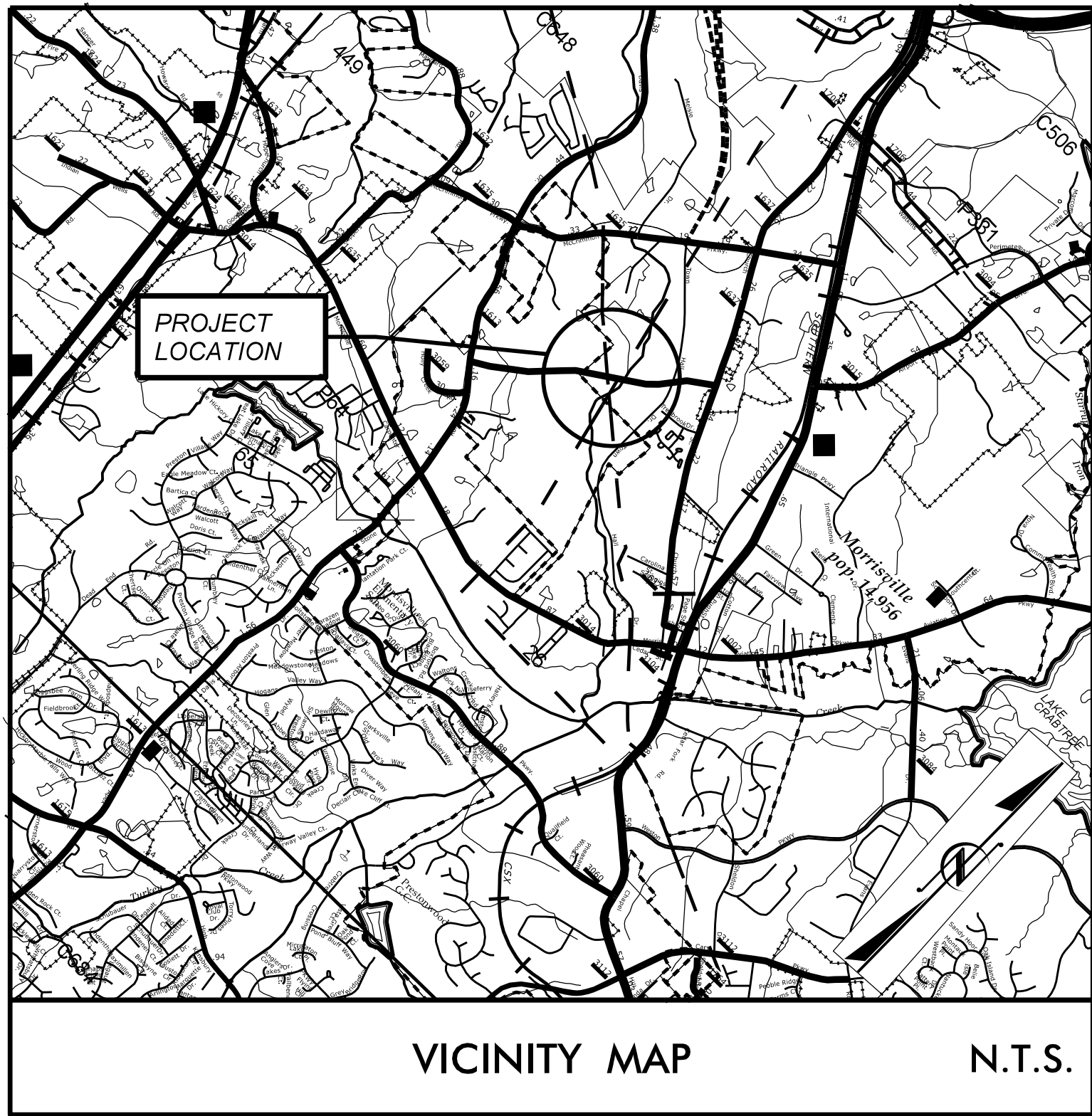


TIP PROJECT: HL-0033

CONTRACT: C204765

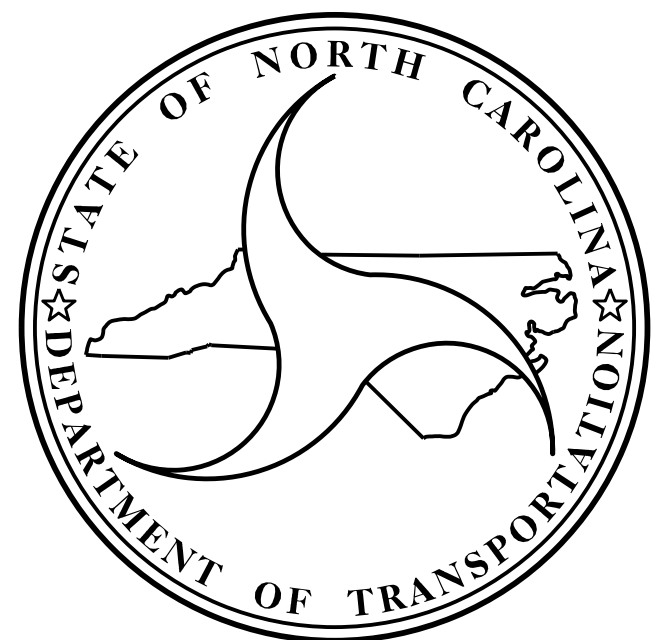
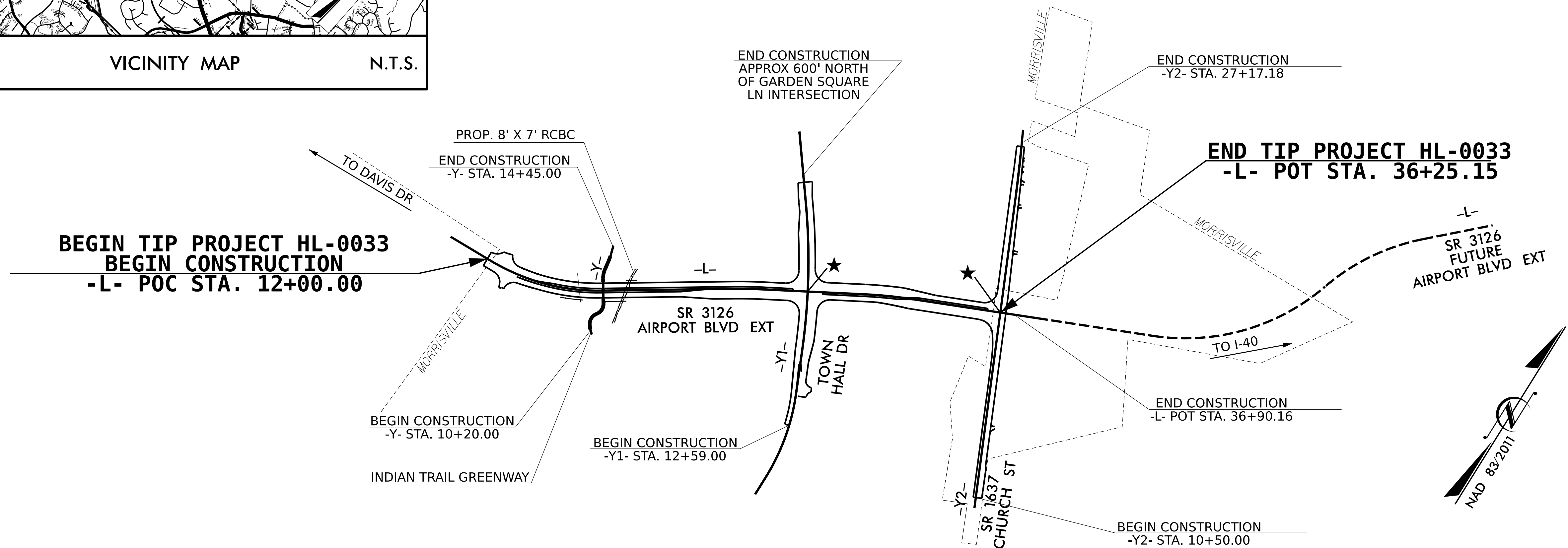


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
WAKE COUNTY

**LOCATION: EXTENSION OF AIRPORT BOULEVARD (SR 3126)
FROM GARDEN SQUARE LANE TO CHURCH ST (SR 1637)
IN MORRISVILLE**

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HL-0033	1	
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
36249.4033	N/A	PE	
49618.2.1	N/A	R/W	
49618.2.2	N/A	UTIL	
49618.3.1	3126001	CONST.	



DESIGN DATA

ADT 2026 = 6,450
ADT 2046 = 17,600
K = 11 %
D = 60 %
T = 4 % *
V = 50 MPH
* (TTST 1 %, DUAL 3 %)

FUNC CLASS=MINOR ARTERIAL
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT HL-0033 = 0.459 MILES

TOTAL LENGTH TIP PROJECT HL-0033 = 0.459 MILES

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

2024 STANDARD SPECIFICATIONS

LETTING DATE :
FEBRUARY 17, 2026

KRISTY ALFORD, P.E.
PROJECT ENGINEER

FRANCESCA LEA, P.E.
PROJECT DESIGN ENGINEER

DESIGN DISCHARGE _____ = 307 CFS
FREQUENCY OF DESIGN FLOOD _____ = 25 YRS.
DESIGN HIGH WATER ELEVATION _____ = 328.7 FT.
DRAINAGE AREA _____ = 0.24 SQ. MI.
BASE DISCHARGE (Q100) _____ = 312 CFS
BASE HIGH WATER ELEVATION _____ = 328.7 FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE _____ = 488 CFS
FREQUENCY OF OVERTOPPING FLOOD _____ = 500 YRS+.
OVERTOPPING FLOOD ELEVATION _____ = * 330.8 FT.

* ROADWAY SAG AT STA. 18+42 -L-, EL. 330.70'
(LT. SHOULDER POINT)

OVERTOPPING DISCHARGE _____ = 488 CFS
FREQUENCY OF OVERTOPPING FLOOD ____ = 500 YRS+
OVERTOPPING FLOOD ELEVATION _____ = * 330.8 FT.
* ROADWAY SAG AT STA. 18+42 -L-, EL. 330.70'
(L.T. SHOULDER POINT)

GRADE POINT EL. @
STA. 18+78.00 -L- _____ = 330.89'

BED ELEVATION @
STA. 18-78.00 -L- _____ = 320.32'

ROADWAY SLOPES _____ = 2:1

CULVERT EXCAVATION	LUMP SUM
FOUNDATION CONDITIONING MATERIAL _____	117.5 TONS
CLASS A CONCRETE	
BARREL @ 0.825 CY/FT _____	103.1 C.Y.
OUTLET WINGS ETC. _____	22.6 C.Y.
TOTAL _____	125.7 C.Y.
REINFORCING STEEL	
BARREL _____	18,402 LBS.
WINGS ETC. _____	1,321 LBS.
TOTAL _____	19,723 LBS.

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 $f_y = 60\text{ksi}$.



ACCOUNTS : 1915 - 1918 IN 25 25 - 1 FEBRUARY - 1918

REGION: FTLL (MAMA) 4.00 FT

DESIGN FILL (MIN) ----- 2.73 FT

AT THE CONTRACTOR'S OPTION HE MAY SUBMIT TO THE ENGINEER FOR APPROVAL

FOR SUBMITTAL OF WORKING DRAWINGS SEE SPECIAL PROVISIONS

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	500	#4	1	5'-10"	1948
A2	500	#4	1	5'-6"	1837
A100	359	#5	STR.	8'-11"	3339
A101	8	#5	STR.	6'-6"	54
A102	8	#5	STR.	4'-2"	35
A200	359	#5	STR.	8'-11"	3339
A201	8	#5	STR.	6'-6"	54
A202	8	#5	STR.	4'-2"	35
A300	60	#4	STR.	8'-11"	357
A301	2	#4	STR.	5'-4"	7
A400	60	#4	STR.	8'-11"	357
A401	2	#4	STR.	5'-4"	7
B1	250	#4	STR.	7'-10"	1308
B2	500	#4	STR.	6'-4"	2115
C1	144	#4	STR.	33'-0"	3174
D1	8	#6	STR.	1'-3"	15
E1	8	#5	STR.	3'-3"	28
E2	8	#5	STR.	4'-0"	34
G1	4	#4	STR.	10'-4"	28
S2	12	#8	STR.	10'-4"	331
REINFORCING STEEL =					18,402 LBS.

BAR DIMENSIONS ARE OUT TO OUT

BAR	SIZE	SPLICE LENGTH
B1	#4	1'-10"
C1	#4	2'-5"

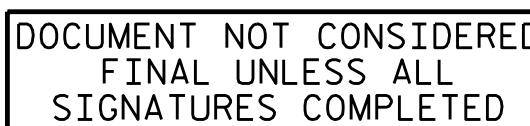
WAKE

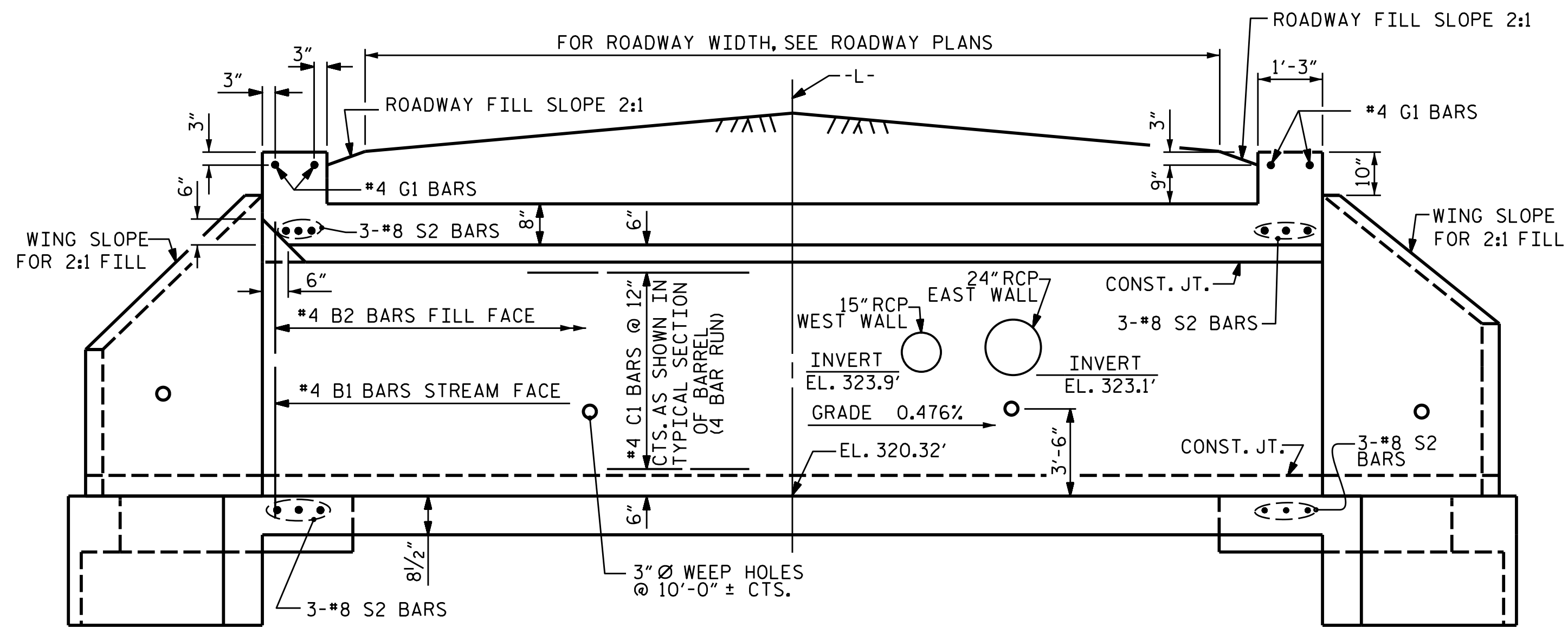
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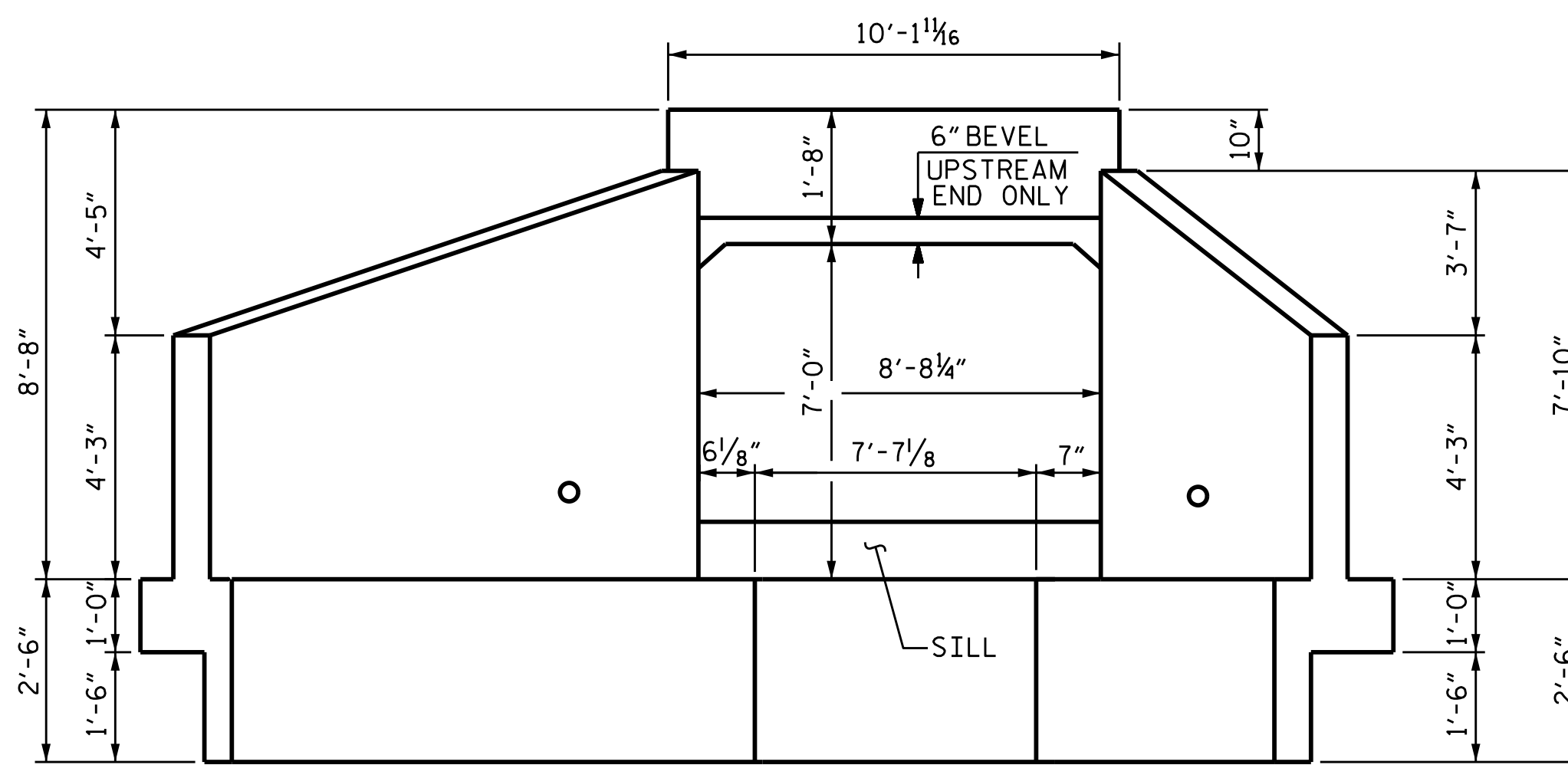
ULINA

sla ua

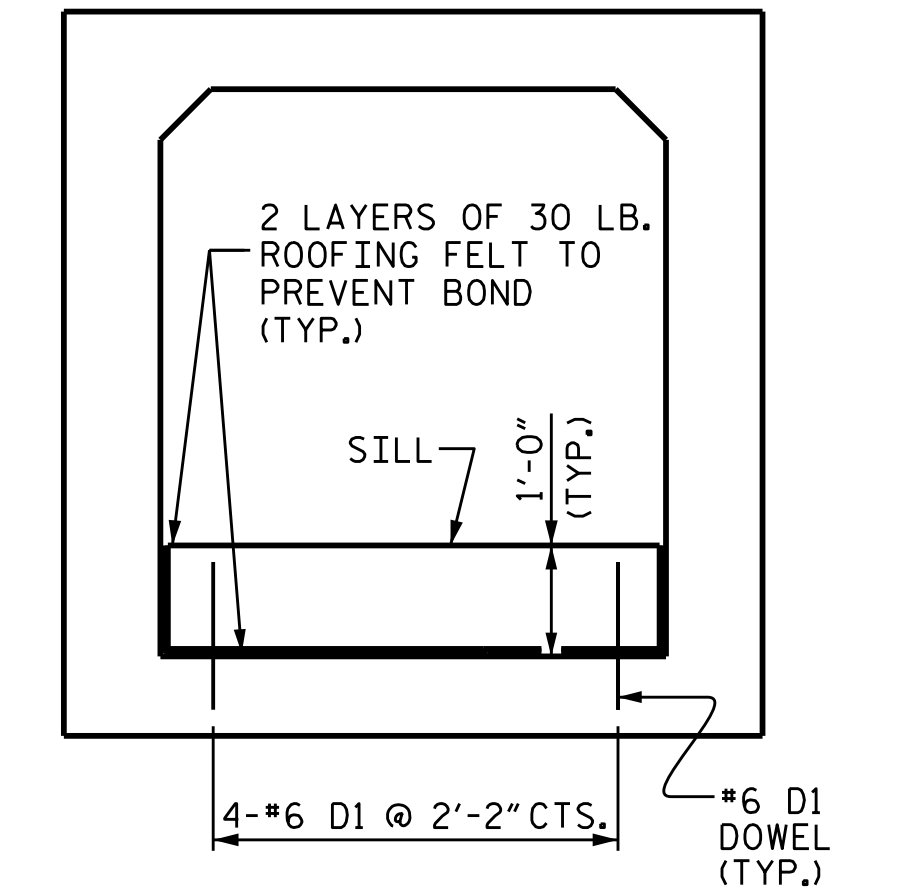




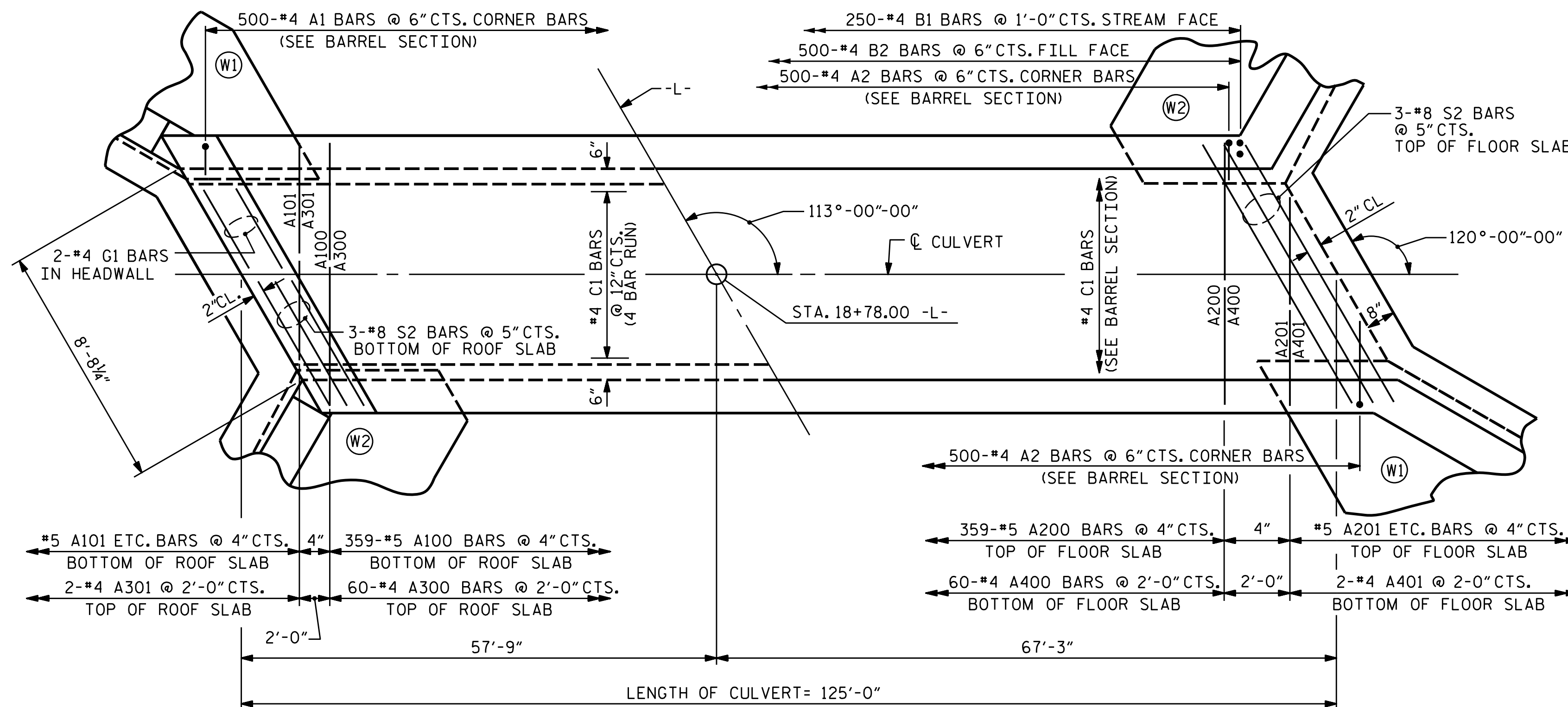
CULVERT SECTION NORMAL TO ROADWAY



END ELEVATION NORMAL TO SKEW

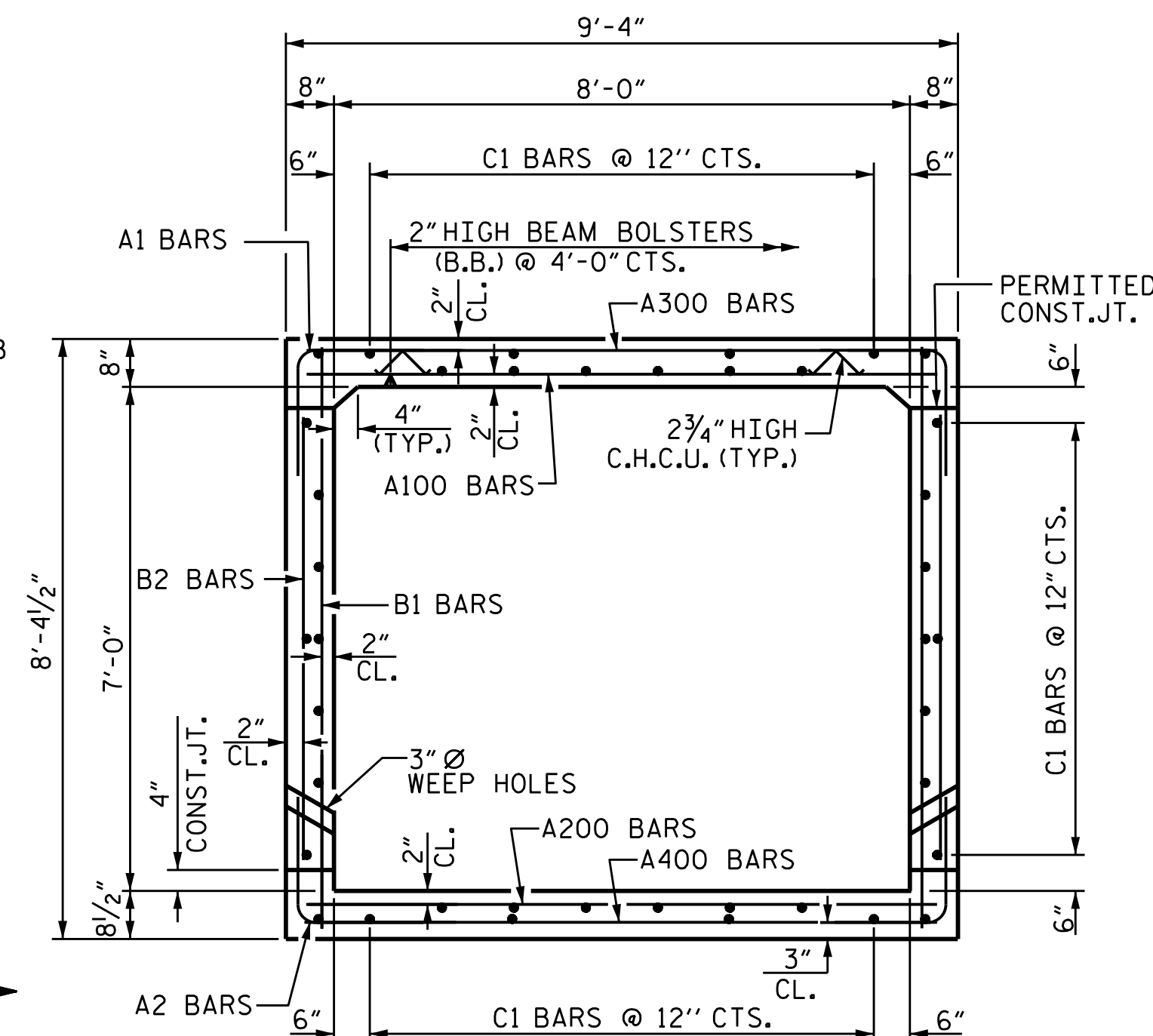


ELEVATION
LOOKING UPSTREAM
INSTALL 1 FT CONCRETE SILL
(3 FT OFFSET FROM INLET AND OUTLET FACE)



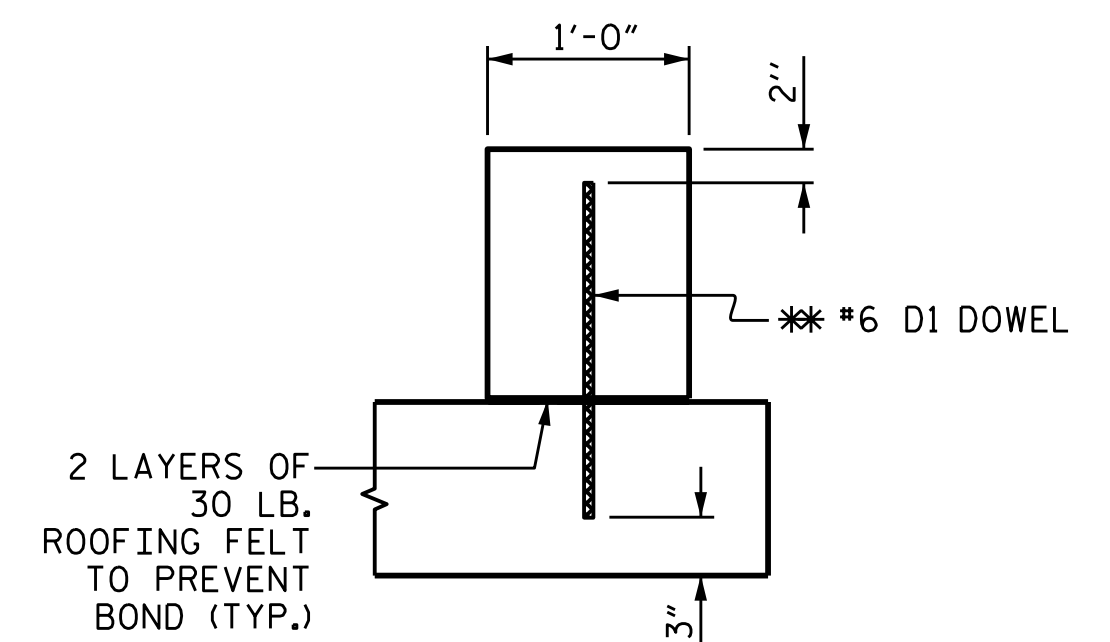
PART PLAN - ROOF SLAB

PART PLAN - FLOOR SLAB



RIGHT ANGLE SECTION OF BARREL

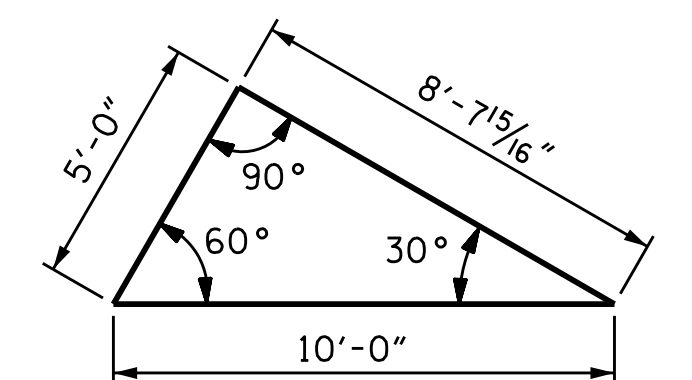
THERE ARE 36 "C" BARS IN SECTION OF BARREL



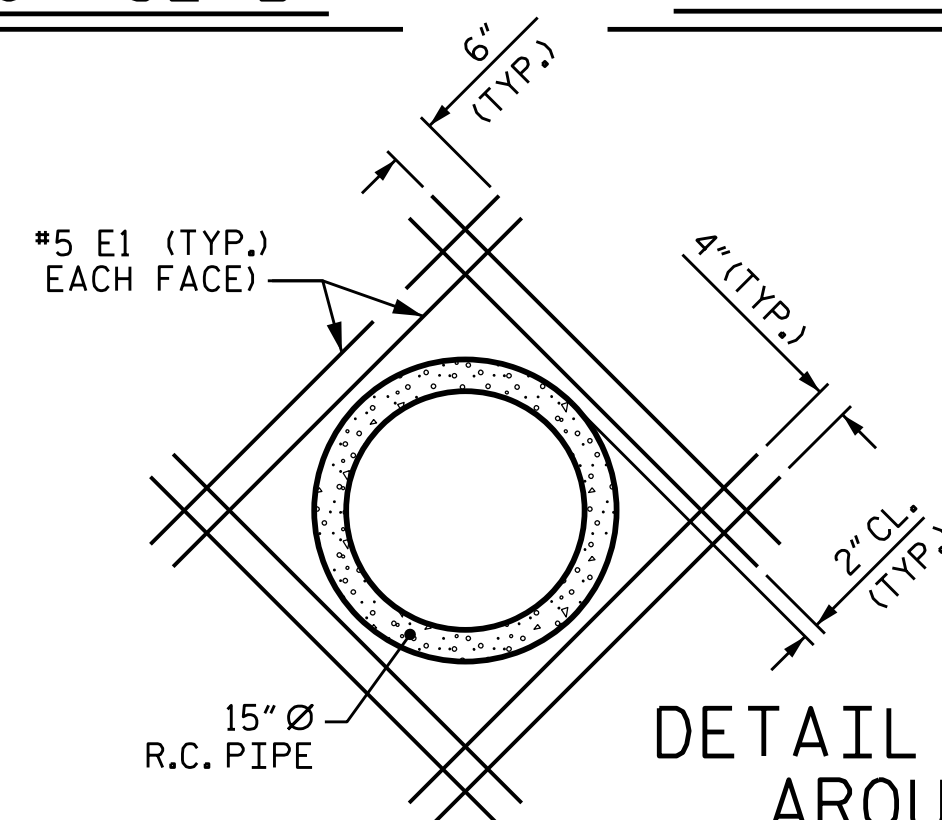
SECTION THROUGH SILL

SILL DETAILS

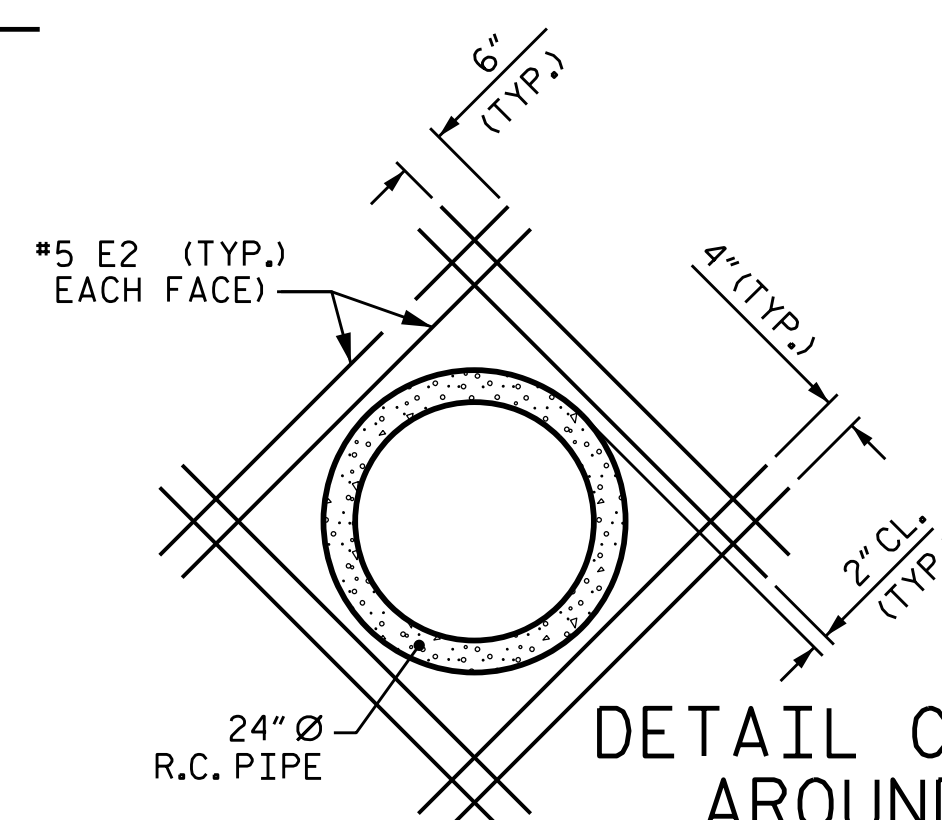
* DOWELS MAY BE PUSHED INTO GREEN CONCRETE AFTER SLAB HAS BEEN FLOAT FINISHED.



SKEW TRIANGLE



DETAIL OF REINFORCING AROUND 15" Ø PIPE



DETAIL OF REINFORCING AROUND 24" Ø PIPE

FOR PIPE THRU EXTERIOR WALL, FIELD CUT AND BEND "B" AND "C" BARS AS NEEDED TO CLEAR PIPE

FOR PIPE THRU EXTERIOR WALL, FIELD CUT AND BEND "B" AND "C" BARS AS NEEDED TO CLEAR PIPE

DRAWN BY : O. T. NGUYEN DATE : 11/21
CHECKED BY : W.D. REAMS DATE : 01/22
DESIGN ENGINEER OF RECORD : W.D. REAMS DATE : 01/22

11/25/2025
S:\DPG\Division5\HL-0033\Final Plans\410_003_HL0033_SMU_CU_S02_910000.dgn
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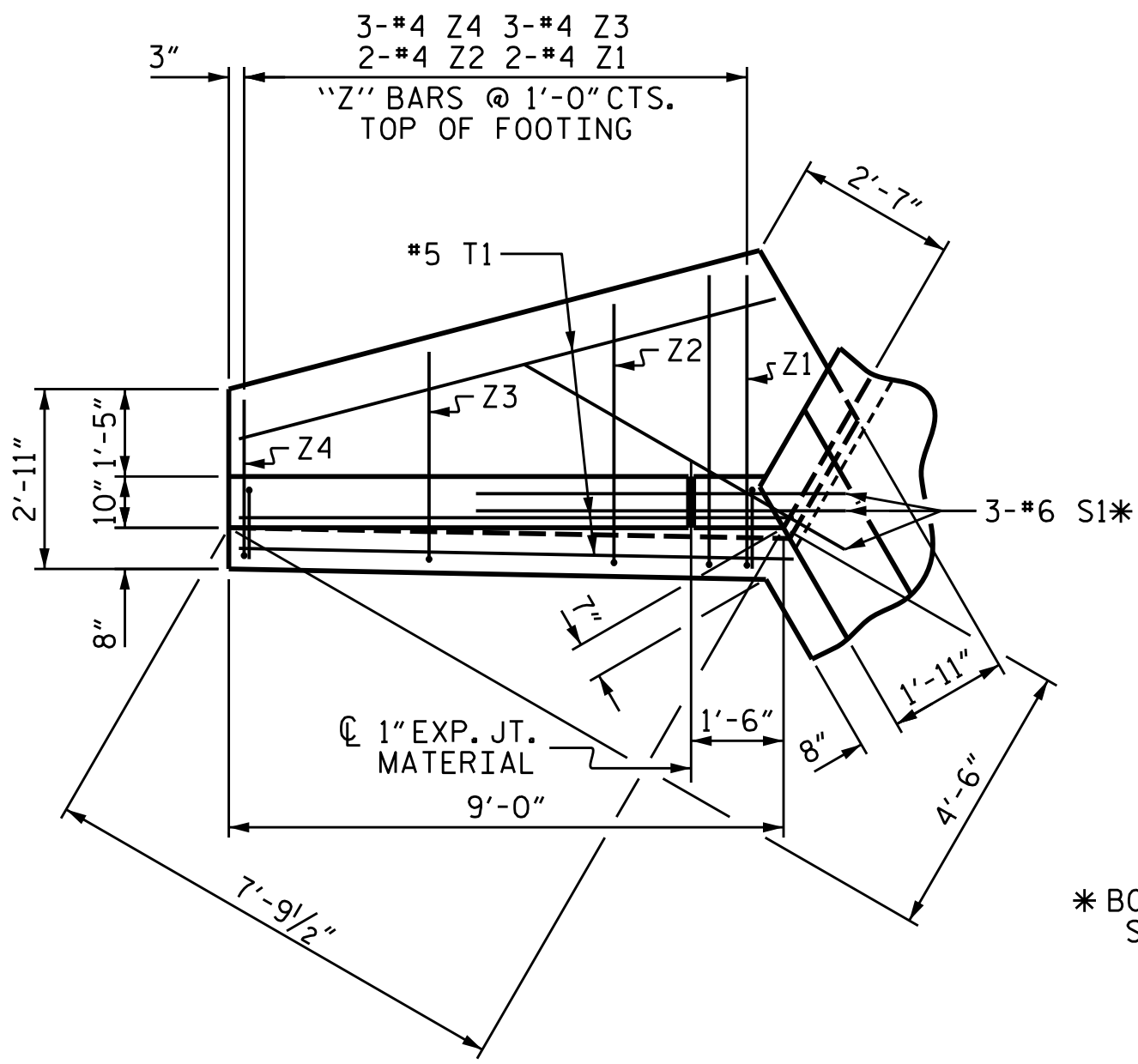


DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

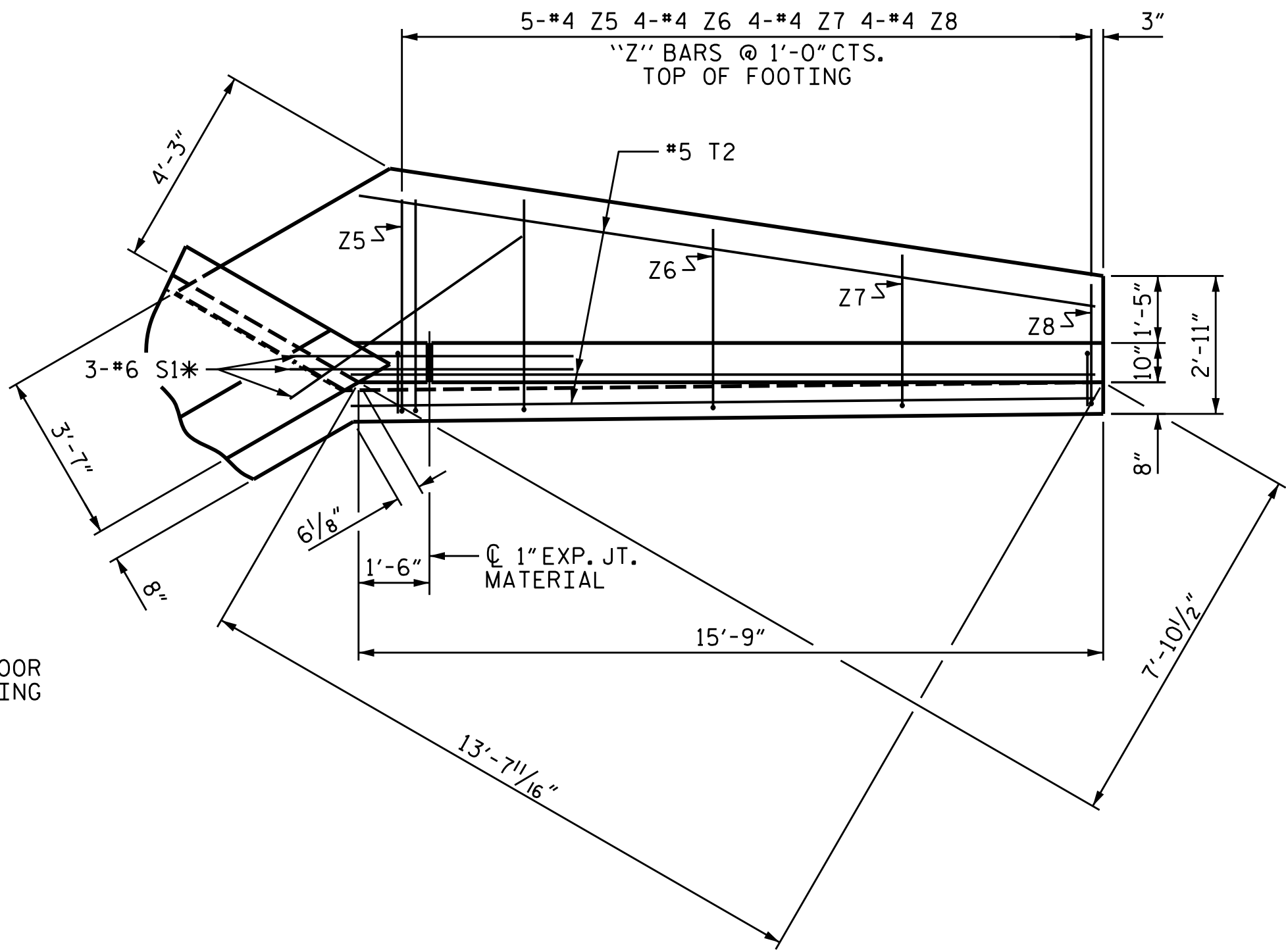
PROJECT NO. HL-0033
WAKE COUNTY
STATION: 18+78.00 -L-

SHEET 2 OF 4

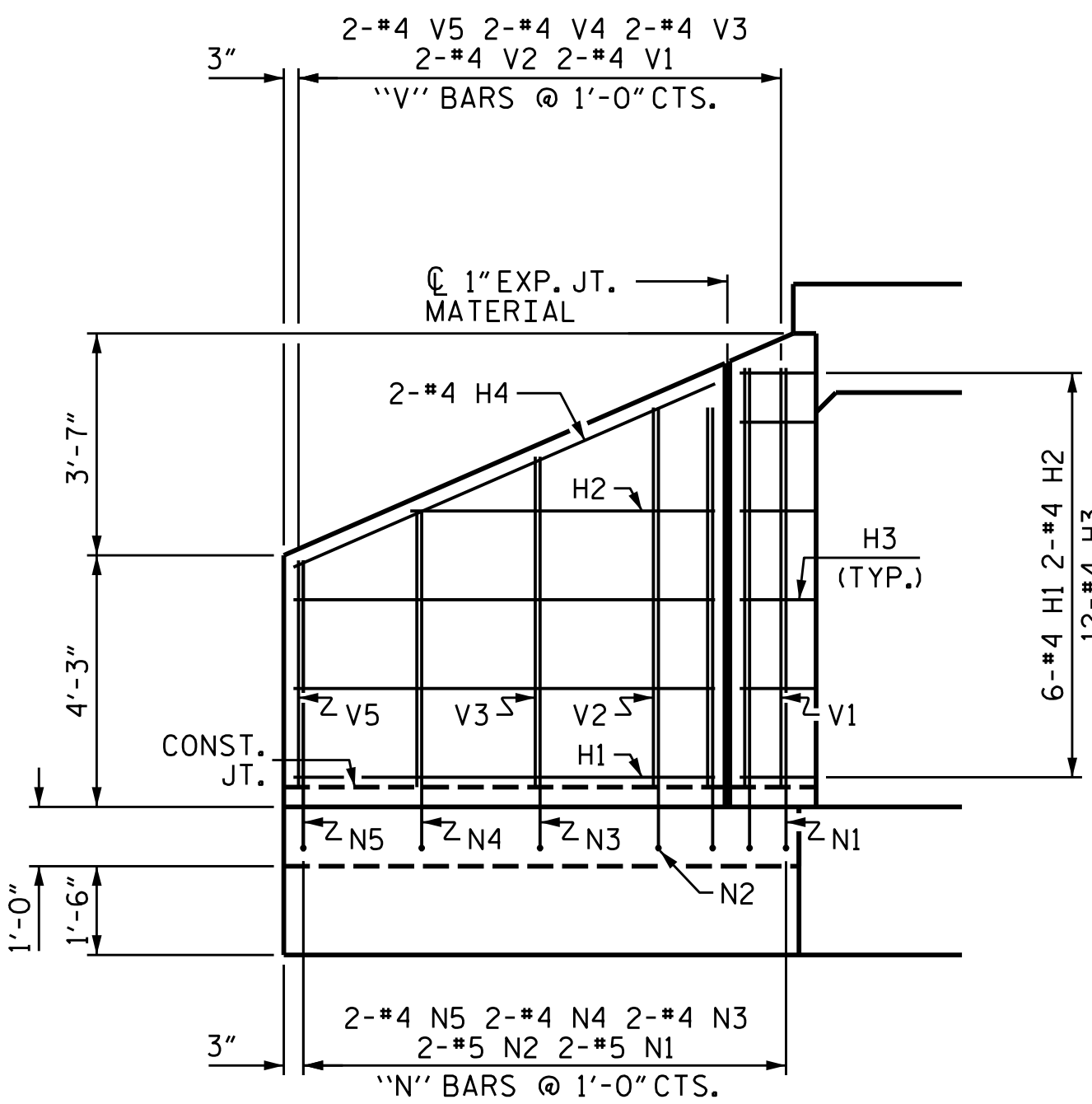
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SINGLE 8 FT. X 7 FT. CONCRETE BOX CULVERT 113° SKEW					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. C1-2					TOTAL SHEETS 4



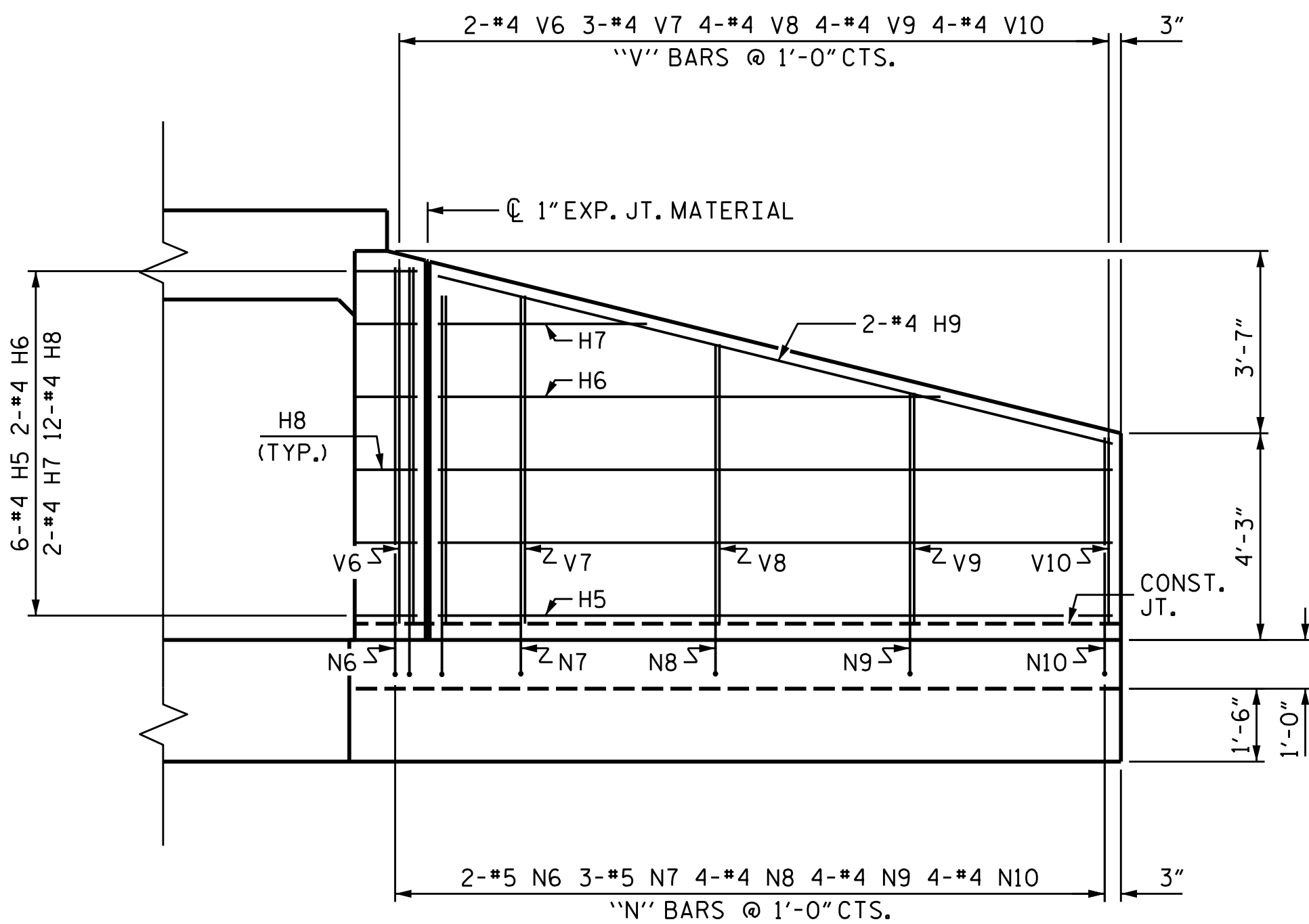
PLAN W2



PLAN W1



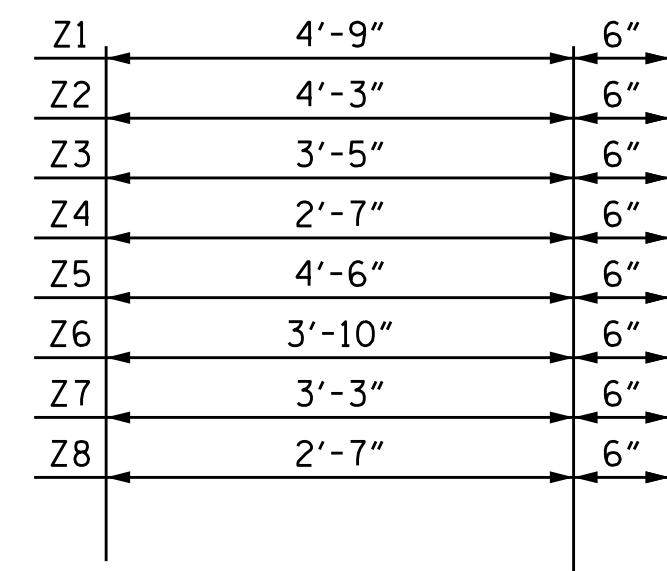
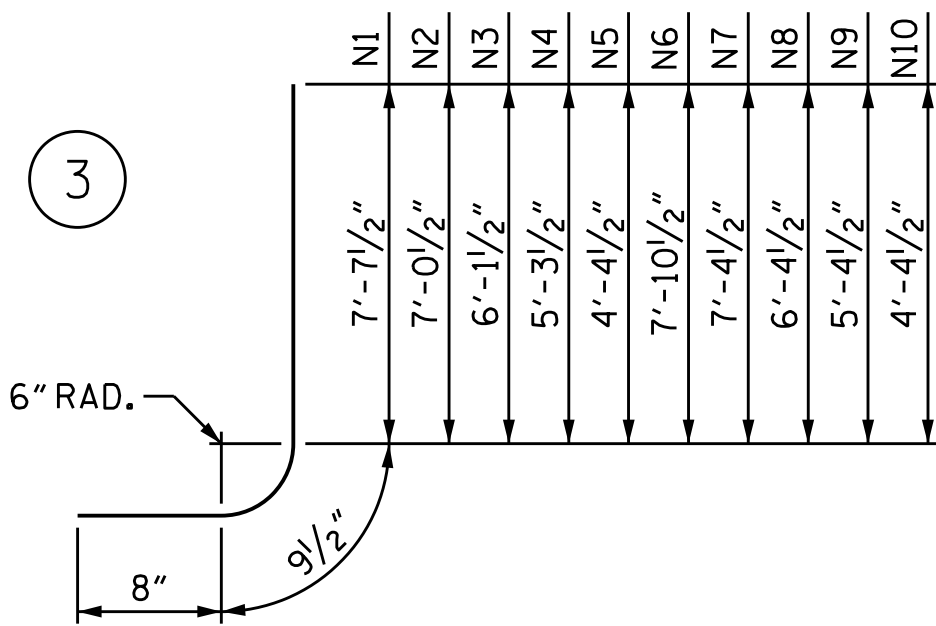
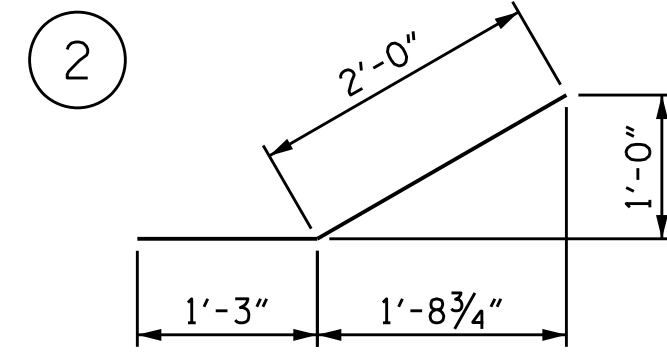
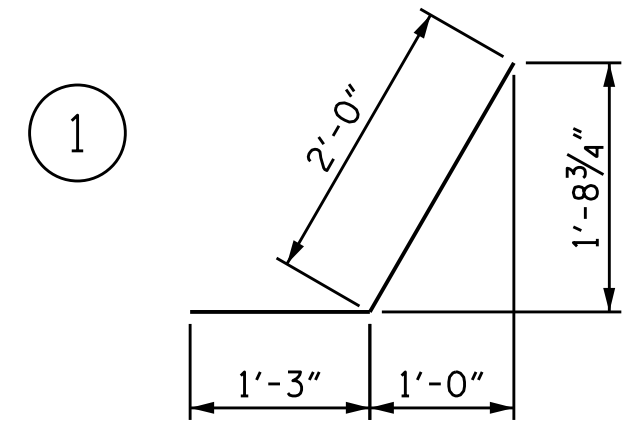
ELEVATION W2



ELEVATION W1

BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT.



4

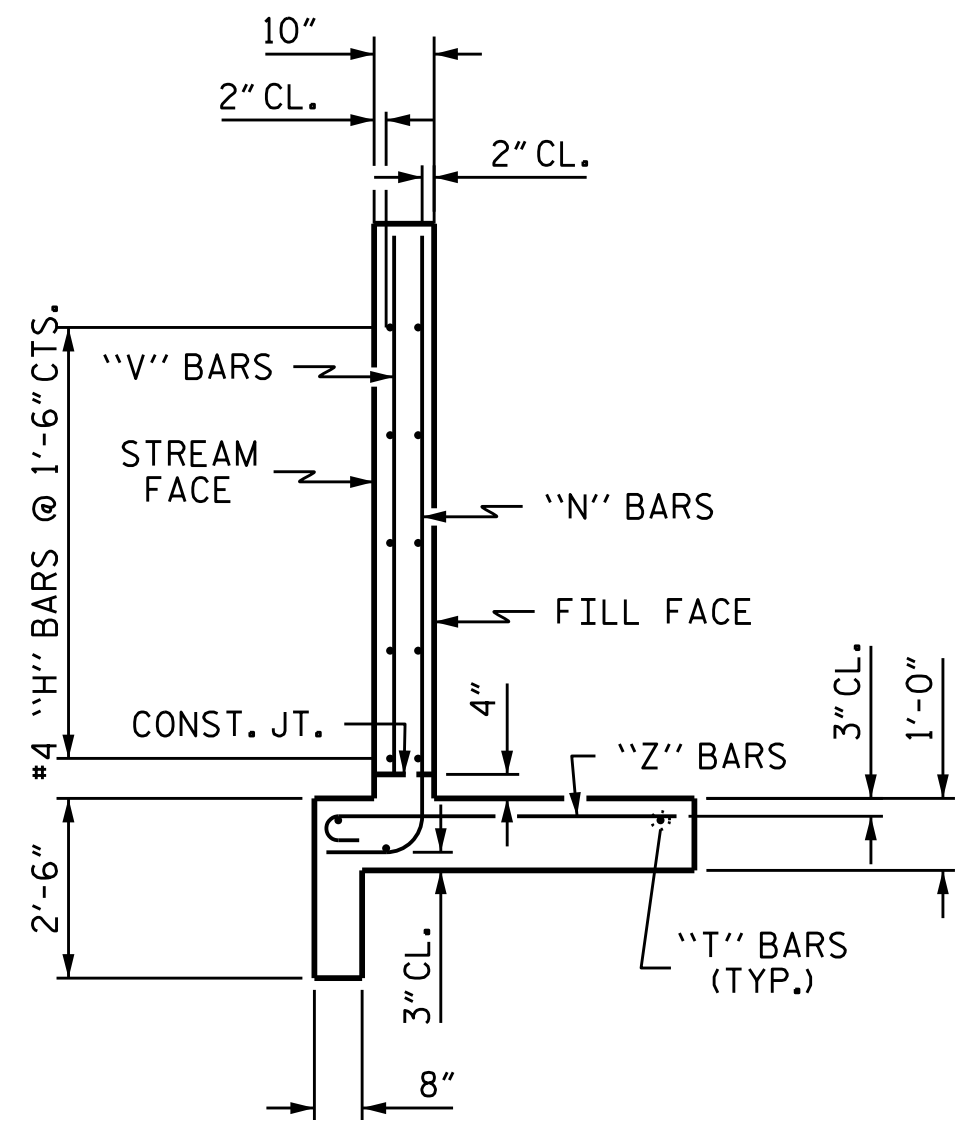
BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	12	#4	STR	7'-1"	57
H2	4	#4	STR	5'-2"	14
H3	24	#4	1	3'-3"	52
H4	4	#4	STR	7'-9"	21
H5	12	#4	STR	13'-10"	111
H6	4	#4	STR	10'-4"	28
H7	4	#4	STR	4'-3"	11
H8	24	#4	2	3'-3"	52
H9	4	#4	STR	14'-3"	38
N1	4	#5	3	9'-1"	38
N2	4	#5	3	8'-6"	35
N3	4	#4	3	7'-7"	20
N4	4	#4	3	6'-9"	18
N5	4	#4	3	5'-10"	16
N6	4	#5	3	9'-4"	39
N7	6	#5	3	8'-10"	55
N8	8	#4	3	7'-10"	42
N9	8	#4	3	6'-10"	37
N10	8	#4	3	5'-10"	31

S1	12	#6	STR	6'-0"	108
T1	6	#5	STR	9'-0"	56
T2	6	#5	STR	15'-9"	99
V1	4	#4	STR	7'-1"	19
V2	4	#4	STR	6'-5"	17
V3	4	#4	STR	5'-7"	15
V4	4	#4	STR	4'-8"	12
V5	4	#4	STR	3'-10"	10
V6	4	#4	STR	7'-4"	20
V7	6	#4	STR	6'-9"	27
V8	8	#4	STR	5'-9"	31
V9	8	#4	STR	4'-9"	25
V10	8	#4	STR	3'-10"	20

Z1	4	#4	4	5'-3"	14
Z2	4	#4	4	4'-9"	13
Z3	6	#4	4	3'-11"	16
Z4	6	#4	4	3'-1"	12
Z5	10	#4	4	5'-0"	33
Z6	8	#4	4	4'-4"	23
Z7	8	#4	4	3'-9"	20
Z8	8	#4	4	3'-1"	16

REINFORCING STEEL FOR 4 WINGS				1321 LBS
CLASS A CONCRETE				
4 WINGS				19.8 CY
2 HEADWALLS				1.1 CY
2 END CURTAIN WALLS				1.1 CY
2 SILLS				0.6 CY
TOTAL				22.6 CY



TYPICAL WING SECTION

PROJECT NO. HL-0033
WAKE COUNTY
STATION: 18+78.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD WINGS
FOR
CONCRETE BOX CULVERT
H = 7'-0" SLOPE = 2:1
120° SKEW

REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					C1-3
					TOTAL SHEETS
					4



ASSEMBLED BY :	O. T. NGUYEN	DATE :	11/21
CHECKED BY :	W. D. REAMS	DATE :	01/22
DRAWN BY :	CCJ	11/99	
CHECKED BY :	RWW	03/00	

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 × 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	1.09	--	1.75	1.56	1	TOP SLAB	4.33	1.09	1	BOTTOM SLAB	0.84	
	HL-93 (OPERATING)	N/A		1.42	--	1.35	2.03	1	TOP SLAB	4.33	1.42	1	BOTTOM SLAB	0.84	
	HS-20 (INVENTORY)	36.000	⬡2	1.19	42.86	1.75	1.56	1	TOP SLAB	4.33	1.19	1	TOP SLAB	0.81	
	HS-20 (OPERATING)	36.000		1.54	55.57	1.35	2.03	1	TOP SLAB	4.33	1.54	1	TOP SLAB	0.81	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH		2.16	29.18	1.40	2.84	1	TOP SLAB	4.33	2.16	1	TOP SLAB	0.81	
		SNGARBS2		2.03	40.61	1.40	2.66	1	TOP SLAB	4.33	2.03	1	TOP SLAB	0.81	
		SNAGRIS2		2.16	47.56	1.40	2.84	1	TOP SLAB	4.33	2.16	1	TOP SLAB	0.81	
		SNCOTTS3	⬡3	1.37	37.28	1.40	1.99	1	TOP SLAB	4.12	1.37	1	BOTTOM SLAB	0.84	
		SNAGGRS4		1.80	62.71	1.40	2.57	1	TOP SLAB	4.33	1.80	1	BOTTOM SLAB	0.84	
		SNS5A		1.63	57.95	1.40	2.37	1	TOP SLAB	4.12	1.63	1	BOTTOM SLAB	0.84	
		SNS6A		1.63	65.12	1.40	2.37	1	TOP SLAB	4.12	1.63	1	BOTTOM SLAB	0.84	
		SNS7B		1.63	68.46	1.40	2.37	1	TOP SLAB	4.12	1.63	1	BOTTOM SLAB	0.84	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3		2.16	71.34	1.40	2.84	1	TOP SLAB	4.33	2.16	1	TOP SLAB	0.81	
		TNT4A		1.63	53.91	1.40	2.37	1	TOP SLAB	4.12	1.63	1	BOTTOM SLAB	0.84	
		TNT6A		1.63	67.81	1.40	2.37	1	TOP SLAB	4.12	1.63	1	BOTTOM SLAB	0.84	
		TNT7A		1.63	68.46	1.40	2.37	1	TOP SLAB	4.12	1.63	1	BOTTOM SLAB	0.84	
		TNT7B		1.63	68.46	1.40	2.37	1	TOP SLAB	4.12	1.63	1	BOTTOM SLAB	0.84	
		TNAGRIT4		1.55	66.78	1.40	2.26	1	TOP SLAB	4.12	1.55	1	BOTTOM SLAB	0.84	
		TNAGT5A		1.59	71.57	1.40	2.29	1	TOP SLAB	4.55	1.59	1	BOTTOM SLAB	0.84	
		TNAGT5B		1.63	73.35	1.40	2.37	1	TOP SLAB	4.12	1.63	1	BOTTOM SLAB	0.84	
	EV2		1.53	44.01	1.30	2.01	1	TOP SLAB	4.33	1.53	1	TOP SLAB	0.81		
	EV3	⬡4	1.19	51.05	1.30	1.73	1	TOP SLAB	4.12	1.19	1	BOTTOM SLAB	0.84		

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	0.5 OR 0.9
ES	1.35	0.5 OR 0.9
LS	1.75	0.00
WA	1.00	0.00

NOTE:
RATING FACTORS ARE BASED ON THE STRENGTH I LIMIT STATE.

⬡ CONTROLLING LOAD RATING

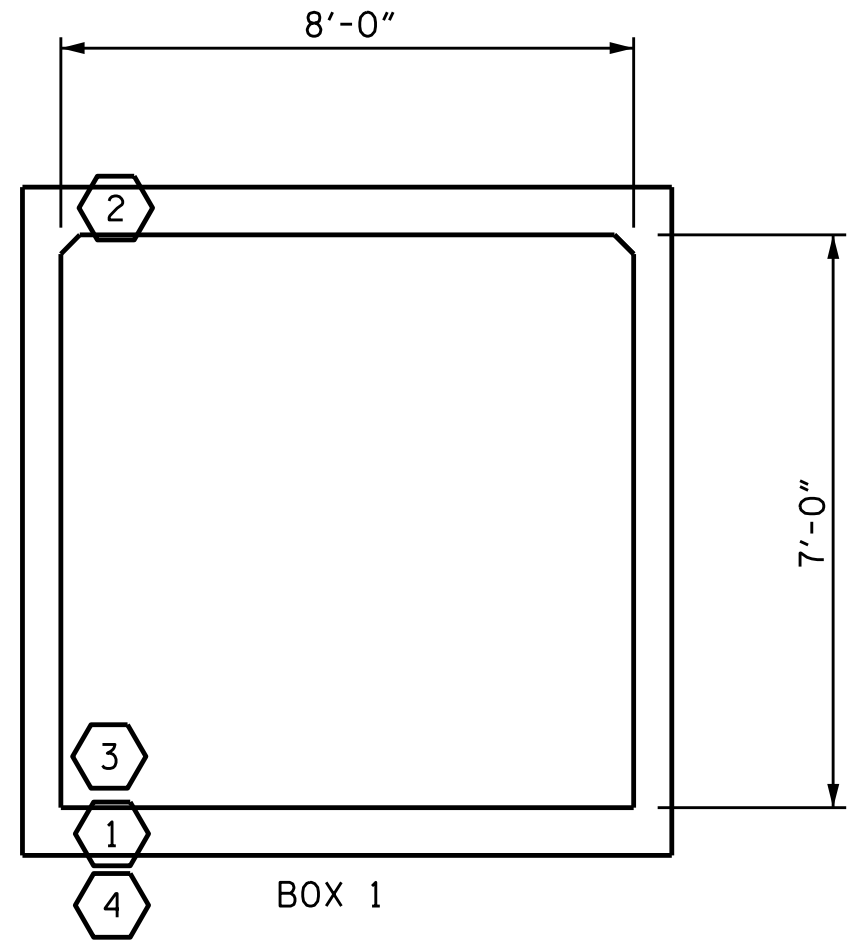
⬡1 DESIGN LOAD RATING (HL-93)

⬡2 DESIGN LOAD RATING (HS-20)

⬡3 LEGAL LOAD RATING **

⬡4 EMERGENCY VEH. LOAD RATING **

** SEE CHART FOR VEHICLE TYPE



LRFR SUMMARY
(LOOKING DOWNSTREAM)

PROJECT NO. HL-0033
WAKE COUNTY
STATION: 18+78.00 -L-

SHEET 4 OF 4



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. C1-4
STANDARD LRFR SUMMARY FOR REINFORCED CONCRETE BOX CULVERTS (NON-INTERSTATE TRAFFIC)						
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 4
1			3			
2			4			

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

ASSEMBLED BY :	O. T. NGUYEN	DATE :	11/21
CHECKED BY :	W. D. REAMS	DATE :	01/22
DRAWN BY :	WMC	7/11	MAA/GM
CHECKED BY :	GM	7/11	MAA/THC

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" Ø SHEAR STUDS FOR THE ¾" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - ⅞" Ø STUDS FOR 4 - ¾" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF ⅞" Ø STUDS ALONG THE BEAM AS SHOWN FOR ¾" Ø STUDS BASED ON THE RATIO OF 3 - ⅞"Ø STUDS FOR 4 - ¾" 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 ⅙" 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 ⅓" 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.