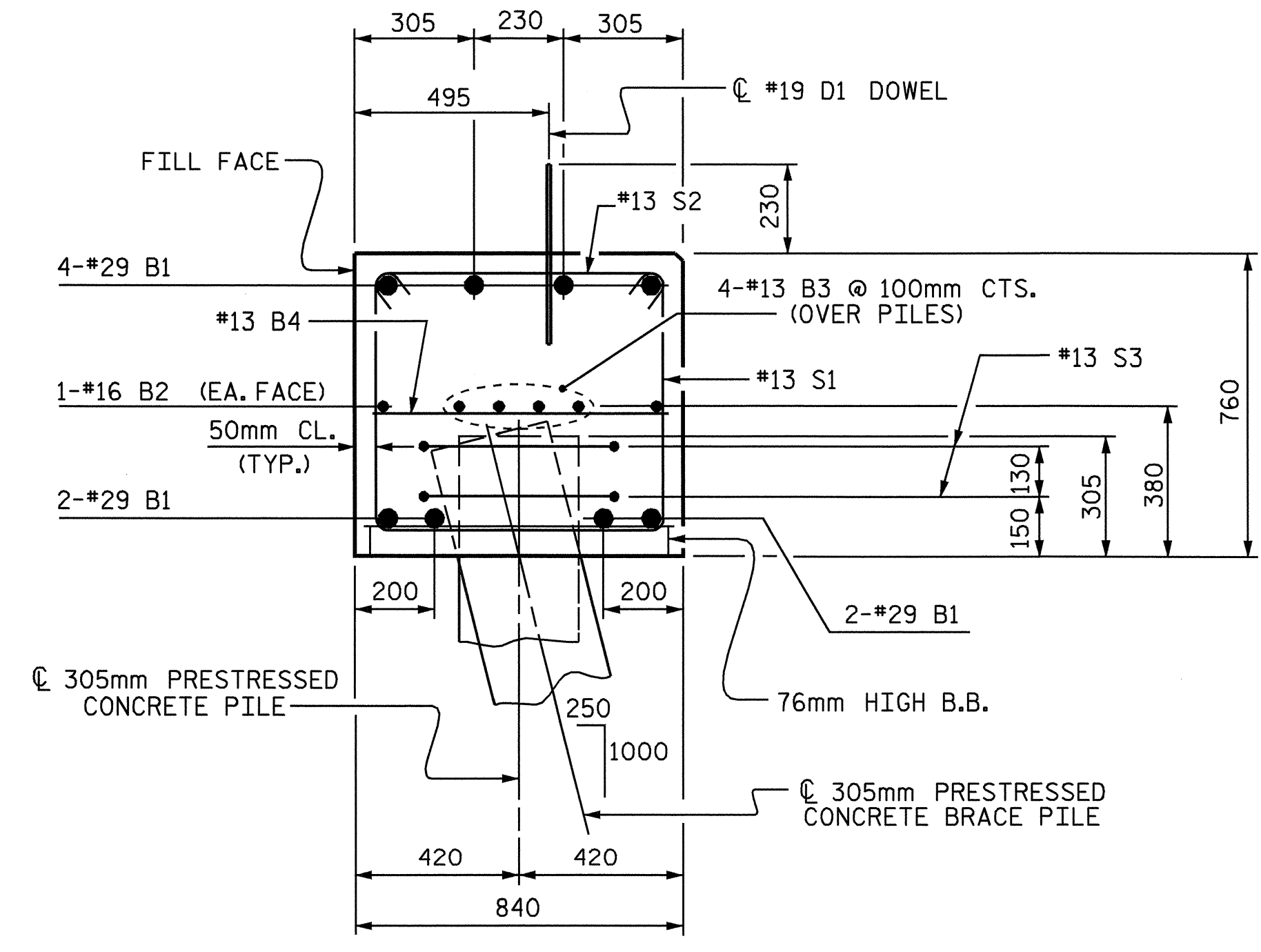


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

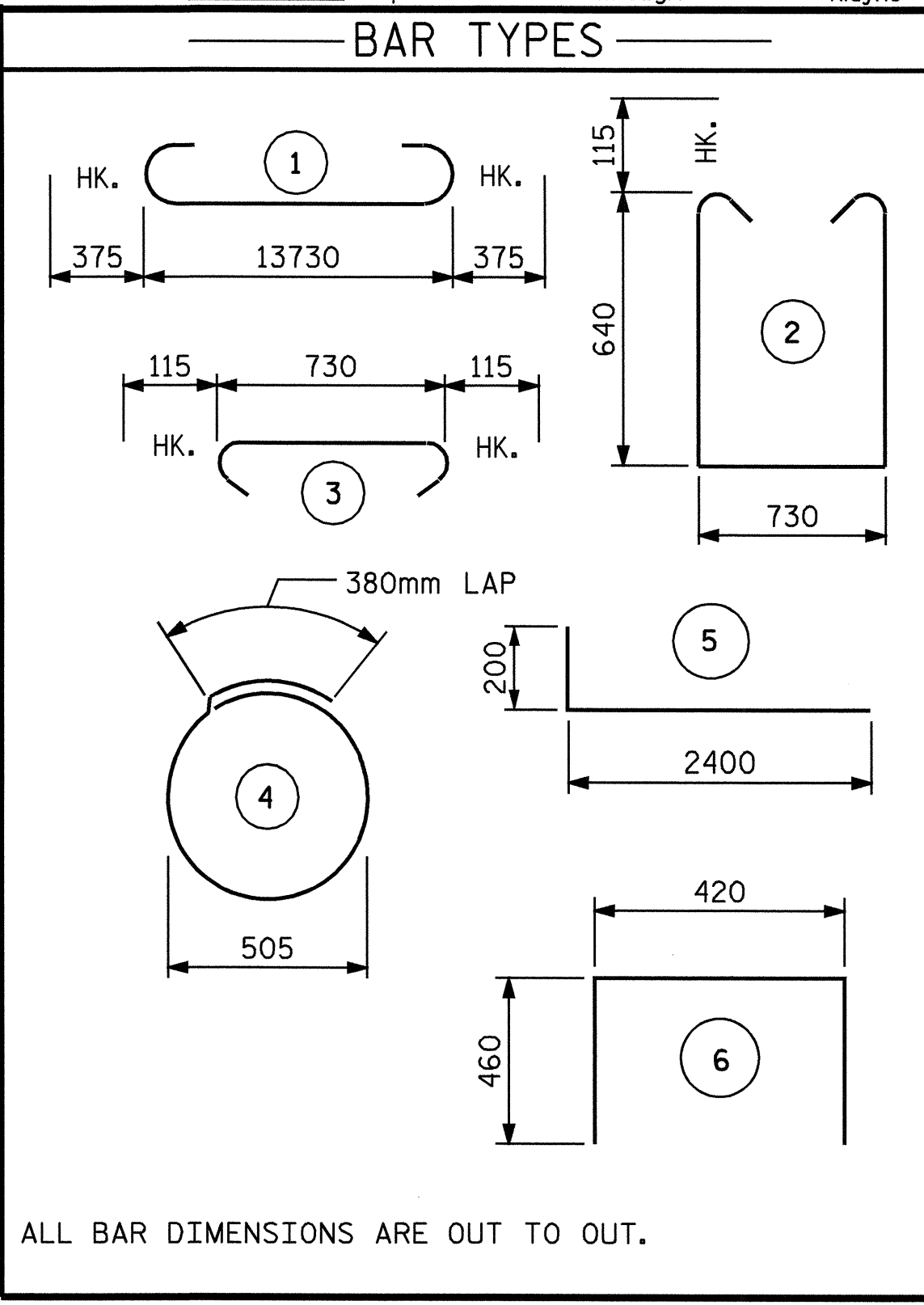
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR 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 FOR THE SEVERAL PAY ITEMS.

**TEMPORARY DRAINAGE AT END BENT**



**SECTION THRU CAP**



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
END BENT #1					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	29	1	14480	586
B2	2	16	STR	13780	43
B3	8	13	STR	7300	58
B4	12	13	STR	740	9
D1	26	19	STR	460	27
H1	24	13	5	2600	62
H2	12	13	STR	980	12
S1	42	13	2	2240	94
S2	42	13	3	960	40
S3	18	13	4	1980	35
U1	4	13	6	1340	5
V1	48	13	STR	1380	66
REINFORCING STEEL					1037 KG
CLASS "A" CONCRETE					
POUR #1 CAP & PART WINGS				9.7m <sup>3</sup>	
POUR #2 UPPER WINGS				1.5m <sup>3</sup>	
POUR #3 LATERAL GUIDES				0.1m <sup>3</sup>	
TOTAL				11.3m <sup>3</sup>	
305mm PRESTRESSED CONCRETE PILES					
* No. = 9				76.5 METERS	
PILE REDRIVES					No. = 9 EA.

NOTE: CONCRETE DISPLACED BY 305mm PRESTRESSED CONCRETE PILES HAS BEEN DEDUCTED.  
\* PILE WITH EMBEDDED DATA COLLECTORS IS INCLUDED IN THIS TOTAL.

PROJECT NO. B-1381  
SAMPSON COUNTY  
STATION: 51+98.000-LREV-  
SHEET 2 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUBSTRUCTURE  
END BENT #1



DRAWN BY: J.P. ADAMS DATE: 8/1/05  
CHECKED BY: S.H. SOCKWELL DATE: 8/9/05

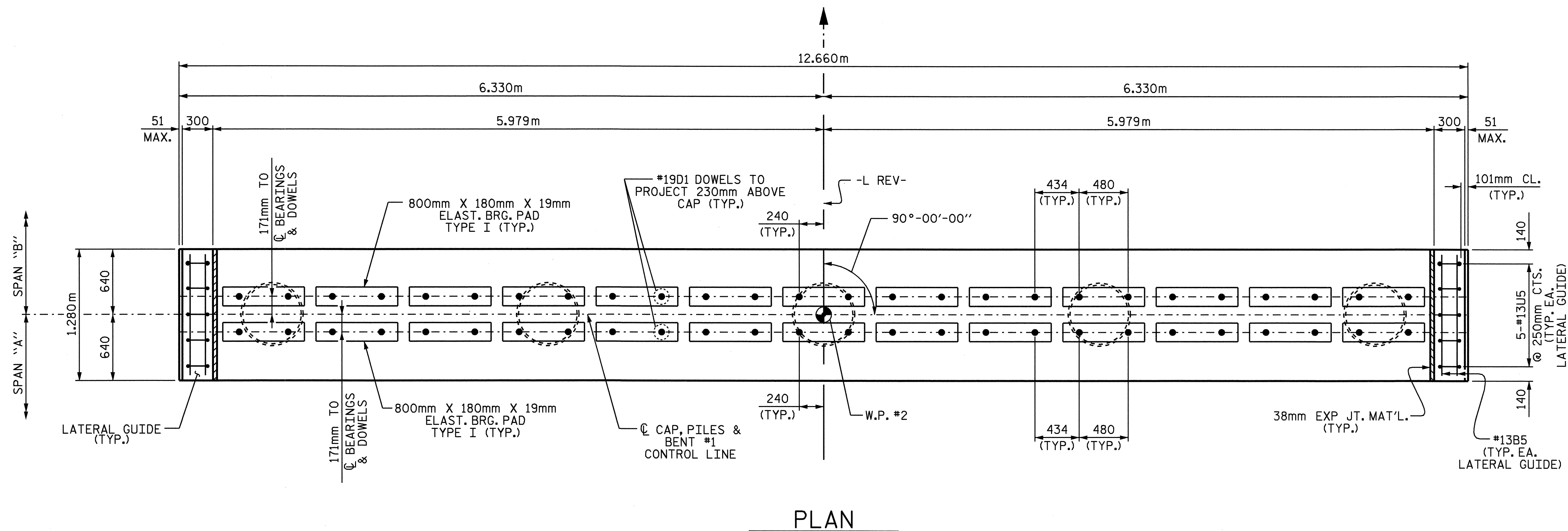
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			29



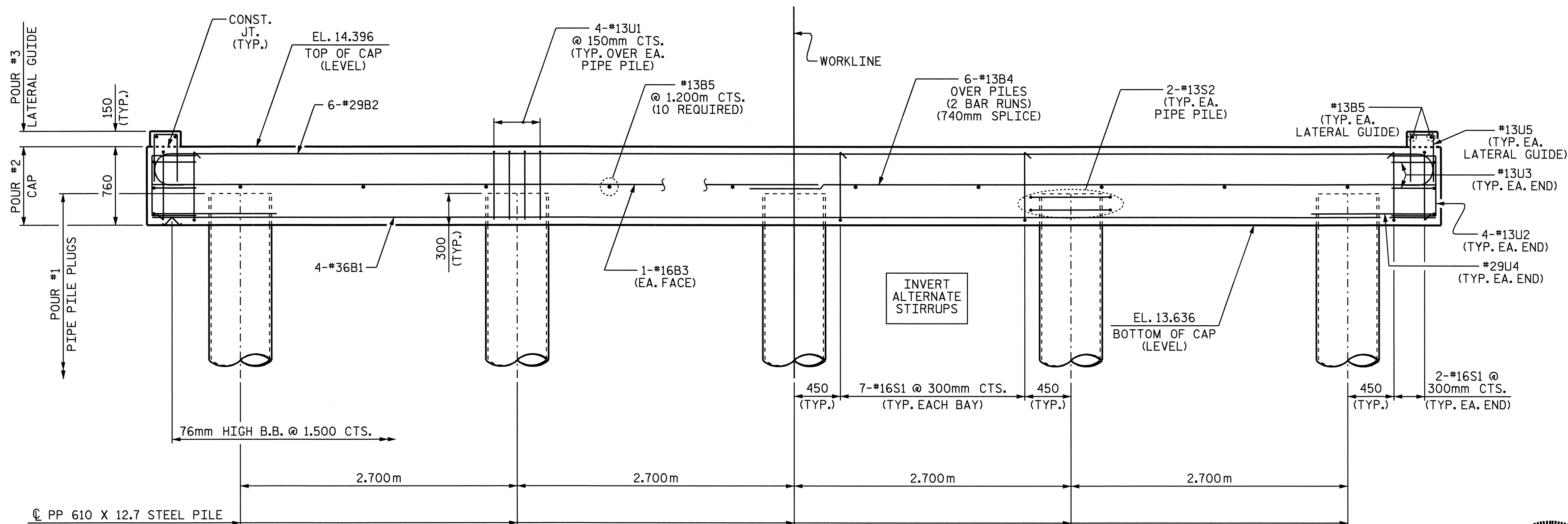
NOTES

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

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



PLAN



ELEVATION

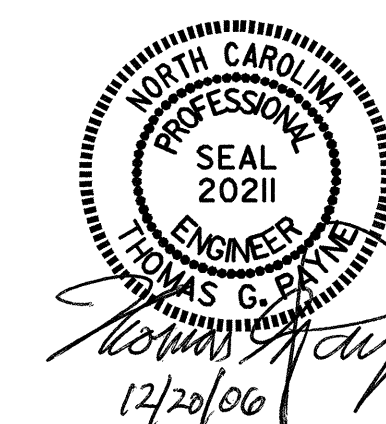
FOR REINFORCING STEEL AND OTHER DETAILS FOR PIPE PILE, SEE "PP 610 X 12.7 STEEL PILE" SHEET.

PROJECT NO. B-1381  
SAMPSON COUNTY  
STATION: 51+98.000-LREV-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

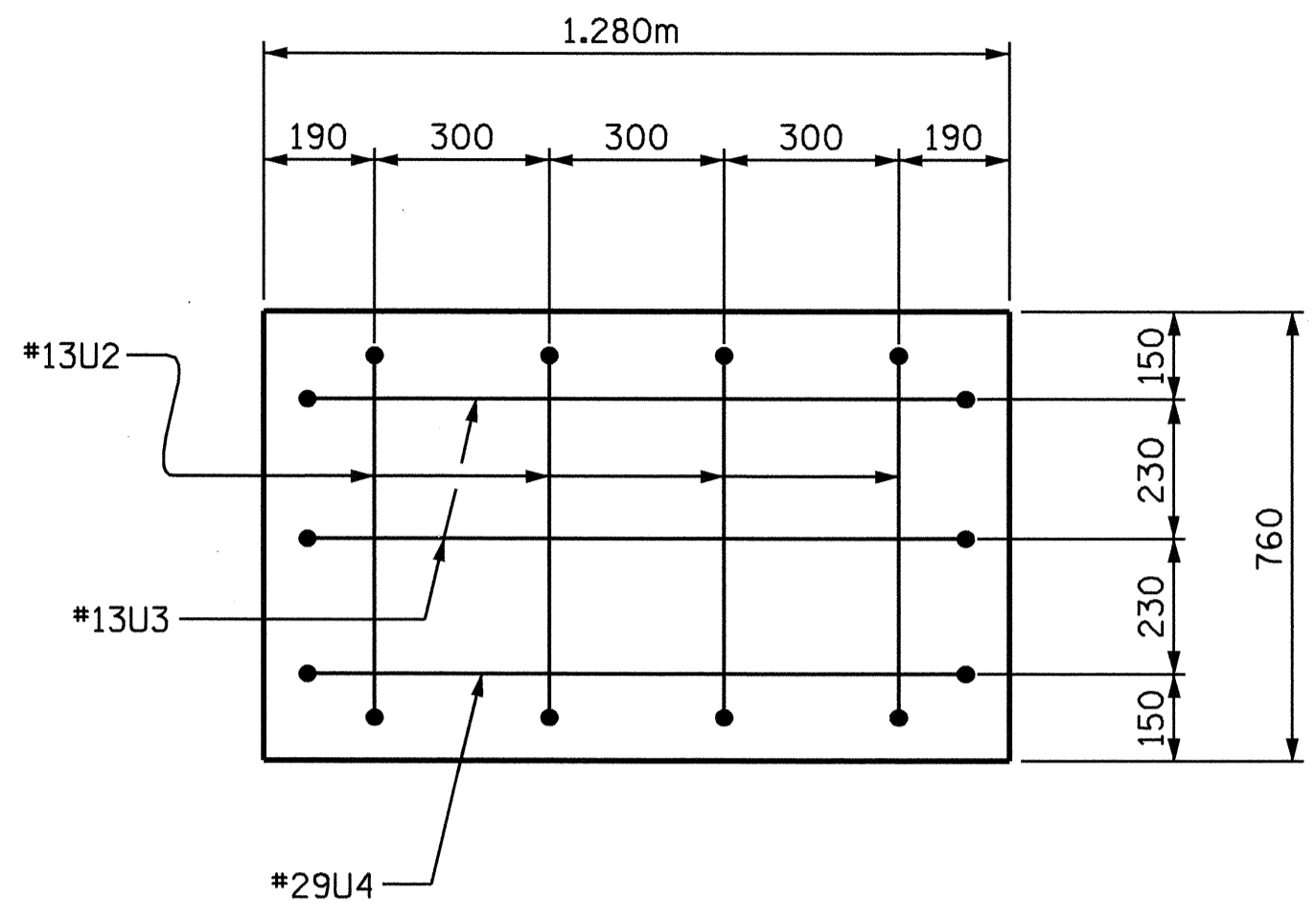
SUBSTRUCTURE  
BENT #1



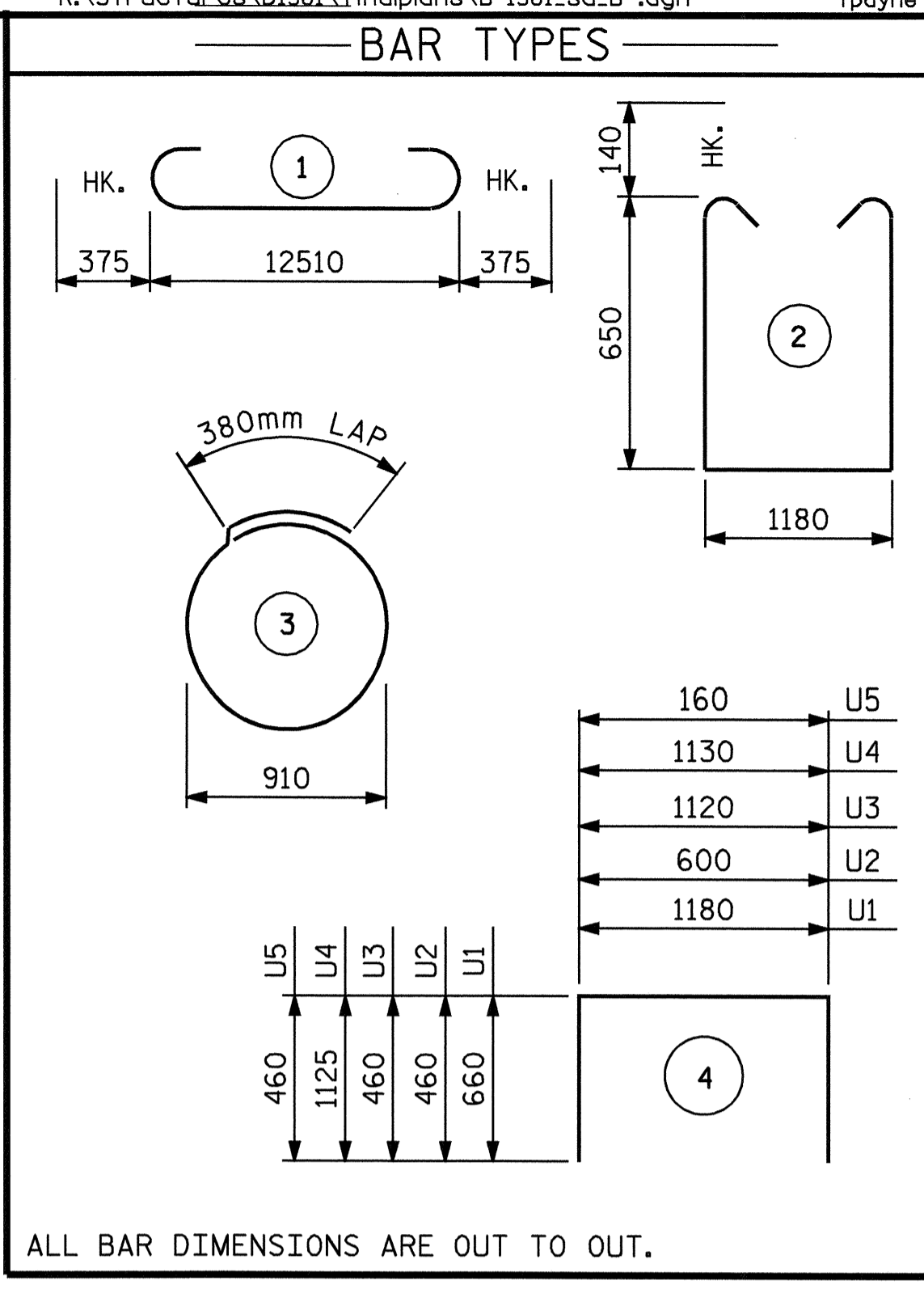
DRAWN BY: J.P. ADAMS DATE: 8/18/05  
CHECKED BY: H.A. LOCKLEAR DATE: 8/26/05

19-DEC-2006 14:20  
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tpayne

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			29



**END VIEW**

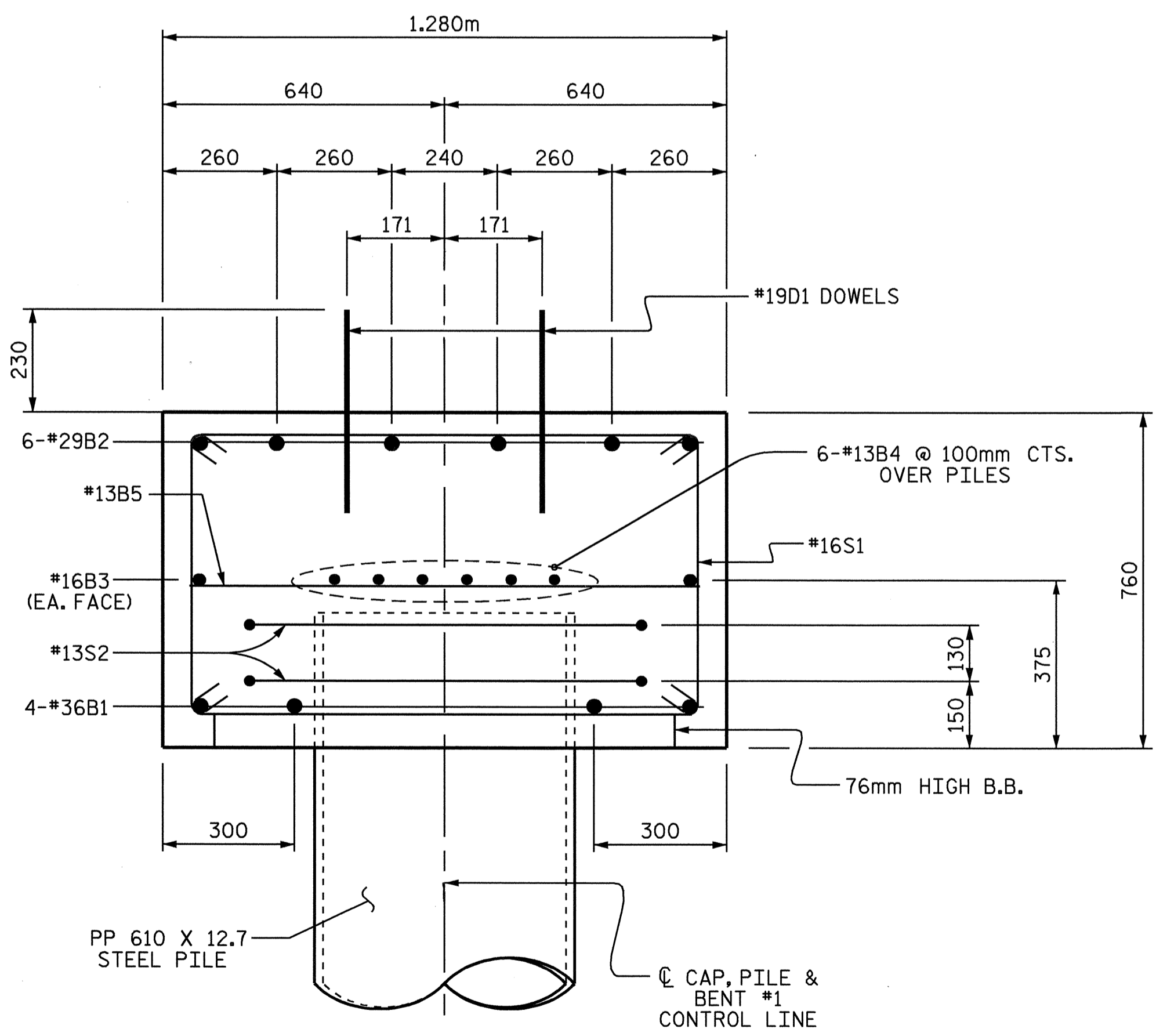


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
BENT #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	36	STR	12540	397
B2	6	29	1	13260	403
B3	2	16	STR	12540	39
B4	12	13	STR	6660	79
B5	14	13	STR	1180	16
D1	52	19	STR	460	53
S1	32	16	2	2760	137
S2	10	13	3	3240	32
U1	20	13	4	2500	50
U2	8	13	4	1520	12
U3	4	13	4	2040	8
U4	2	29	4	3380	34
U5	10	13	4	1080	11
REINFORCING STEEL					1271 KG
CLASS "A" CONCRETE					
POUR #2 CAP					11.9m <sup>3</sup>
POUR #3 LATERAL GUIDES					0.1m <sup>3</sup>
TOTAL					12.0m <sup>3</sup>
PP610 X 12.7 STEEL PILES					
No. = 5					92.5 METERS
PIPE PILE PLATES					No. = 5 EA.
PILE REDRIVES					No. = 5 EA.

NOTE: CONCRETE DISPLACED BY 610mm PIPE PILES HAS BEEN DEDUCTED.

FOR CONCRETE QUANTITY FOR POUR #1 (PIPE PILE PLUGS) SEE THE SHEET ENTITLED "610mm STEEL PIPE PILES".



**SECTION THRU CAP**

REINFORCING STEEL IN PIPE PILE NOT SHOWN FOR CLARITY.

PROJECT NO. B-1381  
SAMPSON COUNTY  
 STATION: 51+98.000-LREV-

SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT #1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-17
TOTAL SHEETS					29



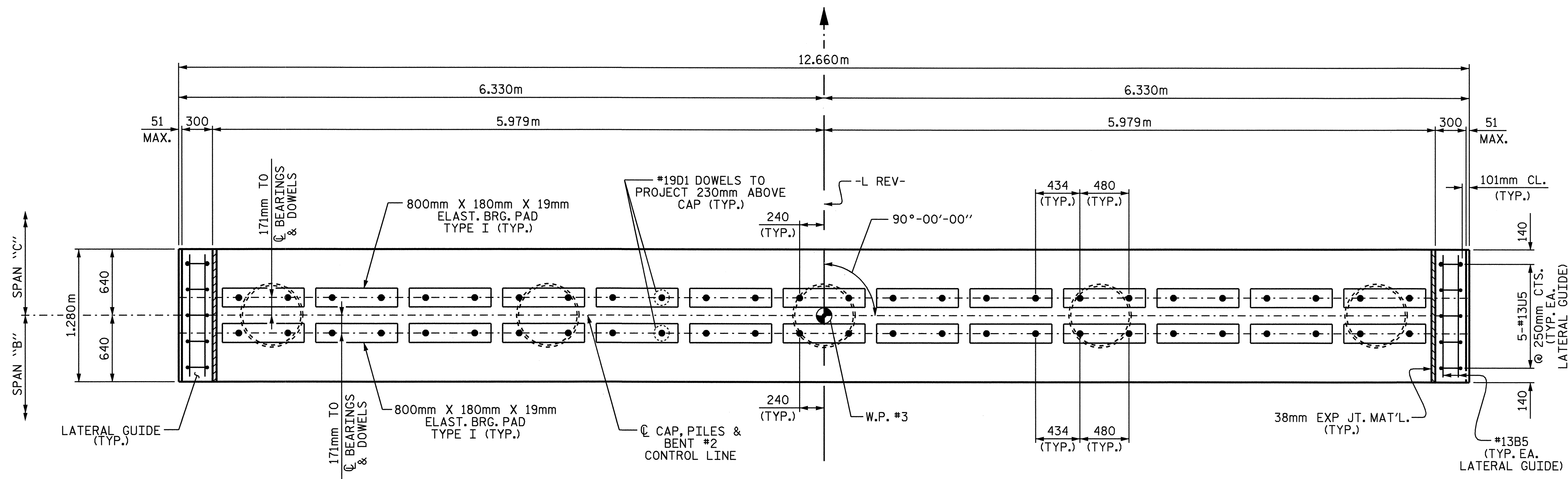
DRAWN BY : J.P. ADAMS DATE : 8/19/05  
 CHECKED BY : H.A. LOCKLEAR DATE : 8/26/05



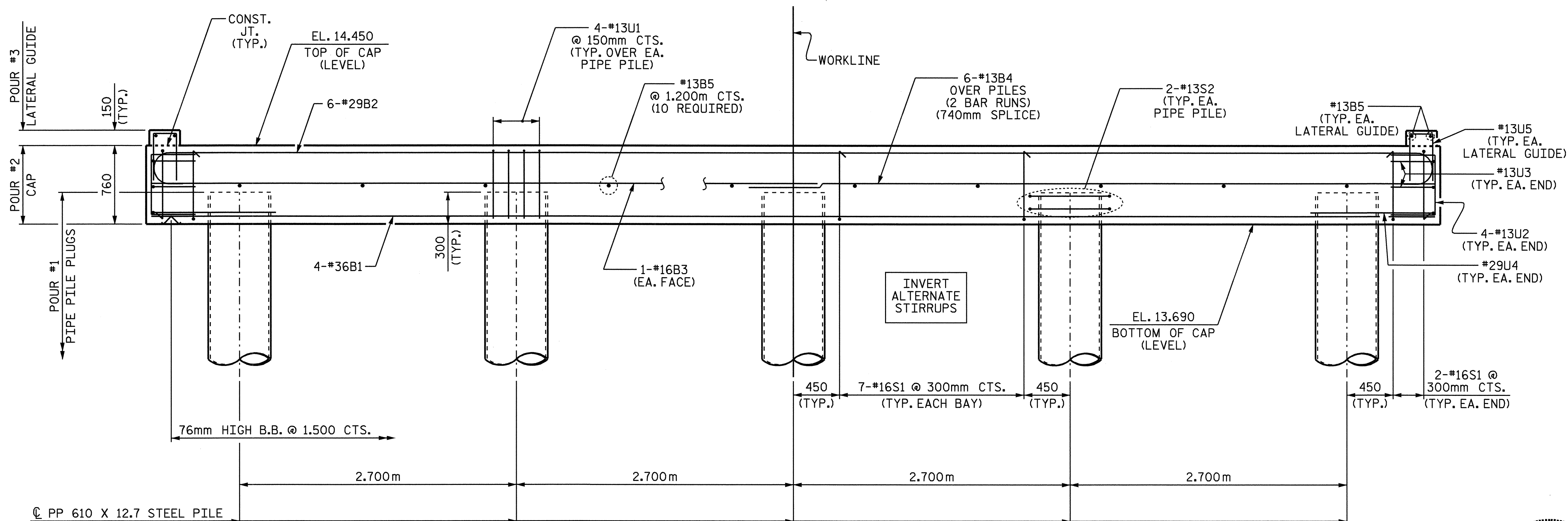
NOTES

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

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



PLAN



ELEVATION

FOR REINFORCING STEEL AND OTHER DETAILS FOR PIPE PILE, SEE "PP 610 X 12.7 STEEL PILE" SHEET.

PROJECT NO. B-1381  
SAMPSON COUNTY  
STATION: 51+98.000-LREV-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

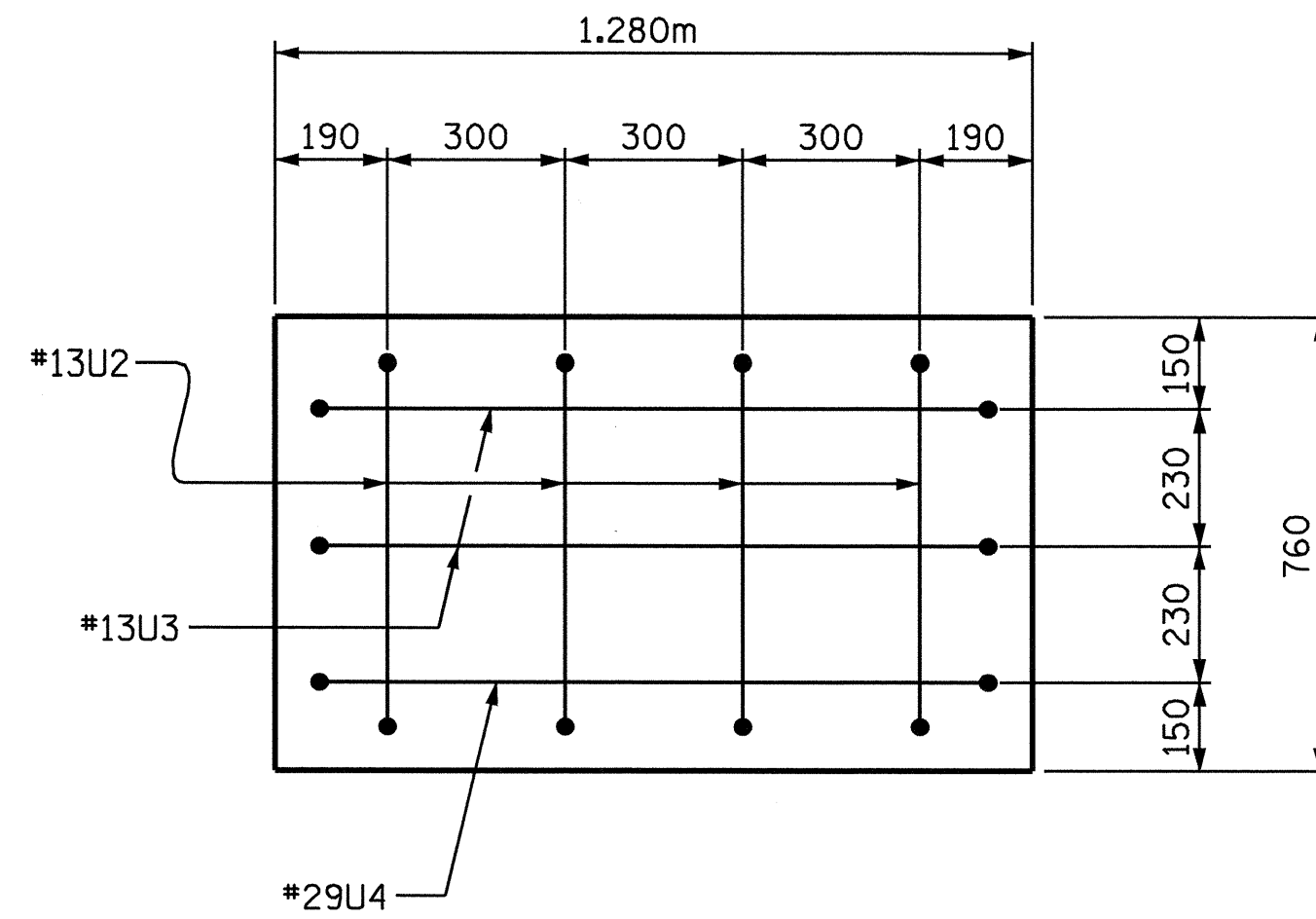
SUBSTRUCTURE  
BENT #2



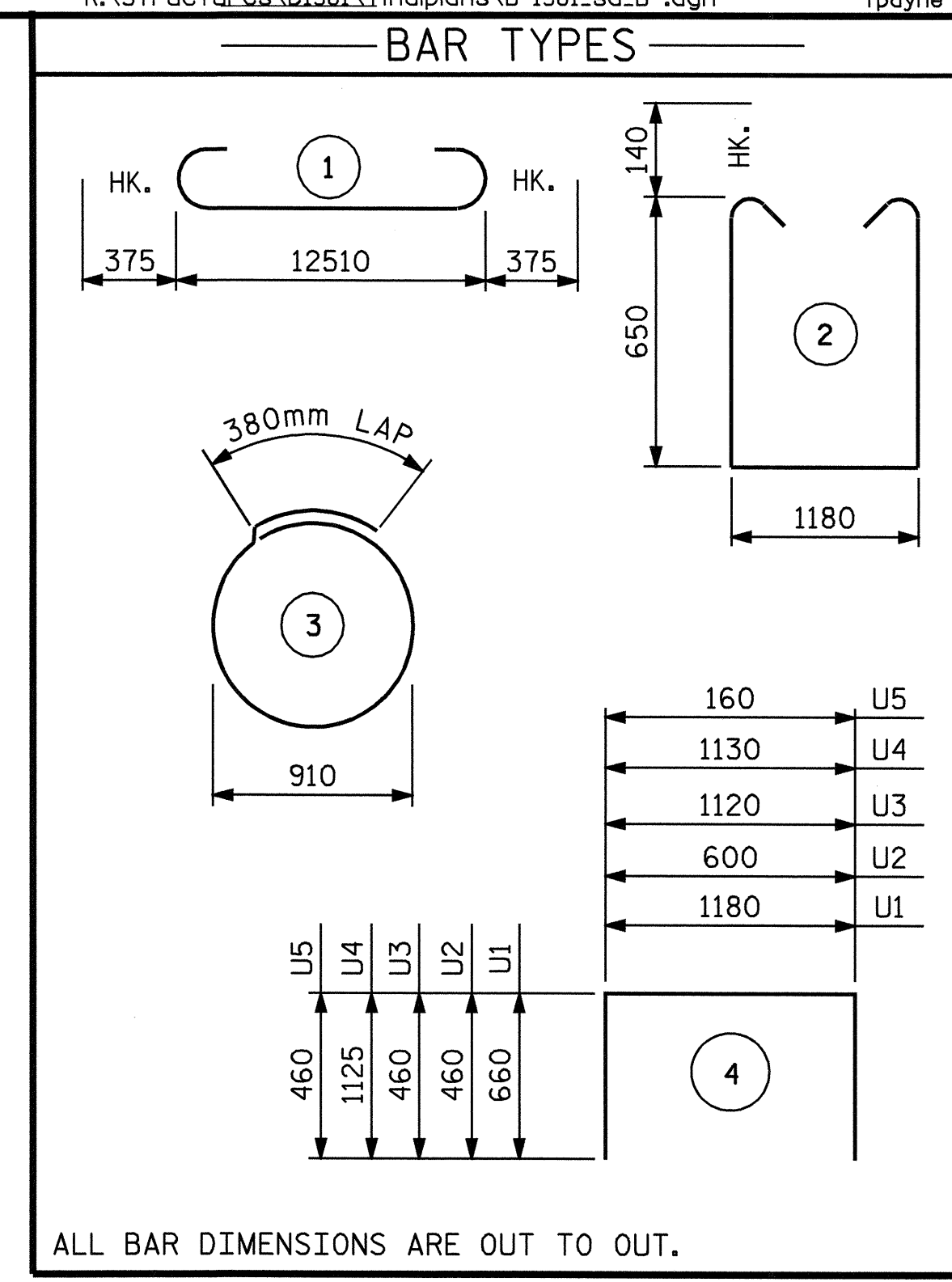
DRAWN BY: J.P. ADAMS DATE: 8/18/05  
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19-DEC-2006 14:21  
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REVISIONS						SHEET NO. S-18
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 29
2			4			



END VIEW

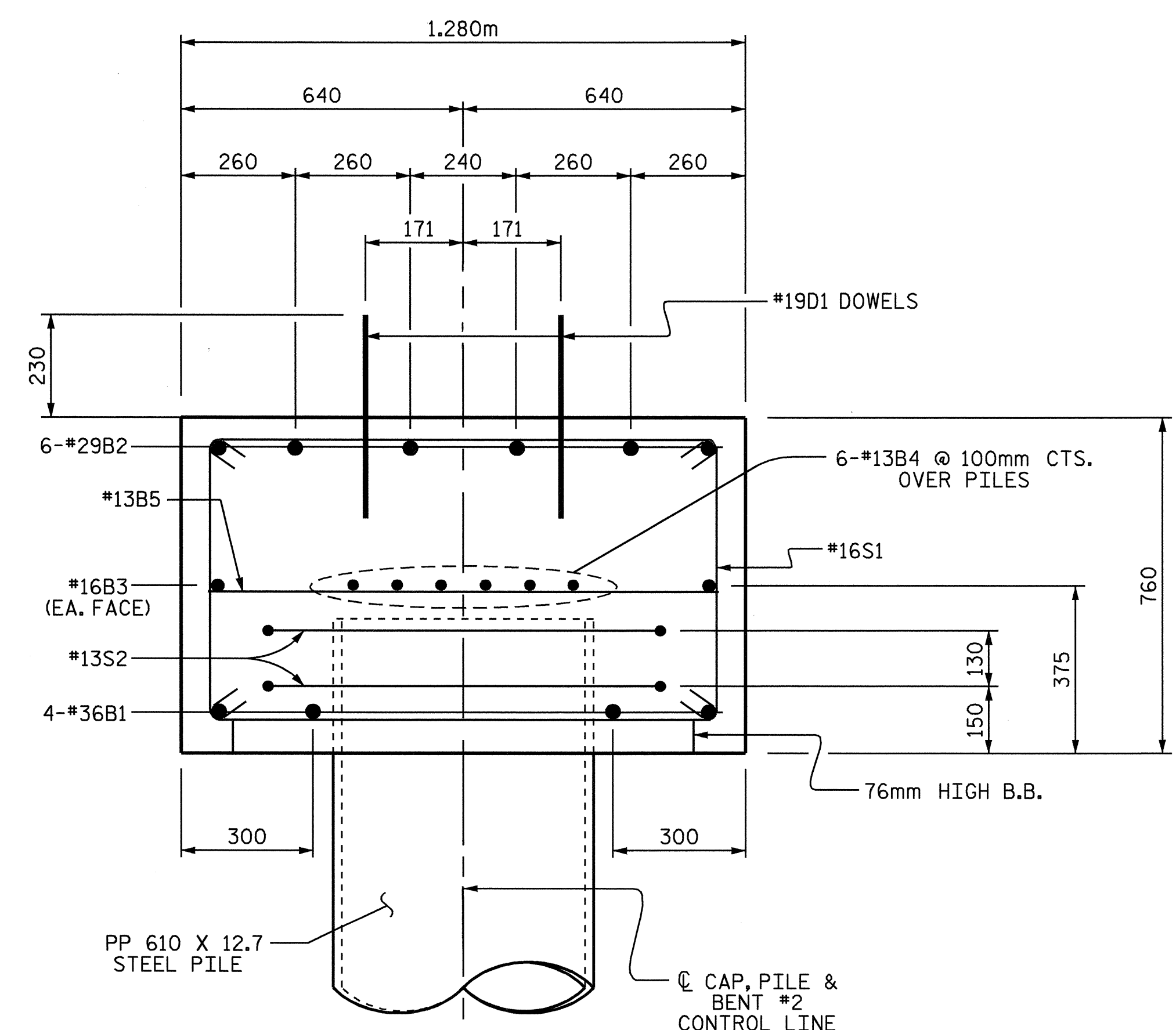


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
BENT #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	36	STR	12540	397
B2	6	29	1	13260	403
B3	2	16	STR	12540	39
B4	12	13	STR	6660	79
B5	14	13	STR	1180	16
D1	52	19	STR	460	53
S1	32	16	2	2760	137
S2	10	13	3	3240	32
U1	20	13	4	2500	50
U2	8	13	4	1520	12
U3	4	13	4	2040	8
U4	2	29	4	3380	34
U5	10	13	4	1080	11
REINFORCING STEEL					1271 KG
CLASS "A" CONCRETE					
POUR #2 CAP					11.9m <sup>3</sup>
POUR #3 LATERAL GUIDES					0.1m <sup>3</sup>
TOTAL					12.0m <sup>3</sup>
PP610 X 12.7 STEEL PILES					
No. = 5					85.0 METERS
PIPE PILE PLATES					No. = 5 EA.
PILE REDRIVES					No. = 5 EA.

NOTE: CONCRETE DISPLACED BY 610mm PIPE PILES HAS BEEN DEDUCTED.

FOR CONCRETE QUANTITY FOR POUR #1 (PIPE PILE PLUGS) SEE THE SHEET ENTITLED "610mm STEEL PIPE PILES".



SECTION THRU CAP

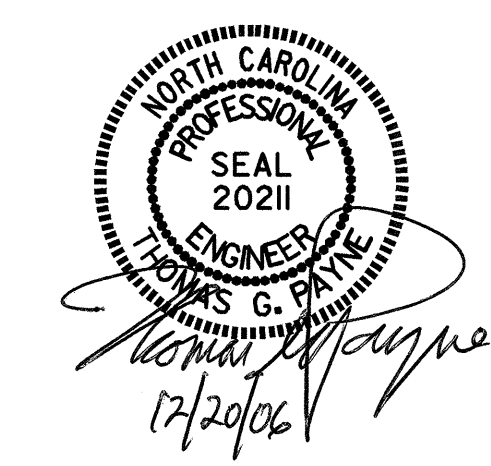
REINFORCING STEEL IN PIPE PILE NOT SHOWN FOR CLARITY.

PROJECT NO. B-1381  
SAMPSON COUNTY  
 STATION: 51+98.000-LREV-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 BENT #2



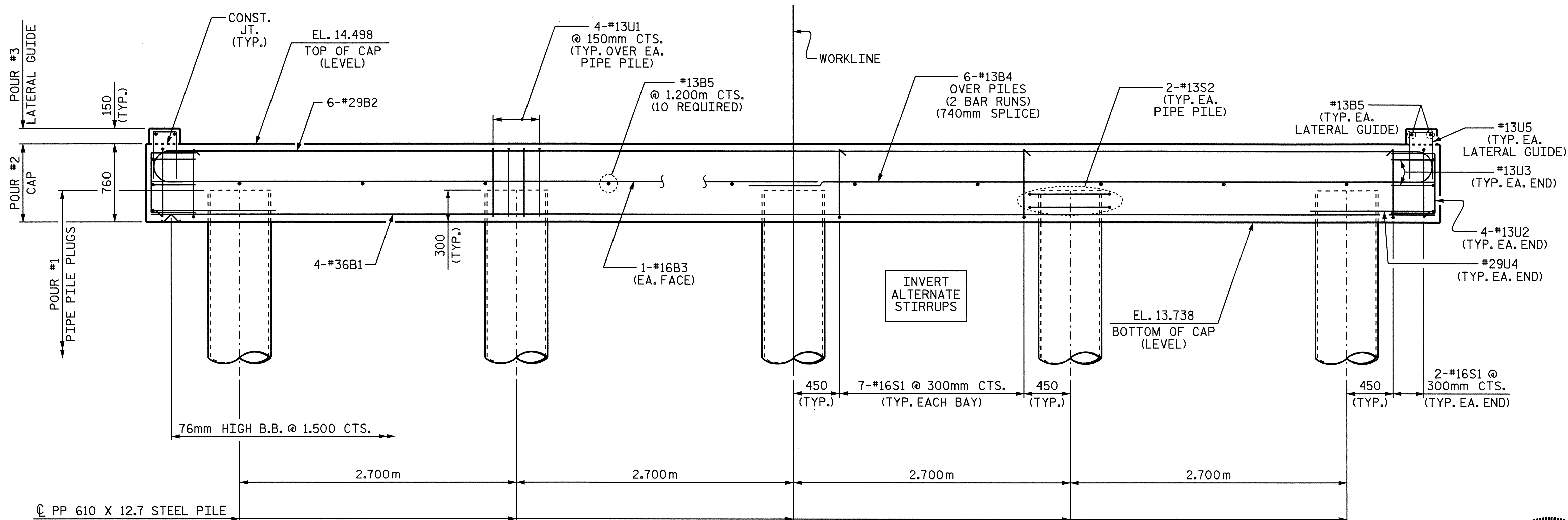
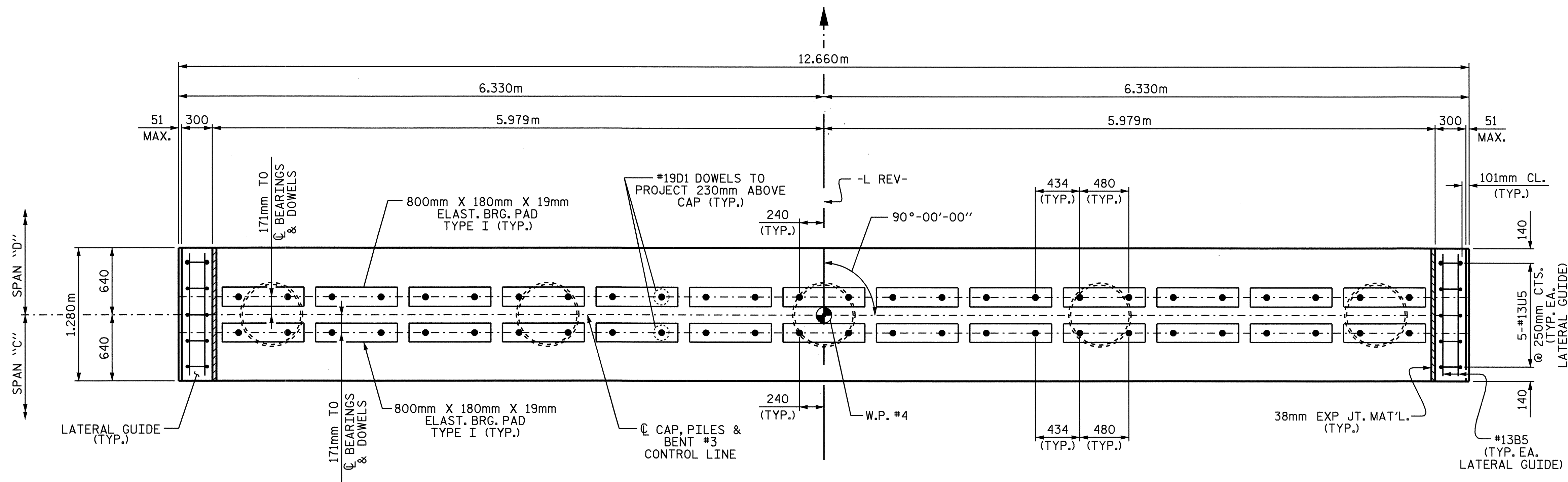
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			29

DRAWN BY : J.P. ADAMS DATE : 8/19/05  
 CHECKED BY : H.A. LOCKLEAR DATE : 8/26/05

NOTES

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

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



FOR REINFORCING STEEL AND OTHER DETAILS FOR PIPE PILE, SEE "PP 610 X 12.7 STEEL PILE" SHEET.

PROJECT NO. B-1381  
SAMPSON COUNTY  
STATION: 51+98.000-LREV-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
BENT #3



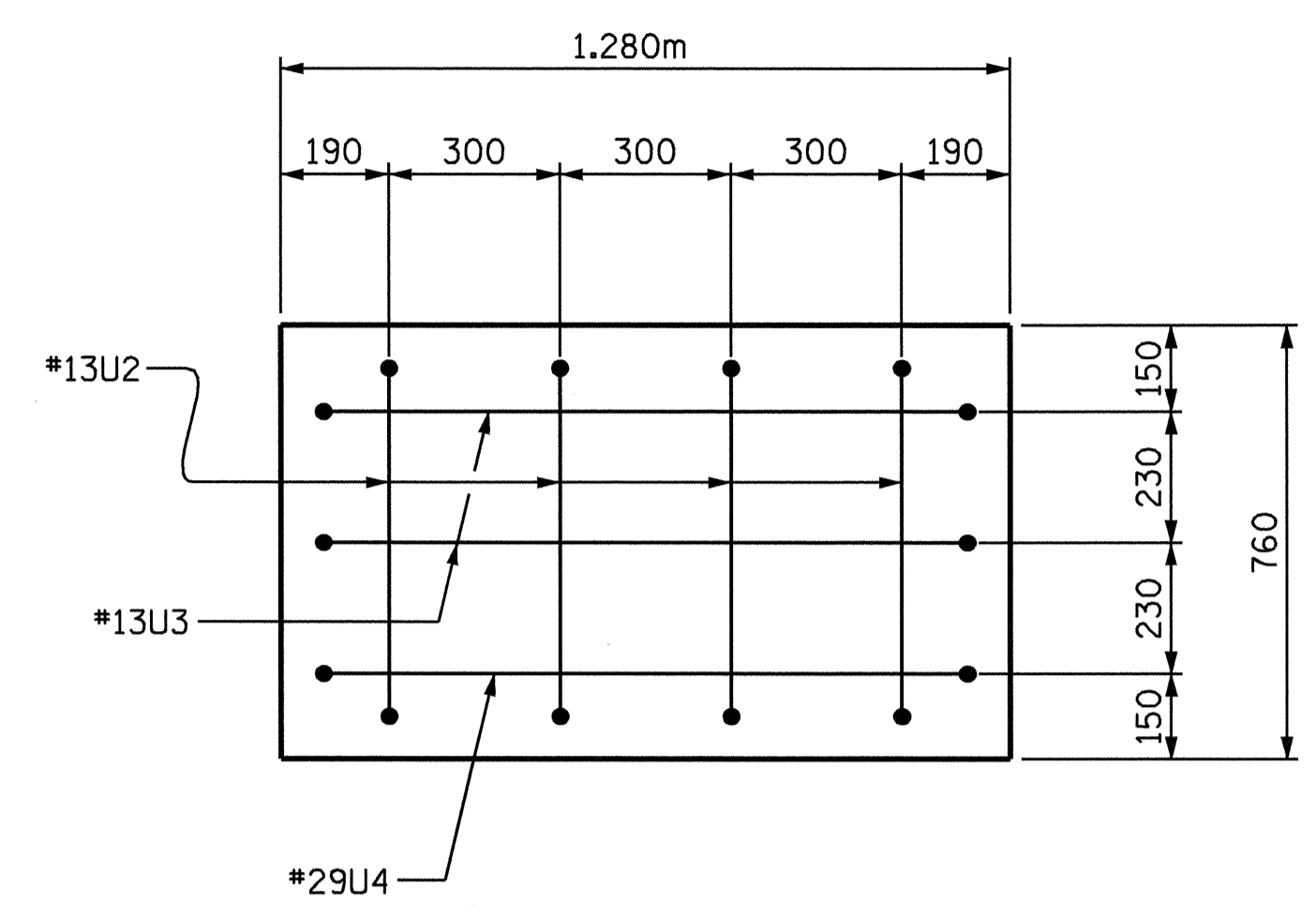
DRAWN BY: J.P. ADAMS DATE: 8/18/05  
CHECKED BY: H.A. LOCKLEAR DATE: 8/26/05

19-DEC-2006 14:05  
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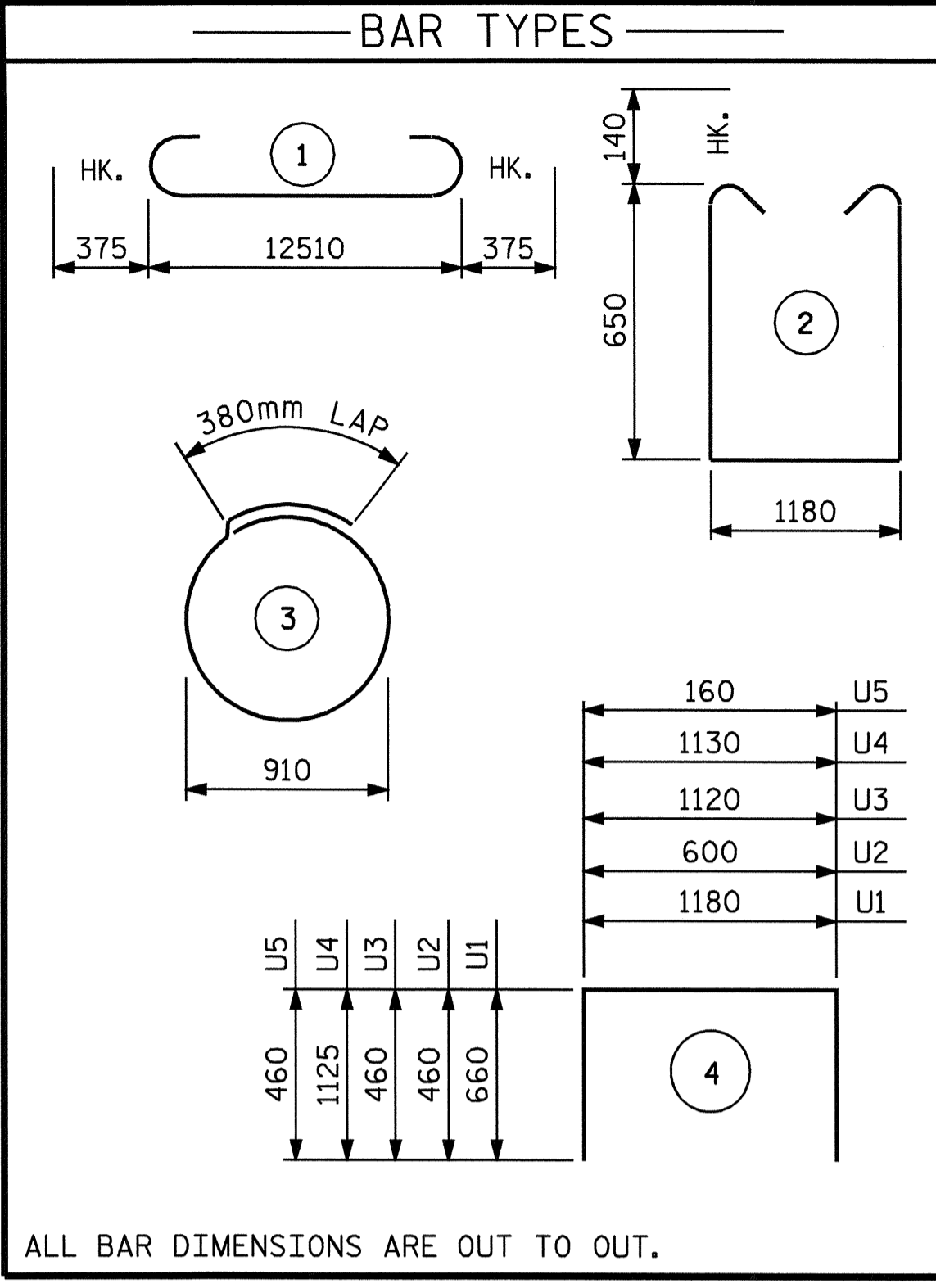
REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	

TOTAL SHEETS: 29





END VIEW

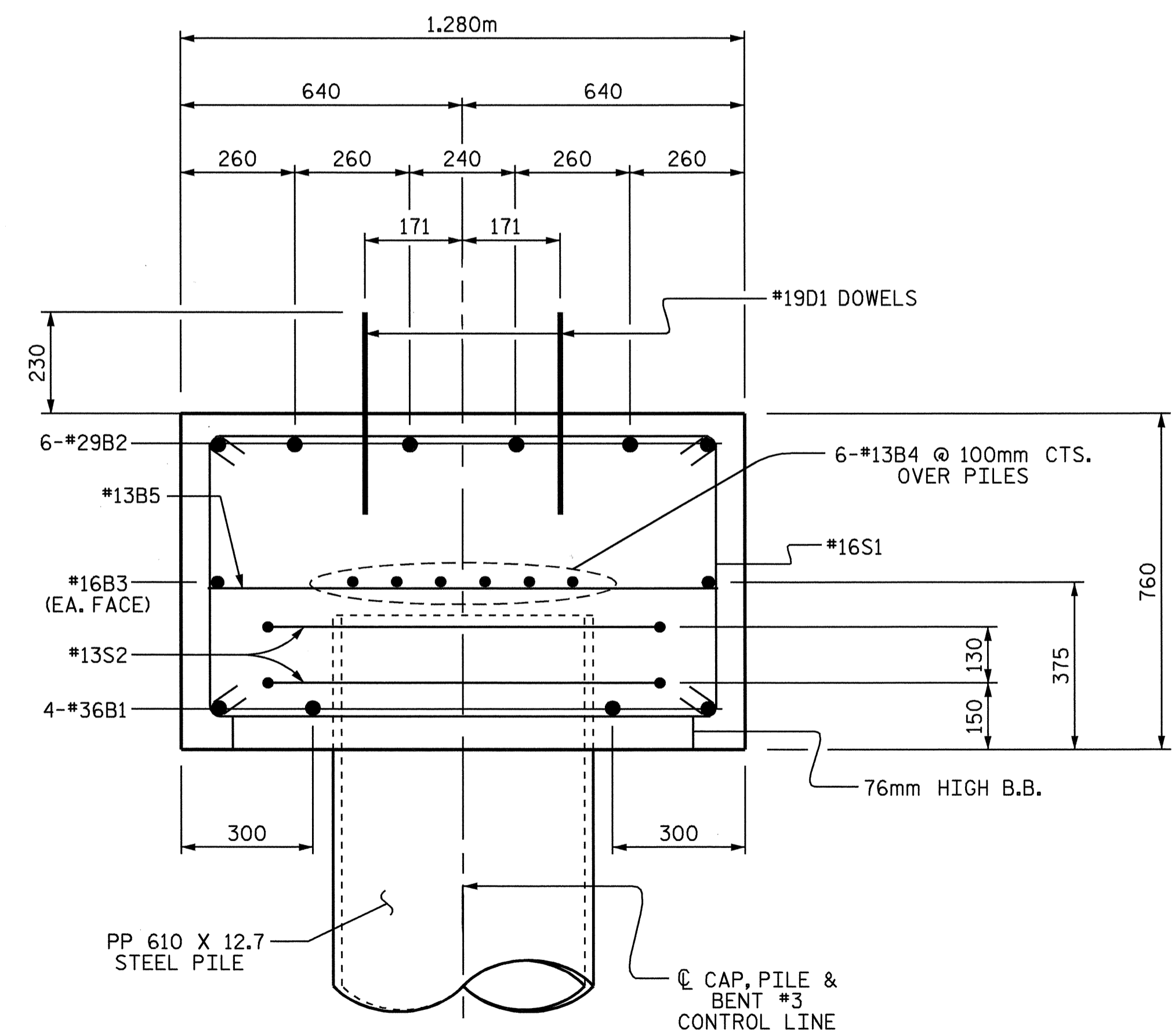


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
BENT #3					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	36	STR	12540	397
B2	6	29	1	13260	403
B3	2	16	STR	12540	39
B4	12	13	STR	6660	79
B5	14	13	STR	1180	16
D1	52	19	STR	460	53
S1	32	16	2	2760	137
S2	10	13	3	3240	32
U1	20	13	4	2500	50
U2	8	13	4	1520	12
U3	4	13	4	2040	8
U4	2	29	4	3380	34
U5	10	13	4	1080	11
REINFORCING STEEL					1271 KG
CLASS "A" CONCRETE					
POUR #2 CAP					11.9m <sup>3</sup>
POUR #3 LATERAL GUIDES					0.1m <sup>3</sup>
TOTAL					12.0m <sup>3</sup>
PP610 X 12.7 STEEL PILES					
No. = 5					82.5 METERS
PIPE PILE PLATES					No. = 5 EA.
PILE REDRIVES					No. = 5 EA.

NOTE: CONCRETE DISPLACED BY 610mm PIPE PILES HAS BEEN DEDUCTED.

FOR CONCRETE QUANTITY FOR POUR #1 (PIPE PILE PLUGS) SEE THE SHEET ENTITLED "610mm STEEL PIPE PILES".



SECTION THRU CAP

REINFORCING STEEL IN PIPE PILE NOT SHOWN FOR CLARITY.

PROJECT NO. B-1381  
SAMPSON COUNTY  
 STATION: 51+98.000-LREV-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 BENT #3



DRAWN BY : J.P. ADAMS DATE : 8/19/05  
 CHECKED BY : H.A. LOCKLEAR DATE : 8/26/05

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			29

NOTES

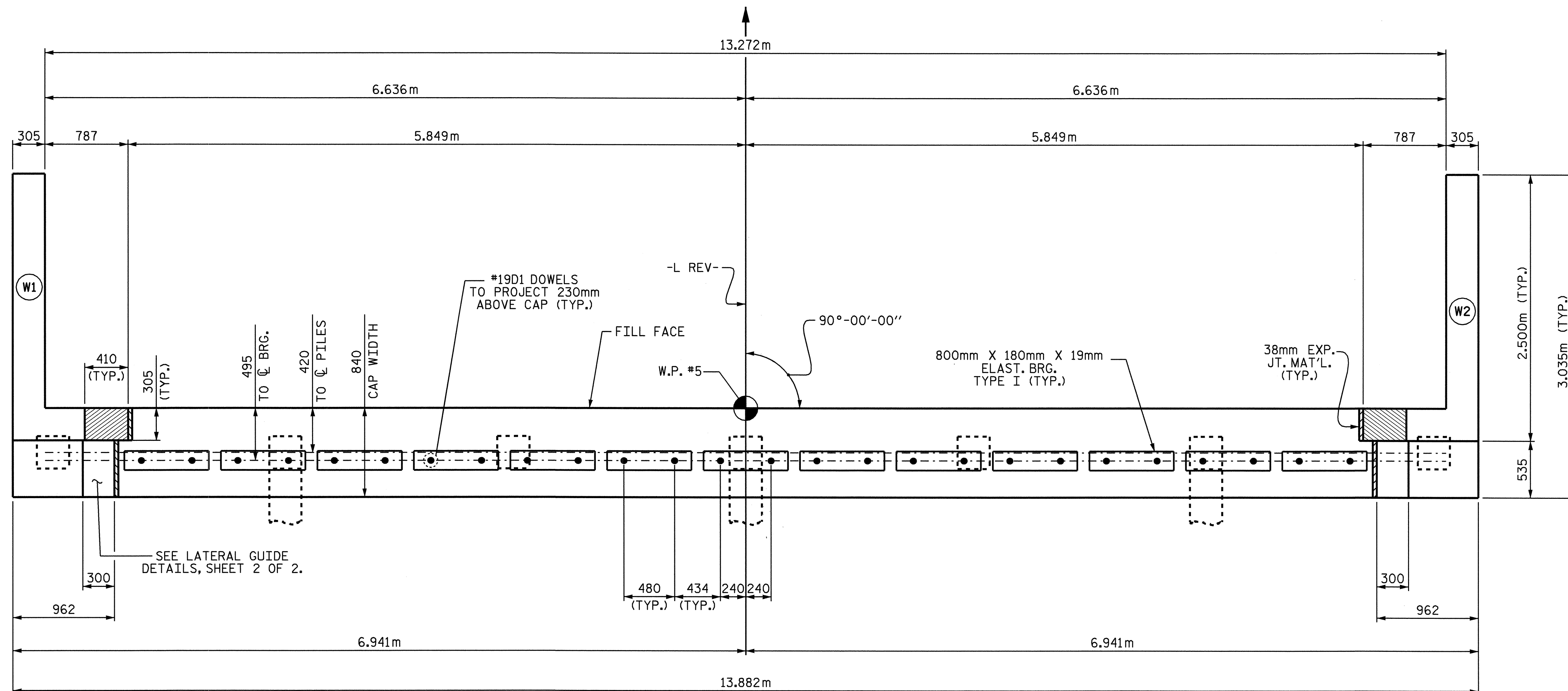
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS

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.

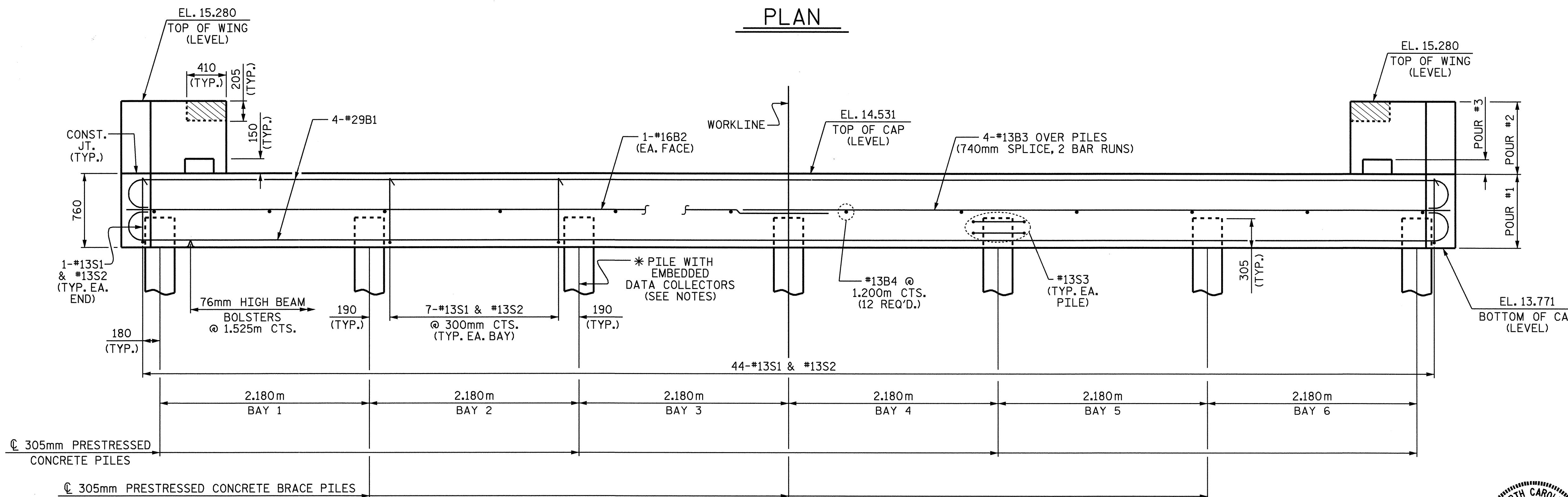
THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER CORED SLAB UNITS ARE IN PLACE.

\* INDICATED PILE WILL CONTAIN EMBEDDED DATA COLLECTORS. SEE SPECIAL PROVISIONS AND SHEET ENTITLED "305mm PRESTRESSED CONCRETE TEST PILE WITH EMBEDDED DATA COLLECTORS".

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



PLAN



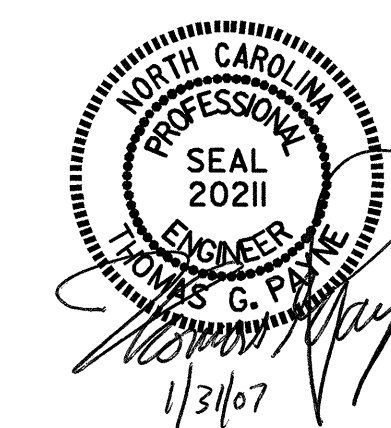
ELEVATION

PROJECT NO. B-1381  
SAMPSON COUNTY  
STATION: 51+98.000-LREV-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
END BENT #2

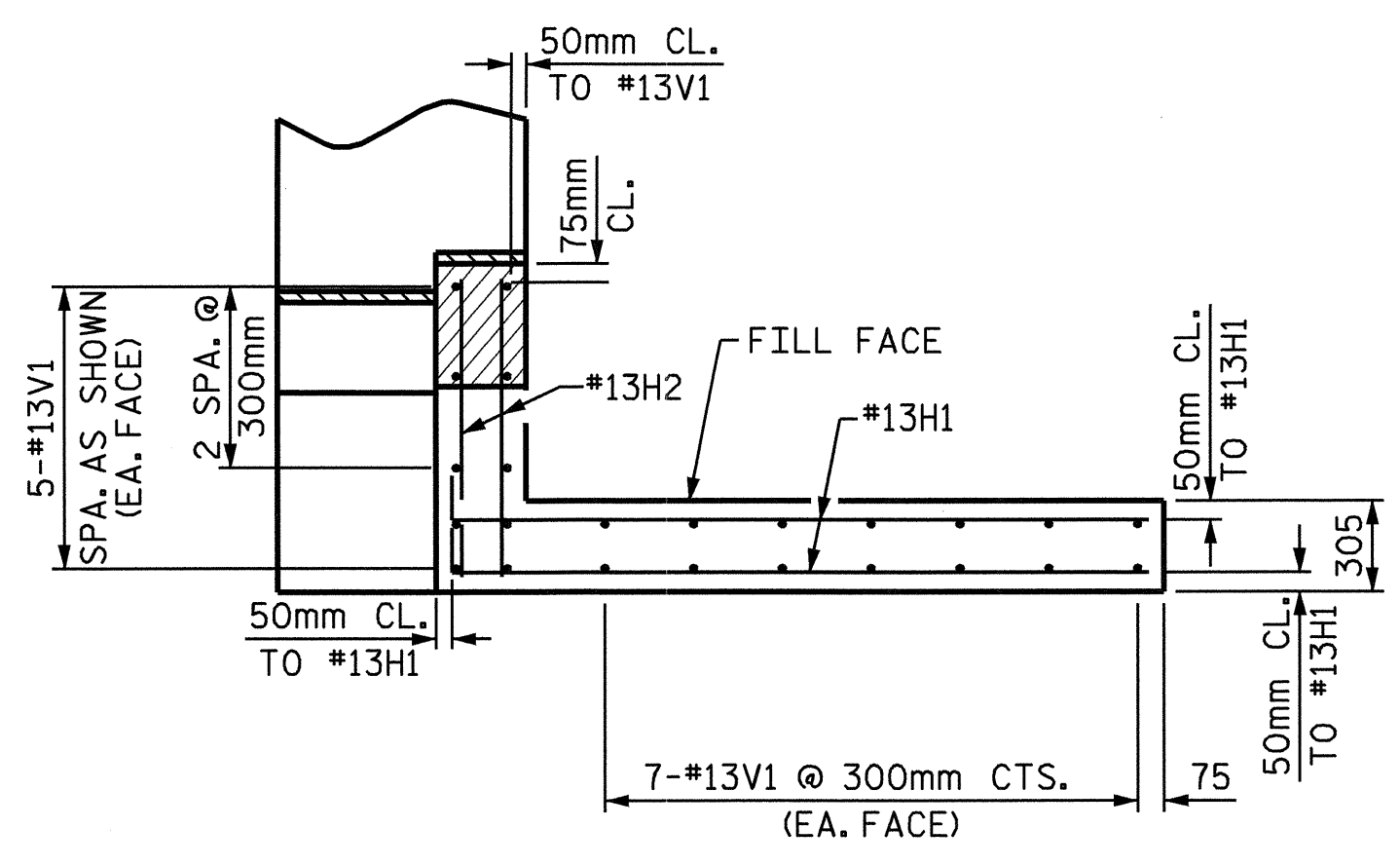


DRAWN BY: J.P. ADAMS DATE: 7/27/05  
CHECKED BY: S.H. SOCKWELL DATE: 8/9/05

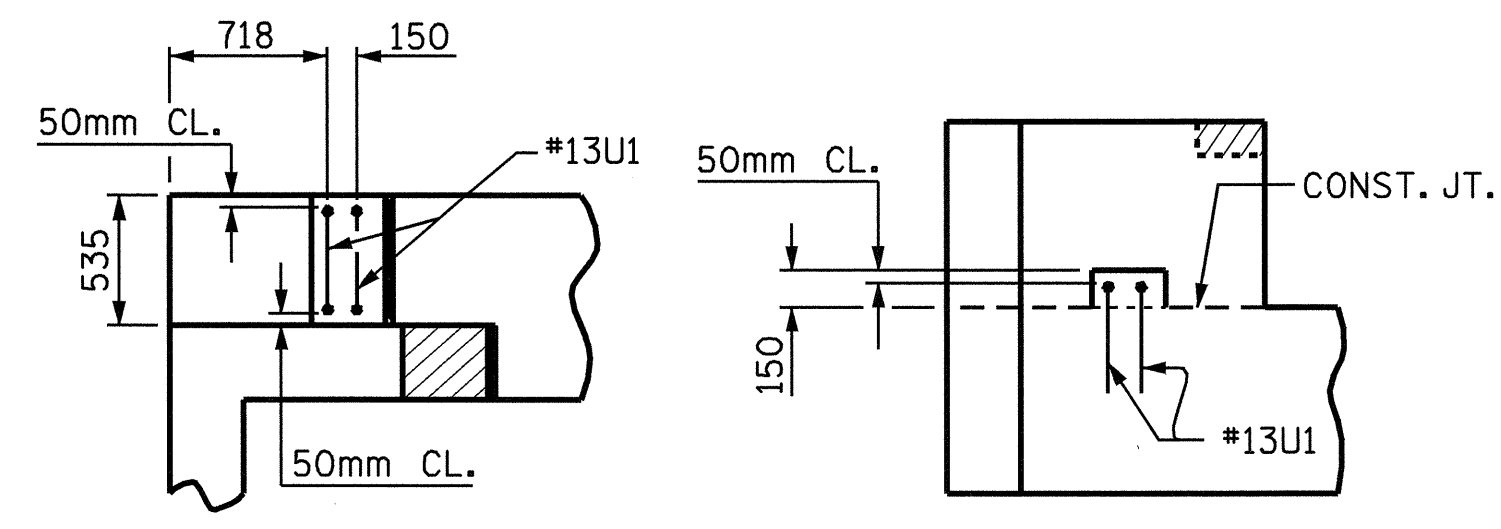
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			29

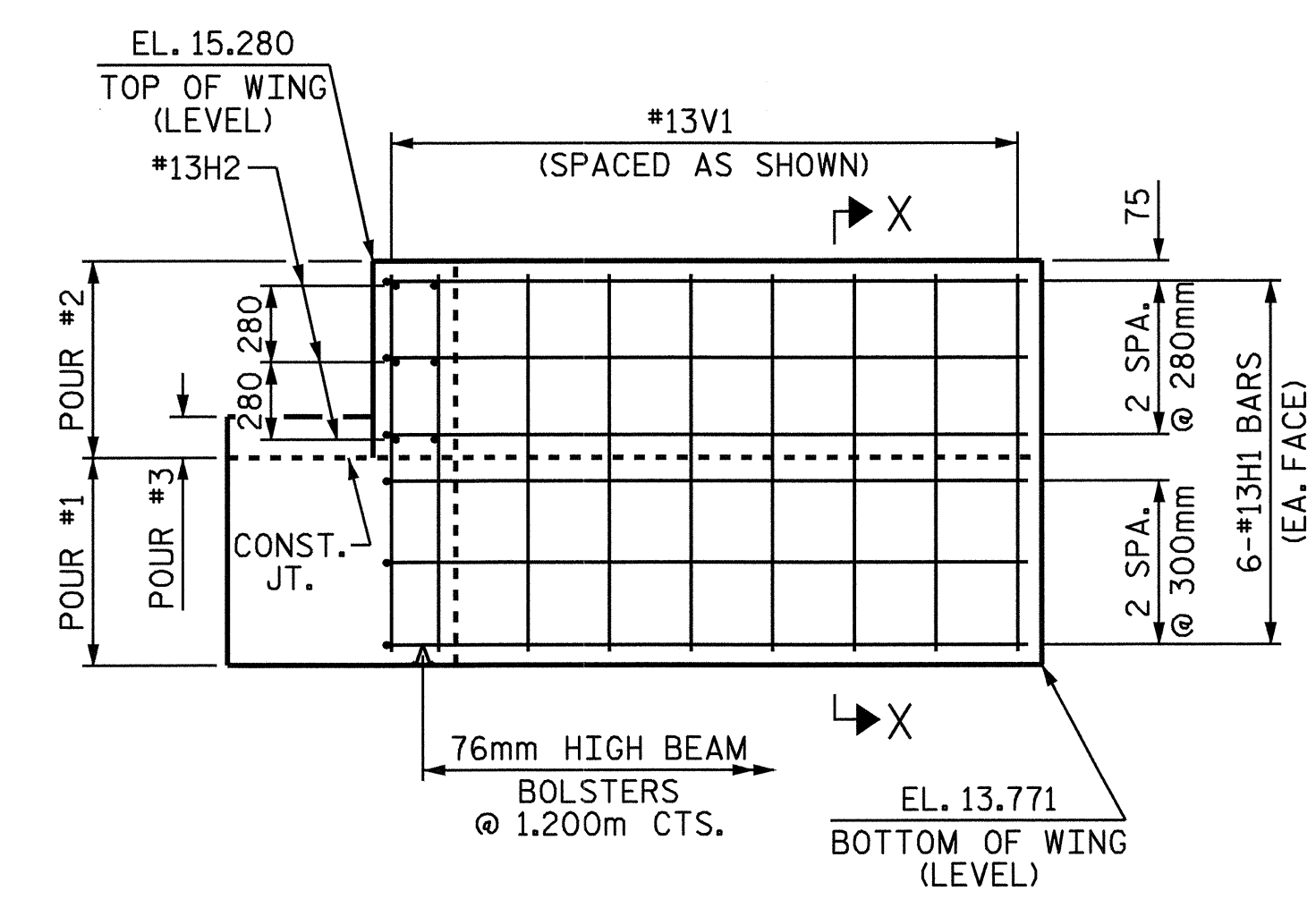




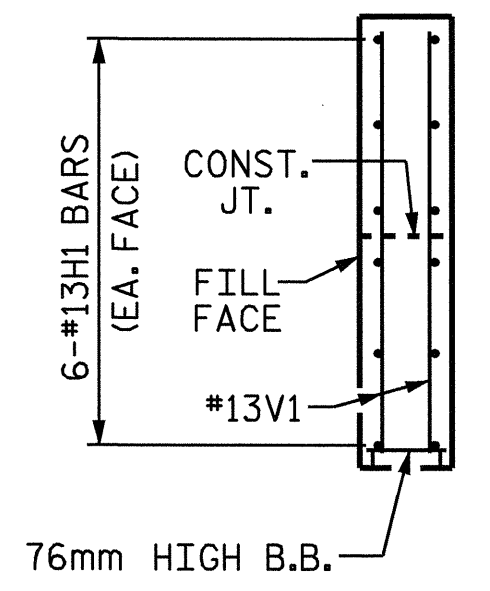
**PLAN OF WING**  
WING 2 SHOWN, WING 1 SIMILAR.



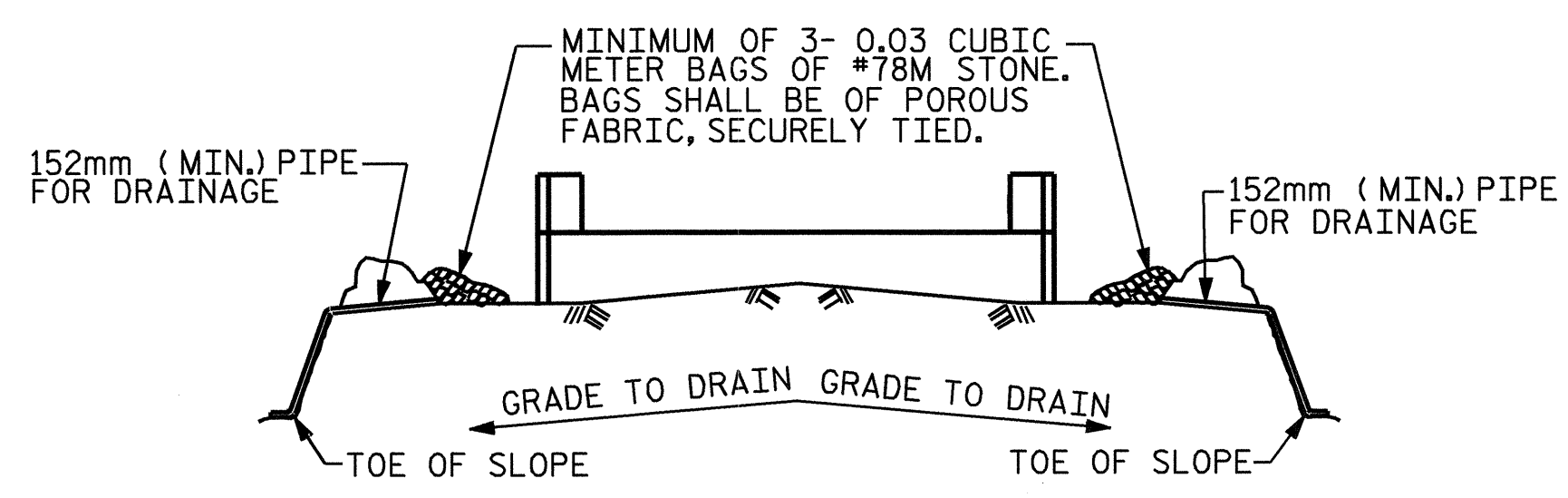
**LATERAL GUIDE DETAILS**  
(EACH END SIMILAR)



**ELEVATION OF WING**  
WING 2 SHOWN, WING 1 SIMILAR.



**SECTION X-X**



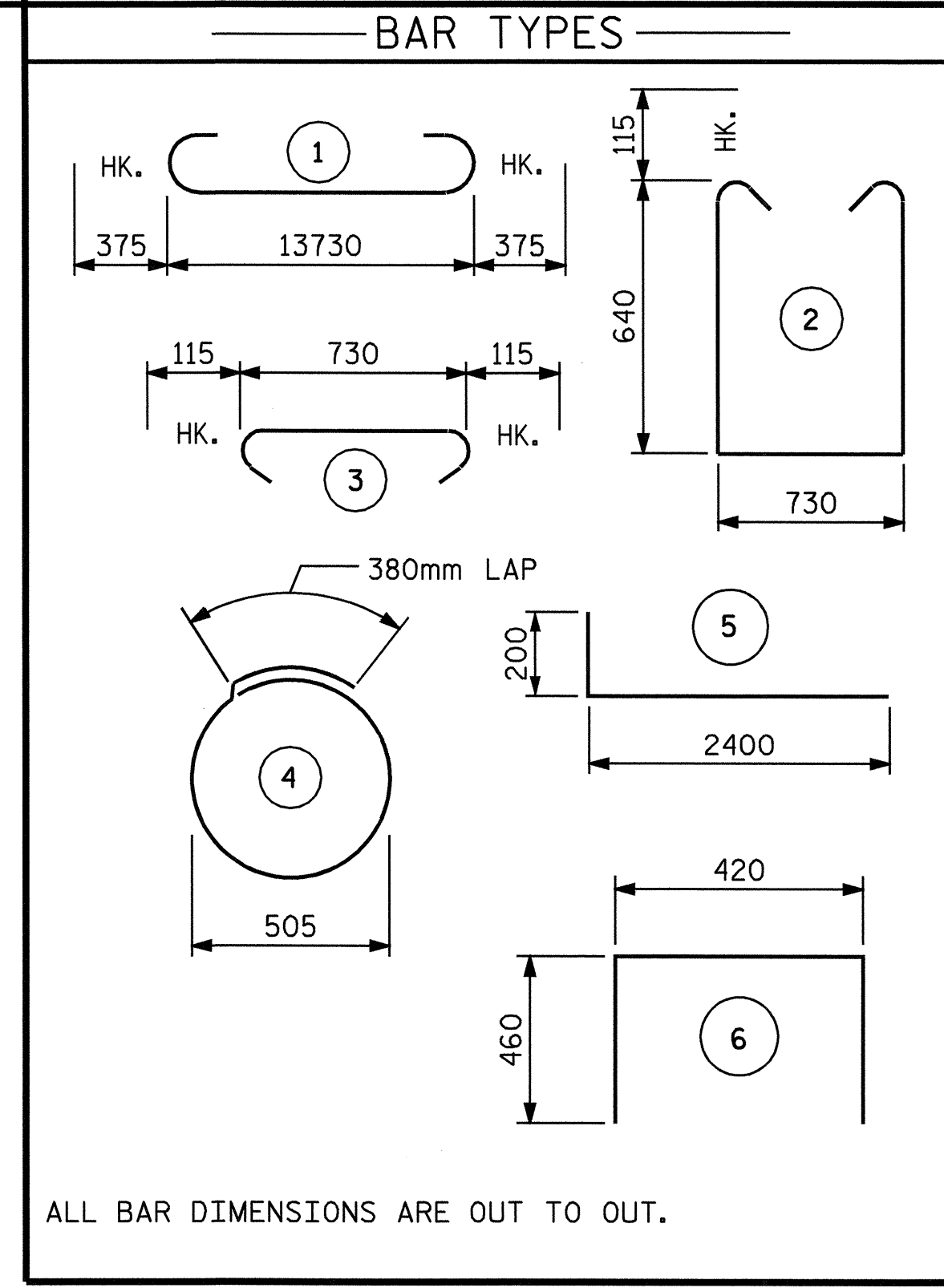
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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 FOR THE SEVERAL PAY ITEMS.

**TEMPORARY DRAINAGE AT END BENT**

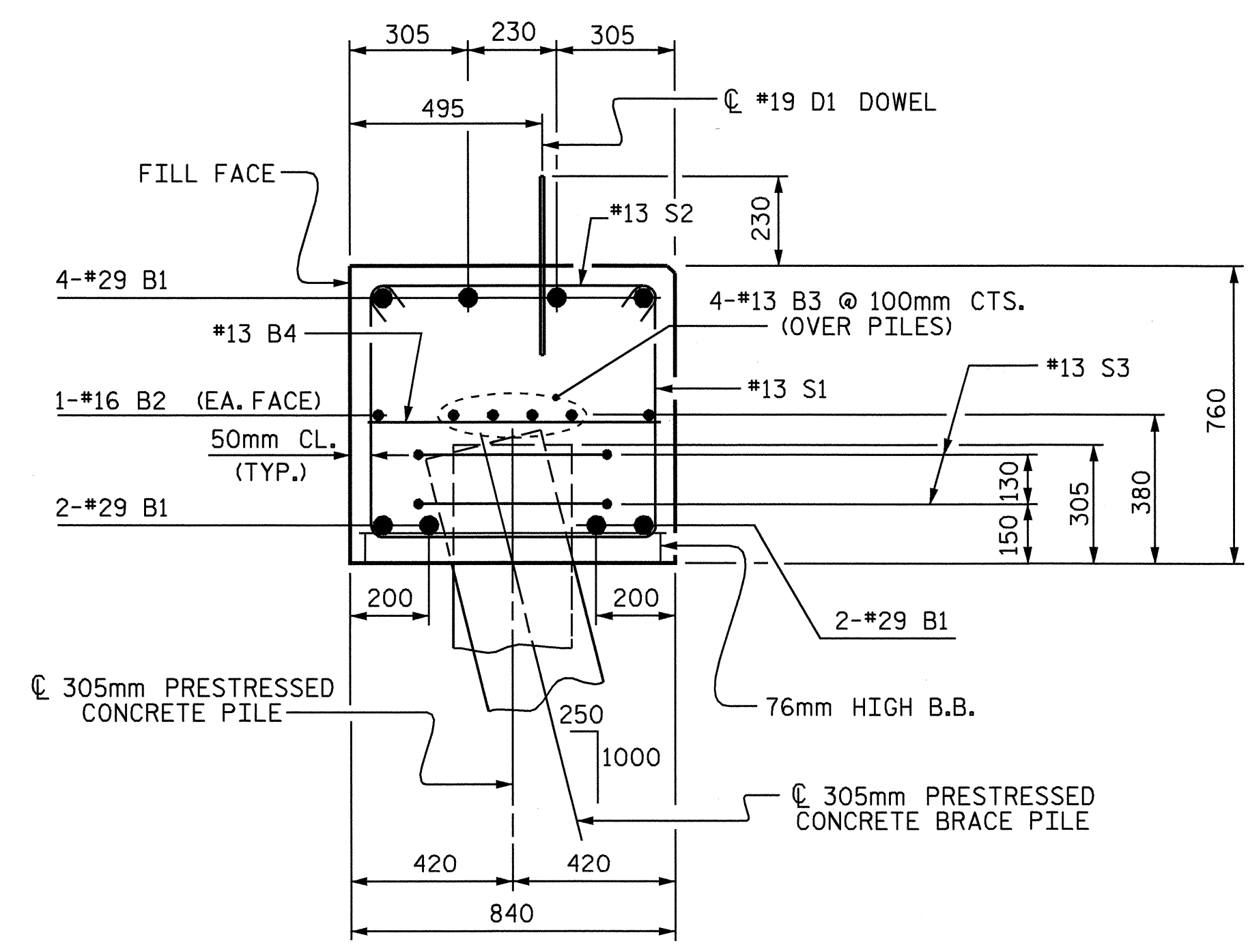
DRAWN BY : J.P. ADAMS DATE : 8/1/05  
CHECKED BY : S.H. SOCKWELL DATE : 8/9/05



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
END BENT #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	29	1	14480	586
B2	2	16	STR	13780	43
B3	8	13	STR	7300	58
B4	12	13	STR	740	9
D1	26	19	STR	460	27
H1	24	13	5	2600	62
H2	12	13	STR	980	12
S1	44	13	2	2240	98
S2	44	13	3	960	42
S3	14	13	4	1980	28
U1	4	13	6	1340	5
V1	48	13	STR	1400	67
REINFORCING STEEL					1037 KG
CLASS "A" CONCRETE					
POUR #1 CAP & PART WINGS					9.7m <sup>3</sup>
POUR #2 UPPER WINGS					1.5m <sup>3</sup>
POUR #3 LATERAL GUIDES					0.1m <sup>3</sup>
TOTAL					11.3m <sup>3</sup>
305mm PRESTRESSED CONCRETE PILES					
* No. = 7					45.5 METERS
PILE REDRIVES					No. = 7 EA.

NOTE: CONCRETE DISPLACED BY 305mm PRESTRESSED CONCRETE PILES HAS BEEN DEDUCTED.  
\* PILE WITH EMBEDDED DATA COLLECTORS IS INCLUDED IN THIS TOTAL.



**SECTION THRU CAP**

PROJECT NO. B-1381  
SAMPSON COUNTY  
STATION: 51+98.000-LREV-  
SHEET 2 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
END BENT #2



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

TOTAL SHEETS: 29

**NOTES**

CONCRETE DESIGN DATA :  $f'_c = 34.5 \text{ MPa}$ ;  $f_c = 13.8 \text{ MPa}$

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  $24.1 \text{ MPa}$ .

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 50mm WIDE.

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203M 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 $\text{mm}^2$	ULTIMATE STRENGTH KN	APPLIED PRESTRESS FORCE KN
12.70	270	4	98.71	183.7 PER STRAND	137.8 PER STRAND
12.70	270	5	98.71	183.7 PER STRAND	137.8 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.

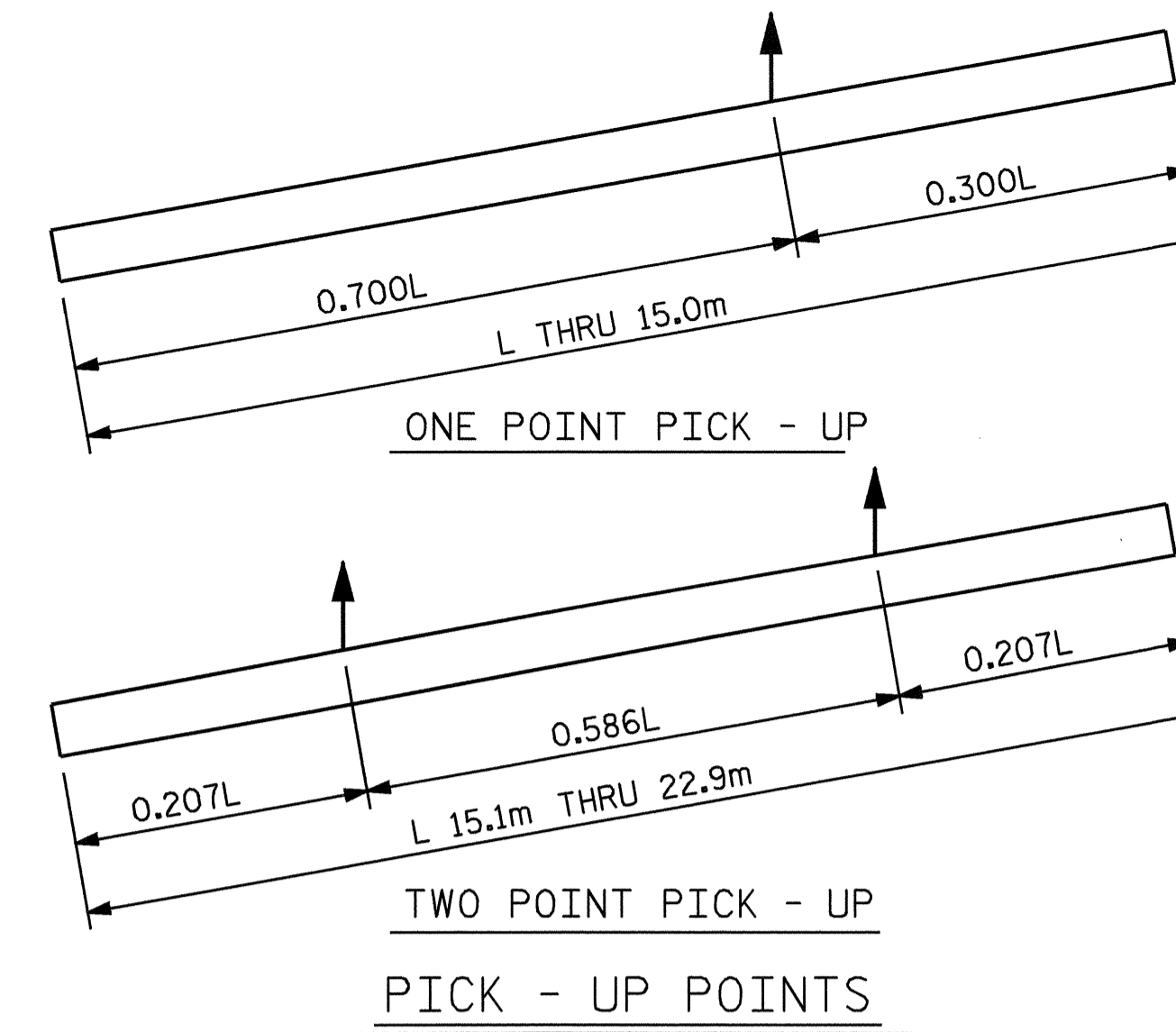
BUILD-UPS SHALL BE 'CLASS A' CONCRETE WITH 20% ADDITIONAL CEMENT. NO DRIVING OF THE BUILT-UP PILE WILL BE PERMITTED UNTIL THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF  $20.7 \text{ MPa}$  AND UNTIL A PERIOD OF SEVEN DAYS HAS ELAPSED SINCE CASTING OF THE BUILD-UP.

ALL CORNERS TO BE CHAMFERED 19mm.

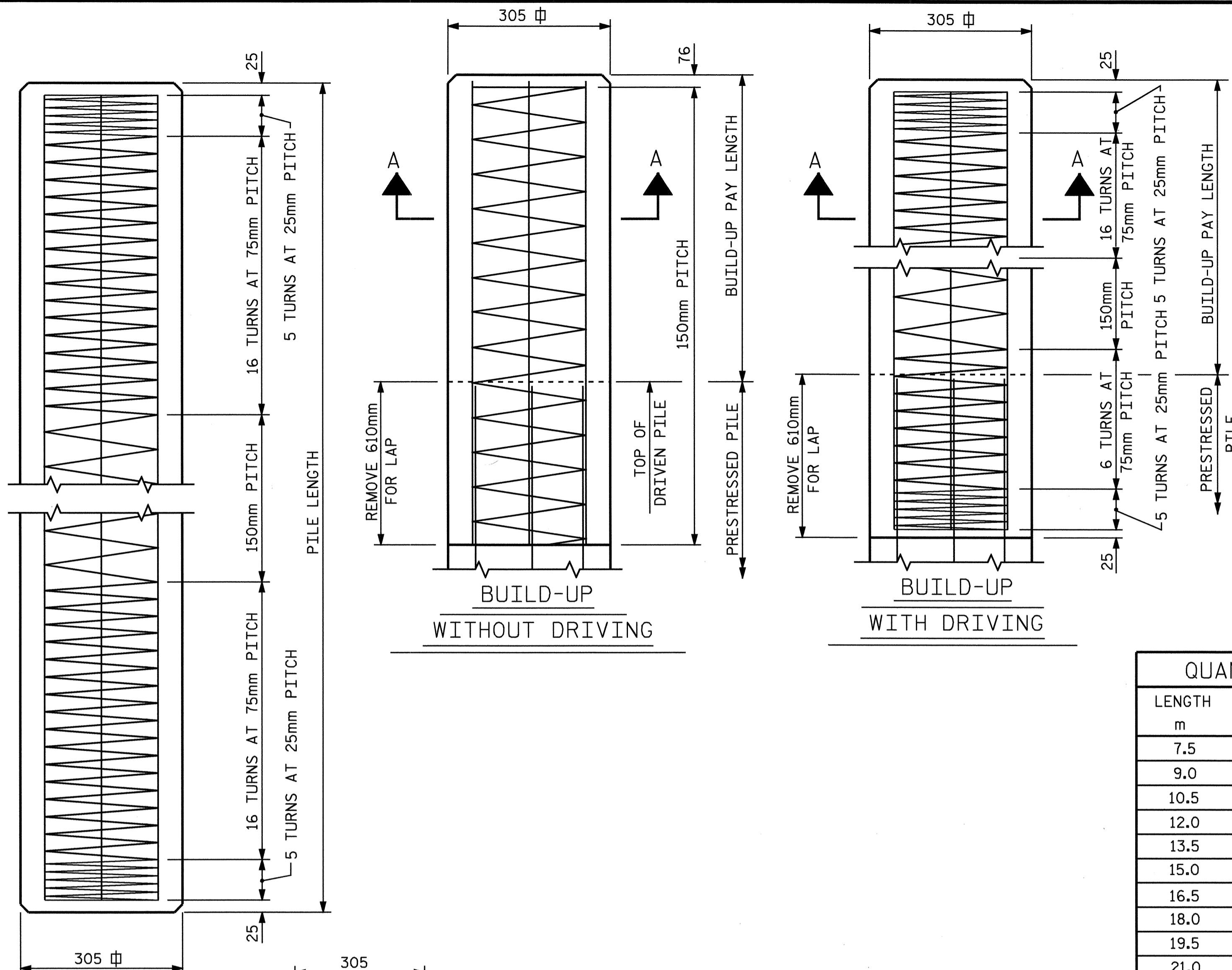
FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE PILES, SEE SPECIAL PROVISIONS.

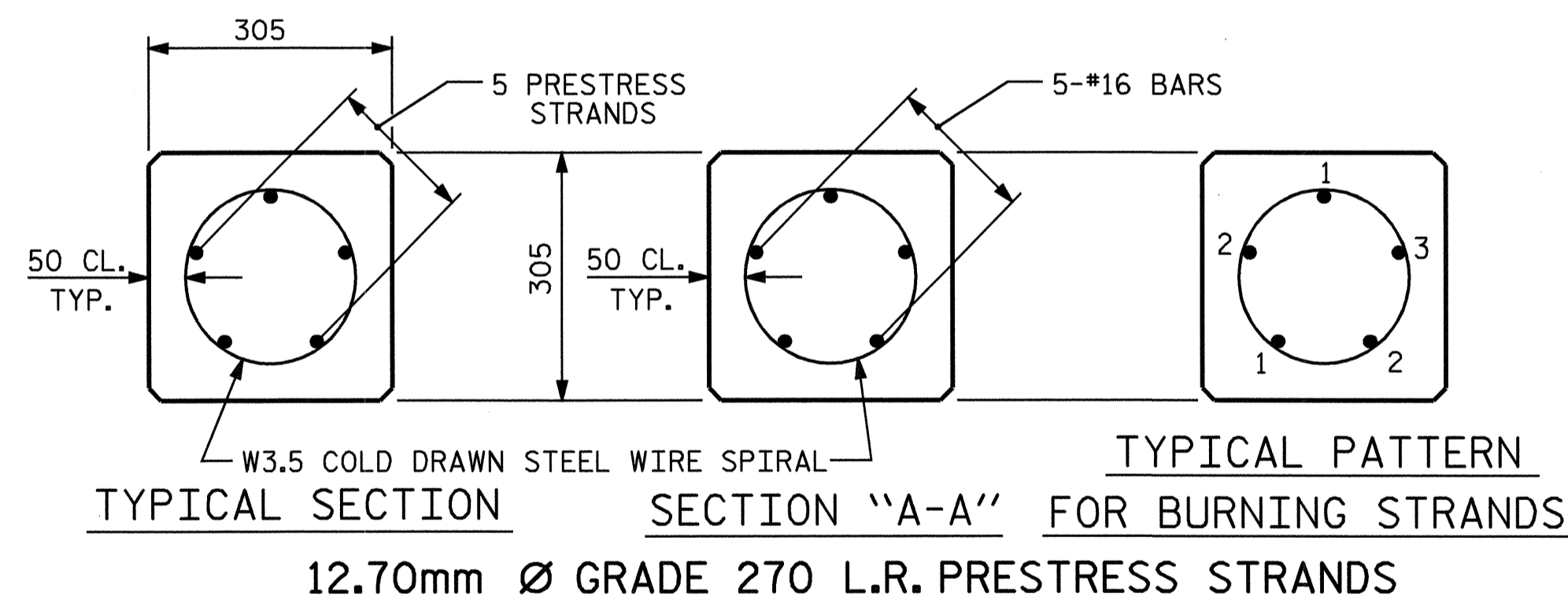
FOR 305mm PRESTRESSED CONCRETE PILE WITH EMBEDDED DATA COLLECTORS, SEE SHEET ENTITLED "305mm PRESTRESSED CONCRETE TEST PILE WITH EMBEDDED DATA COLLECTORS".



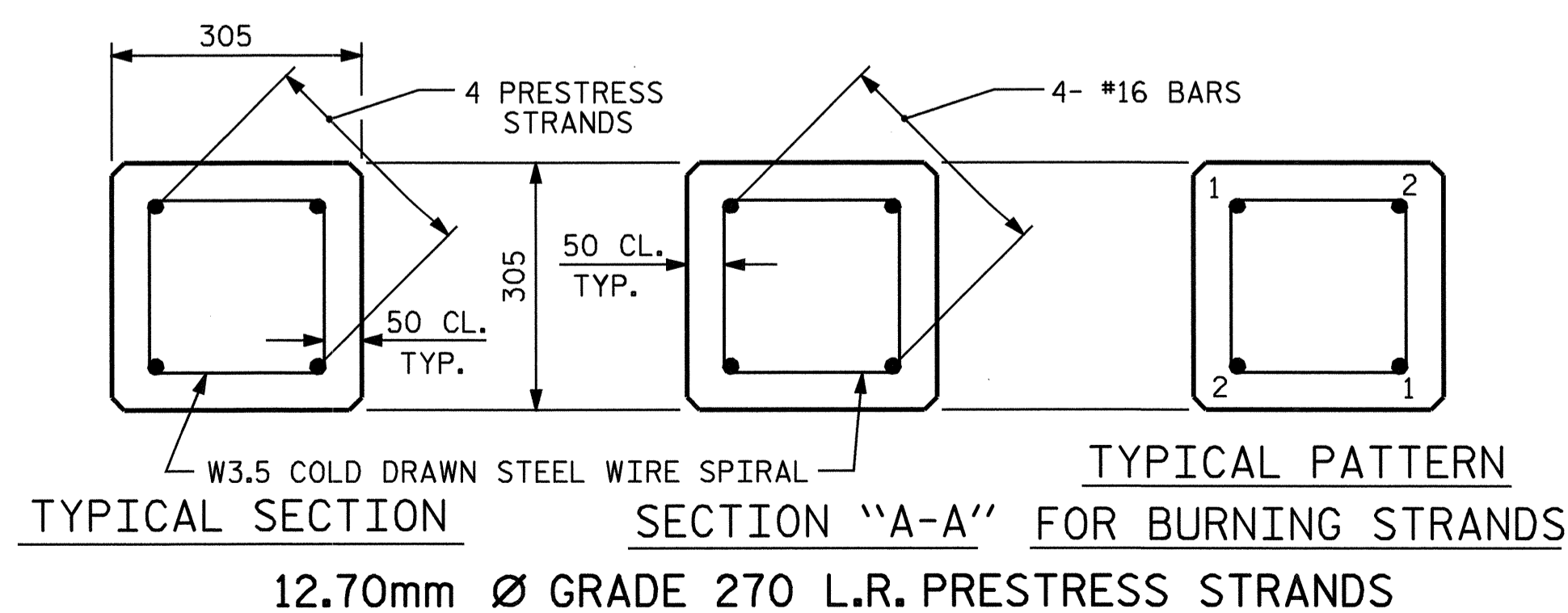
QUANTITIES FOR ONE 305mm PRESTRESSED PILE						
LENGTH m	CONCRETE $\text{m}^3$	PILE WT. kg	ONE PICK-UP POINT		TWO PICK-UP POINT	
			0.300L m	0.700L m	0.207L m	0.586L m
7.5	0.70	1680	2.25	5.25		
9.0	0.84	2020	2.70	6.30		
10.5	0.98	2350	3.15	7.35		
12.0	1.12	2690	3.60	8.40		
13.5	1.26	3030	4.05	9.45		
15.0	1.40	3360	4.50	10.50		
16.5	1.53	3680			3.42	9.67
18.0	1.67	4010			3.73	10.55
19.5	1.81	4350			4.04	11.43
21.0	1.95	4690			4.35	12.31
22.5	2.09	5020			4.66	13.19



ELEVATION



TYPICAL SECTION SECTION "A-A" FOR BURNING STRANDS  
12.70mm Ø GRADE 270 L.R. PRESTRESS STRANDS



TYPICAL SECTION SECTION "A-A" FOR BURNING STRANDS  
12.70mm Ø GRADE 270 L.R. PRESTRESS STRANDS

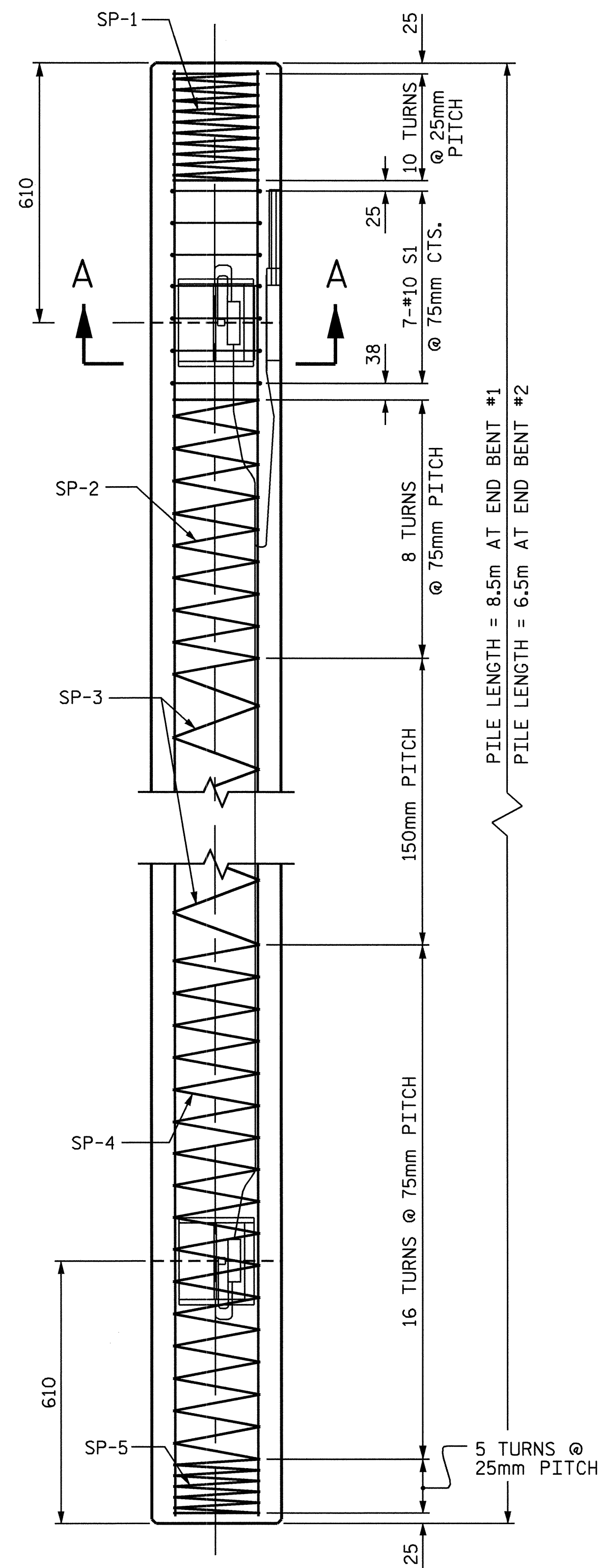
ASSEMBLED BY : J.P. ADAMS	DATE : 9/20/05
CHECKED BY : S.H. SOCKWELL	DATE : 9/21/05
DRAWN BY : FCJ 7/88	REV. 7/17/98 RWW/LES
CHECKED BY : CRK 3/89	REV. 8/16/99R RWW/LES
	REV. 5/1/06 TLA/GM



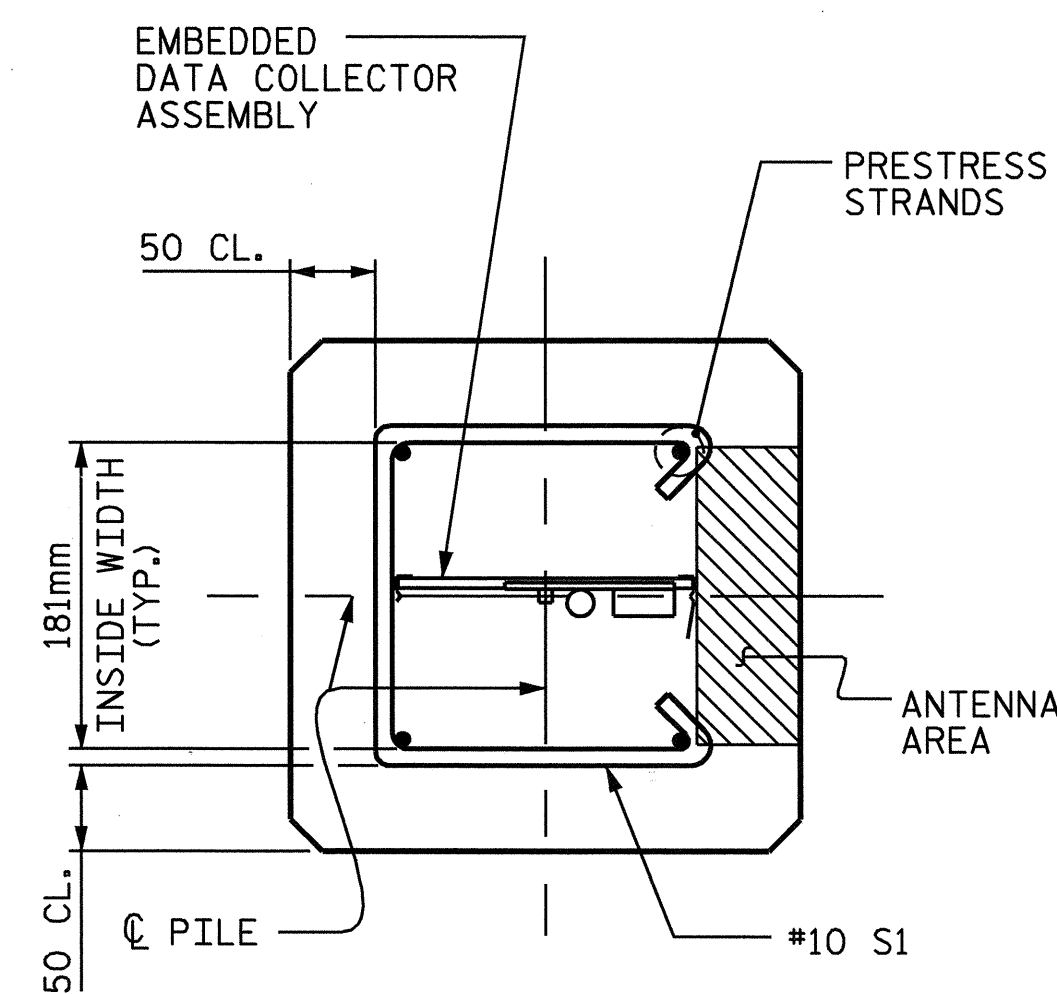
PROJECT NO. B-1381  
SAMPSON COUNTY  
STATION: 51+98.000-LREV-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD 305mm PRESTRESSED CONCRETE PILE					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 29





ELEVATION



SECTION A-A

(4 PRESTRESS STRANDS)  
(BUILD-UP OF TEST PILES IS NOT PERMITTED)

NOTES

FOR ADDITIONAL NOTES AND DETAILS, SEE "305mm PRESTRESSED CONCRETE PILE" SHEET. ONLY THE 4 STRAND PATTERN CONFIGURATION IS PERMITTED FOR THE TEST PILES. BUILD-UP OF TEST PILES IS NOT PERMITTED.

EMBEDDED DATA COLLECTORS (EDC) ARE REQUIRED FOR THE PRESTRESSED CONCRETE PILES TESTED WITH THE PILE DRIVING ANALYZER (PDA) AT END BENTS No. 1 AND No. 2. FOR EMBEDDED DATA COLLECTORS, SEE SPECIAL PROVISIONS.

THE EDC CONSULTANT WILL PROVIDE AND INSTALL THE EDC DURING PILE FABRICATION. NOTIFY THE ENGINEER OF THE PILE FABRICATION SCHEDULE A MINIMUM OF 14 CALENDAR DAYS IN ADVANCE.

WRAP THE SENSOR WIRES, USING PLASTIC OR METAL TIES, AGAINST THE PRESTRESS STRANDS EVERY 300mm WHERE APPROPRIATE.

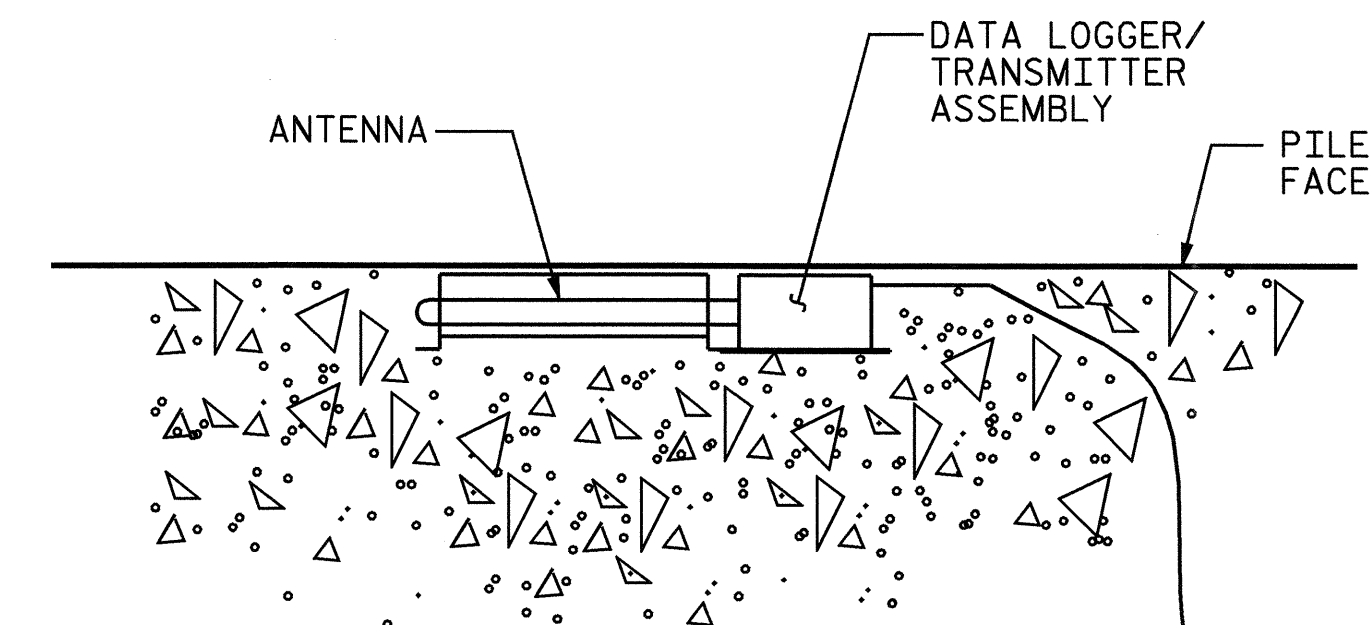
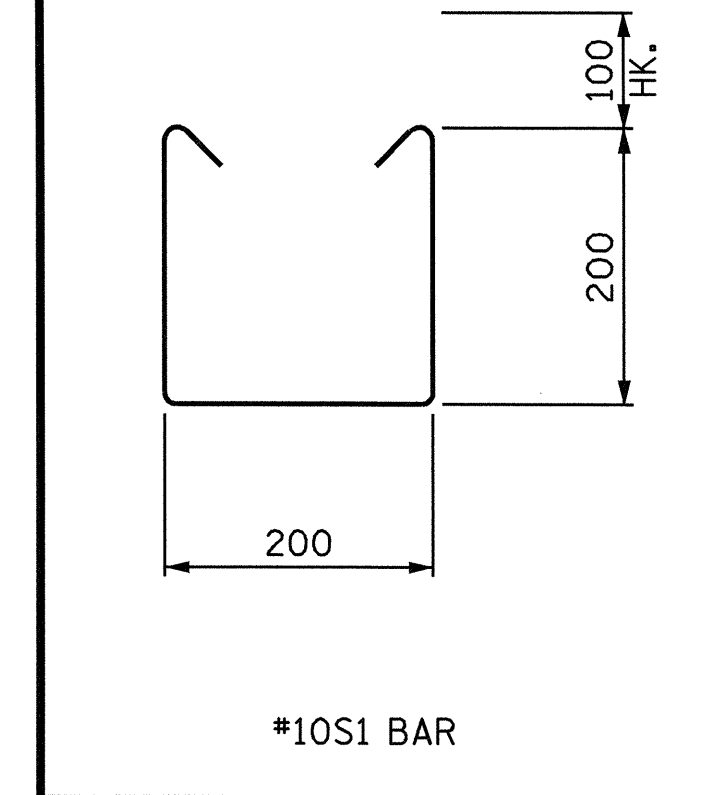
CLEARLY MARK THE LOCATION OF THE RADIO ANTENNA IN THE FRAME.

DURING THE PLACEMENT AND SETTING OF THE CONCRETE, ENSURE THAT VIBRATION SETTLING IS NOT PERFORMED WITHIN 100mm ON EITHER SIDE OF THE ANTENNA AND TRANSDUCER PACKAGES. (CAUTION : DO NOT ALLOW VIBRATOR TO COME IN CONTACT WITH EMBEDDED DATA COLLECTORS.)

COMPLETE THE PILE FINISHING PROCESS BY PLACING AND SCRIBING / MARKING EMBEDDED DATA COLLECTOR SERIAL NUMBER ALONG WITH OTHER PILE DETAILS (E.G. PILE LENGTH, CASTING DATA, JOB NUMBERS) ON THE HAND-FINISHED SURFACE AT THE TOP OF THE PILE.

THE REINFORCING ARRANGEMENT DETAILED CAN ONLY BE USED FOR THE TEST PILES (2 TOTAL, 1 AT EACH END BENT). FOR PRODUCTION PILE DETAILS, SEE "305mm PRESTRESSED CONCRETE PILE" SHEET.

THE 305mm PRESTRESSED CONCRETE PILES WITH EMBEDDED DATA COLLECTORS SHALL BE FABRICATED TO THE LENGTH SHOWN ON THIS SHEET.



ANTENNA DETAIL

PROJECT NO. B-1381  
SAMPSON COUNTY  
STATION: 51+98.000 -LREV.-

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

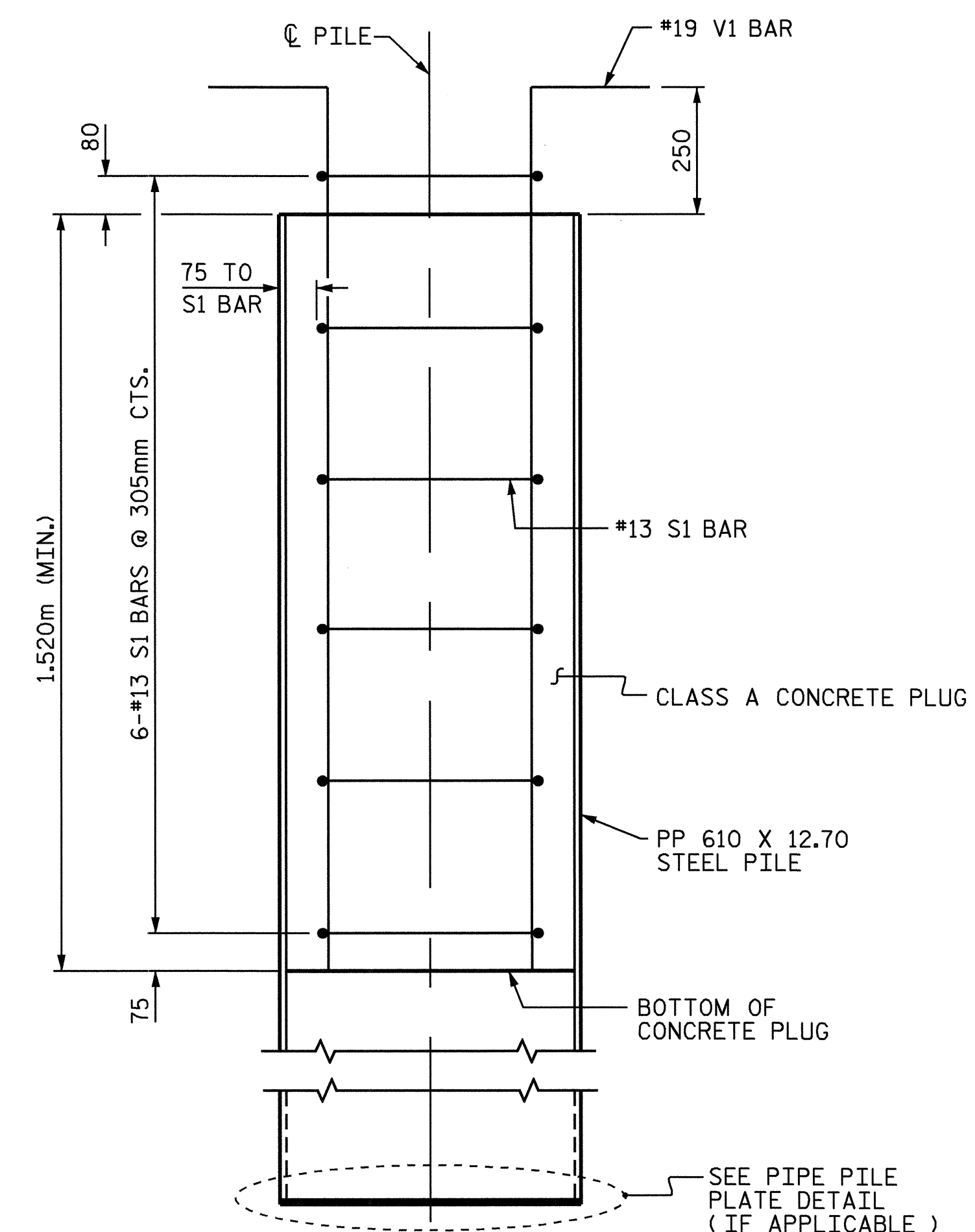
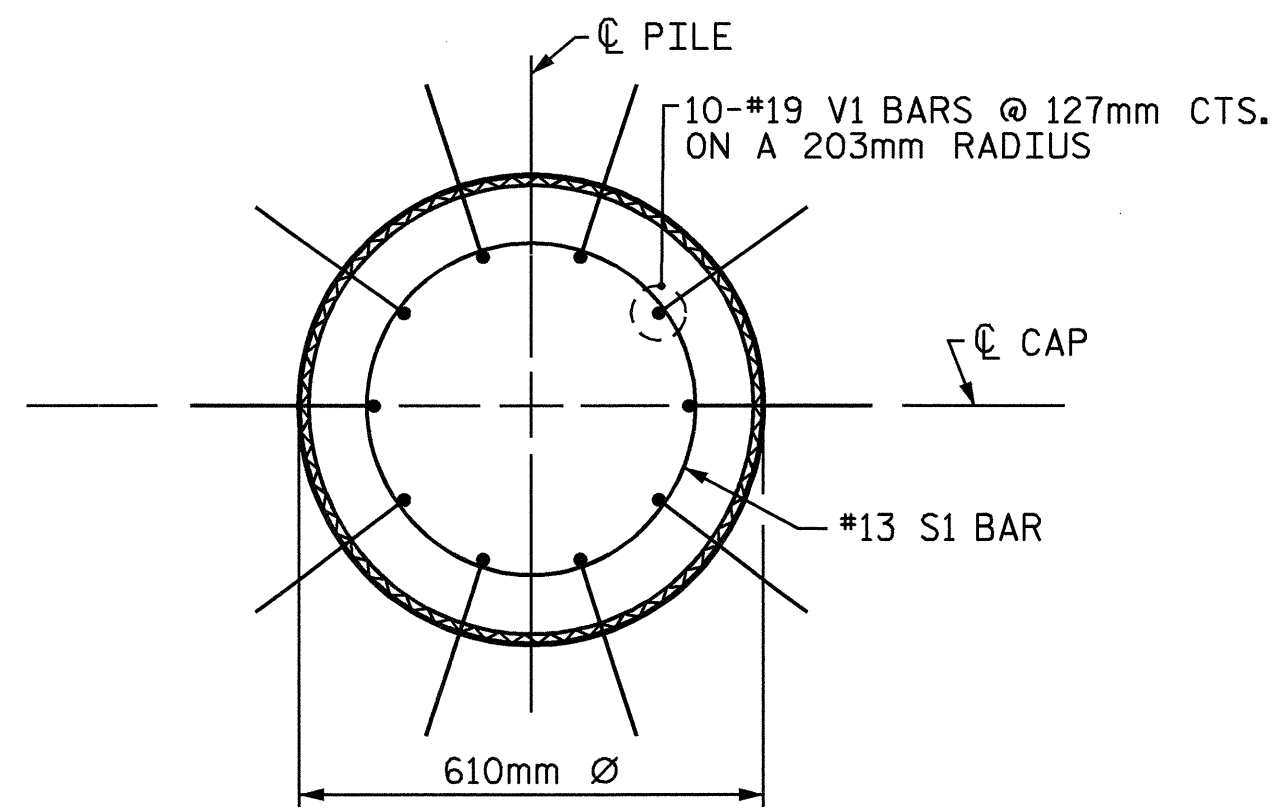
305mm PRESTRESSED  
CONCRETE TEST PILE  
WITH EMBEDDED DATA  
COLLECTORS



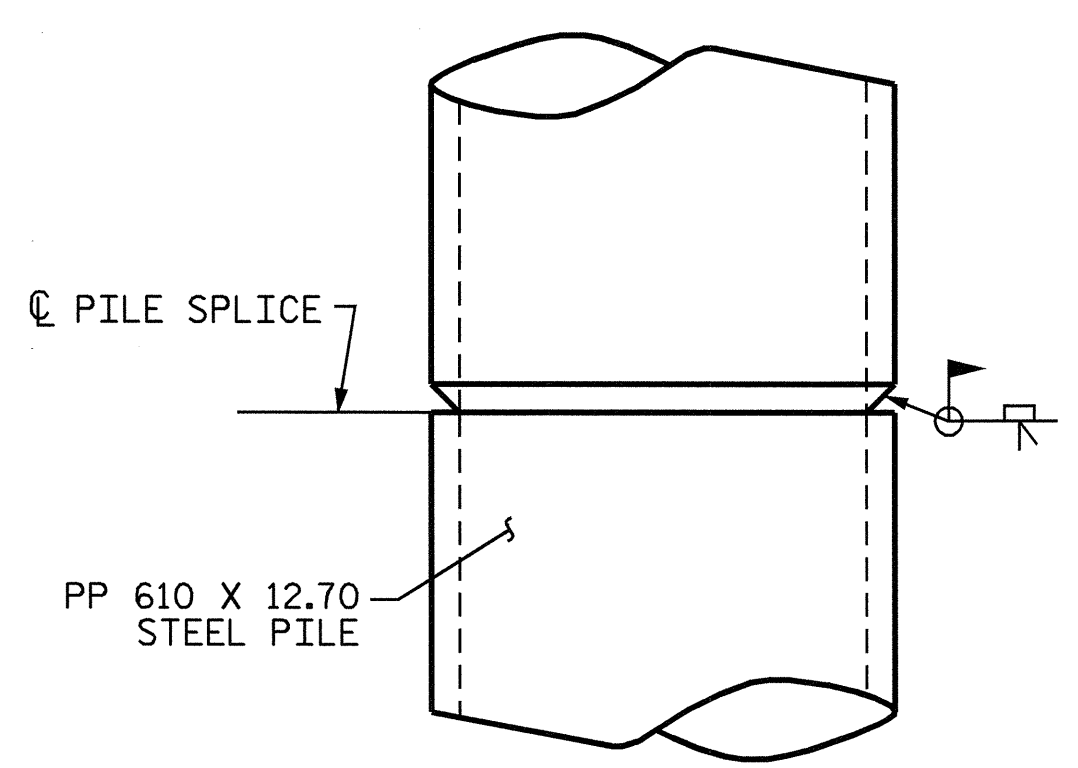
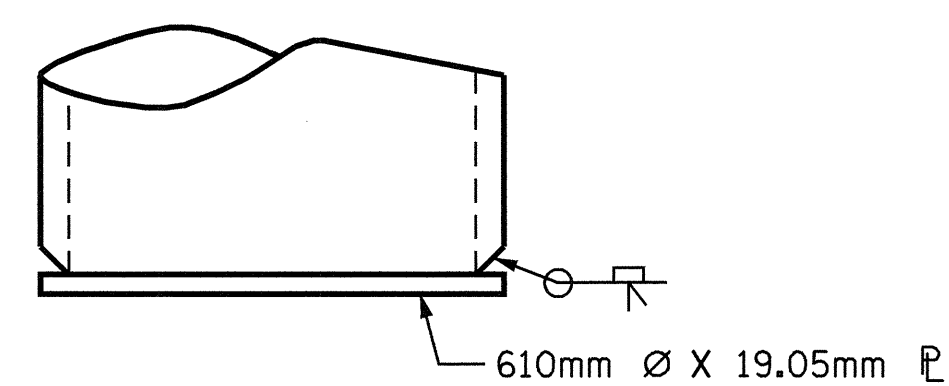
REVISIONS						SHEET NO. S-25
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 29
2			4			

DRAWN BY : K. MCCAULEY/TGP DATE : 9/5/06  
CHECKED BY : G. MUCHANE DATE : 10/06





PP 610 X 12.70 STEEL PILE  
( OPEN OR CLOSED END )



NOTES

STEEL PIPE PILES SHALL BE OF UNIFORM DIAMETER AND MEET THE REQUIREMENTS OF ASTM A252, GRADE 3 MODIFIED (344.7 MPa YIELD STRENGTH).

GALVANIZE STEEL PIPE PILES IN ACCORDANCE WITH THE BEARING PILE SPECIAL PROVISION (NOVEMBER 20, 2006). GALVANIZING 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 CLOSED END PIPE PILES, REMOVE ALL SOIL AND WATER FROM INSIDE THE PILES JUST PRIOR TO PLACING REINFORCING STEEL AND CONCRETE FOR THE CONCRETE PLUG.

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 10.3 MPa.

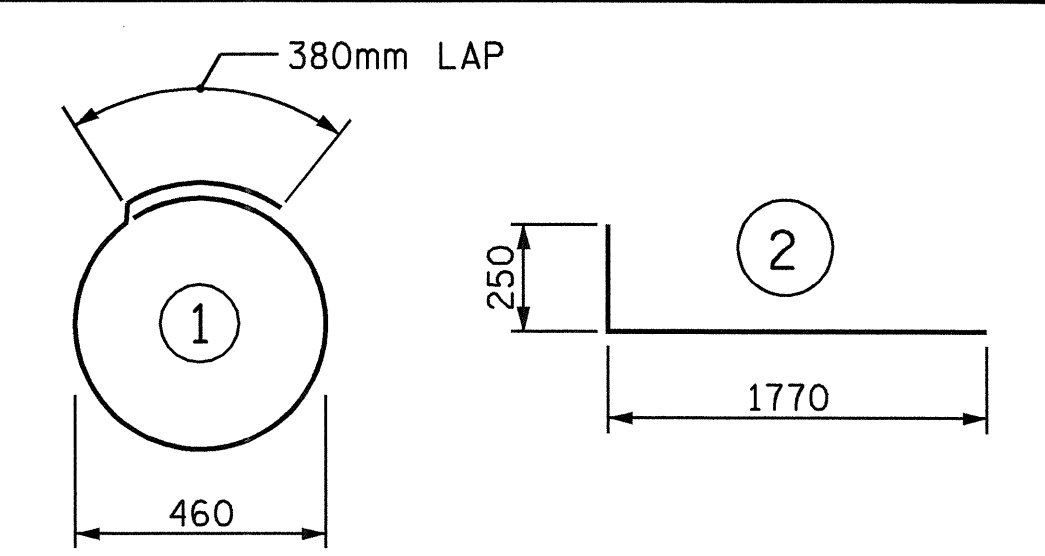
THE REINFORCING STEEL, CLASS A CONCRETE AND GALVANIZING ARE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE BID PER METER FOR PP 610 X 12.70 STEEL PILES.

BILL OF MATERIAL FOR ONE PP 610 X 12.70 STEEL PILE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
S1	6	#13	1	1840	11
V1	10	#19	2	2020	45
REINFORCING STEEL =				56	kg

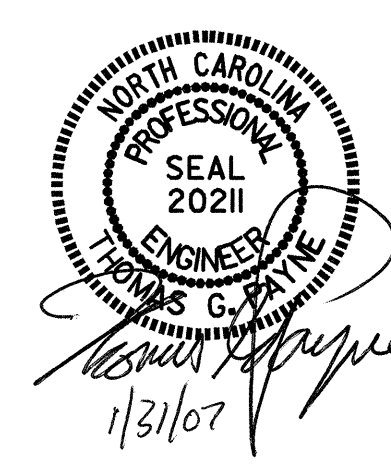
CLASS A CONCRETE  
1.520m MINIMUM PLUG 0.4 CU. METER

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. B-1381  
SAMPSON COUNTY  
STATION: 51+98.000-LREV-



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

STANDARD  
610mm STEEL  
PIPE PILE

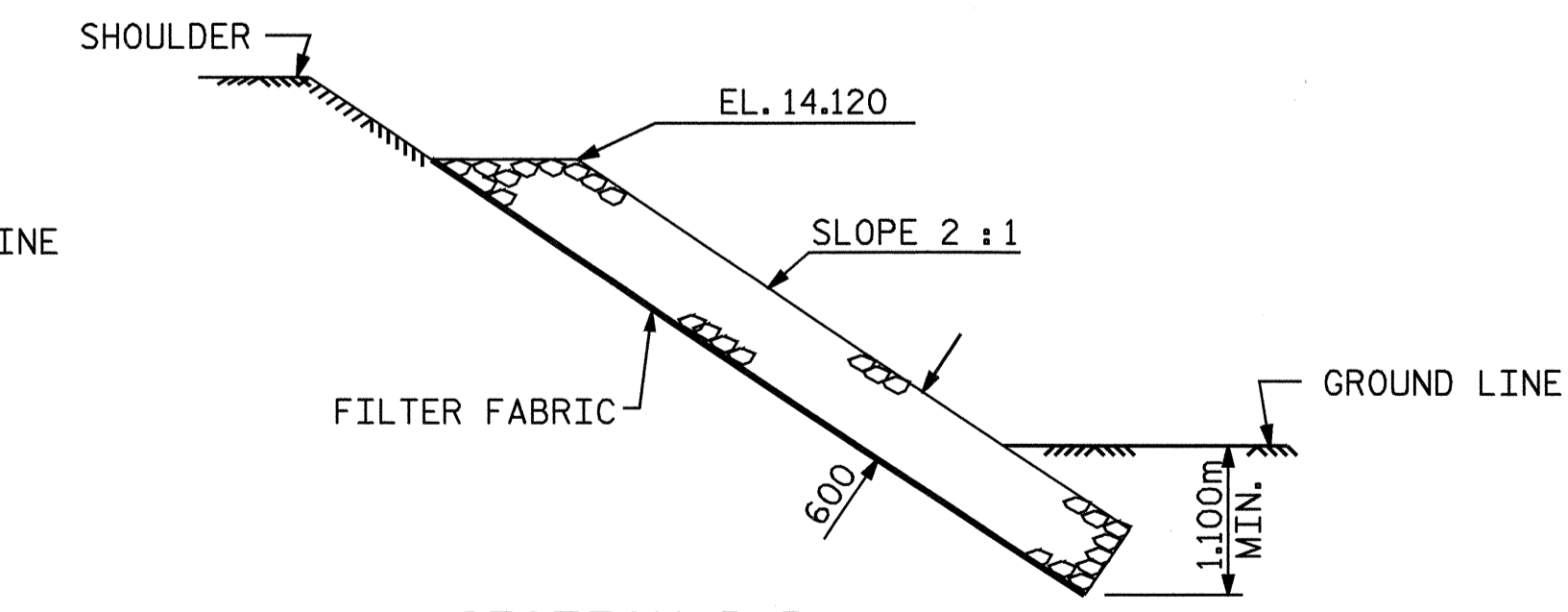
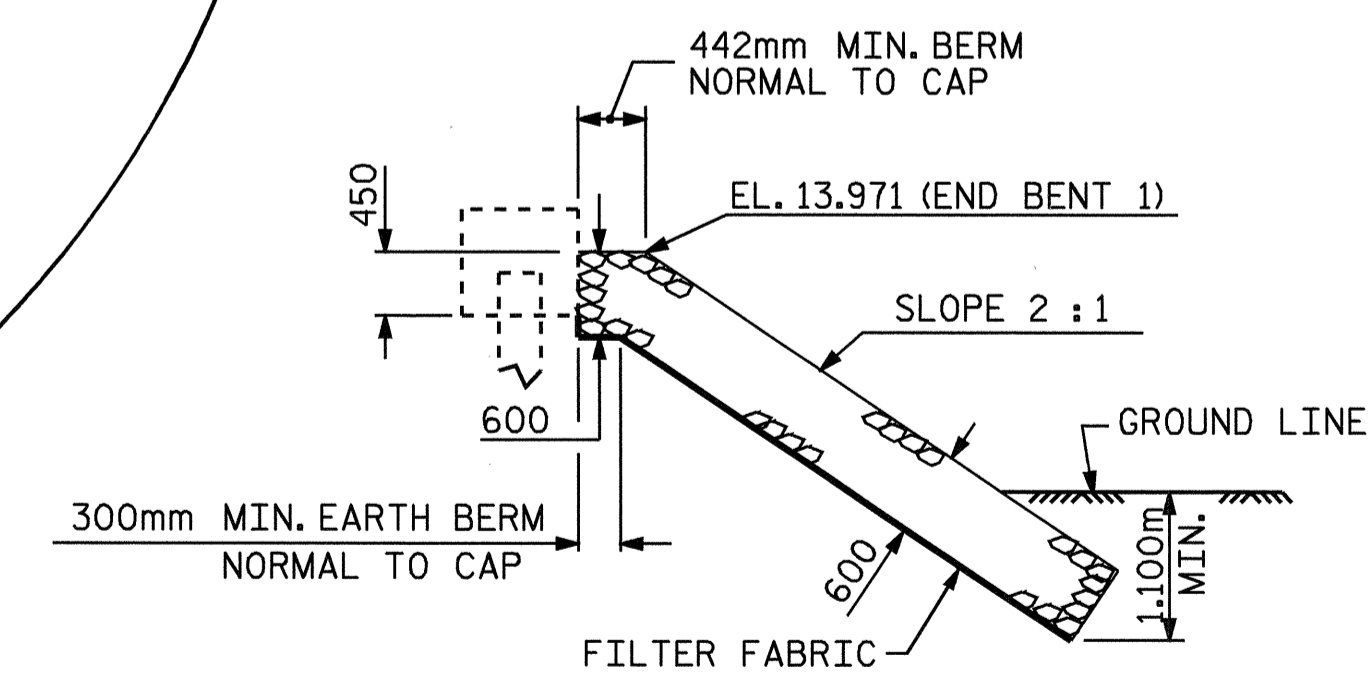
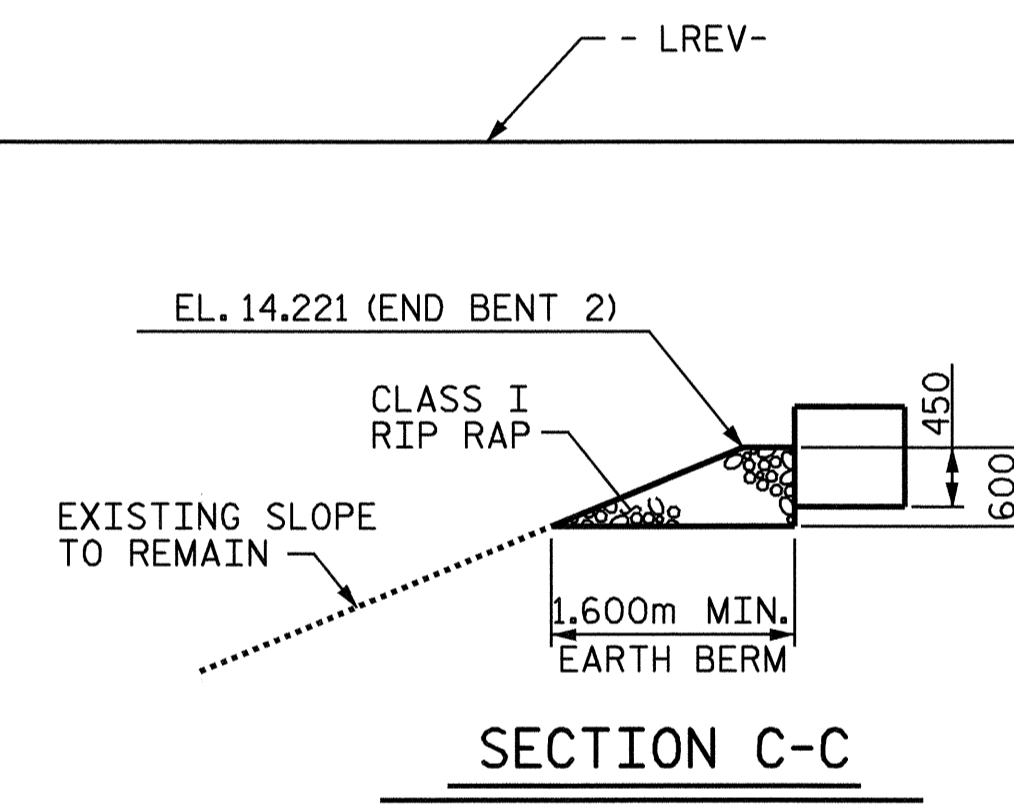
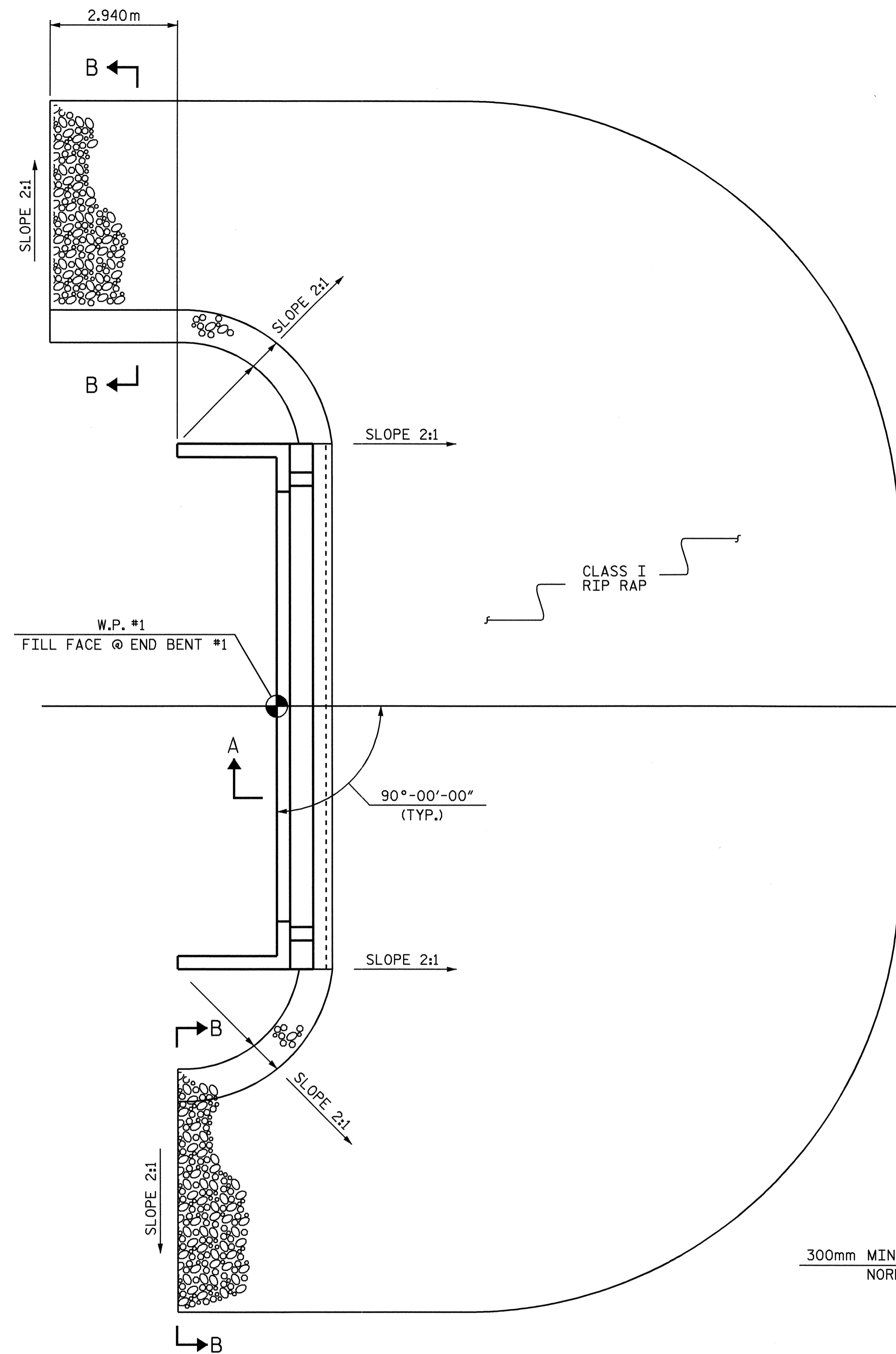
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			29
2			4			

S-26

ASSEMBLED BY : J.P. ADAMS	DATE : 11/27/06
CHECKED BY : H. A. LOCKLEAR	DATE : 11/27/06
DRAWN BY : TLA 8/05	ADDED 10/1/05
CHECKED BY : GM 9/05	REV. 5/1/06 TLA/GM

**NOTES :**  
 THE COST OF THE FILTER FABRIC SHALL BE INCLUDED  
 IN THE CONTRACT PRICE BID FOR PLAIN RIP RAP CLASS I.

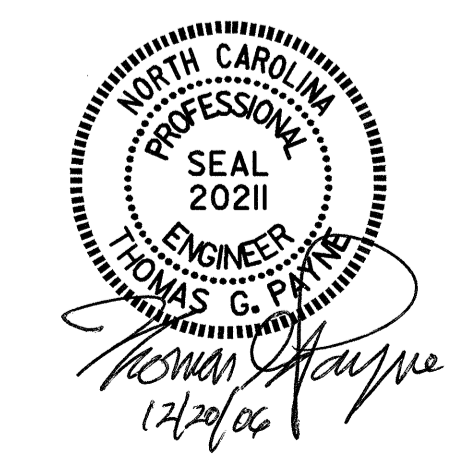
ESTIMATED QUANTITIES		
BRIDGE @ STA. 51+98.000-LREV-	PLAIN RIP RAP CLASS I	FILTER FABRIC FOR DRAINAGE
	METRIC TON	SQUARE METERS
END BENT #1	427	436
END BENT #2	30	31



**PLAN OF RIP RAP**

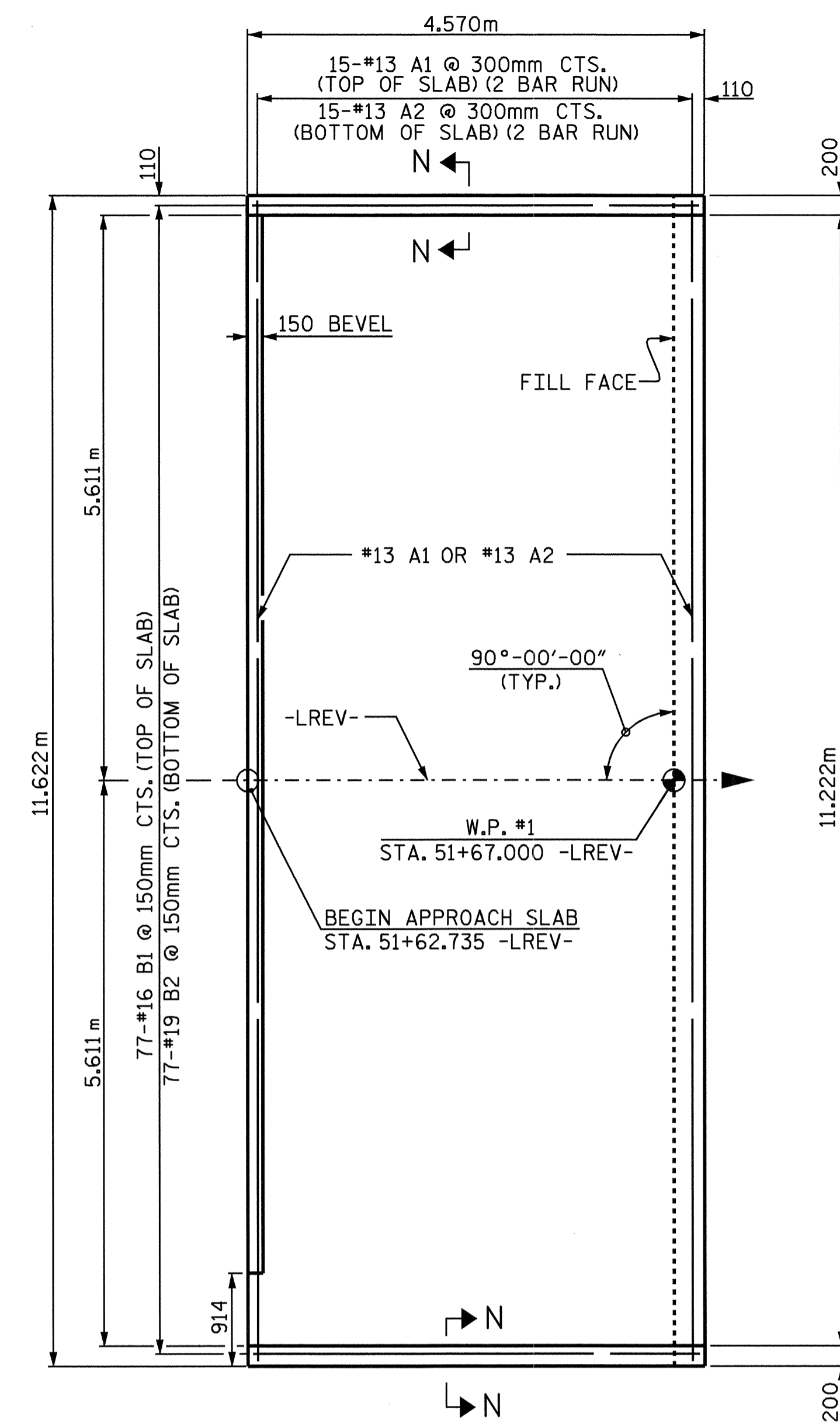
PROJECT NO. B-1381  
SAMPSON COUNTY  
 STATION: 51+98.000-LREV-

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

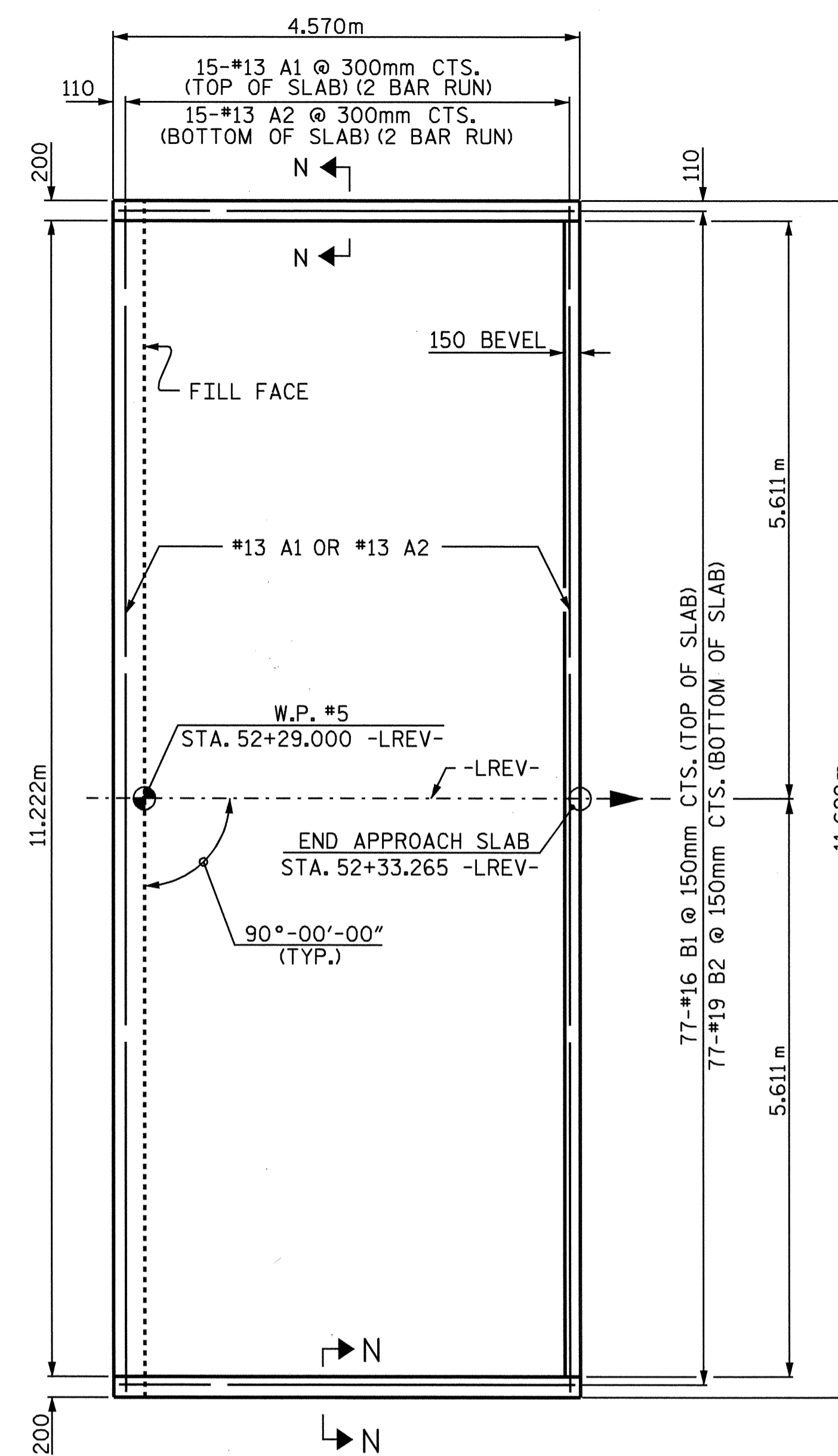


DRAWN BY : S.H. SOCKWELL DATE : 10/10/05  
 CHECKED BY : J.P. ADAMS DATE : 11/1/05

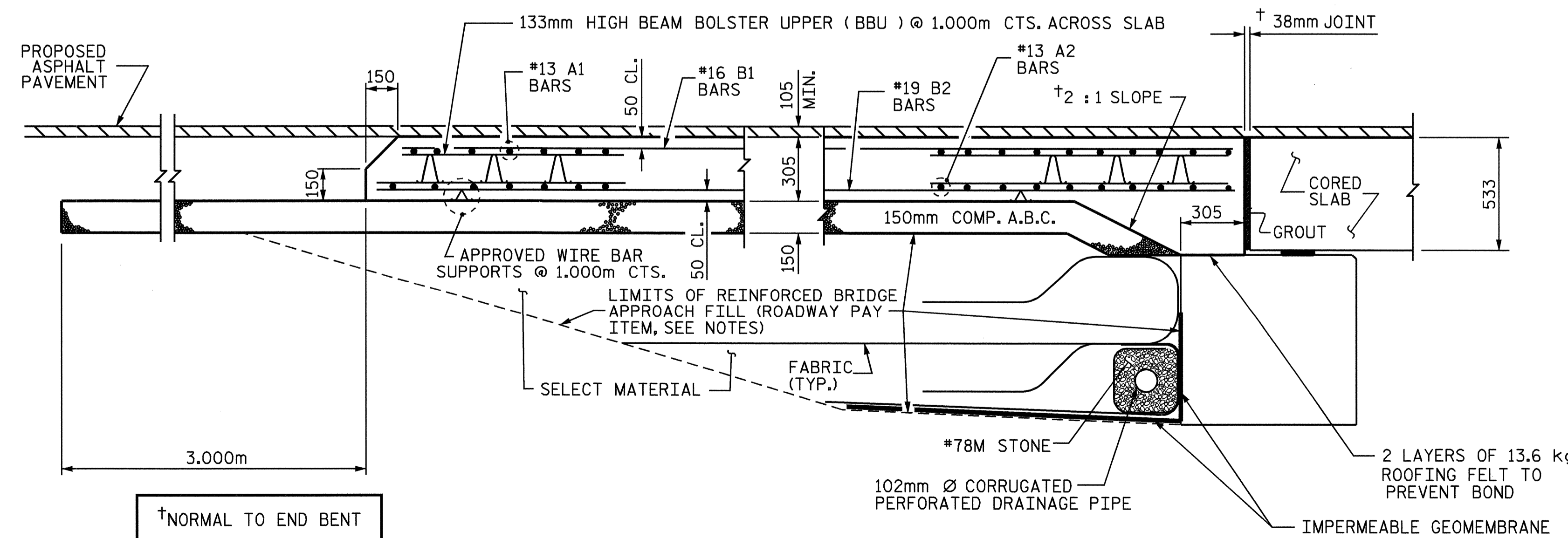
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			29



PLAN APPROACH SLAB @ END BENT 1



PLAN APPROACH SLAB @ END BENT 2



SECTION THRU SLAB

NOTES

FOR REINFORCED BRIDGE APPROACH FILL INCLUDING FABRIC, IMPERMEABLE GEOMEMBRANE, 102mm 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 150mm COMP. A.B.C. SHALL EXTEND 3m BEYOND THE END OF THE APPROACH SLAB AND 300mm OUTSIDE OF EACH EDGE OF THE SLAB.

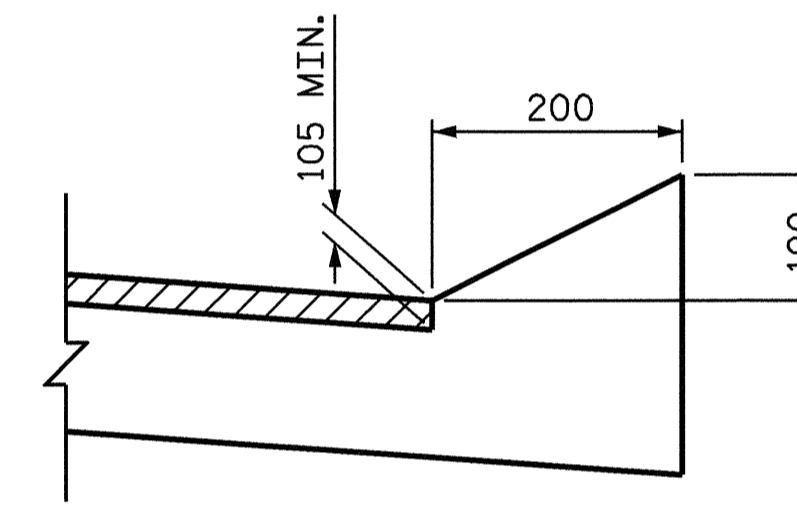
THE CONTRACTOR MAY USE 100mm TYPE B-25.0B ASPHALT CONCRETE COURSE IN LIEU OF 150mm COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL EXTEND 300mm BEYOND THE END OF THE APPROACH SLAB AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 125mm CLASS "A" CONCRETE BASE IN LIEU OF 150mm COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL EXTEND 300mm 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 13.6 kg ROOFING FELT SHALL BE PLACED BETWEEN THE CONCRETE BASE AND THE APPROACH SLAB TO PREVENT BOND. THE APPROACH SLAB SHALL NOT BE CAST UNTIL THE CONCRETE BASE HAS REACHED AN AGE OF THREE CURING DAYS.

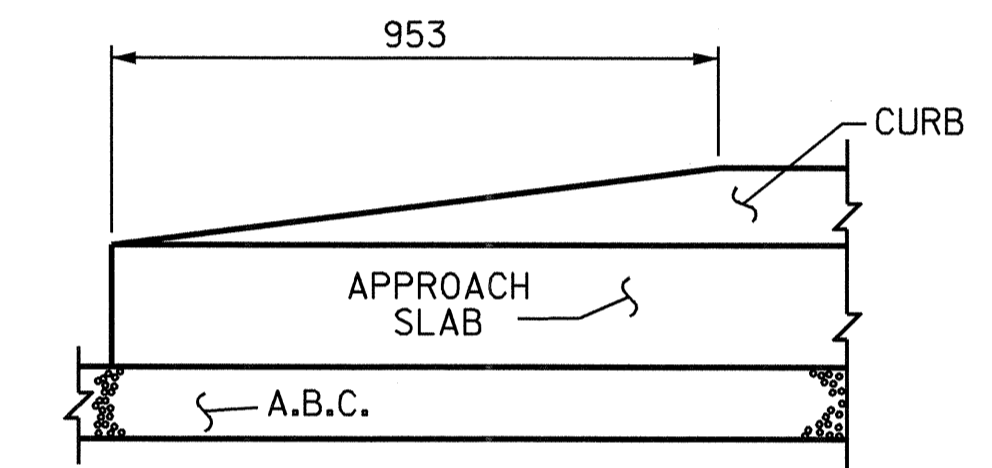
FOR JOINT DETAILS, SEE "PRESTRESSED CONCRETE CORED SLAB UNIT" SHEETS.

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

APPROACH SLAB GROOVING IS NOT REQUIRED.



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

BILL OF MATERIAL						
APPROACH SLAB AT EB #1						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
* A1	30	#13	STR	6080	181	
A2	30	#13	STR	6040	180	
* B1	77	#16	STR	4360	521	
B2	77	#19	STR	4460	768	
REINFORCING STEEL					kg.	948
* EPOXY COATED REINFORCING STEEL					kg.	702
CLASS AA CONCRETE					C.M.	17.8
APPROACH SLAB AT EB #2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
* A1	30	#13	STR	6080	181	
A2	30	#13	STR	6040	180	
* B1	77	#16	STR	4360	521	
B2	77	#19	STR	4460	768	
REINFORCING STEEL					kg.	948
* EPOXY COATED REINFORCING STEEL					kg.	702
CLASS AA CONCRETE					C.M.	17.8

SPlice CHART		
BAR	SIZE	SPlice LENGTH
A1	#13	610
A2	#13	540

PROJECT NO. B-1381  
 SAMPSON COUNTY  
 STATION: 51+98.00 -LREV-

SHEET 1 OF 2

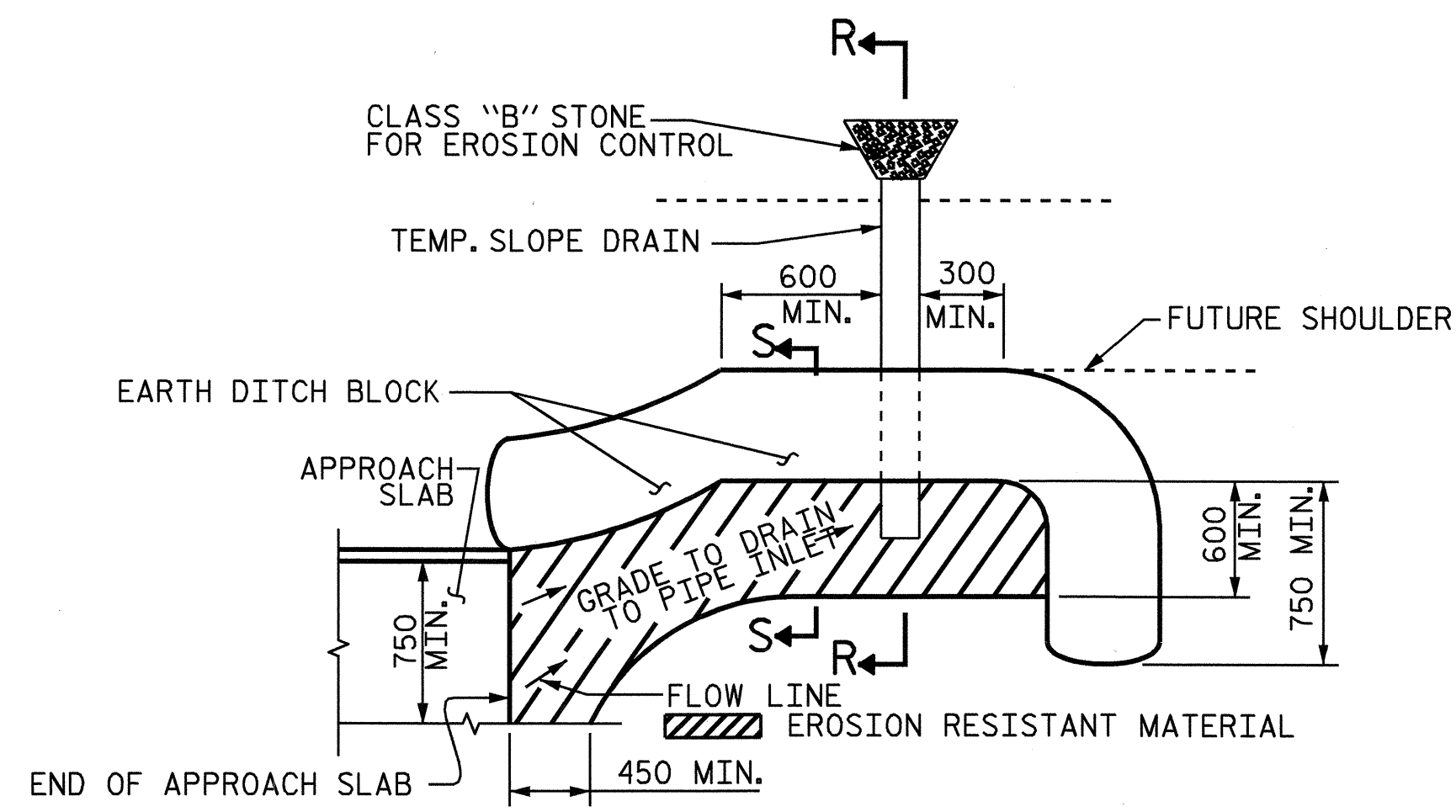
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 BRIDGE APPROACH  
 SLAB FOR PRESTRESSED  
 CONCRETE CORED SLAB



REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28	
1			3			TOTAL SHEETS	
2			4			29	

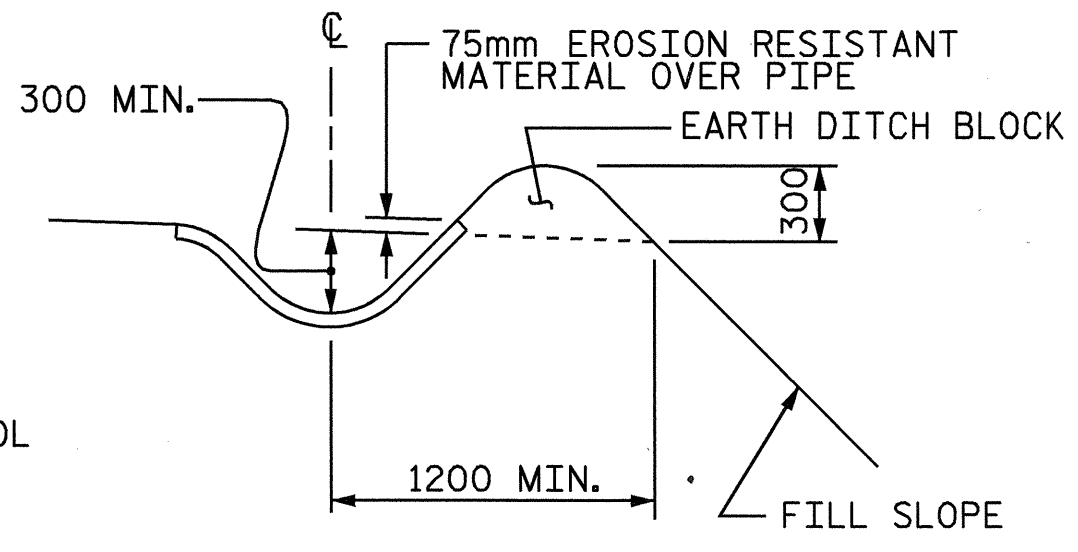
ASSEMBLED BY :	A. CHAN	DATE :	10/27/06
CHECKED BY :	K.D. LAYNE	DATE :	10/27/06
DRAWN BY :	FCJ 6/87	REV. 10/17/00	RWW/LES
CHECKED BY :	EGA 6/87	REV. 7/10/01	LES/RDR
		REV. 5/7/03R	RWW/JTE



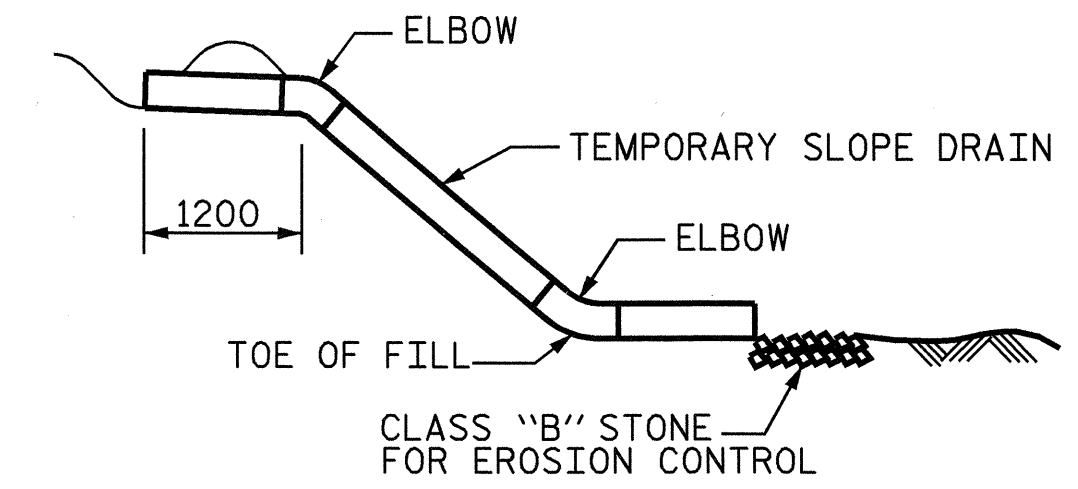


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 50mm DEPTH, 2) EROSION CONTROL MAT, OR 3) CONCRETE, AS DIRECTED BY THE ENGINEER. THE SLOPE DRAINAGE PIPE SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 305mm IN DIAMETER.

PLAN VIEW

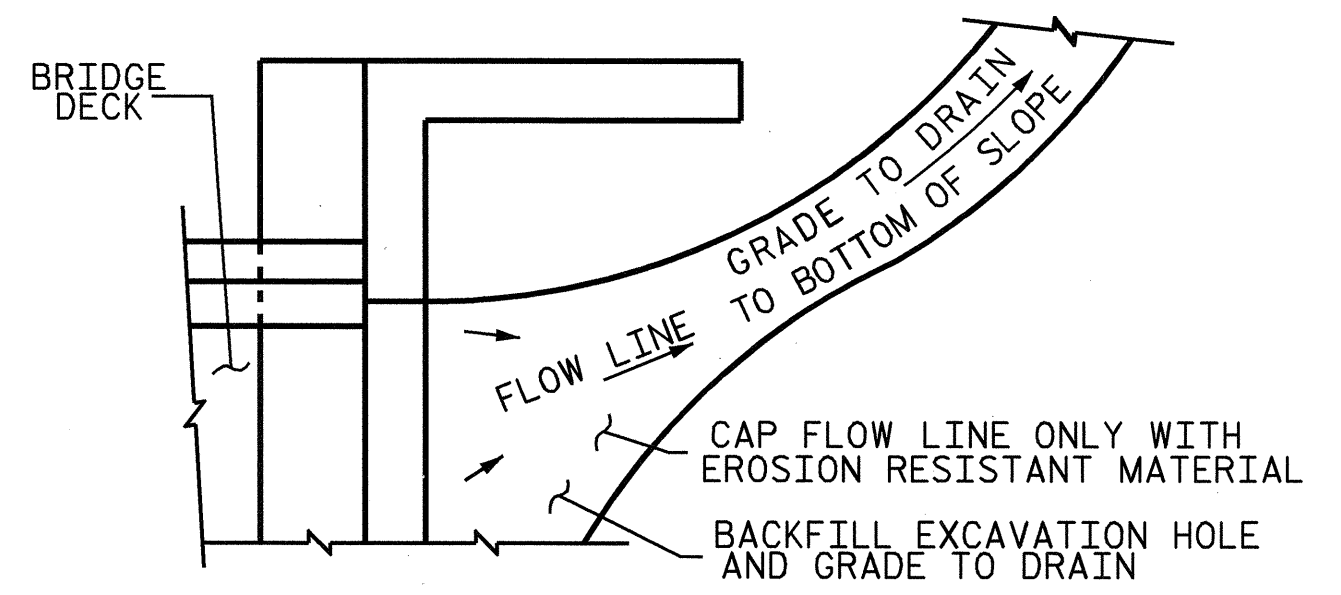


SECTION S-S



SECTION R-R

TEMPORARY BERM AND SLOPE DRAIN DETAILS



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-1381  
SAMPSON COUNTY  
 STATION: 51+98.000-LREV-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 BRIDGE APPROACH  
 SLAB DETAILS



ASSEMBLED BY :	A. CHAN	DATE :	10/27/06
CHECKED BY :	K.D. LAYNE	DATE :	10/27/06
DRAWN BY :	FCJ 11/88	REV. 8/16/99	RAL/LES
CHECKED BY :	ARB 11/88	REV. 10/17/00	RWW/LES
		REV. 5/7/03	RWW/JTE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS
2			4			29

## STANDARD NOTES

### DESIGN DATA:

SPECIFICATIONS	-----	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	-----	SEE PLANS
IMPACT ALLOWANCE	-----	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF		
STRUCTURAL STEEL - AASHTO M270 GRADE 36	-	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	-	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	-	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION		
GRADE 60	--	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	-----	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	-----	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR		
UNTREATED - EXTREME FIBER STRESS	-----	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	-----	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	-----	30 LBS. PER CU. FT.
		(MINIMUM)

### MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2002 STANDARD SPECIFICATIONS "FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

### CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP; AND CLASS S SHALL BE USED FOR UNDERWATER FOOTING SEALS.

### CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

### DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

### ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.  
ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

### REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED WITH THE EXCEPTION OF #2 BARS WHICH MAY BE FABRICATED FROM COLD DRAWN STEEL WIRE. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

### STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

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

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16" INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

### HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

### SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

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