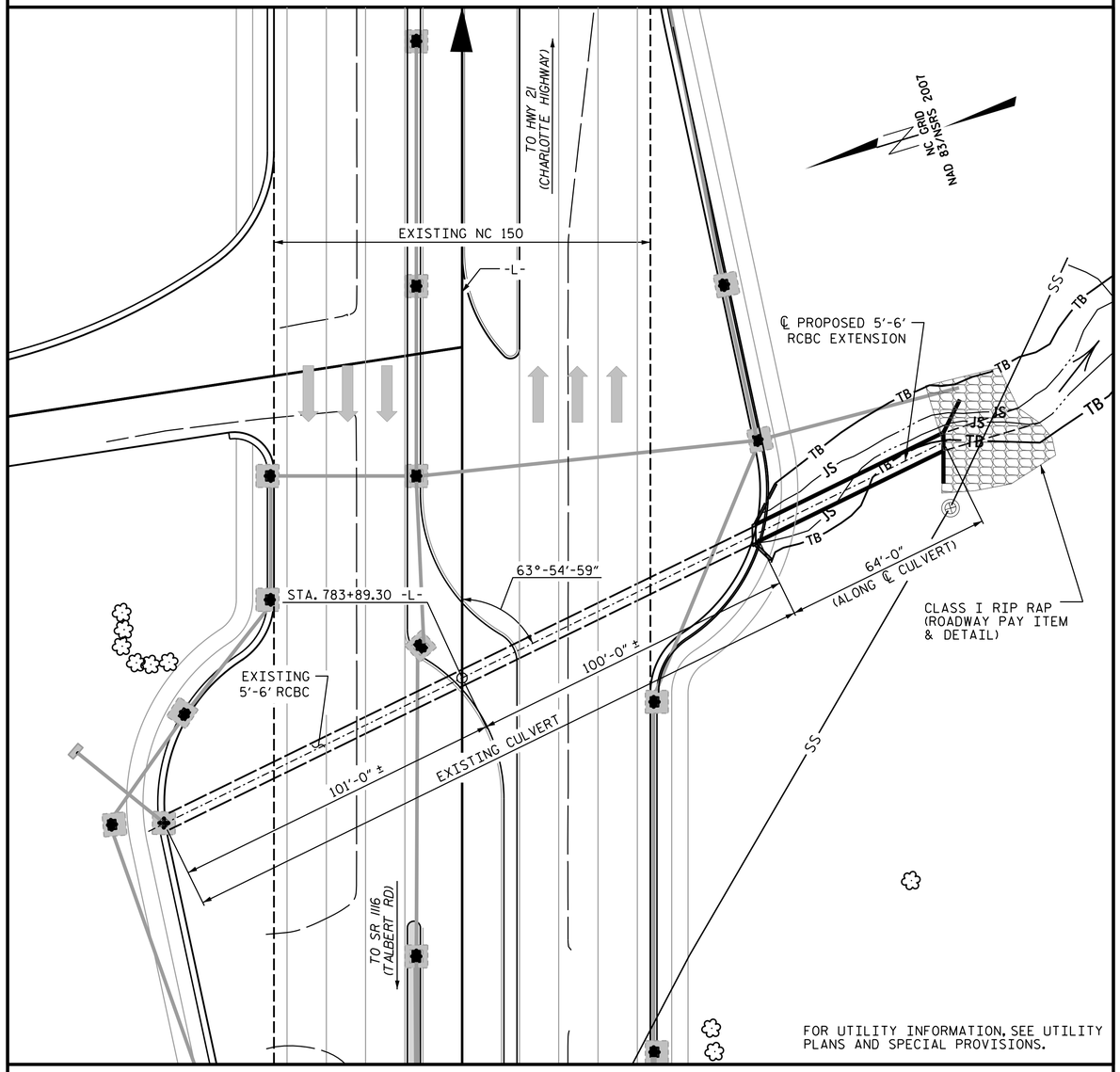
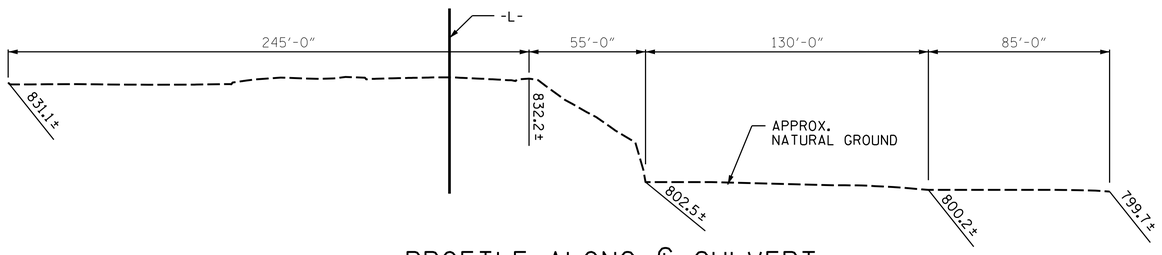
F.A. PROJECT NO.: STP-0150(36)

BENCH MARK #32: PK NAIL IN CONCRETE FOOTING; 124.82' RT OF STA. 786+82.82 -L-; ELEV. = 833.49



LOCATION SKETCH



PROFILE ALONG ℄ CULVERT

DRAWN BY :	STM	DATE :	02/24
CHECKED BY :	MGC	DATE :	04/24
DESIGN ENGINEER OF RECORD :	STM	DATE :	02/24

TOTAL STRUCTURE QUANTITIES

CLASS A CONCRETE		
BARREL @ 0.68 CY/FT	43.5	C.Y.
WINGS, ETC.	10.4	C.Y.
TOTAL	53.9	C.Y.
REINFORCING STEEL		
BARREL	5,392	LBS.
WINGS, ETC.	553	LBS.
TOTAL	5,945	LBS.
CULVERT EXCAVATION	LUMP SUM	
FOUNDATION COND. MAT'L.	48 TONS	

ROADWAY DATA

GRADE POINT ELEV. @ STA. 783+89.30 -L-	= 833.14
BED ELEV. @ STA. 783+89.30 -L-	= 804.41
ROADWAY SLOPES	= 2:1

HYDRAULIC DATA

DESIGN DISCHARGE	= 410 CFS
FREQUENCY OF DESIGN FLOOD	= 50 YRS
DESIGN HIGH WATER ELEVATION	= 815.2
DRAINAGE AREA	= 0.33 SQ. MI.
BASE DISCHARGE (0100)	= 470 CFS
BASE HIGH WATER ELEVATION	= 817.0

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 630+ CFS
FREQUENCY OF OVERTOPPING FLOOD	= 500+ YRS
OVERTOPPING FLOOD ELEVATION	= 832.7

SAMPLE BAR REPLACEMENT

SIZE	LENGTH
#3	6'-2"
#4	7'-4"
#5	8'-6"
#6	9'-8"
#7	10'-10"
#8	12'-0"
#9	13'-2"
#10	14'-6"
#11	15'-10"

NOTE:
SAMPLE BAR REPLACEMENT LENGTHS BASED ON 30" (SAMPLE LENGTH) PLUS TWO SPLICE LENGTHS AND f, = 60ksi.

NOTES:

ASSUMED LIVE LOAD ---------- HL-93 OR ALTERNATE LOADING.

DESIGN FILL---------- 22.5' MAX.

FOR OTHER DESIGN DATA AND NOTES, SEE STANDARD NOTES SHEET.

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

CONCRETE IN CULVERT TO BE POURED IN THE FOLLOWING ORDER:

1. WING FOOTINGS AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS.
2. THE REMAINING PORTIONS OF THE WALLS AND WINGS FULL HEIGHT FOLLOWED BY ROOF SLAB AND HEADWALLS.

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.

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

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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.

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 SAMPLE BARS SHOULD COME FROM STEEL ACTUALLY USED IN THE PROJECT AND THE SAMPLE BARS SHOULD BE REPLACED BY SPICED BARS AS SPECIFIED IN THE SAMPLE BAR REPLACEMENT CHART. PAYMENT FOR THE SAMPLE BARS AND REPLACEMENT REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

EXCAVATE 1 FOOT BELOW CULVERT AND REPLACE WITH FOUNDATION CONDITIONING MATERIAL IN ACCORDANCE WITH ARTICLE 414-4 OF THE STANDARD SPECIFICATIONS. FOUNDATION CONDITIONING MATERIAL SHOULD CONSIST OF SELECT MATERIAL CLASS V OR VI FOR RCBC.

IF REQUIRED, UNDERCUT LOOSE SOILS THAT MAY BE ENCOUNTERED BENEATH THE BOTTOM OF THE FOUNDATION CONDITIONING MATERIAL. BACKFILL UNDERCUT AREAS WITH FOUNDATION CONDITIONING MATERIAL.

FOR TRAFFIC PHASING, SEE TRAFFIC CONTROL PLANS.

IF APPROVED BY THE ENGINEER, THE CONTRACTOR MAY USE THE EXISTING WINGS AS TEMPORARY SHORING FOR THE CONSTRUCTION OF THE CULVERT EXTENSION. 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.

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

PROJECT NO. R-2307B

IREDELL COUNTY

STATION: 783+89.30 -L-

SHEET 1 OF 6

NORTH CAROLINA PROFESSIONAL SEAL 20125 ENGINEER
Marshall G. Chew, Jr.
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TGS ENGINEERS
706 HILLSBOROUGH STREET
SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SINGLE 5 FT. x 6 FT. CONCRETE BOX CULVERT EXTENSION 64° SKEW

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

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 (γ_{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	**2.32**	--	1.75	**2.32**	1	TOP SLAB	0.75	3.06	1	BOTT. SLAB	0.75	
		HL-93 (OPERATING)	N/A		3.01	--	1.35	3.01	1	TOP SLAB	0.75	3.97	1	BOTT. SLAB	0.75	
		HS-20 (INVENTORY)	36.000	2	**2.44**	87.84	1.75	**2.44**	1	TOP SLAB	0.75	4.06	1	EXT. WALL	0.38	
		HS-20 (OPERATING)	36.000		3.17	114.12	1.35	3.17	1	TOP SLAB	0.75	5.26	1	EXT. WALL	0.38	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.43	46.31	1.40	3.43	1	TOP SLAB	0.75	5.07	1	EXT. WALL	0.38	
		SNGARBS2	20.000		3.28	65.60	1.40	3.28	1	TOP SLAB	0.75	5.07	1	EXT. WALL	0.38	
		SNAGRIS2	22.000		3.24	71.28	1.40	3.24	1	TOP SLAB	0.75	5.07	1	EXT. WALL	0.38	
		SNCOTTS3	27.250		2.98	81.21	1.40	2.98	1	TOP SLAB	0.75	4.64	1	BOTT. SLAB	0.75	
		SNAGGRS4	34.925		2.86	99.89	1.40	2.86	1	TOP SLAB	5.75	3.41	1	BOTT. SLAB	0.75	
		SNS5A	35.550		2.90	103.10	1.40	2.90	1	TOP SLAB	0.75	3.51	1	BOTT. SLAB	0.75	
		SNS6A	39.950		2.83	113.06	1.40	2.83	1	TOP SLAB	0.75	3.33	1	BOTT. SLAB	0.75	
		SNS7B	42.000		2.82	118.44	1.40	2.82	1	TOP SLAB	0.75	3.26	1	BOTT. SLAB	0.75	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		2.95	97.35	1.40	2.95	1	TOP SLAB	5.75	4.06	1	BOTT. SLAB	0.75	
		TNT4A	33.075		2.94	97.24	1.40	2.94	1	TOP SLAB	0.75	4.08	1	BOTT. SLAB	0.75	
		TNT6A	41.600		2.82	117.31	1.40	2.82	1	TOP SLAB	0.75	3.19	1	BOTT. SLAB	0.75	
		TNT7A	42.000		2.78	116.76	1.40	2.78	1	TOP SLAB	0.75	3.04	1	BOTT. SLAB	0.75	
		TNT7B	42.000		2.81	118.02	1.40	2.81	1	TOP SLAB	0.75	3.21	1	BOTT. SLAB	0.75	
		TNAGRIT4	43.000		2.81	120.83	1.40	2.81	1	TOP SLAB	0.75	3.21	1	BOTT. SLAB	0.75	
		TNAGT5A	45.000		2.74	123.30	1.40	2.74	1	TOP SLAB	0.75	2.92	1	BOTT. SLAB	0.75	
		TNAGT5B	45.000	3	**2.73**	122.85	1.40	**2.73**	1	TOP SLAB	0.75	2.87	1	BOTT. SLAB	0.75	
EMERGENCY VEHICLE (EV)		EV2	28.750		3.36	96.60	1.30	3.36	1	TOP SLAB	0.75	5.46	1	EXT. WALL	0.38	
		EV3	43.000	4	**2.90**	124.70	1.30	**2.90**	1	TOP SLAB	0.75	3.08	1	BOTT. SLAB	0.75	

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:

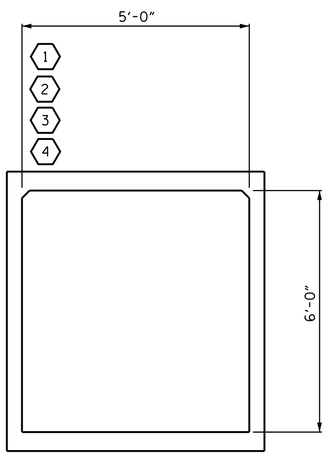
RATING FACTORS ARE BASED ON THE STRENGTH I LIMIT STATE.

COMMENTS:

1.
2.
3.
4.

- (#) CONTROLLING LOAD RATING
- (1) DESIGN LOAD RATING (HL-93)
- (2) DESIGN LOAD RATING (HS-20)
- (3) LEGAL LOAD RATING **
- (4) EMERGENCY VEHICLE RATING **

** SEE CHART FOR VEHICLE TYPE



LRFR SUMMARY

(LOOKING DOWNSTREAM)

PROJECT NO. R-2307B

IREDELL COUNTY

STATION: 783+89.30 -L-

SHEET 2 OF 6

ASSEMBLED BY :	STM	DATE :	02/24
CHECKED BY :	MGC	DATE :	04/24
DRAWN BY : WMC 7/11	REV. 10/1/11		MAA/GM
CHECKED BY : GM 7/11	REV. 12/17		MAA/THC

NORTH CAROLINA PROFESSIONAL SEAL 20125 ENGINEER MARSHALL G. CHEEK, JR.

Digitally signed by Marshall G. Cheek, Jr.

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TGS ENGINEERS
706 HILLSBOROUGH STREET
SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

LRFR SUMMARY FOR REINFORCED CONCRETE BOX CULVERTS

(NON-INTERSTATE TRAFFIC)

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

STD. NO. LRFR5

5/8/2024
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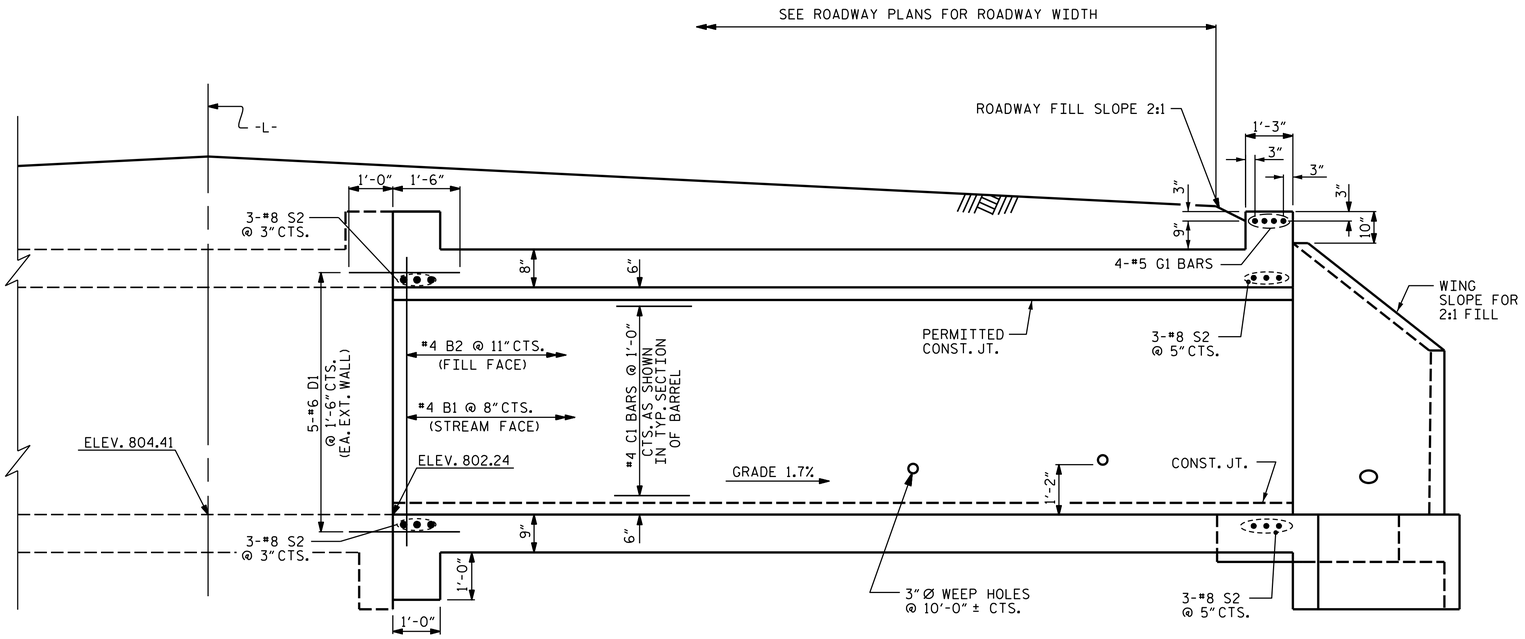
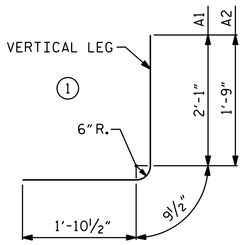


CULVERT SECTION NORMAL TO ROADWAY

BAR TYPE



DIMENSIONS ARE OUT TO OUT

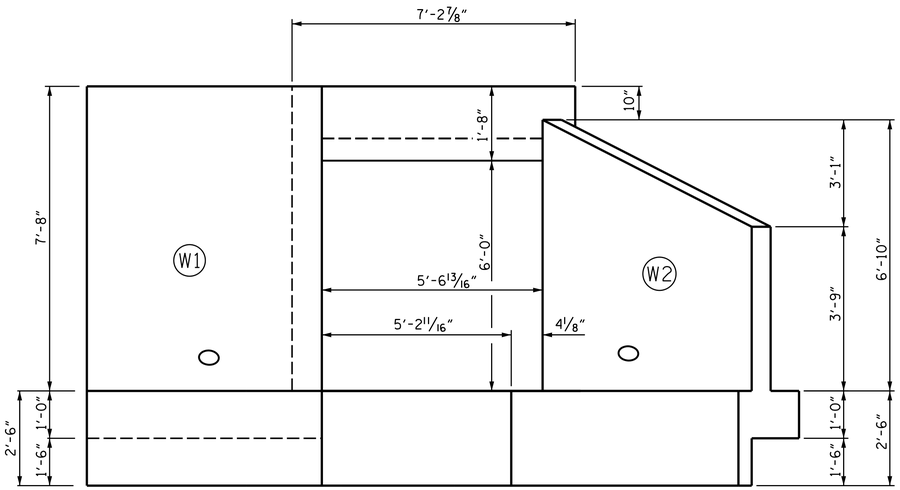
SPLICE LENGTHS CHART

BAR	SIZE	SPLICE LENGTH
C1	#4	1'-10"

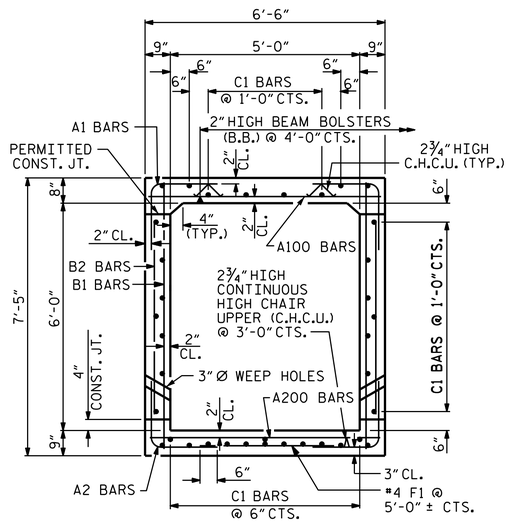
CULVERT EXTENSION BAR SCHEDULE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A100	92	#5	STR	6'-2"	592
A101	2	#5	STR	4'-9"	10
A102	2	#5	STR	3'-5"	7
A200	92	#5	STR	6'-2"	592
A201	2	#5	STR	4'-9"	10
A202	2	#5	STR	3'-5"	7
A1	140	#4	1	4'-9"	444
A2	140	#4	1	4'-5"	413
B1	192	#4	STR	7'-0"	898
B2	140	#4	STR	5'-4"	499
C1	72	#4	STR	32'-9"	1575
D1	18	#6	STR	2'-6"	68
F1	13	#4	STR	3'-4"	29
G1	4	#5	STR	6'-10"	29
S2	12	#8	STR	6'-10"	219

REINFORCING STEEL 5,392 LBS



END ELEVATION NORMAL TO SKEW



RIGHT ANGLE SECTION OF BARREL

THERE ARE 36 "C" BARS IN SECTION OF BARREL.

PROJECT NO. R-2307B

IREDELL COUNTY

STATION: 783+89.30 -L-

SHEET 3 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SINGLE 5 FT. X 6 FT. CONCRETE BOX CULVERT EXTENSION

NORTH CAROLINA PROFESSIONAL SEAL 20125 ENGINEER MARSHALL C. CREEK, JR.

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TGS ENGINEERS
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CORP. LICENSE NO.: C-0275

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

ASSEMBLED BY :	STM	DATE : 02/24
CHECKED BY :	MGC	DATE : 04/24
DESIGN ENGINEER OF RECORD:	STM	DATE : 04/24

5/8/2024
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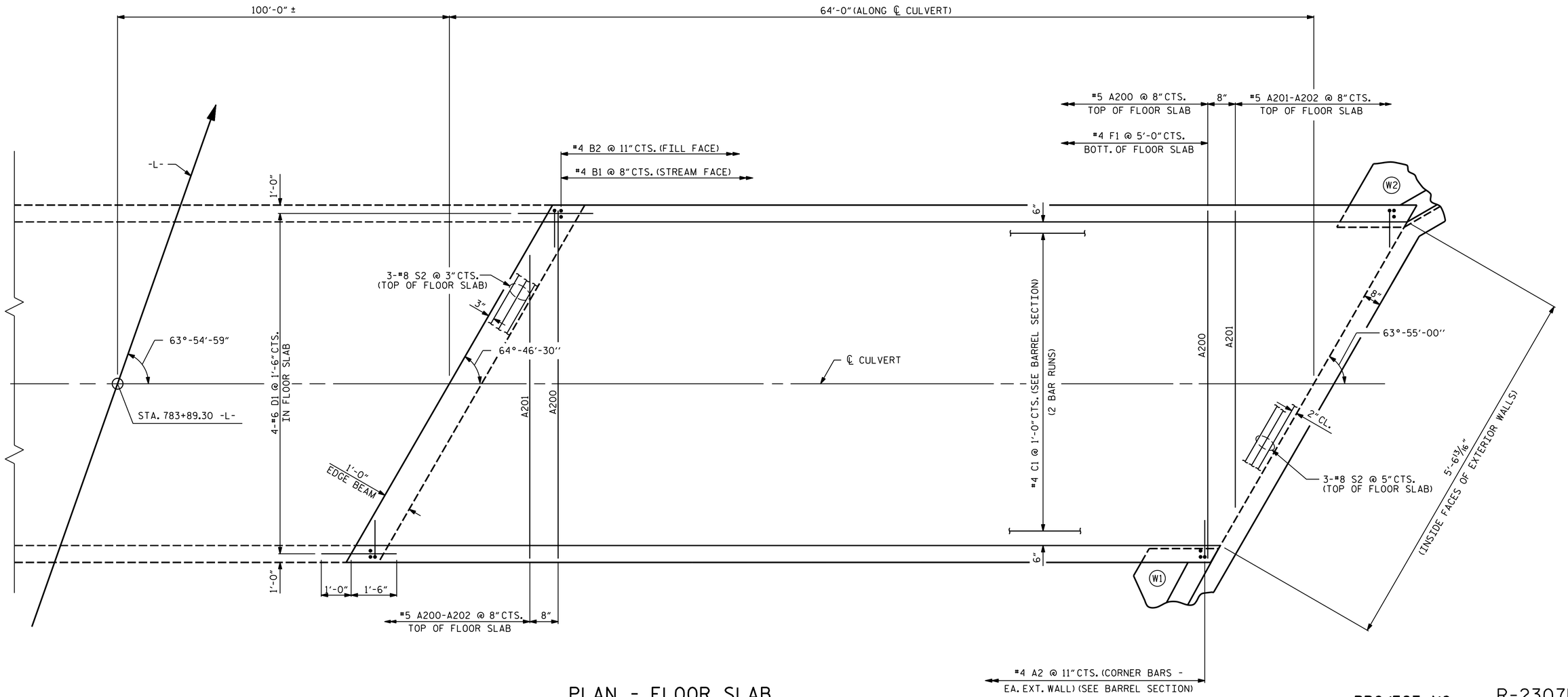
STD. NO. CB60_1



PLAN - FLOOR SLAB

PROJECT NO. R-2307B

IREDELL COUNTY

STATION: 783+89.30 -L-

SHEET 4 OF 6

NORTH CAROLINA PROFESSIONAL SEAL 20125 ENGINEER MARSHALL C. CREEK, JR.

Marshall C. Creek Jr.
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SINGLE 5 FT. X 6 FT. CONCRETE BOX CULVERT EXTENSION

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

DRAWN BY : STM DATE : 02/24
CHECKED BY : MGC DATE : 04/24
DESIGN ENGINEER OF RECORD: STM DATE : 01/24

5/8/2024
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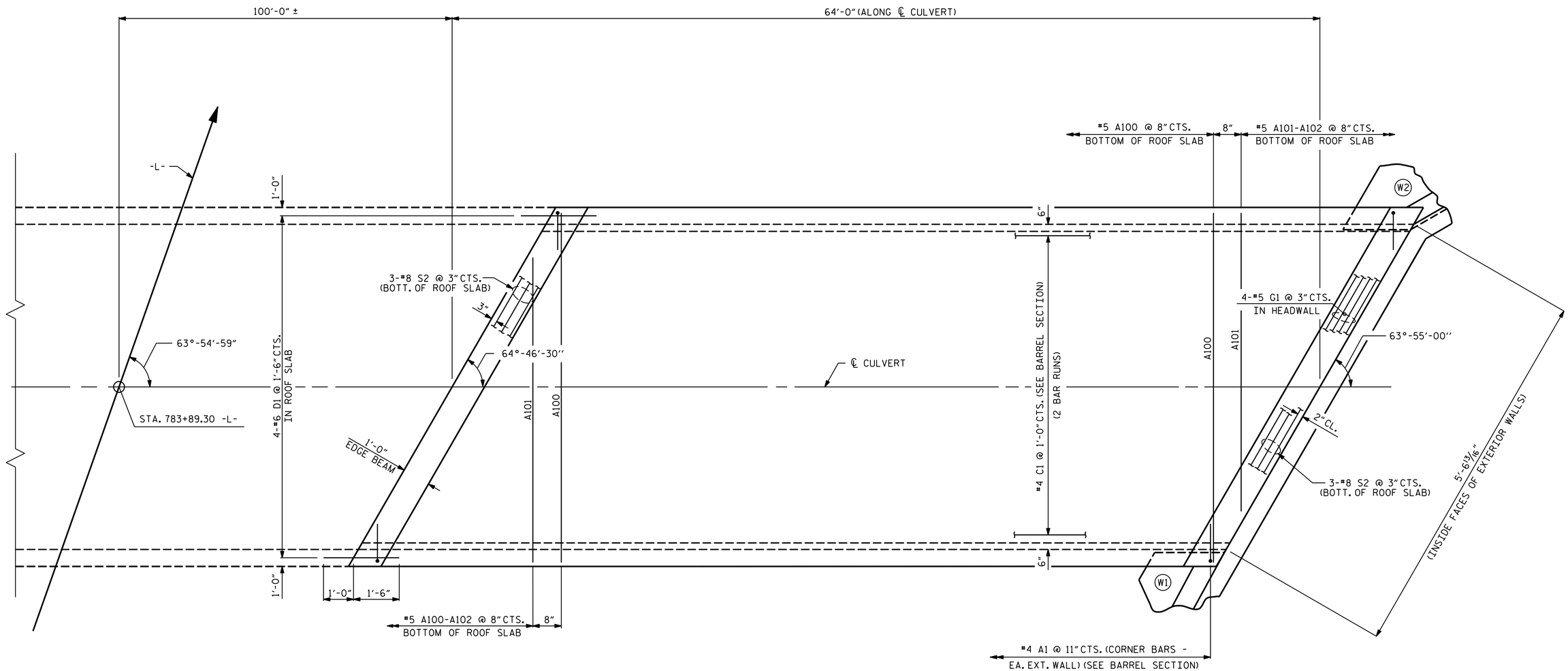

PLAN - ROOF SLAB

PROJECT NO. R-2307B

IREDELL COUNTY

STATION: 783+89.30 -L-

SHEET 5 OF 6

NORTH CAROLINA PROFESSIONAL SEAL 20125 ENGINEER MARSHALL G. CREEK, JR.

Marshall G. Creek Jr.

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RALEIGH

SINGLE 5 FT. X 6 FT. CONCRETE BOX CULVERT EXTENSION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-5
1			3			TOTAL SHEETS
2			4			6

DRAWN BY : STM DATE : 02/24
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DESIGN ENGINEER OF RECORD: STM DATE : 01/24

5/8/2024
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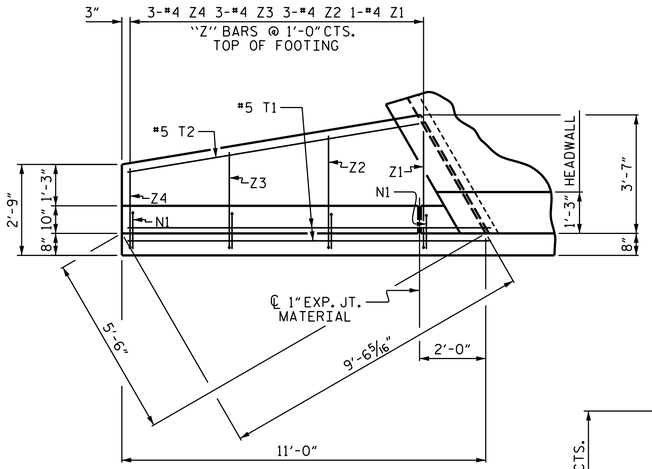
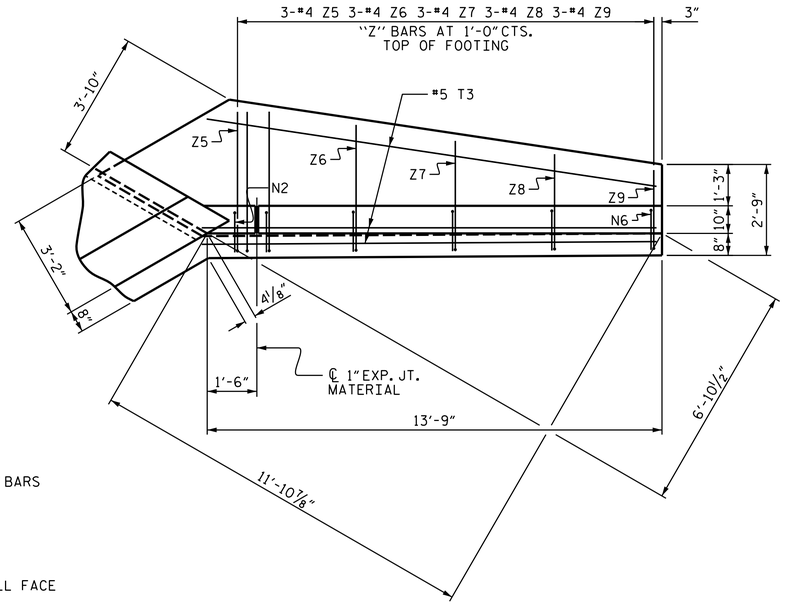
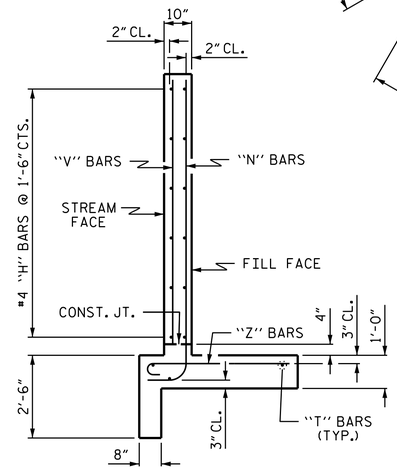


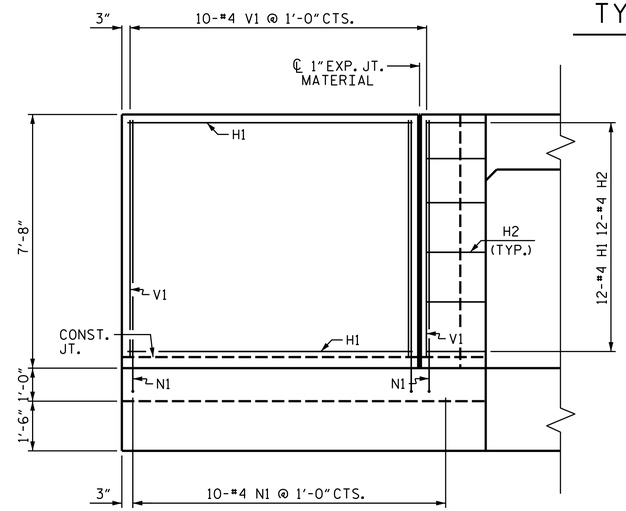
PLAN W1



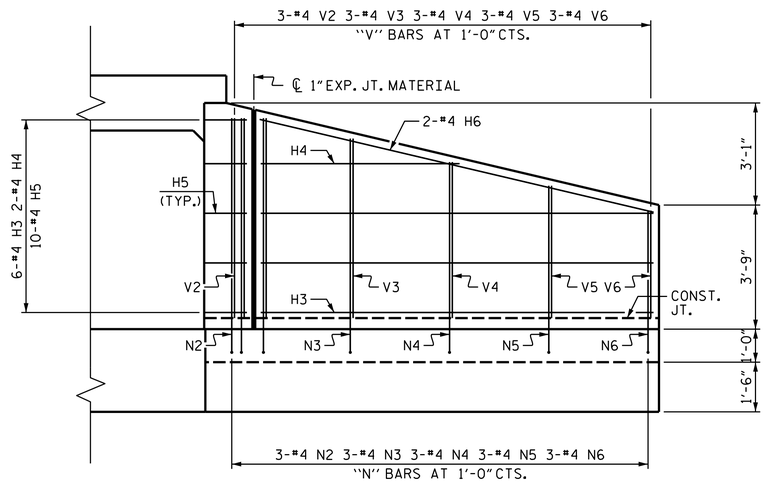
PLAN W2



TYPICAL WING SECTION

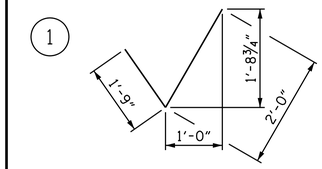


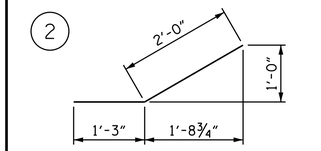
ELEVATION W1

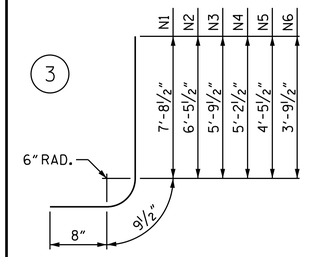


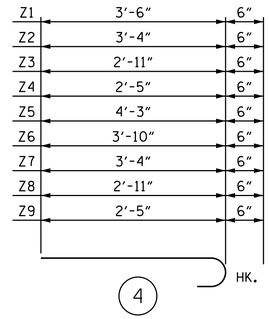
ELEVATION W2

BAR TYPES









ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	12	#4	STR	8'-7"	69
H2	12	#4	1	3'-9"	30
H3	6	#4	STR	11'-10"	47
H4	2	#4	STR	6'-0"	8
H5	10	#4	2	3'-3"	22
H6	2	#4	STR	12'-1"	16
N1	10	#4	3	9'-2"	61
N2	3	#4	3	7'-11"	16
N3	3	#4	3	7'-3"	15
N4	3	#4	3	6'-8"	13
N5	3	#4	3	5'-11"	12
N6	3	#4	3	5'-3"	11
T1	2	#5	STR	11'-0"	23
T2	1	#5	STR	8'-0"	8
T3	3	#5	STR	13'-9"	43
V1	10	#4	STR	7'-2"	48
V2	3	#4	STR	6'-0"	12
V3	3	#4	STR	5'-4"	11
V4	3	#4	STR	4'-8"	9
V5	3	#4	STR	4'-0"	8
V6	3	#4	STR	3'-3"	7
Z1	1	#4	4	4'-0"	3
Z2	3	#4	4	3'-10"	8
Z3	3	#4	4	3'-5"	7
Z4	3	#4	4	2'-11"	6
Z5	3	#4	4	4'-9"	10
Z6	3	#4	4	4'-4"	9
Z7	3	#4	4	3'-10"	8
Z8	3	#4	4	3'-5"	7
Z9	3	#4	4	2'-11"	6

REINFORCING STEEL FOR 2 WINGS 553 LBS

CLASS A CONCRETE

2 WINGS	9.3	CY
1 HEADWALL	0.3	CY
1 END CURTAIN WALL	0.3	CY
2 EDGE BEAMS	0.5	CY
TOTAL	10.4	CY

NOTES:

G1 BARS IN HEADWALL ARE INCLUDED WITH THE BARREL REINFORCING STEEL.

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.

PROJECT NO. R-2307B

IREDELL COUNTY

STATION: 783+89.30 -L-

SHEET 6 OF 6

NORTH CAROLINA PROFESSIONAL SEAL 20125 ENGINEER Marshall G. Check, Jr.

Digitally signed by Marshall G. Check, Jr.
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8/1/2024 | 2:17 PM EDT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
706 HILLSBOROUGH STREET
SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

WINGS FOR CONCRETE BOX CULVERT

H = 6'-0" SLOPE = 2:1

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

DRAWN BY :	STM	DATE :	02/24
CHECKED BY :	MGC	DATE :	04/24
DESIGN ENGINEER OF RECORD:	STM	DATE :	01/24

5/8/2024
X:\NCDOT\R-2307B\Structures\RCBC at Sta. 783 + 89.30 -L-\Final Plans\DGNs\411_011_R-2307B_SMU_C06.dgn
User:smassinople

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	AASHTO (CURRENT)
LIVE LOAD	SEE PLANS
IMPACT ALLOWANCE	SEE AASHTO
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 AASHTO
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 2024 "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 ¾" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1½" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A ¼" 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 ¼" 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 ⅞" ∅ SHEAR STUDS FOR THE ¾" ∅ STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - ⅞" ∅ STUDS FOR 4 - ¾" ∅ STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF ⅞" ∅ STUDS ALONG THE BEAM AS SHOWN FOR ¾" ∅ STUDS BASED ON THE RATIO OF 3 - ⅞"∅ STUDS FOR 4 - ¾" ∅ 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" 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. FINS 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.