

TIP PROJECT: I-4928

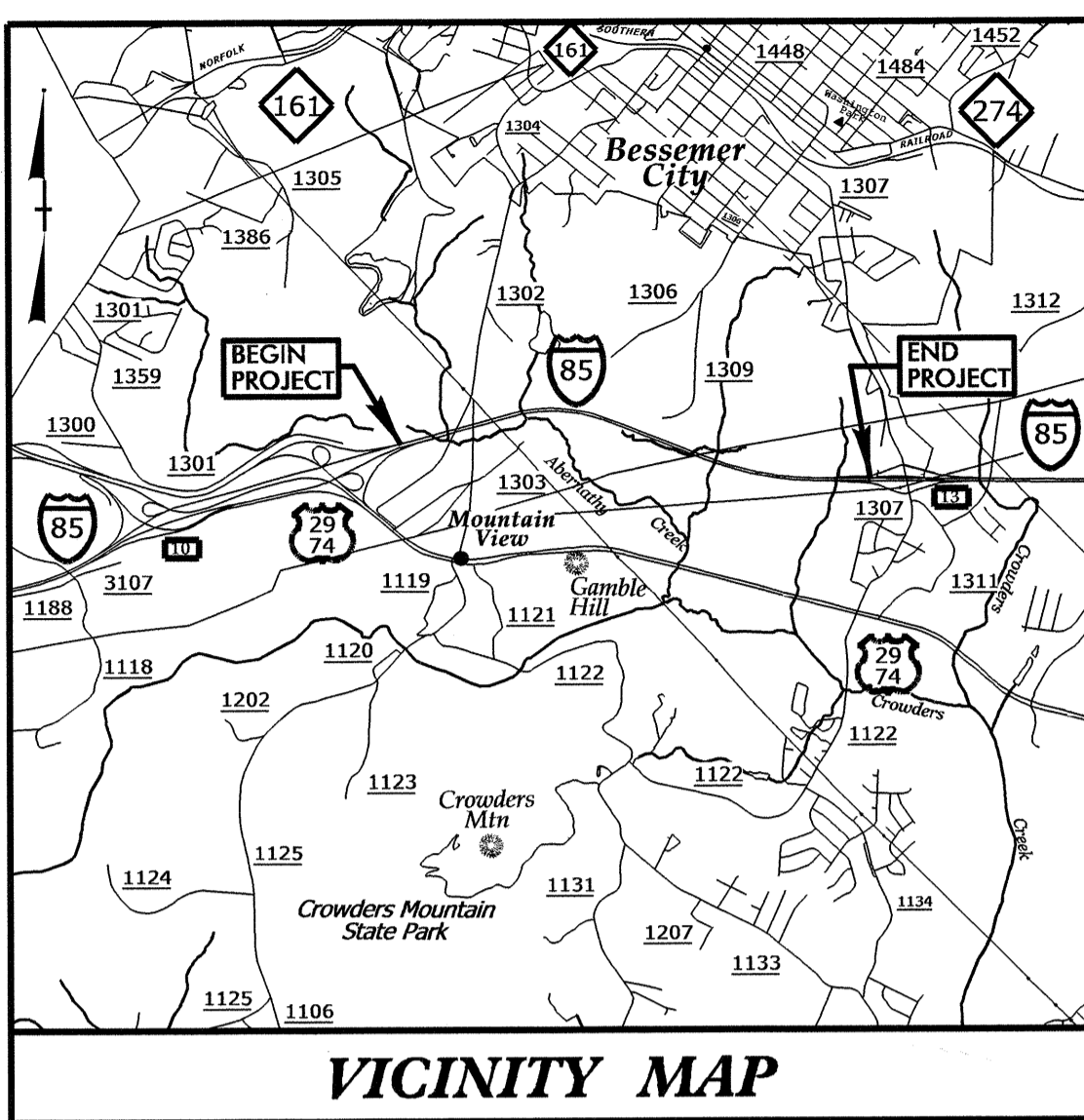
CONTRACT: C203357

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

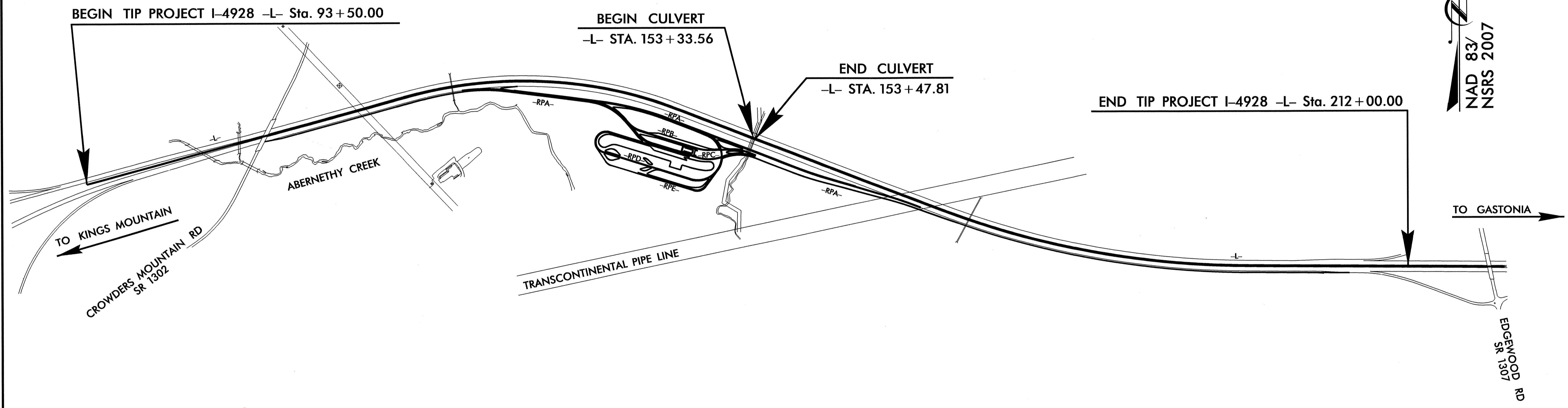
GASTON COUNTY

**LOCATION: NEW I-85 NBL WEIGH STATION FROM SR 1302
(CROWDERS MOUNTAIN RD) TO SR 1307 (EDGEWOOD ROAD)**

**TYPE OF WORK: GRADING, PAVING, DRAINAGE, CULVERT, WIDENING, PAVEMENT,
SIGNING, WEIGH STATION BUILDINGS, STATIC SCALES,
COMMERCIAL VEHICLE INFORMATION SYSTEMS NETWORKS (CVISN)
WEIGH-IN-MOTION (WIM) SCALE SYSTEM, & LIGHTING**

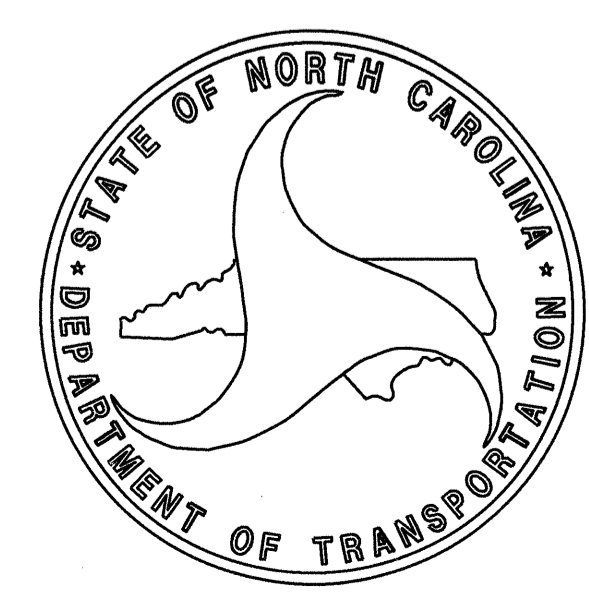


STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-4928		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
41188.1.1	IMS-085-1(106)3	P.E.	
41188.2.1	IMS-085-1(106)3	R/W	
41188.3.FS1	IMS-085-1(106)3	CONST.	



NAD 83/
NSRS 2007

CULVERT



DESIGN DATA

ADT 2014	=	74,224
ADT 2035	=	98,500
DHV	=	10 %
D	=	55 %
T	=	23 % *
V	=	70 MPH
* TTST	18 %	DUAL 5 %

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I-4928	=	2.244 MILES
TOTAL LENGTH TIP PROJECT I-4928	=	2.244 MILES

Prepared in the Office of:

DIVISION OF HIGHWAYS

2012 STANDARD SPECIFICATIONS

LETTING DATE:
MARCH 18, 2014

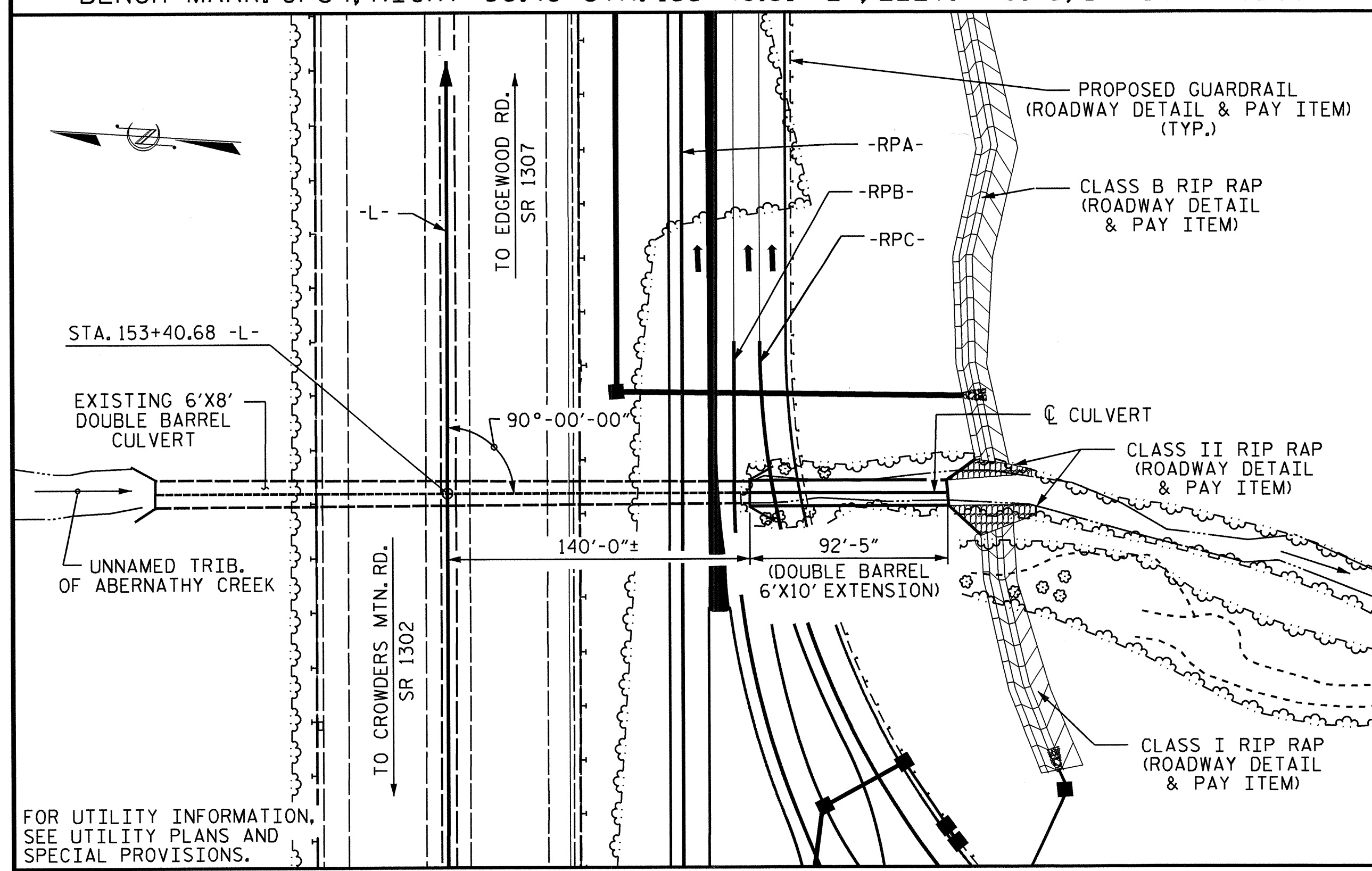
L. E. SUTTON, PE
PROJECT ENGINEER

V. A. PATEL, PE
PROJECT DESIGN ENGINEER

STRUCTURES MANAGEMENT UNIT
1000 Birch Ridge Dr.,
Raleigh NC, 27610

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

16-DEC-2013 10:38
\$\$\$\$\$DGN\$\$\$\$\$
thoarcoll



LOCATION SKETCH

TOTAL STRUCTURE QUANTITIES			
STAGE 1		STAGE 2	
CLASS A CONCRETE BARREL @ 0.95 CY/FT	87.8 C.Y.	CLASS A CONCRETE BARREL @ 1.27 CY/FT	117.4 C.Y.
WINGS, SILLS, ETC.	10.6 C.Y.	WINGS, SILLS, ETC.	8.8 C.Y.
TOTAL	98.4 C.Y.	TOTAL	126.2 C.Y.
REINFORCING STEEL BARREL	14166 LBS.	REINFORCING STEEL BARREL	13867 LBS.
WINGS, SILLS, ETC.	705 LBS.	WINGS, SILLS, ETC.	564 LBS.
TOTAL	14871 LBS.	TOTAL	14431 LBS.
CULVERT EXCAVATION	LUMP SUM 100 TONS	CULVERT EXCAVATION	LUMP SUM 70 TONS
FOUNDATION CONDI. MAT'L		FOUNDATION CONDI. MAT'L	
POLYURETHANE GROUT INJECTION		POLYURETHANE GROUT INJECTION	12,500 LBS.

ASSUMED LIVE LOAD ----- HS20-44 OR ALTERNATE LOADING.
 DESIGN FILL----- 41.17 FT.
 FOR OTHER DESIGN DATA AND NOTES SEE STANDARD NOTE SHEET.
 3" Ø WEEP HOLES INDICATED TO BE IN ACCORDANCE WITH THE SPECIFICATIONS.
 CONCRETE IN CULVERTS TO BE POURED IN THE FOLLOWING ORDER:
 1. WING FOOTINGS AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS OF STAGE 1.
 2. THE REMAINING PORTIONS OF STAGE 1 WALLS AND WING FULL HEIGHT.
 3. WING FOOTINGS AND FLOOR SLAB INCLUDING 4" OF VERTICAL WALL OF STAGE 2.
 4. THE REMAINING PORTION OF STAGE 2 WALL AND WING FULL HEIGHT FOLLOWED BY ROOF SLAB AND HEADWALL.
 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.
 TRANSVERSE CONSTRUCTION JOINT SHALL BE USED IN THE BARREL, SPACED TO LIMIT THE POURS TO A MAXIMUM OF 70 FT. LOCATION OF JOINT SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER.

ROADWAY DATA

GRADE POINT ELEV. @ STA. 153+40.68 -L- = 774.36
 BED ELEV. @ STA. 153+40.68 -L- = 725.79
 ROADWAY SLOPES @ STA. 153+40.68 -L- = 1.5:1

HYDRAULIC DATA

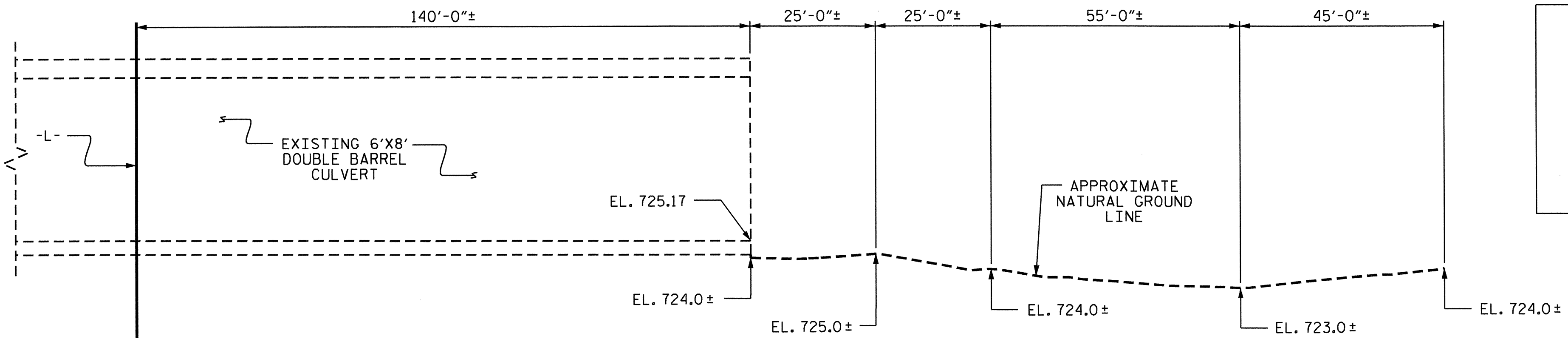
DESIGN DISCHARGE = 1200 C.F.S.
 FREQUENCY OF DESIGN FLOOD = 50 YRS.
 DESIGN HIGH WATER ELEVATION = 738.50
 DRAINAGE AREA = 1.19 SQ. MI.
 BASE DISCHARGE (Q100) = 1300 C.F.S.
 BASE HIGH WATER ELEVATION = 739.53

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = 2200(+) C.F.S.
 FREQUENCY OF OVERTOPPING FLOOD = 500(+) YEARS
 OVERTOPPING FLOOD ELEVATION = 753.00(+)

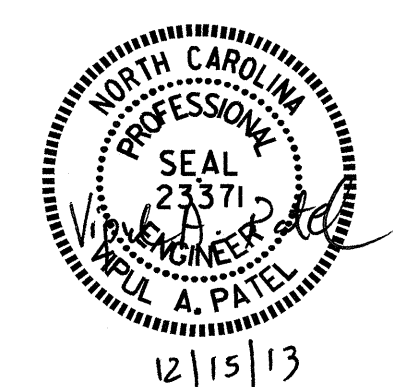
NOTES

AT THE CONTRACTOR'S OPTION, HE MAY SPLICE THE VERTICAL REINFORCING STEEL IN THE INTERIOR FACE OF EXTERIOR WALL AND BOTH FACES OF INTERIOR WALLS 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.
 IF APPROVED BY THE ENGINEER, THE CONTRACTOR MAY USE THE EXISTING WINGS AS TEMPORARY SHORING FOR THE CONSTRUCTION OF THE CULVERT EXTENSIONS. IN THIS CASE, THE BOTTOM SLAB OF THE EXTENSION SHALL BE POURED AT LEAST 72 HOURS PRIOR TO CUTTING THE WINGS. THE WINGS MAY BE CUT EARLIER PROVIDED THE SLAB CONCRETE STRENGTH HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI.
 FOR CULVERT DIVERSION DETAILS AND PAY ITEM, SEE EROSION CONTROL PLANS. NO PRECAST REINFORCED BOX CULVERT OPTION WILL BE ALLOWED.
 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. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.
 FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
 FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
 FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
 FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
 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.
 BARS FROM EXISTING CULVERT WING WALL SHALL BE CUT FLUSH WITH THE END OF EXISTING CULVERT. THE EXISTING CULVERT AND CULVERT EXTENSION SHALL NOT BE CONNECTED IN ANY WAY DUE TO ANTICIPATED SETTLEMENT OF CULVERT EXTENSION.
 THE CULVERT EXTENSION HAS BEEN DESIGNED WITHOUT A RIGID CONNECTION TO ALLOW SETTLEMENT TO OCCUR BETWEEN THE TWO ADJOINING SECTIONS.
 PRIOR TO BEGINNING EMBANKMENT CONSTRUCTION, SURVEY THE EXISTING CULVERT FLOOR AND ESTABLISH BASELINE ELEVATIONS AT THE END AND QUARTER POINTS AND PROVIDE ELEVATIONS TO THE RESIDENT ENGINEER AND THE GEOTECHNICAL OPERATIONS ENGINEER.
 THE CULVERT CONNECTION INTERFACE IS TO BE INSPECTED AND SURVEYED BY THE CONTRACTOR WEEKLY DURING EMBANKMENT CONSTRUCTION AND AT THE 30, 45, AND 60 DAY INTERVALS AFTER THE EMBANKMENT HAS BEEN COMPLETED FOR SETTLEMENT.
 REPORT DIFFERENTIAL AND TOTAL SETTLEMENT QUANTITY TO THE GEOTECHNICAL OPERATIONS ENGINEER WEEKLY AND SEAL VOIDS BETWEEN THE SECTIONS WITH ELASTOMERIC SEALANT TO LIMIT THE INTRUSION OF SOIL AND WATER.
 IF TOTAL SETTLEMENT EXCEEDS 6 INCHES AT THE INTERFACE OF THE TWO CULVERTS, OR THE DIFFERENTIAL SETTLEMENT EXCEEDS 4 INCHES BETWEEN THE INTERFACE AND EXIT OF THE NEW CULVERT, GROUTING TO LIMIT FUTURE MOVEMENT MAY BE REQUIRED AS DIRECTED BY THE ENGINEER. FOR POLYURETHANE GROUT INJECTION, SEE SPECIAL PROVISIONS.
 THE CURTAIN WALL AT THE OUTLET END OF THE EXISTING CULVERT SHALL BE REMOVED TO ALLOW THE EXTENSION TO SETTLE. SAW CUT OR CHIP OFF CURTAIN WALL. AREAS WHERE SURFACE IS NOT LEFT SMOOTH SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER. A SMOOTH SURFACE IS REQUIRED TO ALLOW EVEN SETTLEMENT OF THE EXTENSION.



PROFILE ALONG CULVERT

I HEREBY CERTIFY THESE PLANS ARE THE AS BUILT PLANS

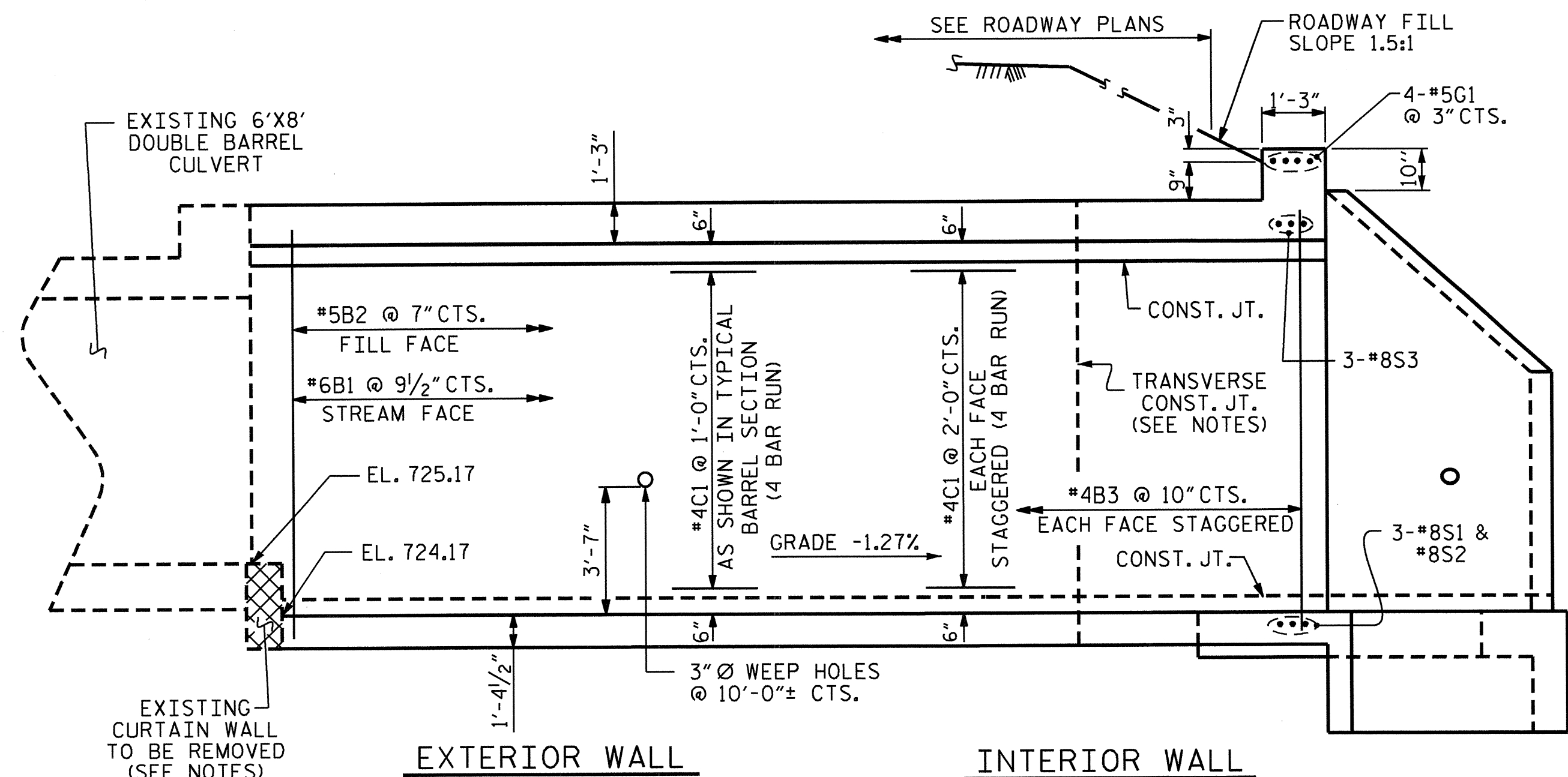


PROJECT NO. I-4928
 GASTON COUNTY
 STATION: 153+40.68 -L-
 SHEET 1 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 DOUBLE 6 FT. X 10 FT. CONCRETE BOX CULVERT
 90° SKEW
 (RIGHT EXTENSION)

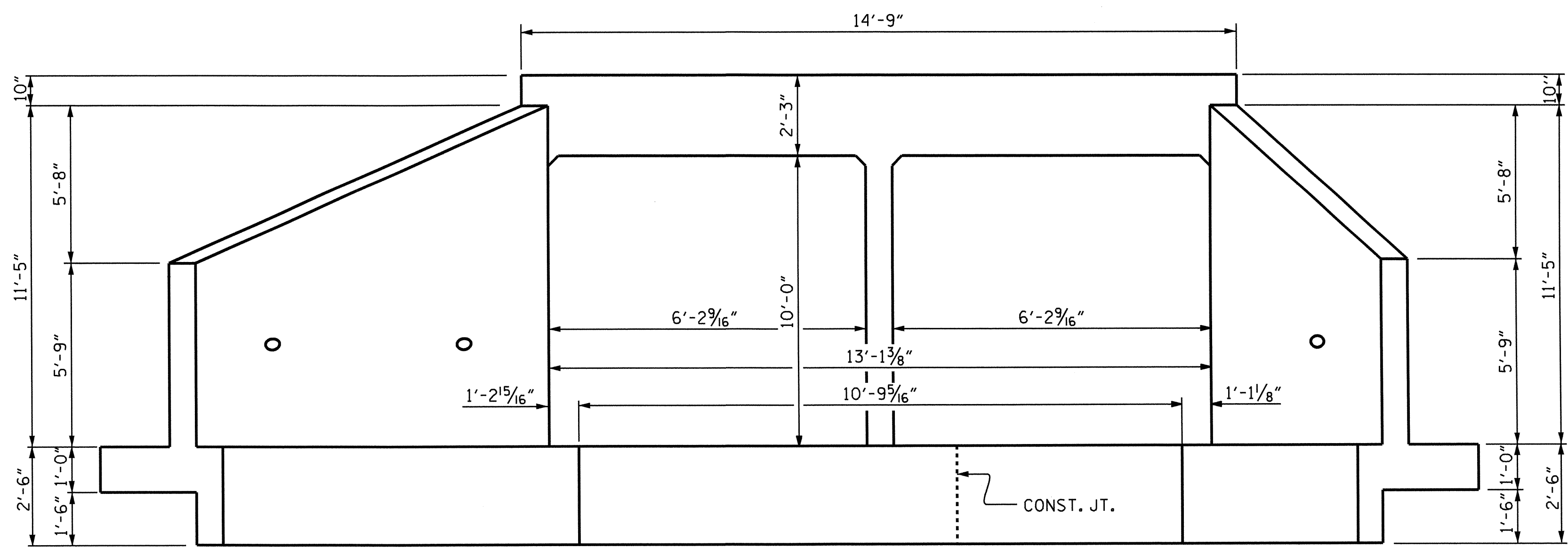
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-1
1			3			TOTAL SHEETS
2			4			5

DRAWN BY : T. H. CARROLL DATE : 10/3/13
 CHECKED BY : H. A. LOCKLEAR DATE : 10/23/13
 DESIGN ENGINEER OF RECORD: R. L. CHESSON DATE : 11/12/13



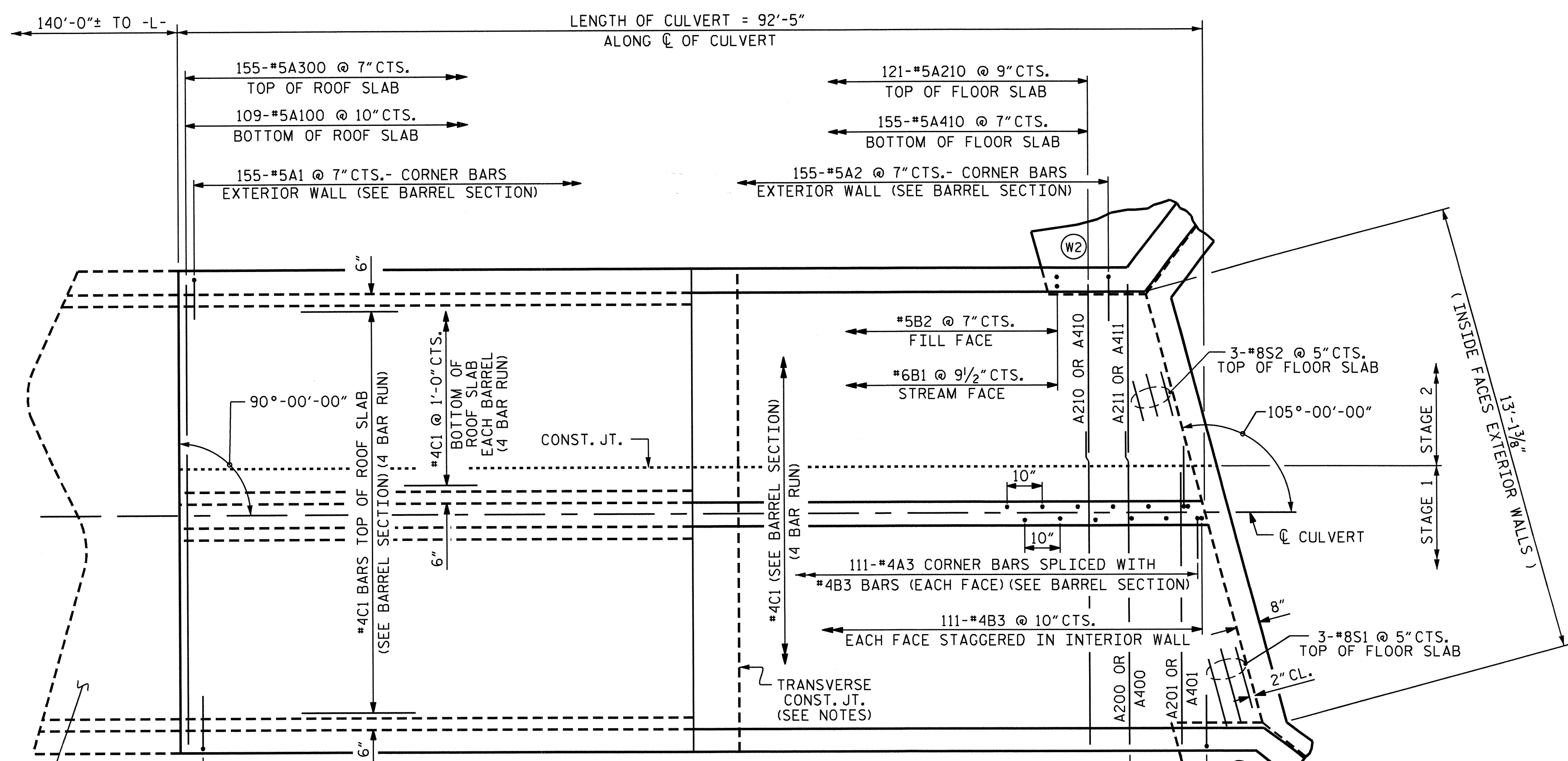
EXTERIOR WALL INTERIOR WALL

CULVERT SECTION



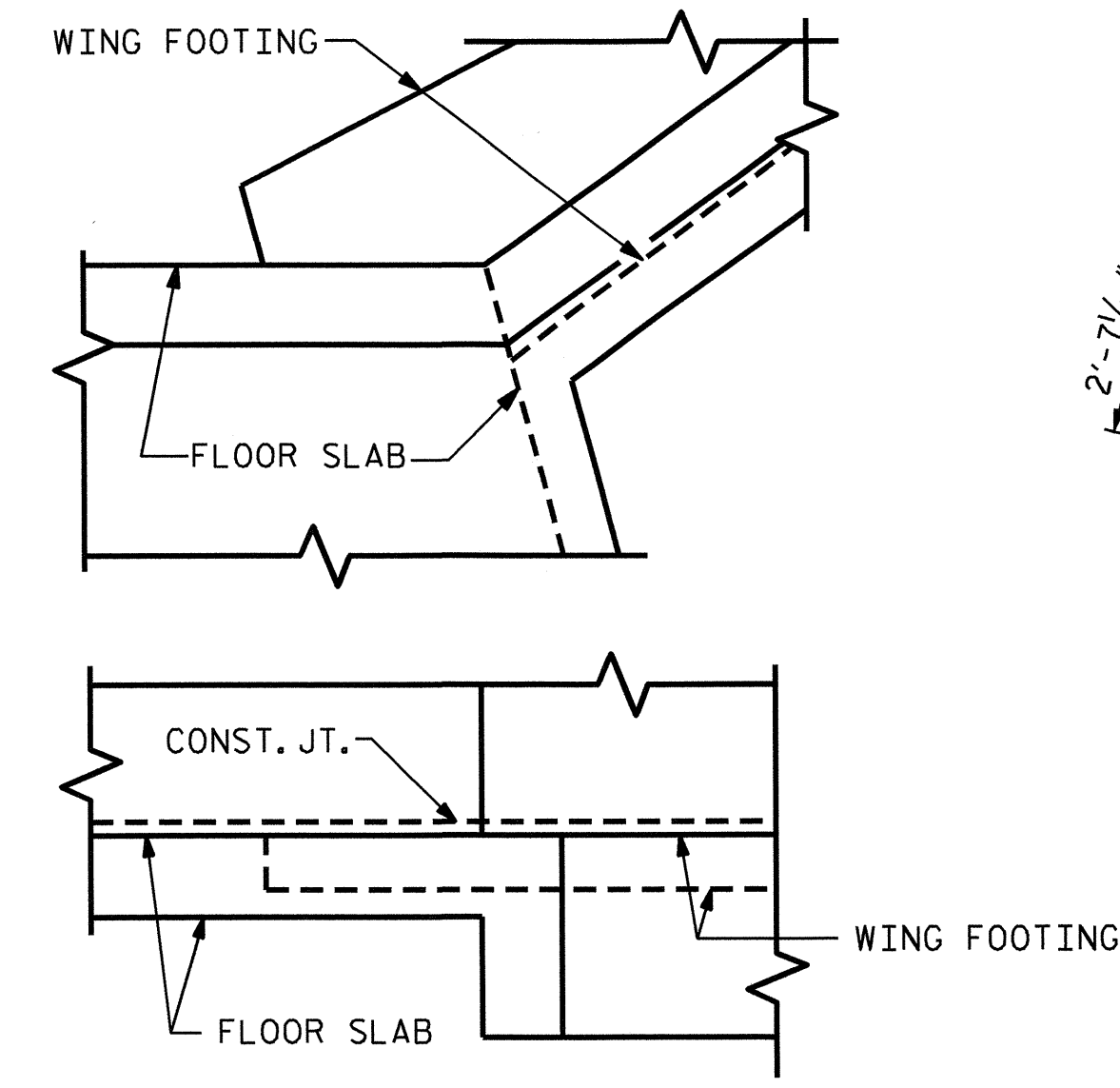
END ELEVATION

(NORMAL TO SKEW, LOOKING UPSTREAM)
(FOR SILL DETAIL, SEE SHEET 3 OF 5)

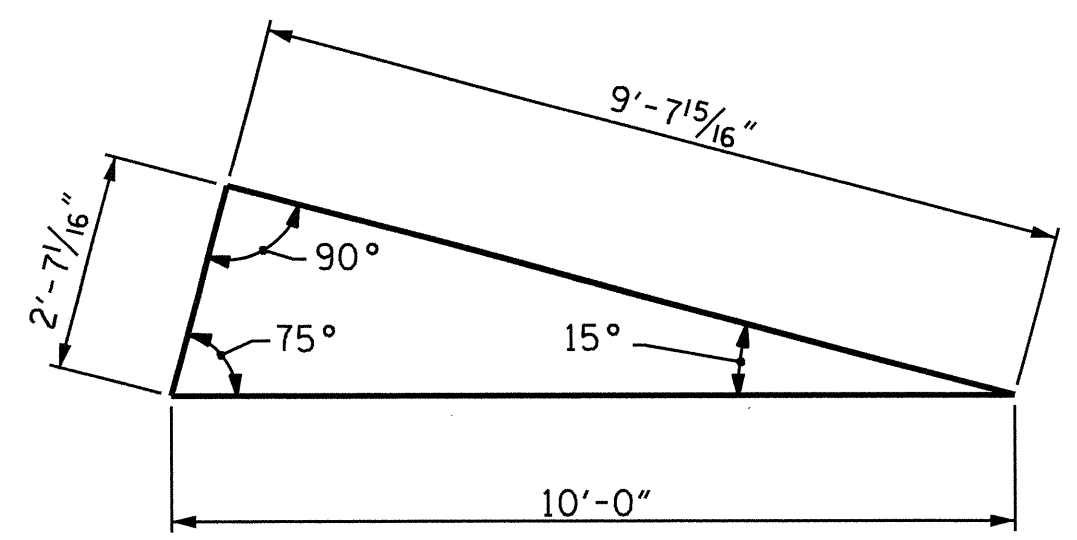


PART PLAN - ROOF SLAB

PART PLAN - FLOOR SLAB



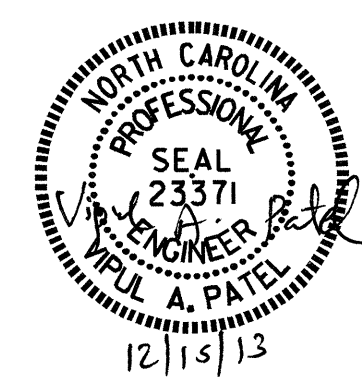
CONNECTION OF WING FOOTING AND FLOOR SLAB



SKEW TRIANGLE

DRAWN BY: T. H. CARROLL DATE: 10/3/13
 CHECKED BY: H. A. LOCKLEAR DATE: 10/23/13
 DESIGN ENGINEER OF RECORD: R. L. CHESSON DATE: 11/12/13

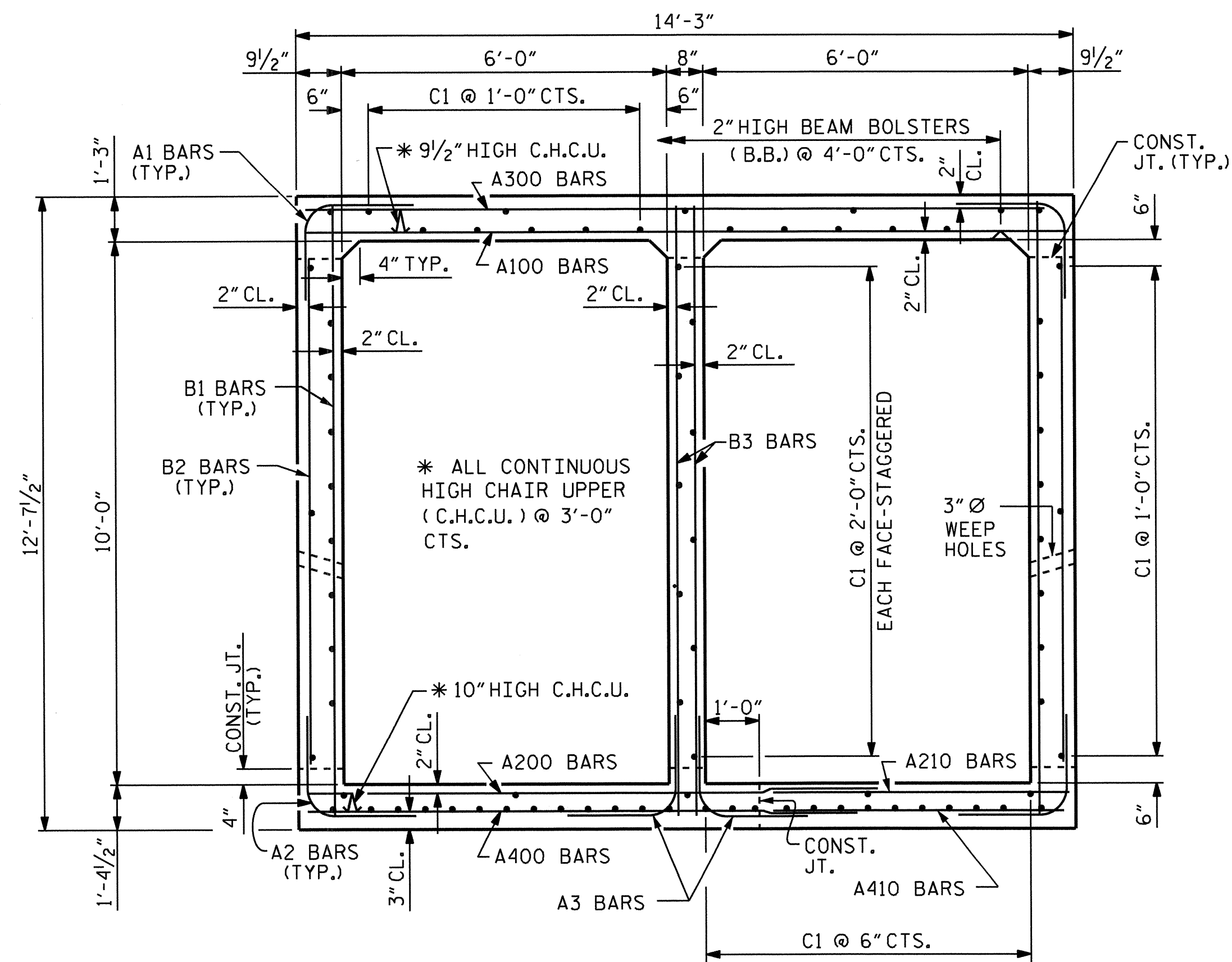
16-DEC-2013 11:02
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PROJECT NO. I-4928
 GASTON COUNTY
 STATION: 153+40.68 -L-
 SHEET 2 OF 5

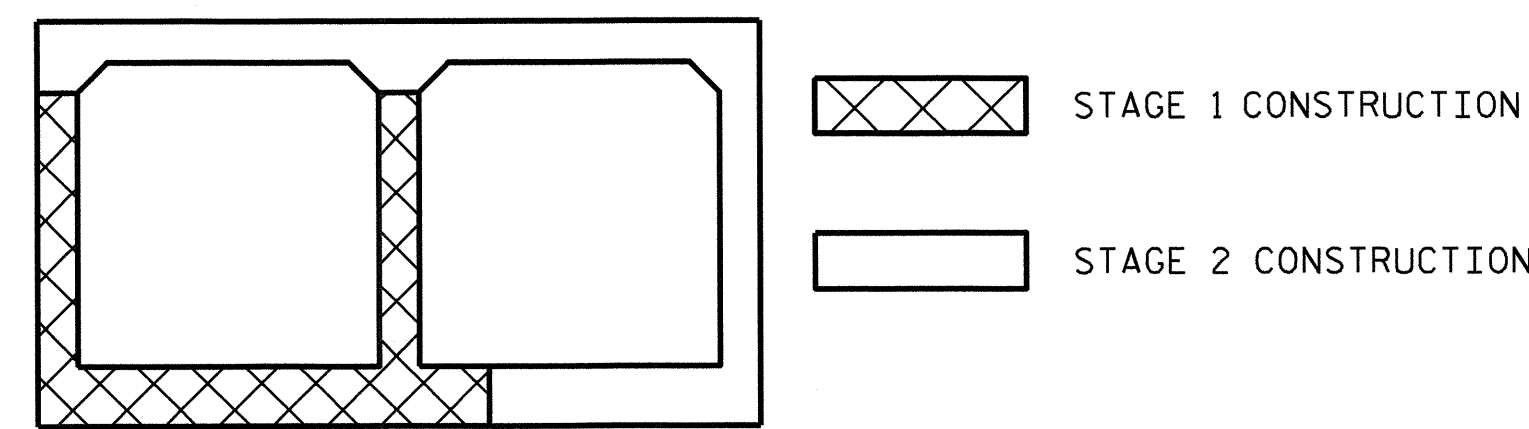
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 DOUBLE 6 FT. X 10 FT.
 CONCRETE BOX CULVERT
 90° SKEW
 (RIGHT EXTENSION)

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



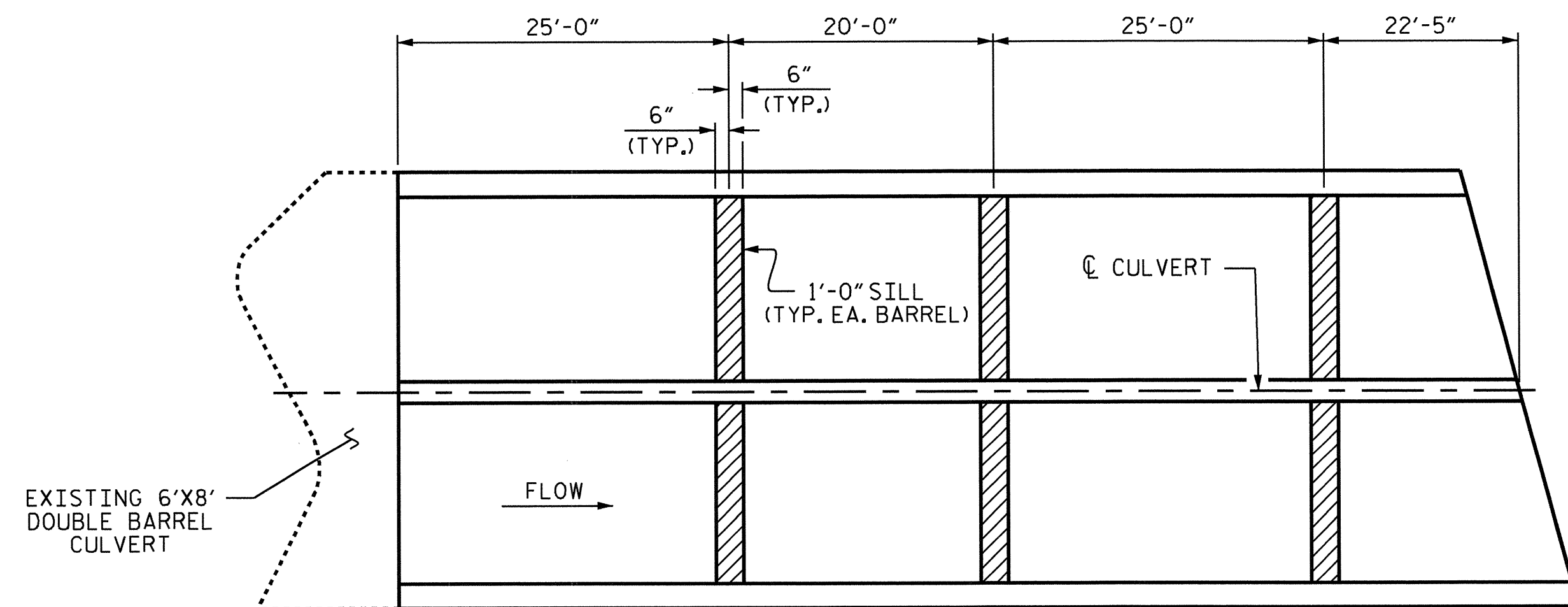
RIGHT ANGLE SECTION OF BARREL

THERE ARE 80 "C" BARS IN SECTION OF BARREL.
(LOOKING UPSTREAM)

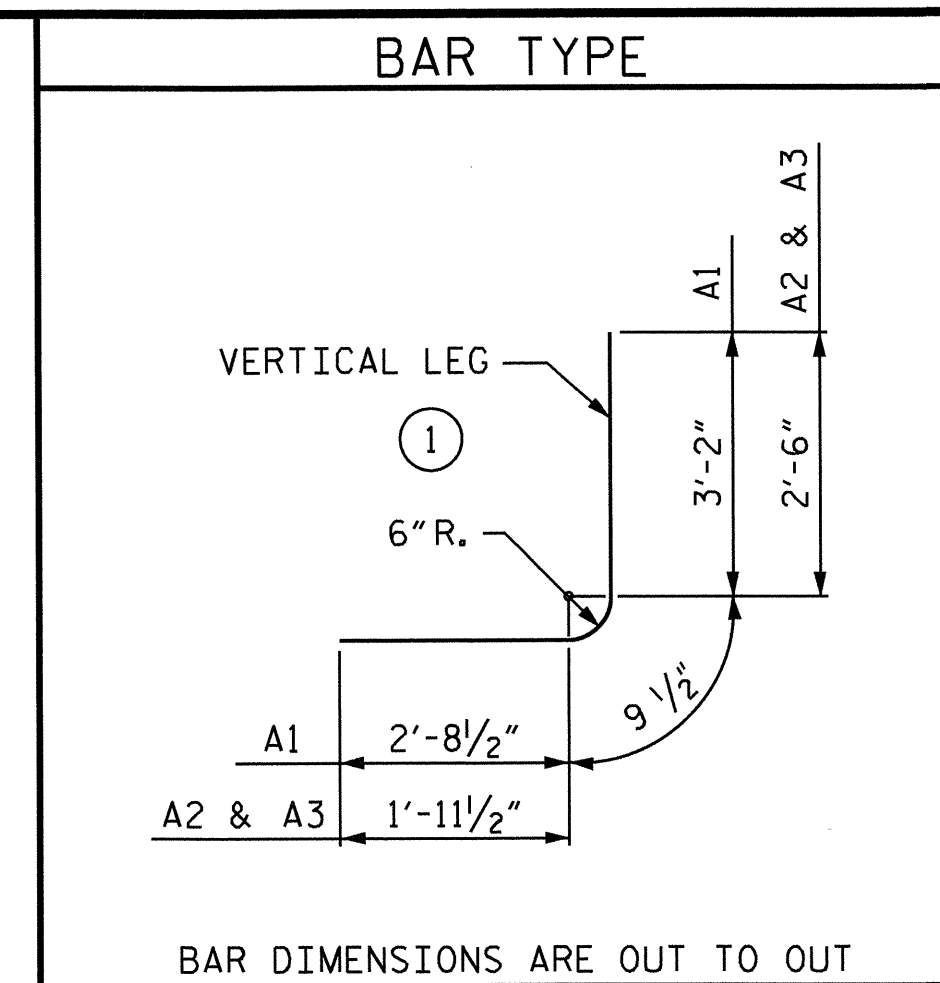


CONSTRUCTION STAGING

(LOOKING UPSTREAM)



PLAN OF CULVERT SHOWING LOCATION OF SILLS

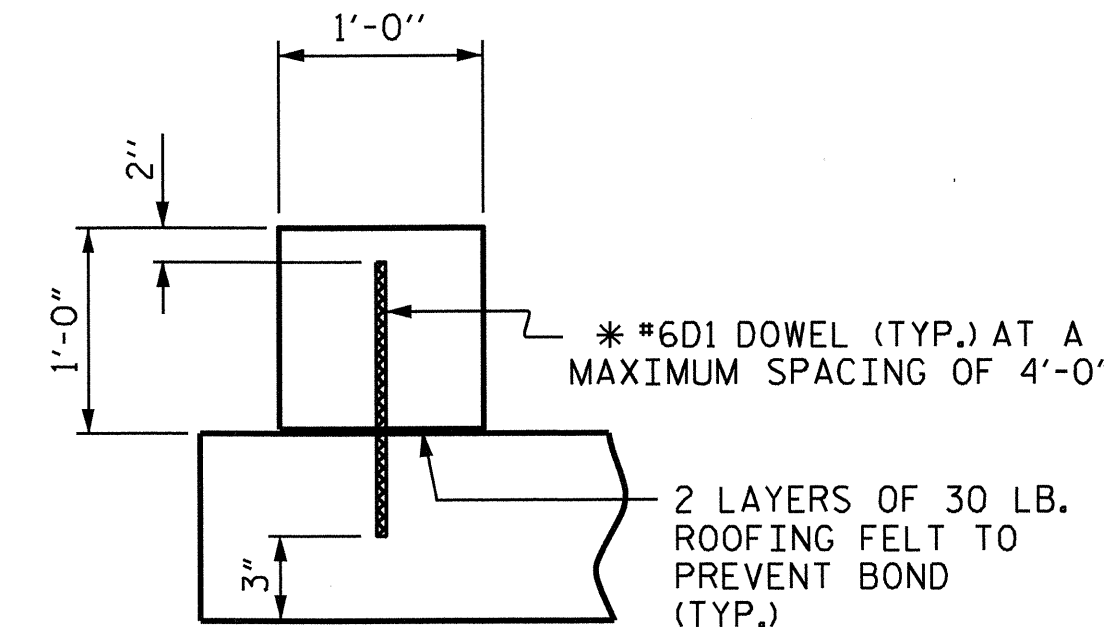


BAR DIMENSIONS ARE OUT TO OUT

SPLICE LENGTH CHART

BAR	SIZE	SPLICE LENGTH
A200	#5	2'-5"
A400	#5	1'-9"
B1	#6	2'-4"
B3	#4	1'-9"
C1	#4	1'-11"

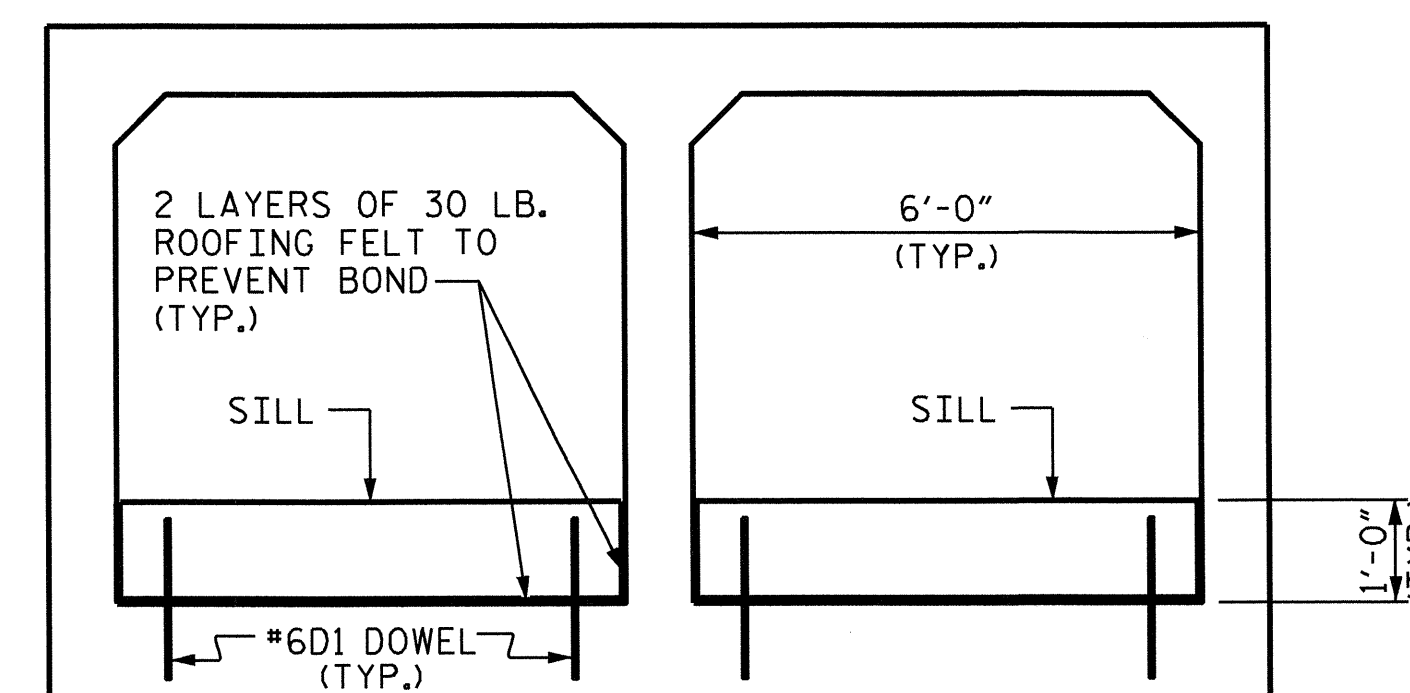
BILL OF MATERIAL													
STAGE 1					STAGE 2								
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT		
A1	160	#5	1	6'-8"	1113	A1	155	#5	1	6'-8"	1078		
A2	160	#5	1	5'-3"	876	A2	155	#5	1	5'-3"	849		
A3	222	#4	1	5'-3"	779								
						A100	109	#5	STR	13'-10"	1573		
A200	122	#5	STR	10'-10"	1378	A101	1	#5	STR	11'-3"	12		
A201	1	#5	STR	8'-1"	8	A102	1	#5	STR	8'-1"	8		
A202	1	#5	STR	5'-11"	6	A103	1	#5	STR	5'-0"	5		
A203	1	#5	STR	3'-1"	3								
						A210	121	#5	STR	5'-5"	684		
A400	157	#5	STR	10'-3"	1678	A211	1	#5	STR	3'-1"	3		
A401	1	#5	STR	8'-1"	8								
A402	1	#5	STR	6'-3"	7	A300	155	#5	STR	13'-10"	2236		
A403	1	#5	STR	4'-1"	4	A301	1	#5	STR	12'-9"	13		
						A302	1	#5	STR	10'-7"	11		
B1	119	#6	STR	12'-2"	2175	A303	1	#5	STR	8'-5"	9		
B2	162	#5	STR	9'-4"	1577	A304	1	#5	STR	6'-3"	7		
B3	222	#4	STR	12'-2"	1804	A305	1	#5	STR	4'-1"	4		
C1	160	#4	STR	24'-11"	2663	A410	155	#5	STR	5'-5"	876		
						A411	1	#5	STR	4'-4"	5		
S1	3	#8	STR	10'-10"	87								
REINFORCING STEEL					LBS	14166	REINFORCING STEEL					LBS	13867



SECTION THROUGH SILL

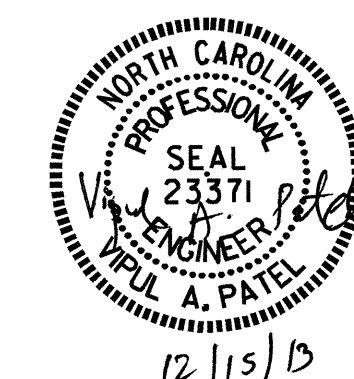
* DOWELS MAY BE PUSHED INTO GREEN CONCRETE AFTER SLAB HAS BEEN FLOAT FINISHED.

SILL QUANTITIES (INCLUDED IN TOTAL STRUCTURE QUANTITIES)											
STAGE 1			STAGE 2								
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	SIZE	TYPE	LENGTH	WEIGHT		
D1	6	#6	STR.	1'-11"	17	D1	6	#6	STR.	1'-11"	17
REINFORCING STEEL				LBS.	17	REINFORCING STEEL				LBS.	17
CLASS A CONCRETE				C.Y.	0.7	CLASS A CONCRETE				C.Y.	0.7



ELEVATION

CULVERT SILL DETAILS



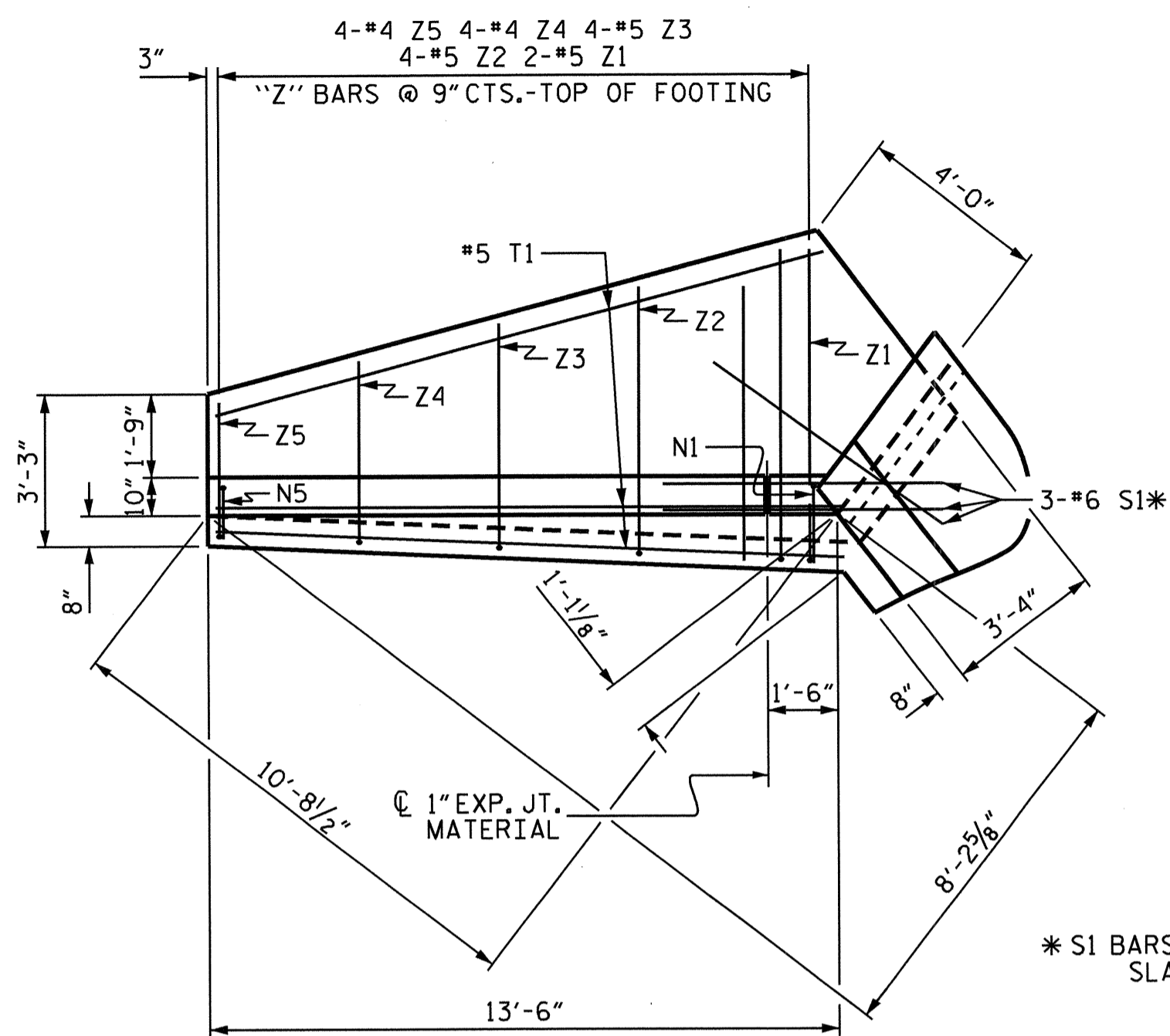
PROJECT NO. I-4928
GASTON COUNTY
 STATION: 153+40.68 -L-

SHEET 3 OF 5

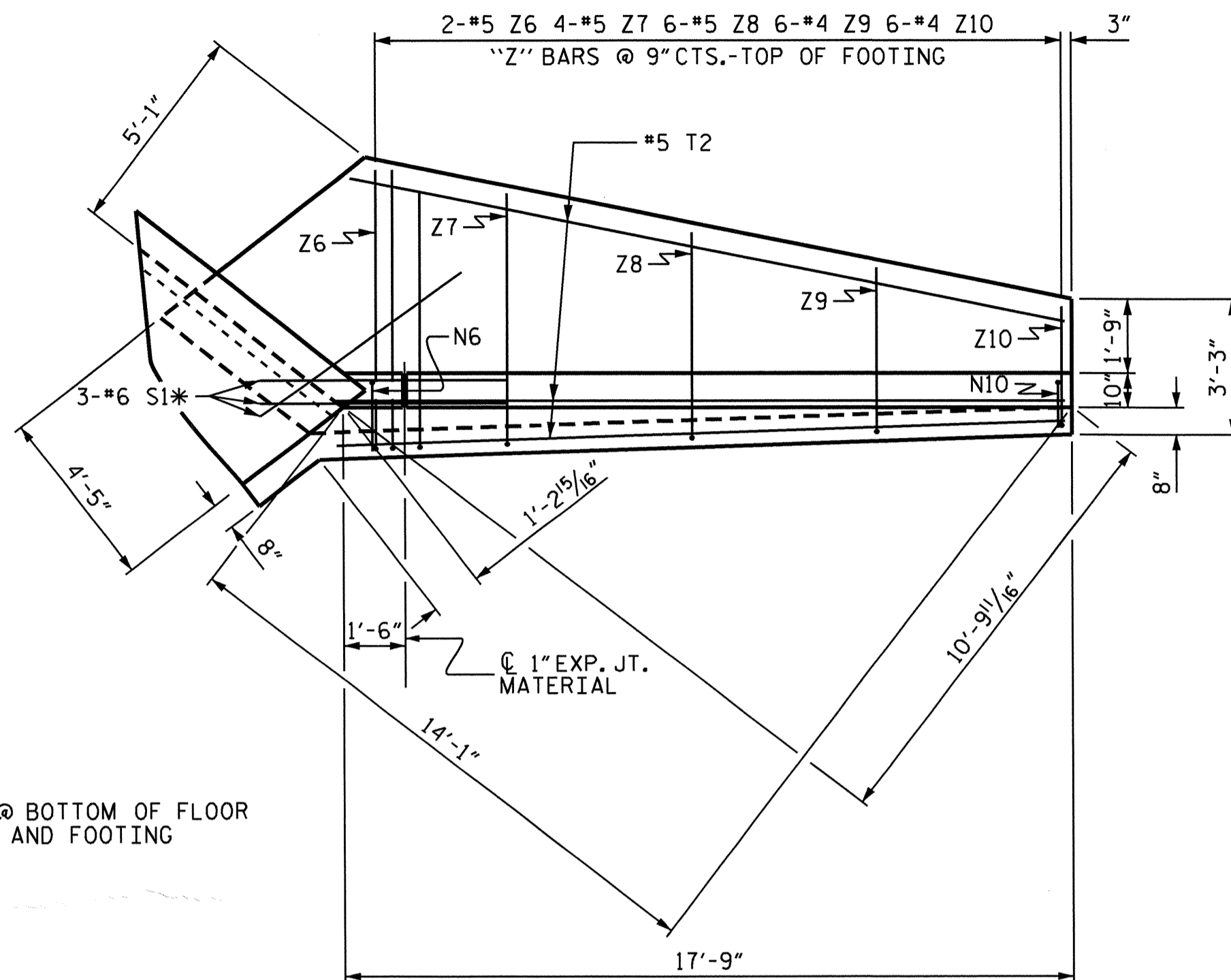
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 DOUBLE 6 FT. X 10 FT.
 CONCRETE BOX CULVERT
 90° SKEW
 (RIGHT EXTENSION)

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

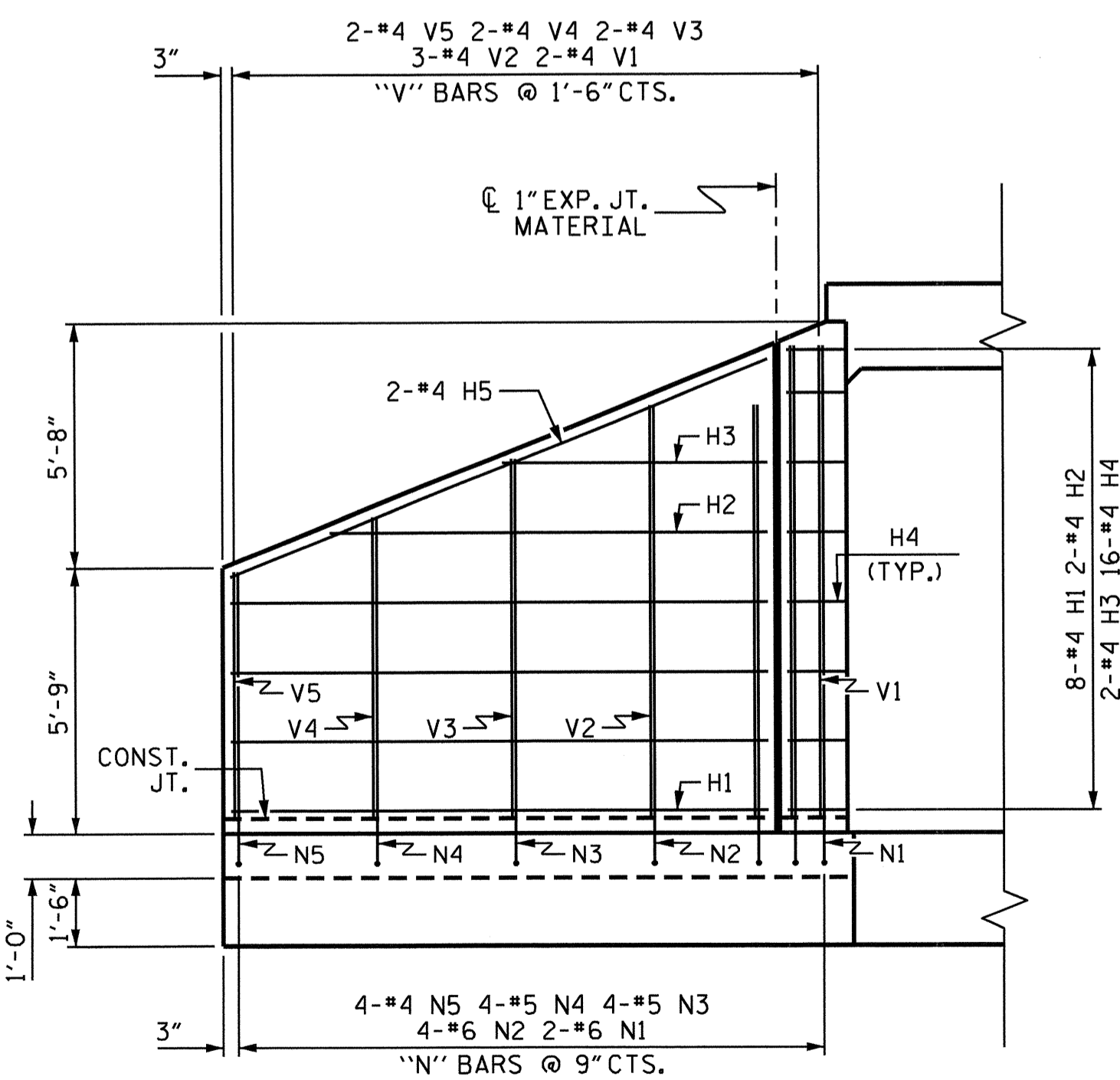
DRAWN BY : T. H. CARROLL DATE : 10/3/13
 CHECKED BY : H. A. LOCKLEAR DATE : 10/23/13
 DESIGN ENGINEER OF RECORD: R. L. CHESSON DATE : 11/12/13



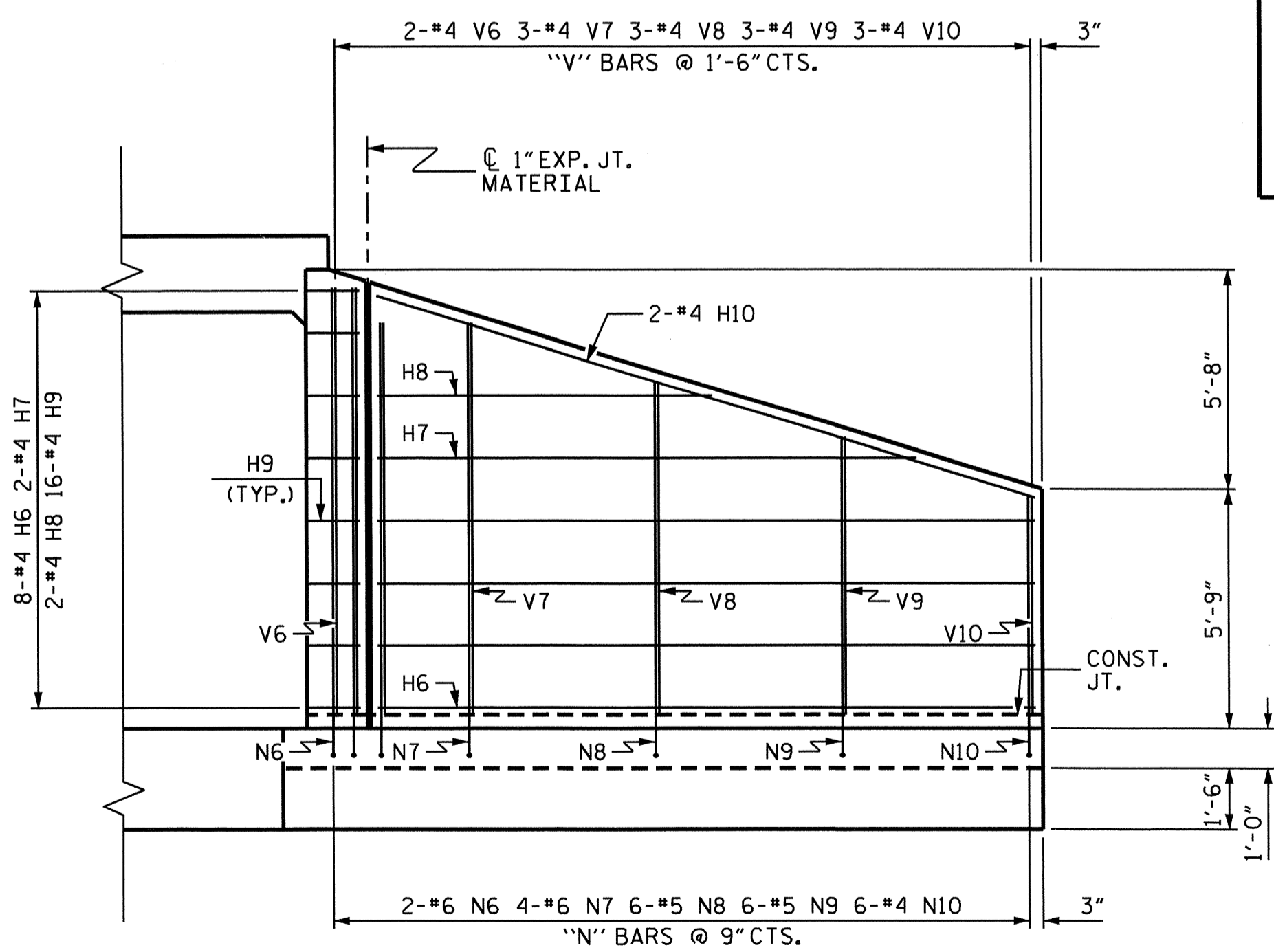
PLAN W2



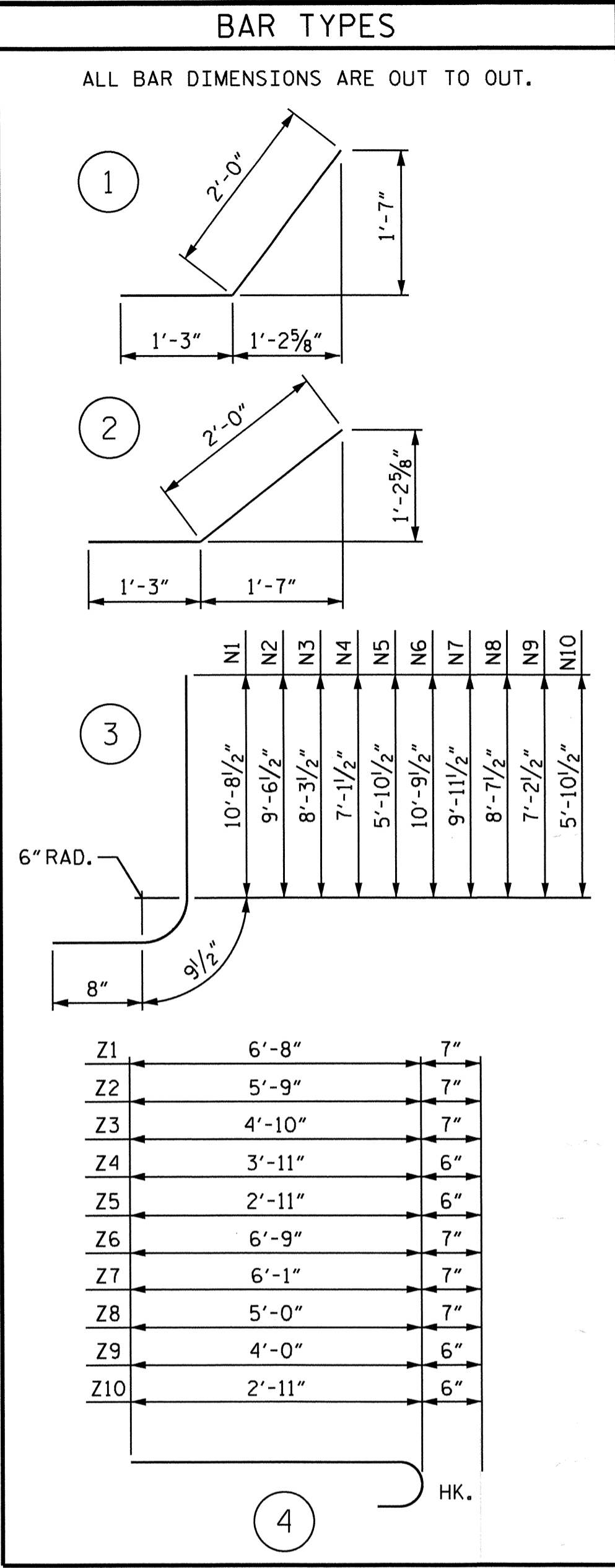
PLAN W1



ELEVATION W2

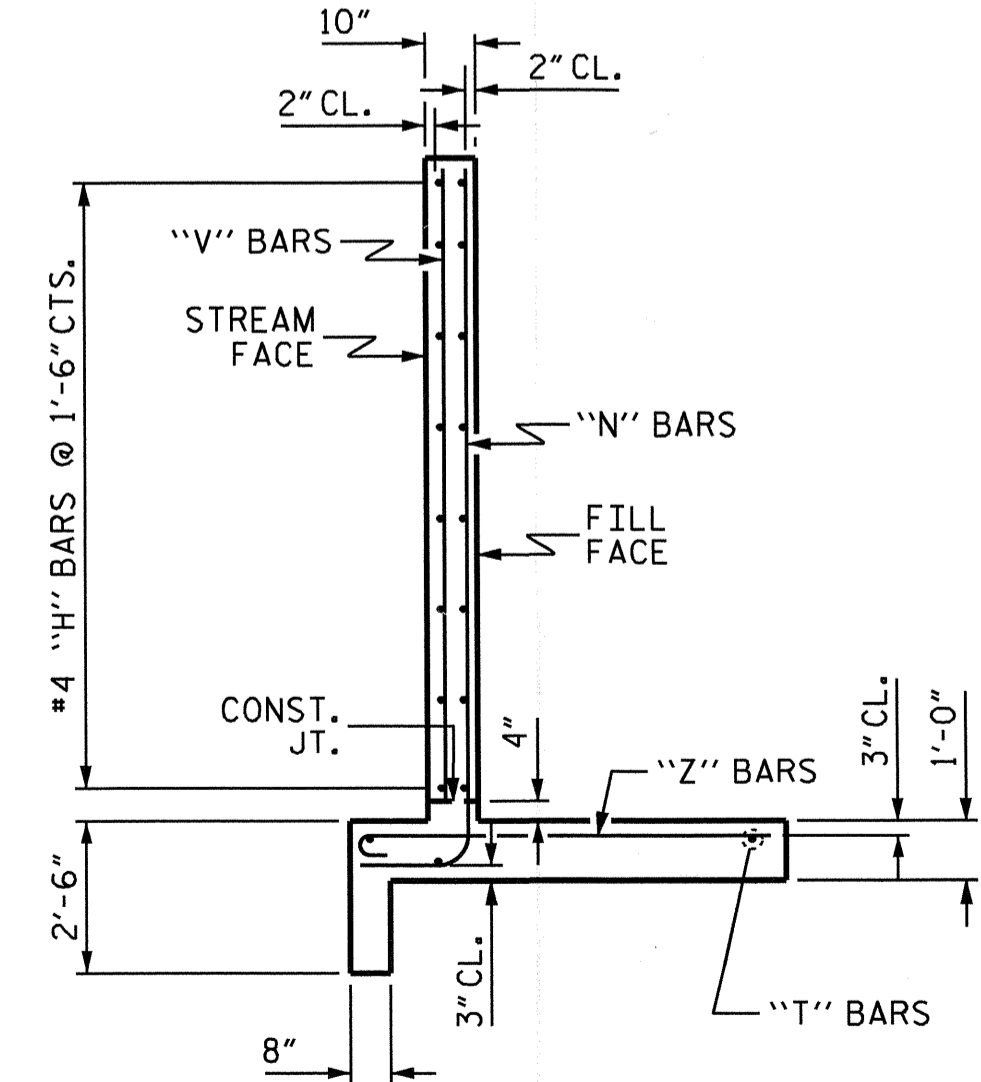


ELEVATION W1



Z1	6'-8"	7"
Z2	5'-9"	7"
Z3	4'-10"	7"
Z4	3'-11"	6"
Z5	2'-11"	6"
Z6	6'-9"	7"
Z7	6'-1"	7"
Z8	5'-0"	7"
Z9	4'-0"	6"
Z10	2'-11"	6"

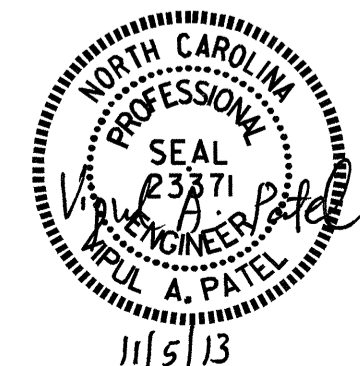
BILL OF MATERIAL STAGE 1 (W1)						BILL OF MATERIAL STAGE 2 (W2)					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT		BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
H6	#4	STR	15'-10"	85		H1	#4	STR	11'-7"	62	
H7	#4	STR	13'-0"	17		H2	#4	STR	9'-5"	13	
H8	#4	STR	8'-1"	11		H3	#4	STR	5'-8"	8	
H9	#4	STR	3'-3"	35		H4	#4	STR	3'-3"	35	
H10	#4	STR	16'-7"	22		H5	#4	STR	12'-6"	17	
N6	#6	3	12'-3"	37		N1	#6	3	12'-2"	37	
N7	#6	3	11'-5"	69		N2	#6	3	11'-0"	66	
N8	#5	3	10'-1"	63		N3	#5	3	9'-9"	41	
N9	#5	3	8'-8"	54		N4	#5	3	8'-7"	36	
N10	#4	3	7'-4"	29		N5	#4	3	7'-4"	20	
S1	#6	STR	6'-0"	27		S1	#6	STR	6'-0"	27	
T2	#5	STR	17'-9"	56		T1	#5	STR	13'-6"	42	
V6	#4	STR	10'-3"	14		V1	#4	STR	10'-2"	14	
V7	#4	STR	9'-5"	19		V2	#4	STR	8'-11"	18	
V8	#4	STR	8'-0"	16		V3	#4	STR	7'-9"	10	
V9	#4	STR	6'-8"	13		V4	#4	STR	6'-6"	9	
V10	#4	STR	5'-3"	11		V5	#4	STR	5'-4"	7	
Z6	#5	4	7'-4"	15		Z1	#5	4	7'-3"	15	
Z7	#5	4	6'-8"	28		Z2	#5	4	6'-4"	26	
Z8	#5	4	5'-7"	35		Z3	#5	4	5'-5"	23	
Z9	#4	4	4'-6"	18		Z4	#4	4	4'-5"	12	
Z10	#4	4	3'-5"	14		Z5	#4	4	3'-5"	9	
REINFORCING STEEL 688 LBS						REINFORCING STEEL 547 LBS					
CLASS A CONCRETE						CLASS A CONCRETE					
1 WING 9.4 CY						1 WING 7.1 CY					
1 END CURTAIN WALL 0.5 CY						1 HEADWALL 0.7 CY					
TOTAL 9.9 CY						1 END CURTAIN WALL 0.3 CY					
						TOTAL 8.1 CY					



TYPICAL WING SECTION

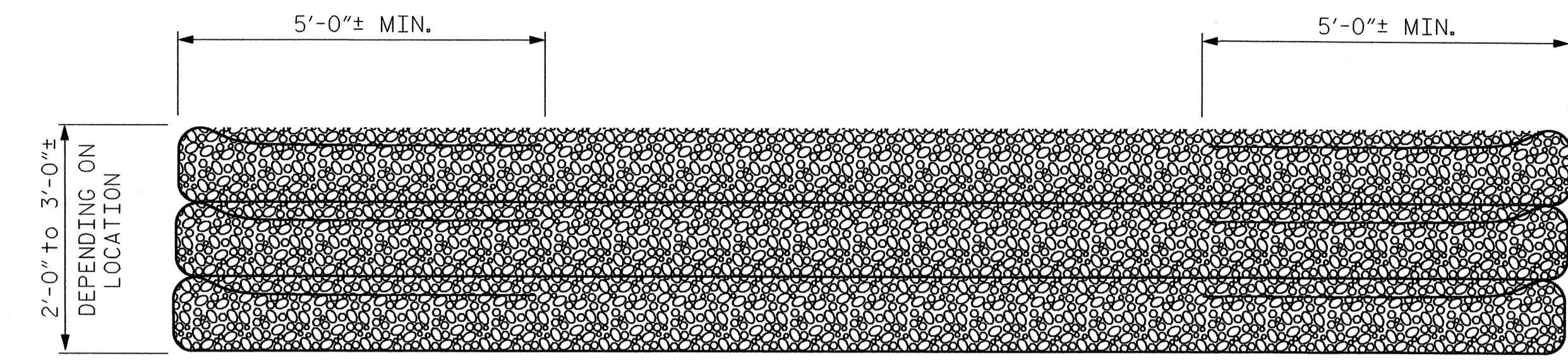
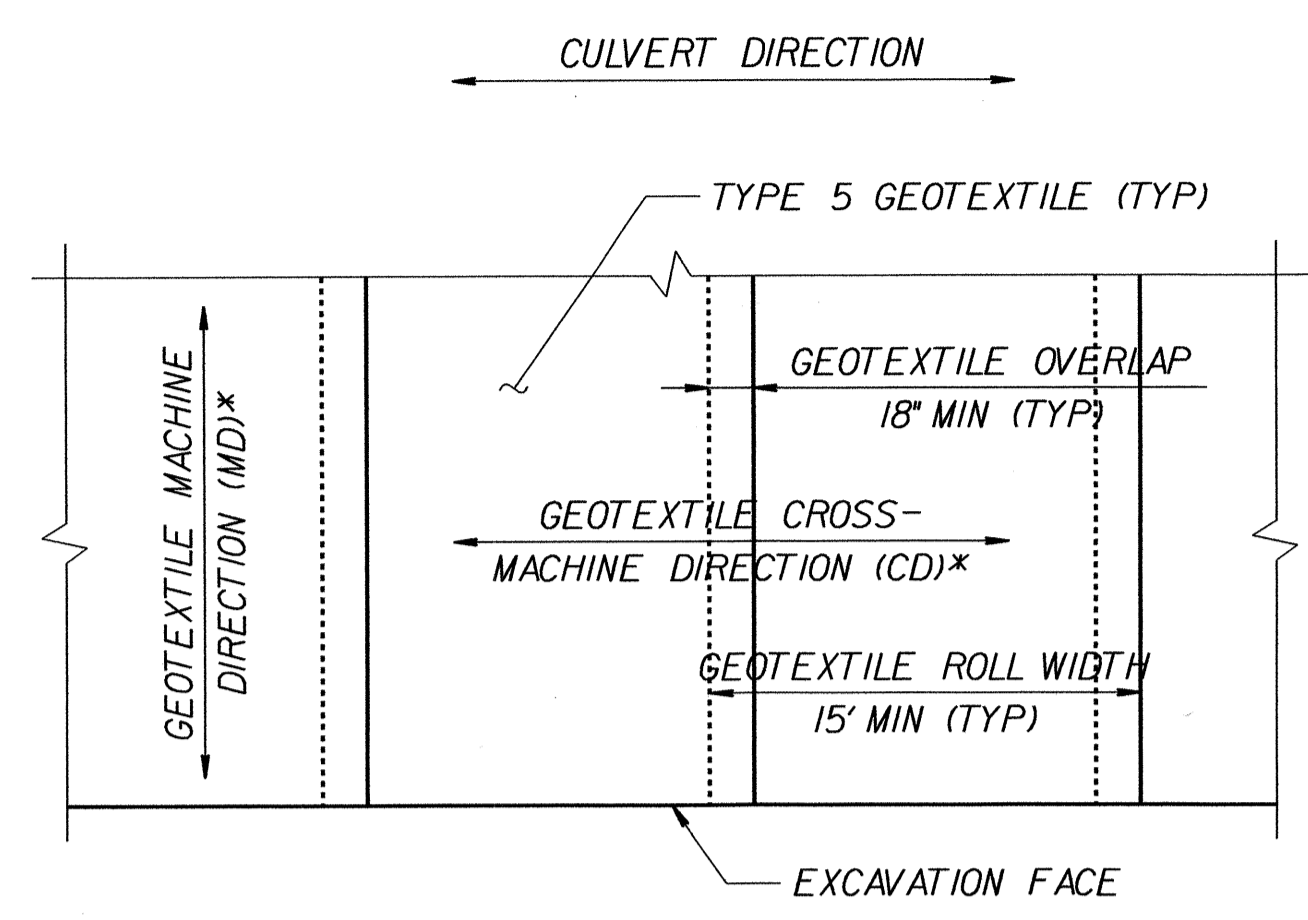
PROJECT NO. I-4928
 GASTON COUNTY
 STATION: 153+40.68 -L-

SHEET 4 OF 5
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD WINGS
 FOR
 CONCRETE BOX CULVERT
 H = 10'-0" 105° SKEW



DESIGN ENGINEER OF RECORD: R. L. CHESSON	DATE: 11/12/13
ASSEMBLED BY: T. H. CARROLL	DATE: 10/3/13
CHECKED BY: H. A. LOCKLEAR	DATE: 10/23/13
DRAWN BY: CCJ	01/00
CHECKED BY: RWW	03/00

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

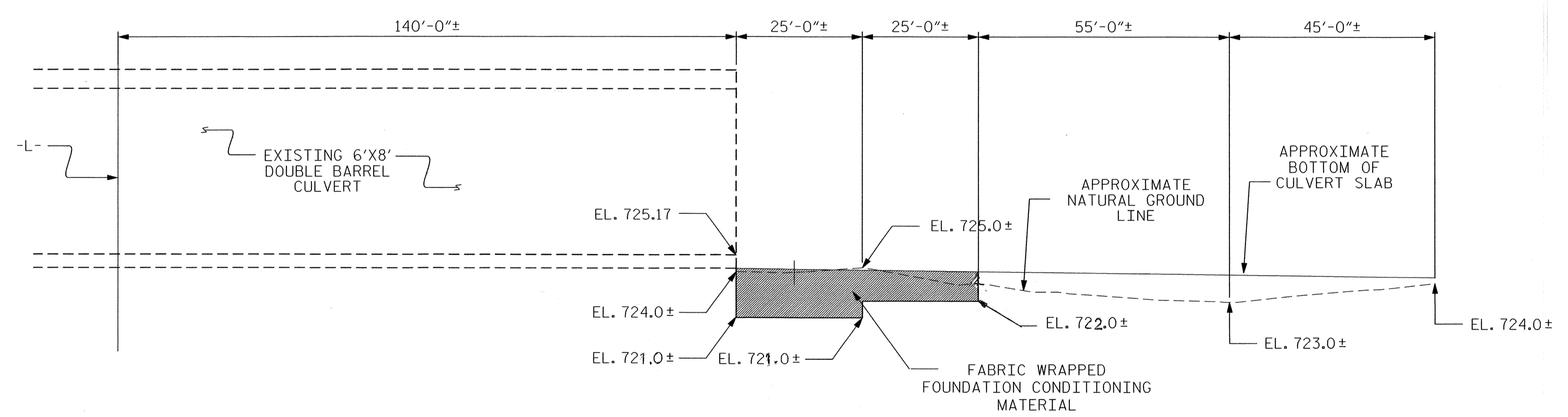


**GEOTEXTILE WRAPPED FOUNDATION
CONDITIONING MATERIAL**

**GEOTEXTILE PLACEMENT
(100% COVERAGE MIN FOR
GEOTEXTILE REINFORCEMENT)**

NOTES:

1. INSTALL TYPE 5 GEOTEXTILE WITH THE MACHINE DIRECTION PERPENDICULAR TO PROPOSED CULVERT.
2. EXTEND ENDS UP THE EXCAVATED SIDE TO ALLOW PLACEMENT AND COMPACTION OF FOUNDATION CONDITIONING MATERIAL AND WRAP TAILS ACROSS THE TOP AS SHOWN IN DETAIL.
3. REPEAT PROCESS AS INDICATED OR DIRECTED BY THE ENGINEER.
4. PROCUREMENT AND INSTALLATION OF TYPE 5 GEOTEXTILE FOR THE THIS APPLICATION WILL BE CONSIDERED INCIDENTAL TO FOUNDATION CONDITIONING MATERIAL CONTRACT PRICE.



PROFILE ALONG CULVERT

PROJECT NO.: I-4928
GASTON COUNTY
STATION: 153 + 40.68 -L-
SHEET 1 OF 1

GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GEOTEXTILE WRAPPED FOUNDATION CONDITIONING MATERIAL DETAILS

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

PREPARED BY: EJS	DATE: 10/2013
REVIEWED BY: SCC	DATE: 10/2013

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 2012 "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; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

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. 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.

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.

ENGLISH

JANUARY, 1990