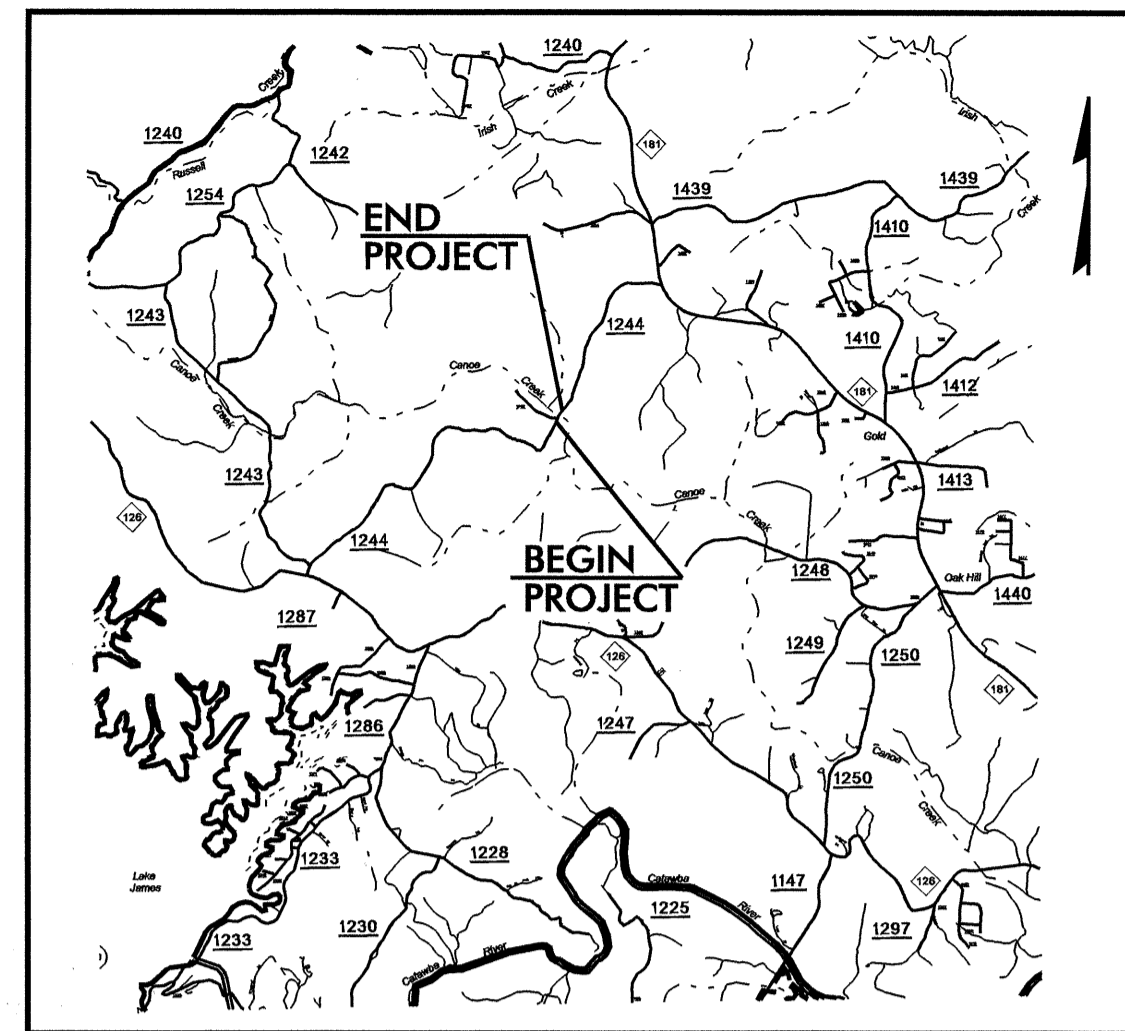


STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4041		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33407.1.1	BRZ-1244(1)	P.E.	
33407.2.1	BRZ-1244(1)	R/W & UTIL.	
33407.3.1	BRZ-1244(1)	CONST.	

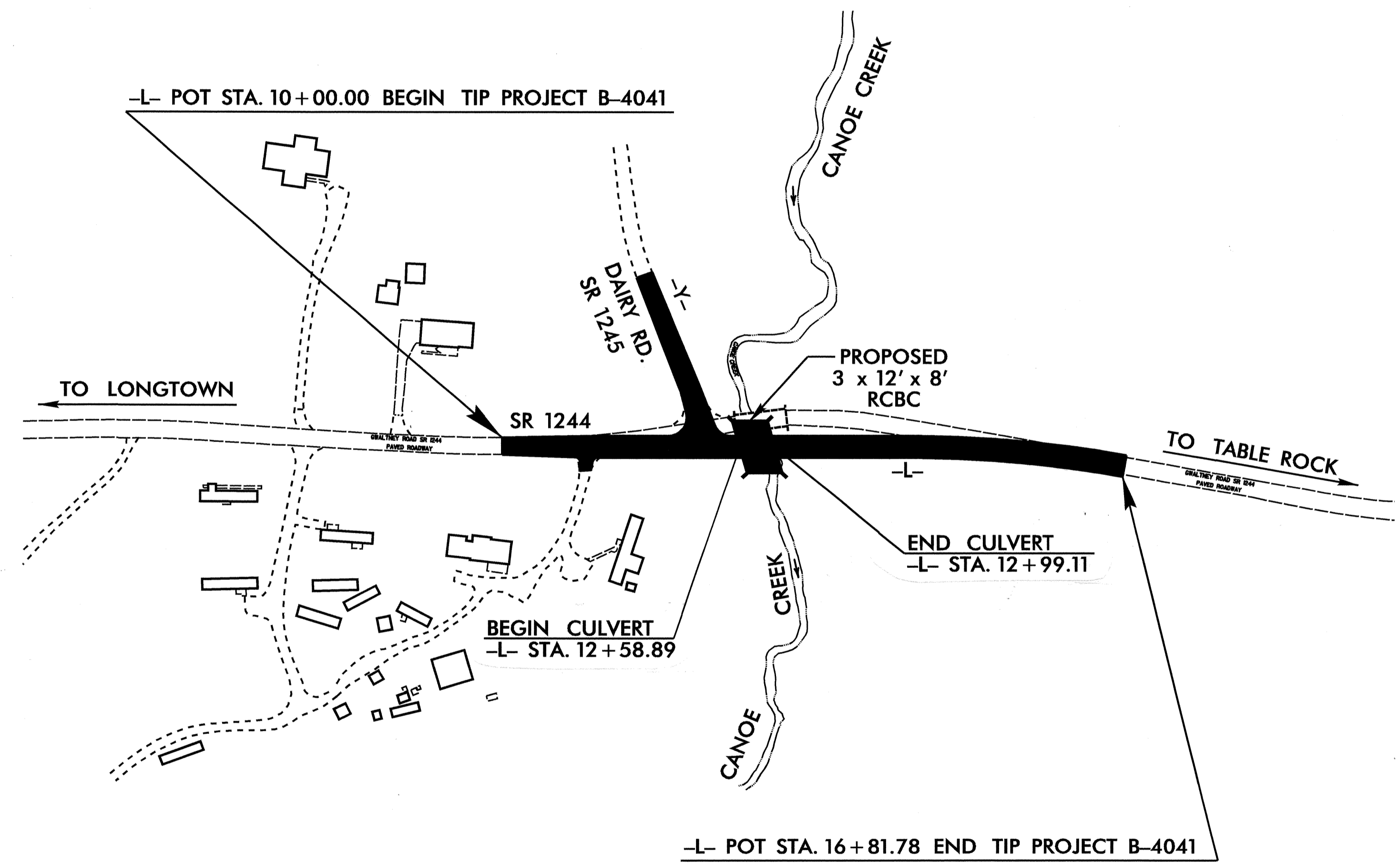
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**BURKE COUNTY**

LOCATION: BRIDGE NO. 57 ON SR 1244 OVER CANOE CREEK  
TYPE OF WORK: GRADING, PAVING, DRAINAGE AND CULVERT



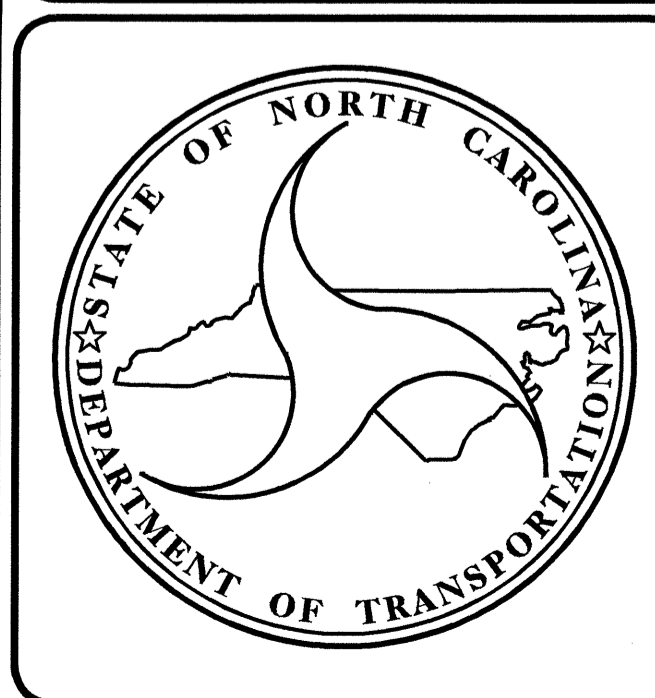
VICINITY MAP



**CULVERT**

\*\* DESIGN EXCEPTION FOR VERTICAL ALIGNMENT (CREST K, SAG K, SSD)

CONTRACT: C201443 TIP PROJECT: B-4041  
 09/08/99  
 09-MAR-2006 14:47  
 PLOT TITLE



DESIGN DATA	
ADT 2006 =	943
ADT 2025 =	3,600
DHV =	12%
D =	55%
T =	3% *
** V =	60 MPH
* TTST 1%	DUAL 2%

PROJECT LENGTH	
LENGTH ROADWAY TIP PROJECT B-4041	= 0.121 mi
LENGTH STRUCTURE TIP PROJECT B-4041	= 0.008 mi
TOTAL LENGTH TIP PROJECT B-4041	= 0.129 mi

Prepared in the office of:

**DIVISION OF HIGHWAYS**

2002 STANDARD SPECIFICATIONS

LETTING DATE:  
AUGUST 15, 2006

R. M. GIROLAMI, PE  
PROJECT ENGINEER

L. E. SUTTON, PE  
PROJECT DESIGN ENGINEER

STRUCTURE DESIGN UNIT  
1000 Birch Ridge Dr.  
RALEIGH, N.C. 27610

*Gregory R. Perretti*  
5.5.06

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

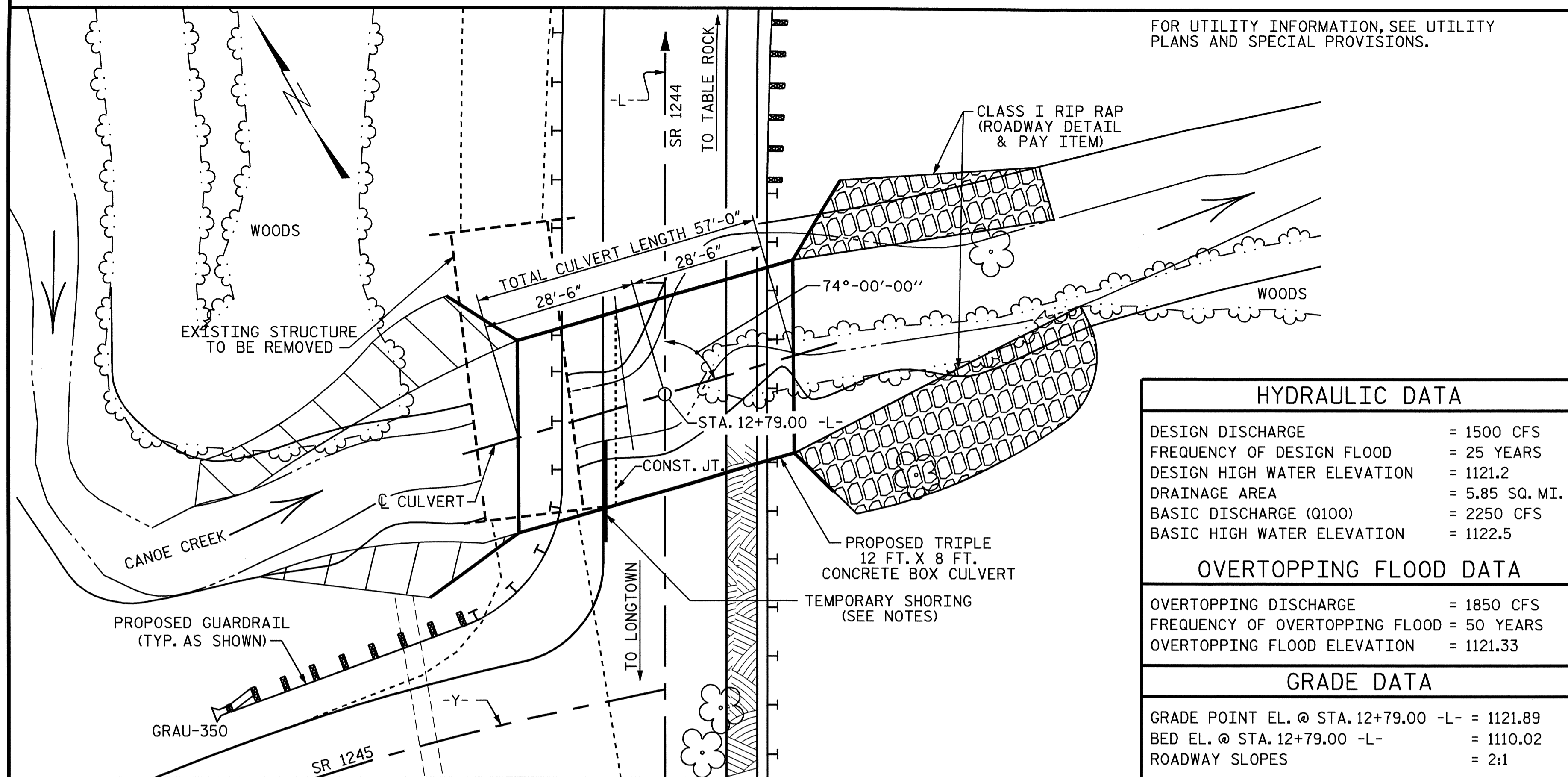
P.E.

STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION

APPROVED  
DIVISION ADMINISTRATOR

DATE



FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

HYDRAULIC DATA

DESIGN DISCHARGE	= 1500 CFS
FREQUENCY OF DESIGN FLOOD	= 25 YEARS
DESIGN HIGH WATER ELEVATION	= 1121.2
DRAINAGE AREA	= 5.85 SQ. MI.
BASIC DISCHARGE (Q100)	= 2250 CFS
BASIC HIGH WATER ELEVATION	= 1122.5

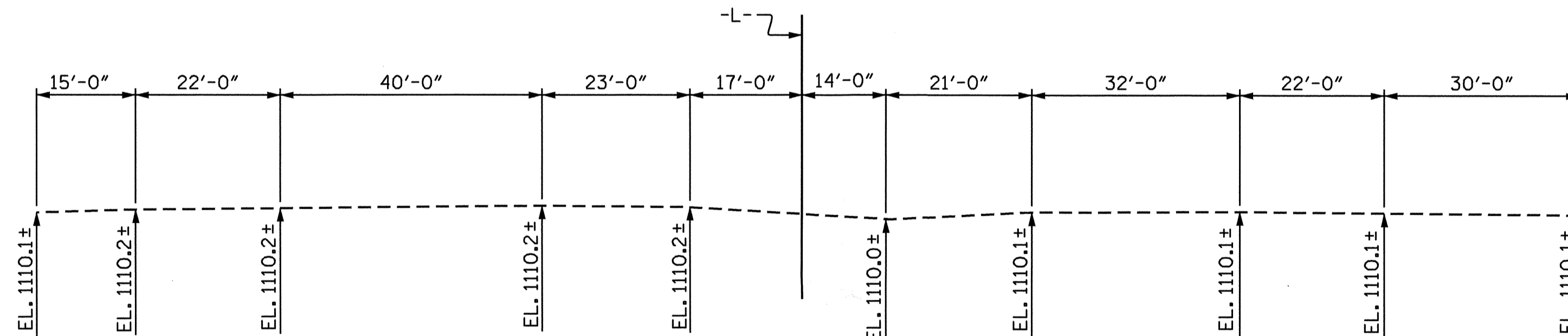
OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 1850 CFS
FREQUENCY OF OVERTOPPING FLOOD	= 50 YEARS
OVERTOPPING FLOOD ELEVATION	= 1121.33

GRADE DATA

GRADE POINT EL. @ STA. 12+79.00 -L-	= 1121.89
BED EL. @ STA. 12+79.00 -L-	= 1110.02
ROADWAY SLOPES	= 2:1

LOCATION SKETCH



PROFILE ALONG CULVERT

TOTAL STRUCTURE QUANTITIES

CLASS A CONCRETE	
STAGE 1	C. Y. 151.0
STAGE 2	C. Y. 85.8
TOTAL	C. Y. 236.8
REINFORCING STEEL	
STAGE 1	LBS. 30,548
STAGE 2	LBS. 16,009
TOTAL	LBS. 46,557
CULVERT EXCAVATION	LUMP SUM
FOUNDATION COND. MAT'L.	TONS 156
REMOVAL OF EXISTING STRUCTURE	LUMP SUM

NOTES

ASSUMED LIVE LOAD HS20 OR ALTERNATE LOADING.

DESIGN FILL = 3.30 FEET.

FOR OTHER DESIGN DATA AND NOTES SEE STANDARD NOTE SHEET.

3" DIA. WEEP HOLES INDICATED TO BE IN ACCORDANCE WITH THE SPECIFICATIONS.

CONCRETE IN CULVERT TO BE POURED IN THE FOLLOWING ORDER:

1. WING FOOTING AND STAGE 1A FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS.
2. THE REMAINING PORTIONS OF STAGE 1A WALLS AND WING FULL HEIGHT.
3. WING FOOTING AND STAGE 1B FLOOR SLAB INCLUDING 4" OF VERTICAL WALLS.
4. THE REMAINING PORTIONS OF STAGE 1B WALLS AND WING FULL HEIGHT FOLLOWED BY ROOF SLAB AND HEADWALL FOR STAGE 1B.
5. WING FOOTING AND STAGE 2A FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS.
6. THE REMAINING PORTIONS OF STAGE 2A WALLS AND WING FULL HEIGHT.
7. WING FOOTING AND STAGE 2B FLOOR SLAB INCLUDING 4" OF VERTICAL WALLS.
8. THE REMAINING PORTIONS OF STAGE 2B WALLS AND WING FULL HEIGHT FOLLOWED BY ROOF SLAB AND HEADWALL FOR STAGE 2B.

THE RESIDENT ENGINEER SHALL CHECK THE LENGTH OF CULVERT BEFORE STAKING IT OUT TO MAKE CERTAIN THAT IT WILL PROPERLY TAKE CARE OF THE FILL.

DIMENSIONS FOR WING LAYOUT AS WELL AS ADDITIONAL REINFORCING STEEL EMBEDDED IN BARREL ARE SHOWN ON WING SHEET.

FOR CULVERT DIVERSION DETAILS AND PAY ITEM, SEE EROSION CONTROL PLANS.

A 3 FOOT STRIP OF FILTER FABRIC SHALL BE ATTACHED TO THE FILL FACE OF THE WING COVERING THE ENTIRE LENGTH OF THE EXPANSION JOINT.

STEEL IN THE BOTTOM SLAB MAY BE SPLICED AT THE PERMITTED CONSTRUCTION JOINT AT THE CONTRACTOR'S OPTION. EXTRA WEIGHT OF STEEL DUE TO THE SPLICES WILL BE PAID FOR BY THE CONTRACTOR.

AT THE CONTRACTOR'S OPTION, HE MAY SPLICE THE VERTICAL REINFORCING STEEL IN THE INTERIOR FACE OF EXTERIOR WALL ABOVE LOWER WALL CONSTRUCTION JOINT. THE SPLICE LENGTH SHALL BE AS PROVIDED IN THE SPLICE LENGTH CHART SHOWN ON THE PLANS. EXTRA WEIGHT OF STEEL DUE TO THE SPLICES SHALL BE PAID FOR BY THE CONTRACTOR.

AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING STRUCTURE CONSISTING OF A 3 SPAN (19.8', 17.2', & 19.5') TIMBER DECK ON STEEL I-BEAMS, WITH A CLEAR ROADWAY WIDTH OF 19.1', SUPPORTED BY TIMBER CAPS & PILES AND LOCATED UPSTREAM FROM THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR 'REMOVAL OF EXISTING STRUCTURE AT STATION 12+79.00 -L-.'

ONE PERMITTED CONSTRUCTION JOINT WILL BE ALLOWED IN THE END CURTAIN WALL.

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

FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS.

FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.

A TEMPORARY FABRIC WALL WILL BE REQUIRED TO MAINTAIN TRAFFIC AND CONSTRUCT STAGE 2 OF THE CULVERT. SEE ROADWAY PLANS.

FOR OPTIONAL PRECAST REINFORCED CONCRETE BOX CULVERT AT STATION 12+79.00 -L-, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

PROJECT NO. B-4041  
BURKE COUNTY  
 STATION: 12+79.00 -L-

SHEET 1 OF 9 REPLACES BRIDGE NO. 57

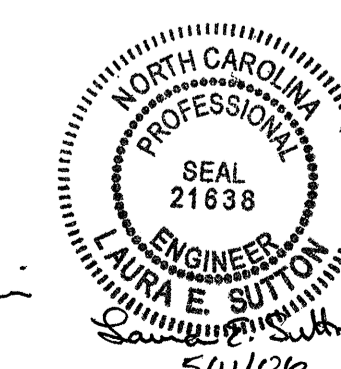
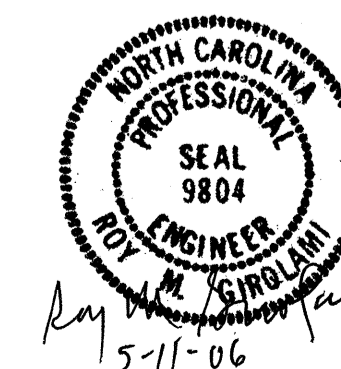
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

TRIPLE BARREL  
 12 FT. X 8 FT.  
 CONCRETE BOX CULVERT  
 74° SKEW

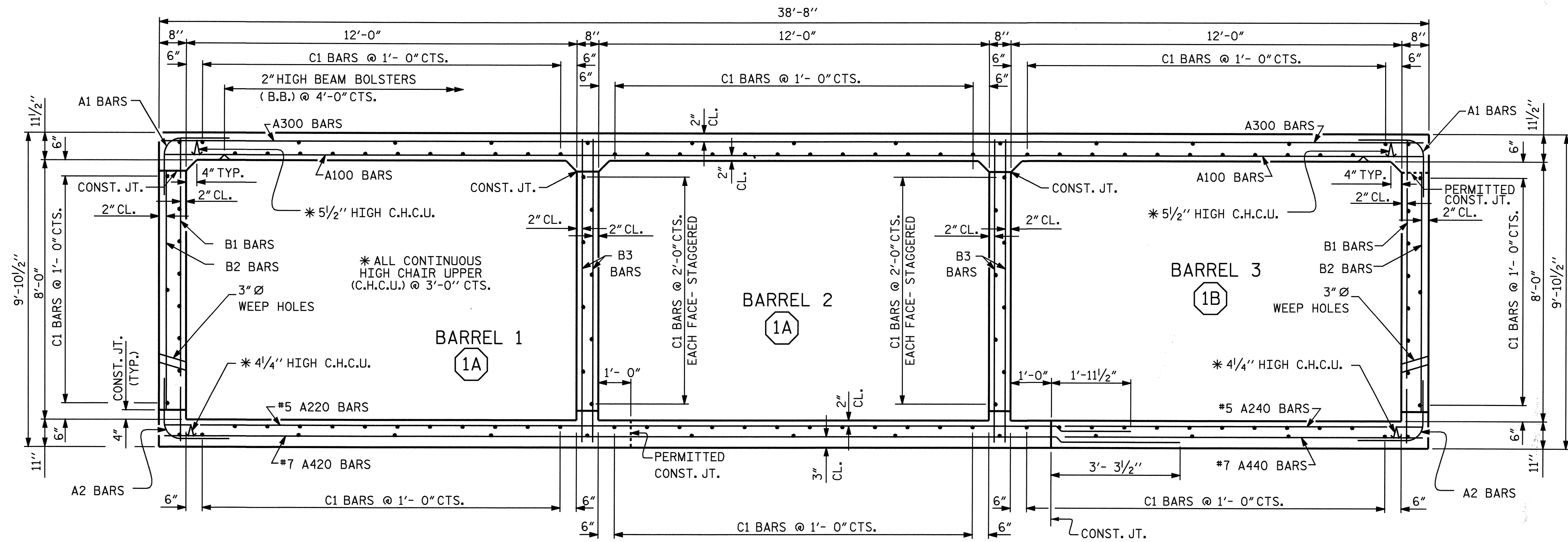
REVISIONS			SHEET NO.		
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

C-1  
 TOTAL SHEETS 9

DRAWN BY: A.S. CALLAWAY DATE: 2/10/05  
 CHECKED BY: L.E. SUTTON DATE: 1/18/06

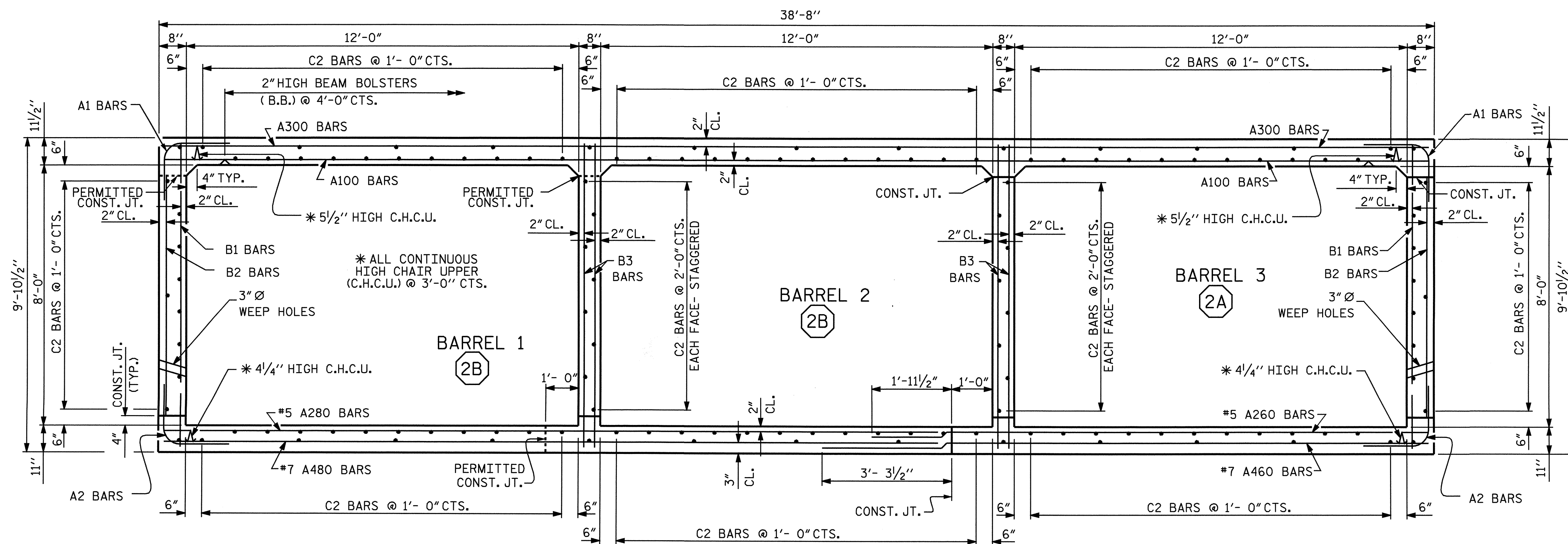






**BARREL SECTION - STAGE 1**

THERE ARE 132 "C" BARS IN SECTION OF BARREL.



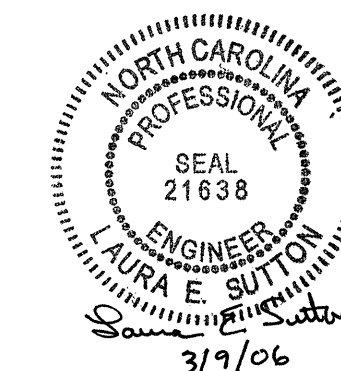
**BARREL SECTION - STAGE 2**

THERE ARE 132 "C" BARS IN SECTION OF BARREL.

PROJECT NO. B-4041  
BURKE COUNTY  
 STATION: 12+79.00 -L-

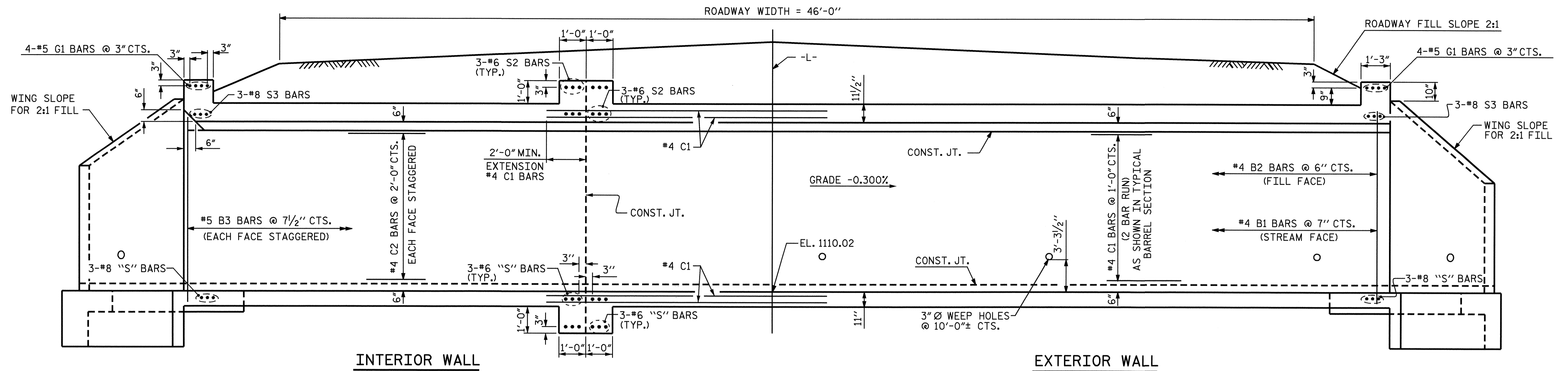
SHEET 3 OF 9

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**TRIPLE BARREL**  
**12 FT. X 8 FT.**  
**CONCRETE BOX CULVERT**  
**74° SKEW**

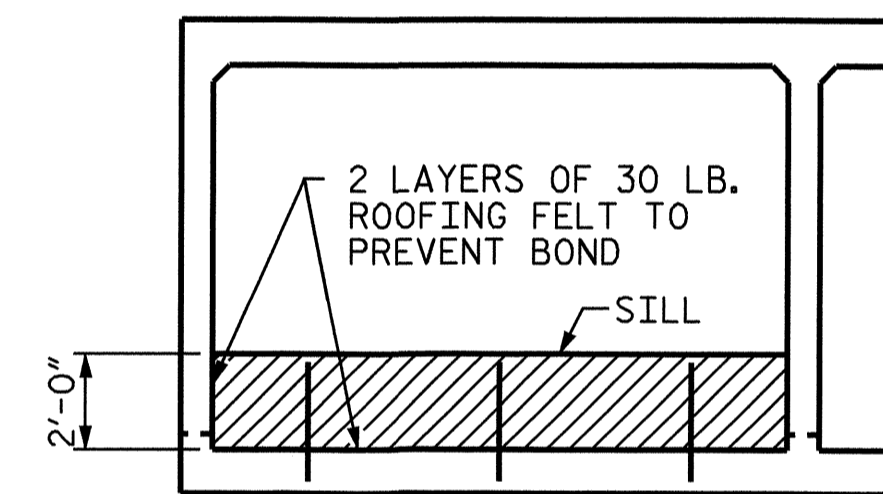


DRAWN BY: A.S. CALLAWAY DATE: 2/15/05  
 CHECKED BY: L.E. SUTTON DATE: 1/18/06

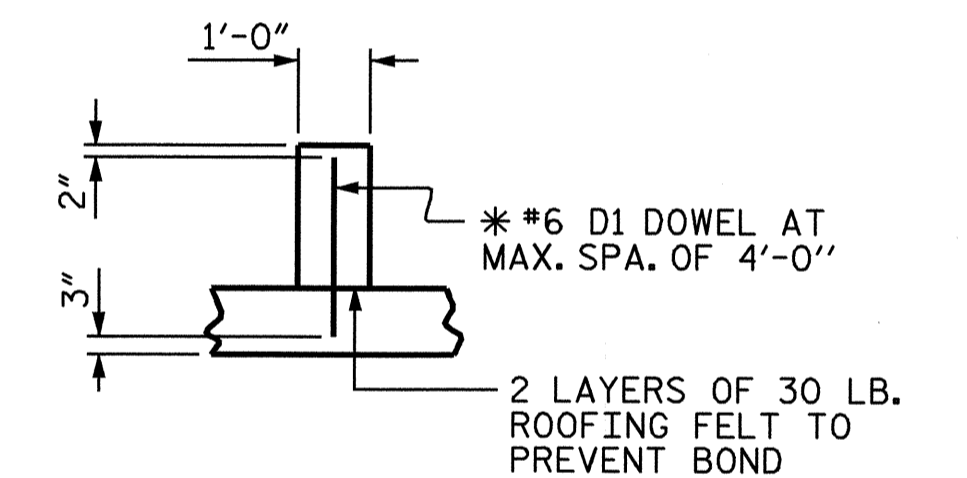
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-3
1			3			TOTAL SHEETS
2			4			9



**CULVERT SECTION NORMAL TO ROADWAY**



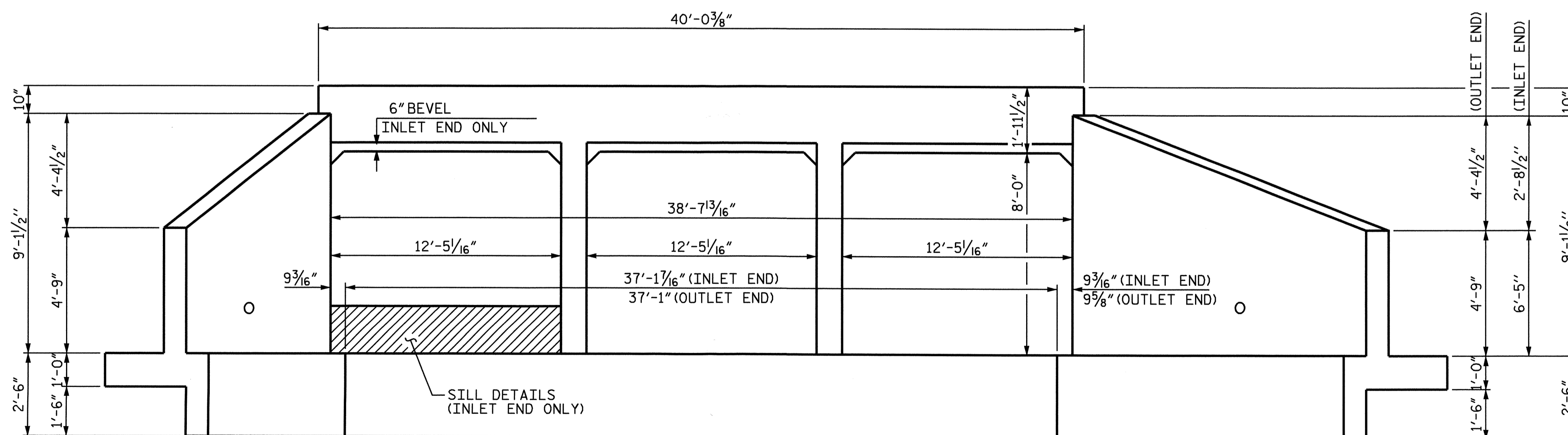
**ELEVATION**



**SECTION THRU SILL**

**SILL DETAIL**

\* DOWELS MAY BE PUSHED INTO GREEN CONCRETE AFTER SLAB HAS BEEN FLOAT FINISHED.

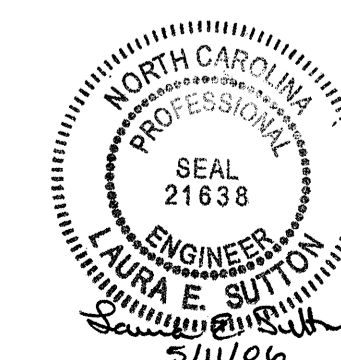


**END ELEVATION NORMAL TO SKEW**

PROJECT NO. B-4041  
BURKE COUNTY  
 STATION: 12+79.00 -L-

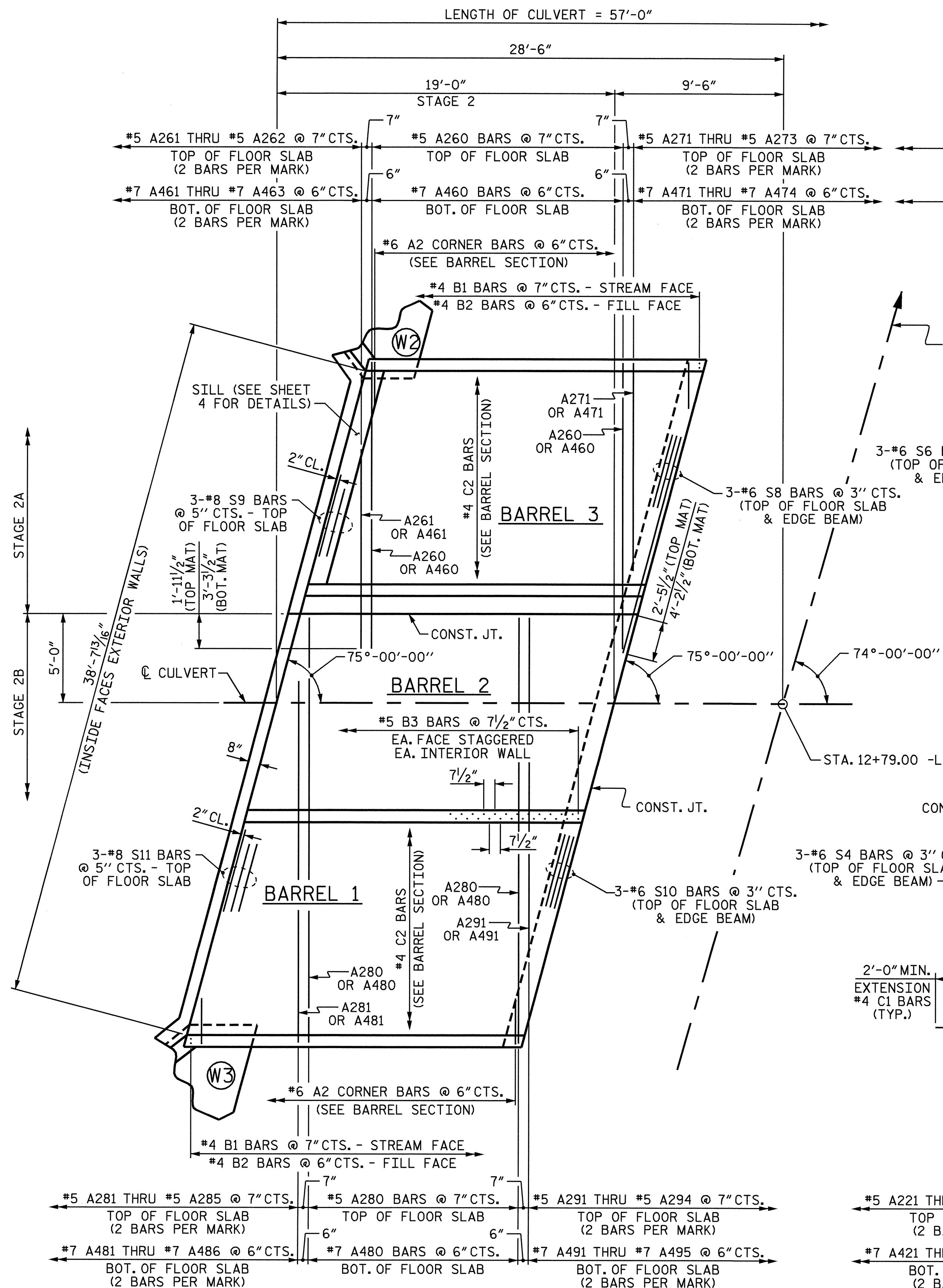
SHEET 4 OF 9

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**TRIPLE BARREL  
 12 FT. X 8 FT.  
 CONCRETE BOX CULVERT  
 74° SKEW**

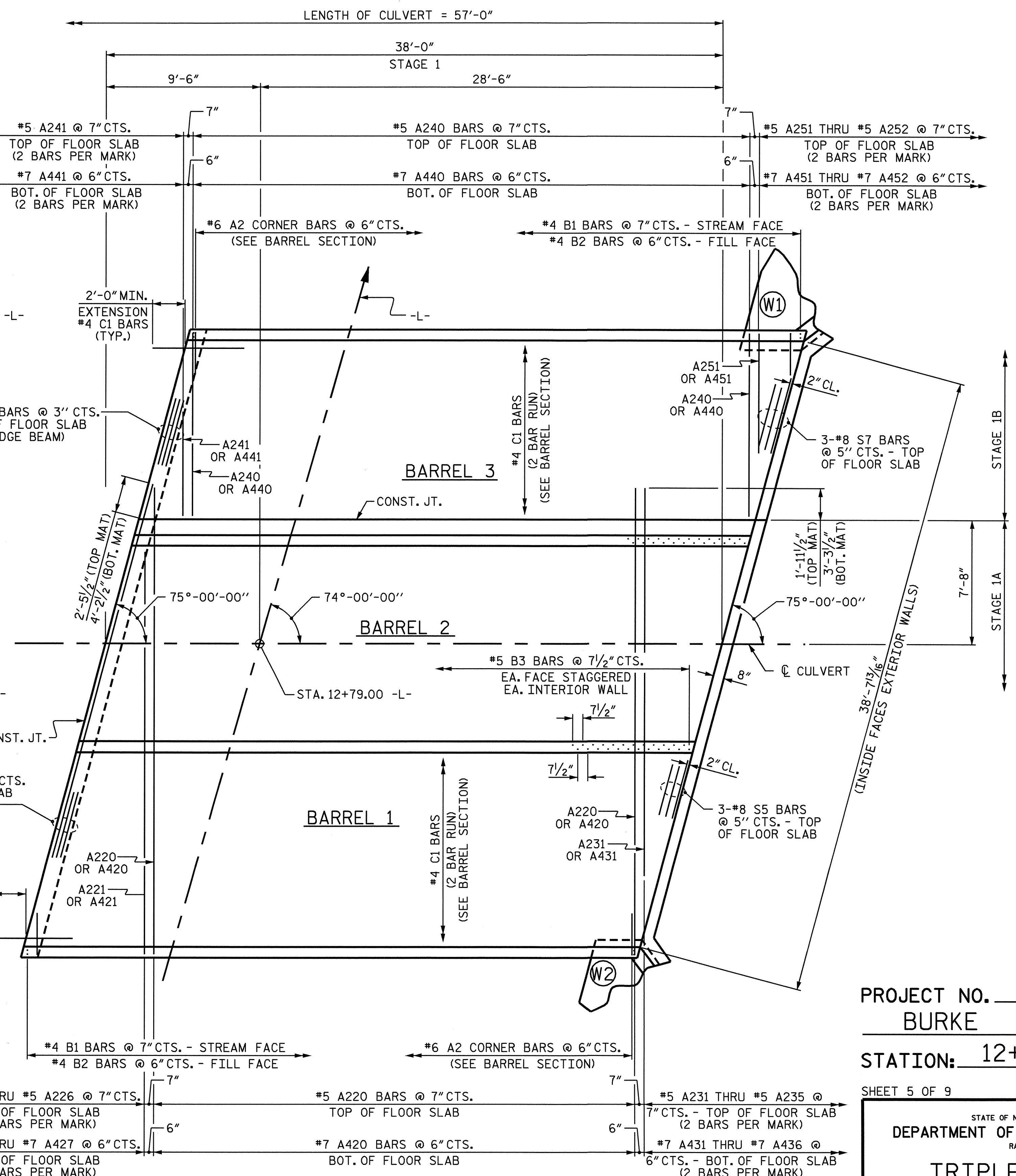


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-4
1			3			TOTAL SHEETS
2			4			9

DRAWN BY: A.S. CALLAWAY DATE: 2/15/06  
 CHECKED BY: L.E. SUTTON DATE: 1/18/06



PLAN OF CULVERT - FLOOR SLAB - STAGE 2

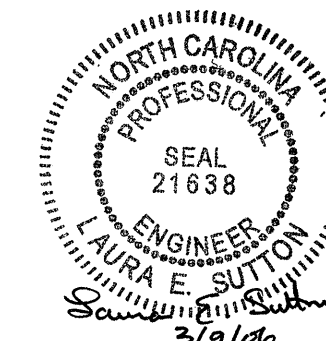


PLAN OF CULVERT - FLOOR SLAB - STAGE 1

PROJECT NO. B-4041  
 BURKE COUNTY  
 STATION: 12+79.00 -L-

SHEET 5 OF 9

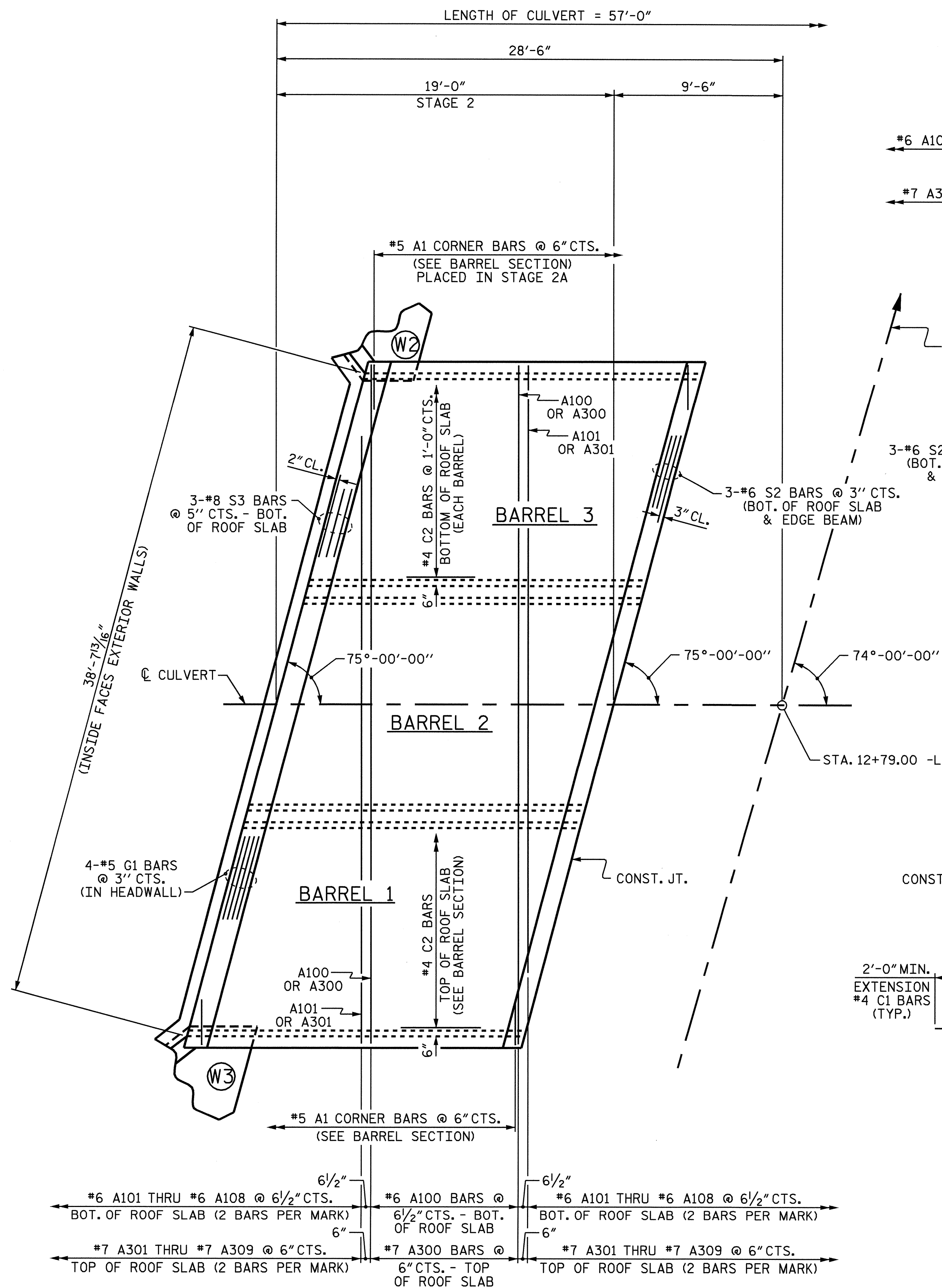
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 TRIPLE BARREL  
 12 FT. X 8 FT.  
 CONCRETE BOX CULVERT  
 74° SKEW



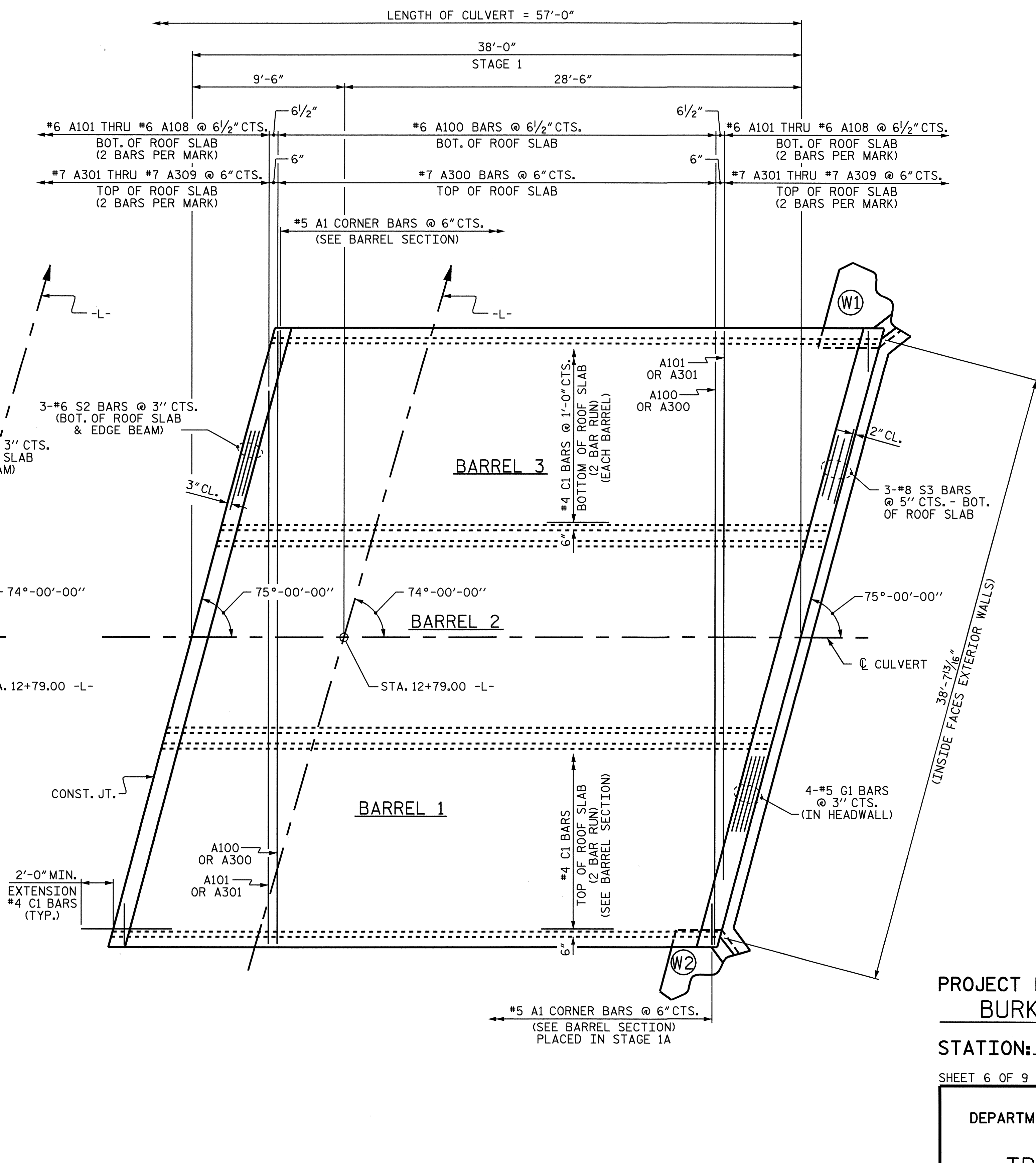
DRAWN BY: L.E. SUTTON DATE: 1/13/06  
 CHECKED BY: A.S. CALLAWAY DATE: 1/17/06

09-MAR-2006 14:47  
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 LSUTTON

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	C-5	
1			3			TOTAL SHEETS	9
2			4				



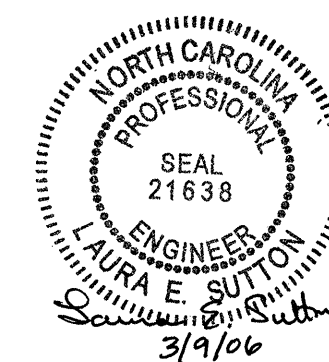
PLAN OF CULVERT - ROOF SLAB - STAGE 2B



PLAN OF CULVERT - ROOF SLAB - STAGE 1B

DRAWN BY : L.E. SUTTON DATE : 1/13/06  
 CHECKED BY : A.S. CALLAWAY DATE : 1/17/06

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 LSUTTON

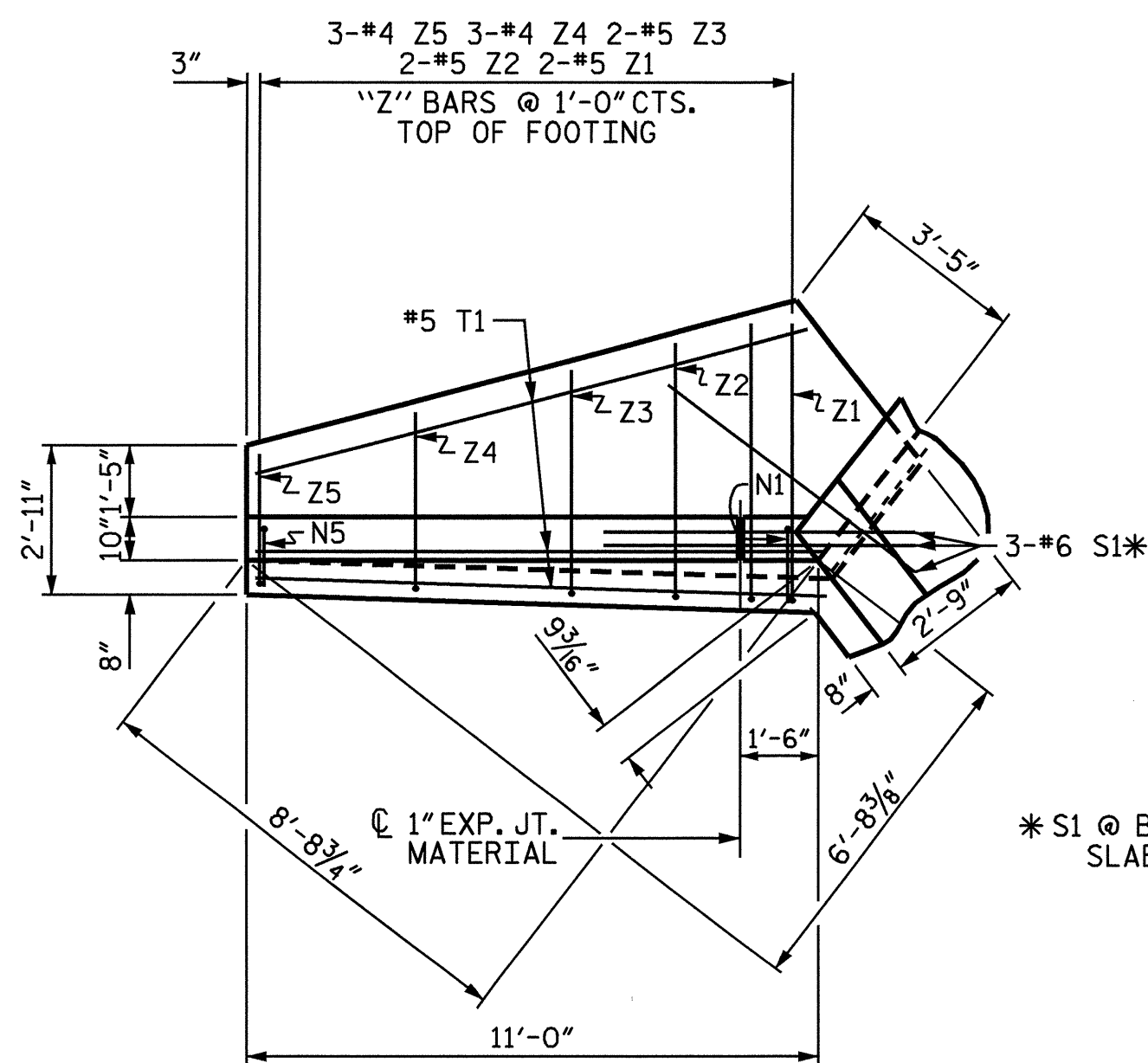


PROJECT NO. B-4041  
 BURKE COUNTY  
 STATION: 12+79.00 -L-

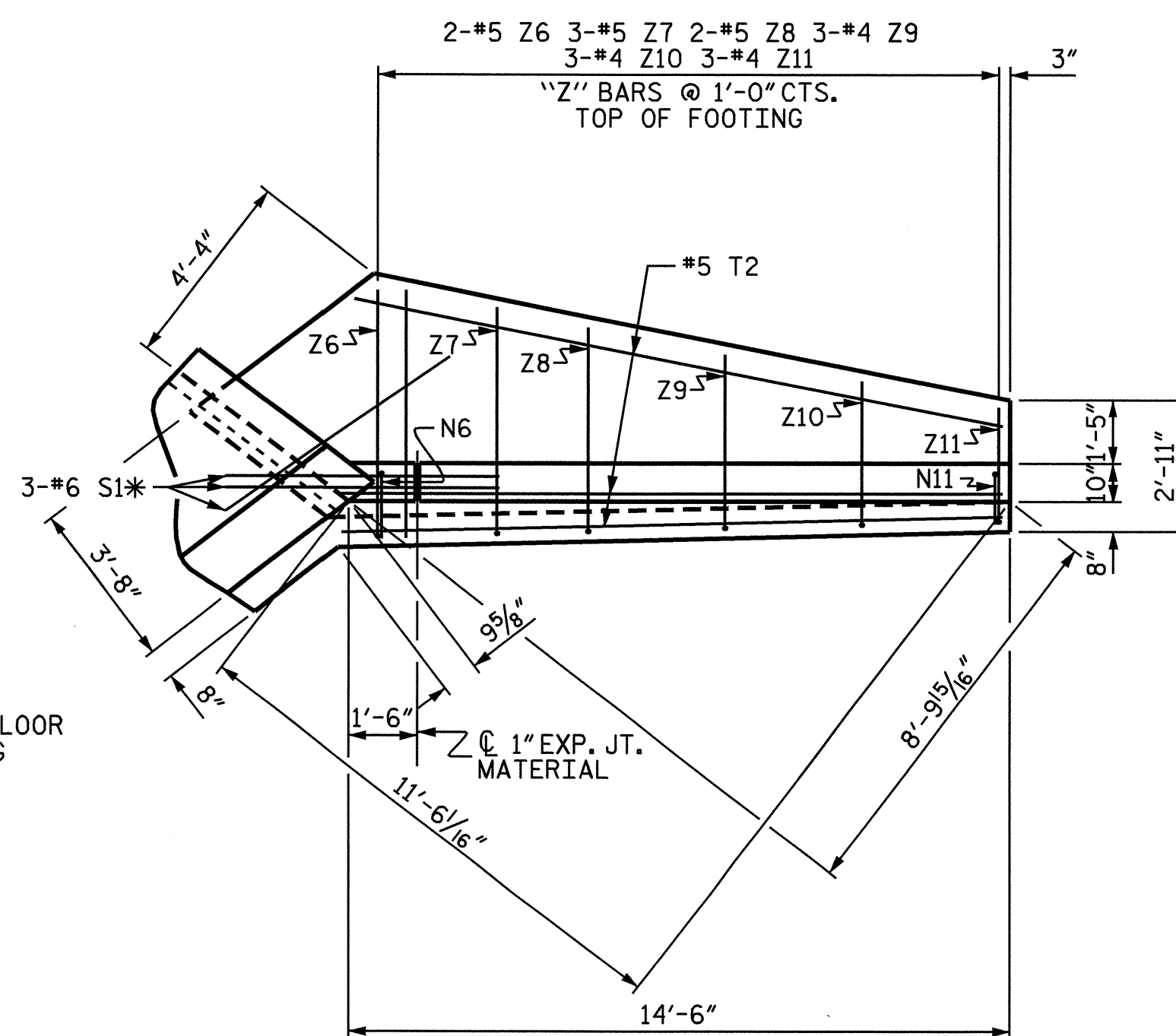
SHEET 6 OF 9

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 TRIPLE BARREL  
 12 FT. X 8 FT.  
 CONCRETE BOX CULVERT  
 74° SKEW

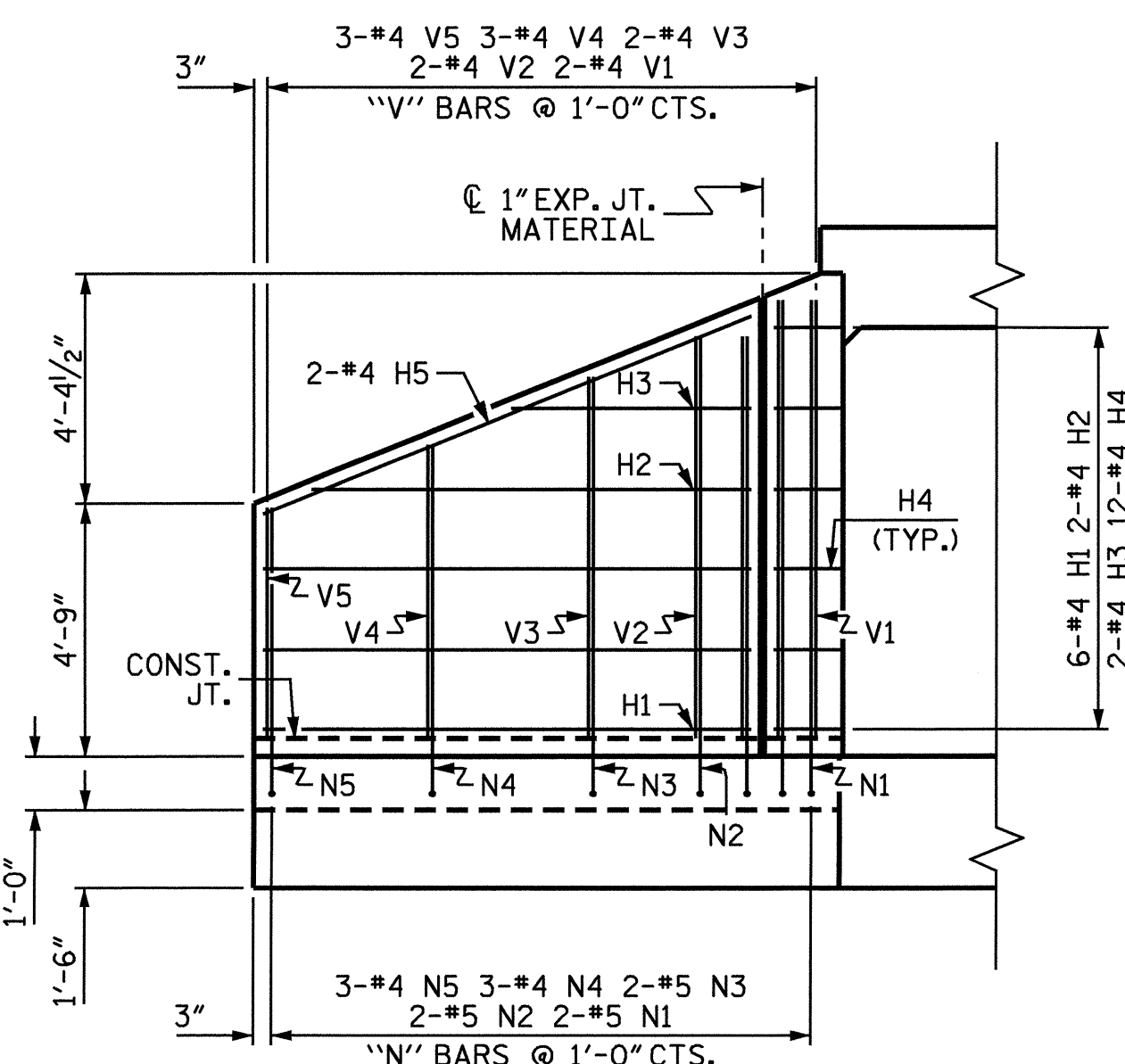
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2			4		3/19/06	9



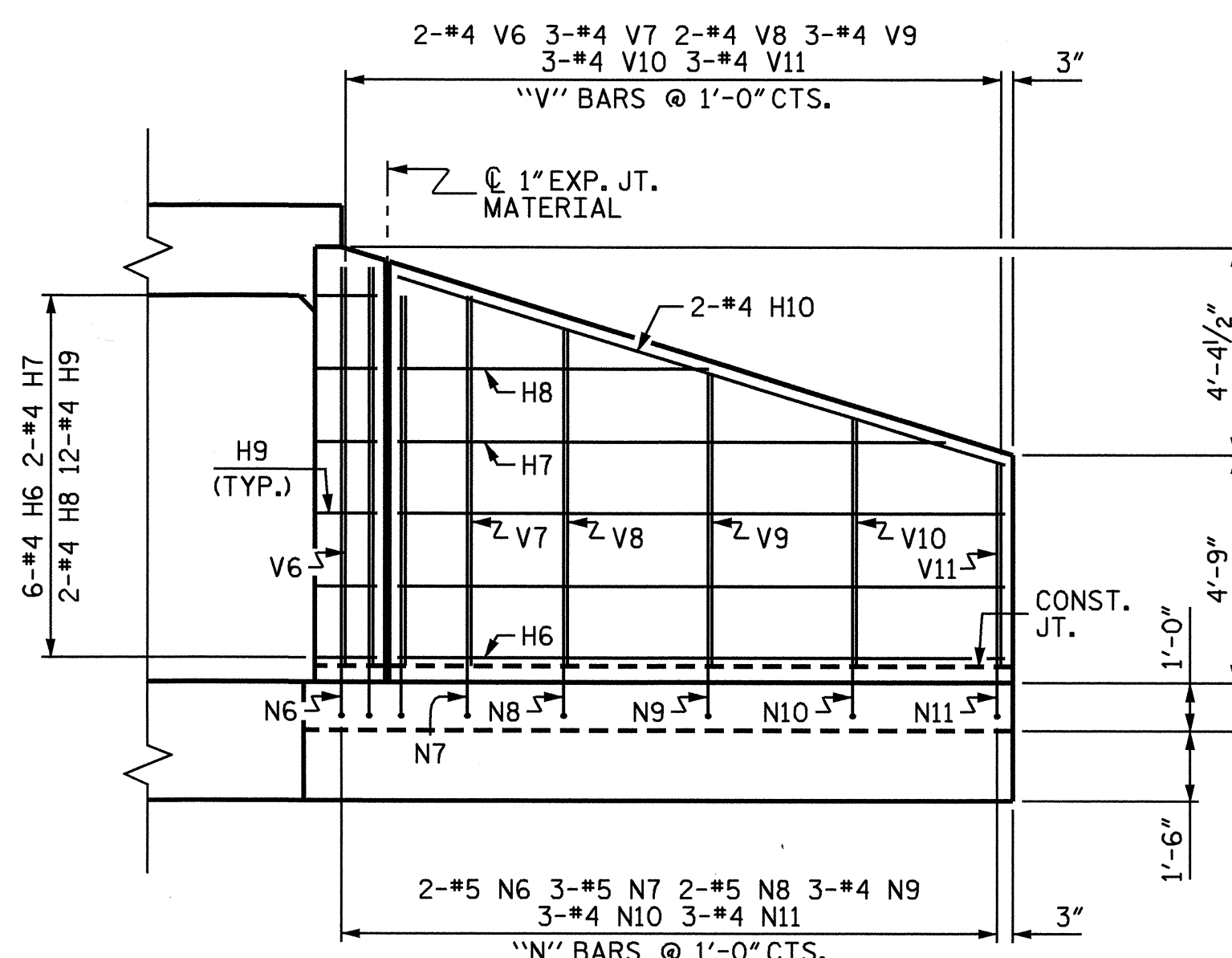
PLAN W2



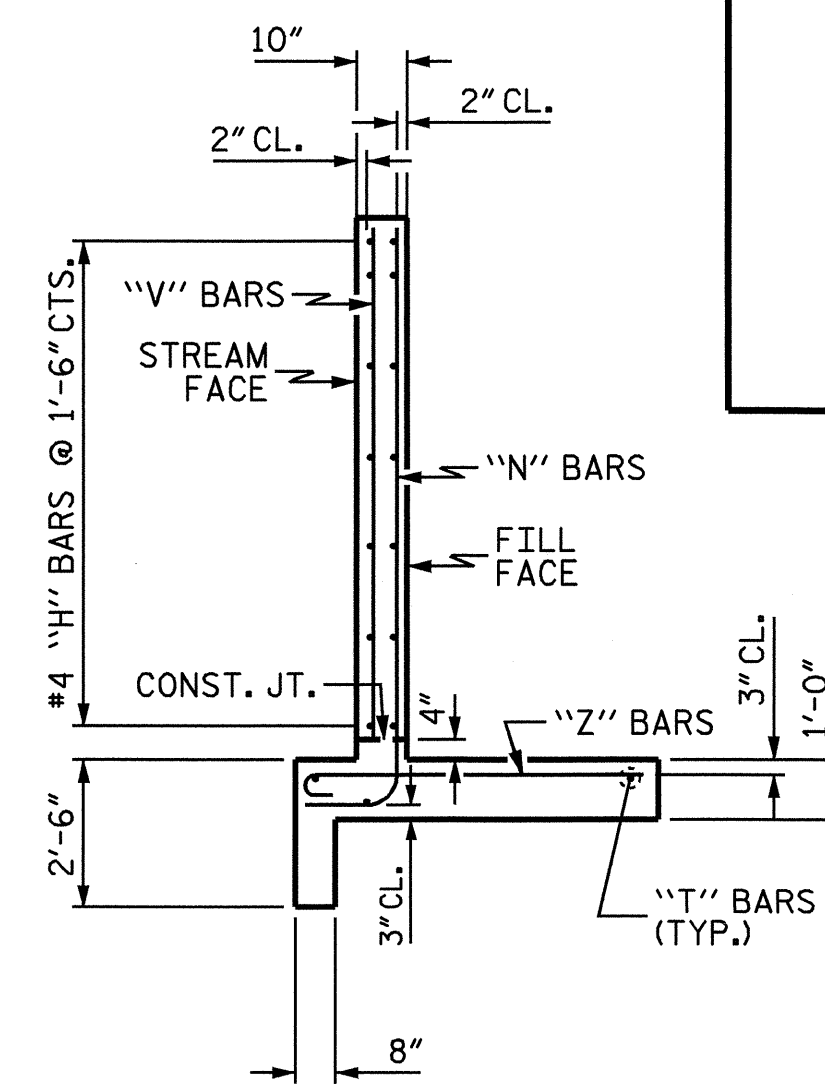
PLAN W1



ELEVATION W2



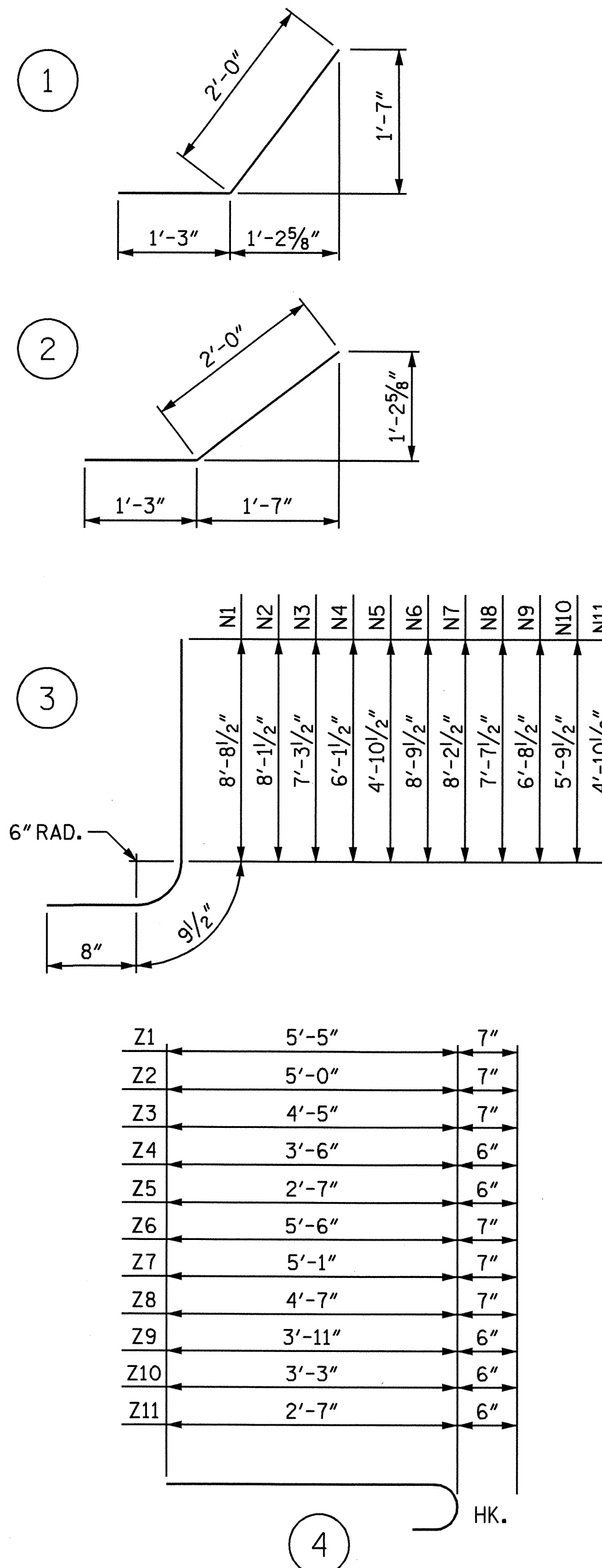
ELEVATION W1



TYPICAL WING SECTION

BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT.



BILL OF MATERIAL

STAGE 1

BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	6	#4	STR	9'- 1"	36
H2	2	#4	STR	8'- 2"	11
H3	2	#4	STR	4'- 5"	6
H4	12	#4	1	3'- 3"	26
H5	2	#4	STR	9'-10"	13
H6	6	#4	STR	12'- 7"	50
H7	2	#4	STR	11'- 4"	15
H8	2	#4	STR	6'- 5"	9
H9	12	#4	2	3'- 3"	26
H10	2	#4	STR	13'- 2"	18
N1	2	#5	3	10'- 2"	21
N2	2	#5	3	9'- 7"	20
N3	2	#5	3	8'- 9"	18
N4	3	#4	3	7'- 7"	15
N5	3	#4	3	6'- 4"	13
N6	2	#5	3	10'- 3"	21
N7	3	#5	3	9'- 8"	30
N8	2	#5	3	9'- 1"	19
N9	3	#4	3	8'- 2"	16
N10	3	#4	3	7'- 3"	15
N11	3	#4	3	6'- 4"	13
S1	6	#6	STR	6'- 0"	54
T1	3	#5	STR	11'- 0"	34
T2	3	#5	STR	14'- 6"	45
V1	2	#4	STR	8'- 2"	11
V2	2	#4	STR	7'- 6"	10
V3	2	#4	STR	6'- 9"	9
V4	3	#4	STR	5'- 6"	11
V5	3	#4	STR	4'- 4"	9
V6	2	#4	STR	8'- 3"	11
V7	3	#4	STR	7'- 8"	15
V8	2	#4	STR	7'- 0"	9
V9	3	#4	STR	6'- 1"	12
V10	3	#4	STR	5'- 2"	10
V11	3	#4	STR	4'- 3"	9
Z1	2	#5	4	6'- 0"	13
Z2	2	#5	4	5'- 7"	12
Z3	2	#5	4	5'- 0"	10
Z4	3	#4	4	4'- 0"	8
Z5	3	#4	4	3'- 1"	6
Z6	2	#5	4	6'- 1"	13
Z7	3	#5	4	5'- 8"	18
Z8	2	#5	4	5'- 2"	11
Z9	3	#4	4	4'- 5"	9
Z10	3	#4	4	3'- 9"	8
Z11	3	#4	4	3'- 1"	6
REINFORCING STEEL FOR 2 WINGS					LBS. 774
CLASS A CONCRETE					
2 WINGS		C.Y.	11.3		
2 EDGE BEAMS		C.Y.	3.0		
1 HEADWALL		C.Y.	1.9		
1 END CURTAIN WALL		C.Y.	2.3		
TOTAL		C.Y.	18.5		

ASSEMBLED BY : A.S. CALLAWAY DATE : 2/15/05  
 CHECKED BY : L.E. SUTTON DATE : 1/18/06  
 DRAWN BY : CCJ 01/00  
 CHECKED BY : RWW 03/00

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 LSUTTON



PROJECT NO. B-4041  
 BURKE COUNTY  
 STATION: 12+79.00 -L-

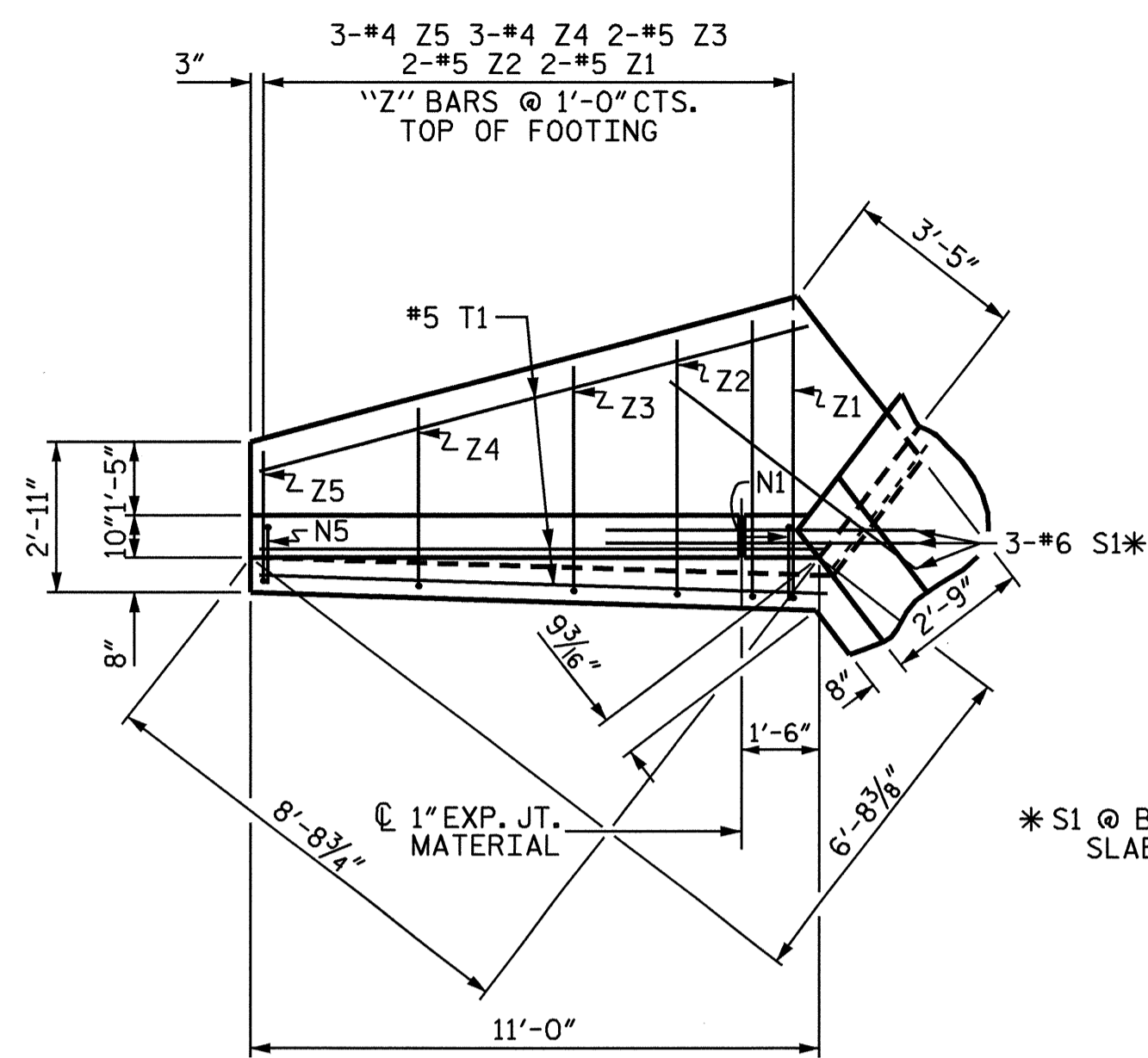
SHEET 7 OF 9

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD WINGS FOR  
 CONCRETE BOX CULVERT  
 STAGE 1  
 H = 8'-0" SLOPE = 2:1  
 75° OR 105° SKEW

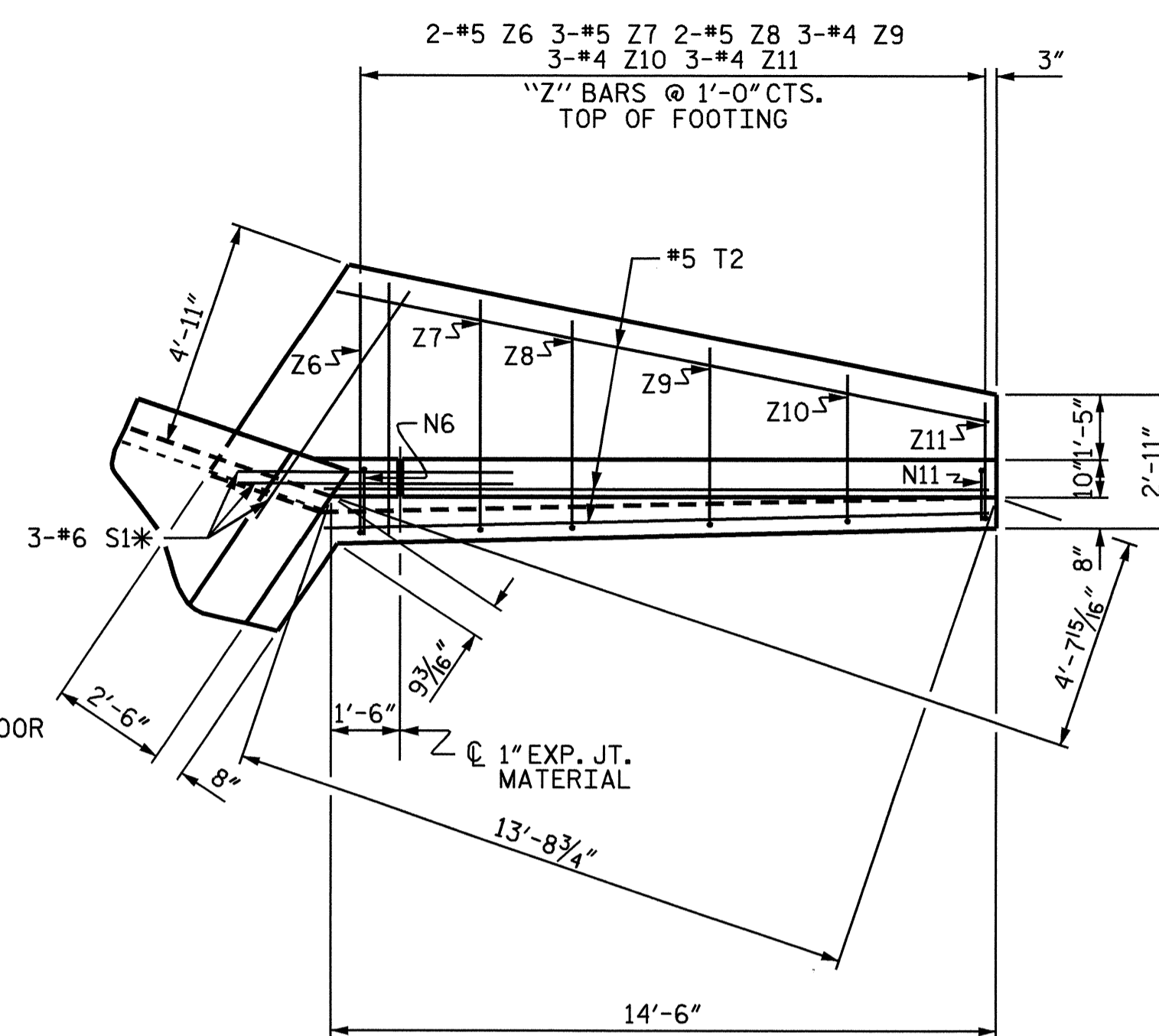
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NO.	BY:	DATE:	NO.	BY:	DATE:	C-7
1			3			TOTAL SHEETS
2			4			9

STD. NO. CW7508

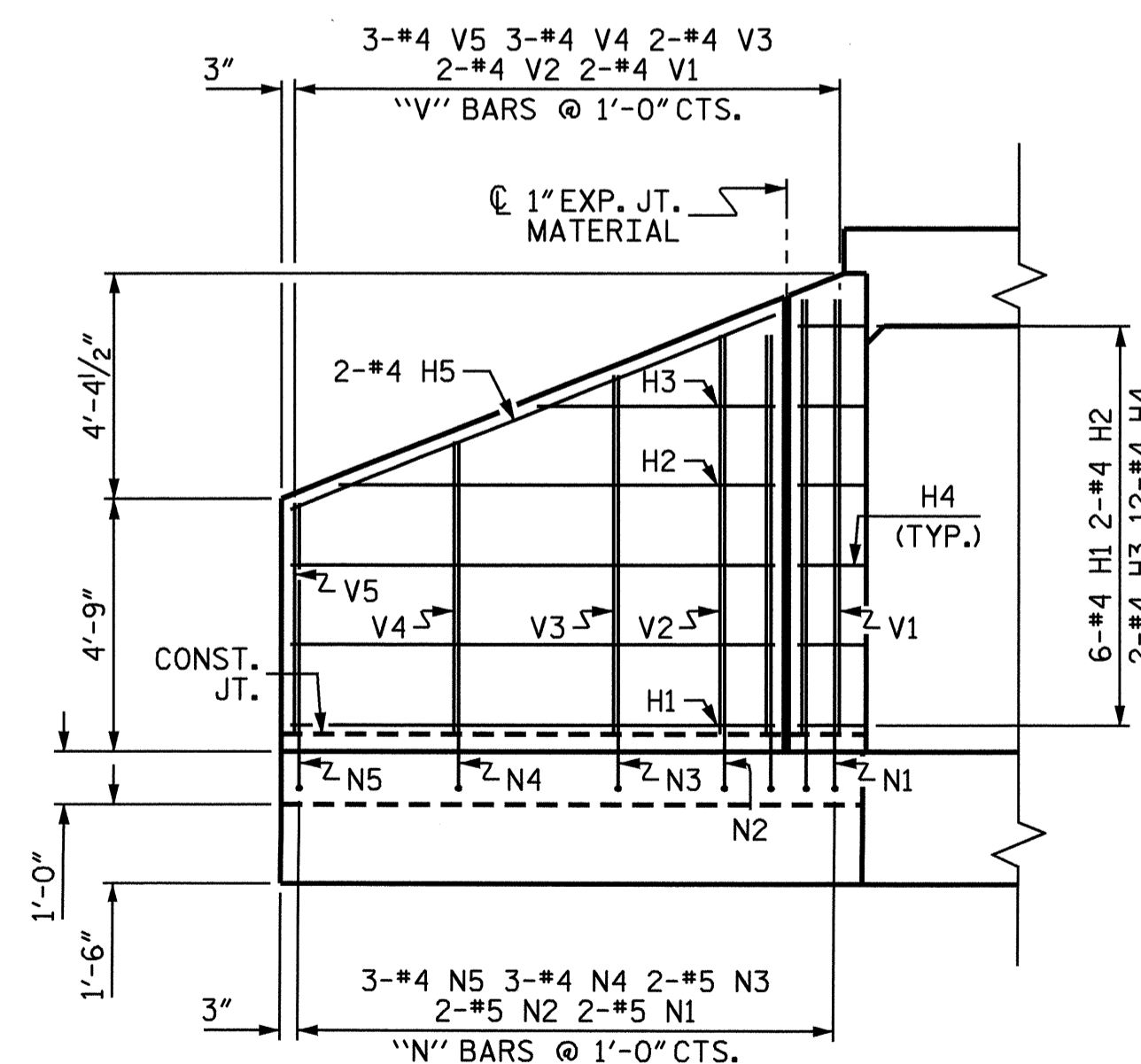




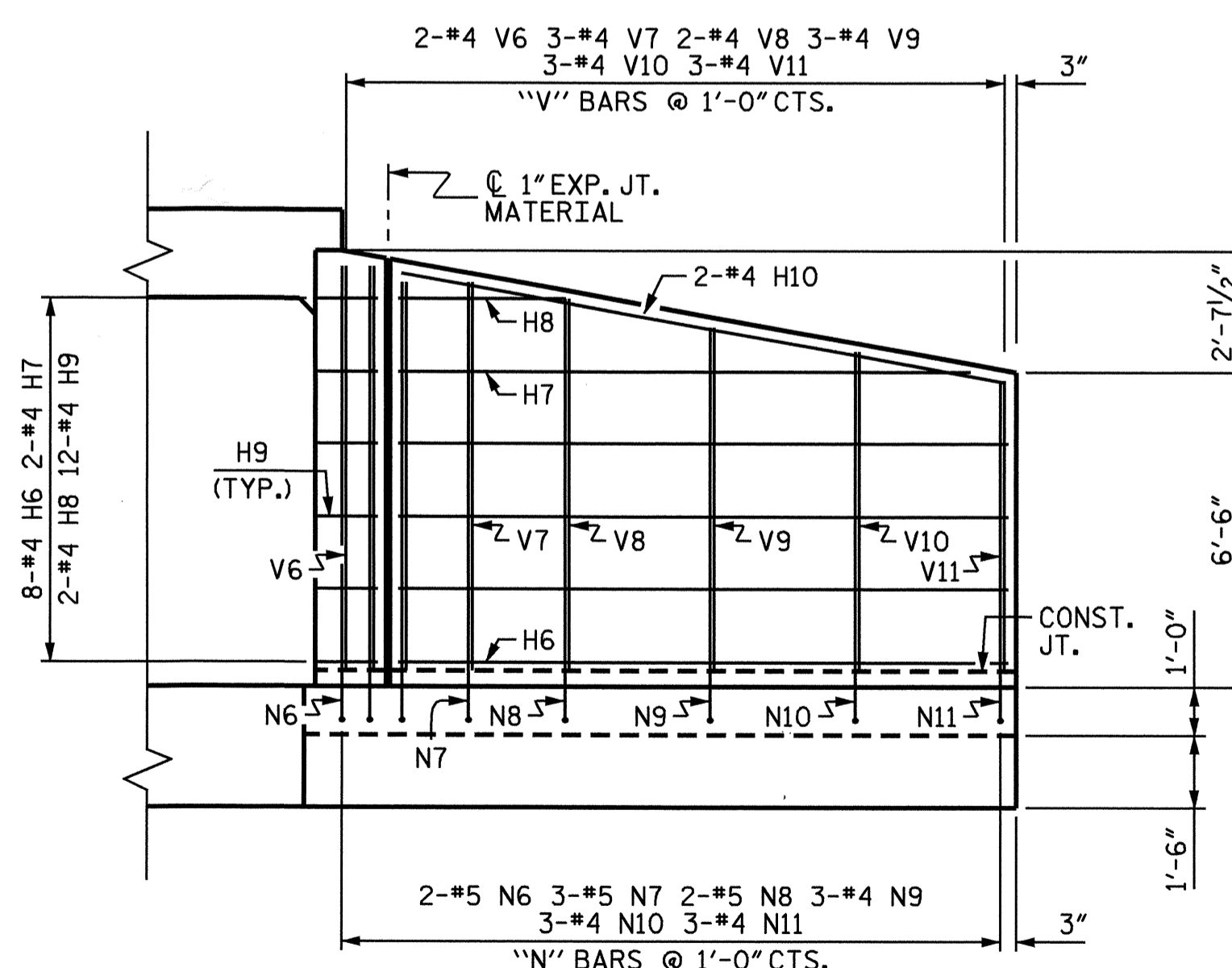
PLAN W2



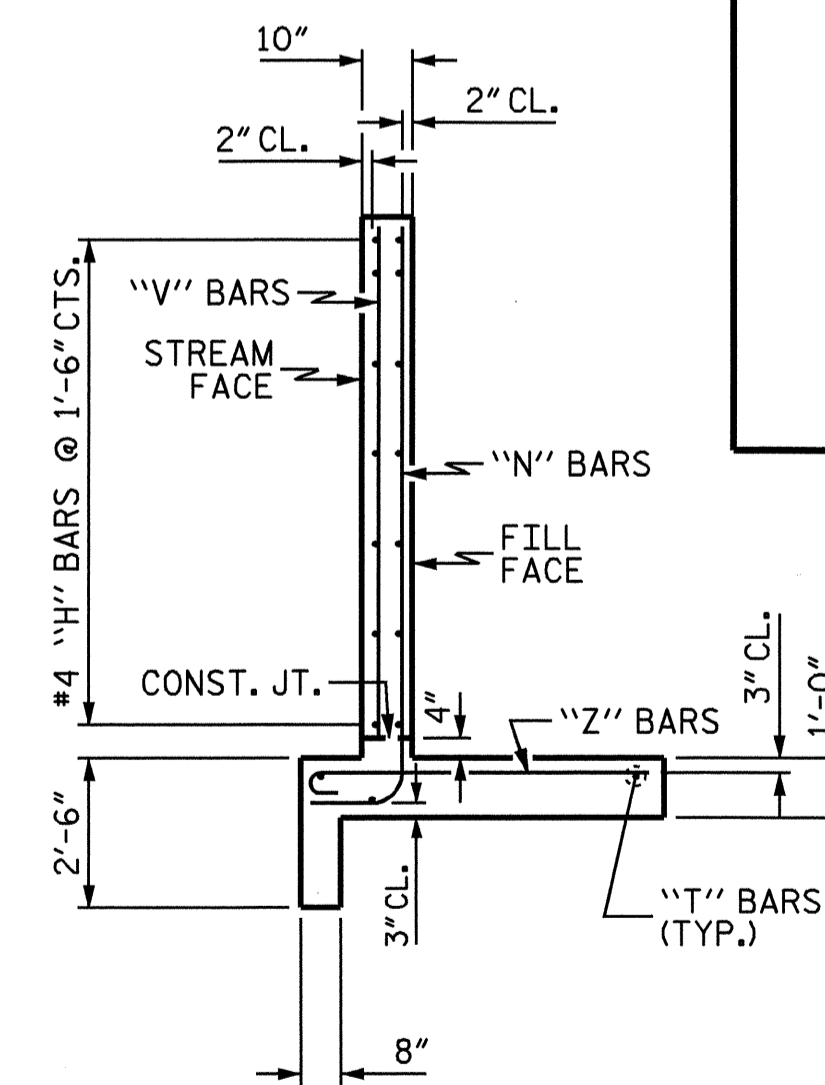
PLAN W3



ELEVATION W2



ELEVATION W3



TYPICAL WING SECTION

BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT.

Z1	5'-5"	7"
Z2	5'-0"	7"
Z3	4'-5"	7"
Z4	3'-6"	6"
Z5	2'-7"	6"
Z6	5'-6"	7"
Z7	5'-1"	7"
Z8	4'-7"	7"
Z9	3'-11"	6"
Z10	3'-3"	6"
Z11	2'-7"	6"

BILL OF MATERIAL					
STAGE 2					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
H1	#4	STR	9'-1"	36	
H2	#4	STR	8'-2"	11	
H3	#4	STR	4'-5"	6	
H4	#4	1	3'-3"	26	
H5	#4	STR	9'-10"	13	
H6	#4	STR	12'-7"	67	
H7	#4	STR	11'-10"	16	
H8	#4	STR	3'-5"	5	
H9	#4	2	3'-3"	26	
H10	#4	STR	12'-8"	17	
N1	#5	3	10'-2"	21	
N2	#5	3	9'-7"	20	
N3	#5	3	8'-9"	18	
N4	#4	3	7'-7"	15	
N5	#4	3	6'-4"	13	
N6	#5	3	10'-4"	22	
N7	#5	3	10'-0"	31	
N8	#5	3	9'-8"	20	
N9	#5	3	9'-1"	28	
N10	#5	3	8'-7"	27	
N11	#4	3	8'-0"	16	
S1	#6	STR	6'-0"	54	
T1	#5	STR	11'-0"	34	
T2	#5	STR	14'-6"	45	
V1	#4	STR	8'-2"	11	
V2	#4	STR	7'-6"	10	
V3	#4	STR	6'-9"	9	
V4	#4	STR	5'-6"	11	
V5	#4	STR	4'-4"	9	
V6	#4	STR	8'-4"	11	
V7	#4	STR	8'-0"	16	
V8	#4	STR	7'-8"	10	
V9	#4	STR	7'-1"	14	
V10	#4	STR	6'-7"	13	
V11	#4	STR	6'-0"	12	
Z1	#5	4	6'-0"	13	
Z2	#5	4	5'-7"	12	
Z3	#5	4	5'-0"	10	
Z4	#4	4	4'-0"	8	
Z5	#4	4	3'-1"	6	
Z6	#5	4	6'-1"	13	
Z7	#5	4	5'-8"	18	
Z8	#5	4	5'-2"	11	
Z9	#5	4	4'-5"	14	
Z10	#5	4	3'-9"	12	
Z11	#4	4	3'-1"	6	
REINFORCING STEEL FOR 2 WINGS				LBS.	836
CLASS A CONCRETE				C.Y.	11.5
2 WINGS				C.Y.	3.0
2 EDGE BEAMS				C.Y.	1.9
1 HEADWALL				C.Y.	2.3
1 END CURTAIN WALL				C.Y.	0.9
1 SILL				C.Y.	19.6
TOTAL				C.Y.	

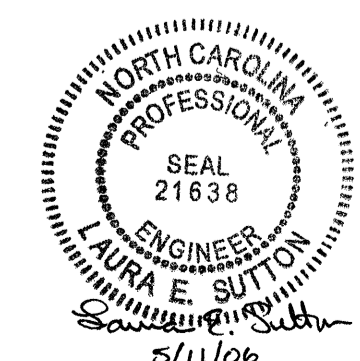
PROJECT NO. B-4041  
 BURKE COUNTY  
 STATION: 12+79.00 -L-

SHEET 8 OF 9

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

WINGS FOR  
 CONCRETE BOX CULVERT  
 STAGE 2

H = 8'-0" SLOPE = 2:1  
 75° SKEW



ASSEMBLED BY: L.E. SUTTON DATE: 2/15/05  
 CHECKED BY: A.S. CALLAWAY DATE: 1/18/06

11-MAY-2006 09:53  
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 LSUTTON

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-8
1			3			TOTAL SHEETS
2			4			9

**NOTES**

THE GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS SHALL CONSIST OF THE FOLLOWING COMPONENTS :

- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2 1/2".
- B. 4 - 1" Ø X 2 1/4" BOLTS WITH WASHERS, BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1" Ø X 2 1/4" GALVANIZED BOLTS 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.)
- C. WIRE STRUTS SHOWN IN THE GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS DETAIL ARE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 P.S.I. AS AN OPTION, A 3/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

GUARDRAIL ANCHOR ASSEMBLY WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP. BOLT THREADS MAY BE RECUT AS NECESSARY TO INSURE FIT.

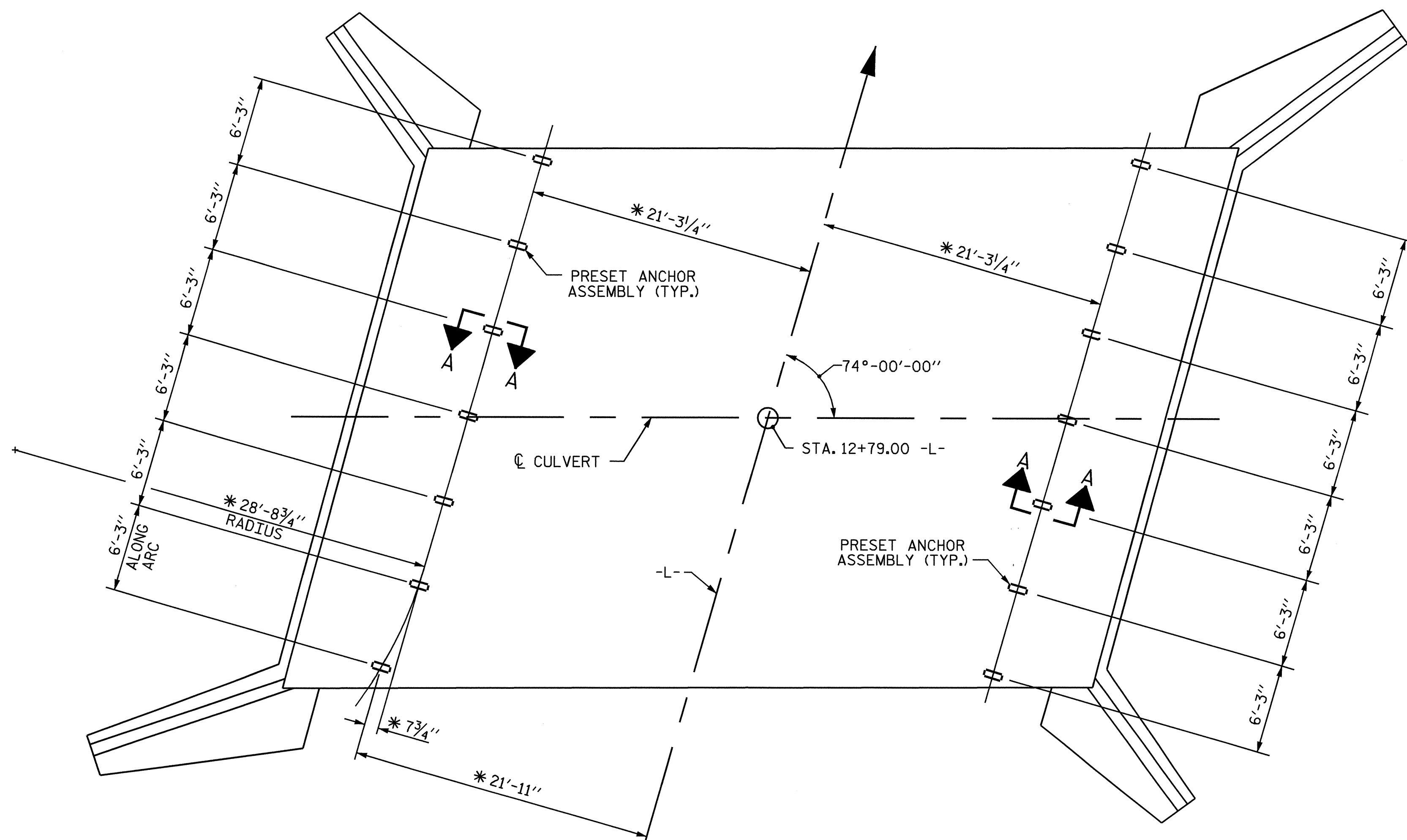
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CLASS "A" CONCRETE.

FERRULES TO BE PLUGGED DURING POURING OF SLAB AS RECOMMENDED BY THE MANUFACTURER.

AT THE CONTRACTOR'S OPTION, FERRULES WITH OPEN OR CLOSED ENDS MAY BE USED. PAYMENT FOR GUARDRAIL, POSTS, AND POST BASE PLATES IS INCLUDED IN ROADWAY PAY ITEMS.

SLAB REINFORCING STEEL MAY BE SHIFTED AS NECESSARY TO CLEAR GUARDRAIL ANCHOR ASSEMBLY. CARE SHOULD BE TAKEN TO KEEP THE SHIFTING OF REINFORCING STEEL TO A MINIMUM.

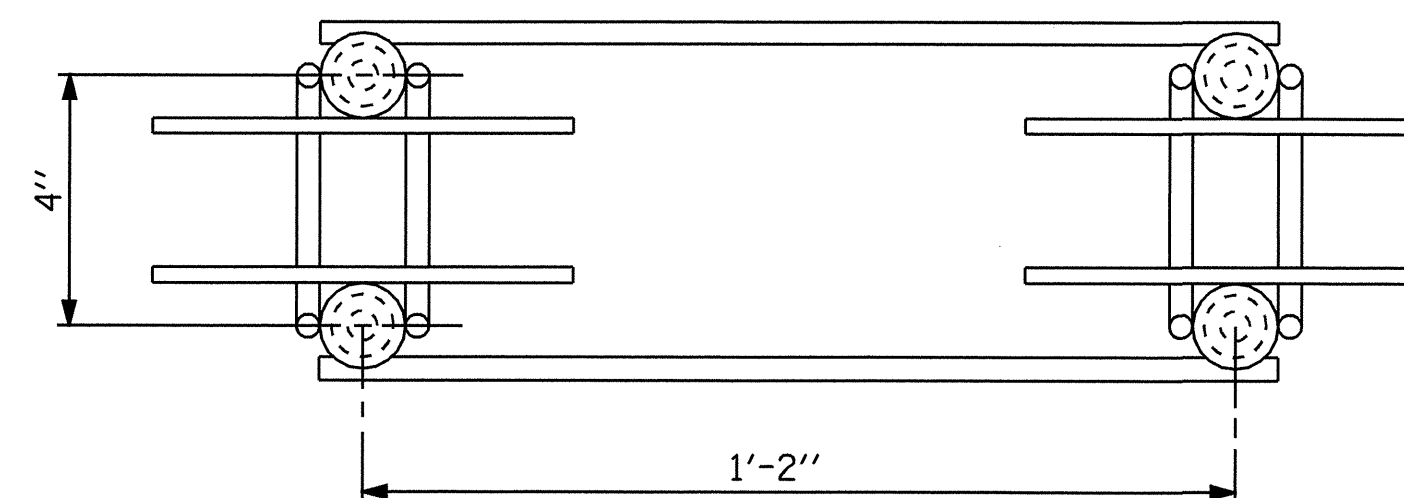
THE CONTRACTOR MAY, AT HIS OPTION, USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF GUARDRAIL ANCHOR ASSEMBLY. THE YIELD LOAD OF THE 1" Ø BOLT IS 21.8 KIPS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS REQUIRED, SEE SPECIAL PROVISIONS FOR "ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS".



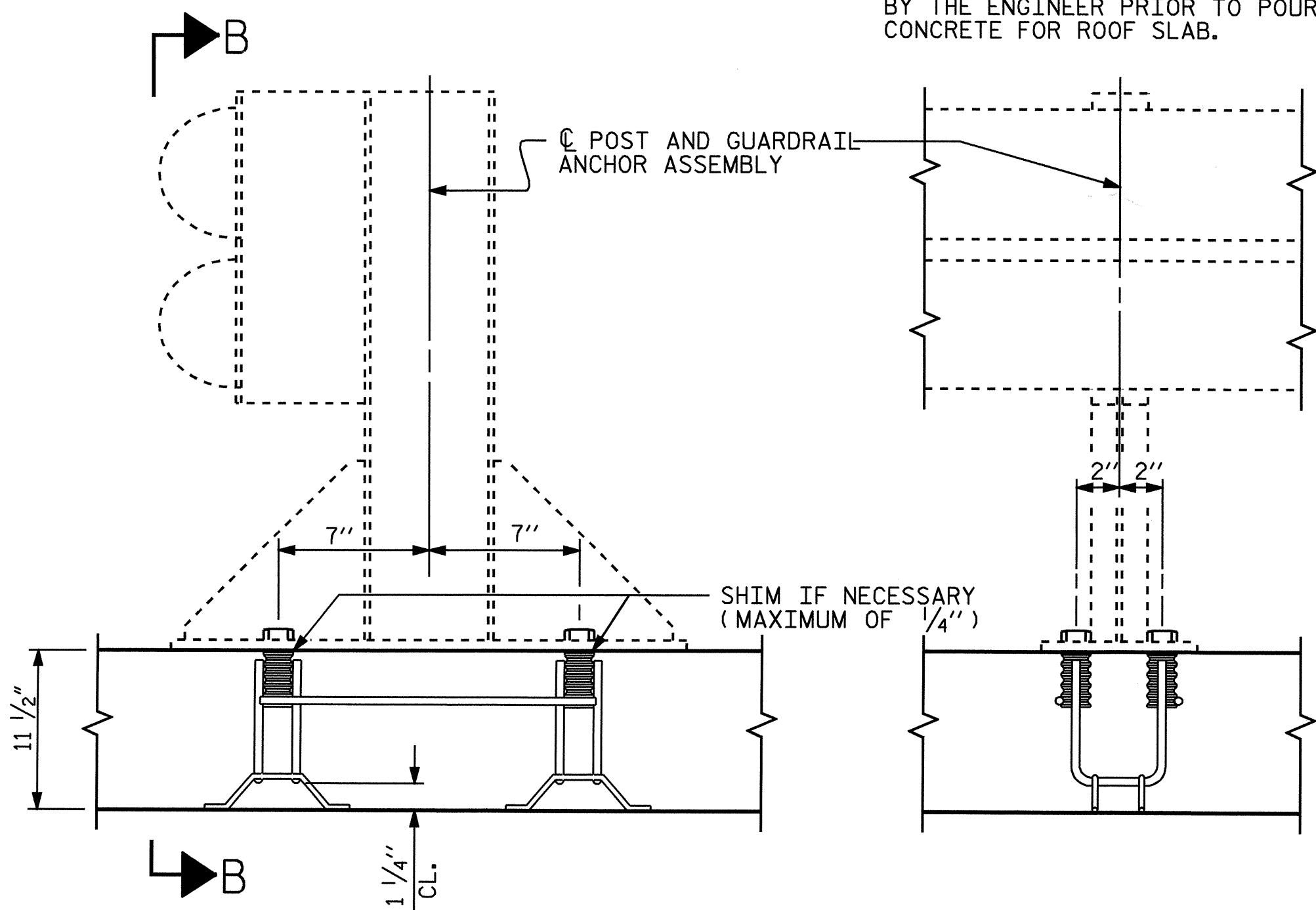
**PLAN**

SHOWING : GUARDRAIL ANCHOR ASSEMBLY SPACING.

\* THESE DIMENSIONS TO BE VERIFIED BY THE ENGINEER PRIOR TO POURING CONCRETE FOR ROOF SLAB.

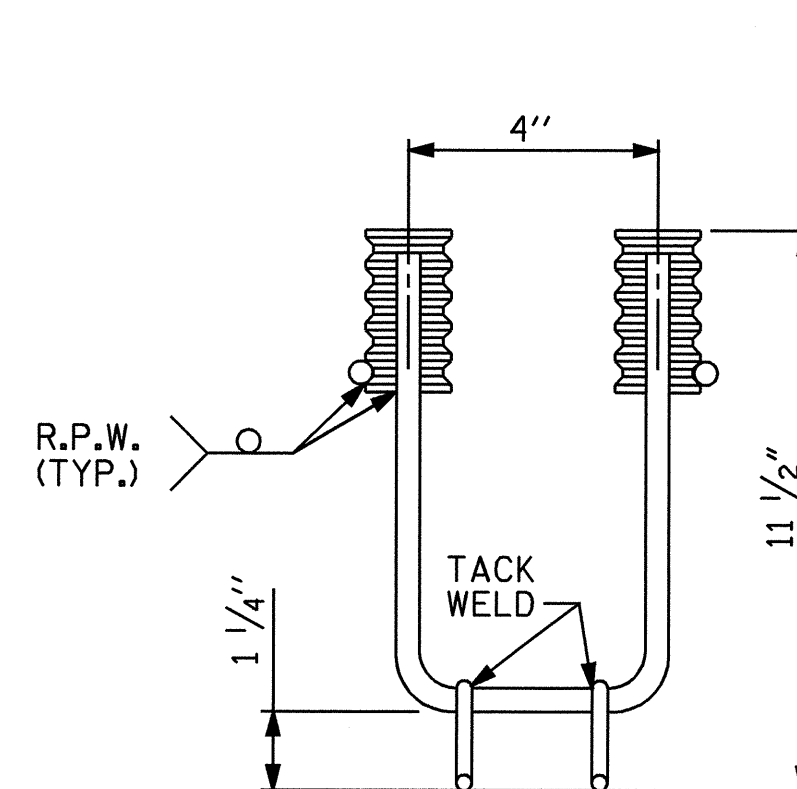


**PLAN**

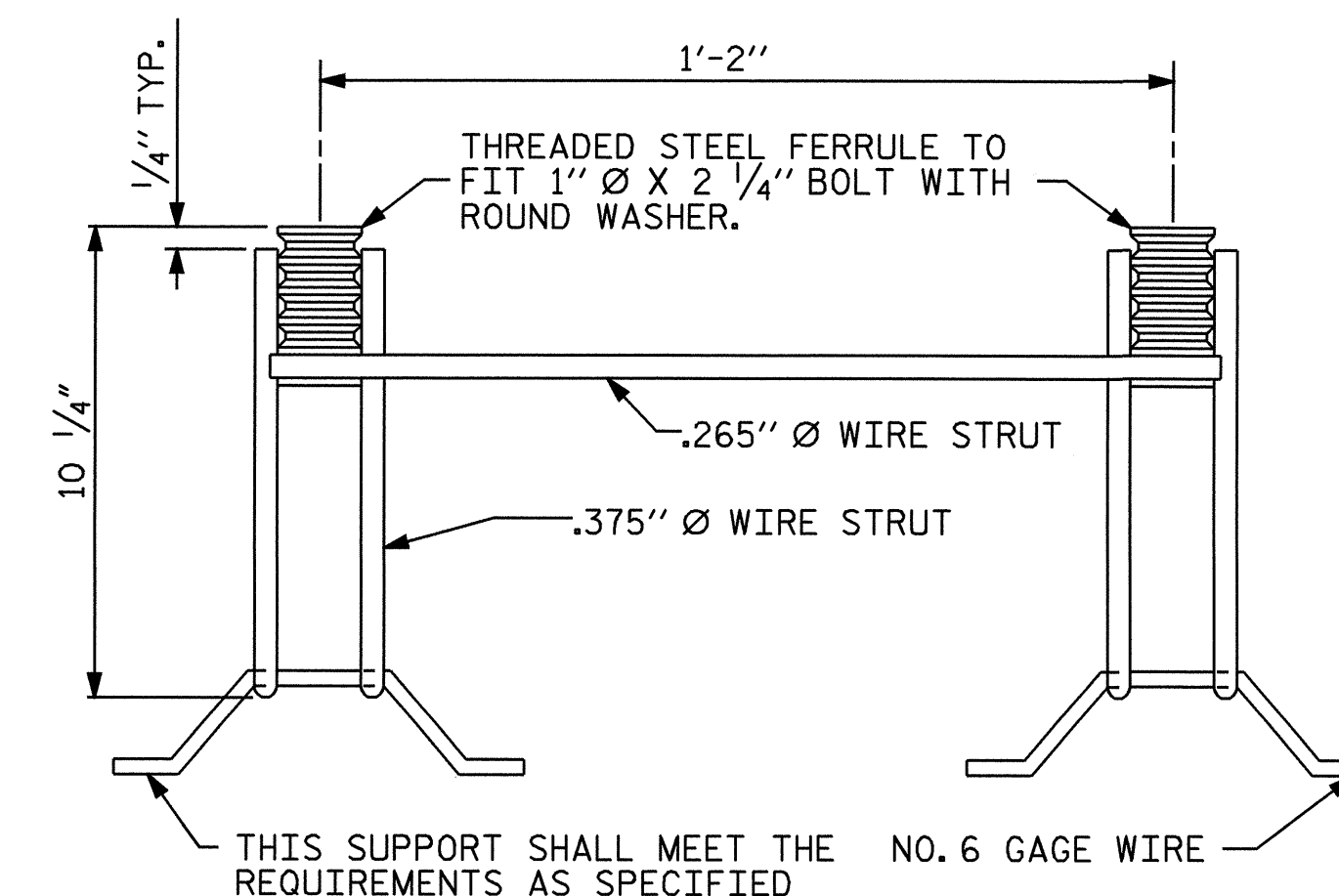


**SECTION A-A**

**SECTION B-B**

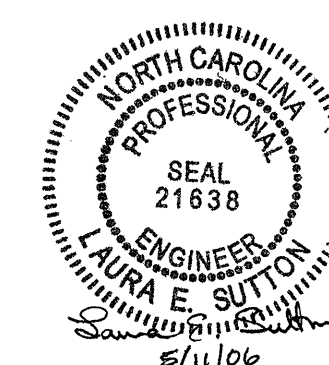


**ELEVATION**



**SIDE VIEW**

THIS SUPPORT SHALL MEET THE REQUIREMENTS AS SPECIFIED FOR SUPPORTS FOR REINFORCING STEEL. SEE SPECIFICATIONS.



PROJECT NO. B-4041  
BURKE COUNTY  
 STATION: 12+79.00 -L-

SHEET 9 OF 9

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 ANCHORAGE DETAILS FOR  
 GUARDRAIL ANCHOR ASSEMBLY  
 FOR CULVERTS

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

ASSEMBLED BY :	A.S. CALLAWAY	DATE :	1/10/06
CHECKED BY :	L.E. SUTTON	DATE :	1/17/06
DRAWN BY :	FCJ 6/88	REV. 8/16/99	RAL/LES
CHECKED BY :	ARB 6/88	REV. 7/10/01	LES/RDR
		REV. 5/7/03	RWW/JTE

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 LSUTTON

**GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS**

**NOTES**

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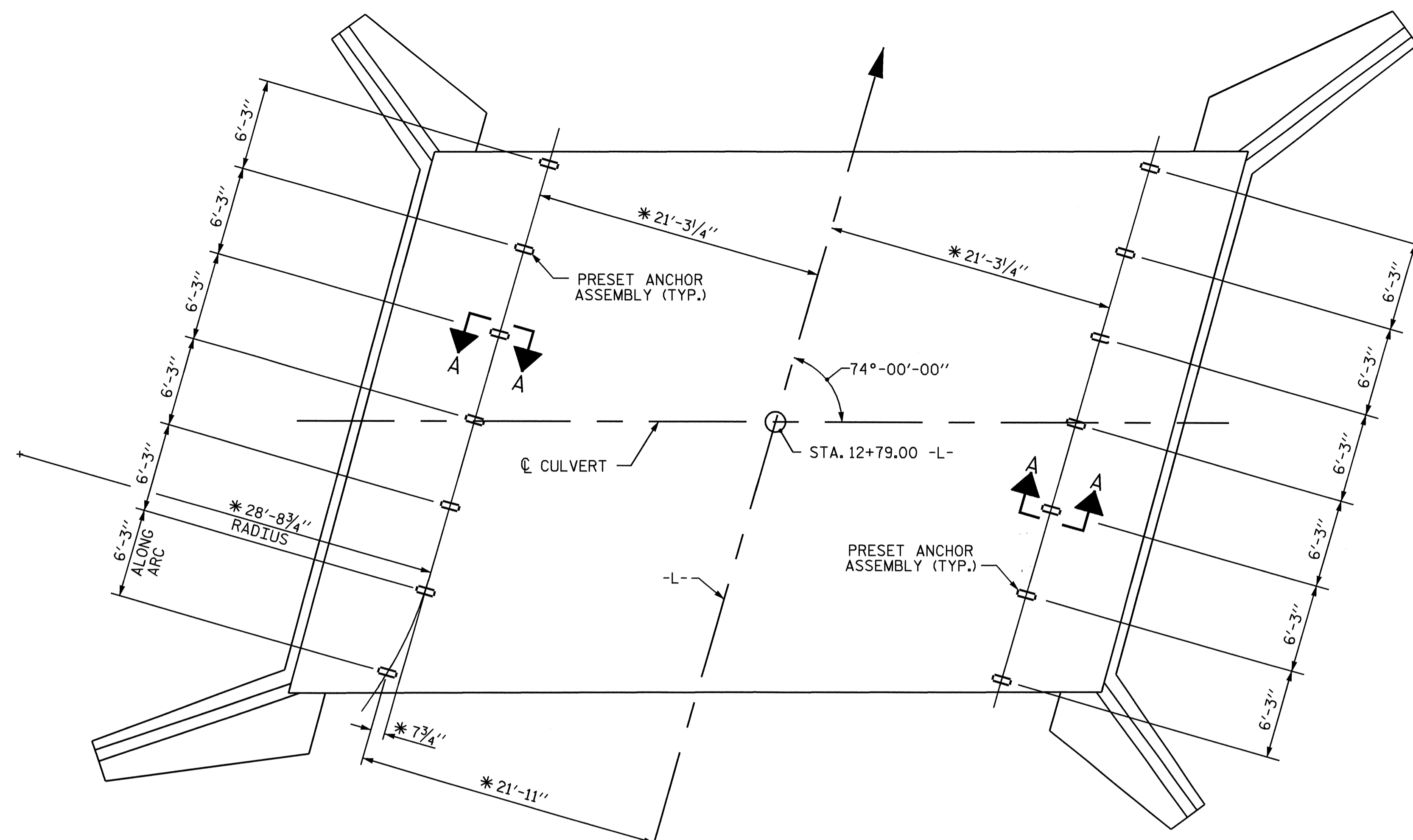
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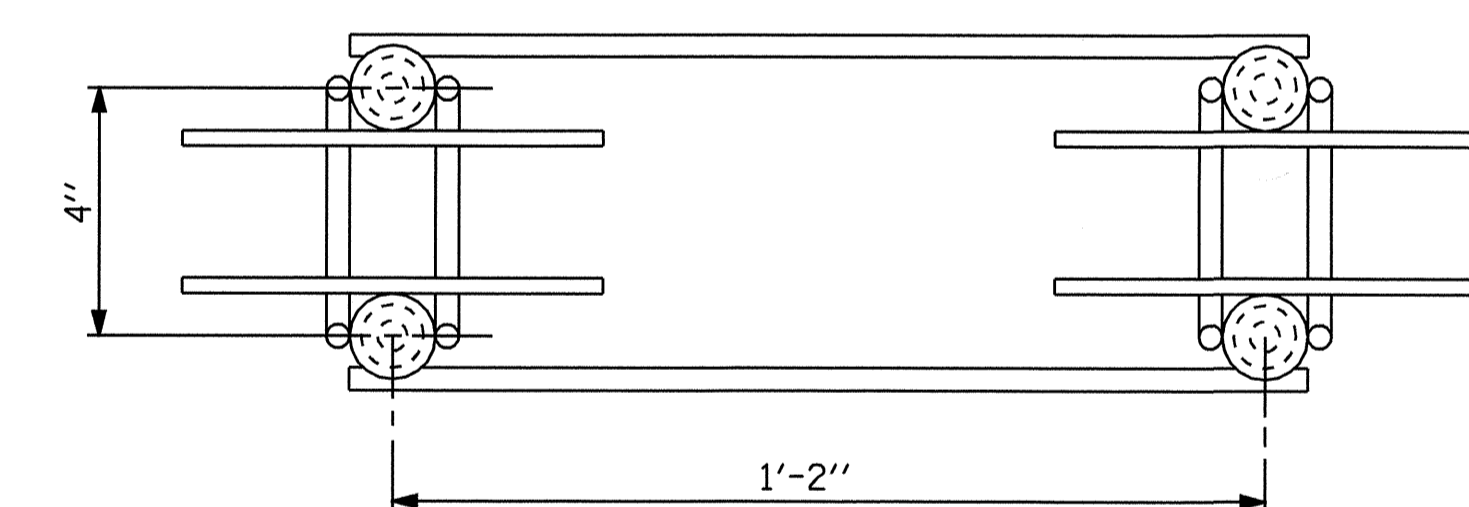
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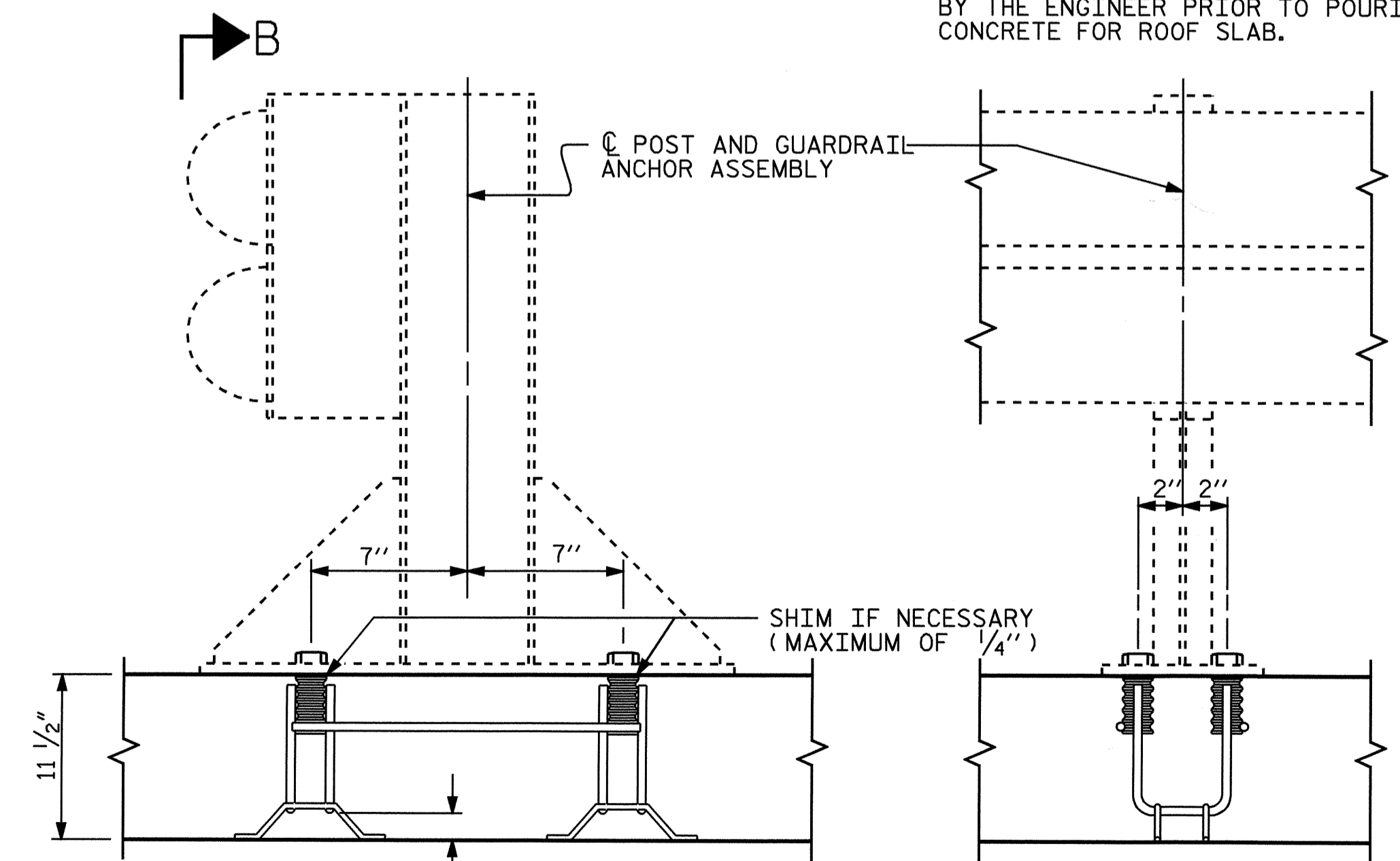
**PLAN**

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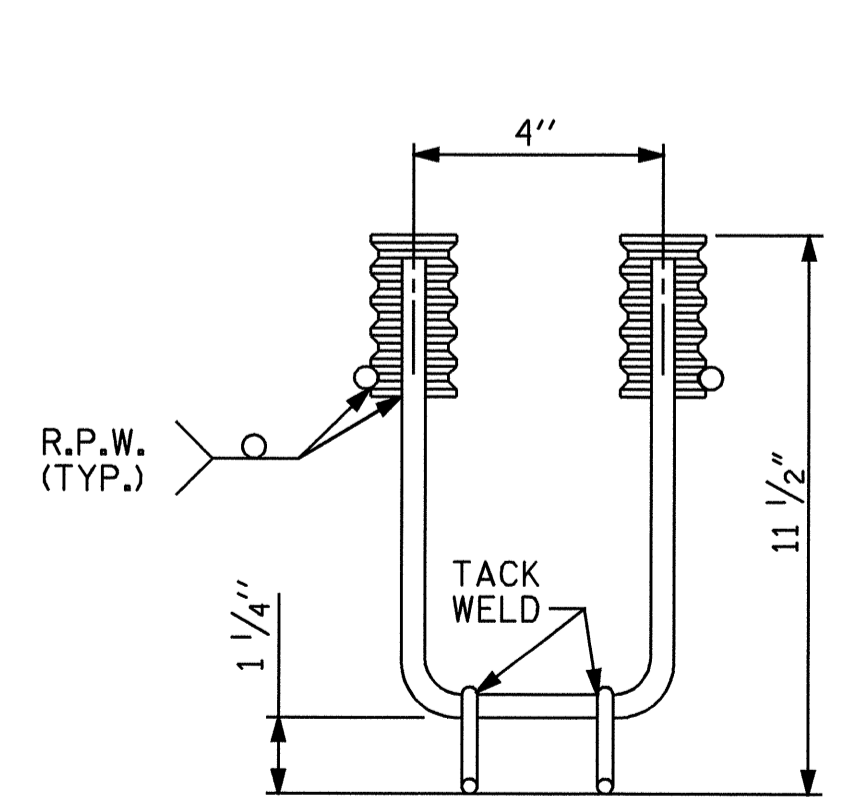


**PLAN**

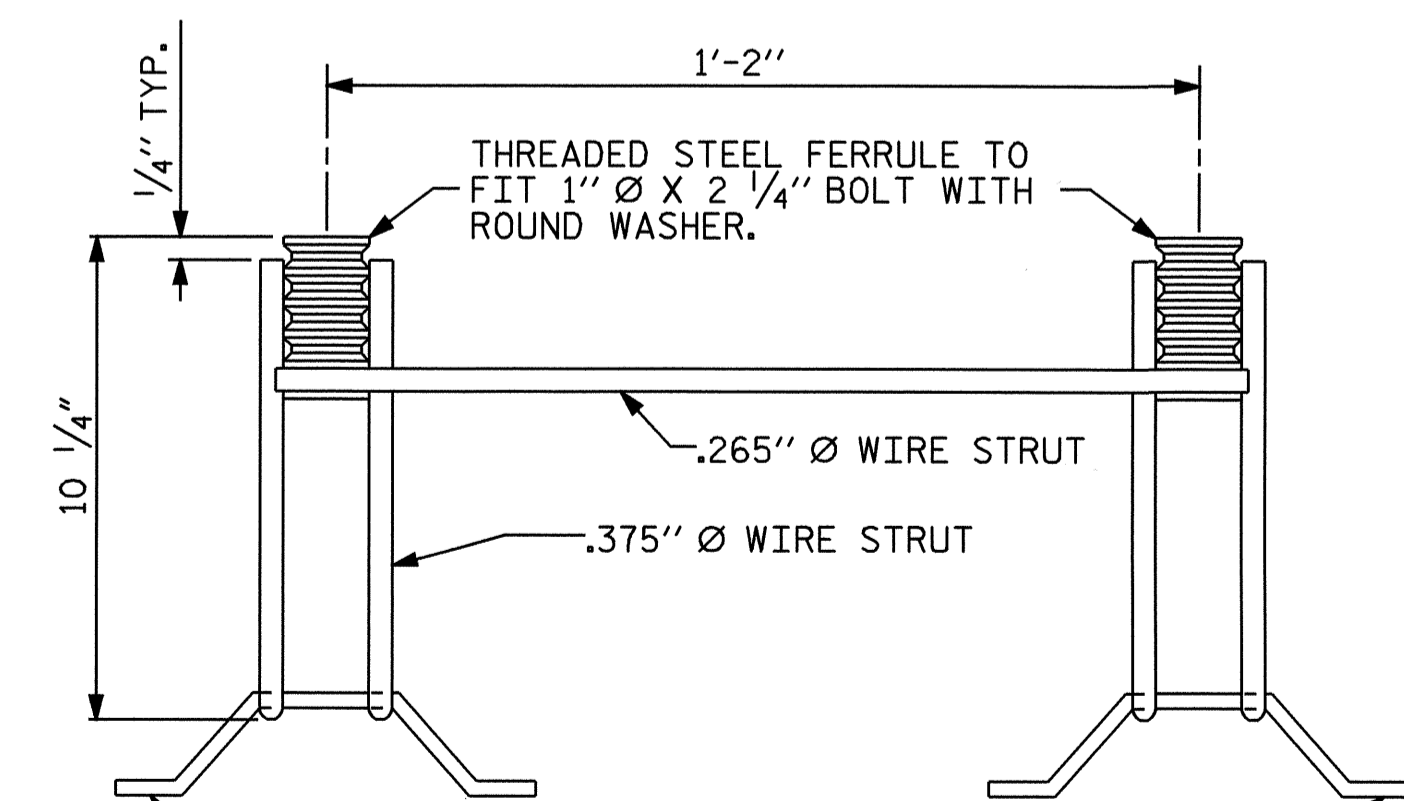


**SECTION A-A**

**SECTION B-B**



**ELEVATION**

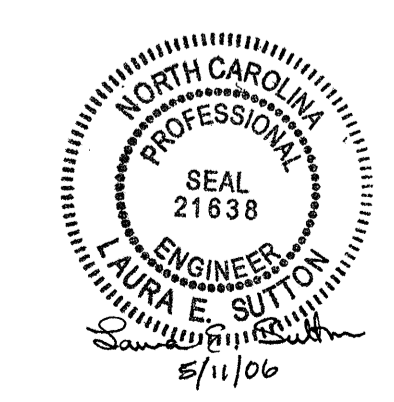


**SIDE VIEW**

PROJECT NO. B-4041  
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SHEET 9 OF 9

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**GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS**