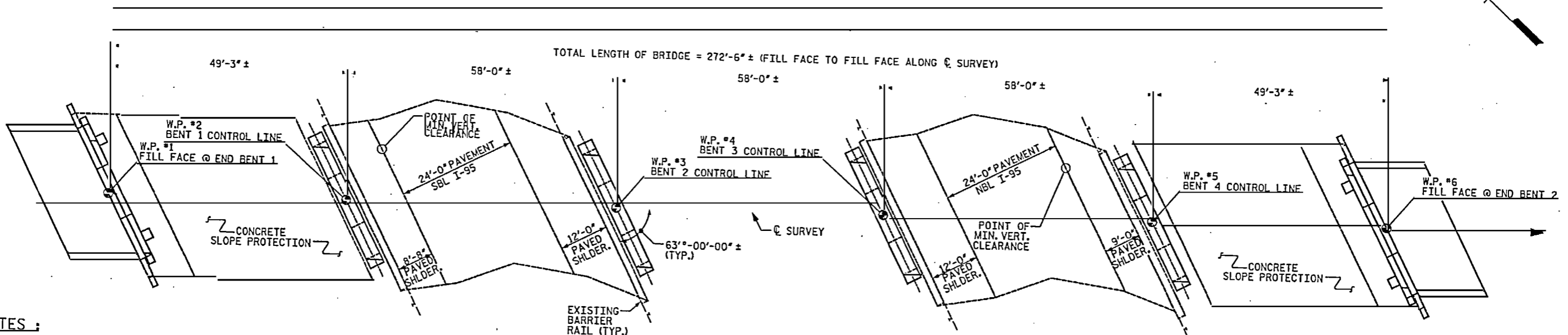


ALL DIMENSIONS IN THESE PLANS ARE BASED ON BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL VERIFY DIMENSIONS IN FIELD PRIOR TO CONSTRUCTION AND ANY FABRICATION. CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES SUCH THAT NECESSARY ADJUSTMENTS BE MADE BY THE CONTRACTOR.

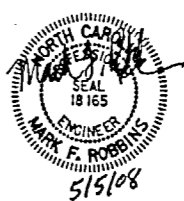


- NOTES:**
- ASSUMED LIVE LOAD = HS 20 OR ALTERNATE LOADING.
  - FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
  - CORED SLABS HAVE BEEN DESIGNED BY THE STRENGTH DESIGN METHOD AS SPECIFIED IN AASHTO STANDARD SPECIFICATIONS.
  - ALL SPANS ON EXISTING STRUCTURE CONSISTING OF PRESTRESSED CONCRETE GIRDERS, 24'-0" CLEAR ROADWAY WIDTH, REINFORCED CONCRETE DECK SHALL BE REMOVED. CURTAIN WALL AT END BENTS SHALL BE REMOVED. FOR PARTIAL REMOVAL OF EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.
  - FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.
  - FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
  - FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
  - FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
  - FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.

**TOTAL BILL OF MATERIAL**

	PARTIAL REMOVAL OF EXISTING STRUCTURE	CLASS AA CONCRETE	REINFORCING STEEL	CONCRETE BARRIER RAIL	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS	EPOXY RESIN INJECTION	EPOXY MORTAR REPAIRS	BRIDGE APPROACH SLABS
	LUMP SUM	CU. YDS.	LBS.	LIN. FT.	LUMP SUM	LIN. FT.	LIN. FT.	LBS.	LUMP SUM
SUPERSTRUCTURE	LUMP SUM			539.0	LUMP SUM	2,425.1			LUMP SUM
END BENT 1		8.8	1,466						LUMP SUM
BENT 1		17.4	2,108				5.0	3.0	
BENT 2		17.4	2,108					2.0	
BENT 3		17.4	2,108				50.0		
BENT 4		17.4	2,108				20.0		
END BENT 2		8.8	1,466						LUMP SUM
<b>TOTAL</b>	<b>LUMP SUM</b>	<b>87.2</b>	<b>11,364</b>	<b>539.0</b>	<b>LUMP SUM</b>	<b>2,425.1</b>	<b>75.0</b>	<b>5.0</b>	

REVISION #1: REVISED PER REVIEW COMMENTS  
BY: TJT DATE: 5-08  
CHK'D BY: KGB DATE: 5-08

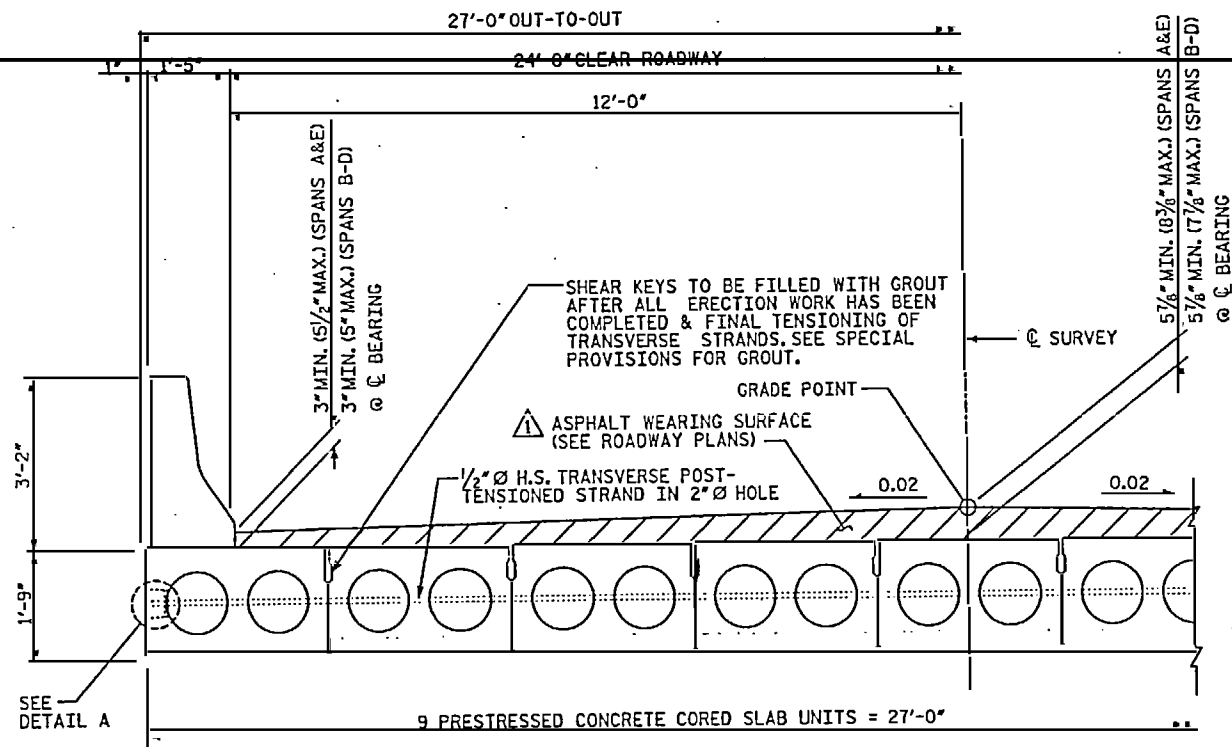


PROJECT NO. B-5021  
ROBESON COUNTY  
BRIDGE: 162  
MODIFICATION OF BRIDGE NO. 162  
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
**GENERAL DRAWING  
BRIDGE OVER I-95  
ON SR 1726**

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	5-30
1	STV	5-08	3			TOTAL SHEETS 62
2			4			

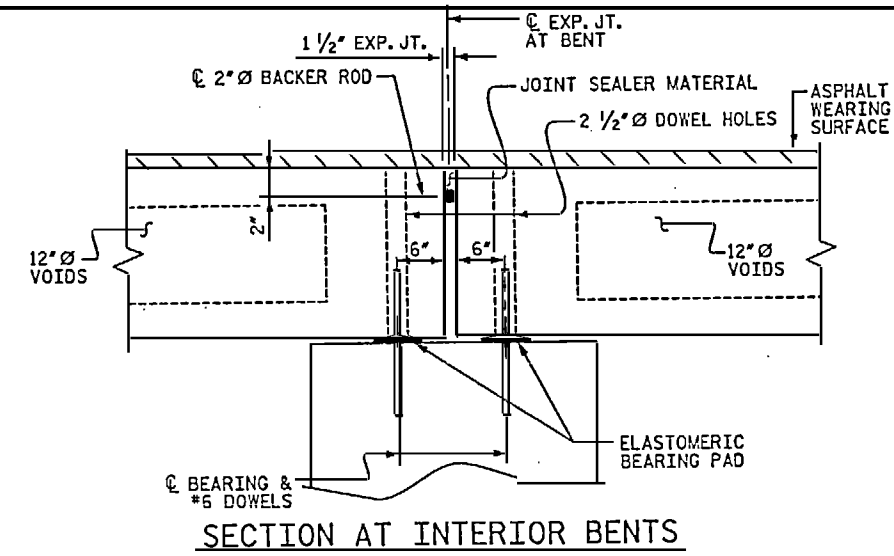
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CHECKED BY: TBO DATE: 3-08

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STV/Ralph Whitehead Associates, Inc.  
1000 West Morehead St., Sta. 200  
Charlotte, NC 28208

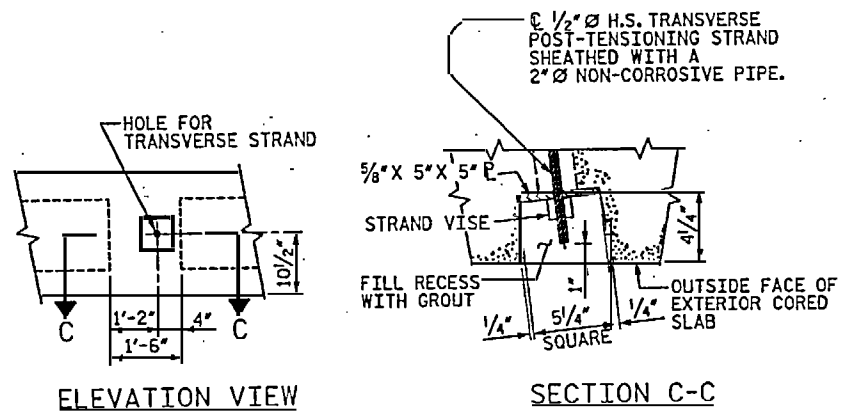


**TYPICAL HALF SECTION**  
(BRIDGE SYMMETRIC ABOUT C SURVEY)

NOTE: ASPHALT WEARING SURFACE IS INCLUDED IN THE QUANTITIES ON THE ROADWAY PLANS.

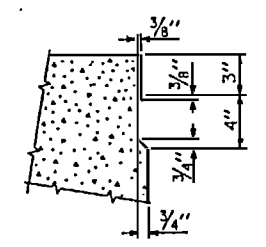


**SECTION AT INTERIOR BENTS**



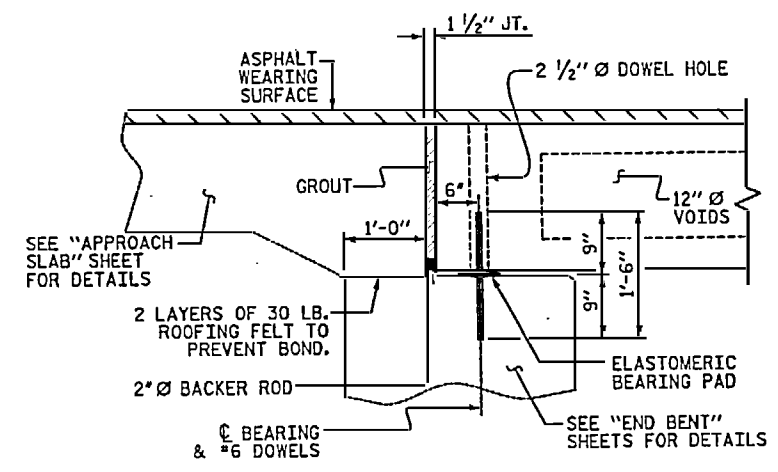
**DETAIL A**

GRouted RECESS AT END OF POST-TENSIONED STRAND CORED SLABS



**SHEAR KEY DETAIL**

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

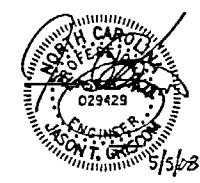


**SECTION AT END BENT**

PROJECT NO. B-5021  
ROBESON COUNTY

BRIDGE: 162

SHEET 1 OF 7



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

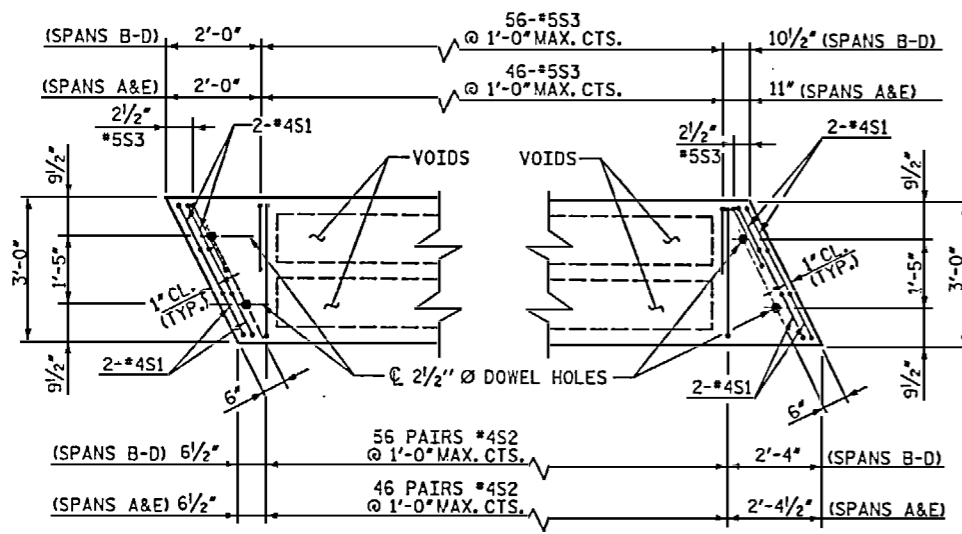
**TYPICAL SECTION AND DETAILS**

REVISION #1: REVISED PER REVIEW COMMENTS  
BY: TJT DATE: 5-08  
CH'KD BY: KGB DATE: 5-08

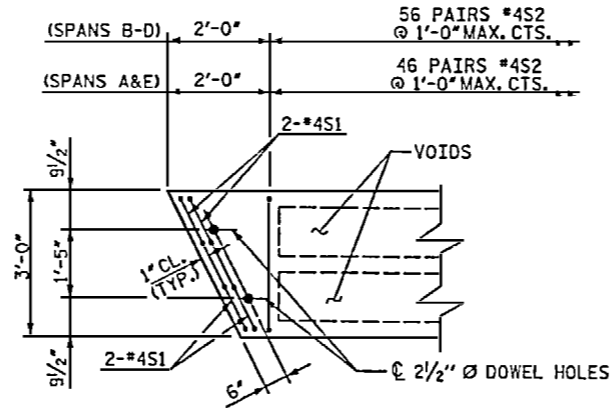
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STV/Ralph Whitehead Associates, Inc.  
1000 West Morehead St., Ste. 200  
Charlotte, NC 28208

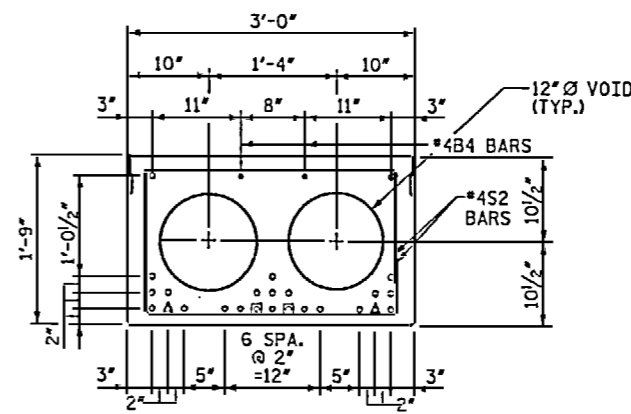
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	5-31
1	STV	5-08	3			10/21/08
2			4			12/1/08



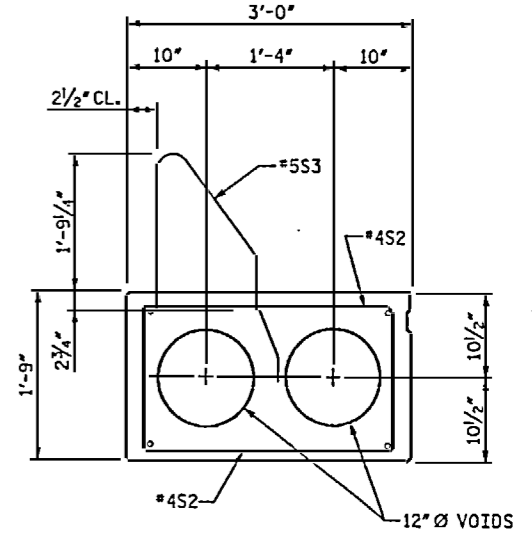
**PART PLAN EXTERIOR SLAB SECTION**  
(LEFT SIDE SHOWN, RIGHT SIDE SIMILAR BY SYMMETRY)



**PART PLAN INTERIOR SLAB SECTION**  
(FAR END SHOWN, NEAR END SIMILAR BY SYMMETRY)

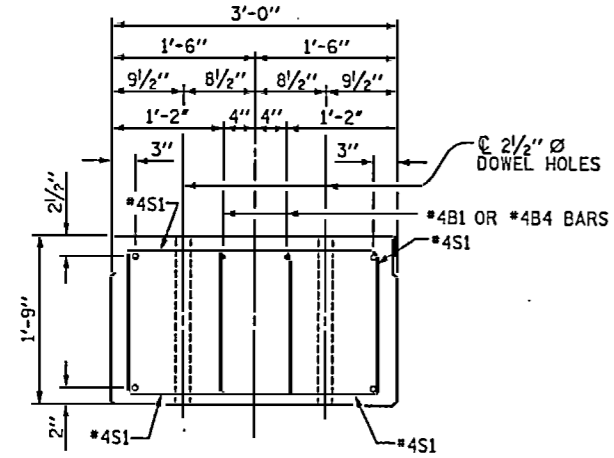


**SPANS B-D INTERIOR SLAB SECTION**  
(25 TOTAL STRANDS REQUIRED)



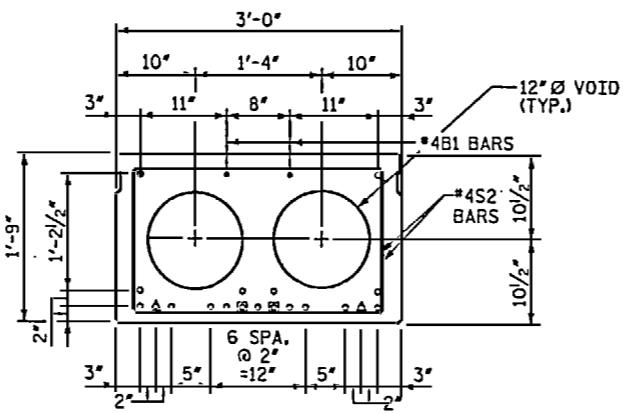
**SPANS B-D EXTERIOR SLAB SECTION**  
(FOR PRESTRESSED STRAND AND #4B4 BAR LAYOUT, SEE INTERIOR SLAB SECTION)

- DENOTES 1/2" Ø L.R. STRANDS
  - △ DENOTES SHEATHED STRAND, BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 4'-0" FROM END OF SLAB.
  - ☒ DENOTES SHEATHED STRAND, BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM END OF SLAB.
- SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.

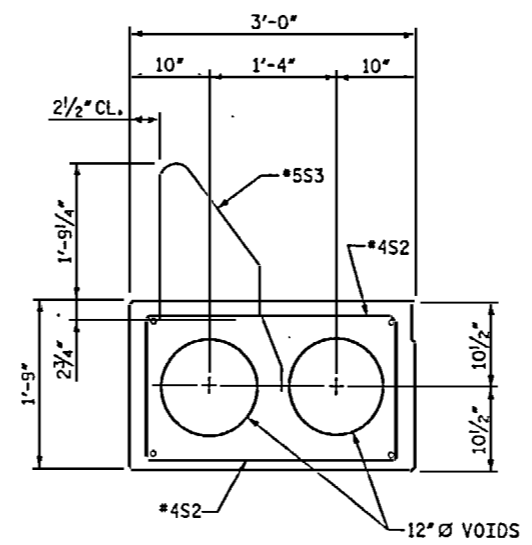


**SLAB END ELEVATION**  
SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES.

INTERIOR SLAB SECTION SHOWN, EXTERIOR SLAB SECTION SIMILAR EXCEPT SHEAR KEY LOCATION.  
STRAND LAYOUT NOT SHOWN.



**SPANS A & E INTERIOR SLAB SECTION**  
(19 TOTAL STRANDS REQUIRED)



**SPANS A & E EXTERIOR SLAB SECTION**  
(FOR PRESTRESSED STRAND AND #4B1 BAR LAYOUT, SEE INTERIOR SLAB SECTION)

- DENOTES 1/2" Ø L.R. STRANDS
  - △ DENOTES SHEATHED STRAND, BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 4'-0" FROM END OF SLAB.
  - ☒ DENOTES SHEATHED STRAND, BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 2'-0" FROM END OF SLAB.
- SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.

PROJECT NO. B-5021  
ROBESON COUNTY  
BRIDGE: 162  
SHEET 2 OF 7



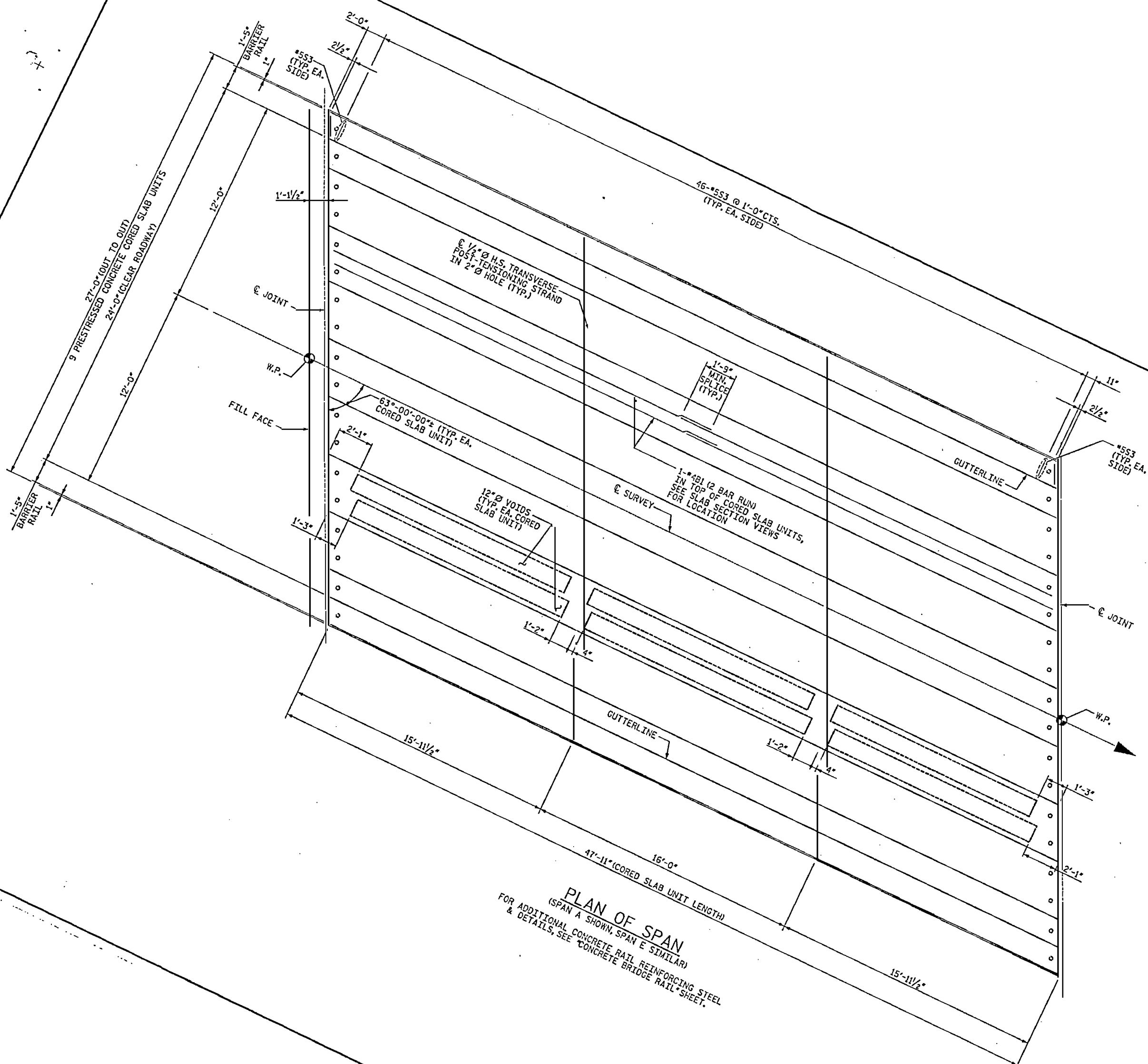
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
3'-0" X 1'-9" PRESTRESSED CORED SLAB

REVISIONS						SHEET NO
NO.	BY	DATE	NO.	BY	DATE	5-32
1			3			TOTAL SHEETS
2			4			62

DRAWN BY: LGH DATE: 2-08  
CHECKED BY: TBQ DATE: 2-08

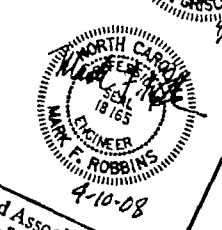
4/10/2008

D-1809.32  
STV/Ralph Whitehead Associates, Inc.  
1000 West Morehead St., Ste. 200  
Charlotte, NC 28208



DRAWN BY: LGH  
 CHECKED BY: TBO  
 DATE: 3-08  
 DATE: 3-08  
 1/12/2008

**PLAN OF SPAN**  
 (SPAN A SHOWN SPAN E SIMILAR)  
 FOR ADDITIONAL CONCRETE RAIL REINFORCING STEEL  
 & DETAILS, SEE CONCRETE BRIDGE RAIL SHEET.



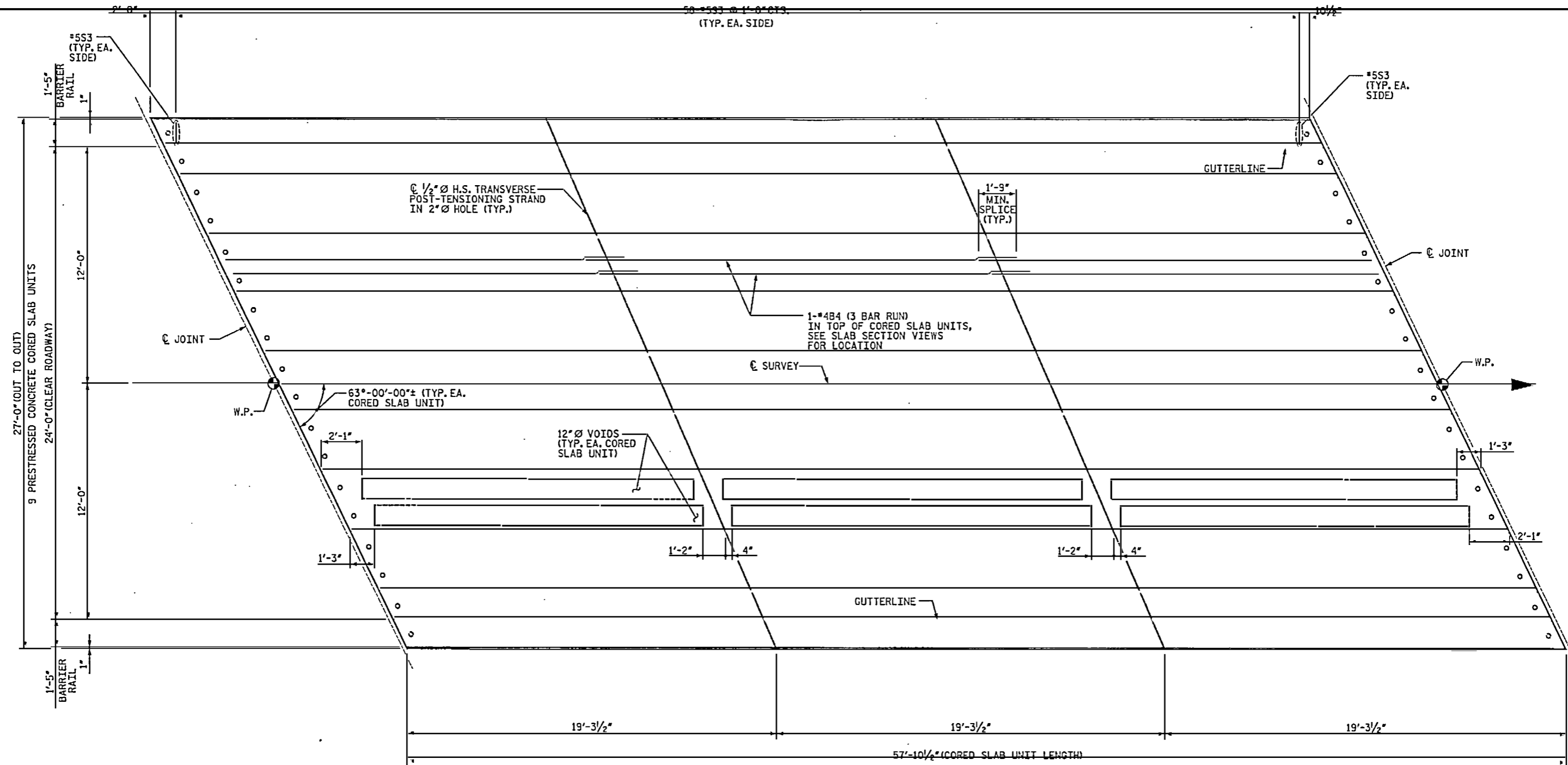
D-1809.33  
 STV/Ralph Whitehead Associates, Inc.  
 1000 West Mountain St.  
 Charlotte, NC 28228

PROJECT NO. B-5021  
 ROBESON COUNTY  
 BRIDGE: 162  
 SHEET 3 OF 7

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 SUPERSTRUCTURE  
 PLAN OF SPAN A & E

REVISIONS			
NO.	BY	DATE	DESCRIPTION
1	STV	3/08	ISSUED FOR PERMIT
2	STV	3/08	ISSUED FOR CONSTRUCTION

SHEET NO.  
 S-33  
 DATE  
 02



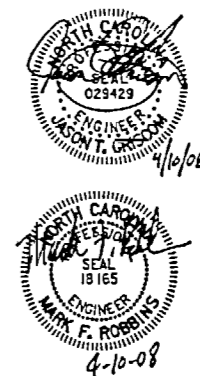
**PLAN OF SPAN**

FOR ADDITIONAL CONCRETE RAIL REINFORCING STEEL  
& DETAILS, SEE "CONCRETE BRIDGE RAIL" SHEET.

PROJECT NO. B-5021  
ROBESON COUNTY  
 BRIDGE: 162  
 SHEET 4 OF 7

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUPERSTRUCTURE  
 PLAN OF SPAN B-D**



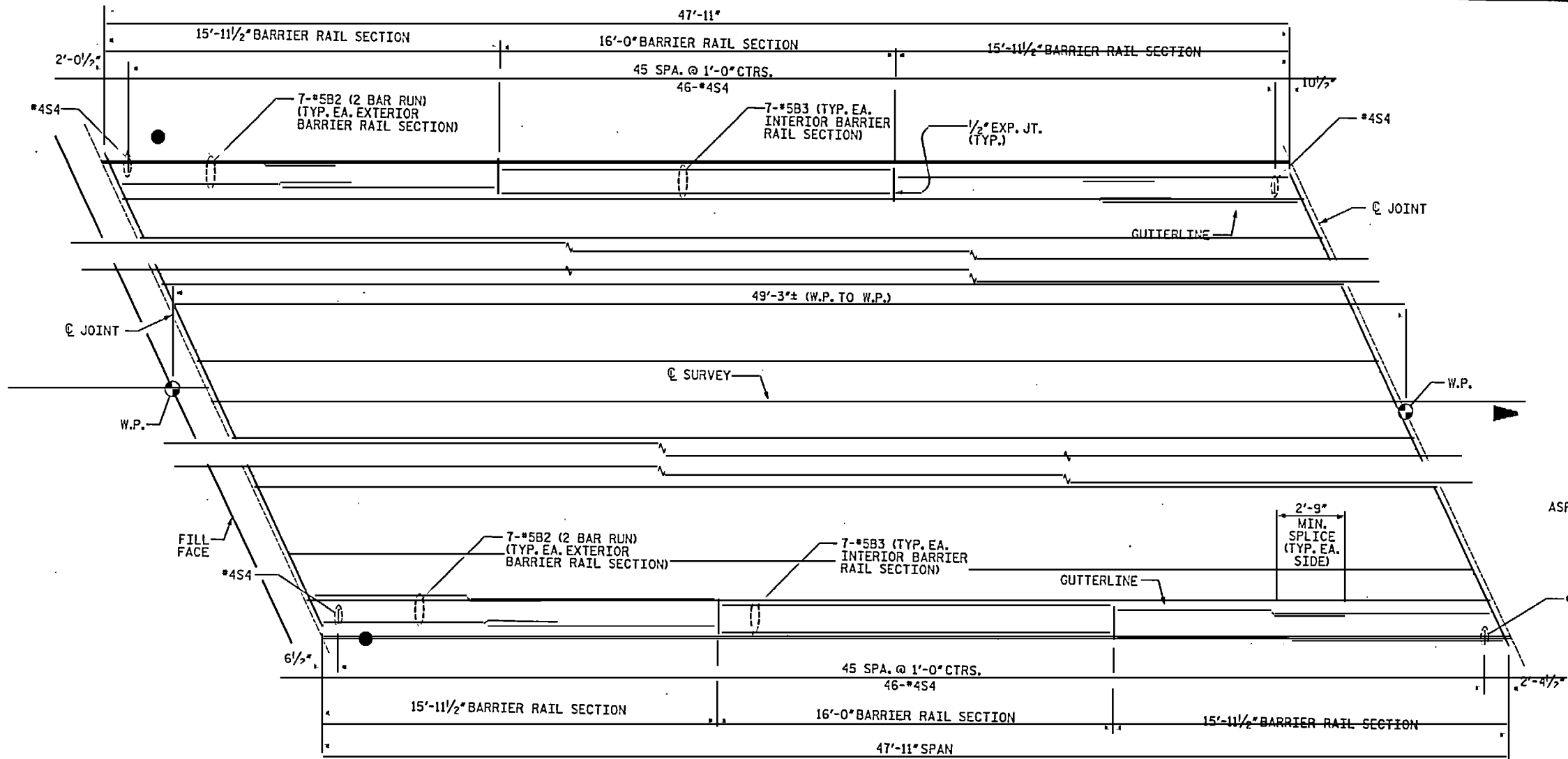
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 CHECKED BY: TBQ DATE: 3-08

4/10/2008

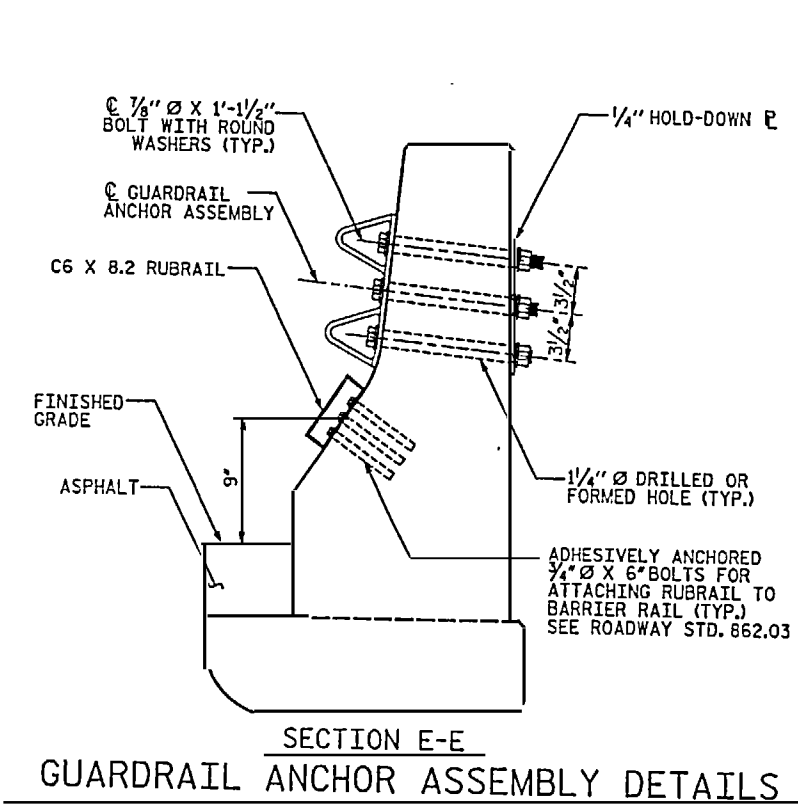
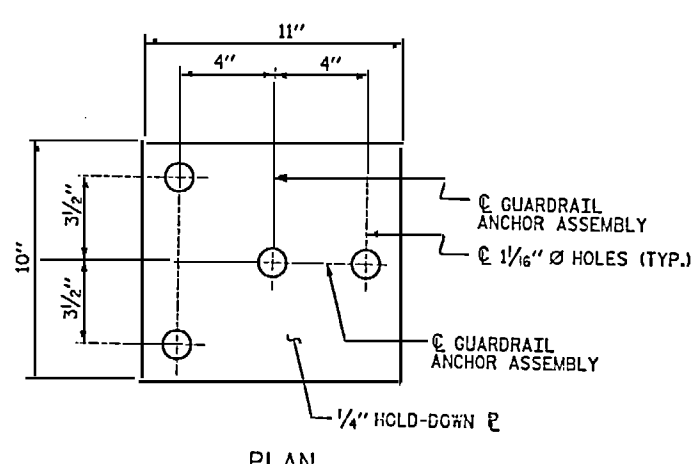
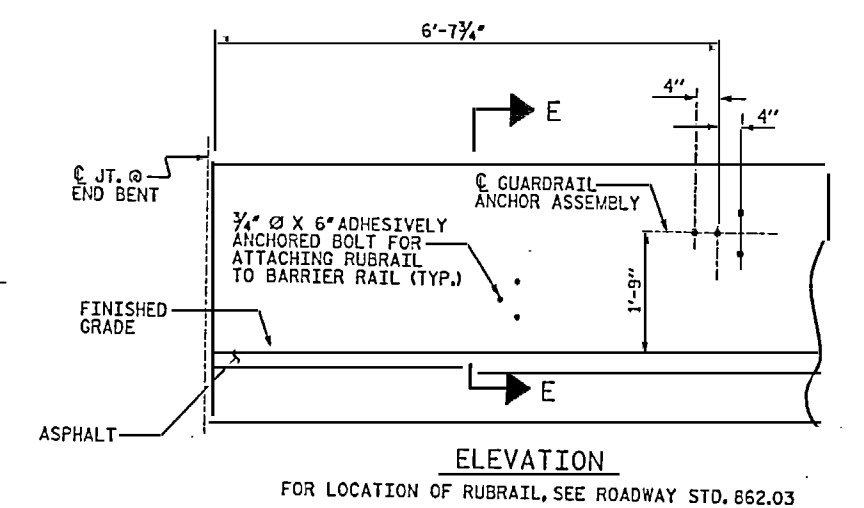
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**STV/Ralph Whitehead Associates, Inc.**  
 1000 West Morehead St., Ste. 200  
 Charlotte, NC 28208

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

TOTAL SHEETS: 62



NOTES:  
FOR RAIL DETAILS, SEE SHEET 7 OF 7.



**PLAN**  
(SPAN A SHOWN, SPAN E SIMILAR)  
● LOCATION OF B-77 GUARDRAIL ATTACHMENT

**GUARDRAIL ANCHORAGE NOTES**

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 4 - 3/8" 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 3/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

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

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

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

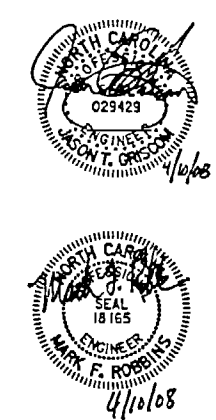
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

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

**LOCATION OF ANCHORS FOR GUARDRAIL**

END BENT 1 SHOWN, END BENT 2 SIMILAR.

PROJECT NO. B-5021  
ROBESON COUNTY  
 BRIDGE: 162  
 SHEET 5 OF 7



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**SUPERSTRUCTURE**  
**RAIL DETAILS**  
**SPANS A & E**

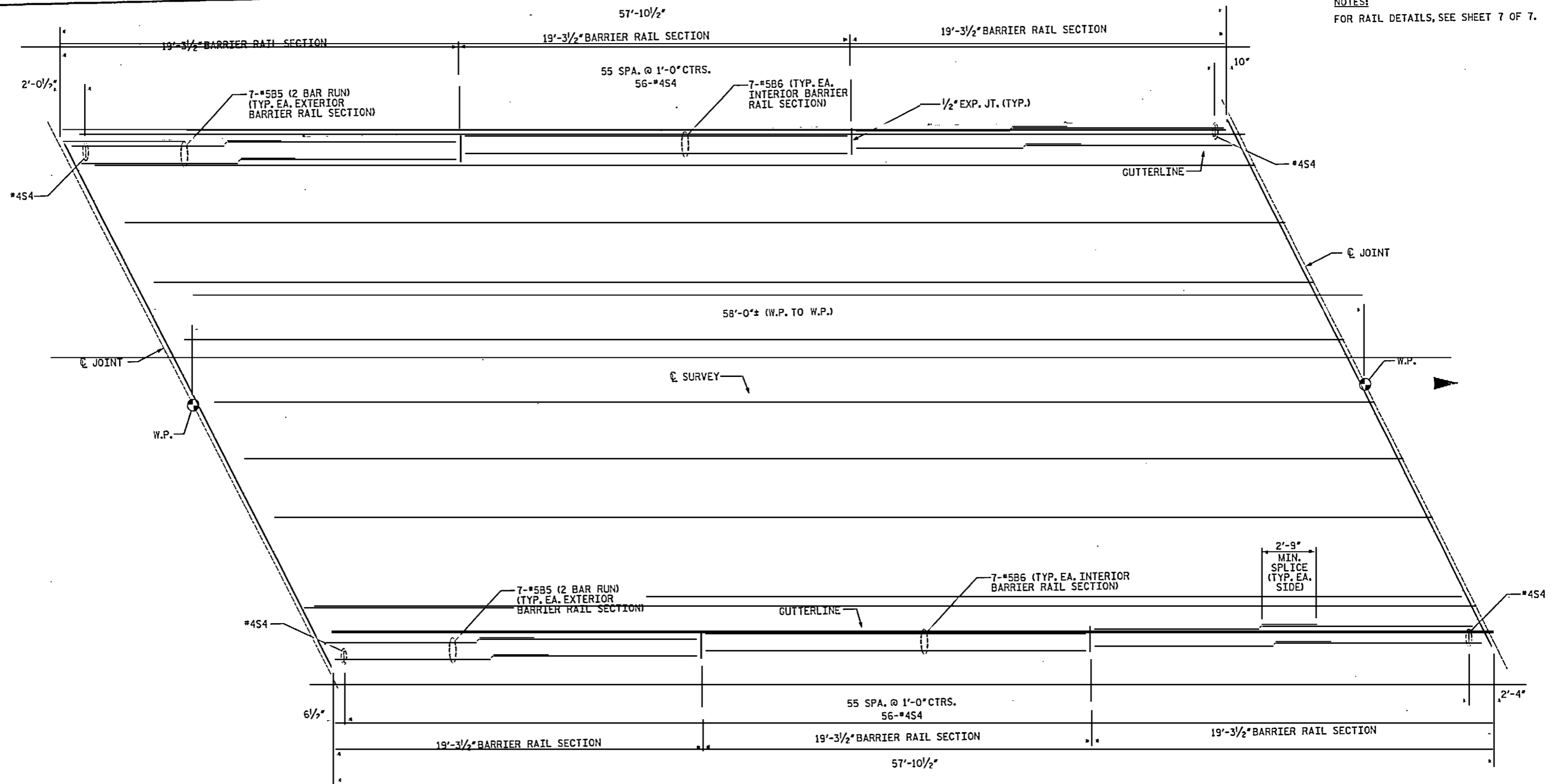
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 STV/Ralph Whitehead Associates, Inc.  
 1000 West Woodhead St., Ste. 200  
 Charlotte, NC 28208

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

TOTAL SHEETS: 62

NOTES:  
FOR RAIL DETAILS, SEE SHEET 7 OF 7.



PLAN

PROJECT NO. B-5021  
ROBESON COUNTY  
 BRIDGE: 162  
 SHEET 6 OF 7



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 SUPERSTRUCTURE  
 RAIL DETAILS  
 SPANS B-D

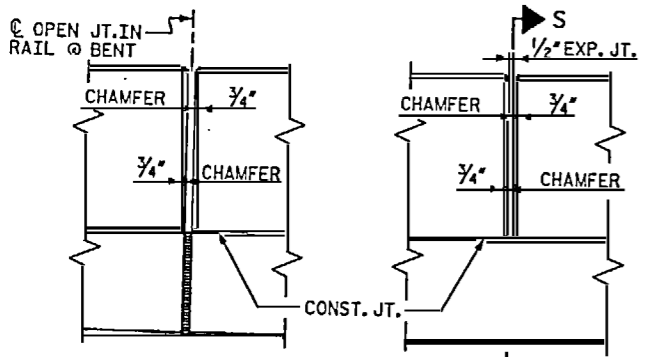
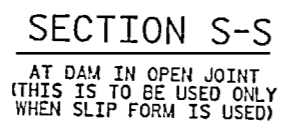
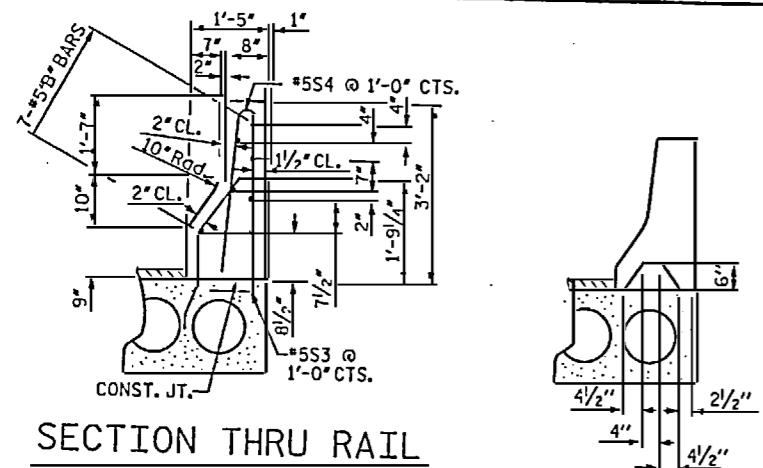
REVISIONS						SHEET NO.	
NO.	BY	DATE	NO.	BY	DATE	S-36	
1			3			TOTAL SHEETS	
2			4			62	

D-1809.36

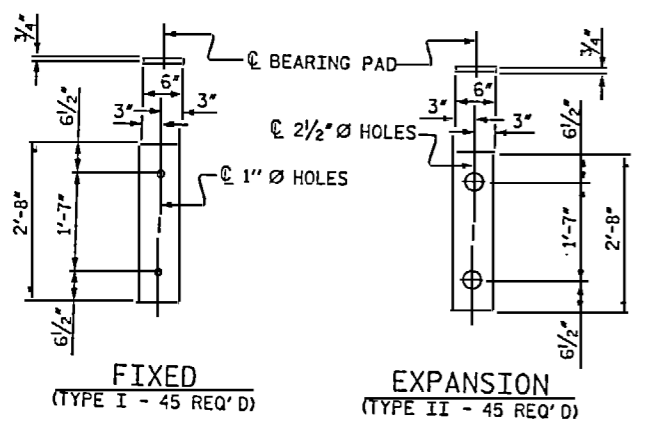
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 1000 West Morehead St., Ste. 200  
 Charlotte, NC 28208

DRAWN BY: JWJ DATE: 3-08  
 CHECKED BY: TBQ DATE: 3-08

4/10/2008



ELEVATION AT EXPANSION JOINTS



ELASTOMERIC BEARING DETAILS

**BILL OF MATERIAL FOR CONCRETE BARRIER RAIL (PER SPAN, 2 REQ'D) SPANS A & E**

BAR	TOTAL NO	SIZE	TYPE	LENGTH	WEIGHT
*B2	56	#5	STR	9'-7"	560
*B3	14	#5	STR	15'-8"	229
*S4	92	#4	2	5'-11"	364
*EPOXY COATED REINFORCING STEEL					1,153 LBS.
CLASS AA CONCRETE					11.3 CY
TOTAL LIN. FT. OF CONCRETE BARRIER RAIL					95.8

**BILL OF MATERIAL FOR CONCRETE BARRIER RAIL (PER SPAN, 3 REQ'D) SPANS B-D**

BAR	TOTAL NO	SIZE	TYPE	LENGTH	WEIGHT
*B5	56	#5	STR	11'-3"	657
*B6	14	#5	STR	18'-11"	276
*S4	112	#4	2	5'-11"	443
*EPOXY COATED REINFORCING STEEL					1,376 LBS.
CLASS AA CONCRETE					13.7 CY
TOTAL LIN. FT. OF CONCRETE BARRIER RAIL					115.8

**DEAD LOAD DEFLECTION AND CAMBER**

	SPANS A & E
CAMBER (SLAB ALONE IN PLACE)	1 3/4"
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1/4"
FINAL CAMBER	1 1/8"

\*\* INCLUDES FUTURE WEARING SURFACE

**DEAD LOAD DEFLECTION AND CAMBER**

	SPANS B-D
CAMBER (SLAB ALONE IN PLACE)	1 1/4"
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	7/16"
FINAL CAMBER	1 1/8"

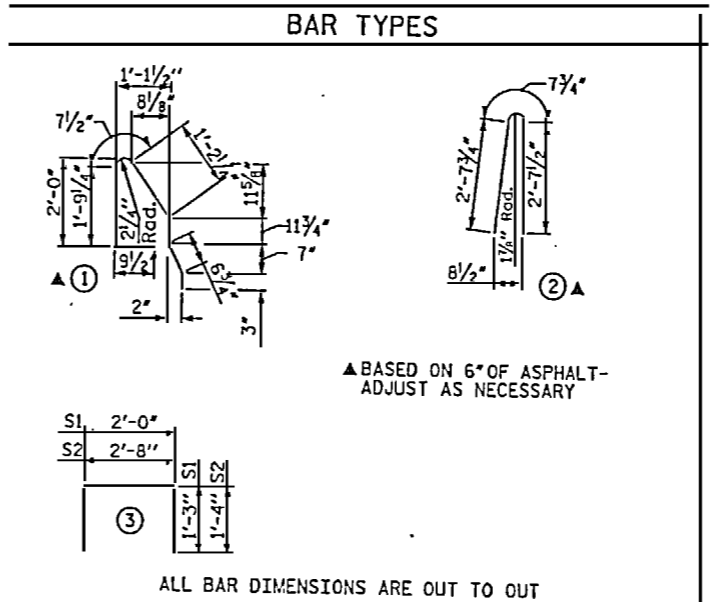
\*\* INCLUDES FUTURE WEARING SURFACE

**CORED SLABS REQUIRED SPANS A & E**

	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	4	47'-11"	191'-8"
INTERIOR C.S.	14	47'-11"	670'-10"
TOTAL	18		862'-6"

**CORED SLABS REQUIRED SPANS B-D**

	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	6	57'-10 1/2"	347'-3"
INTERIOR C.S.	21	57'-10 1/2"	1,215'-4 1/2"
TOTAL	27		1,562'-7 1/2"



**BILL OF MATERIAL FOR ONE CORED SLAB SECTION SPANS A & E**

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
B1	4	#4	STR	24'-8"	66	24'-8"	66
S1	16	#4	3	4'-6"	48	4'-6"	48
S2	92	#4	3	5'-4"	328	5'-4"	328
*S3	48	#5	1	6'-2"	309		
REINFORCING STEEL				442 LBS.		442 LBS.	
*EPOXY COATED REINFORCING STEEL				309 LBS.			
5000 P.S.I. CONCRETE				6.9 CY		6.9 CY	
1/2" Ø L.R. STRANDS				No.	19		19

**BILL OF MATERIAL FOR ONE CORED SLAB SECTION SPANS B-D**

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
B4	6	#4	STR	20'-6"	82	20'-6"	82
S1	16	#4	3	4'-6"	48	4'-6"	48
S2	112	#4	3	5'-4"	399	5'-4"	399
*S3	60	#5	1	6'-2"	386		
REINFORCING STEEL				529 LBS.		529 LBS.	
*EPOXY COATED REINFORCING STEEL				386 LBS.			
7000 P.S.I. CONCRETE				8.3 CY		8.3 CY	
1/2" Ø L.R. STRANDS				No.	25		25

**GRADE 270 STRANDS**

	1/2" Ø L.R.
AREA ( SQUARE INCHES )	0.153
ULTIMATE STRENGTH ( LBS. PER STRAND )	41,300
APPLIED PRESTRESS ( LBS. PER STRAND )	30,980

**NOTES**

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

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

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

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH GROUT. THE 2 1/2" Ø DOWEL HOLES AT EXPANSION ENDS OF SLAB SECTIONS SHALL BE FILLED WITH JOINT SEALER MATERIAL TO 1/2" ABOVE THE TOP OF DOWELS AND THEN FILLED WITH GROUT.

THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE SL LOW MODULUS SILICONE SEALANT. THE 2" Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS. PAYMENT FOR JOINT SEALER MATERIAL SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION OF THE BRIDGE.

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 4000 PSI (SPANS A & E) AND 5600 PSI (SPANS B-D).

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED. PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

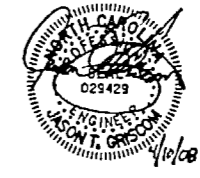
APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

VERTICAL GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BRIDGE RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8 FEET TO 10 FEET BETWEEN EXPANSION JOINTS AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

**SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS**

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"
#5	2'-6"	2'-2"	2'-6"	2'-2"	3'-5"
#6	3'-0"	2'-7"	3'-10"	2'-7"	4'-4"
#7	5'-3"	3'-6"			
#8	6'-10"	4'-7"			

PROJECT NO. B-5021  
 ROBESON COUNTY  
 BRIDGE: 162  
 SHEET 7 OF 7



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**SUPERSTRUCTURE CONCRETE BRIDGE RAIL DETAILS**

DRAWN BY: JTG DATE: 3-08  
 CHECKED BY: TBQ DATE: 3-08

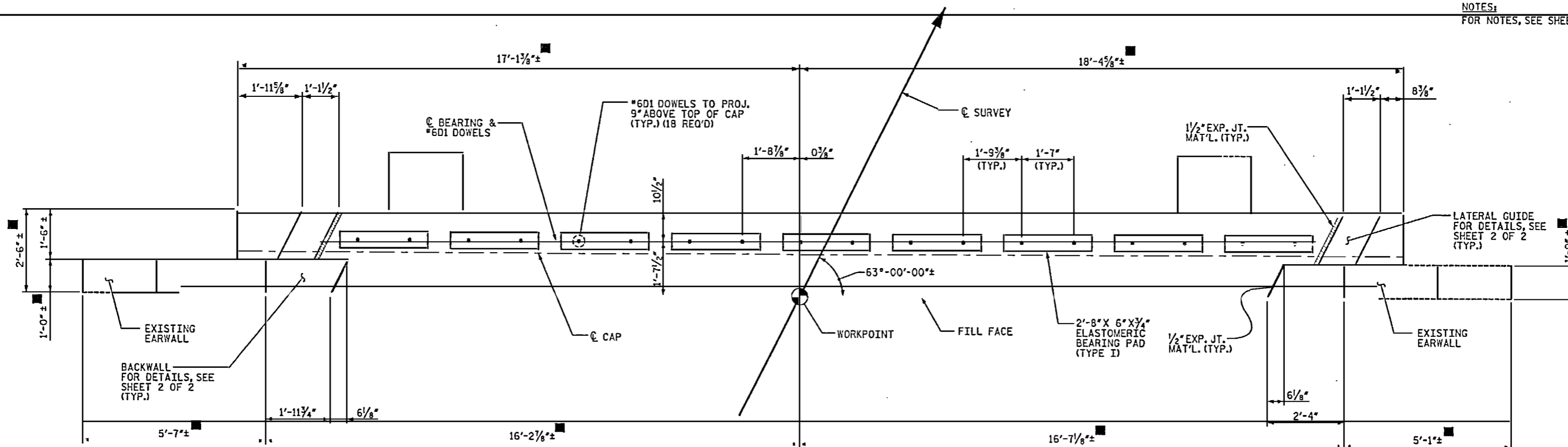
D-1809.37  
 STV/Ralph Whitehead Associates, Inc.  
 1000 West Morehead St., Ste. 200  
 Charlotte, NC 28208

**REVISIONS**

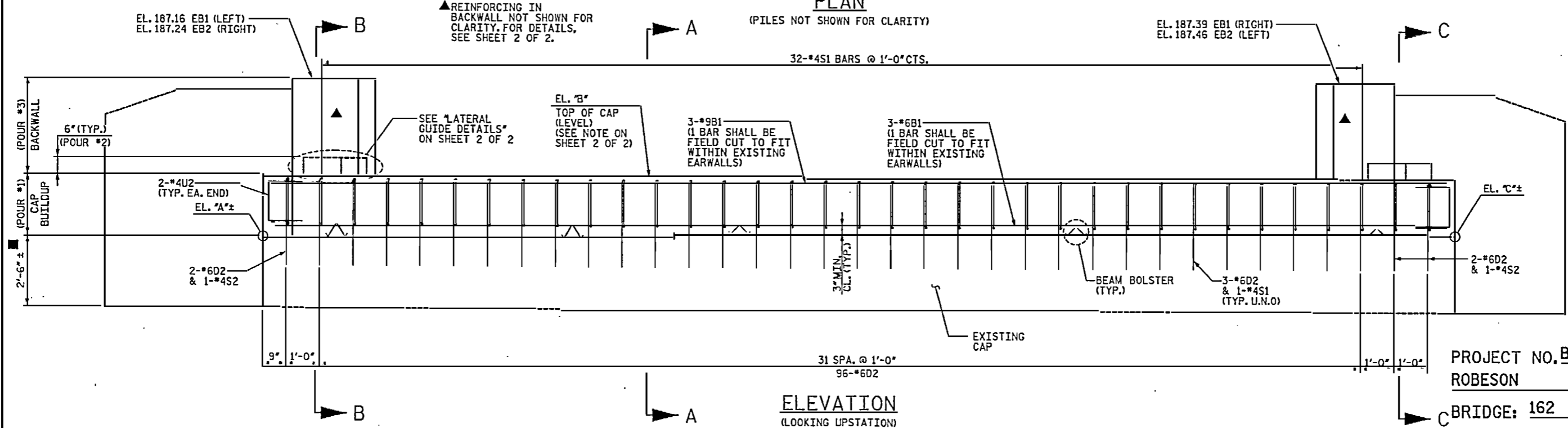
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

SHEET NO. S-37  
 TOTAL SHEETS 62





PLAN



ELEVATION

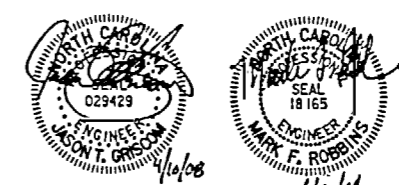
DIMENSIONS AND ELEVATIONS ARE BASED ON AS-BUILT DIMENSIONS AND FIELD SURVEY INFORMATION. CONTRACTOR SHALL FIELD VERIFY DIMENSIONS PRIOR TO CONSTRUCTION. REINFORCING AND CONCRETE CAP EXTENSIONS SHALL BE ADJUSTED TO MATCH FIELD VERIFIED DIMENSIONS PROVIDED THAT THE OUT-TO-OUT DIMENSIONS REMAIN AS DETAILED.

	END BENT 1	END BENT 2
"A"	181.82	181.83
"B"	184.54	184.59
"C"	182.01	181.99

PROJECT NO. B-5021  
ROBESON COUNTY  
BRIDGE: 162  
SHEET 1 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

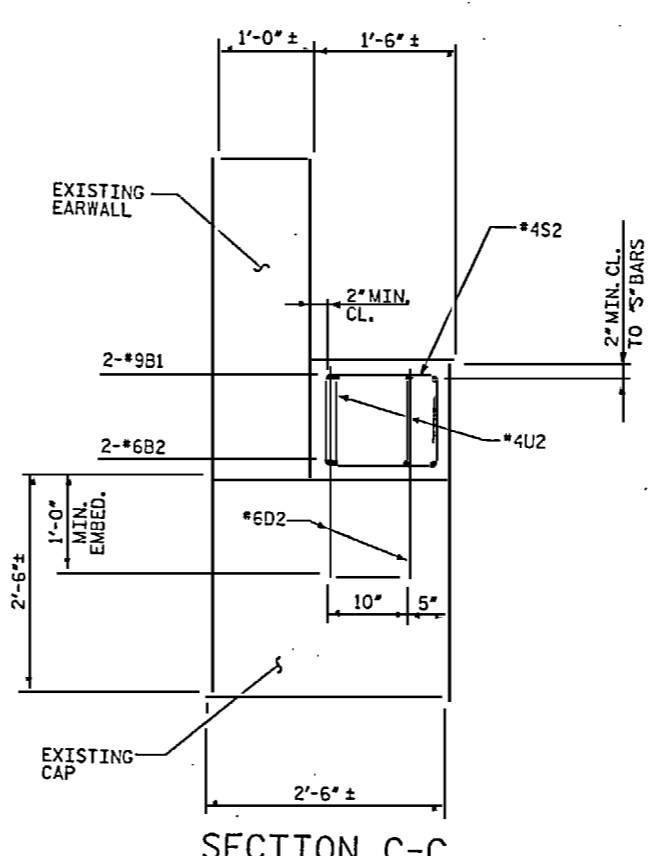
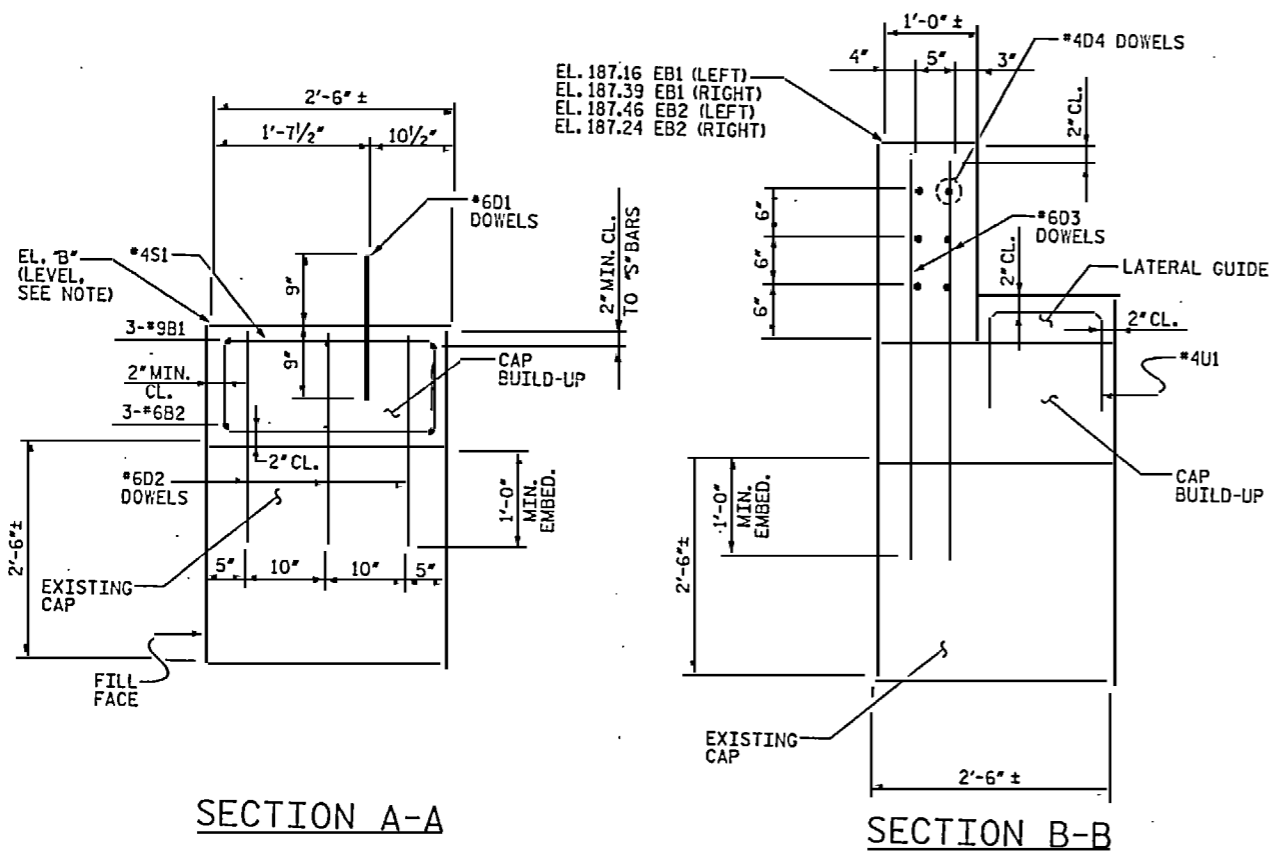
SUBSTRUCTURE  
END BENTS 1 & 2



DRAWN BY: JWJ DATE: 3-08  
CHECKED BY: TBQ DATE: 3-08

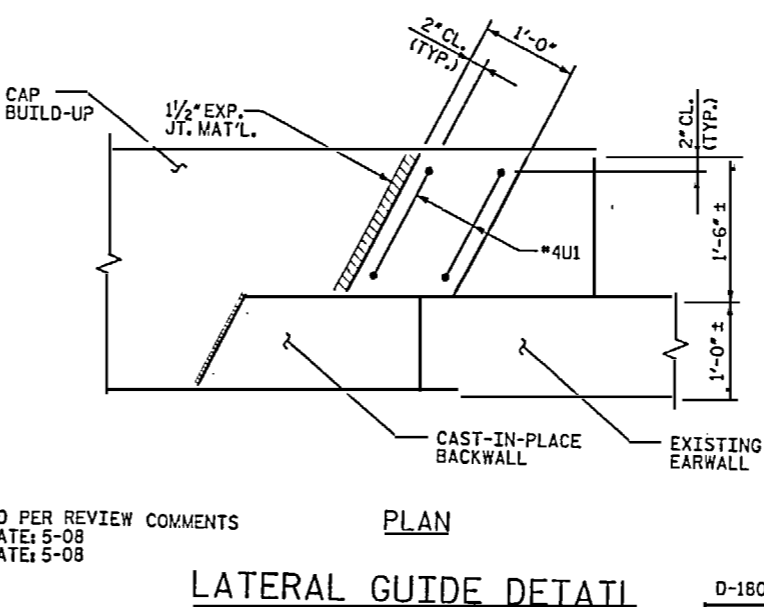
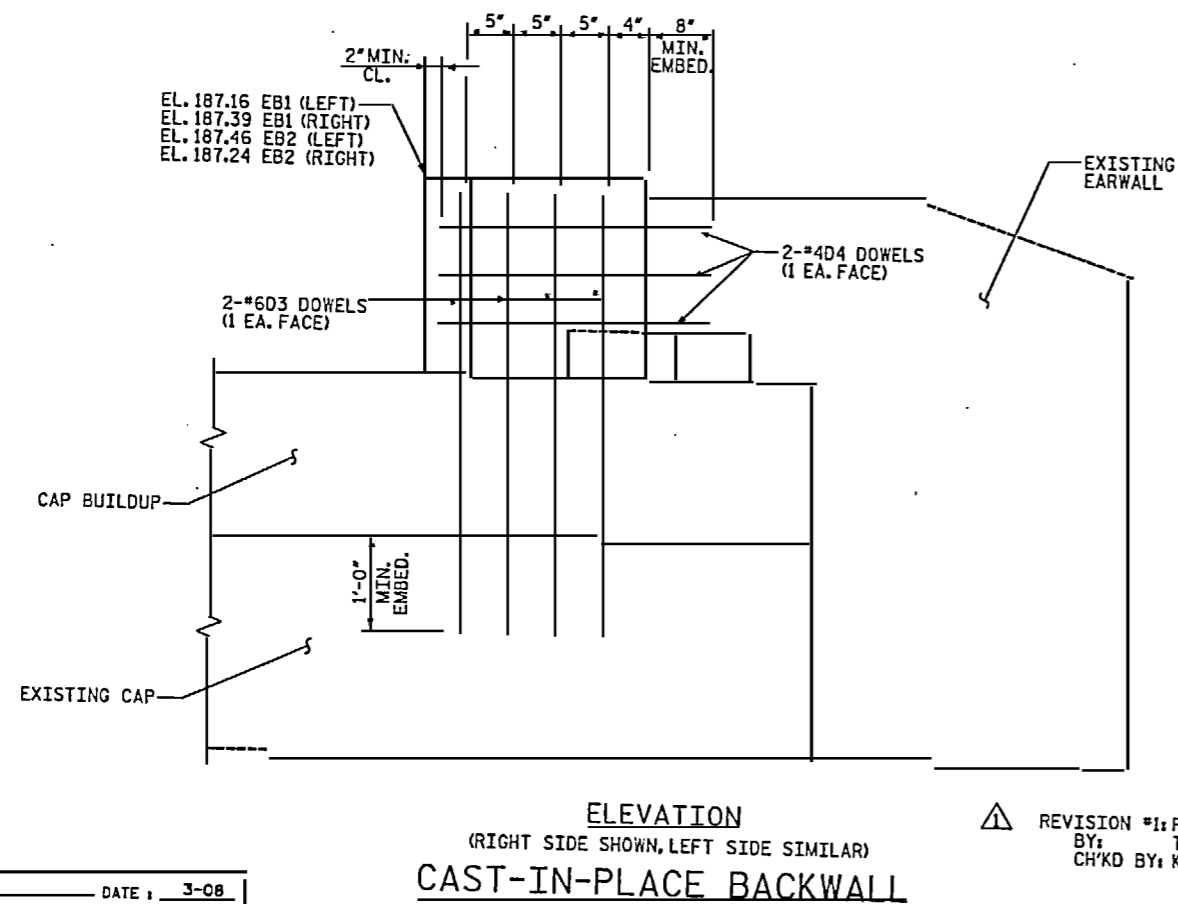
D-1809.38  
STV/Ralph Whitehead Associates, Inc.  
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Charlotte, NC 28208

REVISIONS						SHEET NO. 5-3B
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 62
2			4			



BAR TYPES		BILL OF MATERIAL		
		<b>BILL OF REINFORCING FOR ONE END BENT (2 REQ'D.)</b>		
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	3	9	STR. 35'-0"	357
B2	3	6	STR. 35'-0"	158
D1	18	6	STR. 1'-6"	41
D2	102	6	STR. 3'-4"	511
D3	16	6	STR. 5'-8"	136
D4	12	4	STR. 2'-6"	20
S1	32	4	(1) 9'-6"	203
S2	3	4	(1) 7'-6"	15
U1	4	4	(2) 4'-1"	11
U2	4	4	(2) 5'-1"	14
REINFORCING STEEL			LBS.	1,466
CLASS AA CONCRETE BREAKDOWN				
POUR 1 (CAP)			CY	8.3
POUR 2 (LATERAL GUIDE)			CY	0.1
POUR 3 (BACKWALL)			CY	0.4
TOTAL			CY	8.8

**NOTES:**  
 REINFORCING STEEL MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.  
 THE LATERAL GUIDES ARE NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.  
 THE BACKWALL IS NOT TO BE POURED UNTIL AFTER THE APPROACH SLAB IS IN PLACE.  
 ALL ELEVATIONS ARE TO BE VERIFIED BY THE ENGINEER.  
 ⚠ A HIGH EARLY STRENGTH PORTLAND CEMENT CONCRETE SHALL BE USED TO ACHIEVE A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI PRIOR TO PLACING CORED SLAB UNITS. SEE STANDARD SPECIFICATION SECTION 1000 FOR DETAILS.  
 ⚠ #6D2, #6D3, AND #6D4 DOWELS SHALL BE ADHESIVELY ANCHORED USING AN APPROVED ADHESIVE CONSIDERING LOAD RESISTANCE, IN-SERVICE AND INSTALLATION TEMPERATURE, AVAILABILITY OF COMPREHENSIVE INSTALLATION INSTRUCTIONS, AND CREEP. ANCHORS SHALL BE INSTALLED TO THE MINIMUM EMBEDMENT DEPTHS AS SHOWN ON PLANS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE DOWEL IS 26 KIPS. FOR ADHESIVELY ANCHORED DOWELS, SEE SPECIAL PROVISIONS.  
 DIMENSIONS AND ELEVATIONS ARE BASED ON AS-BUILT DIMENSIONS AND FIELD SURVEY INFORMATION. CONTRACTOR SHALL FIELD VERIFY DIMENSIONS PRIOR TO CONSTRUCTION. REINFORCING AND CONCRETE CAP EXTENSIONS SHALL BE ADJUSTED TO MATCH FIELD VERIFIED DIMENSIONS PROVIDED THAT THE OUT-TO-OUT DIMENSIONS REMAIN AS DETAILED.



DRAWN BY: LGH DATE: 3-08  
 CHECKED BY: BMC DATE: 3-08

**ELEVATION**  
 (RIGHT SIDE SHOWN, LEFT SIDE SIMILAR)  
**CAST-IN-PLACE BACKWALL**

REVISION #1: REVISED PER REVIEW COMMENTS  
 BY: TJT DATE: 5-08  
 CH'KD BY: KGB DATE: 5-08

**PLAN**  
**LATERAL GUIDE DETAIL**

D-1809.39  
 STV/Ralph Whitehead Associates, Inc.  
 1000 West Morehead St., Ste. 200  
 Charlotte, NC 28208

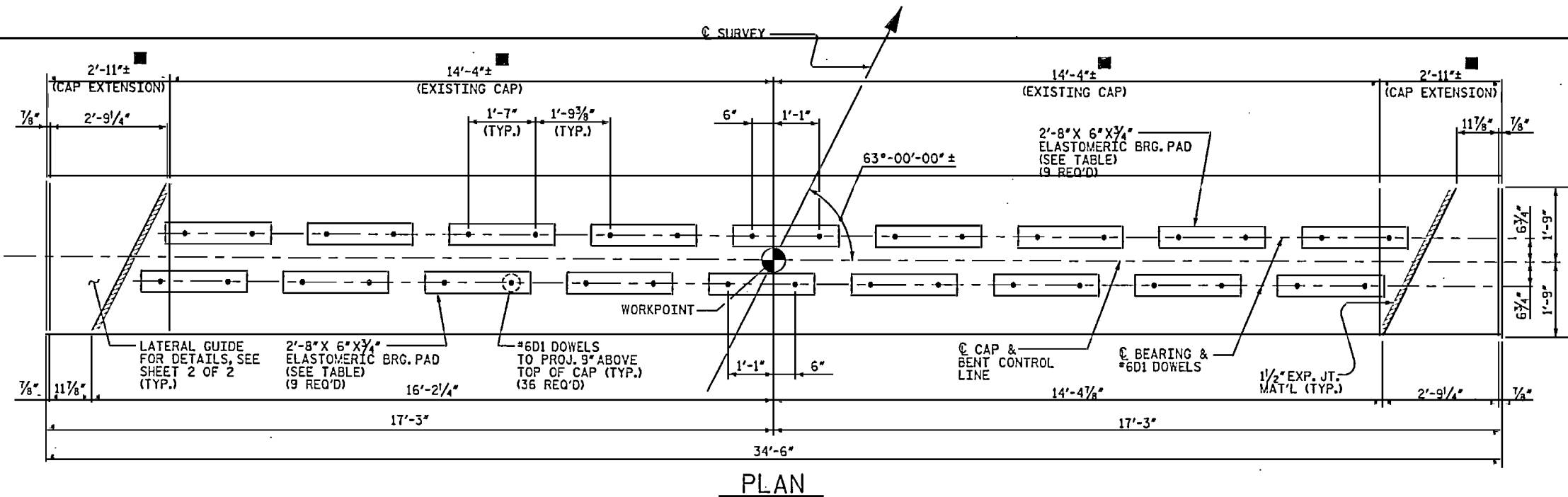
PROJECT NO. B-5021  
 ROBESON COUNTY  
 BRIDGE: 162  
 SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE**  
**END BENTS 1 & 2**

REVISIONS		SHEET NO.	
NO.	DATE	NO.	DATE
1	5-08	3	
2		4	

ISIN: 62



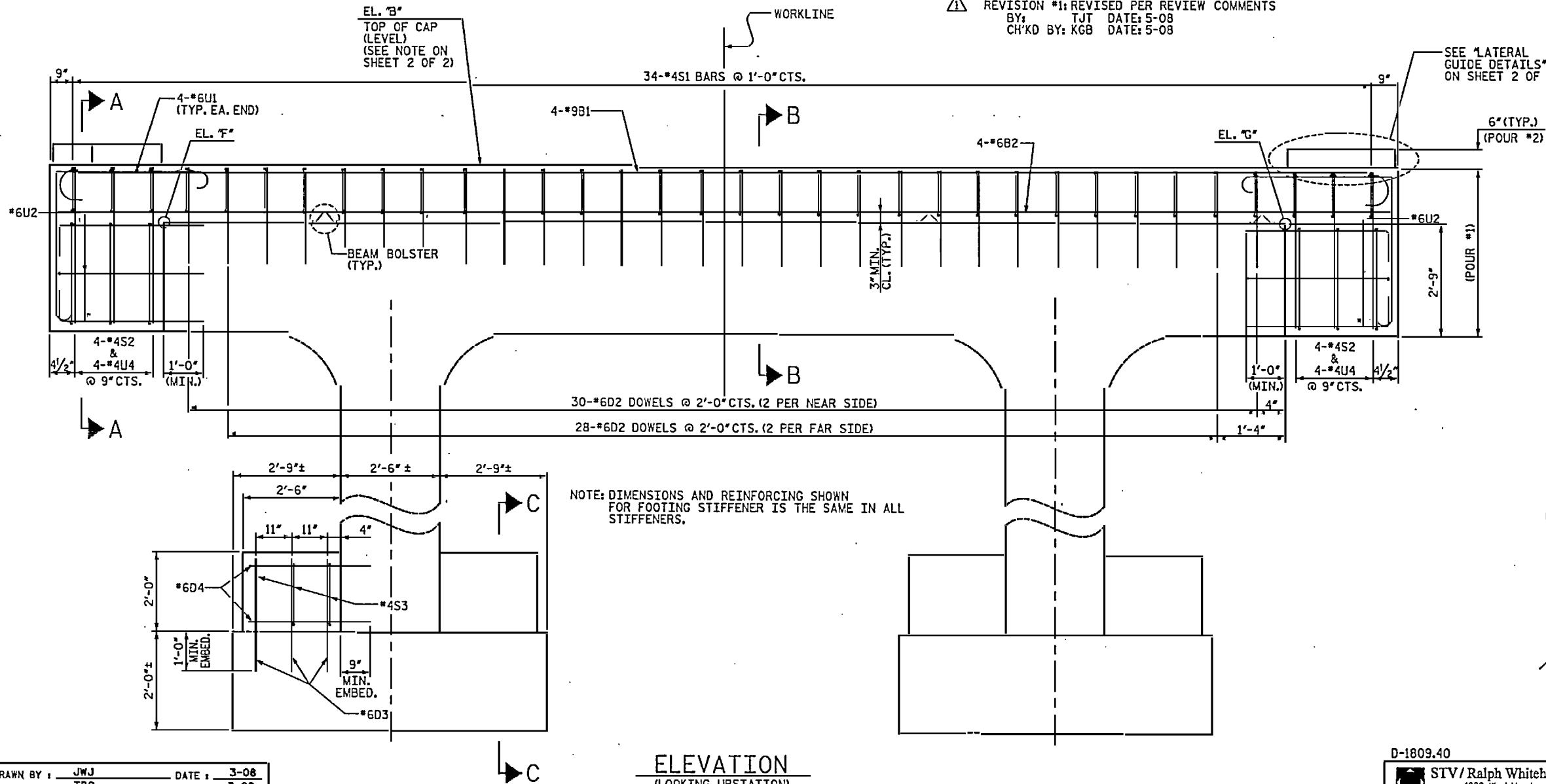
**NOTES**

- REINFORCING STEEL MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
- THE LATERAL GUIDES ARE NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.
- ALL ELEVATIONS ARE TO BE VERIFIED BY THE ENGINEER.
- A HIGH EARLY STRENGTH PORTLAND CEMENT CONCRETE SHALL BE USED TO ACHIEVE A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI PRIOR TO PLACING CORED SLAB UNITS. SEE STANDARD SPECIFICATION SECTION 1000 FOR DETAILS.
- \*6D2, \*6D3, \*6D4, \*6U2 DOWELS SHALL BE ADHESIVELY ANCHORED USING AN APPROVED ADHESIVE CONSIDERING LOAD RESISTANCE, IN-SERVICE AND INSTALLATION TEMPERATURE, AVAILABILITY OF COMPREHENSIVE INSTALLATION INSTRUCTIONS, AND CREEP. ANCHORS SHALL BE INSTALLED TO THE MINIMUM EMBEDMENT DEPTHS AS SHOWN ON PLANS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE DOWEL IS 26 KIPS. FOR ADHESIVELY ANCHORED DOWELS, SEE SPECIAL PROVISIONS.
- DIMENSIONS AND ELEVATIONS ARE BASED ON AS-BUILT DIMENSIONS AND FIELD SURVEY INFORMATION. CONTRACTOR SHALL FIELD VERIFY DIMENSIONS PRIOR TO CONSTRUCTION. REINFORCING AND CONCRETE CAP EXTENSIONS SHALL BE ADJUSTED TO MATCH FIELD VERIFIED DIMENSIONS PROVIDED THAT THE OUT-TO-OUT DIMENSIONS REMAIN AS DETAILED.

REVISION #1: REVISED PER REVIEW COMMENTS  
 BY: TJT DATE: 5-08  
 CH'KD BY: KGB DATE: 5-08

BENT	EL. 'F'	EL. 'G'
1	182.55	182.67
2	183.04	183.06
3	183.06	183.01
4	182.67	182.53

BENT	DOWNSTATION	UPSTATION
1	TYPE II	TYPE I
2	TYPE II	TYPE I
3	TYPE II	TYPE I
4	TYPE II	TYPE II



NOTE: DIMENSIONS AND REINFORCING SHOWN FOR FOOTING STIFFENER IS THE SAME IN ALL STIFFENERS.



PROJECT NO. B-5021  
 ROBESON COUNTY  
 BRIDGE: 162  
 SHEET 1 OF 2

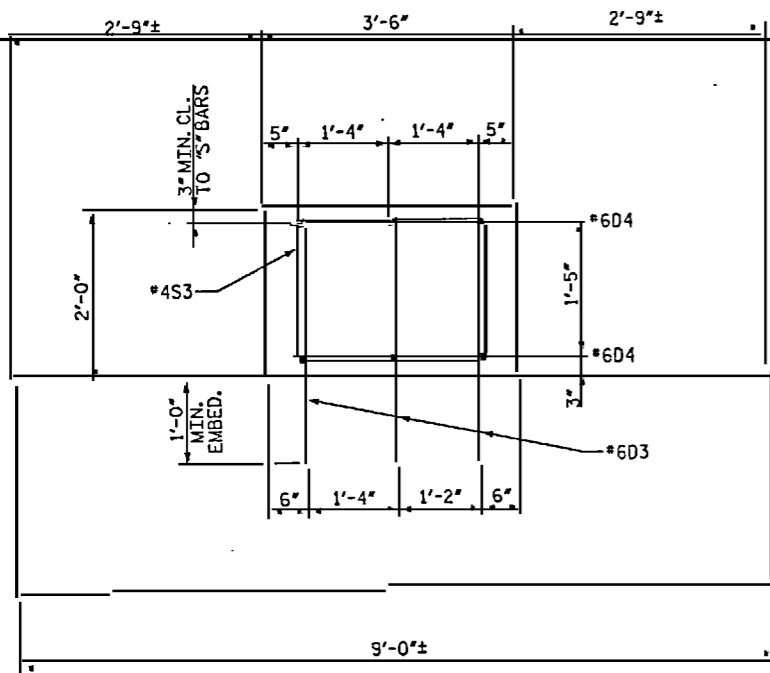
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE  
 BENTS 1-4**

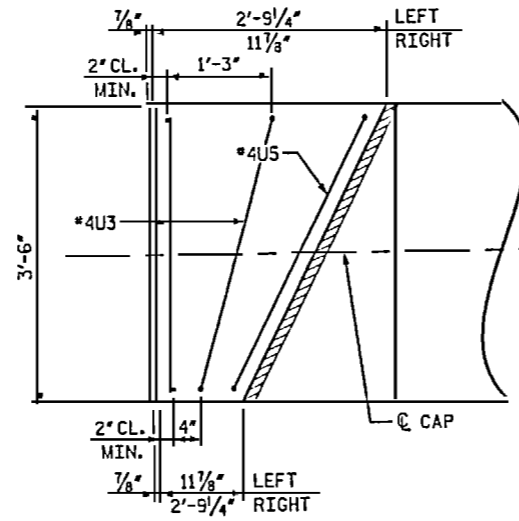
NO.	BY	DATE	NO.	BY	DATE	SHEET NO.
1	STV	5-08	3			S-40
2			4			62

DRAWN BY: JWJ DATE: 3-08  
 CHECKED BY: TBQ DATE: 3-08

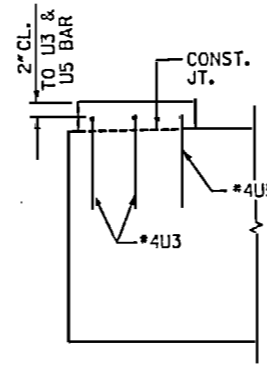
D-1809.40  
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SECTION C-C



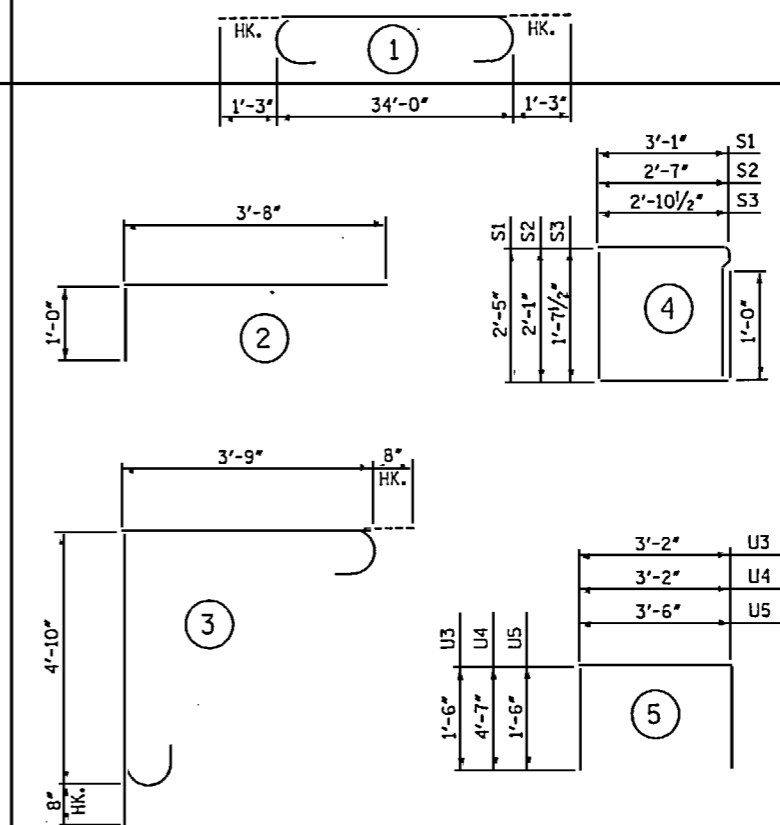
PLAN



ELEVATION

LATERAL GUIDE DETAILS  
(LEFT SIDE SHOWN, RIGHT SIDE SIMILAR)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

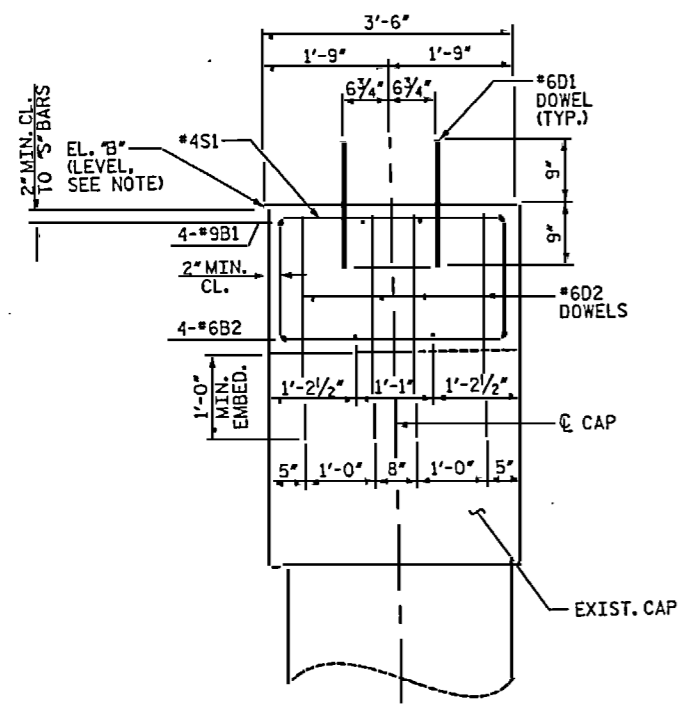
BILL OF MATERIAL

BILL OF REINFORCING FOR ONE BENT (4 REQ'D.)

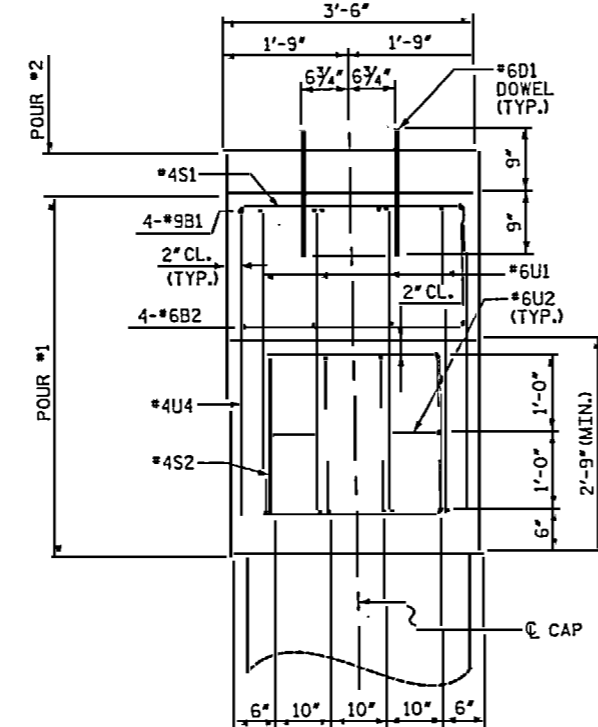
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	9	(1)	36'-6"	496
B2	4	6	STR.	34'-0"	204
D1	36	6	STR.	1'-6"	81
D2	58	6	STR.	3'-7"	312
D3	36	6	STR.	2'-9"	149
D4	24	6	STR.	3'-0"	108
S1	34	4	(4)	12'-0"	273
S2	8	4	(4)	10'-4"	55
S3	12	4	(4)	10'-0"	80
U1	8	6	(3)	9'-11"	119
U2	20	6	(2)	4'-8"	140
U3	4	4	(5)	6'-2"	16
U4	8	4	(5)	12'-4"	66
U5	2	4	(5)	6'-6"	9

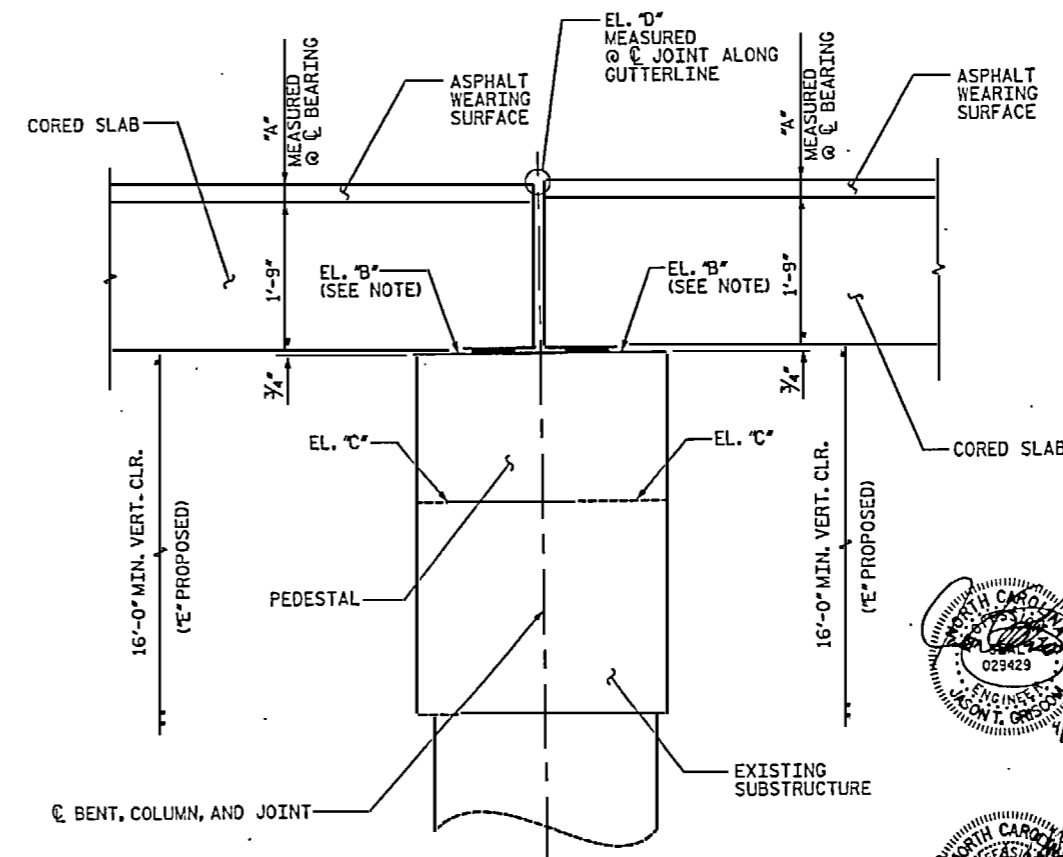
REINFORCING STEEL	LBS.	2,108
CLASS AA CONCRETE BREAKDOWN		
POUR 1 (CAP & FOOTING) CY		17.1
POUR 2 (LATERAL GUIDE) CY		0.3
TOTAL	CY	17.4



SECTION B-B



SECTION A-A



DOWNSTATION

UPSTATION

PEDESTAL HEIGHT

NOTE: DIMENSIONS AND ELEVATIONS SHOWN ARE FROM BEST INFORMATION AVAILABLE. CONTRACTOR SHALL MAKE ADJUSTMENTS TO PEDESTAL EL. 'B' TO MAINTAIN 3" (5/2" MAX.) SPANS A & E OR 3" (5" MAX.) SPANS B-D. ASPHALT WEARING SURFACE @ C BEARING MATCH EL. 'D' AND TO MAINTAIN THE 16'-0" MIN. VERTICAL CLEARANCE. IF ANY ELEVATIONS ARE MODIFIED, THE CONTRACTOR IS RESPONSIBLE FOR ADJUSTING THE REINFORCING TO FIT THE PEDESTAL HEIGHT.

	BENT 1	BENT 2	BENT 3	BENT 4
'A'	3'	3'	3'	3'
'B'	185.30	185.80	185.81	185.33
'C'	182.55	183.04	183.01	182.53
'D'	187.36	187.86	187.87	187.39
'E'	16'-10"	16'-10"	17'-4"	17'-4"

PROJECT NO. B-5021  
ROBESON COUNTY  
BRIDGE: 162

SHEET 2 OF 2

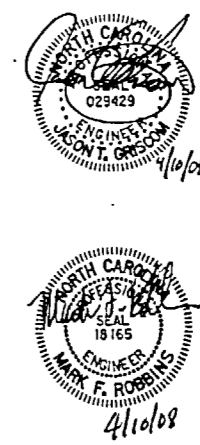
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

SUBSTRUCTURE  
BENTS 1-4

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

DRAWN BY: JWJ DATE: 3-08  
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1000 West Morehead St., Ste. 200  
Charlotte, NC 28208



BILL OF MATERIAL

ONE APPROACH SLAB  
(2 REQUIRED)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	30	#4	STR.	28'-1"	563
B1	50	#5	STR.	14'-1"	734
B2	50	#6	STR.	14'-7"	1,095
B3	2	#4	STR.	11'-2"	15
D1	20	#4	STR.	9'	10
REINFORCING STEEL				LBS.	2,417
CLASS AA CONCRETE					
SLAB				C. Y.	15.6
CURBS				C. Y.	0.3
TOTAL				C. Y.	15.9

NOTES

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

THE 6" COMP. A.B.C. SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB AND SHALL EXTEND 1'-0" OUTSIDE OF EACH EDGE OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 4" TYPE B-25.0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 5" CLASS "A" CONCRETE BASE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER OF 30 LB ROOFING FELT SHALL BE PLACED BETWEEN THE CONCRETE BASE AND THE APPROACH SLAB TO PREVENT BOND. THE APPROACH SLAB SHALL NOT BE CAST UNTIL THE CONCRETE BASE HAS REACHED AN AGE OF THREE CURING DAYS.

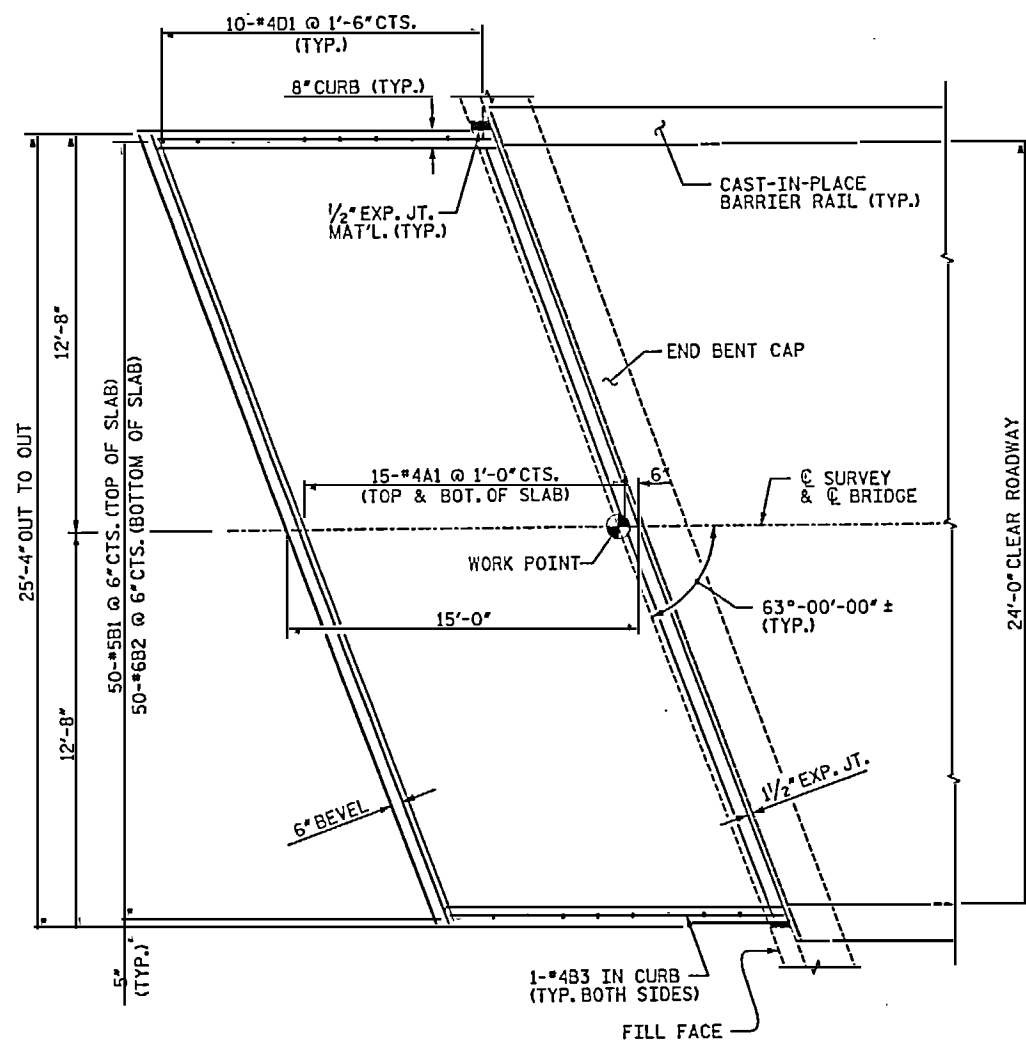
THE 1/2" EXPANSION JOINT MATERIAL IS TO BE HELD IN PLACE WITH GALVANIZED NAILS.

DOWELS MAY BE PUSHED INTO GREEN CONCRETE AFTER THE SLAB HAS BEEN SCREEDED AND FLOAT FINISHED.

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

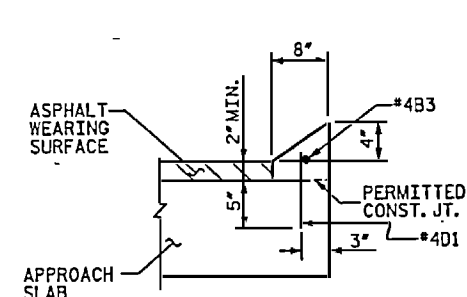
THE JOINT AT THE END BENT SHALL BE GROUTED AS SOON AS PRACTICAL AFTER THE CONSTRUCTION OF THE APPROACH SLABS.

APPROACH SLAB GROOVING IS NOT REQUIRED.

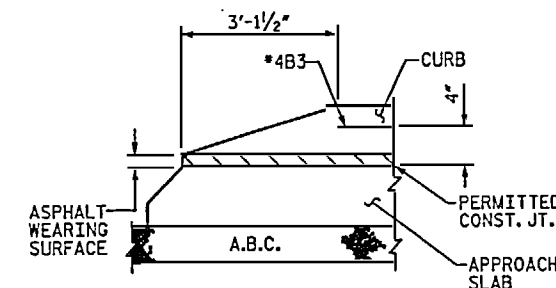


PLAN OF APPROACH SLAB

APPROACH SLAB AT END BENT 1 SHOWN  
(APPROACH SLAB AT END BENT 2 SIMILAR)

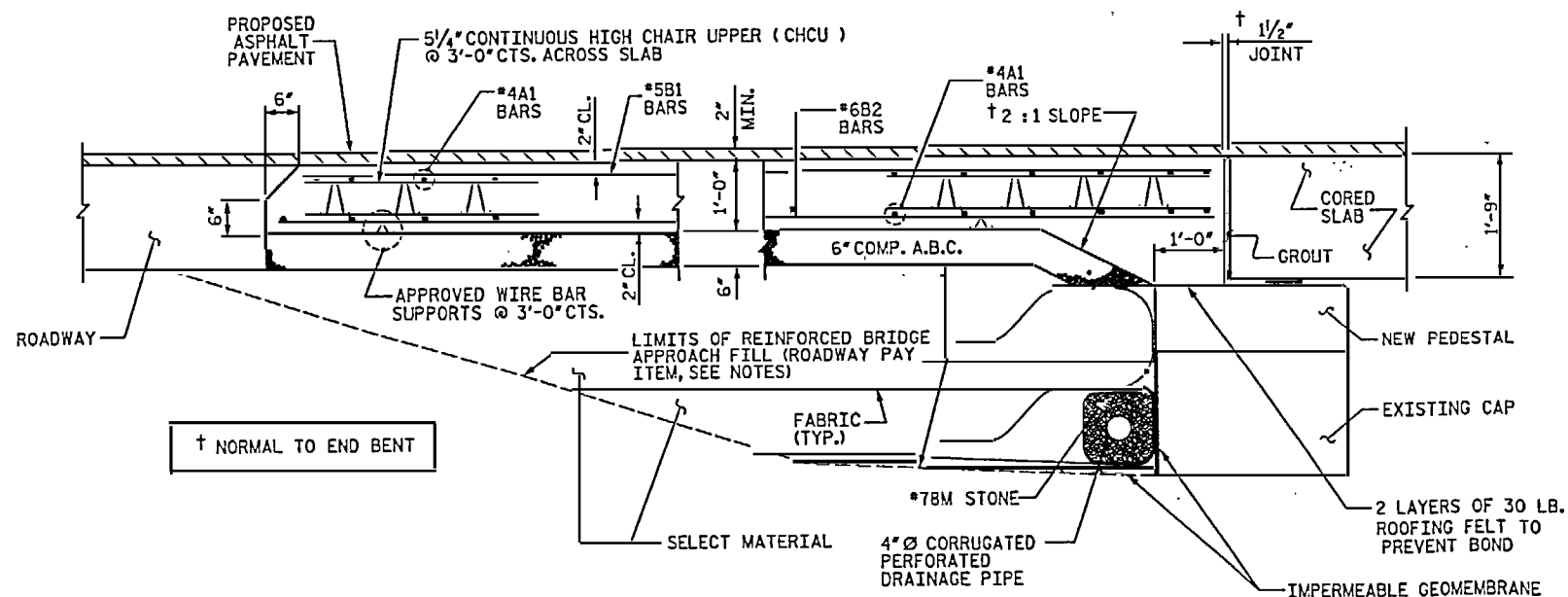


SECTION THRU CURB



CURB DETAILS

DETAIL AT END OF CURB  
WITHOUT SPECIAL DRAINAGE



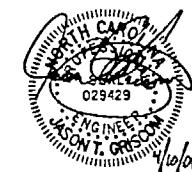
SECTION THRU SLAB

DRAWN BY: JWJ DATE: 3-08  
CHECKED BY: TBQ DATE: 3-08

4/10/2008

PROJECT NO. B-5021  
ROBESON COUNTY  
BRIDGE: 162

SHEET 1 OF 1



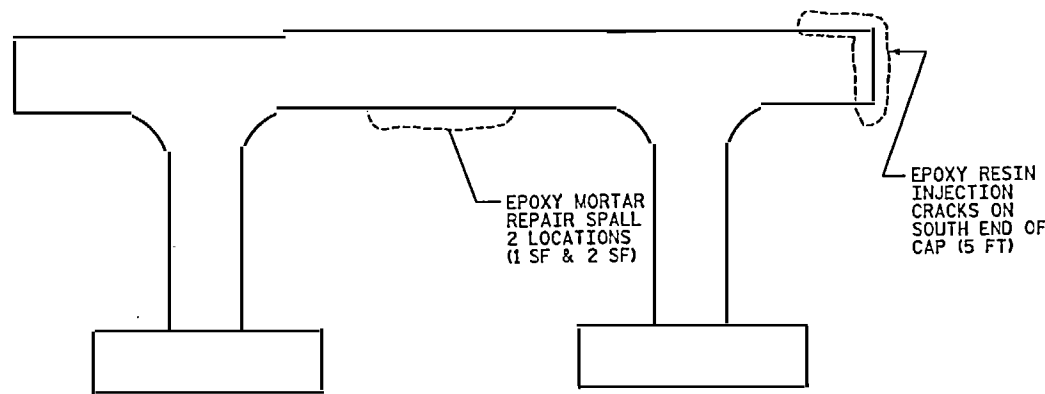
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

APPROACH SLAB

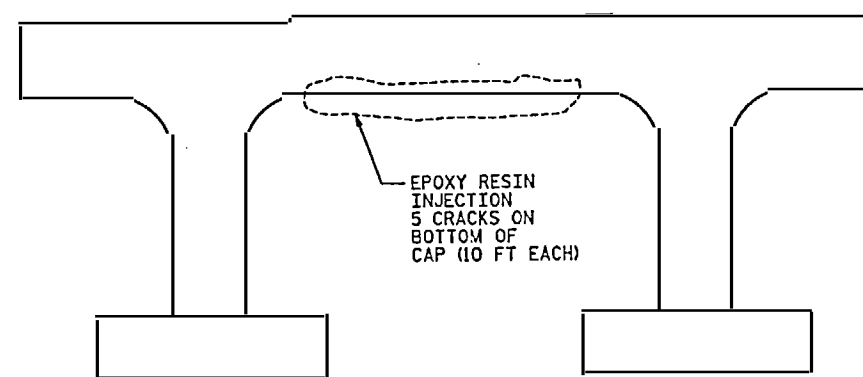
D-1809.42  
STV / Ralph Whitehead Associates, Inc.  
1000 West Morehead St., Ste. 200  
Charlotte, NC 28208

REVISIONS					SHEET NO.
NO.	BY	DATE	NO.	DATE	5-42
1			3		TOTAL SHEETS
2			4		62

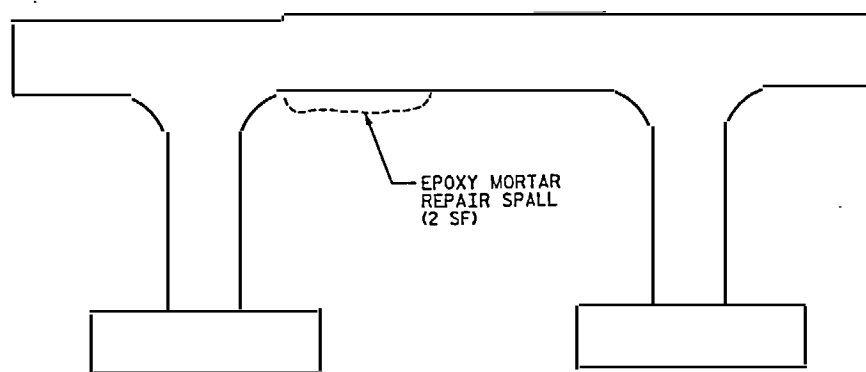
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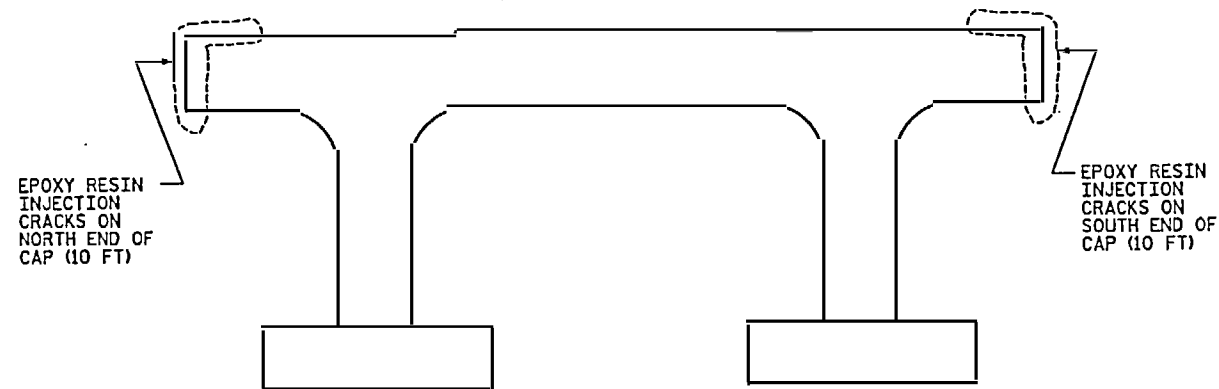
**BENT 1 ELEVATION**  
(LOOKING SOUTHEAST)



**BENT 3 ELEVATION**  
(LOOKING SOUTHEAST)

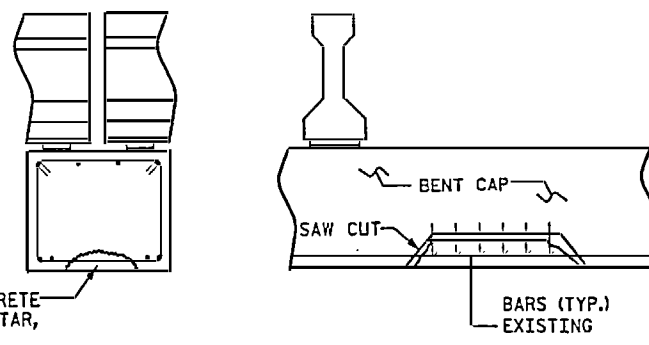


**BENT 2 ELEVATION**  
(LOOKING SOUTHEAST)



**BENT 4 ELEVATION**  
(LOOKING SOUTHEAST)

- NOTES:**
1. REPAIRS SHALL BE IMPLEMENTED DURING SUPERSTRUCTURE REPLACEMENT.
  2. SAWCUT 1/4" - 1/2" DEEP AROUND ALL SPALLS.
  3. FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.
  4. FOR EPOXY MORTAR REPAIRS, SEE SPECIAL PROVISIONS.



**SECTION**      **ELEVATION**  
**TYPICAL BENT REPAIR DETAIL**

PROJECT NO. B-5021  
ROBESON \_\_\_\_\_ COUNTY  
BRIDGE: 162



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**SUBSTRUCTURE  
REPAIRS**

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-48
1			3			TOTAL SHEETS 62
2			4			

DRAWN BY : JAD      DATE : 3-08  
CHECKED BY : JTG      DATE : 3-08

D-1809.43  
STV/Ralph Whitehead Associates, Inc.  
1000 West Morehead St., Ste. 200  
Charlotte, NC 28208