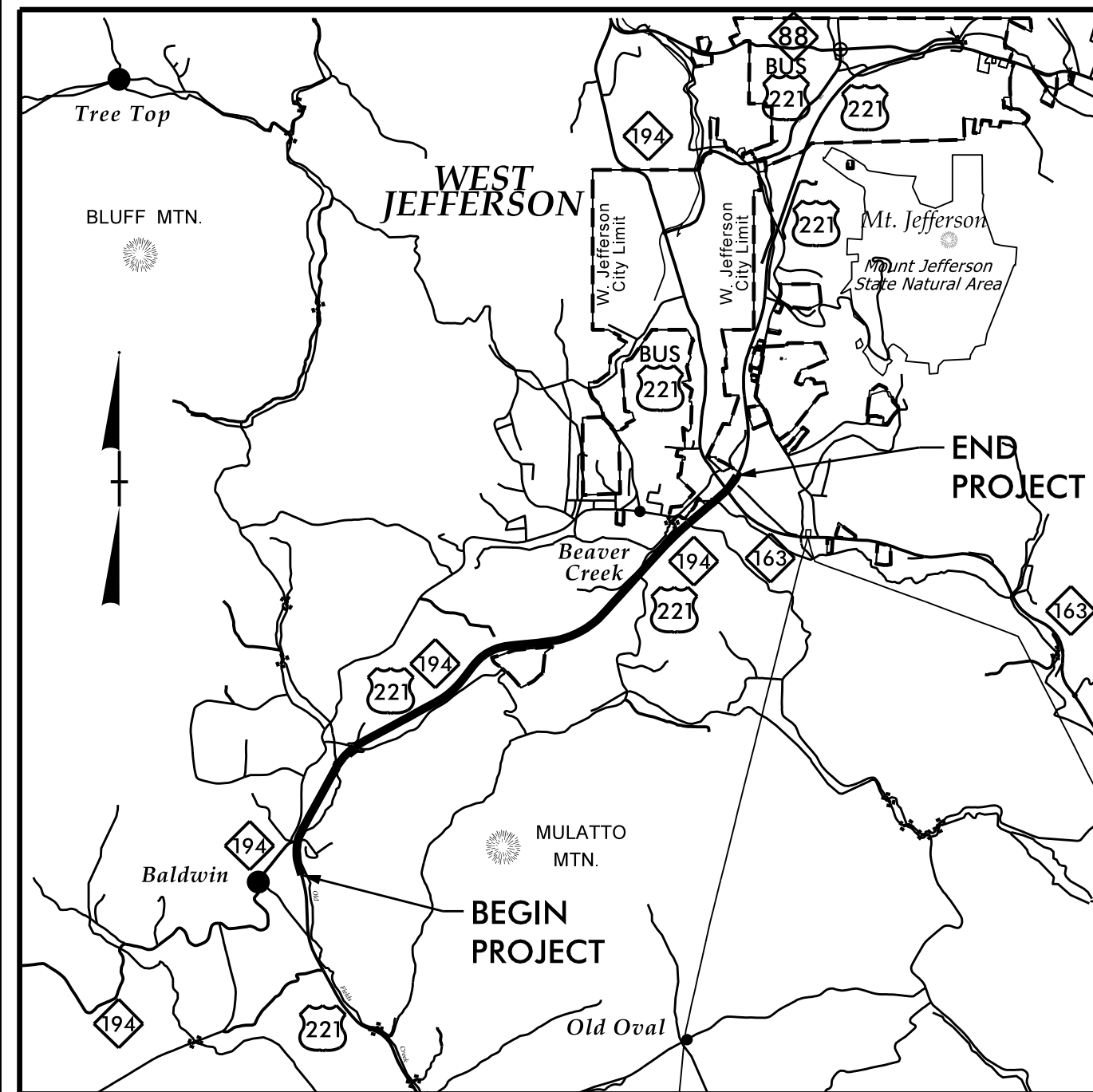


CONTRACT: C203536 TIP NO: R-2915D



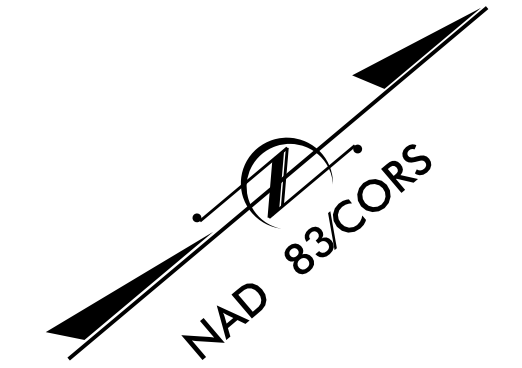
VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ASHE COUNTY

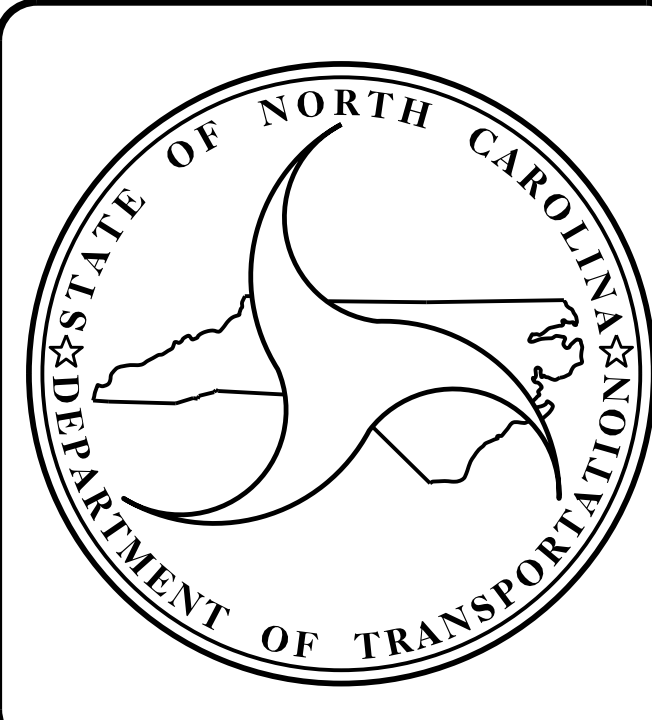
LOCATION: US 221 FROM SOUTH OF NC 194 TO US 221 BYPASS

TYPE OF WORK: GRADING, PAVING, DRAINAGE, SIGNAL, AND CULVERT

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2915D		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34518.1.5	STP-0221(42)	P.E.	
34518.2.4	STP-0221(42)	R/W, UTIL.	
34518.3.FR4	STP-0221(42)	CONST.	



CULVERT



DESIGN DATA

ADT 2015	=	14715
ADT 2035	=	25000
DHV	=	9 %
D	=	55 %
T	=	9 % *
V	=	60 MPH
* TTST = 2 DUAL 7		
FUNC CLASS	=	Major Collector Statewide Tier

PROJECT LENGTH

LENGTH ROADWAY OF TIP PROJECT R-2915D	=	4.073 MI
LENGTH STRUCTURE OF TIP PROJECT R-2915D	=	0.008 MI
TOTAL LENGTH OF PROJECT R-2915D	=	4.081 MI

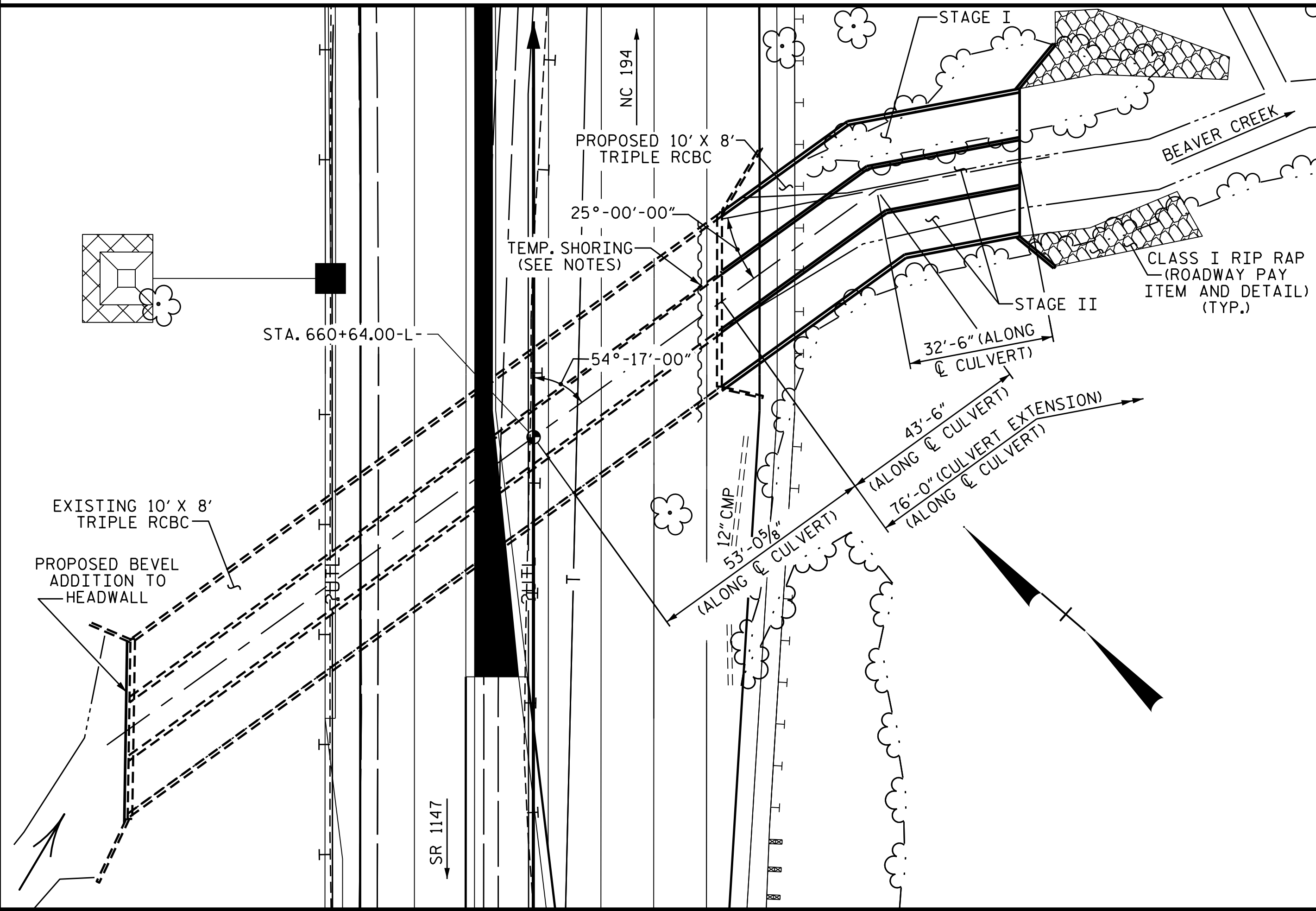
Prepared in the Office of:
DIVISION OF HIGHWAYS
STRUCTURES MANAGEMENT UNIT
1000 BIRCH RIDGE DR.
RALEIGH, N.C. 27610

2012 STANDARD SPECIFICATIONS

LETTING DATE: FEBRUARY 17, 2015

Q. H. NGUYEN, P.E.
PROJECT ENGINEER

B. D. KLAPPENBACH, P.E.
PROJECT DESIGN ENGINEER



LOCATION SKETCH

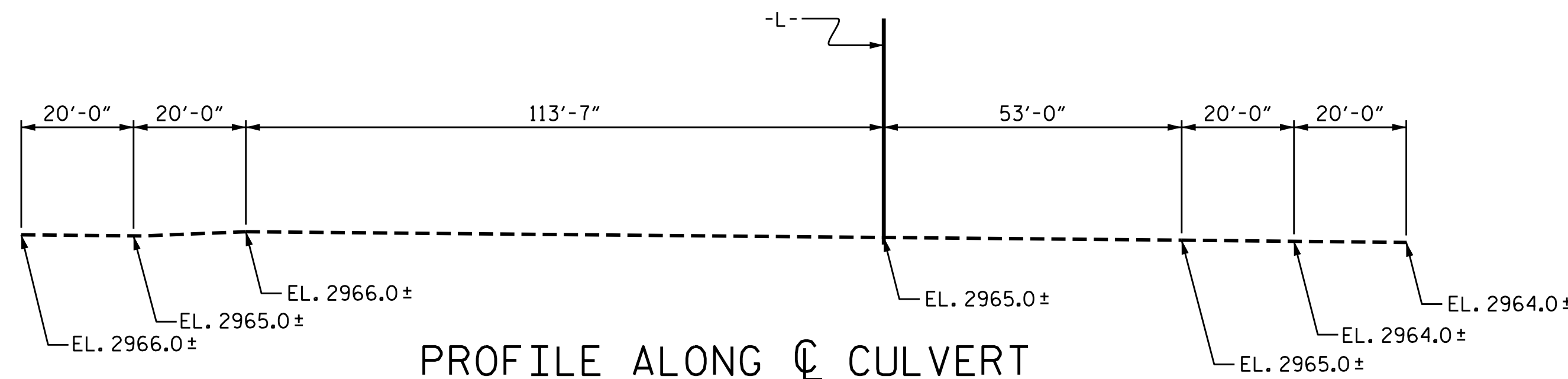
GRADE POINT ELEVATION @ STA. 660+64.00-L- = 2997.58
 BED ELEVATION @ STA. 660+64.00-L- = 2965.17
 ROADWAY SLOPES 2:1

HYDRAULIC DATA

DESIGN DISCHARGE 1748 C.F.S.
 FREQUENCY OF DESIGN FLOOD 50 YEARS
 DESIGN HIGH WATER ELEVATION 2974.50
 DRAINAGE AREA 4.7 SQ. MI.
 BASE DISCHARGE (Q100) 2127 C.F.S.
 BASE HIGH WATER ELEVATION 2976.10

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE < 2127 C.F.S.
 FREQUENCY OF OVERTOPPING FLOOD < 100 YEARS
 OVERTOPPING FLOOD ELEVATION 2975.50



PROFILE ALONG CULVERT

DRAWN BY : H. T. BARBOUR DATE : 6-3-14
 CHECKED BY : B. N. GRADY DATE : 8-14
 DESIGN ENGINEER OF RECORD: RONG DEAN DATE : 11-14

NOTES

ASSUMED LIVE LOAD -----HL-93 OR ALTERNATE LOADING.
 DESIGN FILL-----MAX. 25.11, MIN. 24.88
 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:

- STAGE I
1. WING 1 FOOTING AND FLOOR SLAB INCLUDING 4" OF VERTICAL WALLS, CURTAIN WALL AND FLOOR SLAB EDGE BEAM TO CONSTRUCTION JOINT OF STAGE I.
 2. THE REMAINING PORTIONS OF THE WALLS AND WING 1 FULL HEIGHT.
- STAGE II
3. WING 2 FOOTING, FLOOR SLAB INCLUDING 4" OF VERTICAL WALLS, THE REMAINING PORTIONS OF THE CURTAIN WALL, FLOOR SLAB EDGE BEAM AND WALLS AND WING 2 FULL HEIGHT.
 4. THE ROOF SLAB, HEADWALLS AND EDGE BEAMS FOR STAGE I AND STAGE II.

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.

TRANSVERSE CONSTRUCTION JOINTS SHALL BE USED IN THE BARREL, SPACED TO LIMIT THE POURS TO A MAXIMUM OF 70 FT. LOCATION OF JOINTS SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER.

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.

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.

DOWELS SHALL BE USED TO CONNECT THE CULVERT EXTENSION TO THE EXISTING CULVERT AS SHOWN. FOR NOTE REGARDING SETTING OF DOWELS, SEE SHEET SN.

THE EXISTING 10' X 8' TRIPLE BARREL REINFORCED CONCRETE BOX CULVERT LOCATED AT THE PROPOSED SITE SHALL BE RETAINED AND EXTENDED TO THE LIMITS SHOWN.

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.

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.

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

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.

NO PRECAST REINFORCED BOX CULVERT OPTION WILL BE ALLOWED.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

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

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT A BEVEL ADDITION IS TO BE ADDED TO THE INLET END OF THE EXISTING CULVERT. FOR DETAILS OF THE BEVEL ADDITION, SEE SHEET 5 OF 6.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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.

FOR DOWELS IN BEVEL ADDITION, NO FIELD TESTING REQUIRED.

DETAILED DRAWINGS FOR FALSEWORK AND FORMS FOR THIS CULVERT EXTENSION SHALL BE SUBMITTED. SEE SHEET SN.

TOTAL STRUCTURE QUANTITIES

CLASS A CONCRETE
 BARREL @ 4.873 CY/FT 370.4 C.Y.
 WINGS ETC. 17.8 C.Y.
 BEVEL ADDITION 4.5 C.Y.
 TOTAL 392.7 C.Y.

REINFORCING STEEL
 BARREL 42838 LBS.
 WINGS ETC. 774 LBS.
 BEVEL ADDITION 233 LBS.
 TOTAL 43845 LBS.

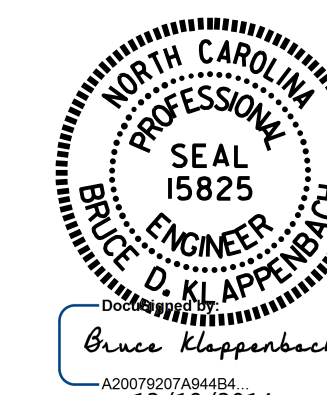
CULVERT EXCAVATION LUMP SUM
 FOUNDATION CONDITIONING MATERIAL 177 TONS

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

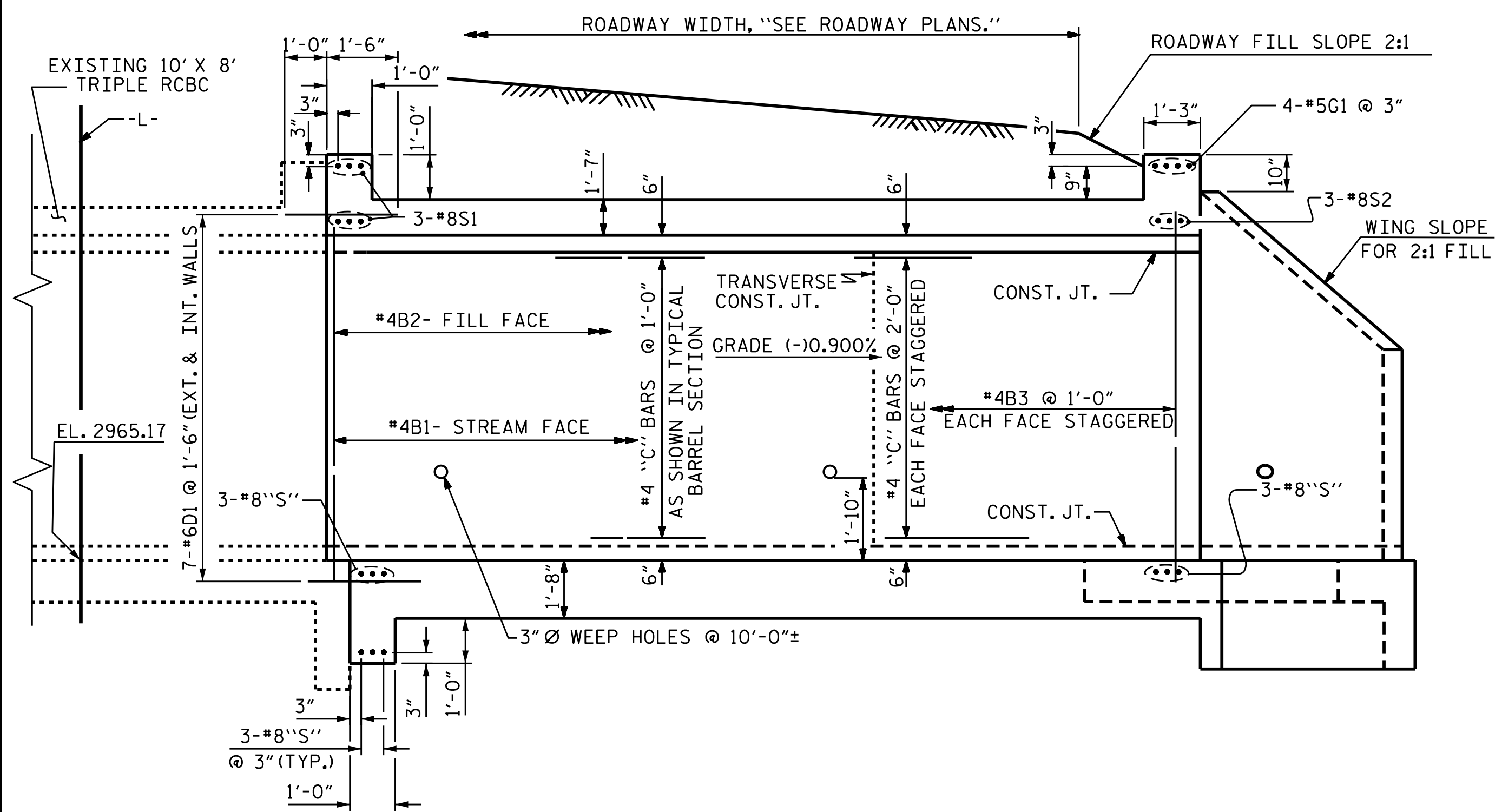
PROJECT NO. R-2915D
ASHE COUNTY
 STATION: 660+64.00-L-

SHEET 1 OF 6 EXTENDS CULVERT C511

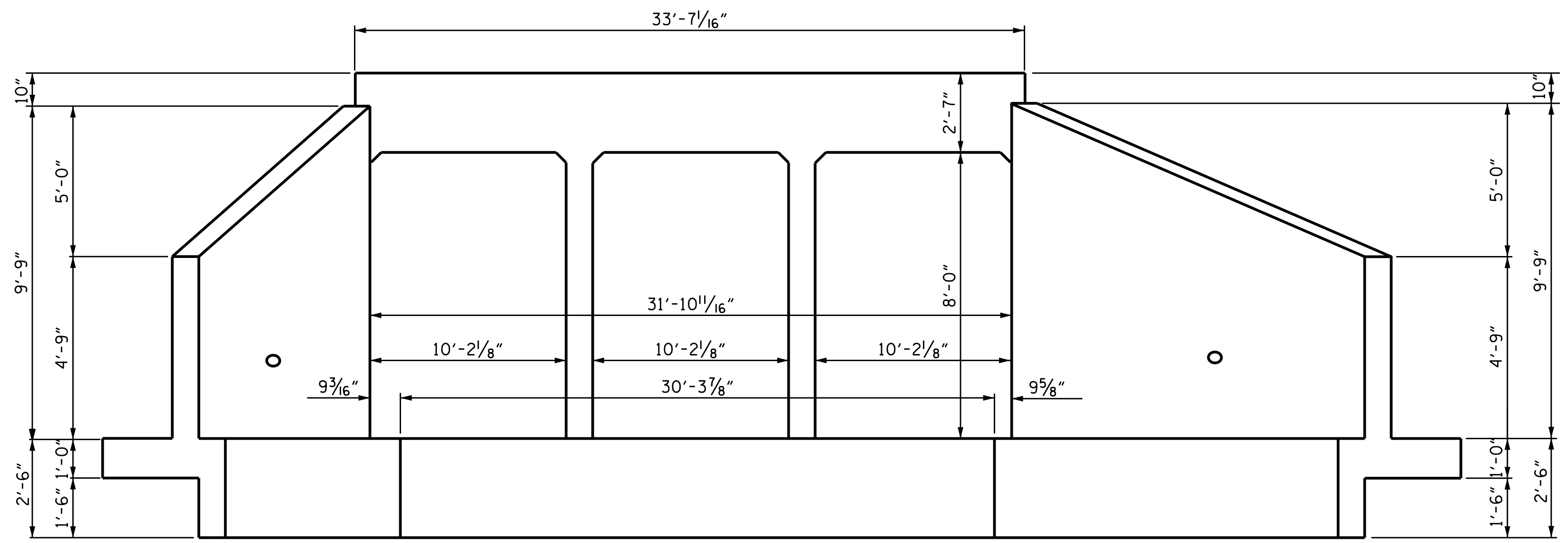
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**BARREL STANDARD
 TRIPLE 10 FT. X 8 FT.
 CONCRETE BOX CULVERT**



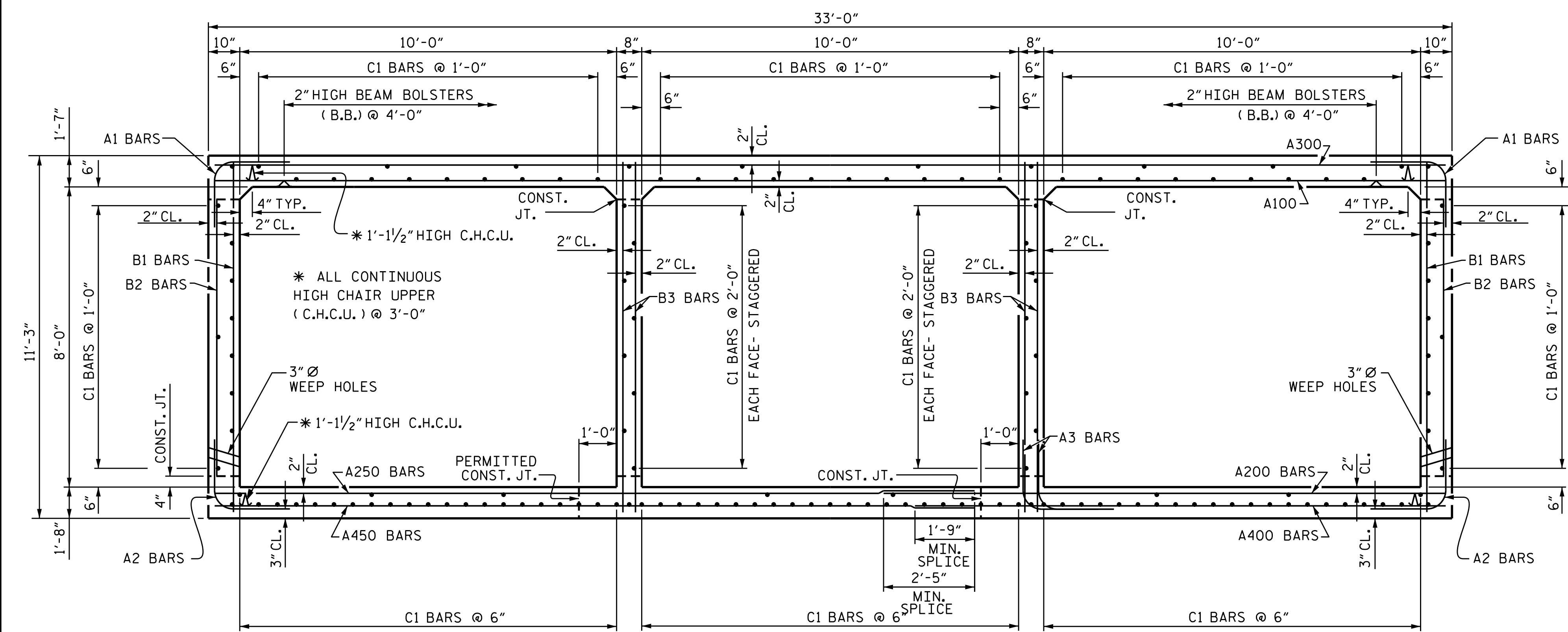
AUGUST		1989	
REVISIONS			
NO.	BY:	DATE:	NO.
1			3
2			4
SHEET NO.			C-1
TOTAL SHEETS			6



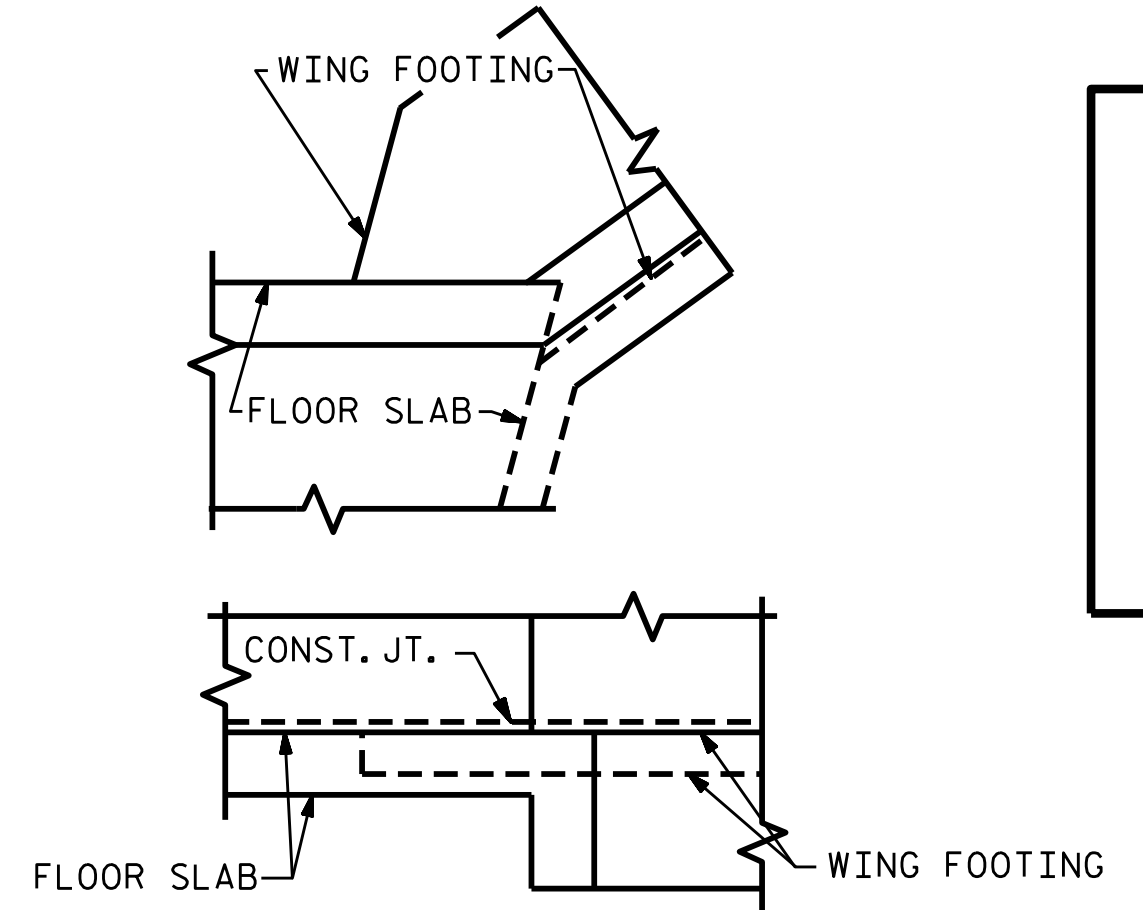
EXTERIOR WALL **INTERIOR WALL**
CULVERT SECTION NORMAL TO ROADWAY



END ELEVATION NORMAL TO SKEW
 LOOKING UPSTREAM



RIGHT ANGLE SECTION OF BARREL
 THERE ARE 147 "C" BARS IN SECTION OF BARREL
 (LOOKING UPSTREAM)
 (FOR STAGING, SEE SHEET 5 OF 6)



DETAIL
CONNECTION OF WING FOOTING AND FLOOR SLAB WHEN SLAB IS THICKER THAN FOOTING

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. R-2915D
ASHE COUNTY
 STATION: 660+64.00-L-

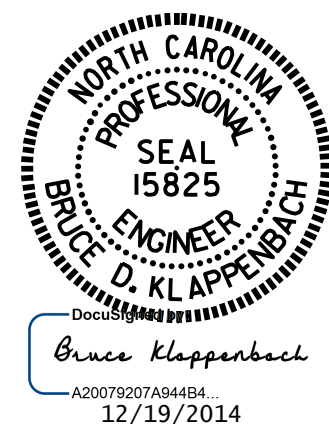
SHEET 2 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

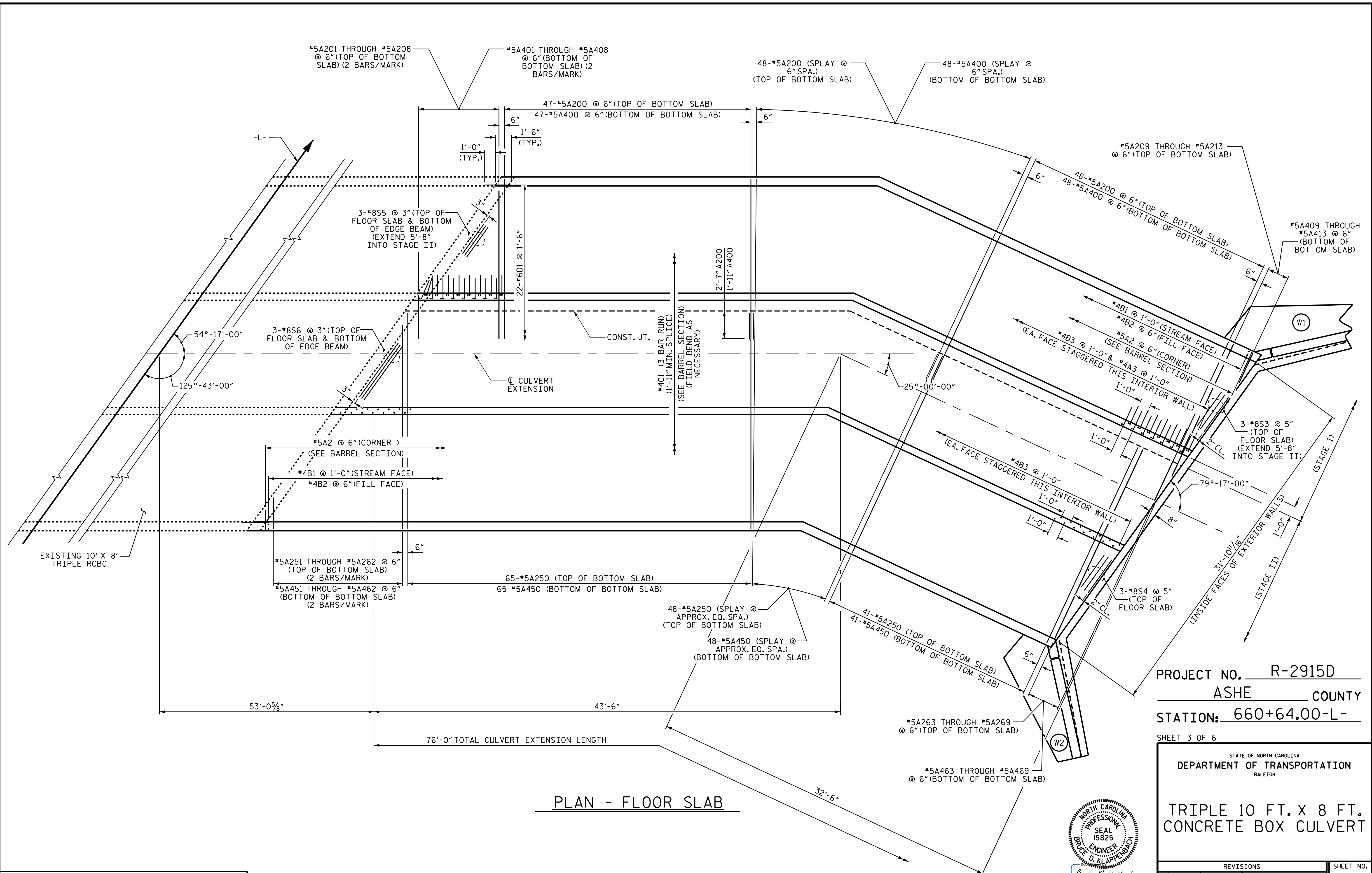
TRIPLE 10 FT. X 8 FT. CONCRETE BOX CULVERT

1971

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-2
1			3			TOTAL SHEETS
2			4			6



DRAWN BY : H. J. BARBOUR DATE : 6-3-14
 CHECKED BY : B. N. GRADY DATE : 7-14
 DESIGN ENGINEER OF RECORD: RONG DEAN DATE : 11-14



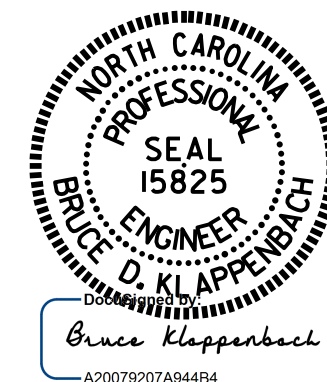
PLAN - FLOOR SLAB

PROJECT NO. R-2915D
 ASHE COUNTY
 STATION: 660+64.00-L-

SHEET 3 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

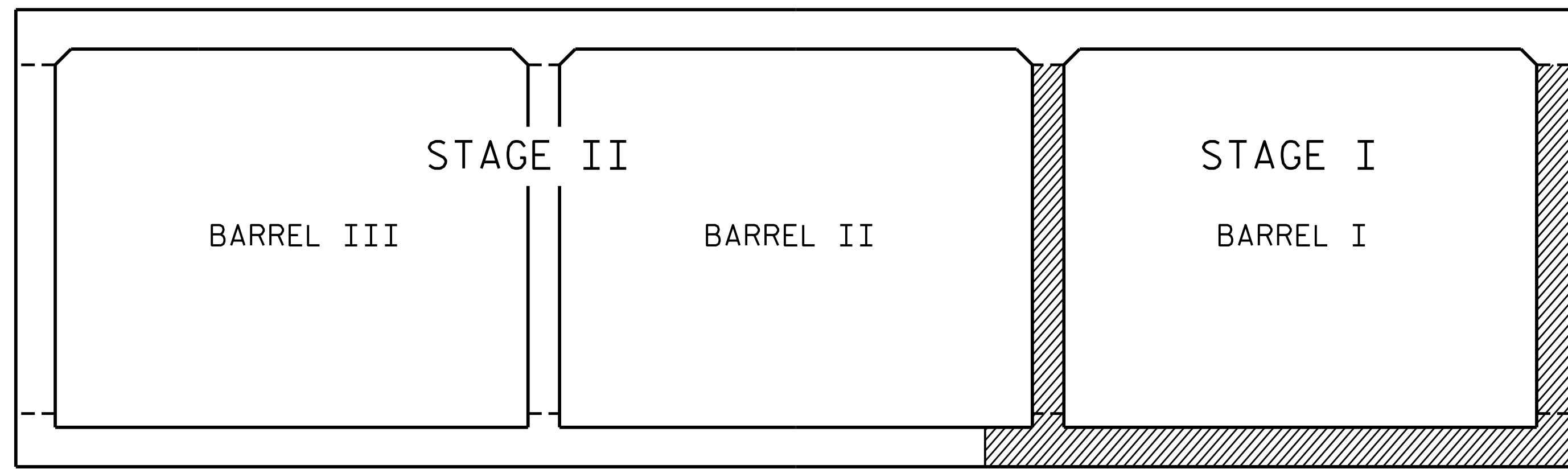
TRIPLE 10 FT. X 8 FT.
 CONCRETE BOX CULVERT



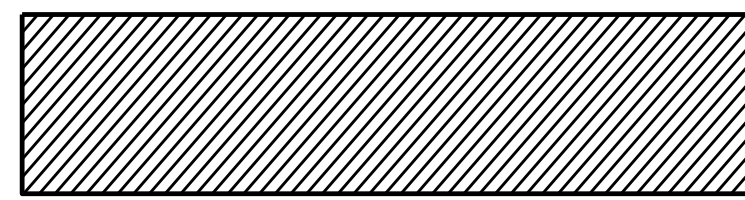
DRAWN BY : H. T. BARBOUR DATE : 5-30-14
 CHECKED BY : B. N. GRADY DATE : 8-14
 DESIGN ENGINEER OF RECORD: RONG DEAN DATE : 11-14

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	C-3	
1			3			TOTAL	6
2			4			SHEETS	

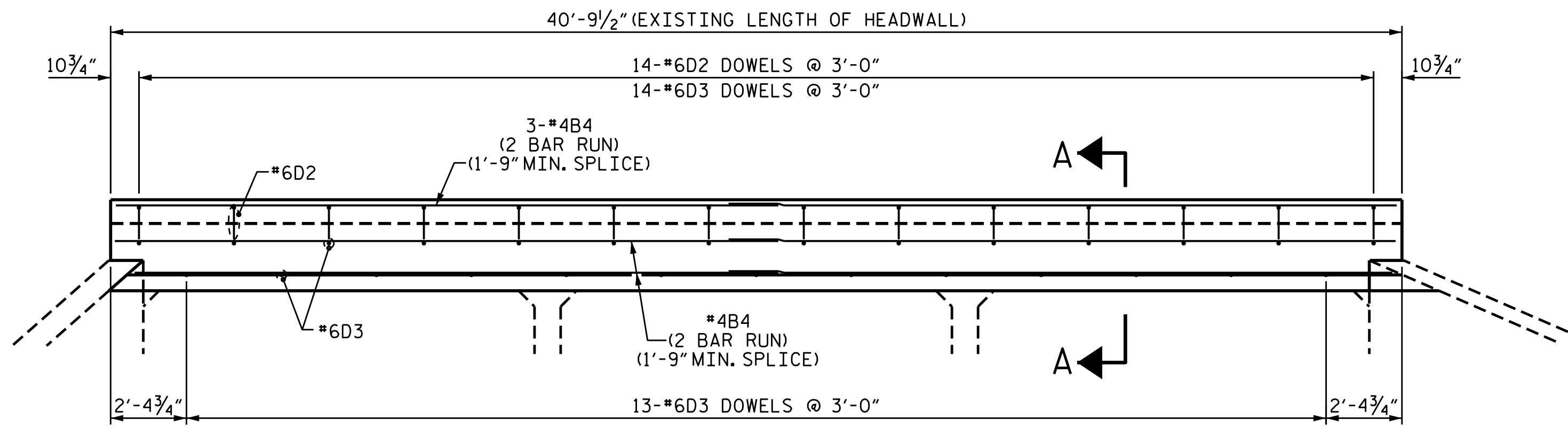
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 bklappenbach



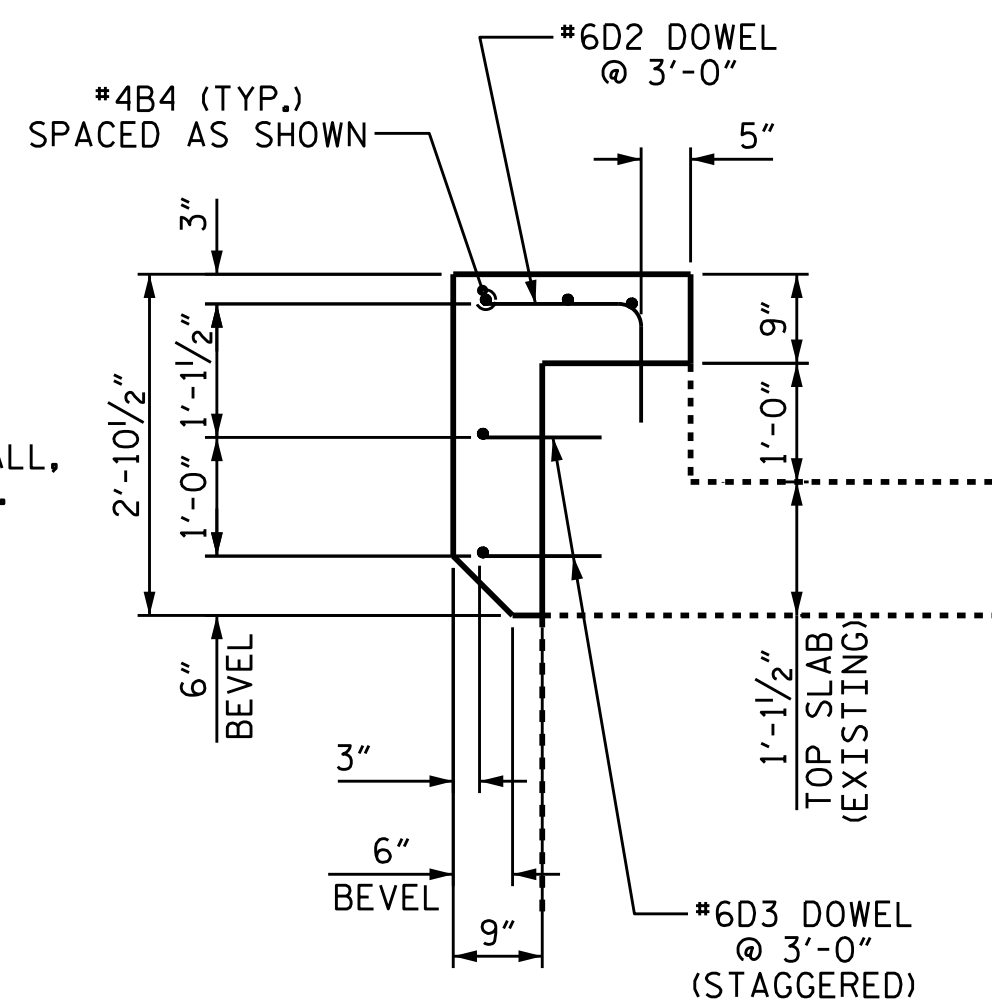
STAGE I & STAGE II LOOKING UPSTREAM



DENOTES STAGE I



PART-END ELEVATION



SECTION A-A
BEVEL ADDITION

THE BEVEL ADDITION SHALL BE ADDED TO THE INLET END OF THE EXISTING CULVERT AND EXTEND THE FULL LENGTH OF THE HEADWALL.

DRAWN BY : H. T. BARBOUR DATE : 6-2-14
 CHECKED BY : B. N. GRADY DATE : 8-14
 DESIGN ENGINEER OF RECORD : RONG DEAN DATE : 11-14

18-DEC-2014 16:56
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 bklappenbach

BILL OF MATERIAL

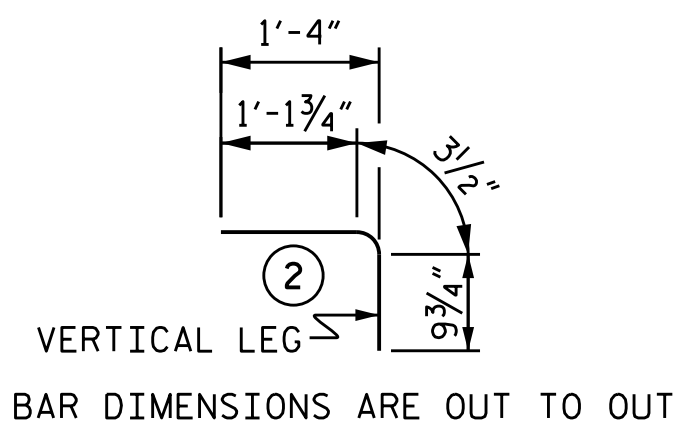
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	303	#5	1	7'-4"	2318	A262	2	#5	STR	3'-9"	8	A456	2	#5	STR	12'-1"	25
A2	303	#5	1	5'-6"	1738	A263	1	#5	STR	19'-7"	20	A457	2	#5	STR	10'-8"	22
A3	150	#4	1	5'-2"	518	A264	1	#5	STR	16'-11"	18	A458	2	#5	STR	9'-3"	19
A100	136	#5	STR	32'-8"	4634	A265	1	#5	STR	14'-4"	15	A459	2	#5	STR	7'-11"	17
A101	2	#5	STR	31'-6"	66	A266	1	#5	STR	11'-8"	12	A460	2	#5	STR	6'-6"	14
A102	2	#5	STR	30'-2"	63	A267	1	#5	STR	9'-0"	9	A461	2	#5	STR	5'-1"	11
A103	2	#5	STR	28'-9"	60	A268	1	#5	STR	6'-5"	7	A462	2	#5	STR	3'-9"	8
A104	2	#5	STR	27'-4"	57	A269	1	#5	STR	3'-9"	4	A463	1	#5	STR	19'-7"	20
A105	2	#5	STR	26'-0"	54	A300	136	#5	STR	32'-8"	4634	A464	1	#5	STR	16'-11"	18
A106	2	#5	STR	24'-7"	51	A301	2	#5	STR	31'-6"	66	A465	1	#5	STR	14'-4"	15
A107	2	#5	STR	23'-2"	48	A302	2	#5	STR	30'-2"	63	A466	1	#5	STR	11'-8"	12
A108	2	#5	STR	21'-10"	46	A303	2	#5	STR	28'-9"	60	A467	1	#5	STR	9'-0"	9
A109	2	#5	STR	20'-5"	43	A304	2	#5	STR	27'-4"	57	A468	1	#5	STR	6'-5"	7
A110	2	#5	STR	19'-0"	40	A305	2	#5	STR	26'-0"	54	A469	1	#5	STR	3'-9"	4
A111	2	#5	STR	17'-7"	37	A306	2	#5	STR	24'-7"	51	B1	153	#4	STR	10'-9"	1099
A112	2	#5	STR	16'-3"	34	A307	2	#5	STR	23'-2"	48	B2	303	#4	STR	7'-4"	1484
A113	2	#5	STR	14'-10"	31	A308	2	#5	STR	21'-10"	46	B3	302	#4	STR	10'-9"	2169
A114	2	#5	STR	13'-5"	28	A309	2	#5	STR	20'-5"	43	C1	441	#4	STR	27'-0"	7954
A115	2	#5	STR	12'-1"	25	A310	2	#5	STR	19'-0"	40	D1	72	#6	STR	2'-6"	270
A116	2	#5	STR	10'-8"	22	A311	2	#5	STR	17'-7"	37	G1	4	#5	STR	33'-3"	139
A117	2	#5	STR	9'-3"	19	A312	2	#5	STR	16'-3"	34	S1	6	#8	STR	40'-2"	643
A118	2	#5	STR	7'-11"	17	A313	2	#5	STR	14'-10"	31	S2	3	#8	STR	33'-3"	266
A119	2	#5	STR	6'-6"	14	A314	2	#5	STR	13'-5"	28	S3	3	#8	STR	18'-2"	146
A120	2	#5	STR	5'-1"	11	A315	2	#5	STR	12'-1"	25	S4	3	#8	STR	20'-6"	164
A121	2	#5	STR	3'-9"	8	A316	2	#5	STR	10'-8"	22	S5	6	#8	STR	20'-10"	334
A122	1	#5	STR	32'-1"	33	A317	2	#5	STR	9'-3"	19	S6	6	#8	STR	24'-10"	398
A123	1	#5	STR	29'-5"	31	A318	2	#5	STR	7'-11"	17	REINFORCING STEEL 42838 LBS.					
A124	1	#5	STR	26'-10"	28	A319	2	#5	STR	6'-6"	14	BAR TYPES					
A125	1	#5	STR	24'-2"	25	A320	2	#5	STR	5'-1"	11	VERTICAL LEG					
A126	1	#5	STR	21'-6"	22	A321	2	#5	STR	3'-9"	8	①					
A127	1	#5	STR	18'-11"	20	A322	1	#5	STR	32'-1"	33	6" R.					
A128	1	#5	STR	16'-3"	17	A323	1	#5	STR	29'-5"	31	A1 3'-10"					
A129	1	#5	STR	13'-7"	14	A324	1	#5	STR	26'-10"	28	A2 2'-9"					
A130	1	#5	STR	10'-11"	11	A325	1	#5	STR	24'-2"	25	A3 2'-7"					
A131	1	#5	STR	8'-4"	9	A326	1	#5 <td>21'-6"</td> <td>22</td> <td colspan="5">9/16"</td>	21'-6"	22	9/16"						
A132	1	#5	STR	5'-8"	6	A327	1	#5	STR	18'-11"	20	A1 2'-8 1/2"					
A133	1	#5	STR	3'-0"	3	A328	1	#5	STR	16'-3"	17	A2 1'-11 1/2"					
A200	143	#5	STR	14'-11"	2225	A329	1	#5	STR	13'-7"	14	A3 1'-9 1/2"					
A201	2	#5	STR	13'-9"	29	A330	1	#5	STR	10'-11"	11	BAR DIMENSIONS ARE OUT TO OUT					
A202	2	#5	STR	12'-5"	26	A331	1	#5	STR	8'-4"	9						
A203	2	#5	STR	11'-0"	23	A332	1	#5	STR	5'-8"	6						
A204	2	#5	STR	9'-7"	20	A333	1	#5	STR	3'-0"	3						
A205	2	#5	STR	8'-3"	17	A400	143	#5	STR	14'-3"	2125						
A206	2	#5	STR	6'-10"	14	A401	2	#5	STR	13'-1"	27						
A207	2	#5	STR	5'-5"	11	A402	2	#5	STR	11'-9"	25						
A208	2	#5	STR	4'-1"	9	A403	2	#5	STR	10'-4"	22						
A209	1	#5	STR	13'-7"	14	A404	2	#5	STR	10'-11"	19						
A210	1	#5	STR	10'-11"	11	A405	2	#5	STR	7'-7"	16						
A211	1	#5	STR	8'-4"	9	A406	2	#5	STR	6'-2"	13						
A212	1	#5	STR	5'-8"	6	A407	2	#5	STR	4'-9"	10						
A213	1	#5	STR	3'-0"	3	A408	2	#5	STR	3'-5"	7						
A250	154	#5	STR	20'-2"	3239	A409	1	#5	STR	13'-7"	14						
A251	2	#5	STR	19'-0"	40	A410	1	#5	STR	10'-11"	11						
A252	2	#5	STR	17'-7"	37	A411	1	#5	STR	8'-4"	9						
A253	2	#5	STR	16'-3"	34	A412	1	#5	STR	5'-8"	6						
A254	2	#5	STR	14'-10"	31	A413	1	#5	STR	3'-0"	3						
A255	2	#5	STR	13'-5"	28	A450	154	#5	STR	20'-2"	3239						
A256	2	#5	STR	12'-1"	25	A451	2	#5	STR	19'-0"	40						
A257	2	#5	STR	10'-8"	22	A452	2	#5	STR	17'-7"	37						
A258	2	#5	STR	9'-3"	19	A453	2	#5	STR	16'-3"	34						
A259	2	#5	STR	7'-11"	17	A454	2	#5	STR	14'-10"	31						
A260	2	#5	STR	6'-6"	14	A455	2	#5	STR	13'-5"	28						
A261	2	#5	STR	5'-1"	11												

BILL OF MATERIAL
(BEVEL ADDITION)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B4	10	#4	STR	21'-8"	145
D2	14	#6	2	2'-3"	47
D3	27	#6	STR	1'-0"	41

REINFORCING STEEL 233 LBS.

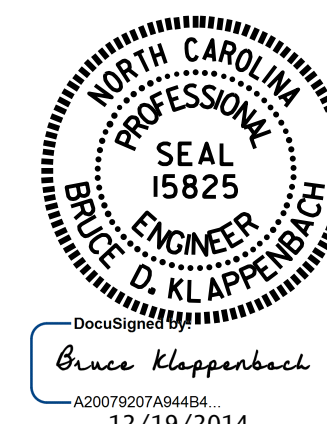
BAR TYPE



BAR DIMENSIONS ARE OUT TO OUT

SPLICE LENGTH CHART

BAR	SIZE	LENGTH
B1	#4	1'-5"
B3	#4	1'-5"
C1	#4	1'-11"



PROJECT NO. R-2915D
 ASHE COUNTY
 STATION: 660+64.00-L-

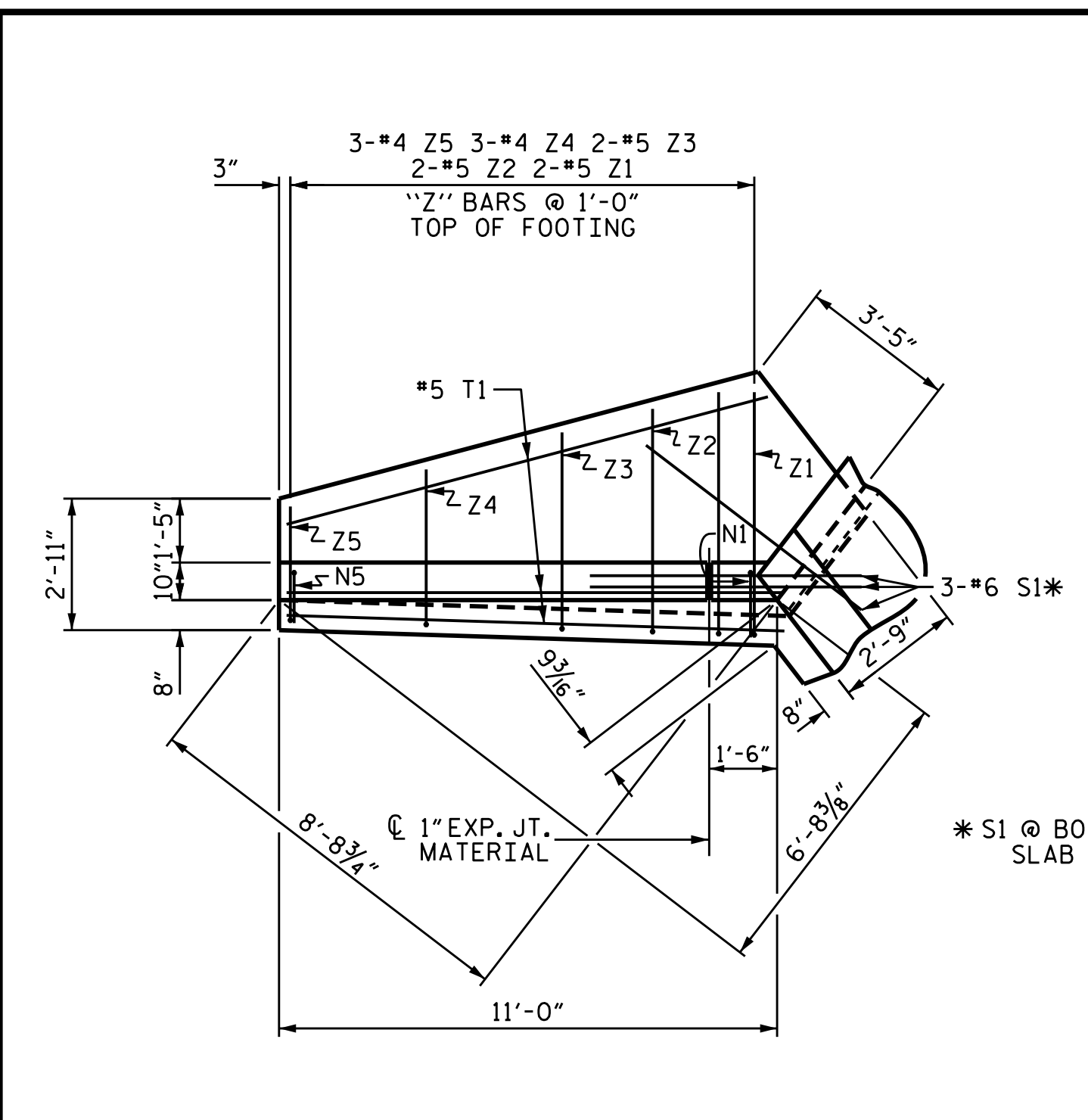
SHEET 5 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

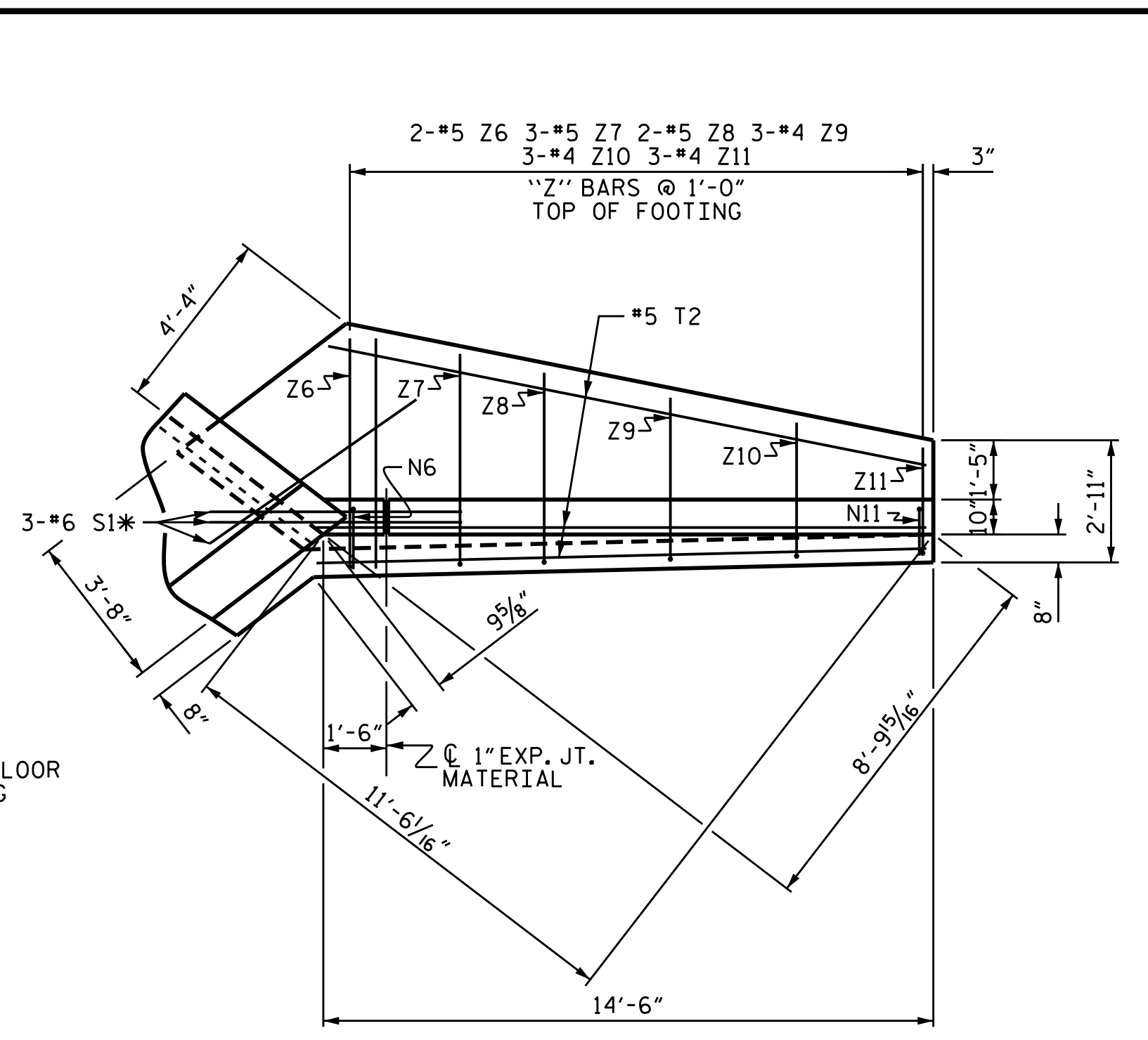
TRIPLE
 10 FT. X 8 FT.
 CONCRETE BOX CULVERT

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

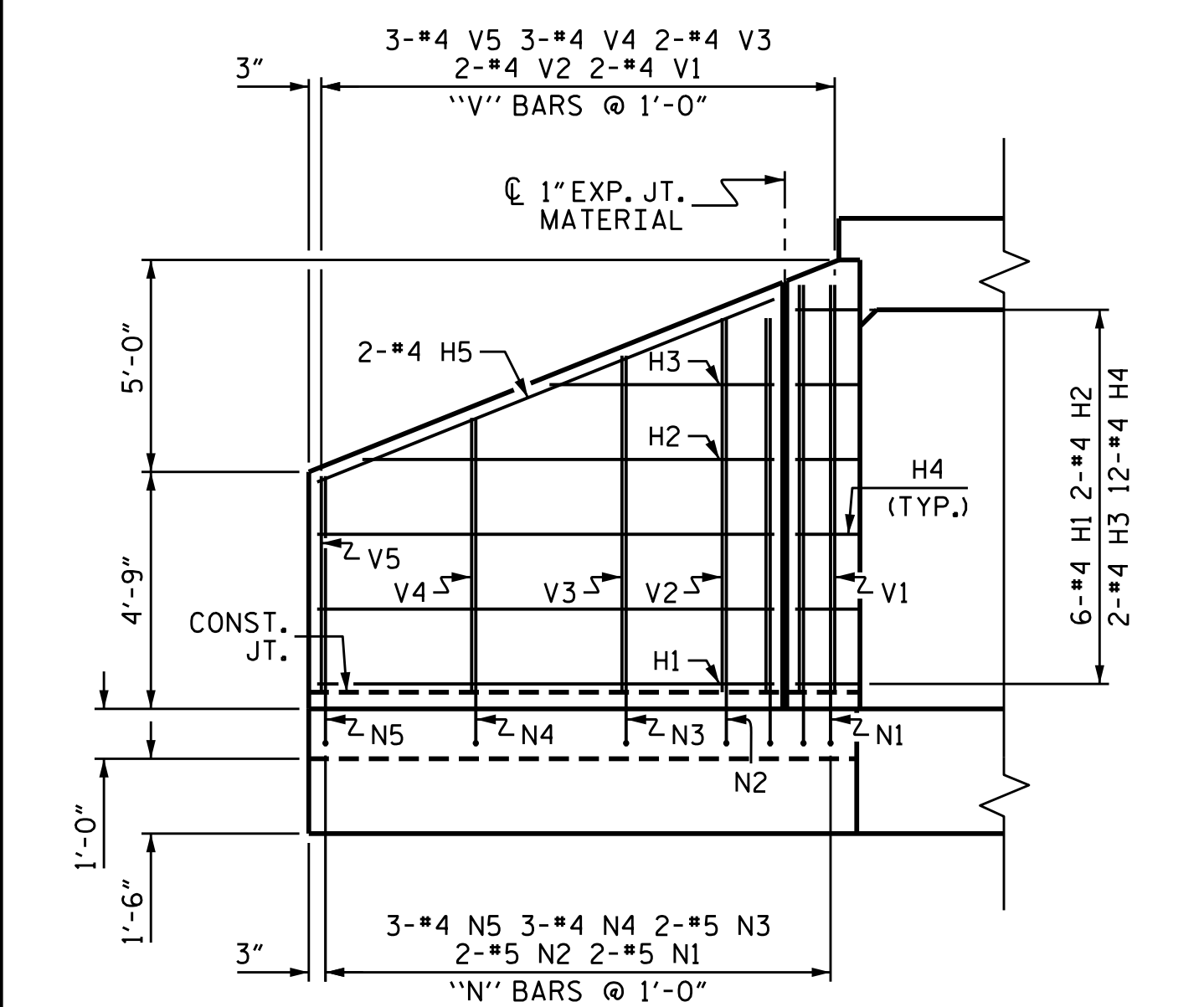
C-5
 TOTAL SHEETS 6



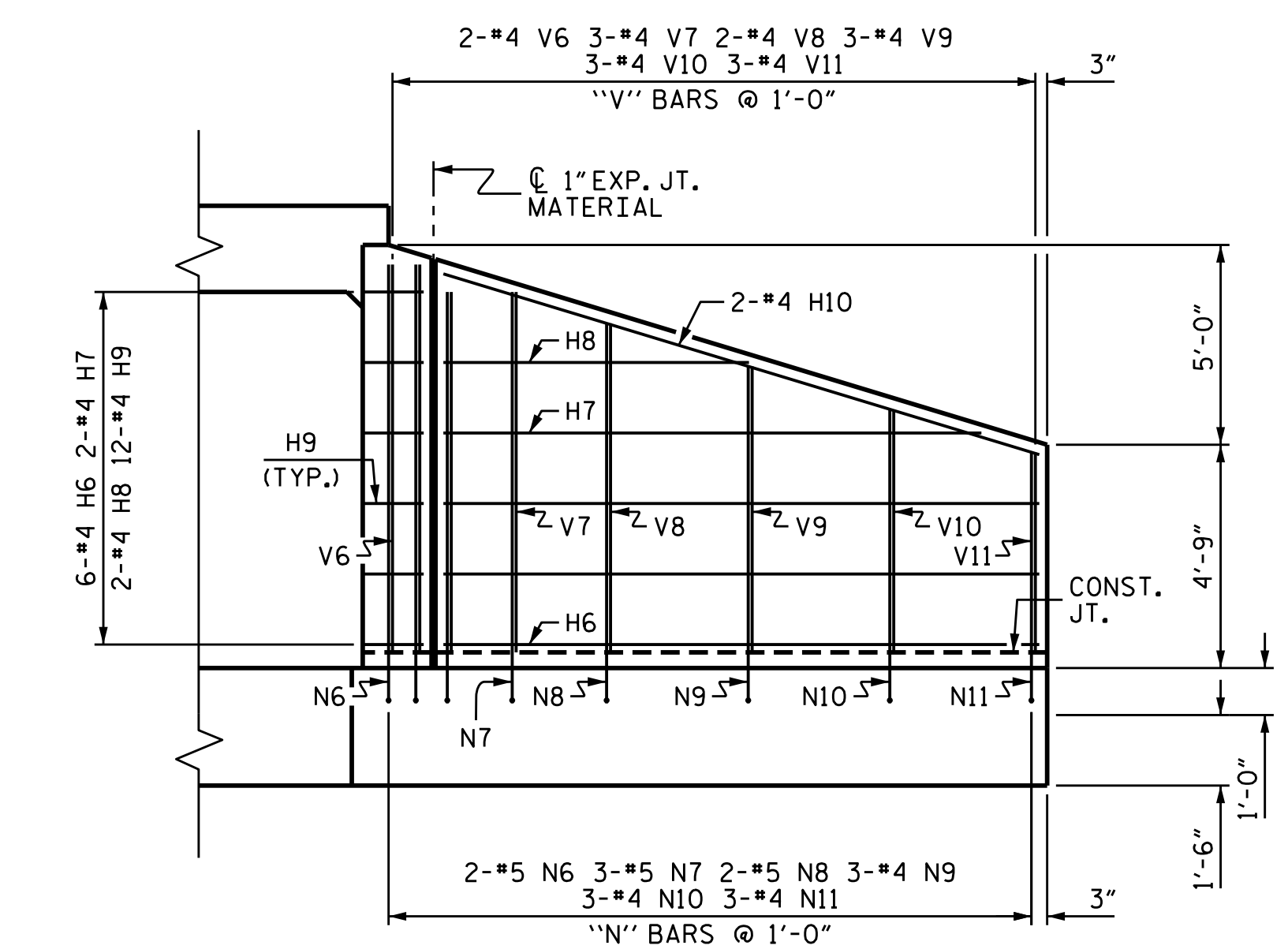
PLAN W2



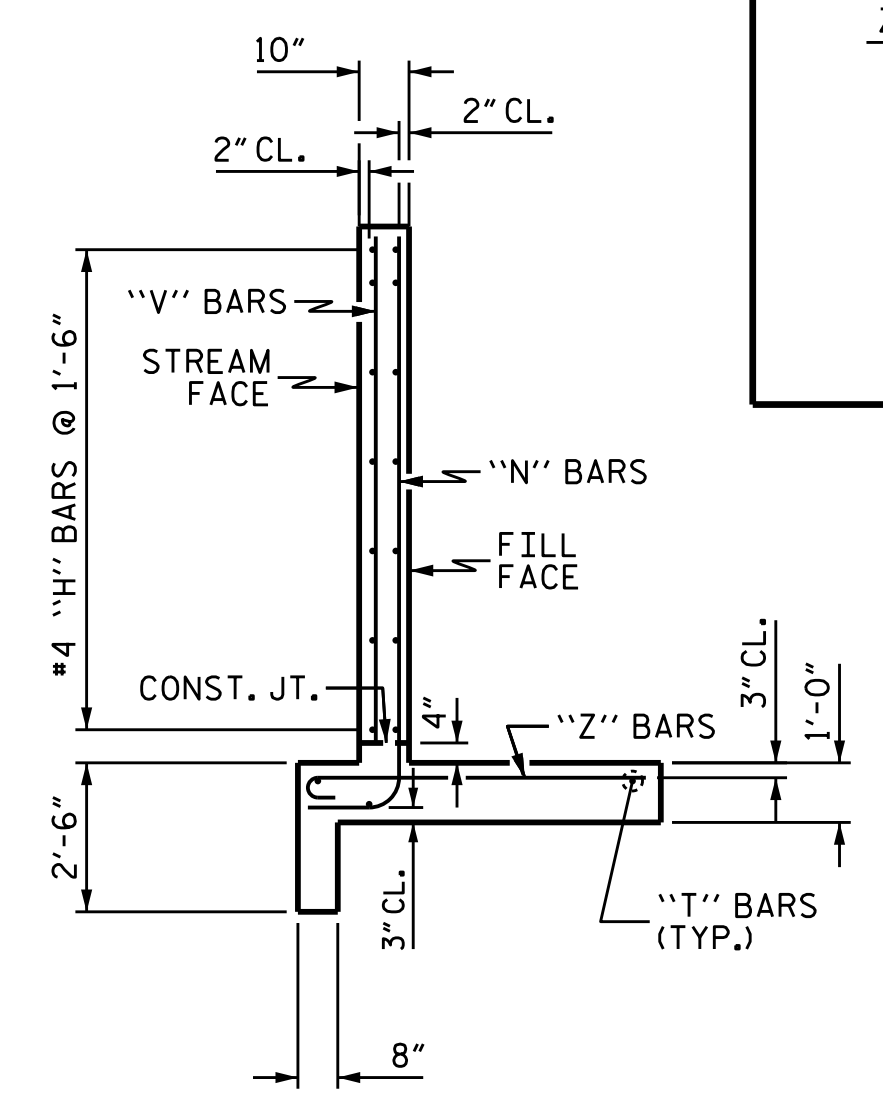
PLAN W1



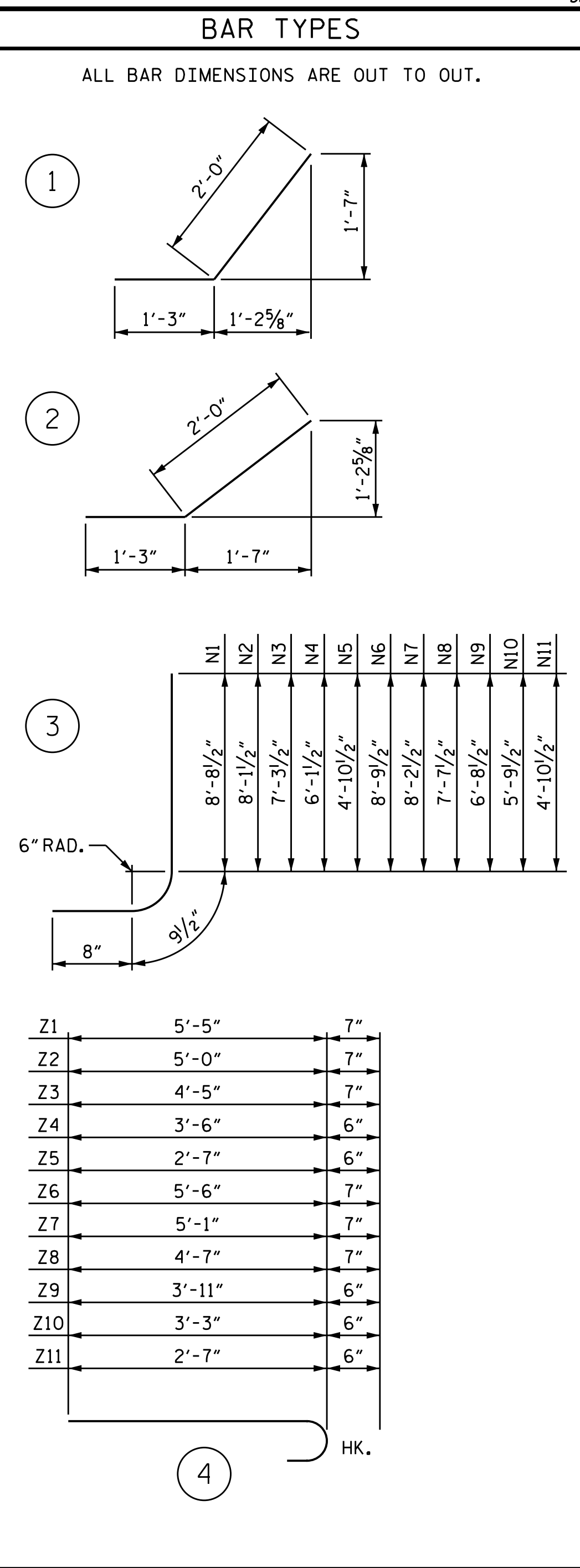
ELEVATION W2



ELEVATION W1



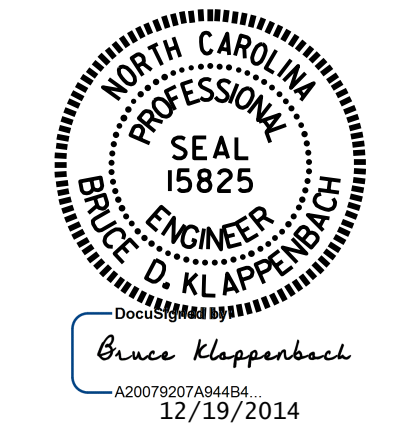
TYPICAL WING SECTION



BILL OF MATERIAL					
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					774 LBS
CLASS A CONCRETE					
2 WINGS					11.3 CY
1 HEADWALL					1.6 CY
1 END CURTAIN WALL					1.9 CY
2 EDGE BEAMS					3.0 CY
TOTAL					17.8 CY

PROJECT NO. R-2915D
ASHE COUNTY
 STATION: 660+64.00-L-
 SHEET 6 OF 6

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD WINGS FOR CONCRETE BOX CULVERT H = 8'-0" SLOPE = 2:1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. C-6					TOTAL SHEETS 6



ASSEMBLED BY : H. T. BARBOUR DATE : 5-22-14
 CHECKED BY : B. N. GRADY DATE : 8-14
 DRAWN BY : CCJ 01/00
 CHECKED BY : RWW 03/00

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

STD. NO. SN