

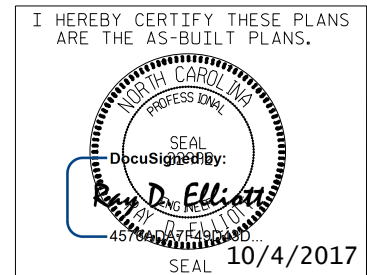
LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

HYDRAULIC DATA:	
DESIGN DISCHARGE	490 CFS
FREQUENCY OF DESIGN DISCHARGE	25 YRS.
DESIGN HIGH WATER ELEVATION	925.4'
DRAINAGE AREA	0.37 SQ. MI.
BASE DISCHARGE	800 CFS
FREQUENCY OF BASE DISCHARGE	100 YRS.
BASE HIGH WATER ELEVATION	929.57'

OVERTOPPING FLOOD DATA:	
OVERTOPPING DISCHARGE	1400 CFS+
FREQUENCY OF OVERTOPPING FLOOD	500 YR+
OVERTOPPING FLOOD ELEVATION	*940.1'

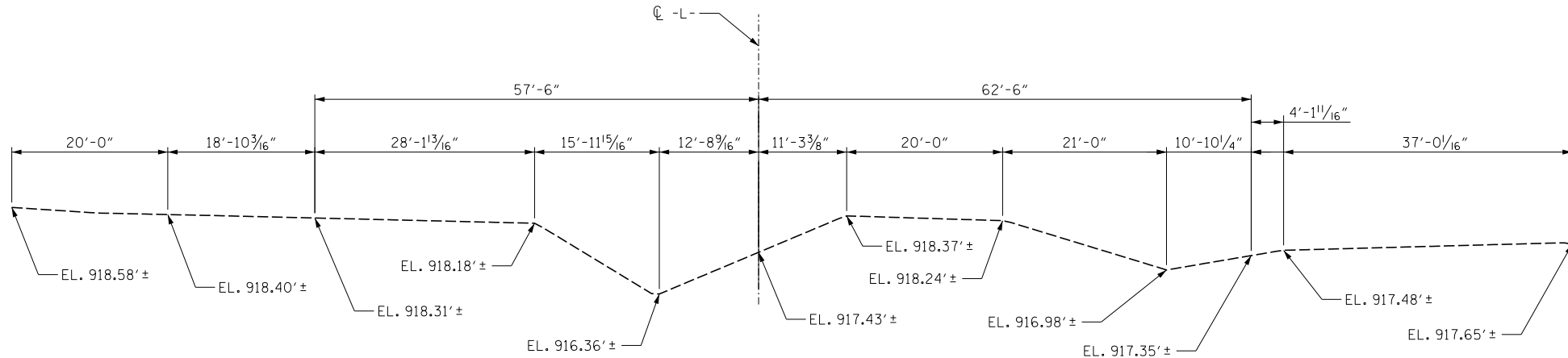
*OVERTOPPING ELEVATION REPRESENTS
 SAG ELEVATION AT -L- 25+39.8



NOTES

ASSUMED LIVE LOAD -----HL-93 OR ALTERNATE LOADING.
 DESIGN FILL-----18'-0" MAX.
 FOR OTHER DESIGN DATA AND GENERAL NOTES SEE SHEET SN (S-15).
 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, CURTAIN WALLS AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS.
 2. THE REMAINING PORTIONS OF THE WALLS AND WINGS FULL HEIGHT FOLLOWED BY ROOF SLAB, HEADWALLS AND SILLS.
 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.
 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.
 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.

FOR PLACING LOAD ON STRUCTURE 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 GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
 AT THE CONTRACTOR'S OPTION HE MAY SUBMIT, TO THE ENGINEER FOR APPROVAL, DESIGN AND DETAIL DRAWINGS FOR A PRECAST REINFORCED CONCRETE BOX CULVERT IN LIEU OF THE CAST-IN-PLACE CULVERT SHOWN ON THE PLANS. THE DESIGN SHALL PROVIDE THE SAME SIZE AND NUMBER OF BARRELS AS USED ON THE CAST-IN-PLACE DESIGN. FOR OPTIONAL PRECAST REINFORCED CONCRETE BOX CULVERT, SEE SPECIAL PROVISIONS.
 FOR CULVERT DIVERSION CHANNEL DETAILS AND PAY ITEM, SEE EROSION CONTROL PLANS.
 BED MATERIAL PLACED BETWEEN SILLS IN THE CULVERT SHALL PROVIDE A CONTINUOUS LOW FLOW CHANNEL BETWEEN THE LOWER SILLS. THE MATERIAL SHALL BE NATURAL STONE WITH A GRADATION SIZE SIMILAR TO THAT OF CLASS B RIP RAP. STONES LARGER THAN 6 INCHES SHALL NOT BE PLACED WITHIN THE LOW FLOW CHANNEL. BED MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER.
 FOR BOX CULVERT EXCAVATION, SEE SECTION 414 OF THE STANDARD SPECIFICATIONS.
 THE REINFORCED CONCRETE BOX CULVERT SHALL BE PLACED ON THE STANDARD 1.0 FOOT BLANKET OF FOUNDATION CONDITIONING MATERIAL.
 THE REQUIRED BEARING CAPACITY AT THE BASE OF THE CULVERT IS 2.0 TSF. THE REQUIRED BEARING CAPACITY SHALL BE VERIFIED.
 FOUNDATION CONDITIONING MATERIAL SHALL BE IN ACCORDANCE WITH ARTICLE 414 OF THE STANDARD SPECIFICATIONS.
 GROUNDWATER WAS ENCOUNTERED AT OR ABOVE THE INVERT ELEVATION. THE CONTRACTOR SHOULD BE PREPARED TO PROVIDE TEMPORARY DEWATERING DURING CONSTRUCTION.
 TRANSVERSE CONSTRUCTION JOINTS SHALL BE USED IN THE BARREL. SPACED TO LIMIT THE POURS TO A MAXIMUM OF 70 FEET. LOCATION OF JOINTS SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER.



PROFILE ALONG CULVERT

REVISED 11-13-91 BY E.L.R. CHECKED BY C.R.P. ADDED 8-22-89

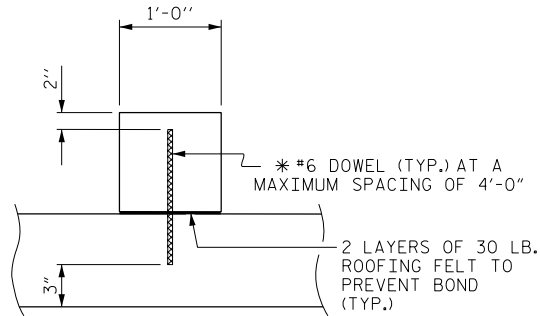
ASSEMBLED BY : CCC	DATE : 9/17	SPECIAL
CHECKED BY : RDE	DATE : 9/17	
DRAWN BY : R. WRIGHT	DATE : AUG. 1989	STANDARD
CHECKED BY : C.R.K.	DATE : AUG. 1989	

PREPARED BY
 TGS ENGINEERS
 804 N LAFAYETTE ST
 SHELBY, NC 28150

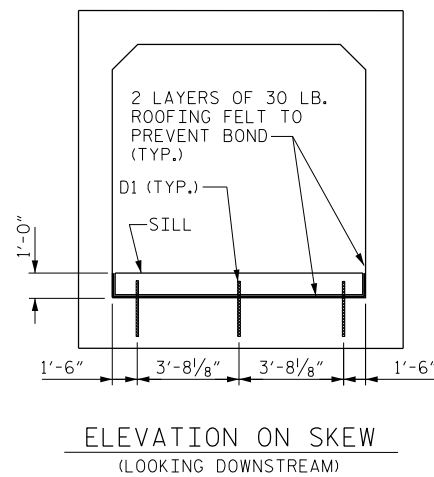
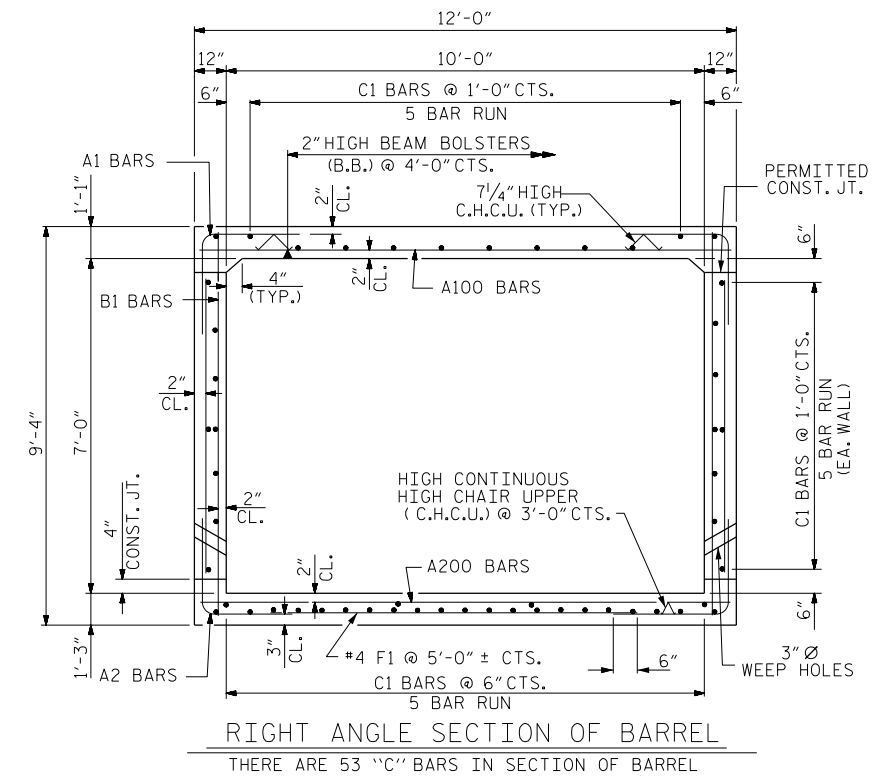
PROJECT NO. 45532.1.1
 CATAWBA COUNTY
 STATION: 24+93.00 -L-
 SHEET 1 OF 6

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH				1989	
BARREL STANDARD SINGLE 10 FT. X 7 FT. CONCRETE BOX CULVERT 105° SKEW				SHEET NO. C-1	
AUGUST				TOTAL SHEETS 6	
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

BAR TYPES		REINFORCING STEEL BAR SCHEDULE					
	BAR NO.	SIZE	TYPE	LENGTH	WEIGHT		
	A1	478	#6	1	7'-2"	5145	
	A2	478	#6	1	7'-2"	5145	
ALL BAR DIMENSIONS ARE OUT TO OUT.							
SPLICE LENGTHS CHART							
BAR SIZE	SPLICE LENGTH						
C1	#4	2'-0"					
A100	233	#6	STR	11'-8"	4083		
A101	2	#6	STR	10'-9"	32		
A102	2	#6	STR	8'-11"	27		
A103	2	#6	STR	7'-0"	21		
A104	2	#6	STR	5'-2"	16		
A105	2	#6	STR	3'-3"	10		
A106	2	#6	STR	1'-5"	4		
A200	233	#6	STR	11'-8"	4083		
A201	2	#6	STR	10'-9"	32		
A202	2	#6	STR	8'-11"	27		
A203	2	#6	STR	7'-0"	21		
A204	2	#6	STR	5'-2"	16		
A205	2	#6	STR	3'-3"	10		
A206	2	#6	STR	1'-5"	4		
B1	478	#5	STR	8'-11"	4445		
B2	478	#5	STR	6'-4"	3158		
C1	265	#4	STR	25'-7"	4529		
D1	6	#6	STR	1'-9"	16		
F1	24	#4	STR	5'-11"	95		
G1	4	#4	STR	12'-1"	32		
S2	12	#8	STR	12'-1"	387		
REINFORCING STEEL					31338	LBS.	



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



TOTAL STRUCTURE QUANTITIES	
CLASS A CONCRETE	
BARREL @ 1.6 CY/FT	192.0 C.Y.
WING, SILLS ETC.	21.2 C.Y.
TOTAL	213.2 C.Y.
REINFORCING STEEL	
BARREL	31338 LBS.
WINGS ETC.	1277 LBS.
TOTAL	32615 LBS.
CULVERT EXCAVATION, STA. 24+93.00 -L-	L.S.
FOUNDATION CONDITIONING MATERIAL	102 TONS

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS.

PROJECT NO. 45532.1.1
 CATAWBA COUNTY
 STATION: 24+93.00 -L-
 SHEET 2 OF 6

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

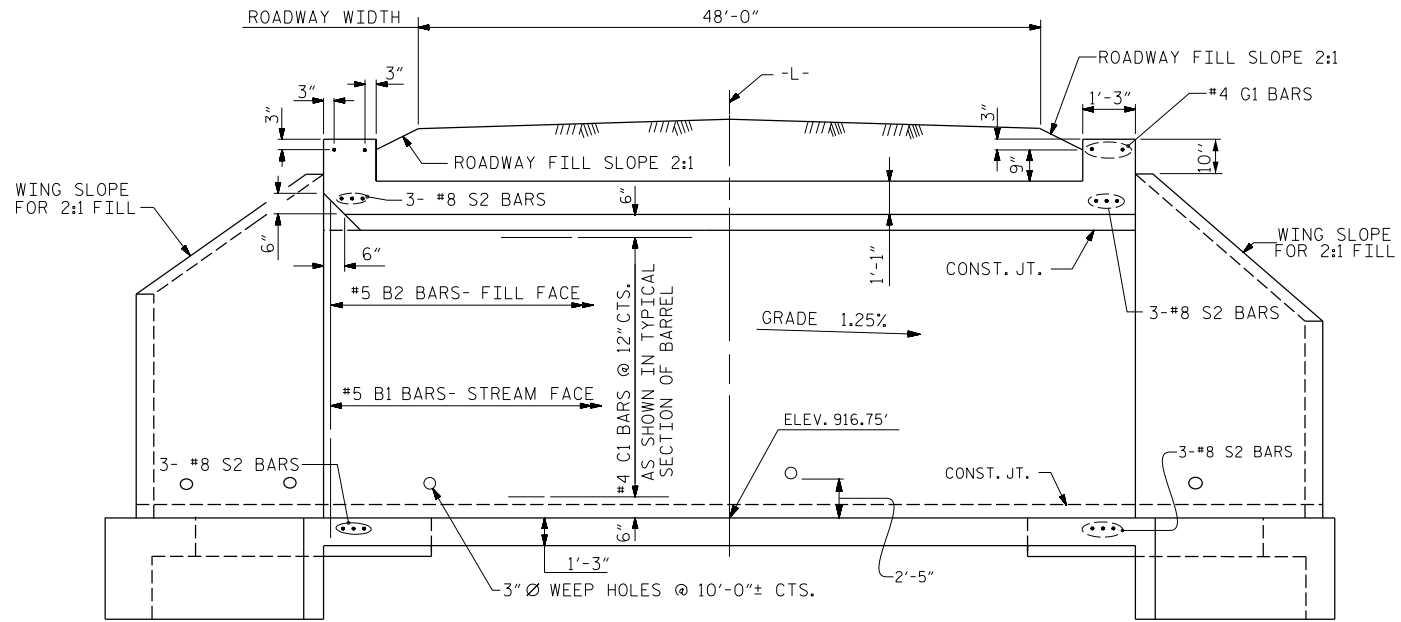
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SINGLE 10 FT. X 7 FT.
 CONCRETE BOX CULVERT
 105° SKEW

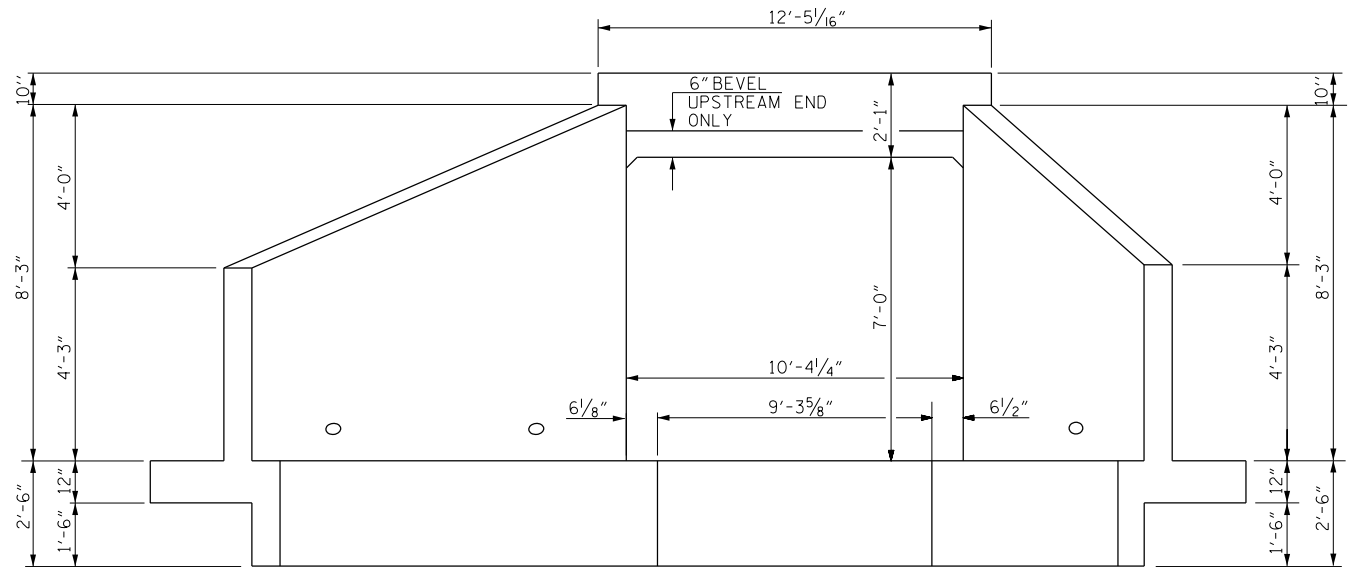
ADDED 11-1-90

ASSEMBLED BY : CCC	DATE : 8/17	SPECIAL
CHECKED BY : RDE	DATE : 8/17	
DRAWN BY : R.W.WRIGHT	DATE : OCT. 1989	STANDARD
CHECKED BY : A.R.BISSETTE	DATE : OCT. 1989	

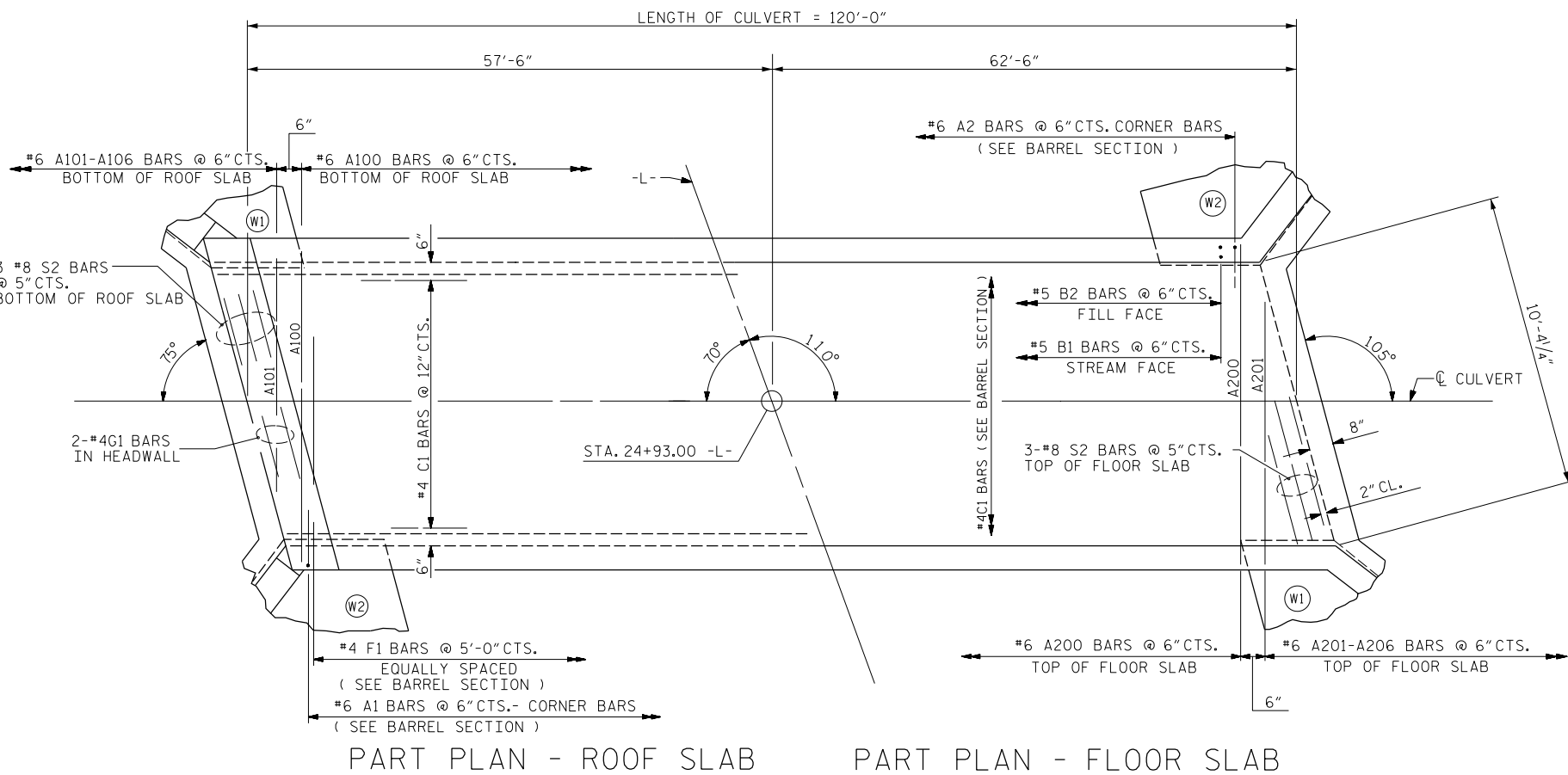
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 TGS ENGINEERS
 804 N LAFAYETTE ST
 SHELBY, NC 28150



CULVERT SECTION NORMAL TO ROADWAY

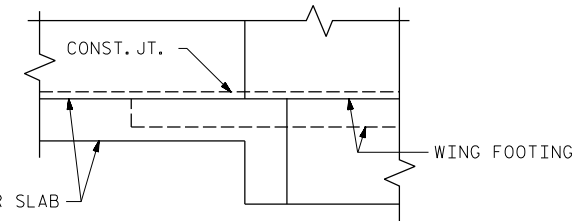
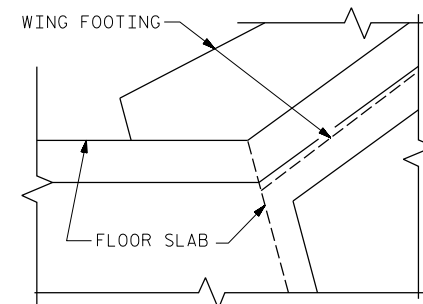


END ELEVATION NORMAL TO SKEW

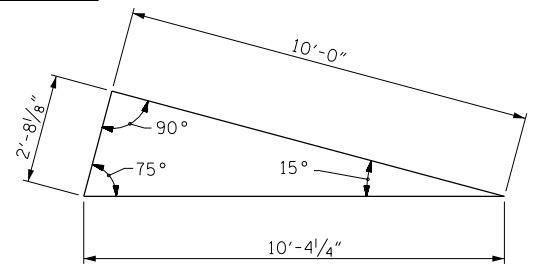


PART PLAN - ROOF SLAB

PART PLAN - FLOOR SLAB

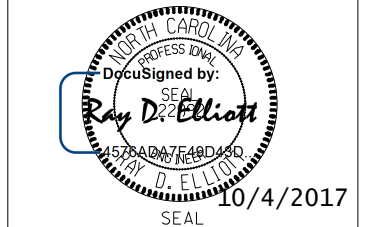


CONNECTION OF WING FOOTING AND FLOOR SLAB WHEN SLAB IS THICKER THAN FOOTING



SKEW TRIANGLE

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS.



PROJECT NO. 45532.1.1
 CATAWBA COUNTY
 STATION: 24+93.00 -L-

SHEET 3 OF 6

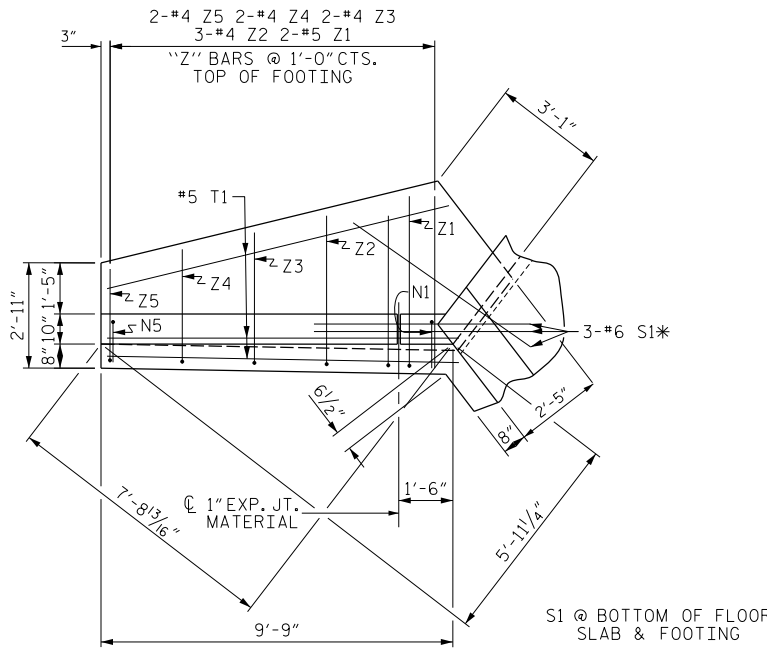
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 BARREL STANDARD
 SINGLE 10 FT. X 7 FT.
 CONCRETE BOX CULVERT
 105° SKEW

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

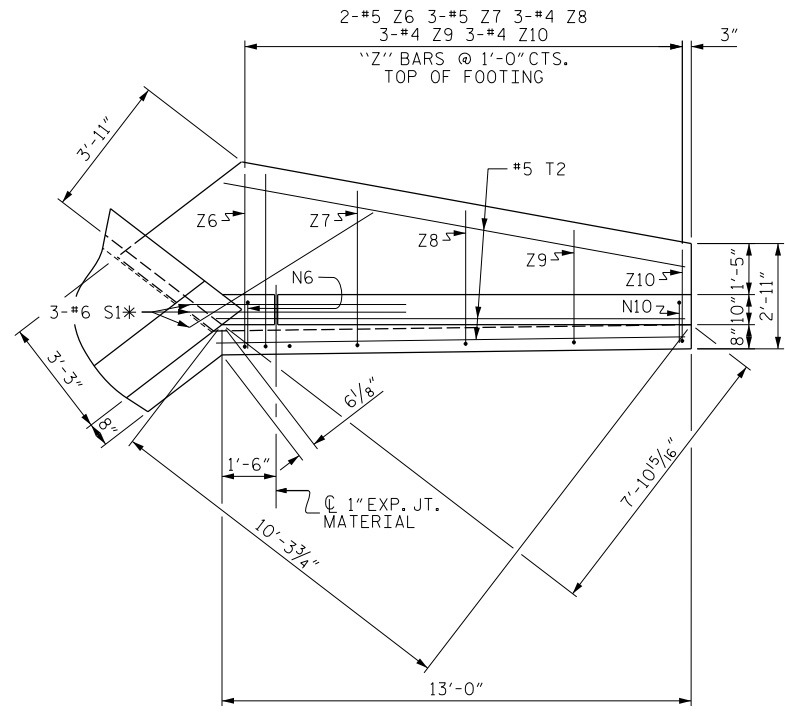
PREPARED BY
 TGS ENGINEERS
 804 N LAFAYETTE ST
 SHELBY, NC 28150

REVISED 8-28-92 BY E.L.R. CHECKED BY G.R.P.
 REVISED 8-22-89 BY A.R.B. CHECKED BY C.R.K.
 REDRAWN 8-22-89
 REVISED 11-19-99 BY M.M. CHECKED BY R.W.W.

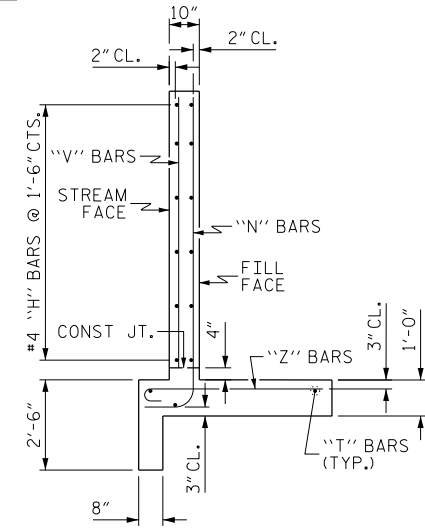
ASSEMBLED BY : CCC	DATE : 8/17	SPECIAL
CHECKED BY : RDE	DATE : 8/17	
DRAWN BY : R.W. WRIGHT	DATE : AUG. 1989	STANDARD
CHECKED BY : A.R. BISSETTE	DATE : AUG. 1989	



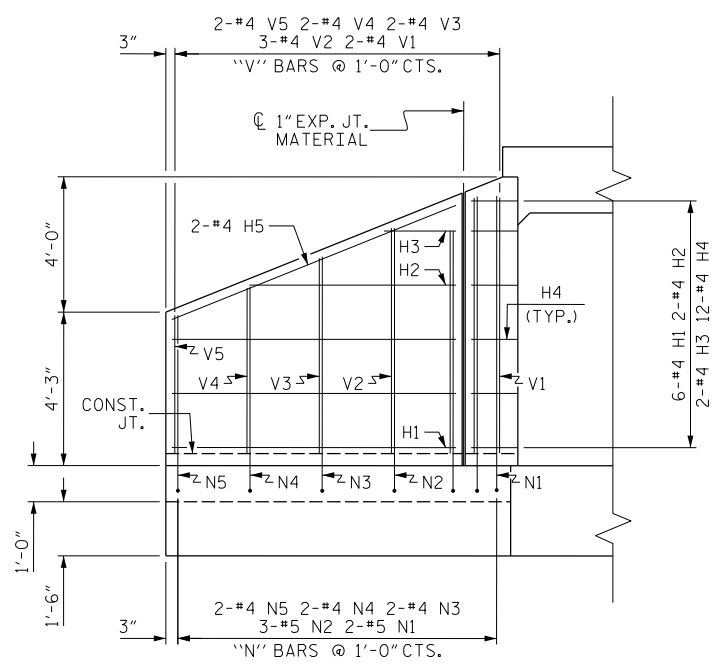
PLAN W2



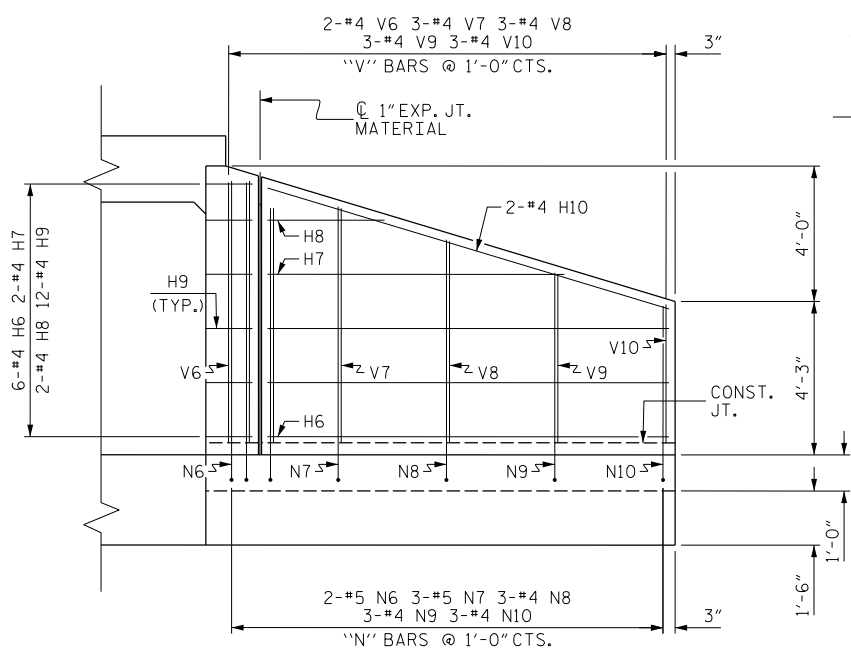
PLAN W1



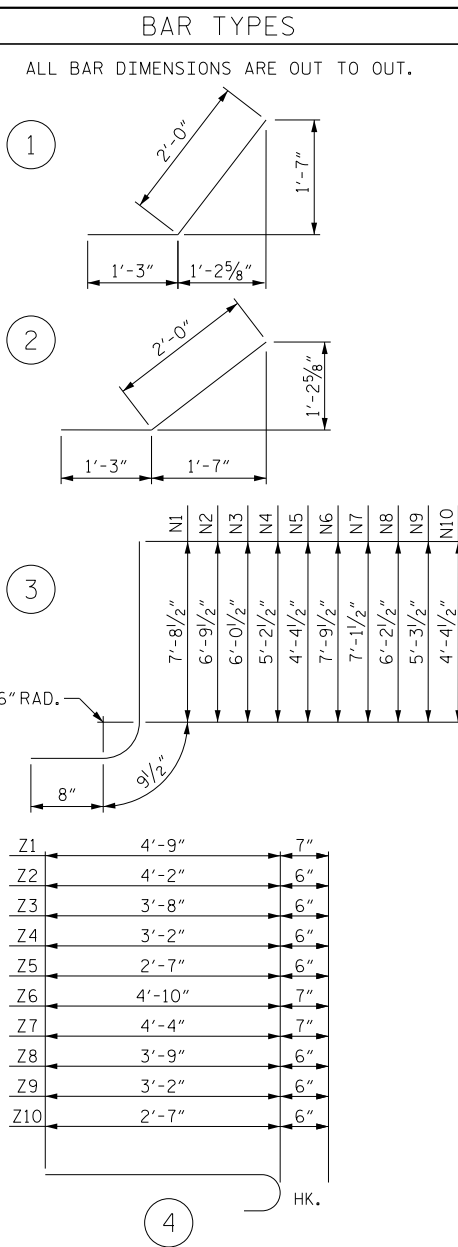
TYPICAL WING SECTION



ELEVATION W2



ELEVATION W1



BILL OF MATERIAL					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	12	#4	STR	7'-10"	63
H2	4	#4	STR	5'-8"	15
H3	4	#4	STR	2'-0"	5
H4	24	#4	1	3'-3"	52
H5	4	#4	STR	8'-5"	22
H6	12	#4	STR	11'-1"	89
H7	4	#4	STR	8'-2"	22
H8	4	#4	STR	3'-3"	9
H9	24	#4	2	3'-3"	52
H10	4	#4	STR	11'-7"	31
N1	4	#5	3	9'-2"	38
N2	6	#5	3	8'-3"	52
N3	4	#4	3	7'-6"	20
N4	4	#4	3	6'-8"	18
N5	4	#4	3	5'-10"	16
N6	4	#5	3	9'-3"	39
N7	6	#5	3	8'-7"	54
N8	6	#4	3	7'-8"	31
N9	6	#4	3	6'-9"	27
N10	6	#4	3	5'-10"	23
S1	12	#6	STR	6'-0"	108
T1	6	#5	STR	9'-9"	61
T2	6	#5	STR	13'-0"	81
V1	4	#4	STR	7'-1"	19
V2	6	#4	STR	6'-3"	25
V3	4	#4	STR	5'-5"	14
V4	4	#4	STR	4'-7"	12
V5	4	#4	STR	3'-10"	10
V6	4	#4	STR	7'-3"	19
V7	6	#4	STR	6'-6"	26
V8	6	#4	STR	5'-7"	22
V9	6	#4	STR	4'-8"	19
V10	6	#4	STR	3'-10"	15
Z1	4	#5	4	5'-4"	22
Z2	6	#4	4	4'-8"	19
Z3	4	#4	4	4'-2"	11
Z4	4	#4	4	3'-8"	10
Z5	4	#4	4	3'-1"	8
Z6	4	#5	4	5'-5"	23
Z7	6	#5	4	4'-11"	31
Z8	6	#4	4	4'-3"	17
Z9	6	#4	4	3'-8"	15
Z10	6	#4	4	3'-1"	12
REINFORCING STEEL FOR 4 WINGS					1277 LBS
CLASS A CONCRETE					
4 WINGS					18.2 CY
2 HEADWALLS					1.1 CY
2 END CURTAIN WALLS					1.1 CY
2 SILLS					0.8 CY
TOTAL					21.2 CY

PROJECT NO. 45532.1.1
CATAWBA COUNTY
 STATION: 24+93.00 -L-
 SHEET 4 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
STANDARD WINGS
 FOR
CONCRETE BOX CULVERT
 H = 7'-0" SLOPE = 2:1
 105° SKEW

ASSEMBLED BY: CCC DATE: 10/14
 CHECKED BY: JBW DATE: 10/14
 DRAWN BY: CCJ 12/99
 CHECKED BY: RWW 03/00

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS.

 SEAL
 DocuSigned by: Raymond D. Elliott
 4578...
 SEAL

10/4/2017

PREPARED BY
 TGS ENGINEERS
 804 N. LAFAYETTE ST
 SHELBY, NC 28150

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

LOAD FACTORS:

DESIGN LOAD RATING FACTORS		
LOAD TYPE	MAX FACTOR	MIN FACTOR
DC	1.25	0.90
DW	1.50	0.65
EV	1.30	0.90
EH	1.35	0.90
ES	1.35	0.90
LS	1.75	--
WA	1.00	--

NOTE:

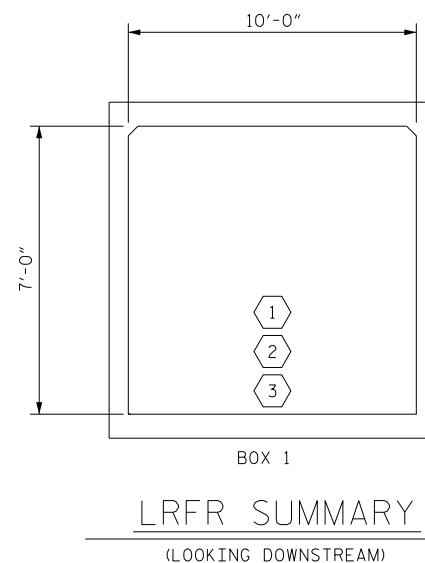
RATING FACTORS ARE BASED ON THE STRENGTH I LIMIT STATE.

COMMENTS:

- 1.
- 2.
- 3.
- 4.

#	CONTROLLING LOAD RATING
1	DESIGN LOAD RATING (HL-93)
2	DESIGN LOAD RATING (HS-20)
3	LEGAL LOAD RATING **
** SEE CHART FOR VEHICLE TYPE	

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR REINFORCED CONCRETE BOX CULVERTS															
LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE								COMMENT NUMBER	
						LIVE-LOAD FACTORS (LL)	MOMENT				SHEAR				
							RATING FACTOR	BOX NO.	ELEMENT TYPE	DISTANCE FROM LEFT END OF ELEMENT (ft)	RATING FACTOR	BOX NO.	ELEMENT TYPE		DISTANCE FROM LEFT END OF ELEMENT (ft)
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	1	1.16	-	1.75	1.16	1	BOTTOM SLAB	5	1.33	1	TOP SLAB	1.1	
	HL-93 (OPERATING)	N/A		1.16	-	1.35	1.16	1	BOTTOM SLAB	5	1.33	1	TOP SLAB	1.1	
	HS-20 (INVENTORY)	36.000	2	1.16		1.75	1.16	1	BOTTOM SLAB	5	1.33	1	TOP SLAB	1.1	
	HS-20 (OPERATING)	36.000		1.16		1.35	1.16	1	BOTTOM SLAB	5	1.33	1	TOP SLAB	1.1	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500	3	1.16	1.40	1.16	1	BOTTOM SLAB	5	1.33	1	TOP SLAB	1.1	
		SNGARBS2	20.000		1.16	1.40	1.16	1	BOTTOM SLAB	5	1.33	1	TOP SLAB	1.1	
		SNAGRIS2	22.000		1.16	1.40	1.16	1	BOTTOM SLAB	5	1.33	1	TOP SLAB	1.1	
		SNCOTTS3	27.250		1.16	1.40	1.16	1	BOTTOM SLAB	5	1.33	1	TOP SLAB	1.1	
		SNAGGRS4	34.925		1.16	1.40	1.16	1	BOTTOM SLAB	5	1.33	1	TOP SLAB	1.1	
		SNS5A	35.550		1.16	1.40	1.16	1	BOTTOM SLAB	5	1.33	1	TOP SLAB	1.1	
		SNS6A	39.950		1.16	1.40	1.16	1	BOTTOM SLAB	5	1.33	1	TOP SLAB	1.1	
		SNS7B	42.000		1.16	1.40	1.16	1	BOTTOM SLAB	5	1.33	1	TOP SLAB	1.1	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.16	1.40	1.16	1	BOTTOM SLAB	5	1.33	1	TOP SLAB	1.1	
		TNT4A	33.075		1.16	1.40	1.16	1	BOTTOM SLAB	5	1.33	1	TOP SLAB	1.1	
		TNT6A	41.600		1.16	1.40	1.16	1	BOTTOM SLAB	5	1.33	1	TOP SLAB	1.1	
		TNT7A	42.000		1.16	1.40	1.16	1	BOTTOM SLAB	5	1.33	1	TOP SLAB	1.1	
		TNT7B	42.000		1.16	1.40	1.16	1	BOTTOM SLAB	5	1.33	1	TOP SLAB	1.1	
		TNAGRIT4	43.000		1.16	1.40	1.16	1	BOTTOM SLAB	5	1.33	1	TOP SLAB	1.1	
TNAGT5A	45.000		1.16	1.40	1.16	1	BOTTOM SLAB	5	1.33	1	TOP SLAB	1.1			
TNAGT5B	45.000		1.16	1.40	1.16	1	BOTTOM SLAB	5	1.33	1	TOP SLAB	1.1			



I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS.

DocuSigned by: *Ray D. Elliott* 10/4/2017

SEAL

PREPARED BY
TGS ENGINEERS
804 N. LAFAYETTE ST
SHELBY, NC 28150

PROJECT NO. 45532.1.1
CATAWBA COUNTY
STATION: 24+93.00 -L-
SHEET 5 OF 6

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO.
STANDARD LRFR SUMMARY FOR REINFORCED CONCRETE BOX CULVERTS (NON-INTERSTATE TRAFFIC)						C-5
REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	6
1			3			
2			4			

ASSEMBLED BY : CCC	DATE : 8/17
CHECKED BY : RDE	DATE : 8/17
DRAWN BY : WMC 7/11	REV. 10/1/11
CHECKED BY : GM 7/11	MAA/GM

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.

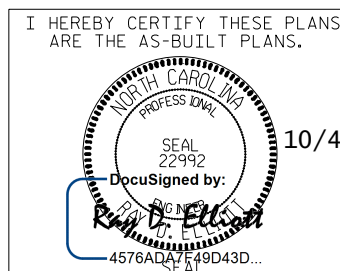
SPECIAL NOTES:

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.

PROJECT NO. 45532.1.1
CATAWBA COUNTY
 STATION: 24+93.00 -L-

SHEET 6 OF 6

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD NOTES					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 6



PREPARED BY
TCS ENGINEERS
804 N. LAFAYETTE ST
SHELBY, NC 28150

DRAWN BY : CCC	DATE : 10/14	REV. 6-16-95 EEM () RGW	REV. 5-7-03 RWW () JTE	REV. 10-1-11 MAA () GM
CHECKED BY : JBW	DATE : 10/14	REV. 8-16-99 RWW () LES	REV. 5-1-06 TLA () CM	