

K:\VDT_Structures\Culvert\NC\01036528 - U-6105\Cad\Dgn\U-6105_rdy_1stdgn

11/6/2025

CONTRACT: C205095

TIP PROJECT: U-6105

STRUCTURES

DESIGN DATA

AADT 2025 = N/A
AADT 2040 = 5,100
K = 4%
D = 51%
T = 3%*
V = 40 MPH

CLASSIFICATION:
MINOR COLLECTOR
* 2% TTST 1% DUAL
SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-6105 = 0.461 MILES
LENGTH STRUCTURE TIP PROJECT U-6105 = 0.006 MILES
TOTAL LENGTH TIP PROJECT U-6105 = 0.467 MILES

-L- USED TO CALCULATE PROJECT LENGTH

PLANS PREPARED FOR
THE NCDOT BY:

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

JULY 26, 2022

LETTING DATE:

FEBRUARY 17, 2026

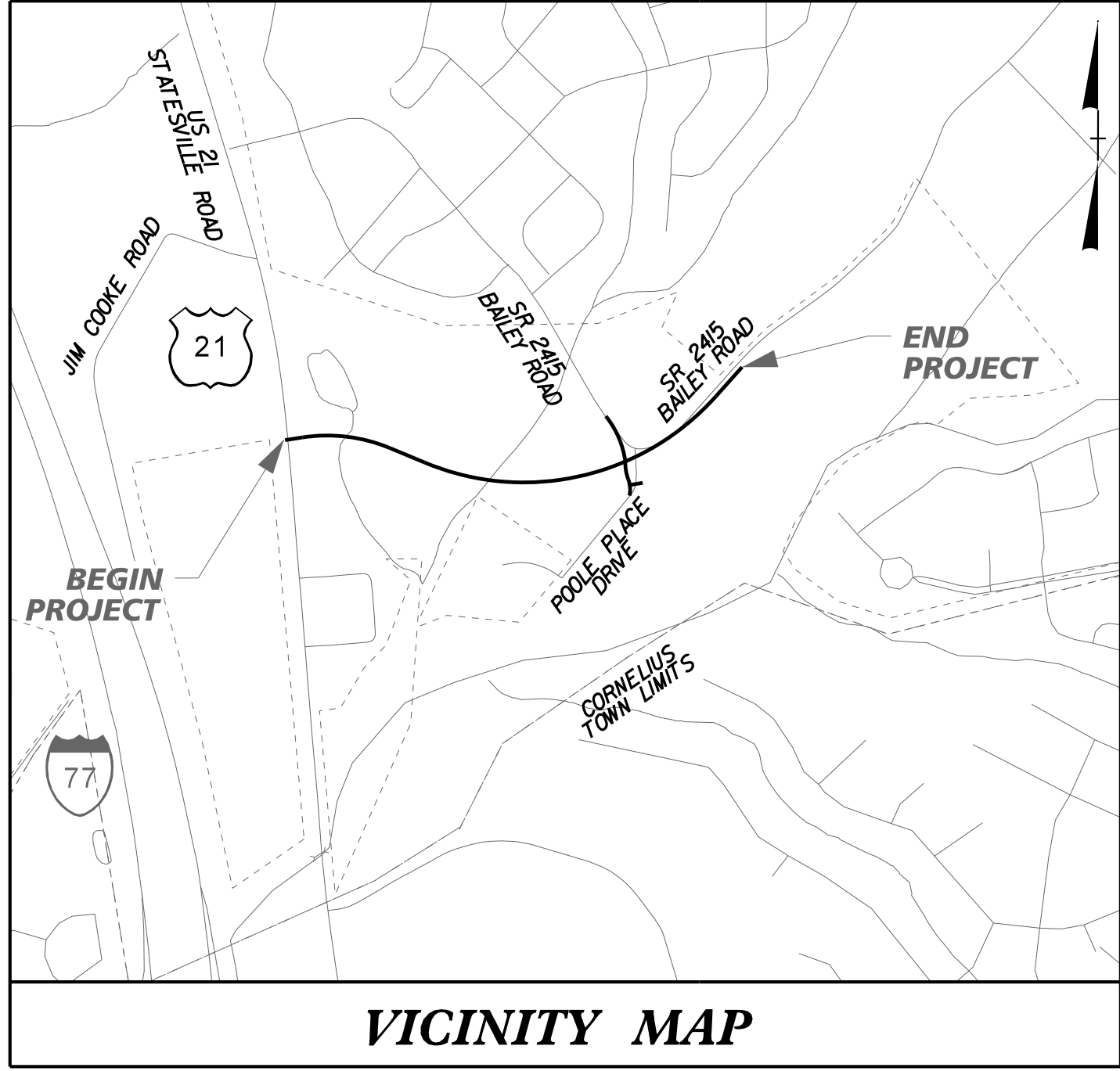
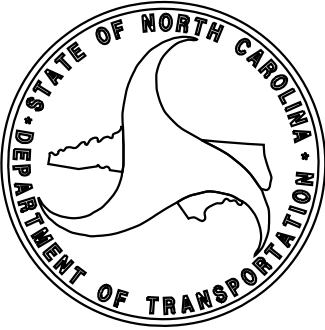
Kimley»Horn

NC LICENSE #F-0102
200 SOUTH TRYON STREET, SUITE 200
CHARLOTTE, NORTH CAROLINA 28202
PHONE: (704) 333-5131

ANDREW L. PHILLIPS, P.E.
PROJECT ENGINEER

BEKAH M. KROL, P.E.
PROJECT DESIGN ENGINEER

YANWEI MA, P.E.
DM-STIP PROJECT MANAGER



VICINITY MAP

Note: Not to Scale

BEGIN TIP PROJECT
U-6105
-L- STA. 10+00.00

BEGIN CONSTRUCTION
-G2- STA. 10+05.00

BEGIN CONSTRUCTION
-G1- STA. 10+00.00

END CONSTRUCTION
-G1- STA. 13+00.00
END CULVERT 1
STA. 21+11.59 -L-

BEGIN CULVERT 1
STA. 20+99.38 -L-

BEGIN CULVERT 2
STA. 21+84.63 -L-

END CULVERT 2
STA. 22+19.13 -L-

END CONSTRUCTION
-Y4- STA. 10+85.00

BEGIN CONSTRUCTION
-Y3- STA. 10+00.00

END TIP PROJECT
U-6105
-L- STA. 34+66.65

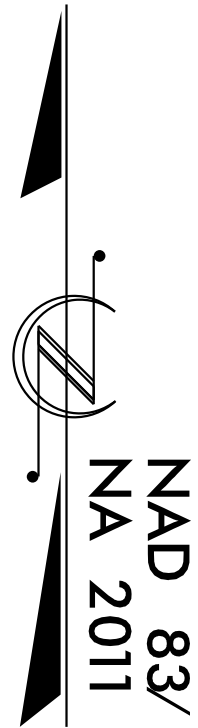
LOCATION: SR 2415 (BAILEY ROAD) FROM POOLE PLACE DRIVE
TO US 21 (STATESVILLE ROAD) IN CORNELIUS
CONSTRUCT ROADWAY ON NEW LOCATION

TYPE OF WORK: GRADING, DRAINAGE, CULVERTS, AND PAVING

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MECKLENBURG COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-6105		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
48173.1.1	STBGDA-2415(001)	PE	
48173.2.1	STBGDA-2415(001)	ROW, UTL	
48173.3.1	STBGDA-2415(001)	CONST	



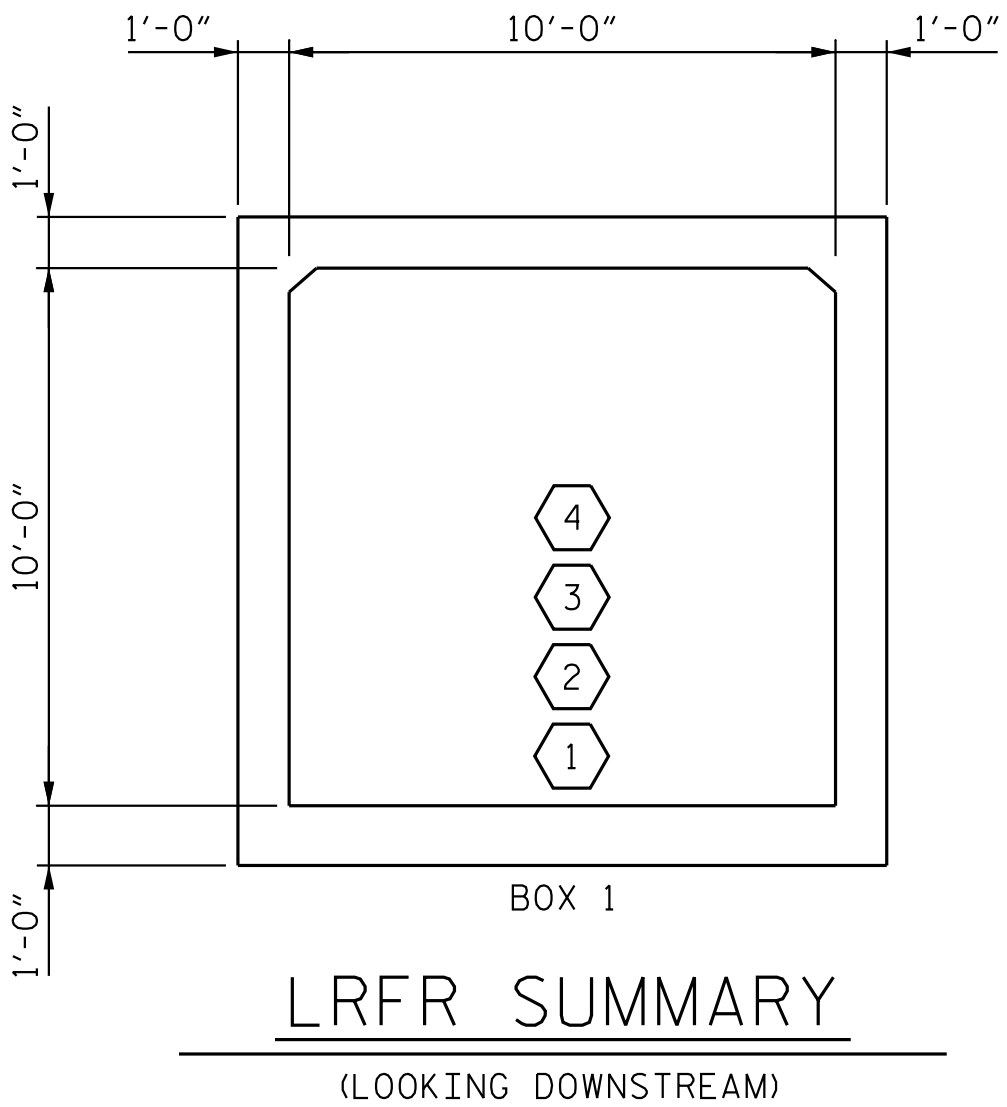
LOAD AND RESISTANCE FACTOR RATING (LRFR)															
SUMMARY FOR REINFORCED CONCRETE BOX CULVERTS															
LOAD TYPE	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING Ⓜ	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE									COMMENT NUMBER
						LIVE-LOAD FACTORS (γLL)	MOMENT				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	HL-93 (INVENTORY)	N/A	Ⓜ1	2.08	--	1.75	2.08	1	BOTTOM SLAB	6.00	3.34	1	BOTTOM SLAB	1.00	
	HL-93 (OPERATING)	N/A	-	2.70	--	1.35	2.70	1	BOTTOM SLAB	6.00	4.33	1	BOTTOM SLAB	1.00	
	HS-20 (INVENTORY)	36.000	Ⓜ2	2.54	91.44	1.75	2.54	1	BOTTOM SLAB	6.00	4.08	1	BOTTOM SLAB	1.00	
	HS-20 (OPERATING)	36.000	-	3.29	118.44	1.35	3.29	1	BOTTOM SLAB	6.00	5.29	1	BOTTOM SLAB	1.00	
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	-	6.07	81.95	1.40	6.07	1	EXTERIOR WALL	1.00	8.90	1	BOTTOM SLAB	11.00	
		SNGARBS2	-	6.07	121.40	1.40	6.07	1	EXTERIOR WALL	1.00	8.33	1	BOTTOM SLAB	1.00	
		SNAGRIS2	-	6.07	133.54	1.40	6.07	1	EXTERIOR WALL	1.00	8.90	1	BOTTOM SLAB	1.00	
		SNCOTTS3	-	2.96	80.66	1.40	2.96	1	BOTTOM SLAB	6.00	4.76	1	BOTTOM SLAB	1.00	
		SNAGGRS4	-	2.94	102.68	1.40	2.94	1	BOTTOM SLAB	6.00	4.75	1	BOTTOM SLAB	1.00	
		SNS5A	-	2.86	101.67	1.40	2.86	1	BOTTOM SLAB	6.00	4.64	1	BOTTOM SLAB	1.00	
		SNS6A	-	2.73	109.06	1.40	2.73	1	BOTTOM SLAB	6.00	4.39	1	BOTTOM SLAB	11.00	
		SNS7B	Ⓜ3	2.73	114.66	1.40	2.73	1	BOTTOM SLAB	6.00	4.39	1	BOTTOM SLAB	1.00	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	-	4.14	136.62	1.40	4.14	1	BOTTOM SLAB	6.00	6.51	1	BOTTOM SLAB	1.00	
		TNT4A	-	3.33	110.14	1.40	3.33	1	BOTTOM SLAB	6.00	5.34	1	BOTTOM SLAB	11.00	
		TNT6A	-	3.06	127.30	1.40	3.06	1	BOTTOM SLAB	6.00	4.93	1	BOTTOM SLAB	1.00	
		TNT7A	-	3.25	136.50	1.40	3.25	1	BOTTOM SLAB	6.00	5.20	1	BOTTOM SLAB	1.00	
		TNT7B	-	2.89	121.38	1.40	2.89	1	BOTTOM SLAB	6.00	4.65	1	BOTTOM SLAB	1.00	
		TNAGRIT4	-	3.18	136.74	1.40	3.18	1	BOTTOM SLAB	6.00	5.09	1	BOTTOM SLAB	11.00	
		TNAGT5A	-	3.18	143.10	1.40	3.18	1	BOTTOM SLAB	6.00	5.09	1	BOTTOM SLAB	1.00	
		TNAGT5B	-	3.20	144.00	1.40	3.20	1	BOTTOM SLAB	6.00	5.11	1	BOTTOM SLAB	1.00	
EMERGENCY VEHICLE (EV)	EV2	-	3.92	112.70	1.30	3.92	1	BOTTOM SLAB	6.00	6.29	1	BOTTOM SLAB	11.00		
	EV3	Ⓜ4	2.55	109.65	1.30	2.55	1	BOTTOM SLAB	6.00	4.14	1	BOTTOM SLAB	1.00		

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	--

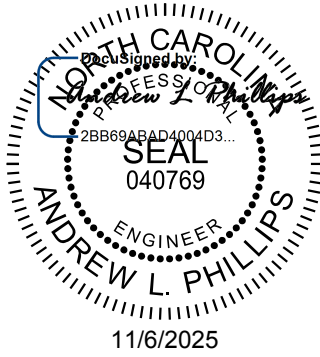
NOTES:
RATING FACTORS ARE BASED ON THE STRENGTH I LIMIT STATE.

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



PROJECT NO. U-6105
MECKLENBURG COUNTY
STATION: 21+05.48 -L-

SHEET 2 OF 5



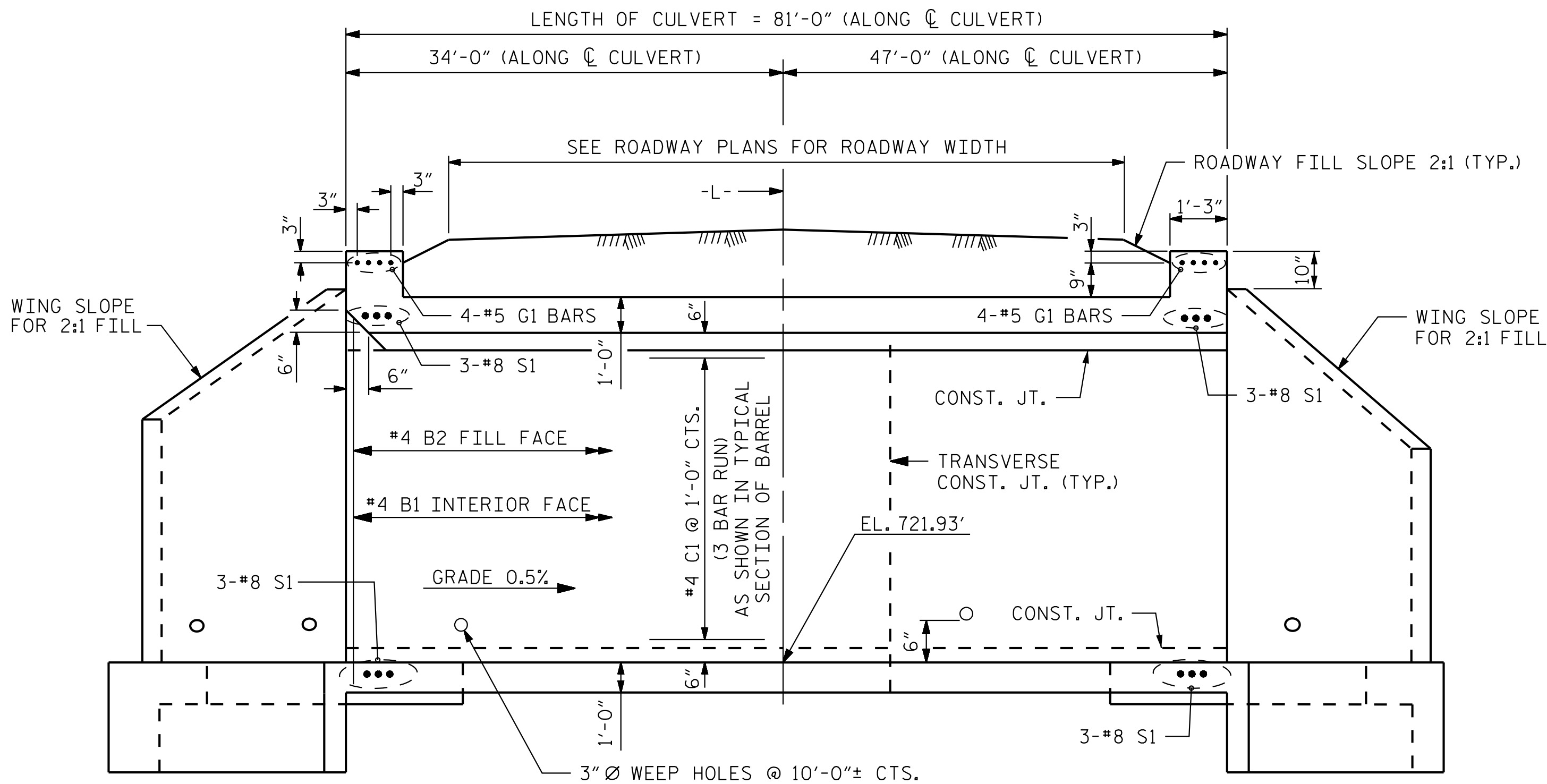
Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

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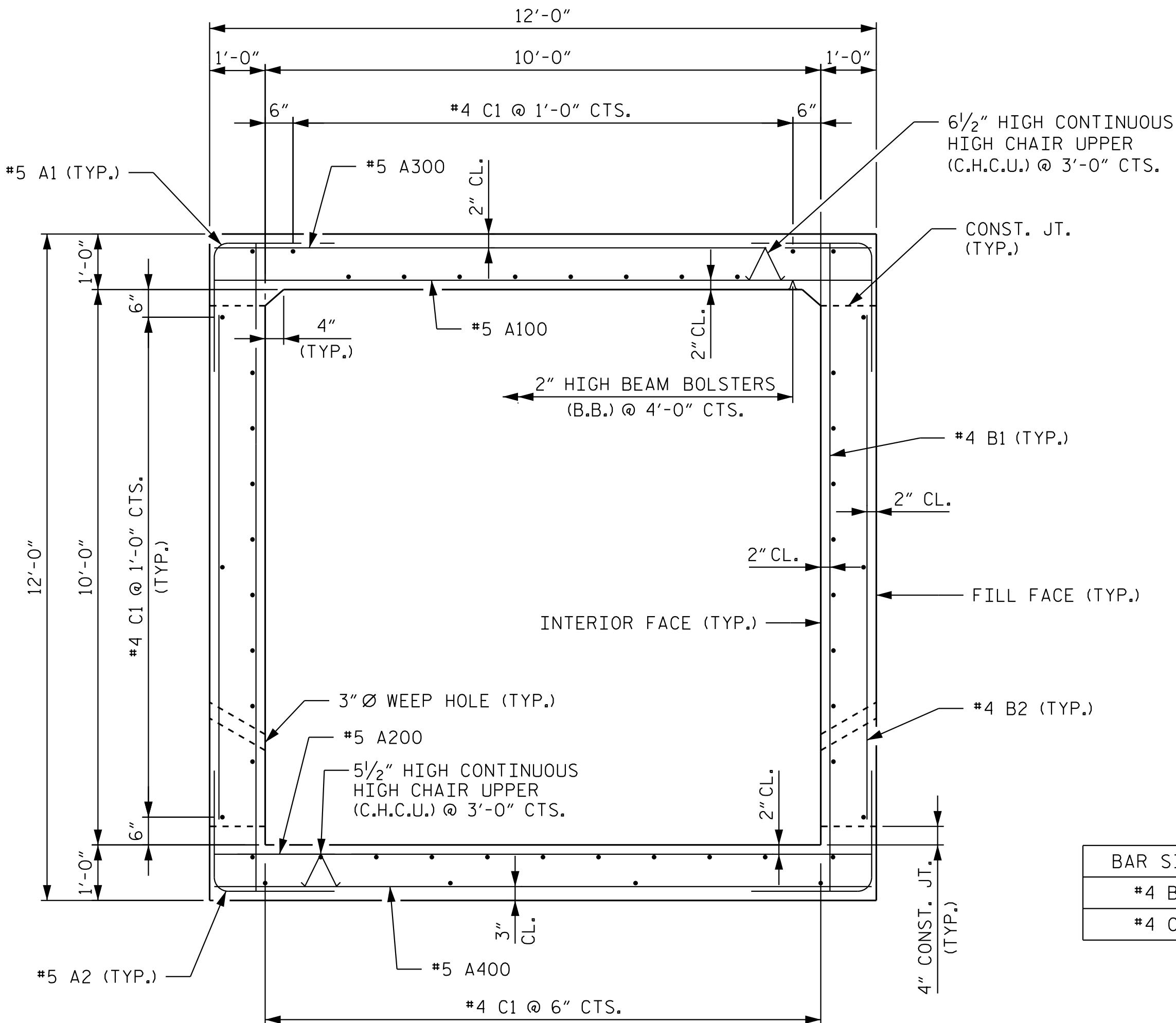
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD LRFR SUMMARY FOR REINFORCED CONCRETE BOX CULVERTS (NON-INTERSTATE TRAFFIC)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. C1-2					TOTAL SHEETS 5

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ASSEMBLED BY : D.D. LOWERY	DATE : 05/2023
CHECKED BY : A. L. PHILLIPS	DATE : 05/2023
DRAWN BY : WMC 7/11	REV. 10/1/11 MAA/GM
CHECKED BY : GM 7/11	REV. 12/17 MAA/THC
	REV. 04/23 BNB/AAI



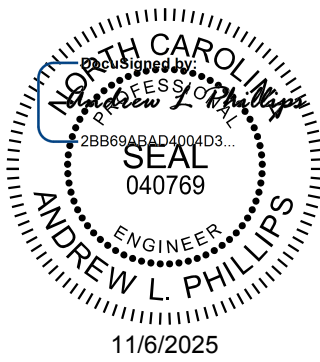
CULVERT SECTION NORMAL TO ROADWAY



RIGHT ANGLE SECTION OF BARREL

THERE ARE 46 "C" BARS IN SECTION OF BARREL

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

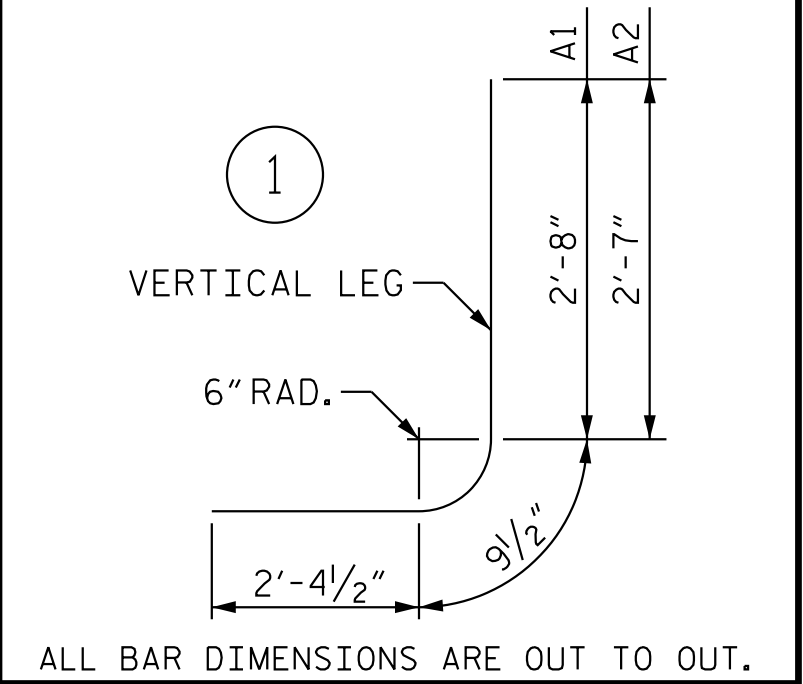


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Raleigh, NC 27601-1772
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BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	322	5	1	5'-10"	1,959
A2	322	5	1	5'-9"	1,931
A100	156	5	STR	11'-8"	1,898
A101	2	5	STR	9'-10"	21
A102	2	5	STR	8'-0"	17
A103	2	5	STR	6'-1"	13
A104	2	5	STR	4'-3"	9
A105	2	5	STR	2'-4"	5
A200	156	5	STR	11'-8"	1,898
A201	2	5	STR	9'-10"	21
A202	2	5	STR	8'-0"	17
A203	2	5	STR	6'-1"	13
A204	2	5	STR	4'-3"	9
A205	2	5	STR	2'-4"	5
A300	156	5	STR	11'-8"	1,898
A301	2	5	STR	9'-10"	21
A302	2	5	STR	8'-0"	17
A303	2	5	STR	6'-1"	13
A304	2	5	STR	4'-3"	9
A305	2	5	STR	2'-4"	5
A400	156	5	STR	11'-8"	1,898
A401	2	5	STR	9'-10"	21
A402	2	5	STR	8'-0"	17
A403	2	5	STR	6'-1"	13
A404	2	5	STR	4'-3"	9
A405	2	5	STR	2'-4"	5
B1	322	4	STR	11'-7"	2,492
B2	322	4	STR	9'-4"	2,008
C1	138	4	STR	28'-6"	2,627
G1	8	4	STR	12'-0"	64
S1	12	8	STR	12'-0"	384
REINFORCING STEEL					LBS. 19,317

BAR TYPE



PROJECT NO. U-6105
MECKLENBURG COUNTY
STATION: 21+05.48 -L-

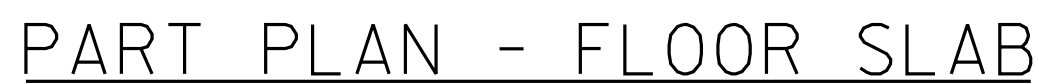
SHEET 3 OF 5

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SINGLE 10 FT. X 10 FT. CONCRETE BOX CULVERT 100°44' 55" SKEW					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. C1-3					TOTAL SHEETS 5

CULVERT 42C001

DRAWN BY: D.D. LOWERY DATE: 05/2024
CHECKED BY: B.M. KROL DATE: 05/2024
DESIGN ENGINEER OF RECORD: A.L. PHILLIPS DATE: 05/2024

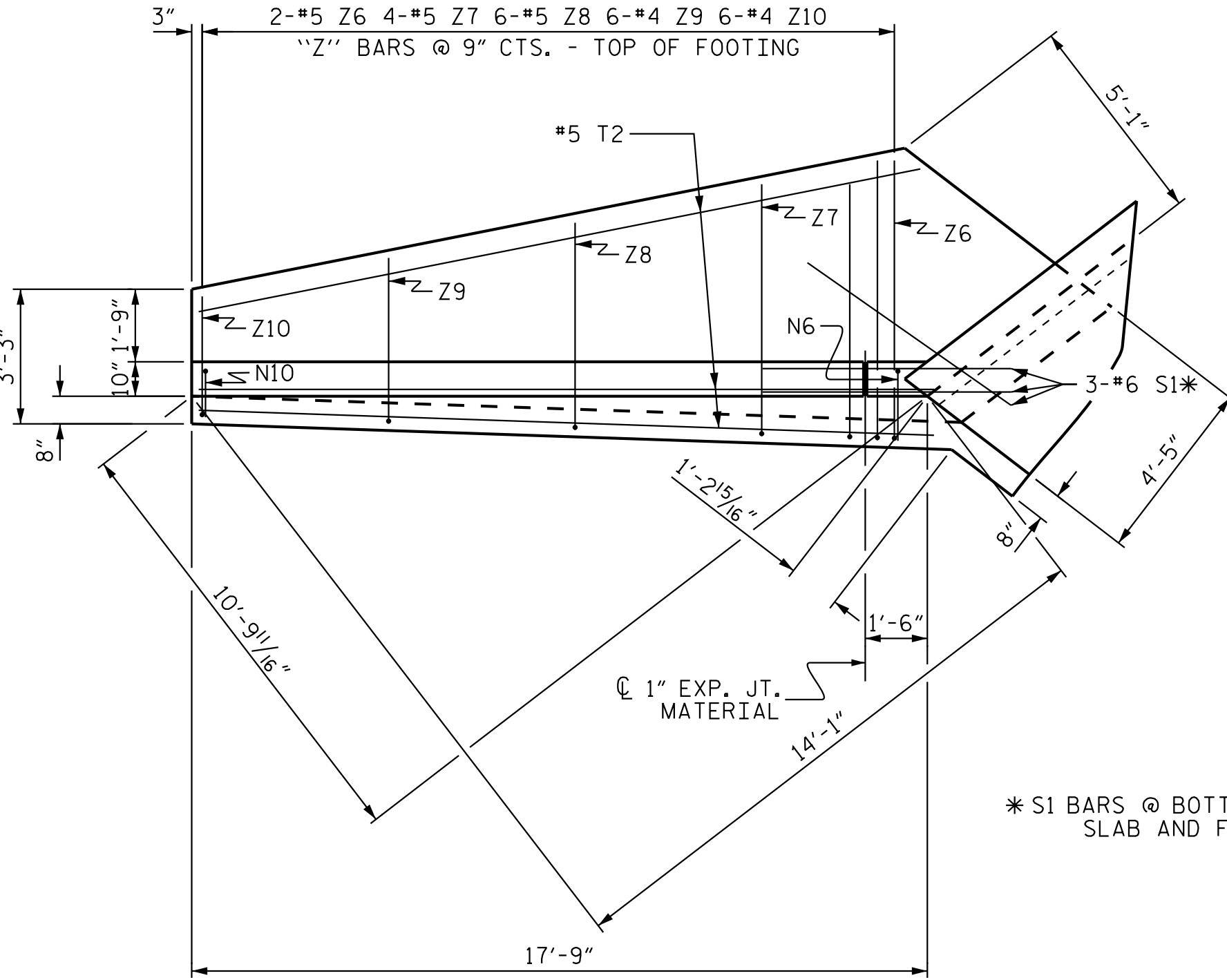
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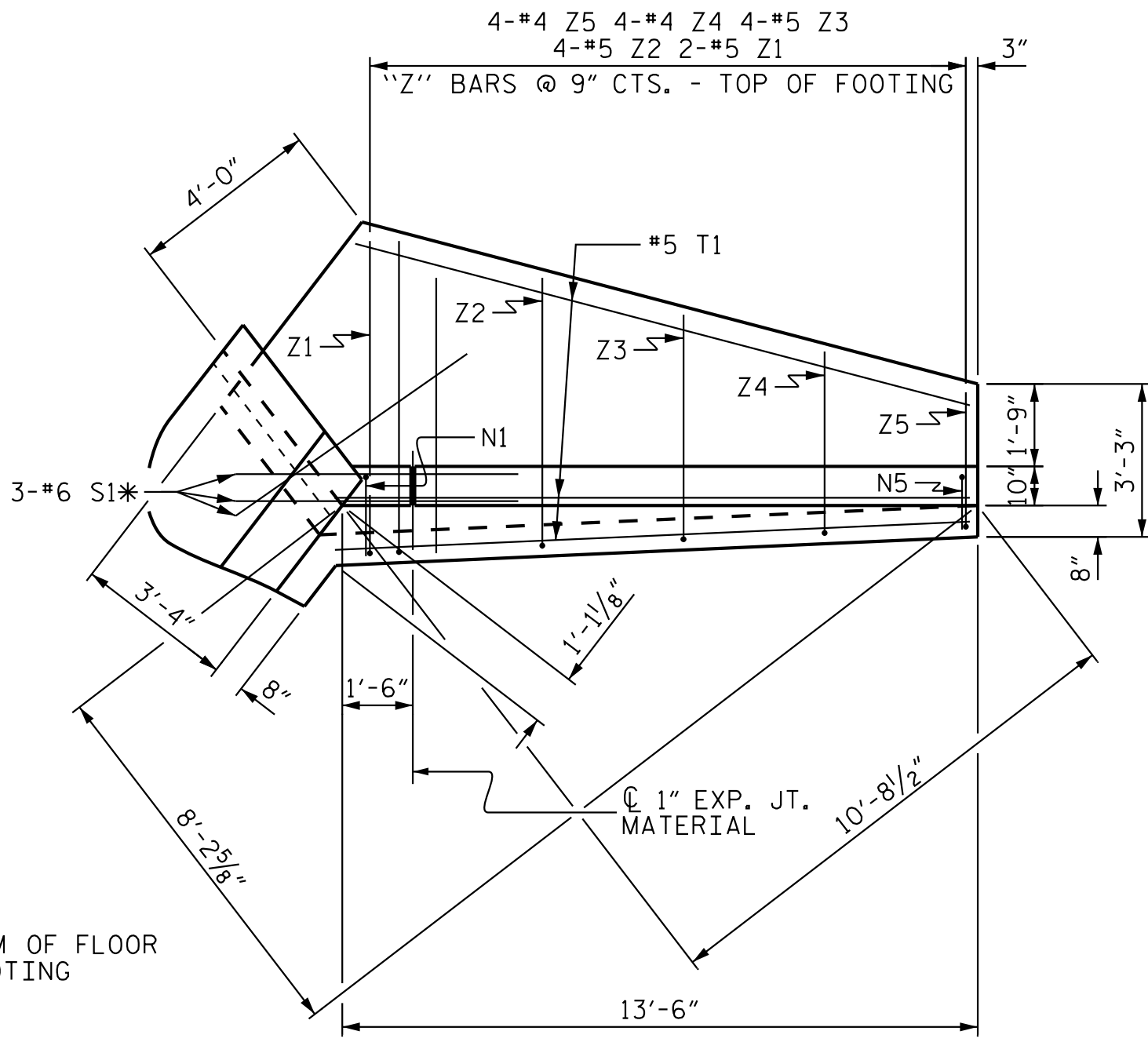
CULVERT 42C001

\\116\2025_K\ARDI_Structures\Culvert\NC\01036528 - U-6105.Cad\Drawn\411_005_U6105_SML_CU05.dgn
11/6/2025

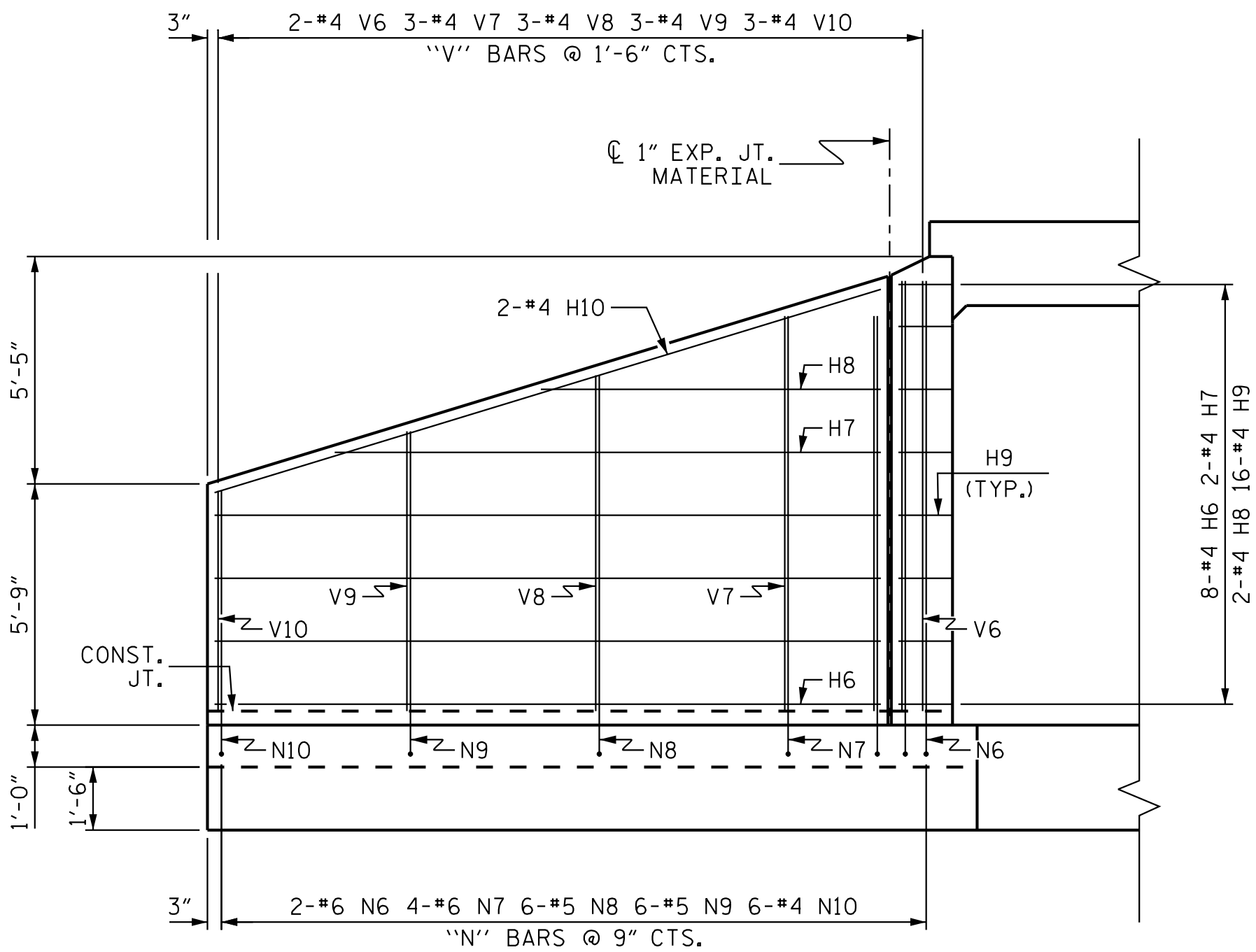
ASSEMBLED BY : D. D. LOWERY	DATE : 05/2023
CHECKED BY : A. L. PHILLIPS	DATE : 05/2023
DRAWN BY : CCJ 12/99	REV. 6/19
CHECKED BY : RWW 03/00	MAA/THC



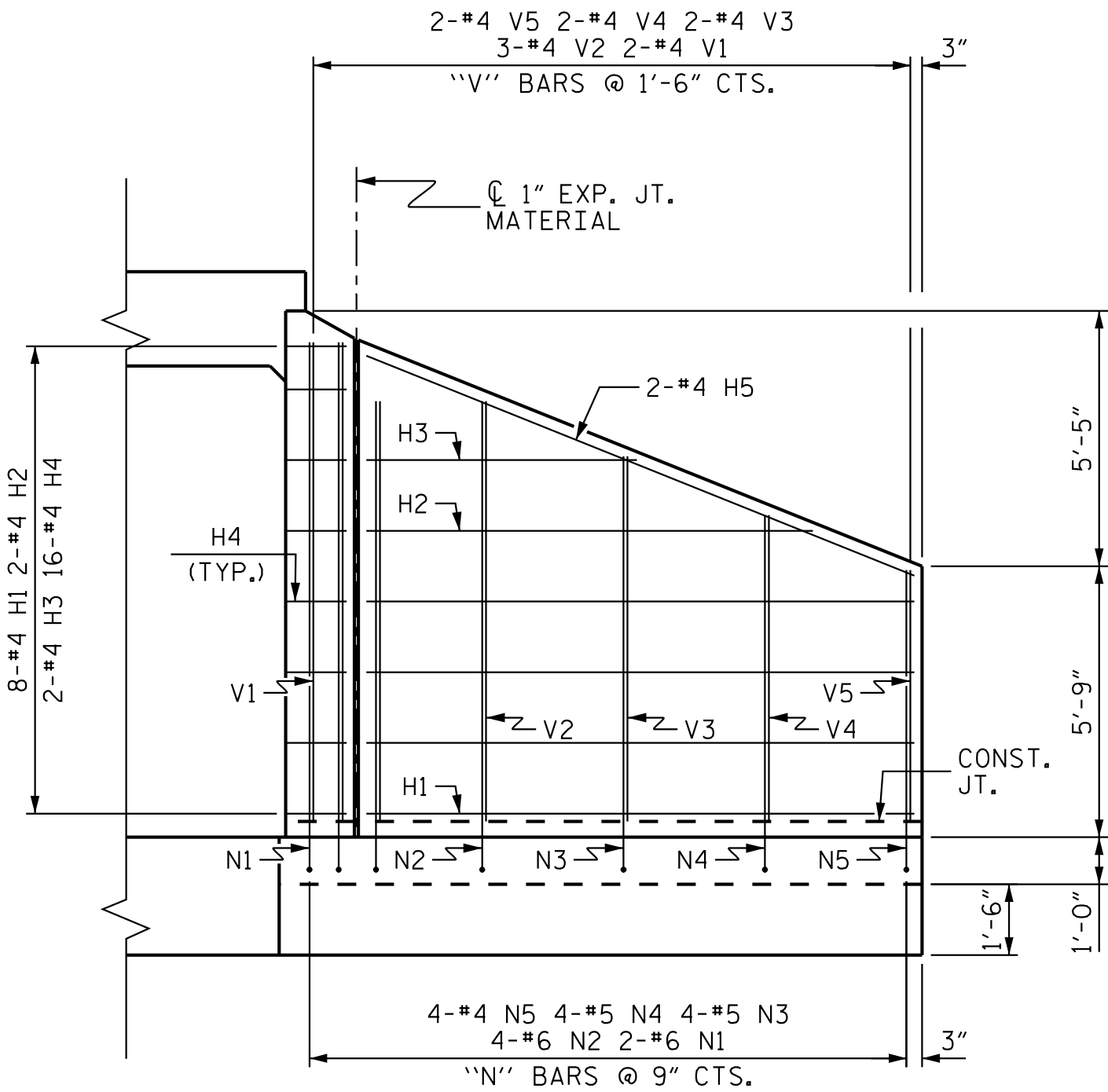
PLAN W1



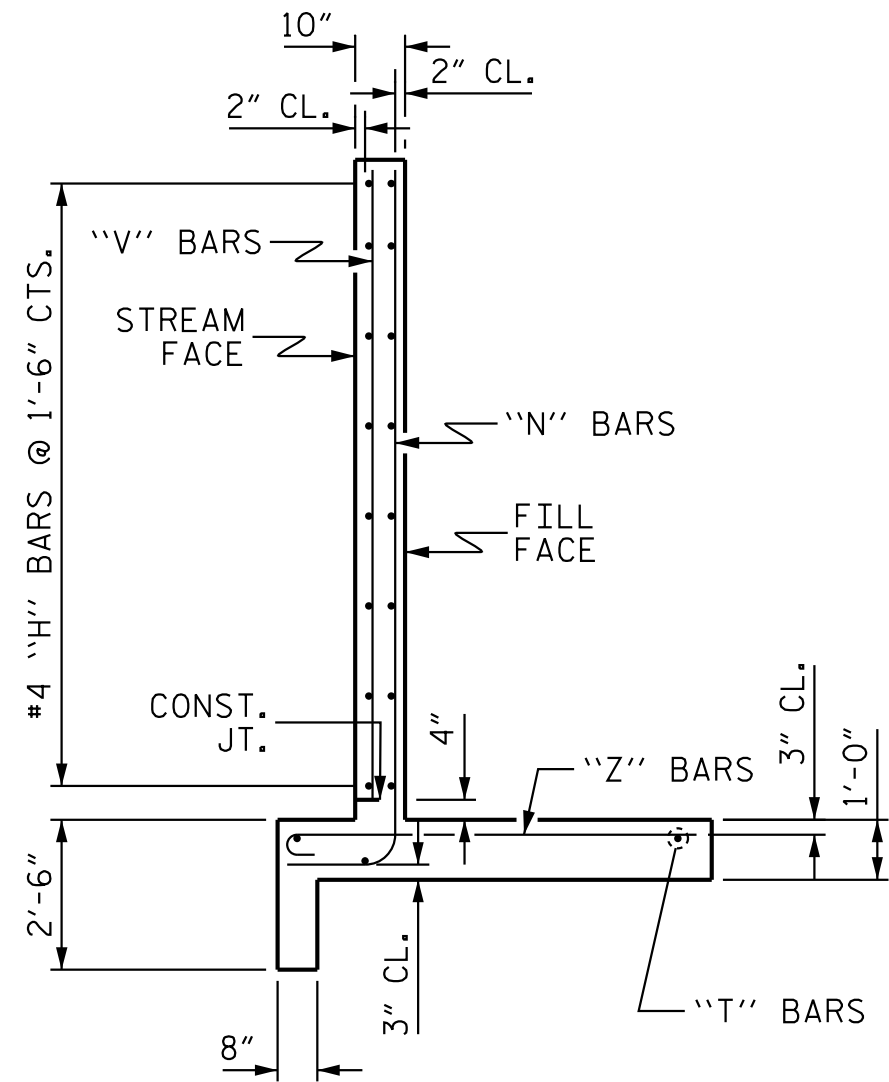
PLAN W2



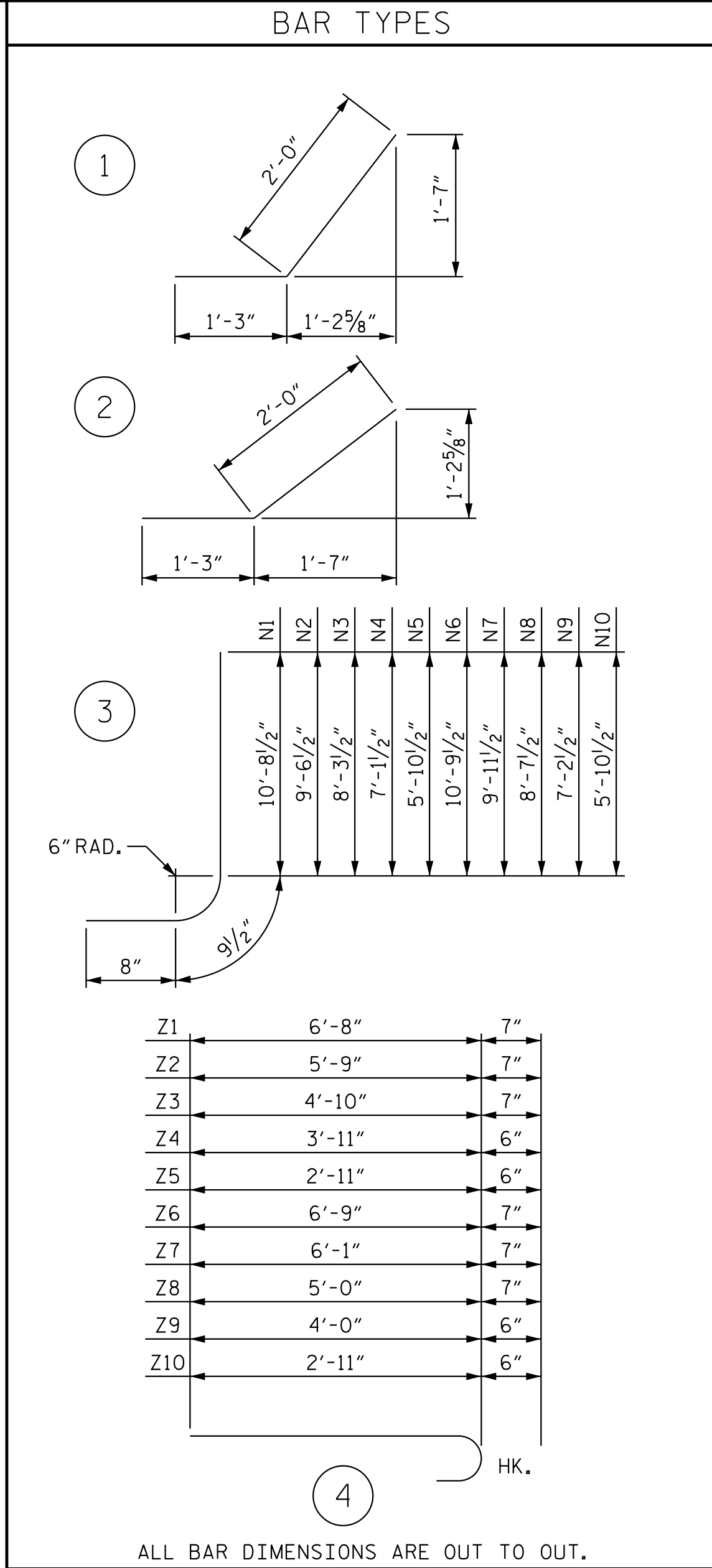
ELEVATION W1



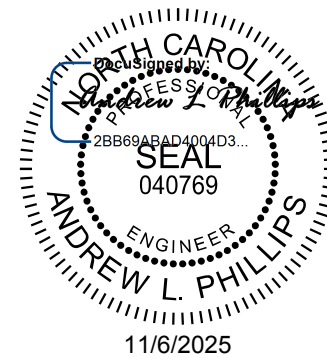
ELEVATION W2



TYPICAL WING SECTION



ALL BAR DIMENSIONS ARE OUT TO OUT.



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BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	16	#4	STR	11'-7"	124
H2	4	#4	STR	9'-5"	25
H3	4	#4	STR	5'-8"	15
H4	32	#4	1	3'-3"	69
H5	4	#4	STR	12'-6"	33
H6	16	#4	STR	15'-10"	169
H7	4	#4	STR	13'-0"	35
H8	4	#4	STR	8'-1"	22
H9	32	#4	2	3'-3"	69
H10	4	#4	STR	16'-7"	44
N1	4	#6	3	12'-2"	73
N2	8	#6	3	11'-0"	132
N3	8	#5	3	9'-9"	81
N4	8	#5	3	8'-7"	72
N5	8	#4	3	7'-4"	39
N6	4	#6	3	12'-3"	74
N7	8	#6	3	11'-5"	137
N8	12	#5	3	10'-1"	126
N9	12	#5	3	8'-8"	108
N10	12	#4	3	7'-4"	59
S1	12	#6	STR	6'-0"	108
T1	6	#5	STR	13'-6"	84
T2	6	#5	STR	17'-9"	111
V1	4	#4	STR	10'-2"	27
V2	6	#4	STR	8'-11"	36
V3	4	#4	STR	7'-9"	21
V4	4	#4	STR	6'-6"	17
V5	4	#4	STR	5'-4"	14
V6	4	#4	STR	10'-3"	27
V7	6	#4	STR	9'-5"	38
V8	6	#4	STR	8'-0"	32
V9	6	#4	STR	6'-8"	27
V10	6	#4	STR	5'-3"	21
Z1	4	#5	4	7'-3"	30
Z2	8	#5	4	6'-4"	53
Z3	8	#5	4	5'-5"	45
Z4	8	#4	4	4'-5"	24
Z5	8	#4	4	3'-5"	18
Z6	4	#5	4	7'-4"	31
Z7	8	#5	4	6'-8"	56
Z8	12	#5	4	5'-7"	70
Z9	12	#4	4	4'-6"	36
Z10	12	#4	4	3'-5"	27
REINFORCING STEEL				2459	LBS
FOR 4 WINGS					
CLASS A CONCRETE					
4 WINGS				32.8	CY
2 HEADWALLS				1.2	CY
2 END CURTAIN WALLS				1.0	CY
TOTAL				35.0	CY

PROJECT NO. U-6105
MECKLENBURG COUNTY
STATION: 21+05.48 -L-

SHEET 5 OF 5

REVISIONS						SHEET NO. C1-5
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 5
2			4			

CULVERT 42C001 STD. NO. CW10510.STD

BENCHMARK: BM#2, STA. 21+25.02 -L-, 74.72' RT., USGS MONUMENT, EL. 720.69', NAD83

F.A. PROJECT NO. STBGDA-2415(001)

NOTES

ASSUMED LIVE LOAD -----HL-93

DESIGN FILL -----18'-9" (MAX.)

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

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

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.

CONCRETE IN THE CULVERT 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 SILLS/BAFFLES, ROOF SLAB AND HEADWALLS.

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

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

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.

THE ENTIRE COST OF WORK REQUIRED TO PLACE EXCAVATED OR SUPPLEMENTAL MATERIAL AS SHOWN ON THE PLANS SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR CULVERT EXCAVATION.

EXCAVATE A MINIMUM OF 1 FOOT BELOW CULVERT BEARING ELEVATION AND REPLACE WITH FOUNDATION CONDITIONING MATERIAL PER SECTION 414 OF THE STANDARD SPECIFICATIONS.

STEEL IN THE BOTTOM SLAB MAY BE SPICED AT THE PERMITTED CONSTRUCTION JOINT AT THE CONTRACTOR'S OPTION. EXTRA WEIGHT OF STEEL DUE TO THE SPLICES SHALL BE PAID FOR BY THE CONTRACTOR.

BACKFILL WITH SELECT MATERIAL, CLASS VI MEETING THE REQUIREMENTS OF SECTION 1016 OF THE STANDARD SPECIFICATIONS.

BURY IN FOOTINGS FOR THE REINFORCED BOX CULVERT AT STATION 22+01.71 -L- AT LEAST 12" INTO NCDOT NO. 57 STONE WITH A MINIMUM THICKNESS AS SHOWN ON THE PLANS.

CULVERT SHOULD BE BACK FILLED WITH NATIVE MATERIAL TO SILL/BAFFLE HEIGHT. NATIVE MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED OR FLOODPLAIN AT THE PROJECT SITE DURING CULVERT CONSTRUCTION. ONLY MATERIAL THAT IS EXCAVATED FROM THE STREAM BED MAY BE USED TO LINE THE LOW FLOW CULVERT BARREL. RIP RAP MAY BE USED TO SUPPLEMENT THE NATIVE MATERIAL IN THE HIGH FLOW CULVERT BARREL. IF RIP RAP IS USED TO LINE THE HIGH FLOW CULVERT BARREL, NATIVE MATERIAL SHOULD BE PLACED ON TOP TO FILL VOIDS AND PROVIDE A FLAT SURFACE FOR ANIMAL PASSAGE. NATIVE MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS (360,000 KG) OF REINFORCING STEEL, ONE 30 INCH (760 MM) SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS (360,000 KG) OF REINFORCING STEEL, TWO 30 INCH (760 MM) 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.

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.

INSTALL TYPE 4 GEOTEXTILE AT THE BOTTOM OF EXCAVATION PRIOR TO PLACING FOUNDATION CONDITIONING MATERIAL. THE GEOTEXTILE SHOULD BE PLACED AT THE BOTTOM OF THE EXCAVATION AND WRAPPED UP THE SIDE WALLS OF THE EXCAVATION.

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.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

HYDRAULIC DATA

DESIGN DISCHARGE -----750 CFS
FREQUENCY OF DESIGN FLOOD -----25 YR.
DESIGN HIGH WATER ELEVATION-----721.2
DRAINAGE AREA -----0.92 SQ. MI.
BASE DISCHARGE (Q100) -----850 CFS
BASE HIGH WATER ELEVATION -----721.5

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE -----4800 CFS
FREQUENCY OF OVERTOPPING FLOOD --->500 YR.
OVERTOPPING FLOOD ELEVATION -----738.0 *
* OVERTOPPING WILL OCCUR AT STA. 17+75.00 -L- AND DOES NOT TAKE INTO ACCOUNT THE PEDESTRIAN CULVERT
WS EL. TAKE @ RIVER STATION 378

ROADWAY DATA

GRADE POINT EL. @ STA. 22+01.71 -L- = 740.25'
INVERT ELEVATION @ STA. 22+01.71 -L- = 714.94'
ROADWAY SLOPES 2 : 1

-L- HORIZONTAL CURVE DATA

PI STA. 23+25.18
Δ = 32°-54'-56.4" (LT)
D = 5°-40'-22.3"
L = 580.23'
T = 298.37'
R = 1,010.00'

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"

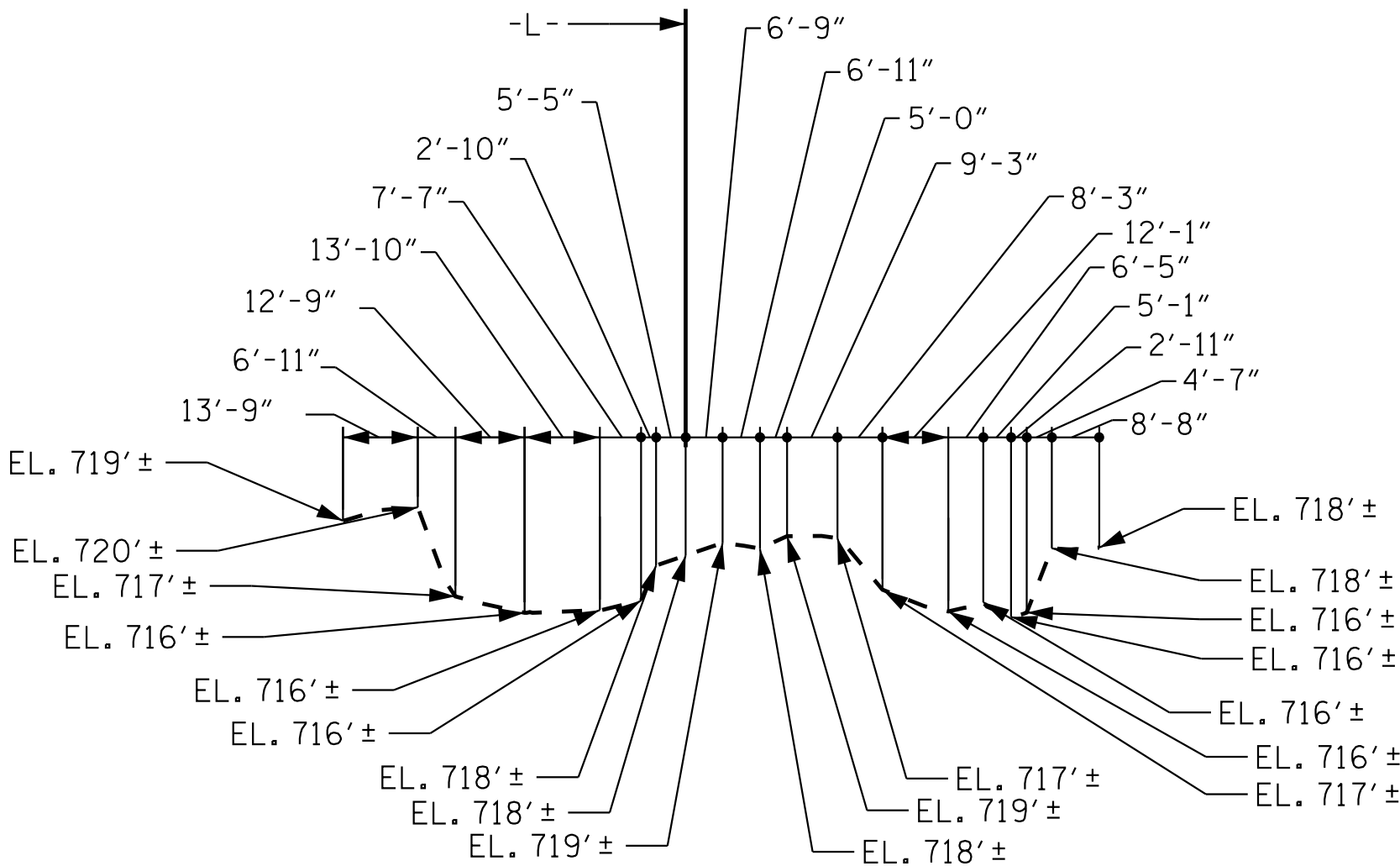
TOTAL STRUCTURE QUANTITIES

CLASS A CONCRETE
BARREL @ 4.864 CY/FT 676.1 C.Y.
WINGS ETC. 41.7 C.Y.
SILLS 6.0 C.Y.
TOTAL 723.8 C.Y.

REINFORCING STEEL
BARREL 81,431 LBS.
WINGS ETC. 3,062 LBS.
TOTAL 84,493 LBS.

BOX CULVERT EXCAVATION STA. 22+01.71 -L- LUMP SUM
FOUNDATION CONDITIONING MATERIAL, BOX CULVERT 340 TONS

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



PROFILE ALONG CULVERT

DRAWN BY: D. D. LOWERY DATE: 05/2024
CHECKED BY: B. M. KROL DATE: 05/2024
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 05/2024

PROJECT NO. U-6105

MECKLENBURG COUNTY

STATION: 22+01.71 -L-

SHEET 1 OF 8 BRIDGE NO. 591669

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DOUBLE 14 FT. X 7 FT.
CONCRETE BOX CULVERT
116°-39'-05" SKEW

REVISIONS						SHEET NO. C2-1
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 8
2			4			

CULVERT 42C002

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	1.47	--	1.75	1.47	1	TOP SLAB	15.50	1.98	2	TOP SLAB	30.00		
	HL-93 (OPERATING)	N/A		1.90	--	1.35	1.90	1	TOP SLAB	15.50	2.57	2	TOP SLAB	30.00		
	HS-20 (INVENTORY)	36.000	2	1.83	65.88	1.75	1.83	1	TOP SLAB	15.50	2.47	2	TOP SLAB	30.00		
	HS-20 (OPERATING)	36.000		2.37	85.32	1.35	2.37	1	TOP SLAB	15.50	3.20	2	TOP SLAB	30.00		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH		6.33	85.46	1.40	6.33	1	TOP SLAB	15.50	8.75	2	TOP SLAB	30.00		
		SNGARBS2	20.000		4.37	87.40	1.40	4.37	1	TOP SLAB	15.50	6.01	2	TOP SLAB	30.00	
		SNAGRIS2	22.000		3.99	87.78	1.40	3.99	1	TOP SLAB	15.50	5.49	2	TOP SLAB	30.00	
		SNCOTTS3	27.250		3.09	84.20	1.40	3.09	1	TOP SLAB	15.50	4.26	2	TOP SLAB	30.00	
		SNAGGRS4	34.925		2.54	88.71	1.40	2.54	1	TOP SLAB	15.50	3.51	2	TOP SLAB	30.00	
		SNS5A	35.550		2.62	93.14	1.40	2.62	1	TOP SLAB	15.50	3.62	2	TOP SLAB	30.00	
		SNS6A	39.950		2.47	98.68	1.40	2.47	1	TOP SLAB	15.50	3.38	2	TOP SLAB	30.00	
		SNS7B	42.000		2.32	97.44	1.40	2.32	1	TOP SLAB	15.50	3.20	2	TOP SLAB	30.00	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		2.85	94.05	1.40	2.85	1	TOP SLAB	15.50	3.94	2	TOP SLAB	30.00	
		TNT4A	33.075		3.04	100.55	1.40	3.04	1	TOP SLAB	15.50	4.16	2	TOP SLAB	30.00	
		TNT6A	41.600		2.61	112.23	1.40	2.61	1	TOP SLAB	15.50	3.54	2	TOP SLAB	30.00	
		TNT7A	42.000		2.51	112.95	1.40	2.51	1	TOP SLAB	15.50	3.45	2	TOP SLAB	30.00	
		TNT7B	42.000		2.74	123.30	1.40	2.74	1	TOP SLAB	15.50	3.69	2	TOP SLAB	30.00	
		TNAGRIT4	43.000		2.46	102.34	1.40	2.46	1	TOP SLAB	15.50	3.35	2	TOP SLAB	30.00	
	TNAGT5A	45.000		2.56	107.52	1.40	2.56	1	TOP SLAB	15.50	3.40	2	TOP SLAB	30.00		
	TNAGT5B	45.000	3	2.11	88.62	1.40	2.11	1	TOP SLAB	15.50	2.93	2	TOP SLAB	30.00		
EV VEHICLES (EV)	EV2	28.75		3.37	96.89	1.30	3.37	1	TOP SLAB	15.50	4.62	2	TOP SLAB	30.00		
	EV3	43.00	4	2.43	104.49	1.30	2.43	1	TOP SLAB	15.50	3.37	2	TOP SLAB	30.00		

LOAD FACTORS:

DESIGN LOAD RATING FACTORS

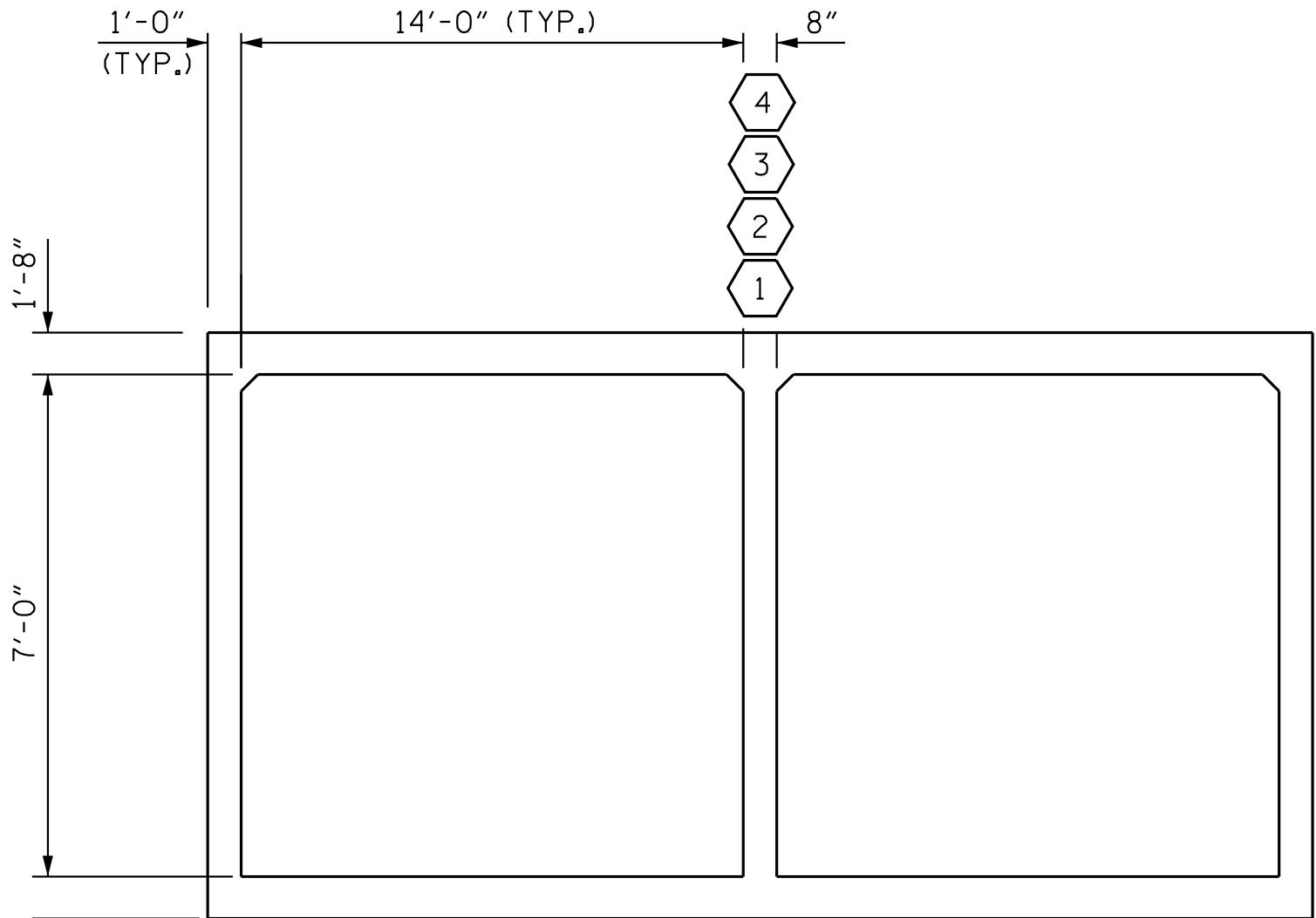
LOAD TYPE	MAX FACTOR	MIN FACTOR
DC	1.25	0.90
DW	1.50	0.65
EV	1.30	0.90
EH	1.35	0.90
ES	1.35	0.90
LS	1.75	--
WA	1.00	--

NOTE:

RATING FACTORS ARE BASED ON THE STRENGTH I LIMIT STATE.

DISTANCE FROM LEFT END OF ELEMENT IS GIVEN FROM THE EXTERIOR EDGE OF EXTERIOR WALL.

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



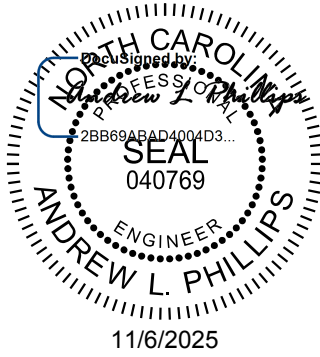
BOX 1 BOX 2

LRFR SUMMARY

(LOOKING DOWNSTREAM)

PROJECT NO. U-6105
MECKLENBURG COUNTY
STATION: 22+01.71 -L-

SHEET 2 OF 8



Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

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NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 8
2			4			

CULVERT 42C002 STD. NO. LRFR5

ASSEMBLED BY : D.D. LOWERY	DATE : 05/2023
CHECKED BY : C. T. POOLE	DATE : 05/2023
DRAWN BY : WMC	7/II
CHECKED BY : GM	7/II
REV. 10/1/II	MAA/GM
REV. 12/17	MAA/THC

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BAR SIZE	SPLICE LENGTH
#4 B1 & B3	1'-10"
#4 C1	2'-5"
#5 A200	3'-0"
#5 A400	2'-4"

PROJECT NO. U-6105
MECKLENBURG COUNTY
 STATION: 22+01.71 -L-

SHEET 3 OF 8

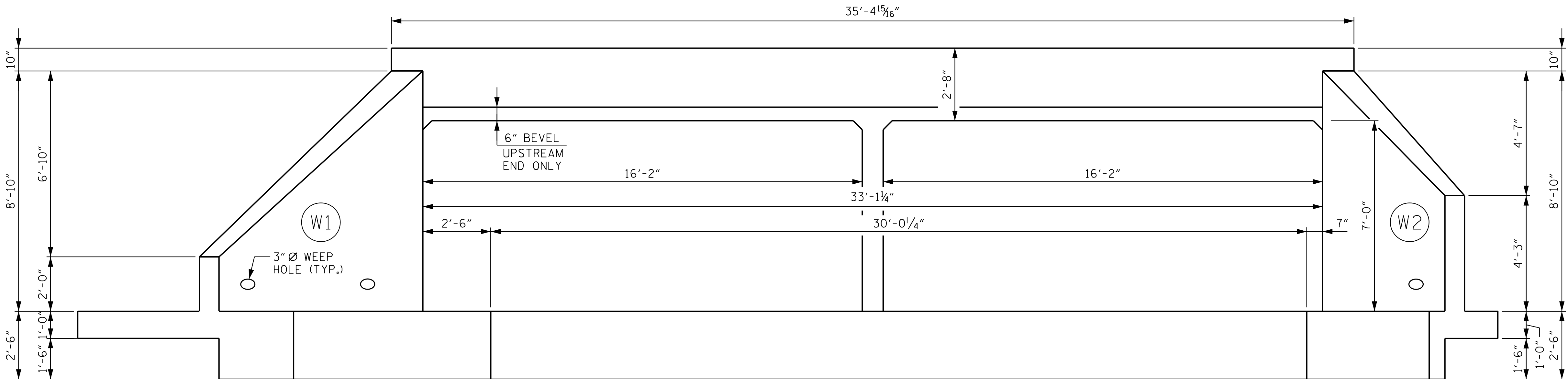


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
DOUBLE 14 FT. X 7 FT.
CONCRETE BOX CULVERT
116°-39'-05" SKEW

REVISIONS						SHEET NO. C2-3
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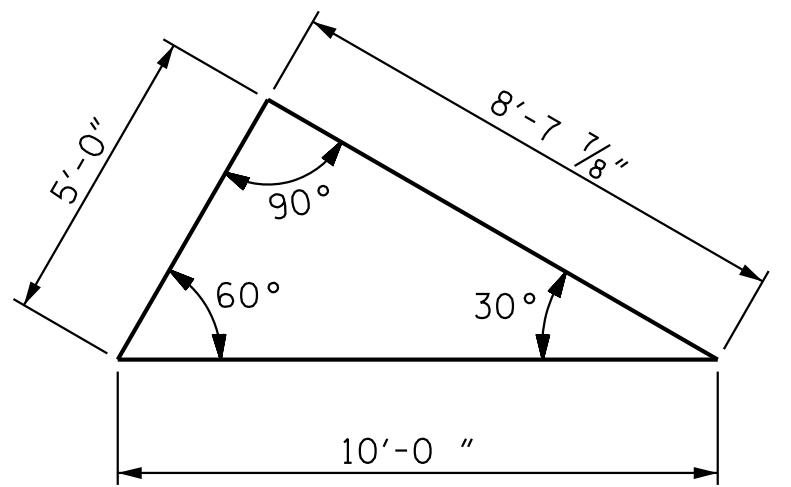
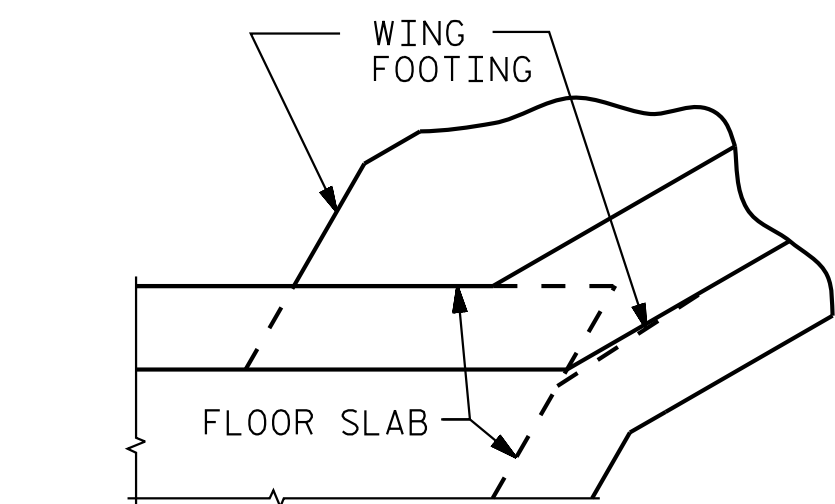
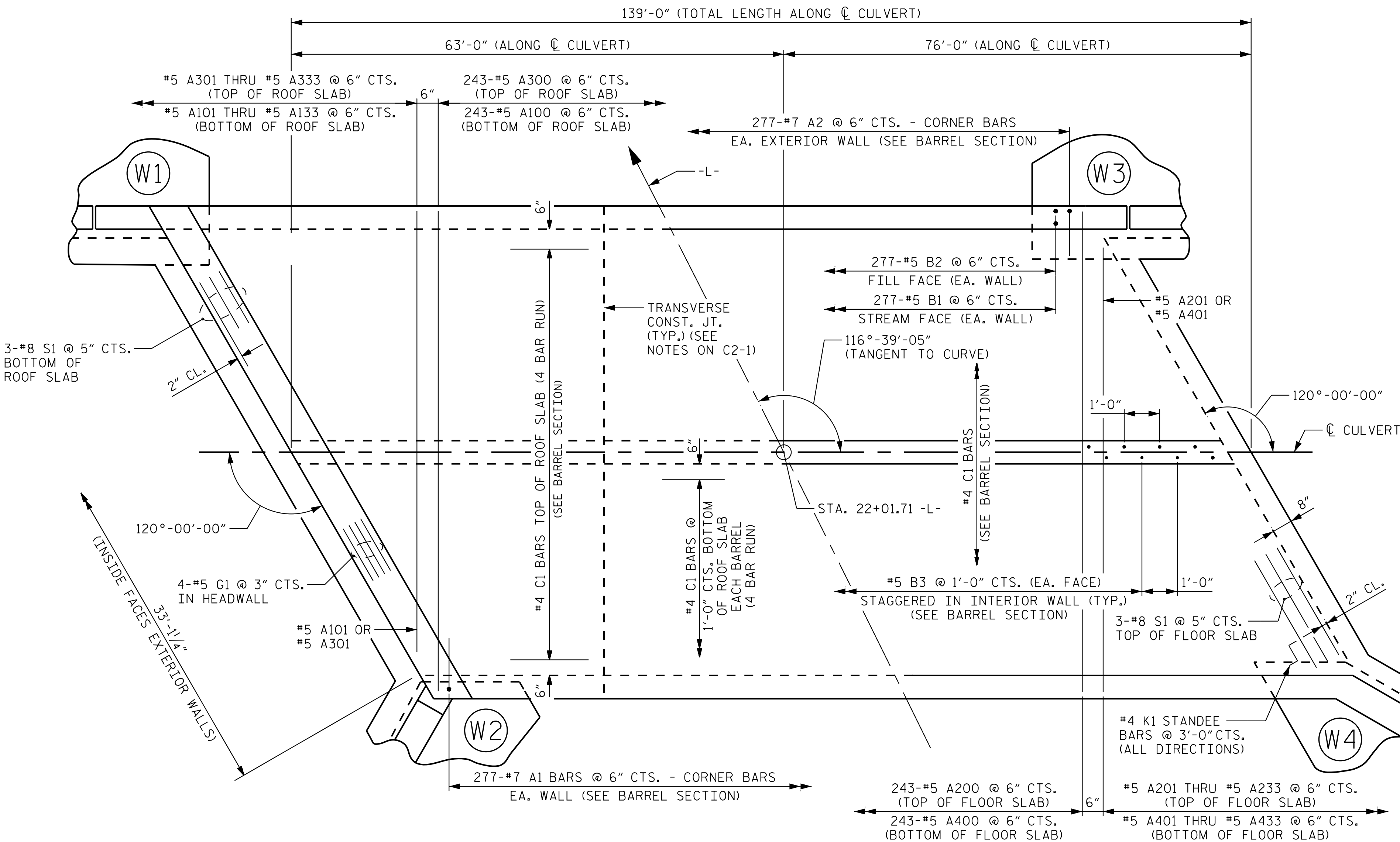
CULVERT 42C002

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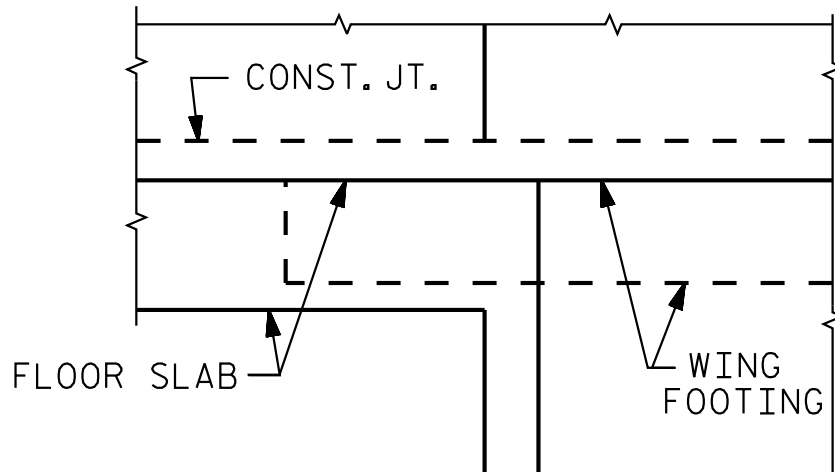


END ELEVATION NORMAL TO SKEW-INLET

(SILLS NOT SHOWN FOR CLARITY, SEE SHEET C2-5)
(OUTLET END ELEVATION NORMAL TO SKEW SIMILAR OPPOSITE HAND)



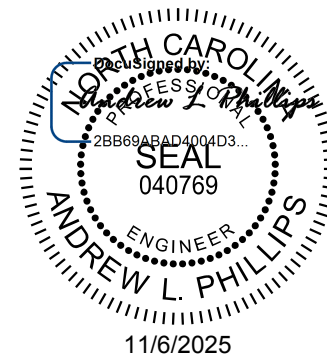
SKEW TRIANGLE



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

PROJECT NO. U-6105
MECKLENBURG COUNTY
STATION: 22+01.71 -L-

SHEET 4 OF 8



Kimley»Horn

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
DOUBLE 14 FT. X 7 FT.
CONCRETE BOX CULVERT
116°-39'-05" SKEW

REVISIONS						SHEET NO. C2-4
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DRAWN BY: D.D. LOWERY DATE: 05/2024
CHECKED BY: B.M. KROL DATE: 05/2024
DESIGN ENGINEER OF RECORD: A.L. PHILLIPS DATE: 05/2024

CULVERT 42C002



(LOOKING DOWNSTREAM)
**LOW AND HIGH FLOW SILLS/BAFFLES ALTERNATE EVERY 25' CTS



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

NOTE: SILL/BAFFLES ARE TO BE CAST
NORMAL TO CULVERT WALLS.

PROJECT NO. U-6105
MECKLENBURG COUNTY
 STATION: 22+01.71 -L-

SHEET 5 OF 8



Kimley»»Horn

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Raleigh, NC 27601-1772
Phone (919) 677-2000

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DOUBLE 14 FT. X 7 FT.
CONCRETE BOX CULVERT
116°-39'-05" SKEW

REVISONS						SHEET NO. C2-5
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CULVERT 42C002

DRAWN BY: <u>D. D. LOWERY</u>	DATE: <u>05/2024</u>
CHECKED BY: <u>B. M. KROL</u>	DATE: <u>05/2024</u>
DESIGN ENGINEER OF RECORD: <u>A. L. PHILLIPS</u>	DATE: <u>05/2024</u>



SHEET 7 OF 8



NC LICENSE #
E-0102

REVISIONS						SHEET NO. C2-7
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2			4			

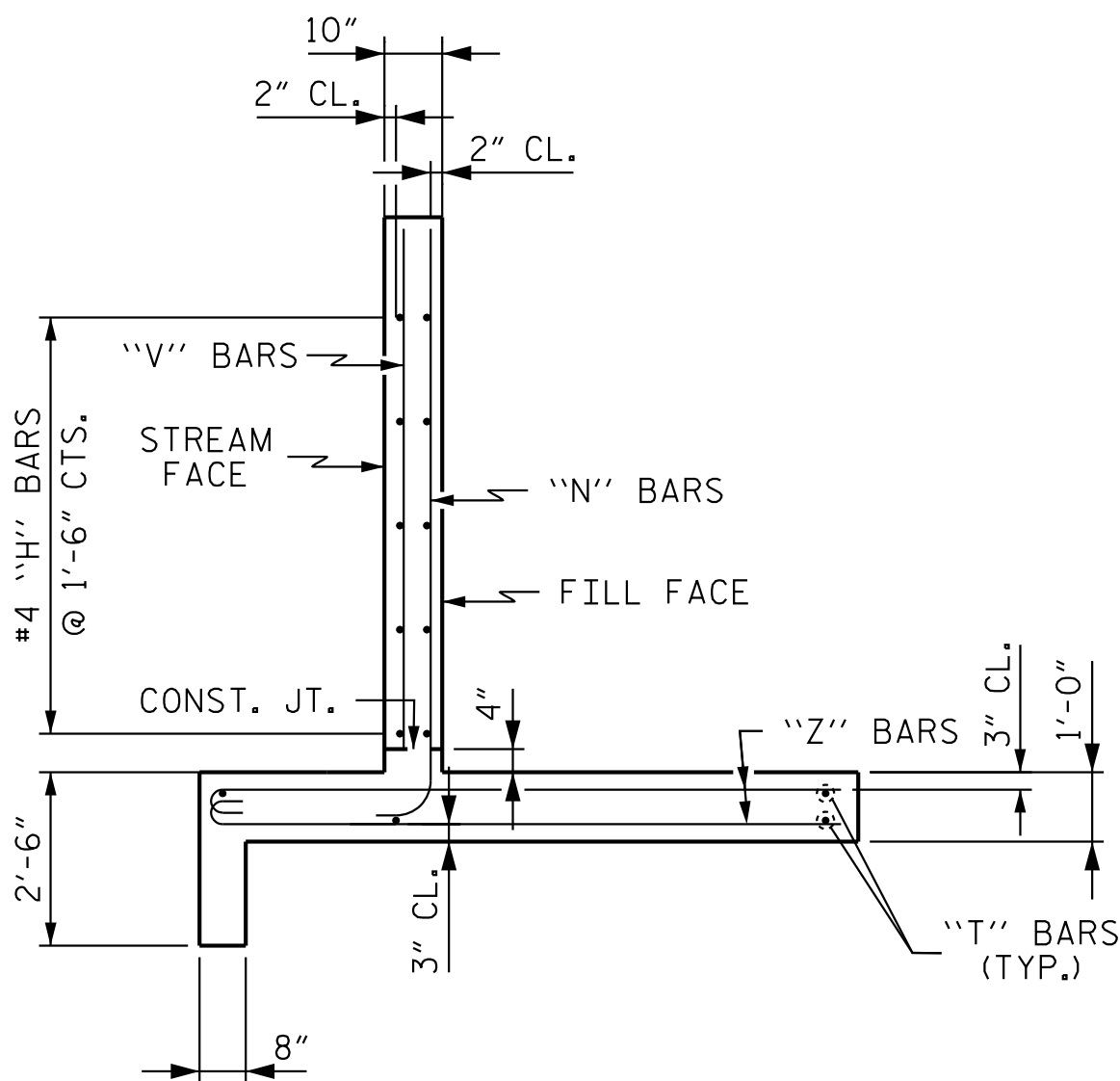
DRAWN BY: D. D. LOWERY	DATE: 05/2024
CHECKED BY: B. M. KROL	DATE: 05/2024
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS	DATE: 05/2024

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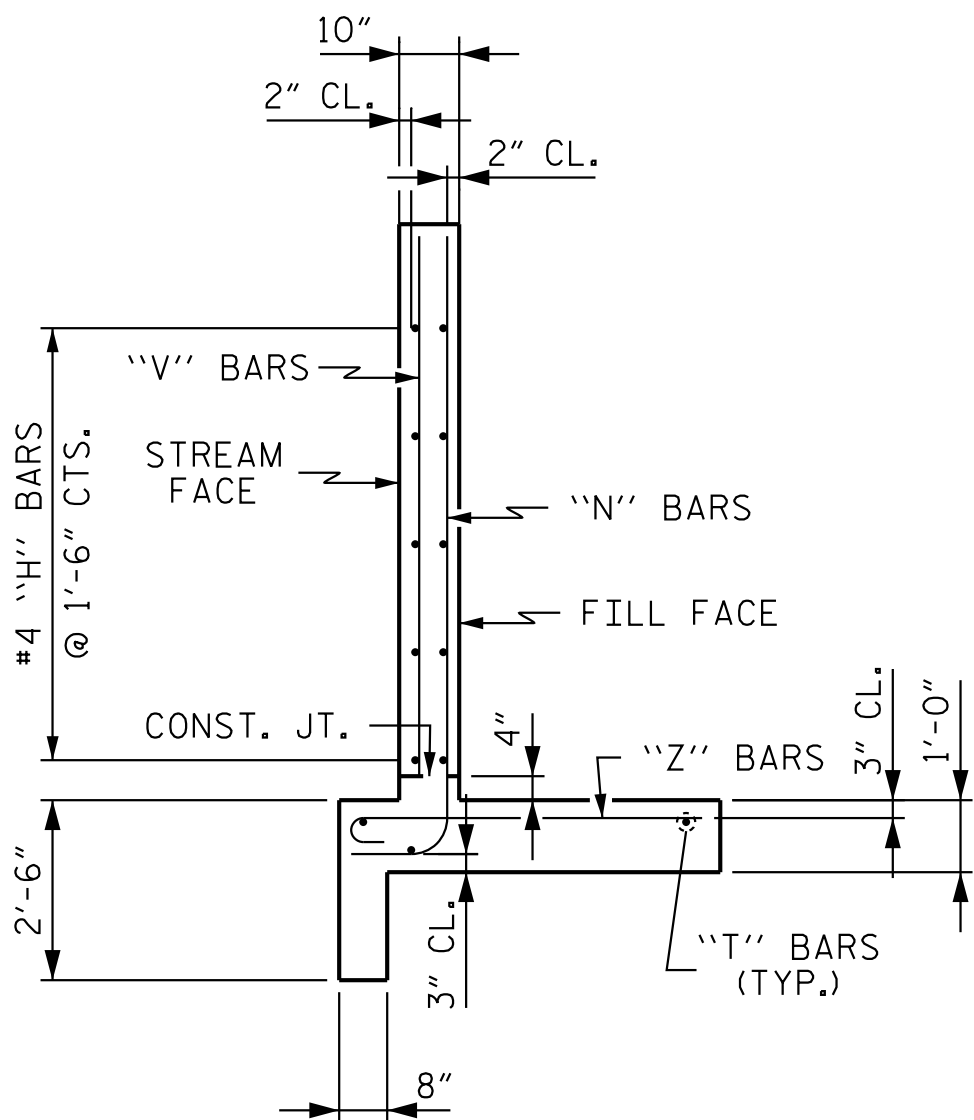
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CULVERT 42C002

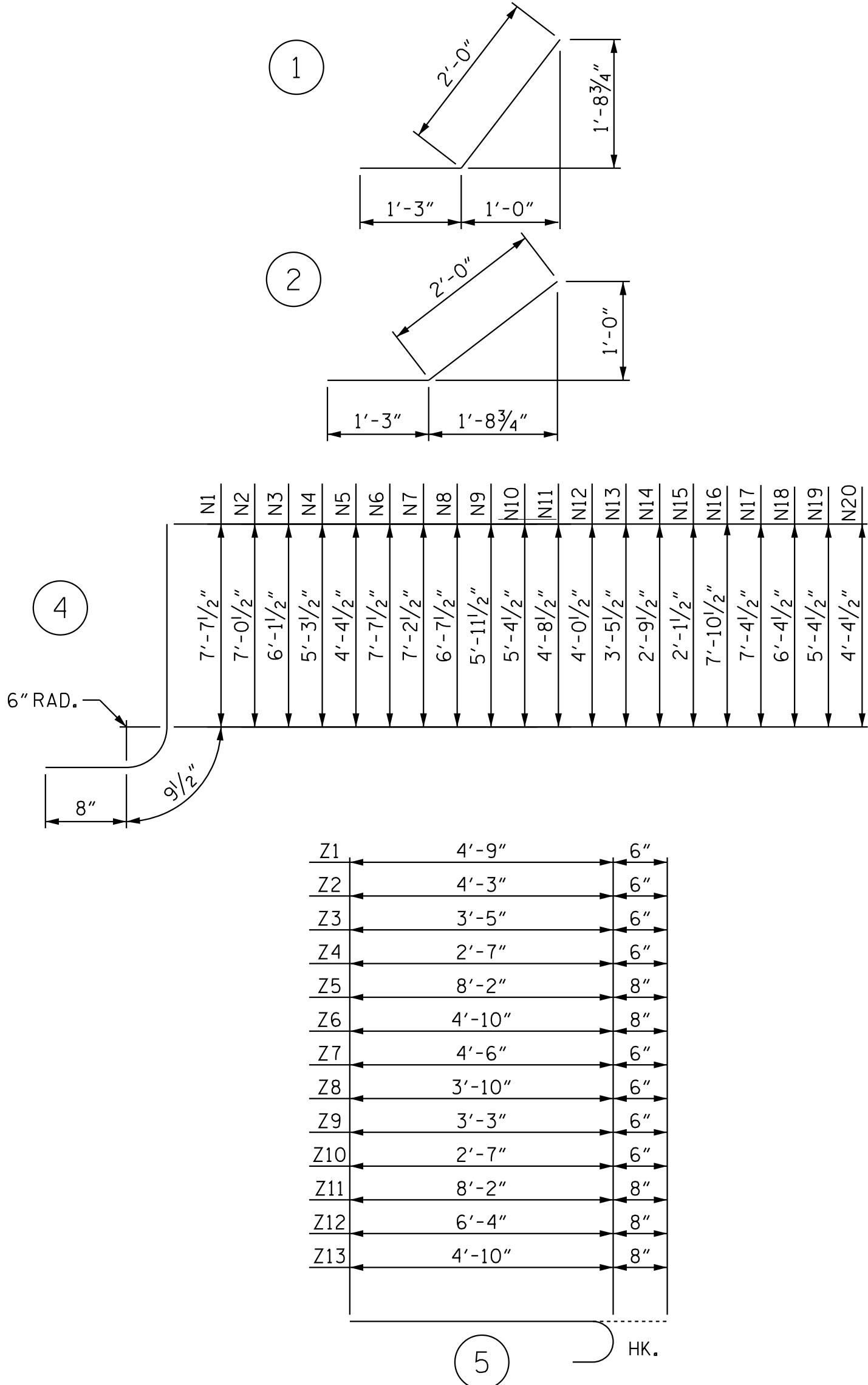


WING 1 AND WING 3
SECTION



WING 2 AND WING 4
SECTION

BAR TYPES



Z1	4'-9"	6"
Z2	4'-3"	6"
Z3	3'-5"	6"
Z4	2'-7"	6"
Z5	8'-2"	8"
Z6	4'-10"	8"
Z7	4'-6"	6"
Z8	3'-10"	6"
Z9	3'-3"	6"
Z10	2'-7"	6"
Z11	8'-2"	8"
Z12	6'-4"	8"
Z13	4'-10"	8"

ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	6	4	STR	7'-1"	28	T1	3	5	STR	9'-0"	28
H2	2	4	STR	5'-2"	7	T2	12	5	STR	15'-10"	198
H3	12	4	1	3'-3"	26	T3	3	5	STR	15'-9"	49
H4	2	4	STR	7'-9"	10	T4	8	5	STR	16'-11"	141
H5	8	4	STR	13'-1"	70	T5	4	5	STR	14'-0"	58
H6	4	4	STR	9'-8"	26						
H7	4	4	STR	5'-11"	16	V1	2	4	STR	7'-1"	9
H8	4	4	STR	2'-2"	6	V2	2	4	STR	6'-5"	9
H9	12	4	STR	3'-3"	26	V3	2	4	STR	5'-7"	7
H10	6	4	STR	14'-1"	38	V4	2	4	STR	4'-8"	6
H11	7	4	STR	13'-10"	55	V5	2	4	STR	3'-10"	5
H12	8	4	STR	10'-4"	14	V6	4	6	STR	7'-0"	42
H13	9	4	STR	4'-3"	6	V7	4	6	STR	6'-7"	40
H14	10	4	2	3'-3"	26	V8	4	6	STR	6'-0"	36
H15	11	4	STR	14'-3"	19	V9	4	6	STR	5'-5"	33
						V10	4	6	STR	4'-9"	29
						V11	4	6	STR	4'-1"	25
N1	2	5	4	9'-1"	19	V12	4	6	STR	3'-6"	21
N2	2	5	4	8'-6"	18	V13	4	6	STR	2'-10"	17
N3	2	4	4	7'-7"	10	V14	4	6	STR	2'-2"	13
N4	2	4	4	6'-9"	9	V15	4	6	STR	1'-7"	10
N5	2	4	4	5'-10"	8	V16	2	4	STR	7'-4"	10
N6	4	6	4	9'-1"	55	V17	3	4	STR	6'-9"	14
N7	4	6	4	8'-8"	52	V18	4	4	STR	5'-9"	15
N8	4	6	4	8'-1"	49	V19	4	4	STR	4'-9"	13
N9	4	6	4	7'-5"	45	V20	4	4	STR	3'-10"	10
N10	4	6	4	6'-10"	41						
N11	4	6	4	6'-2"	37	Z1	2	4	5	5'-3"	7
N12	4	6	4	5'-6"	33	Z2	2	4	5	4'-9"	6
N13	4	6	4	4'-11"	30	Z3	3	4	5	3'-11"	8
N14	4	6	4	4'-3"	26	Z4	3	4	5	3'-1"	6
N15	4	6	4	3'-7"	22	Z5	40	6	5	8'-10"	531
N16	2	5	4	9'-4"	19	Z6	6	6	5	5'-6"	50
N17	3	5	4	8'-10"	28	Z7	5	4	5	5'-0"	17
N18	4	4	4	7'-10"	21	Z8	4	4	5	4'-4"	12
N19	4	4	4	6'-10"	18	Z9	4	4	5	3'-9"	10
N20	4	4	4	5'-10"	16	Z10	4	4	5	3'-1"	8
						Z11	36	6	5	8'-10"	478
S1	6	6	STR	6'-0"	54	Z12	4	6	5	7'-0"	42
						Z13	8	6	5	5'-6"	66

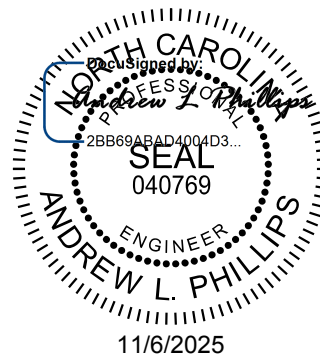
REINFORCING STEEL 3062 LBS

FOR 4 WINGS

CLASS A CONCRETE	
4 WINGS	34.7 CY
2 HEADWALLS	3.3 CY
2 END CURTAIN WALLS	3.7 CY
TOTAL	41.7 CY

PROJECT NO. U-6105
MECKLENBURG COUNTY
STATION: 22+01.71 -L-

SHEET 8 OF 8



Kimley»Horn

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2			4			

CULVERT 42C002

DRAWN BY: D.D. LOWERY DATE: 05/2024
CHECKED BY: B.M. KROL DATE: 05/2024
DESIGN ENGINEER OF RECORD: A.L. PHILLIPS DATE: 05/2024

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 7⁄8" ∅ SHEAR STUDS FOR THE ¾" ∅ STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7⁄8" ∅ STUDS FOR 4 - ¾" ∅ STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7⁄8" ∅ STUDS ALONG THE BEAM AS SHOWN FOR ¾" ∅ STUDS BASED ON THE RATIO OF 3 - 7⁄8"∅ 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. 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.

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