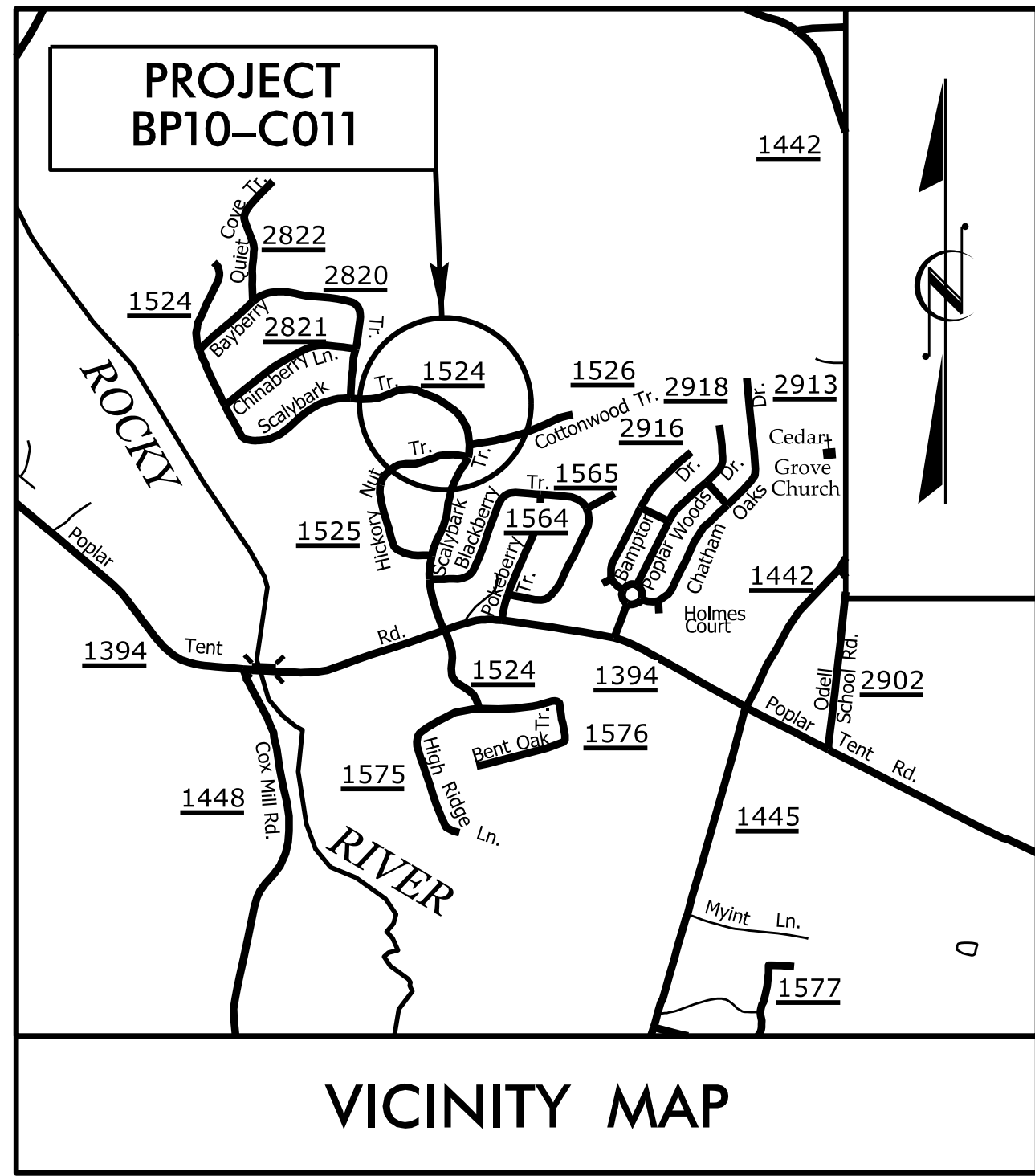


PROJECT: BP10-C011

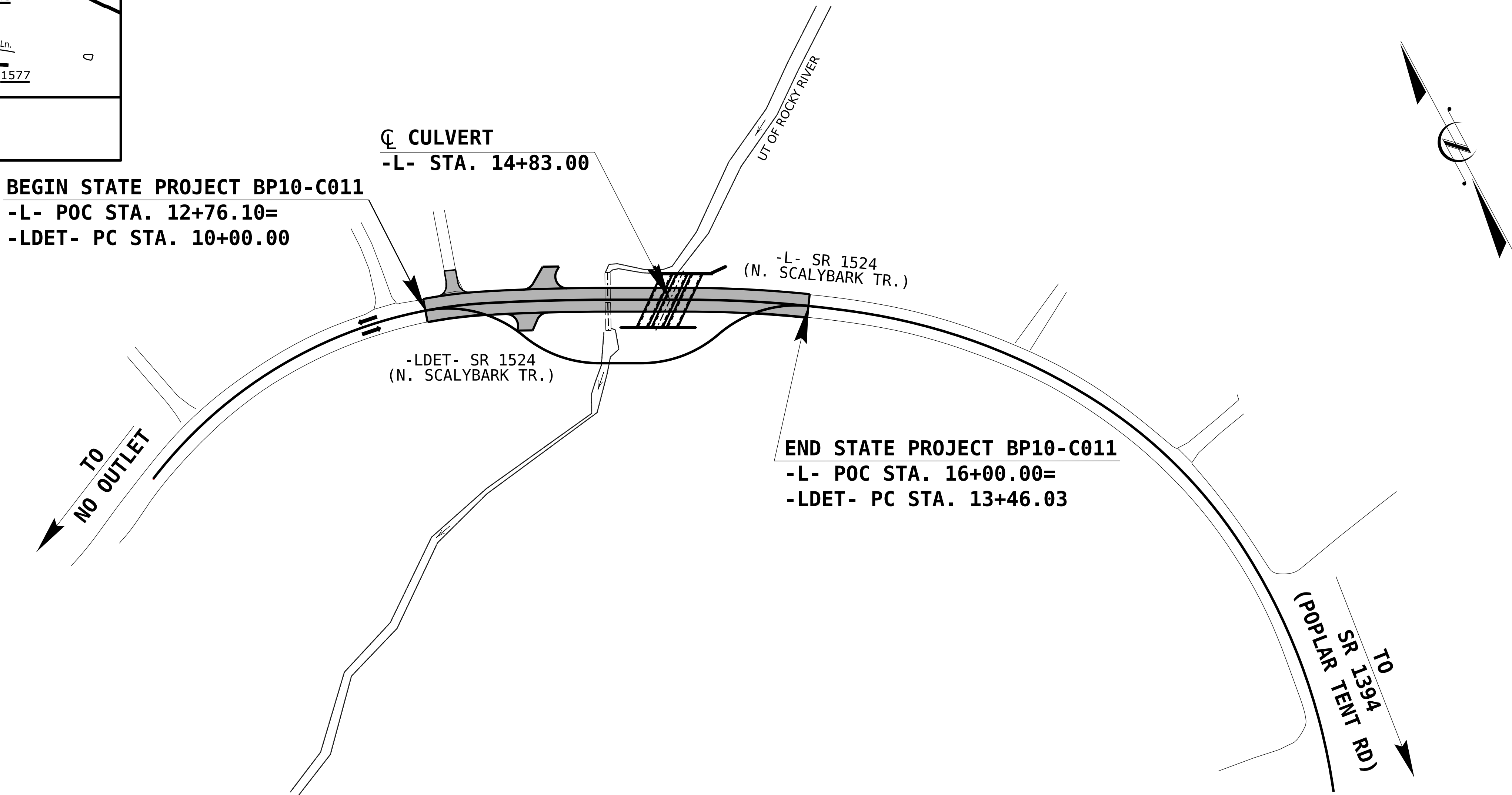
CONTRACT: DJ00571



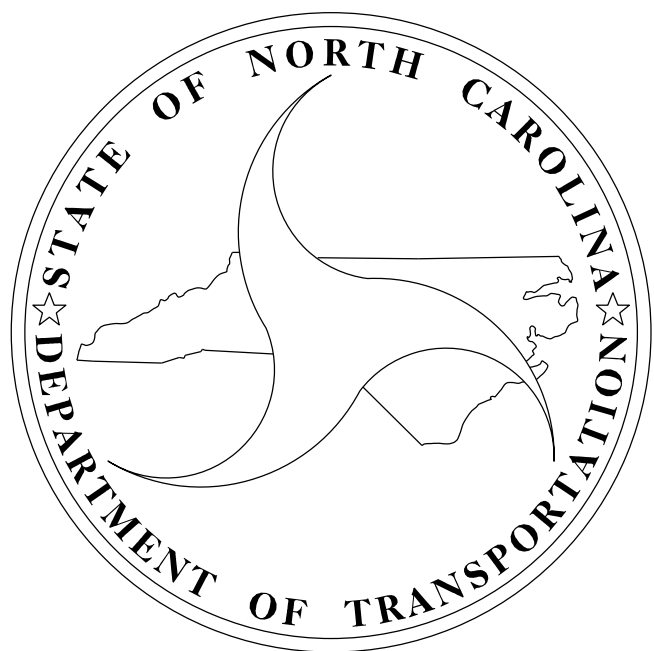
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
CABARRUS COUNTY

LOCATION: REPLACE CULVERT WITH NEW CULVERT NO. 120469
ALONG UNNAMED TRIBUTARY OF ROCKY RIVER
ON SR 1524 (N SCALYBARK TRAIL)
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND CULVERT

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP10-C011		13
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
BP10.C011.1	N.A.	P.E.	
BP10.C011.2	N.A.	UTIL./ROW	
BP10.C011.3	N.A.	CONST.	



CULVERT



DESIGN DATA

ADT (2026)= 320
ADT (2046)= 320
K = N/A %
D = N/A %
T = <1 % **
V = 30 MPH
** (TTST <1 %, DUAL <1 %)
FUNC CLASS=LOCAL
SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT BP10-C011 = 0.054 MILES
LENGTH STRUCTURE PROJECT BP10-C011 = 0.007 MILES
TOTAL LENGTH PROJECT BP10-C011 = 0.061 MILES

Prepared in the Office of:
CDM Smith
CDM SMITH Inc.
4600 Park Road, Suite 240
Charlotte, NC 28209-3730
NC COA No. F-1255
FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

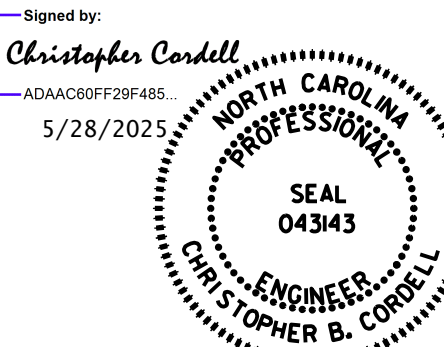
2024 STANDARD SPECIFICATIONS

LETTING DATE :
AUGUST 6, 2025

KIT A. PERSIANI, P.E.
PROJECT ENGINEER

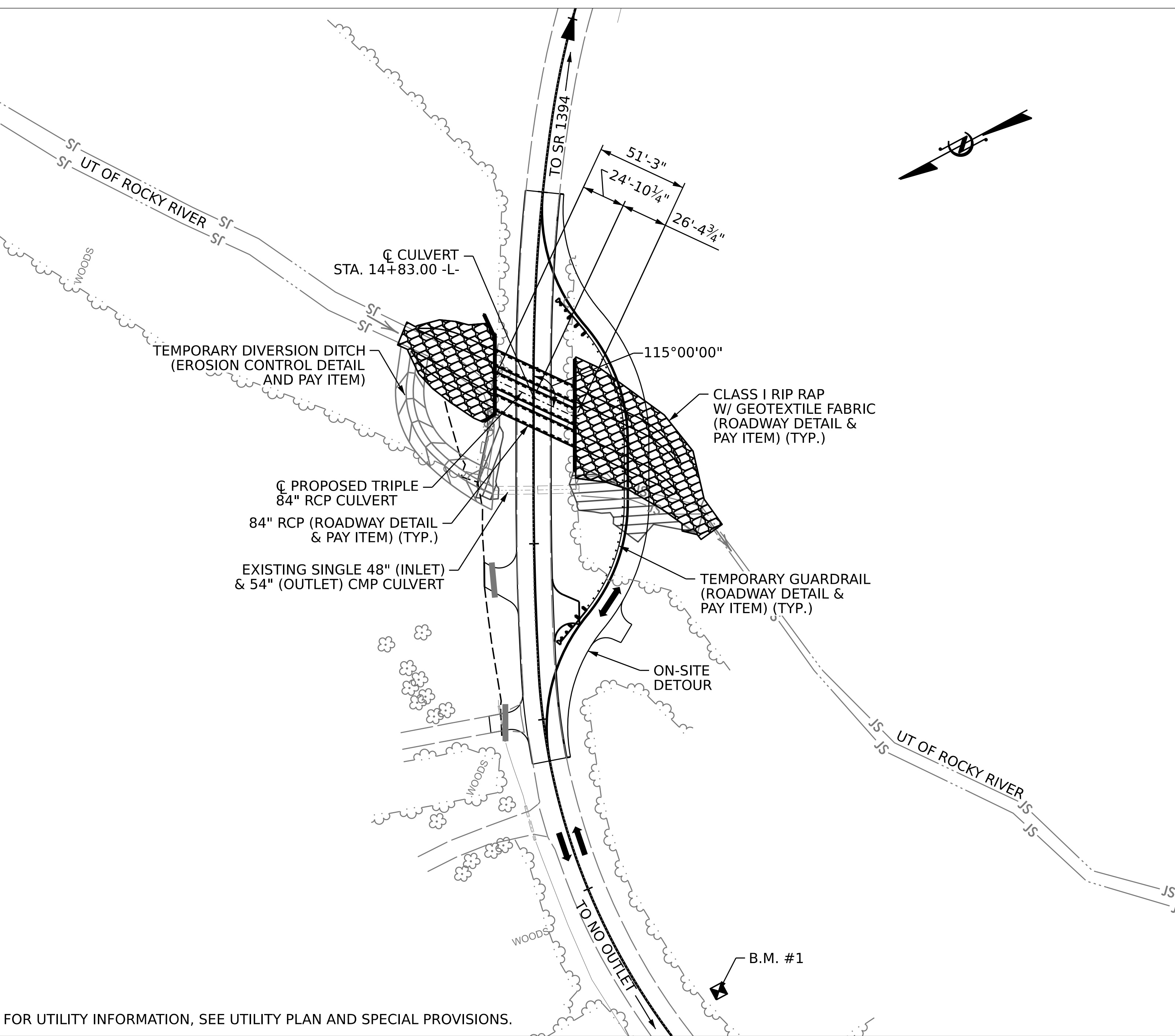
CHRIS CORDELL, P.E.
PROJECT DESIGN ENGINEER

YANWEI MA, P.E.
NCDOT CONTACT



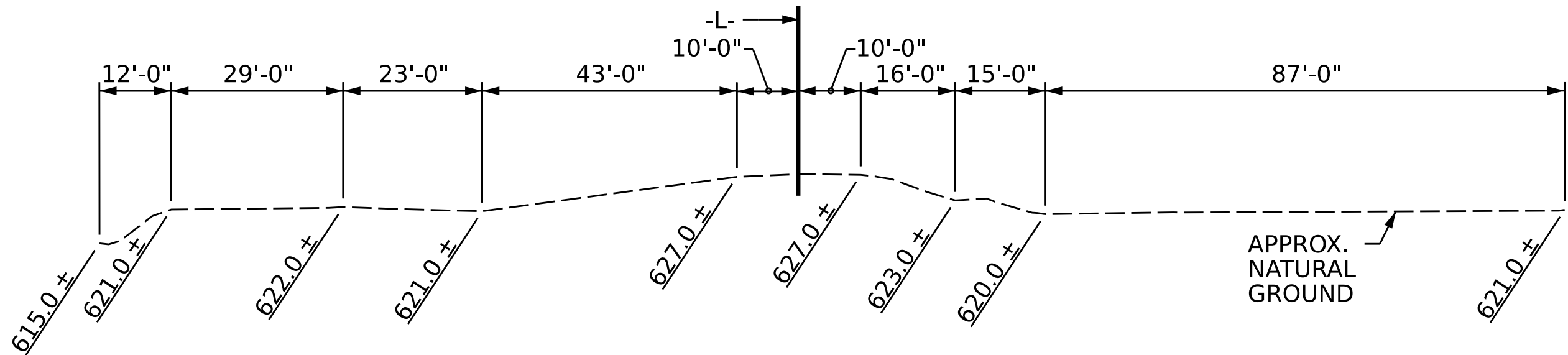
8/26/21

B.M.#1: NAIL IN BASE OF 18" OAK TREE STA. 11+08.35 -L-, 36.62'RT. ELEV. 626.90'



FOR UTILITY INFORMATION, SEE UTILITY PLAN AND SPECIAL PROVISIONS.

LOCATION SKETCH



PROFILE ALONG $\text{\textcircled{C}}$ CULVERT

ROADWAY DATA

GRADE PT. EL. @ STA. 14+83.00 -L- = 627.24'
BED ELEV. @ STA. 14.83.00 -L- = 617.52'
ROADWAY SLOPE = VARIES

HORIZONTAL CURVE DATA

P.I. STA. = 15+69.90 -L-
 Δ = 08°-18'-41.1" (RT.)
D = 05°-48'-40.0"
L = 143.03'
T = 71.64'
R = 985.97'

HYDRAULIC DATA

DESIGN DISCHARGE = 660 CFS
FREQUENCY OF DESIGN FLOOD = 10 YRS
DESIGN HIGH WATER ELEVATION = 624.7 FT
DRAINAGE AREA = 1.04 SQ MI
BASE DISCHARGE (Q100) = 920 CFS
BASE HIGH WATER ELEVATION = 626.5 FT

OVERTOPPING DATA

OVERTOPPING DISCHARGE = 835 CFS
FREQUENCY OF OVERTOPPING FLOOD = 50± YRS
OVERTOPPING FLOOD ELEVATION = 626.1 FT *

* AT LOW PT. STA. 13+42 -L-

W.S. ELEVATION AT DATE OF SURVEY = 618.71

TOTAL STRUCTURE QUANTITIES

CLASS 'A' CONCRETE 143.1 CU. YDS.
REINFORCING STEEL 17,130 LBS.

FOUNDATION NOTES

UNDERCUT SOFT/VERY LOOSE SOILS THAT MAY BE ENCOUNTERED BENEATH THE BOTTOM OF THE FOUNDATION CONDITION MATERIAL. BACKFILL UNDERCUT AREAS WITH FOUNDATION CONDITIONING MATERIAL. IF MORE THAN 1 FOOT OF ADDITIONAL UNDERCUT IS REQUIRED, CONTACT THE OPERATIONS ENGINEER FOR APPROVAL.

NOTES

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

THE PRECAST REINFORCED CONCRETE PIPE CULVERT IS TO BE DESIGNED FOR A MINIMUM DESIGN FILL DEPTH OF 2.78' AND MAXIMUM OF 3.92'.

FOR OTHER DESIGN DATA AND NOTES, SEE SHEET SN.

3" $\text{\textcircled{O}}$ WEEP HOLES INDICATED TO BE IN ACCORDANCE WITH THE SPECIFICATIONS.

THE CONTRACTOR SHALL CHECK THE LENGTH AND ELEVATION OF THE CULVERT BEFORE STAKING IT OUT TO MAKE CERTAIN THAT IT WILL PROPERLY TAKE CARE OF THE FILL.

CAST-IN-PLACE CONCRETE SHALL BE POURED IN THE FOLLOWING ORDER:
1. FOOTING AND 4" OF ALL VERTICAL WALLS.
2. INSTALL PRECAST 84" REINFORCED CONCRETE PIPE.
3. THE REMAINING PORTIONS OF THE WALLS AND WINGS TO FULL HEIGHT.
4. CONCRETE SILLS

ALL MATERIALS AND WORKSMANSHIP SHALL MEET THE REQUIREMENTS OF THE NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES DATED JANUARY 2024.

84" REINFORCED CONCRETE PIPE WALLS ARE ASSUMED TO BE 8 $\frac{3}{4}$ " AND SHALL BE CONFIRMED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. ANY CHANGES IN DESIGN DIMENSIONS WILL REQUIRE ADJUSTMENT OF DETAILS AND REINFORCEMENT LENGTHS, AND MAY REQUIRE ADJUSTMENT OF THE FOOTING ELEVATIONS TO ACCOMMODATE.

PER INFORMATION PROVIDED BY THE NCDOT GEOTECHNICAL UNIT THE HEADWALLS ARE DESIGNED ASSUMING A SOIL UNIT WEIGHT OF 115 PCF, A SOIL FRICTION ANGLE OF 28 DEGREES, AND A FACTORED BEARING RESISTANCE OF 2 KSF. THE CONTRACTOR MUST CHECK FIELD CONDITIONS FOR THE REQUIRED RESISTANCE PRIOR TO CONSTRUCTION OF THE FOOTINGS.

BACKFILL CULVERT IN ACCORDANCE WITH SECTION 300 OF THE STANDARD SPECIFICATIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR CONSTRUCTION SEQUENCE AND EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.

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

A 3 FOOT STRIP OF FILTER FABRIC SHALL BE ATTACHED TO THE FILL FACE OF THE WING COVERING THE ENTIRE LENGTH OF THE EXPANSION JOINT.

NO PRECAST REINFORCED BOX CULVERT OPTION WILL BE ALLOWED.

FOR INSTALLATION OF THE 84" PRECAST REINFORCED CONCRETE PIPES, SEE SECTION 300 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. **BP10-C011**

CABARRUS COUNTY

STATION: **14+83.00 -L-**

SHEET 1 OF 13 NEW STRUCTURE 120469

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**TRIPLE 84" REINFORCED
CONCRETE PIPE CULVERT
ALONG UT OF ROCKY RIVER
ON SR 1524 (SCALEYBARK TRAIL)**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-1
1			3			TOTAL SHEETS 13
2			4			

CDM Smith

CDM SMITH Inc.
4600 Park Road, Suite 240
Charlotte, NC 28209-3730
NC COA No. F-1255

DOCUMENT NOT CONSIDERED
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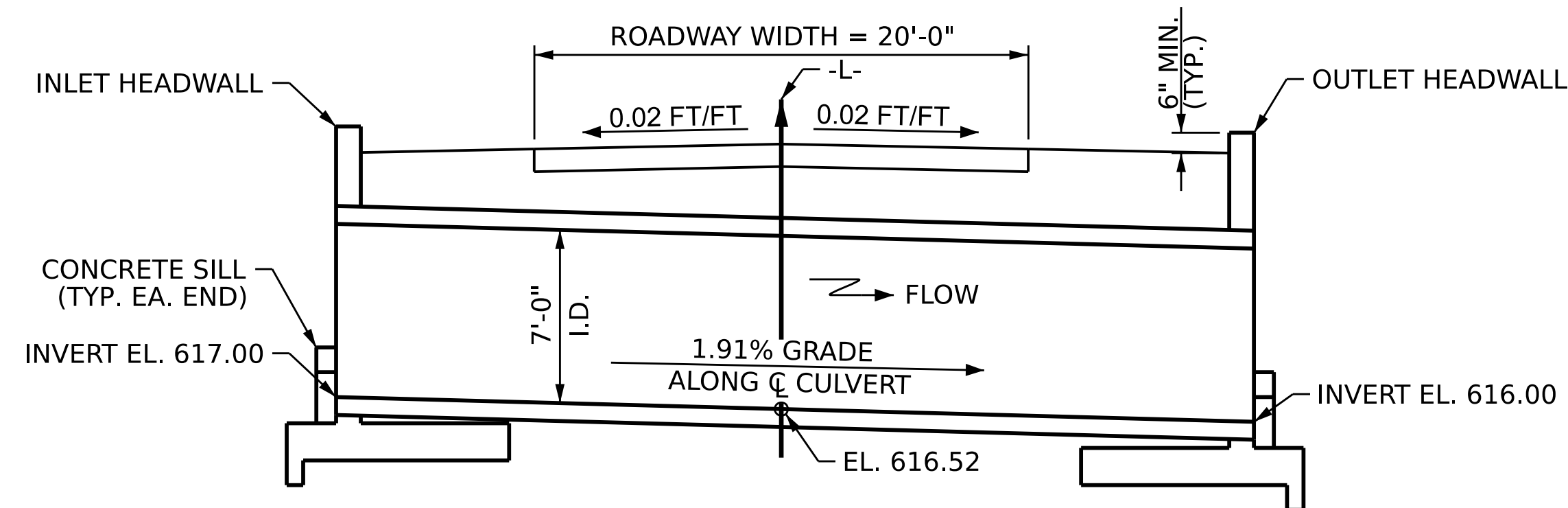
DRAWN BY : JJR
CHECKED BY : CBC
DESIGN ENGINEER : CBC

DATE : 2/25
DATE : 2/25
DATE : 2/25

DWG. No.

NORTH CAROLINA
PROFESSIONAL
SEAL
043143
ENGINEER
CHRISTOPHER B. CORDELL

Signed by:
Christopher Cordell
ADAA007723F485...
5/28/2025



CULVERT SECTION NORMAL TO ROADWAY

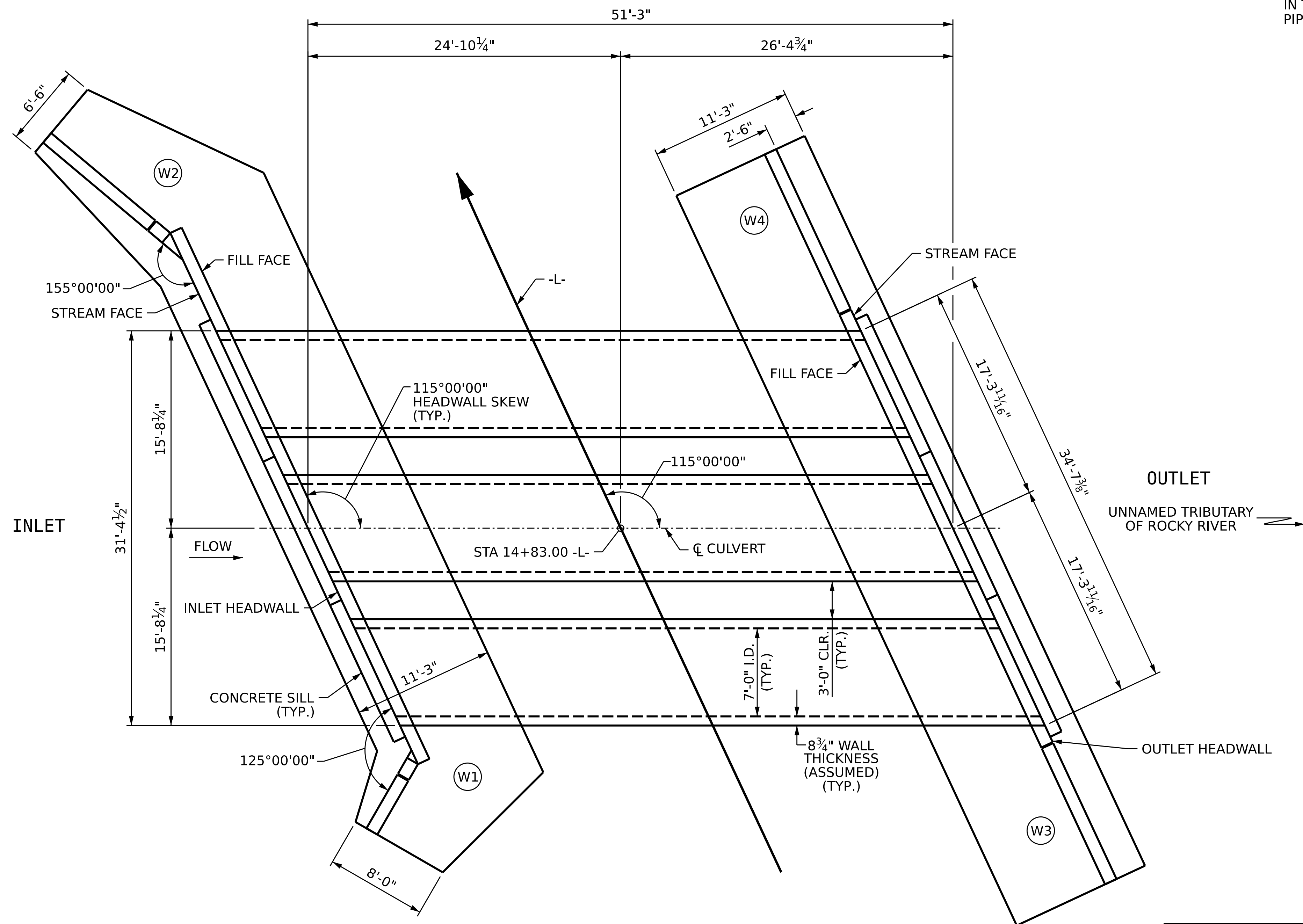
NOTES

CULVERT PIPE IS BURIED 1 FOOT BELOW EXISTING STREAM BED. BACKFILL WITH NATIVE MATERIAL TO SILL HEIGHT IN ALL BARRELS.

NATIVE MATERIAL BETWEEN SILLS IN THE CULVERT SHALL PROVIDE A CONTINUOUS FLOW CHANNEL.

THE ENGINEER, IN CONSULTATION WITH DEO STAFF, SHALL REVIEW ALL MATERIAL TO BE USED AS BACKFILL PRIOR TO CONDUCTING THE BACKFILL ACTIVITY. BACKFILL SHALL CONSIST OF NATIVE MATERIAL ONLY UNLESS THE ENGINEER, IN CONSULTATION WITH DEO STAFF, DETERMINES THAT (1) THE NATIVE MATERIAL IS UNSUITABLE, OR (2) ADDITIONAL MATERIAL IS REQUIRED TO SUPPLEMENT THE NATIVE MATERIAL. THE CHOSEN BACKFILL MATERIAL SHALL NOT HAVE ADVERSE EFFECTS TO AQUATIC LIFE, AQUATIC LIFE PASSAGE, OR WATER QUALITY. NATIVE MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED OR FLOODPLAIN AT THE PROJECT SITE DURING CULVERT CONSTRUCTION.

THE ENTIRE COST OF WORK REQUIRED TO PLACE EXCAVATED OR SUPPLEMENTAL MATERIAL AS SHOWN ON THE PLANS SHALL BE INCLUDED IN THE ROADWAY PAY ITEM FOR THE 84" PRECAST REINFORCED CONCRETE PIPES. SEE SECTION 300 OF THE STANDARD SPECIFICATIONS.



PLAN

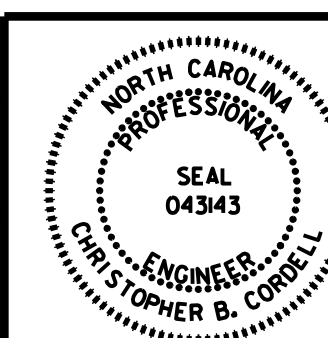
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Charlotte, NC 28209-3730
NC COA No. F-1255

DRAWN BY : JJR DATE : 2/25
 CHECKED BY : CBC DATE : 2/25
 DESIGN ENGINEER : CBC DATE : 2/25

DWG. No.



Signed by:
Christopher Cordell
ADAAC80FF29F485...
5/28/2025

PROJECT NO. BP10-C011

CABARRUS COUNTY

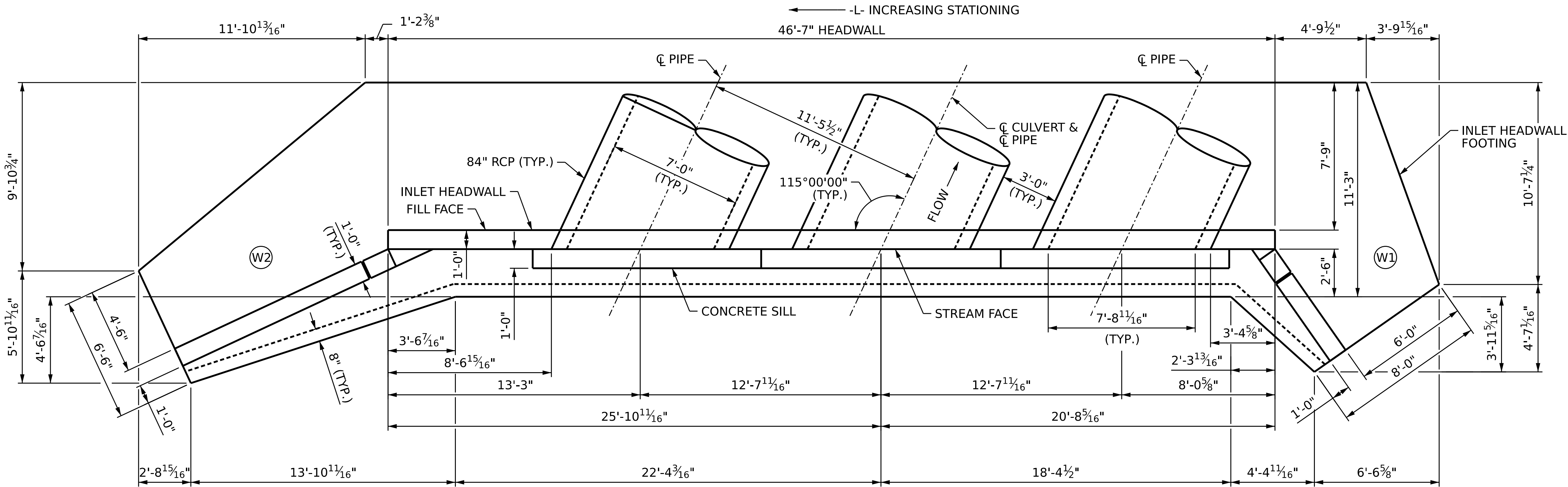
STATION: 14+83.00 -L-

SHEET 2 OF 13

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TRIPLE 84" REINFORCED
CONCRETE PIPE CULVERT
ALONG UT OF ROCKY RIVER
ON SR 1524 (SCALEYBARK TRAIL)

REVISONS						SHEET NO. C-2
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 13
2			4			

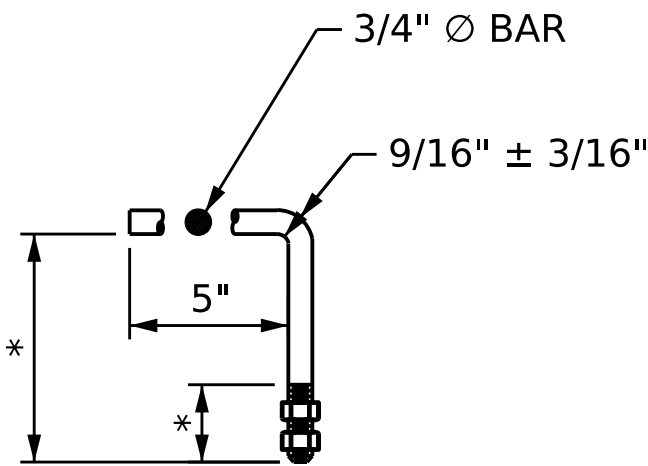


INLET PLAN

LOOKING DOWNSTREAM

NOTES

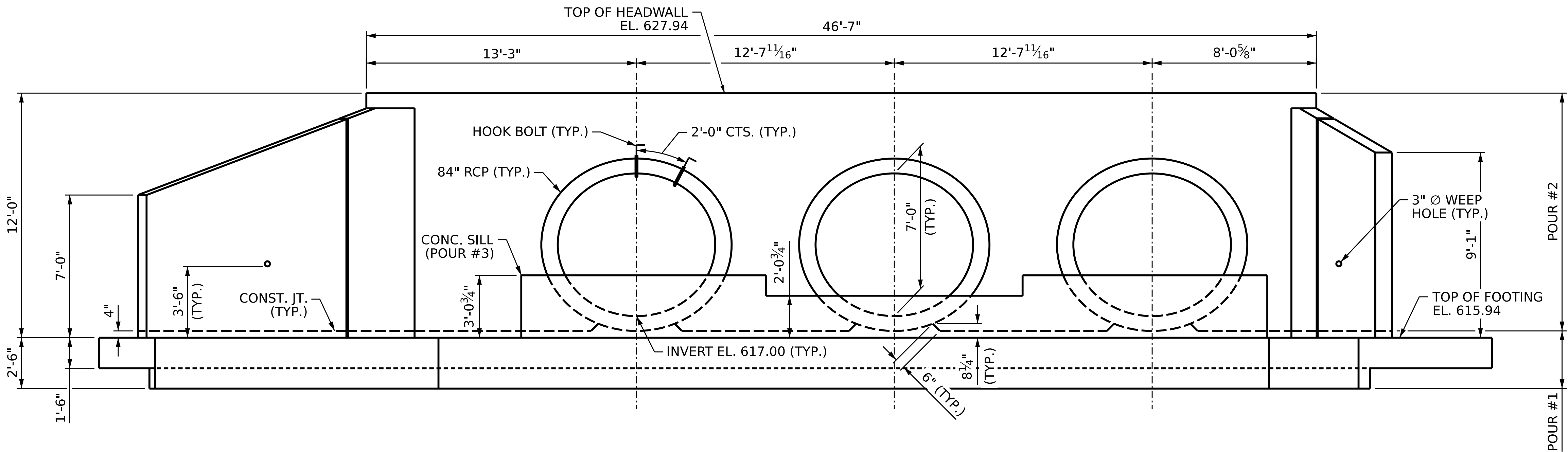
- FOR INLET HEADWALL DETAILS, SEE SHEET C-5.
FOR WING DETAILS, SEE SHEET C-6.
FOR FOOTING DETAILS, SEE SHEET C-7.
FOR SILL DETAILS, SEE SHEET C-13.



HOOK BOLT

HOOK BOLTS (ANCHORS) SHALL BE CONSTRUCTED AT 2'-0" CTS. ALONG THE CIRCUMFERENCE OF THE 7'-0" CSPA. THE HOOK BOLTS SHALL BE EMBEDDED IN THE CONCRETE ENDWALL 8" IN DEPTH. THE GALVANIZED 3/4" DIA. HOOK BOLTS MUST MEET ASTM A-307 OR ASTM A-836. BOTH BOLTS AND NUTS MUST BE IN ACCORDANCE WITH ASTM A-153 FOR GALVANIZING. HOOK BOLTS SHALL BE PLACED, AND MAY BE TURNED AS NECESSARY, SO AS TO AVOID INTERFERENCE WITH THE HEADWALL REINFORCEMENT.

* REQUIRED DIMENSION TO BE DETERMINED BY THE MANUFACTURER TO ACCOMMODATE FINAL PIPE WALL THICKNESS.



END ELEVATION OF INLET NORMAL TO SKEW

(7 HOOK BOLTS PER PIPE REQUIRED)

PROJECT NO. **BP10-C011**
CABARRUS COUNTY
STATION: **14+83.00 -L-**

SHEET 3 OF 13

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

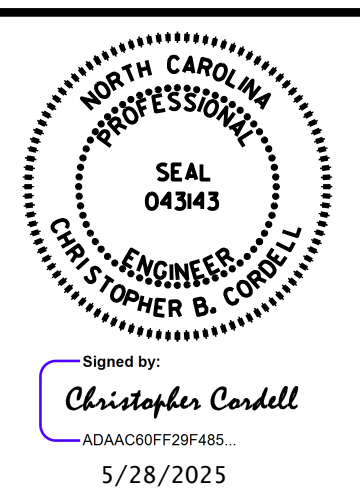
INLET HEADWALL

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SIGNATURES COMPLETED

CDM Smith
CDM SMITH Inc.
4600 Park Road, Suite 240
Charlotte, NC 28209-3730
NC COA No. F-1255

DRAWN BY : JJR DATE : 2/25
CHECKED BY : CBC DATE : 2/25
DESIGN ENGINEER : CBC DATE : 2/25

DWG. No.

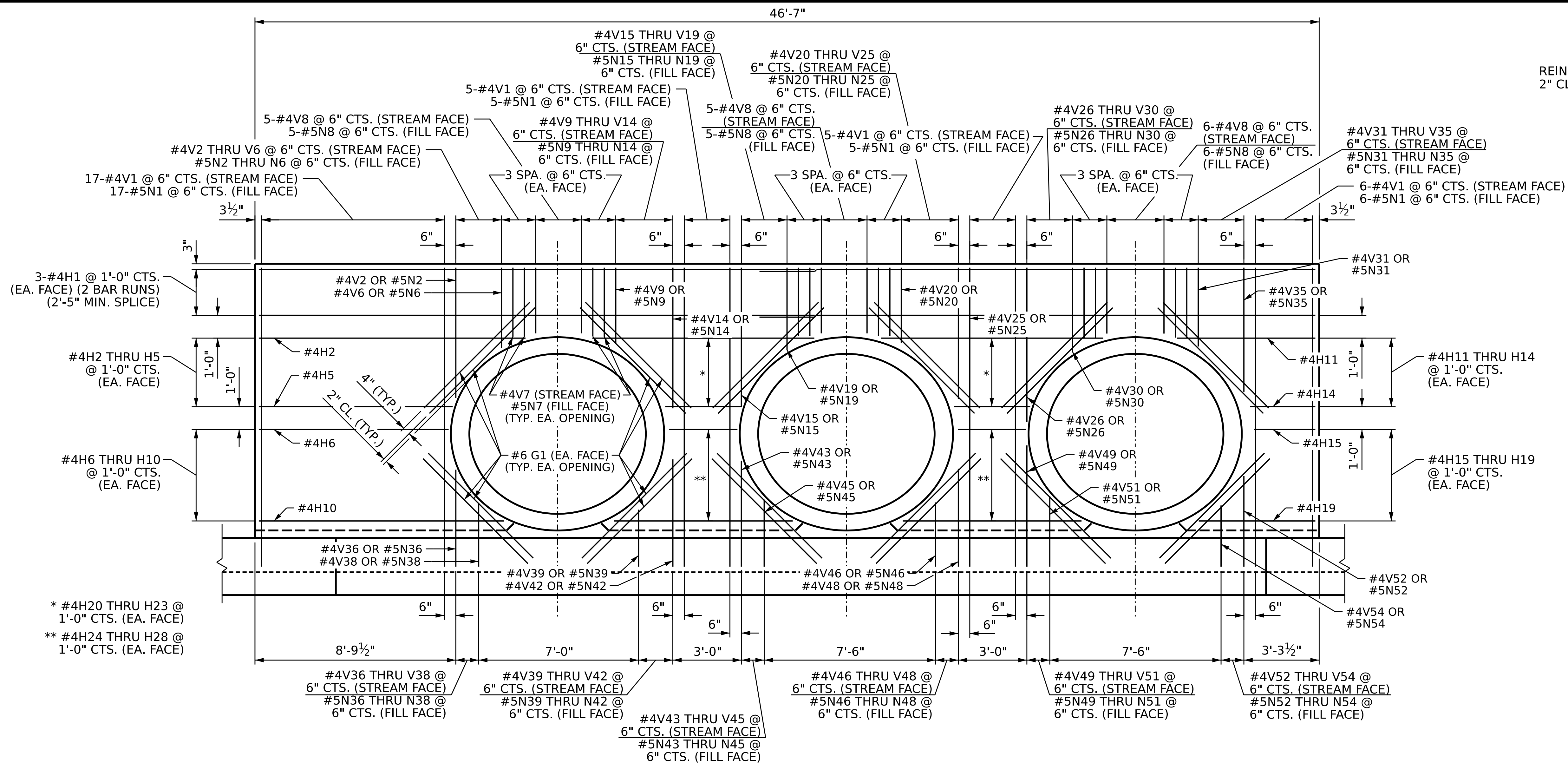


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			C-3
2			4			TOTAL SHEETS 13

Technical drawing of a bracket assembly. The drawing shows a side view of a bracket with a vertical support and a horizontal arm. The horizontal arm is labeled "3/4" Ø BAR". The vertical support is labeled "9/16" ± 3/16". The horizontal arm has a length of "5" from the center of the support to the end. The vertical support has a height of "*" from the base to the top of the arm. The base of the vertical support is labeled "*" from the center of the support to the base. The drawing includes a small square feature on the horizontal arm and a small circular feature on the vertical support.

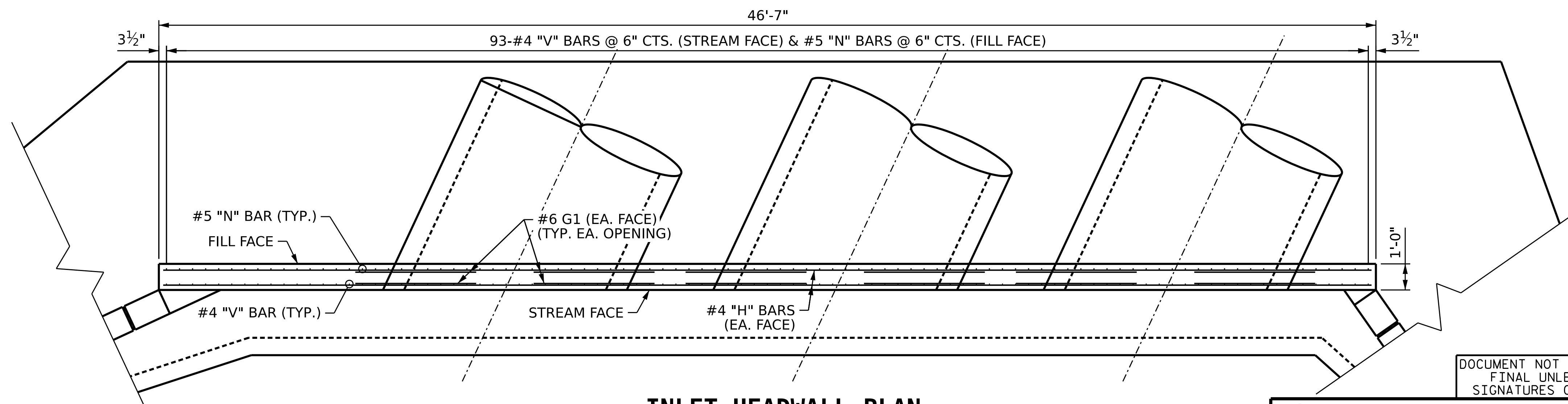
REVISIONS						SHEET NO. C-4
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 13
2			4			

Seal of the Professional Engineer
 NORTH CAROLINA
 PROFESSIONAL
 SEAL
 043143
 ENGINEER
 CHRISTOPHER B. CORDELL
 Signed by:
Christopher Cordell
 ADAAC60FF29F485...
 5/28/2025



INLET HEADWALL ELEVATION

WINGS & SILL NOT SHOWN FOR CLARITY

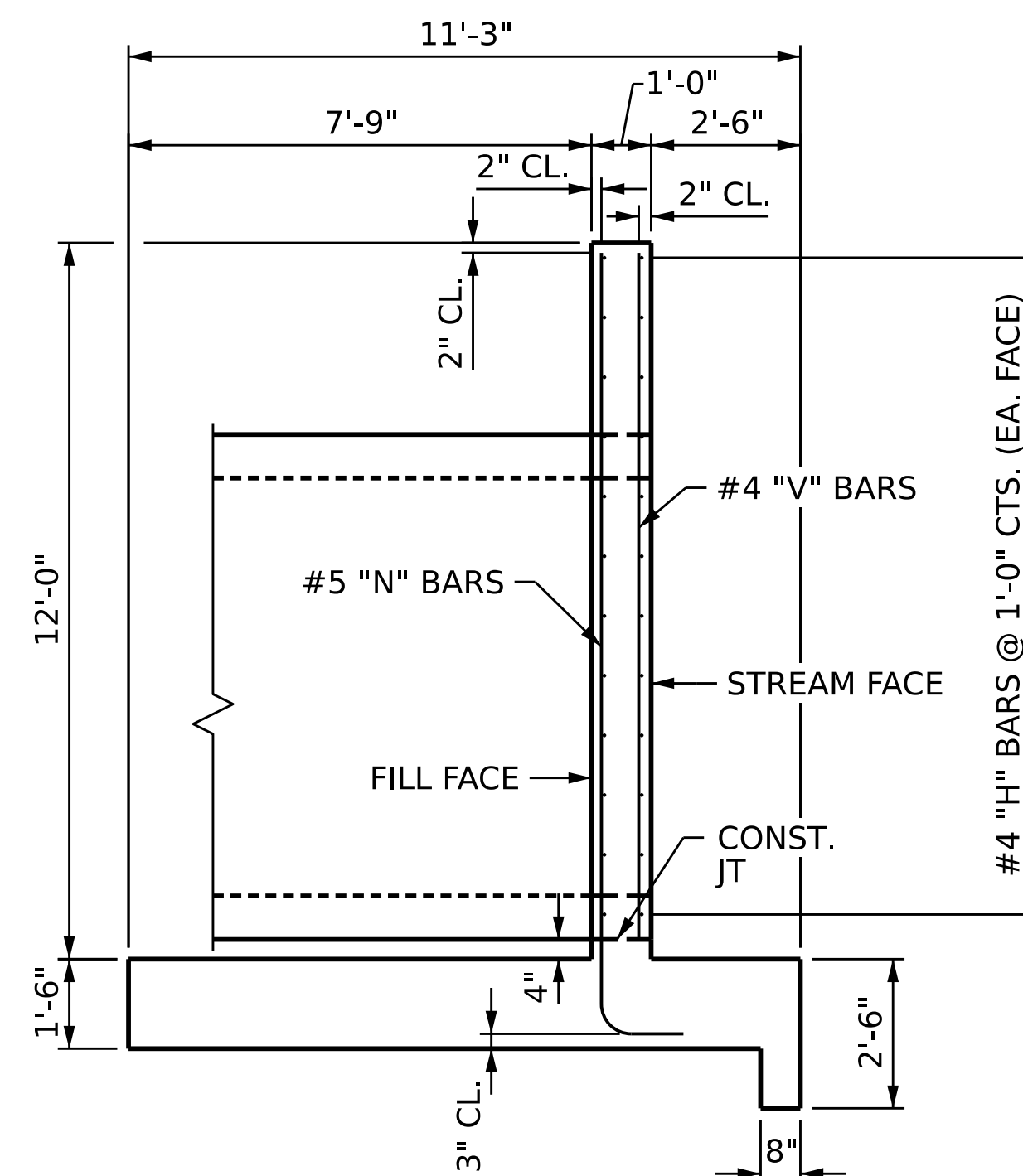


INLET HEADWALL PLAN

WINGS & SILL NOT SHOWN FOR CLARITY
FOR HEADWALL LAYOUT DIMENSIONS, SEE SHEET C-3

NOTES

REINFORCEMENT MAY BE CLIPPED AS NECESSARY TO MAINTAIN
2" CLEAR OF PIPE WALL OPENING.



INLET HEADWALL SECTION

SILL NOT SHOWN FOR CLARITY
FOOTING REINFORCEMENT NOT SHOWN FOR CLARITY

PROJECT NO. BP10-C011

CABARRUS COUNTY

STATION: 14+83.00 -L-

SHEET 5 OF 13

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

INLET HEADWALL DETAILS

REVISIONS						SHEET NO. C-5
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 13
2			4			

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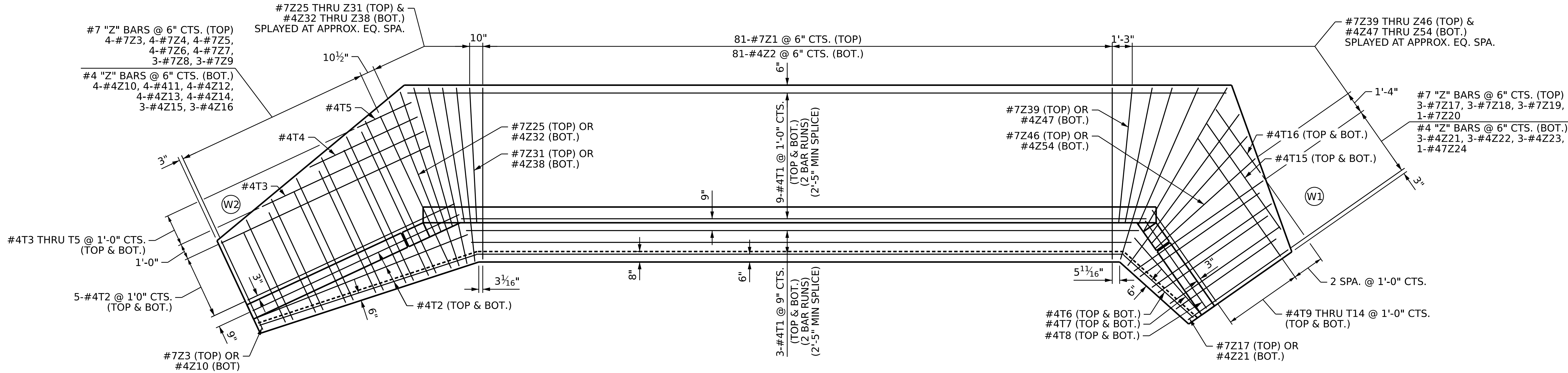
DWG. No.

A circular professional engineer seal for Christopher B. CordeLL. The outer ring contains the text "NORTH CAROLINA" at the top and "ENGINEER" at the bottom. Inside the ring, the name "CHRISTOPHER B. CORDELL" is written in a curved path. In the center of the seal, the word "SEAL" is positioned above the license number "043143".

Signed by:
Christopher Cordell
ADAAC80FF29F485...
5/28/2025

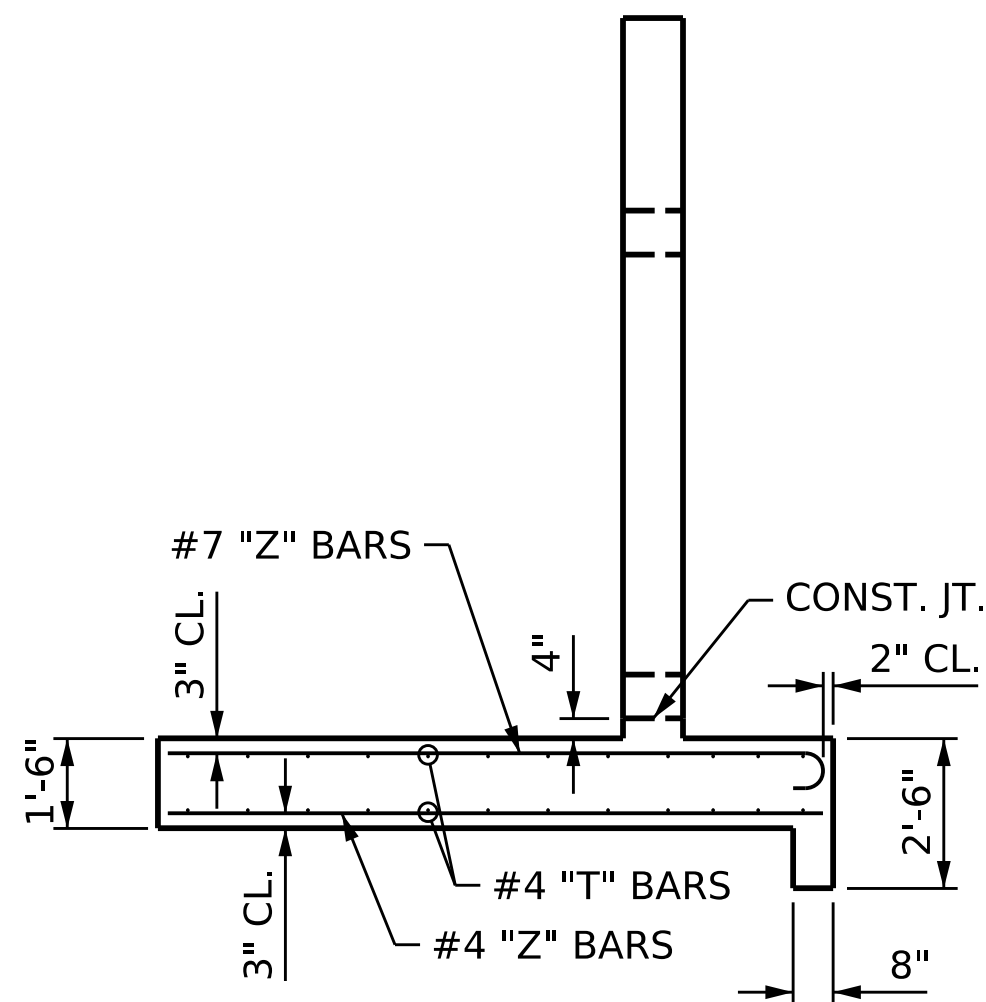


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-6
1			3			TOTAL SHEETS 13
2			4			



INLET FOOTING PLAN

FOR FOOTING LAYOUT DIMENSION, SEE SHEET C-3



INLET FOOTING SECTION

HEADWALL & WINGWALL REINFORCEMENT
NOT SHOWN FOR CLARITY

PROJECT NO. **BP10-C011**
CABARRUS COUNTY
STATION: **14+83.00 -L-**

SHEET 7 OF 13

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

INLET FOOTING DETAILS

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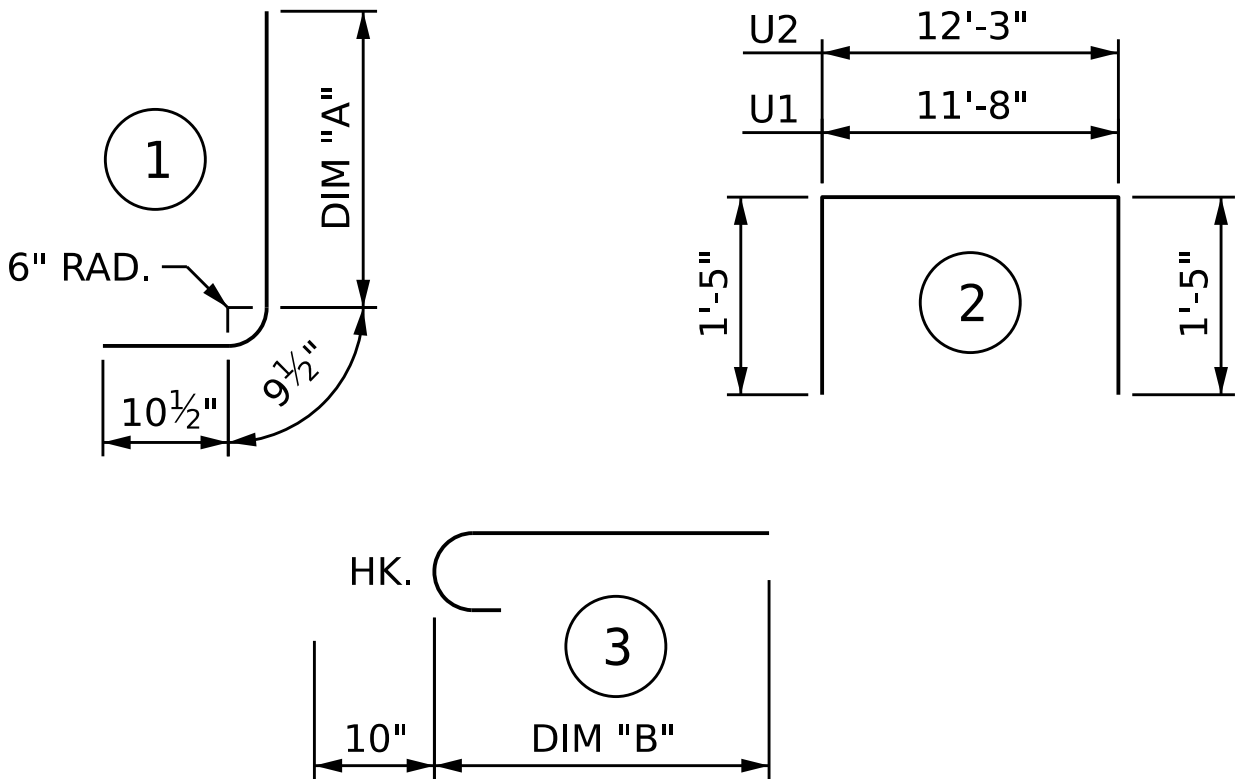
DRAWN BY : JJR DATE : 2/25
CHECKED BY : CBC DATE : 2/25
DESIGN ENGINEER : CBC DATE : 2/25

DWG. No.

Signed by:
Christopher Cordell
ADAAAC68FF23F485
5/28/2025

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			C-7
2			4			TOTAL SHEETS 13

BAR TYPES



DIM "A"

BAR	LENGTH	BAR	LENGTH	BAR	LENGTH
N1	12'-7"	N46	2'-3"	N57	10'-8"
N36	3'-8"	N47	2'-10"	N58	11'-5"
N37	2'-10"	N48	3'-9"	N59	7'-7"
N38	2'-3"	N49	4'-9"	N60	8'-2"
N39	1'-11"	N50	3'-3"	N61	8'-8"
N40	2'-5"	N51	2'-7"	N62	9'-2"
N41	3'-1"	N52	2'-2"	N63	9'-8"
N42	4'-2"	N53	2'-8"	N64	10'-2"
N43	4'-1"	N54	3'-5"	N65	10'-9"
N44	3'-0"	N55	9'-8"	N66	11'-5"
N45	2'-5"	N56	10'-2"		

DIM "B"

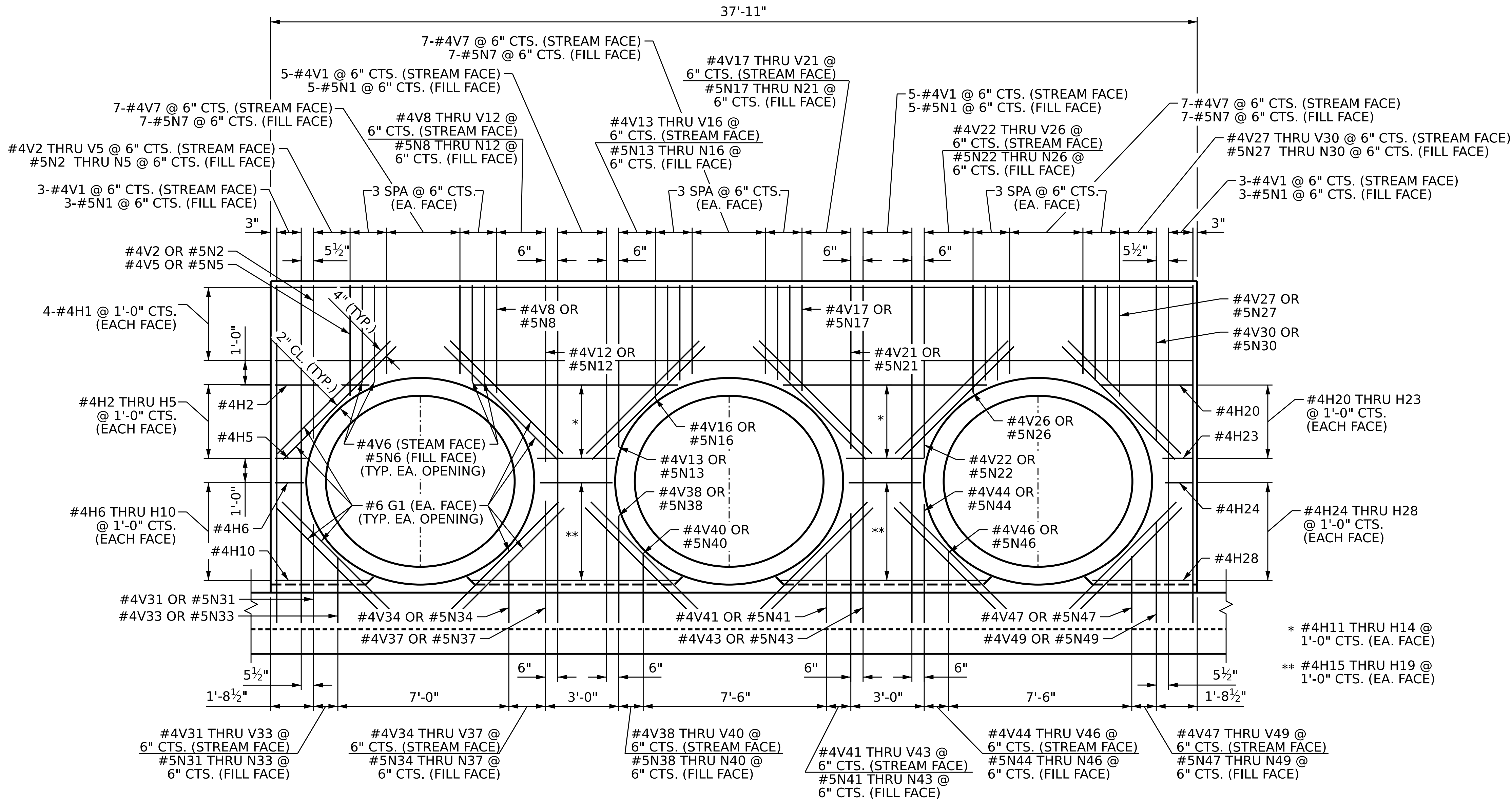
BAR	LENGTH	BAR	LENGTH	BAR	LENGTH
Z1	10'-11"	Z18	8'-6"	Z31	8'-7"
Z3	6'-3"	Z19	9'-3"	Z39	8'-7"
Z4	7'-0"	Z20	10'-0"	Z40	8'-9"
Z5	7'-9"	Z25	8'-11"	Z41	11'-4"
Z6	8'-6"	Z26	11'-8"	Z42	9'-6"
Z7	9'-4"	Z27	9'-1"	Z43	10'-7"
Z8	10'-1"	Z28	11'-5"	Z44	11'-11"
Z9	10'-8"	Z29	8'-8"	Z45	9'-1"
Z17	7'-9"	Z30	11'-1"	Z46	8'-6"

REINFORCING STEEL BREAKDOWN

HEADWALL:	2,153 LBS.
WINGWALLS:	906 LBS.
FOOTING:	5,018 LBS.
SILLS:	230 LBS.
TOTAL REINFORCING STEEL	8,361 LBS.
CLASS A CONCRETE BREAKDOWN	
POUR #1: FOOTINGS & LOWER PART OF HEADWALL & WINGS	43.7 C.Y.
POUR #2: UPPER PART OF HEADWALL & WINGS	20.2 C.Y.
POUR #3: SILLS	3.7 C.Y.
TOTAL CLASS A CONCRETE	67.6 C.Y.

BILL OF MATERIAL

INLET HEADWALL						INLET HEADWALL (CONT.)						INLET FOOTING						INLET FOOTING (CONT.)																	
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT												
G1	48	#6	STR.	6'-6"	469	N44	1	#5	1	4'-8"	5	T1	48	#4	STR.	27'-3"	874	Z48	1	#4	STR.	8'-9"	6												
						N45	1	#5	1	4'-1"	4	T2	16	#4	STR.	14'-7"	156	Z49	1	#4	STR.	11'-4"	8												
H1	12	#4	STR.	24'-3"	195	N46	1	#5	1	3'-11"	4	T3	2	#4	STR.	11'-4"	15	Z50	1	#4	STR.	9'-6"	6												
H2	2	#4	STR.	11'-8"	16	N47	1	#5	1	4'-6"	5	T4	2	#4	STR.	7'-6"	10	Z51	1	#4	STR.	10'-7"	7												
H3	2	#4	STR.	9'-9"	13	N48	1	#5	1	5'-5"	6	T5	2	#4	STR.	3'-9"	5	Z52	1	#4	STR.	11'-11"	8												
H4	2	#4	STR.	8'-11"	12	N49	1	#5	1	6'-5"	7	T6	2	#4	STR.	5'-11"	8	Z53	1	#4	STR.	9'-1"	6												
H5	2	#4	STR.	8'-5"	11	N50	1	#5	1	4'-11"	5	T7	2	#4	STR.	6'-4"	8	Z54	1	#4	STR.	8'-6"	6												
H6	2	#4	STR.	8'-3"	11	N51	1	#5	1	4'-3"	4	T8	2	#4	STR.	6'-9"	9	WINGWALL 1																	
H7	2	#4	STR.	8'-4"	11	N52	1	#5	1	3'-10"	4	T9	2	#4	STR.	7'-1"	9																		
H8	2	#4	STR.	8'-8"	12	N53	1	#5	1	4'-4"	5	T10	2	#4	STR.	7'-6"	10																		
H9	2	#4	STR.	9'-5"	13	N54	1	#5	1	5'-1"	5	T11	2	#4	STR.	7'-11"	11	H29	2	#4	STR.	4'-10"	6												
H10	2	#4	STR.	10'-8"	14							T12	2	#4	STR.	8'-4"	11	H30	18	#4	STR.	4'-7"	55												
H11	2	#4	STR.	6'-0"	8	V1	33	#4	STR.	11'-6"	254	T13	2	#4	STR.	8'-9"	12	H31	2	#4	STR.	2'-2"	3												
H12	2	#4	STR.	4'-2"	6	V2	1	#4	STR.	5'-8"	4	T14	2	#4	STR.	9'-2"	12	H32	22	#4	STR.	2'-10"	42												
H13	2	#4	STR.	3'-3"	4	V3	1	#4	STR.	4'-9"	3	T15	2	#4	STR.	8'-2"	11	N55	3	#5	1	11'-4"	35												
H14	2	#4	STR.	2'-10"	4	V4	1	#4	STR.	4'-3"	3	T16	2	#4	STR.	4'-11"	7	N56	3	#5	1	11'-10"	37												
H15	2	#4	STR.	2'-8"	4	V5	1	#4	STR.	3'-10"	3							N57	3	#5	1	12'-4"	39												
H16	2	#4	STR.	2'-9"	4	V6	1	#4	STR.	3'-6"	2	Z1	81	#7	3	11'-9"	1945	N58	3	#5	1	13'-1"	41												
H17	2	#4	STR.	3'-1"	4	V7	12	#4	STR.	3'-0"	24	Z2	81	#4	STR.	10'-11"	591																		
H18	2	#4	STR.	3'-9"	5	V8	16	#4	STR.	2'-10"	30	Z3	4	#7	3	7'-1"	58	V55	3	#4	STR.	8'-7"	17												
H19	2	#4	STR.	5'-1"	7	V9	1	#4	STR.	3'-4"	2	Z4	4	#7	3	7'-10"	64	V56	3	#4	STR.	9'-1"	18												
H20	4	#4	STR.	9'-8"	26	V10	1	#4	STR.	3'-7"	2	Z5	4	#7	3	8'-7"	70	V57	3	#4	STR.	9'-7"	19												
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H22	4	#4	STR.	4'-3"	11	V12	1	#4	STR.	4'-4"	3	Z7	4	#7	3	10'-2"	83	V67	1	#4	STR.	10'-9"	7												
H23	4	#4	STR.	3'-4"	9	V13	1	#4	STR.	5'-0"	3	Z8	3	#7	3	10'-11"	69	WINGWALL 2																	
H24	4	#4	STR.	2'-11"	8	V14	1	#4	STR.	6'-1"	4	Z9	3	#7	3	11'-6"	71																		
H25	4	#4	STR.	3'-1"	8	V15	1	#4	STR.	6'-1"	4	Z10	4	#4	STR.	6'-3"	17																		
H26	4	#4	STR.	3'-10"	10	V16	1	#4	STR.	5'-0"	3	Z11	4	#4	STR.	7'-0"	19	H33	2	#4	STR.	11'-1"	15												
H27	4	#4	STR.	5'-2"	14	V17	1	#4	STR.	4'-4"	3	Z12	4	#4	STR.	7'-9"	21	H34	14	#4	STR.	10'-5"	97												
H28	4	#4	STR.	7'-9"	21	V18	1	#4	STR.	3'-11"	3	Z13	4	#4	STR.	8'-6"	23	H35	2	#4	STR.	7'-11"	11												
						V19	1	#4	STR.	3'-7"	2	Z14	4	#4	STR.	9'-4"	25	H36	2	#4	STR.	5'-0"	7												
N1	33	#5	1	14'-3"	490	V20	1	#4	STR.	3'-4"	2	Z15	3	#4	STR.	10'-1"	20	H37	2	#4	STR.	2'-1"	3												
N2	1	#5	STR.	5'-8"	6	V21	1	#4	STR.	3'-6"	2	Z16	3	#4	STR.	10'-8"	21	H38	22	#4	STR.	4'-3"	62												
N3	1	#5	STR.	4'-9"	5	V22	1	#4	STR.	3'-10"	3	Z17	3	#7	3	8'-7"	53	N59	3	#5	1	9'-3"	29												
N4	1	#5	STR.	4'-3"	4	V23	1	#4	STR.	4'-3"	3	Z18	3	#7	3	9'-4"	57	N60	3	#5	1	9'-10"	31												
N5	1	#5	STR.	3'-10"	4	V24	1	#4	STR.	4'-10"	3	Z19	3	#7	3	10'-1"	62	N61	3	#5	1	10'-4"	32												
N6	1	#5	STR.	3'-6"	4	V25	1	#4	STR.	5'-8"	4	Z20	1	#7	3	10'-10"	22	N62	3	#5	1	10'-10"	34												
N7	12	#5	STR.	3'-0"	38	V26	1	#4	STR.	6'-9"	5	Z21	3	#4	STR.	7'-9"	16	N63	3	#5	1	11'-4"	35												
N8	16	#5	STR.	2'-10"	47	V27	1	#4	STR.	5'-3"	4	Z22	3	#4	STR.	8'-6"	17	N64	3	#5	1	11'-10"	37												
N9	1	#5	STR.	3'-4"	3	V28	1	#4	STR.	4'-6"	3	Z23	3	#4	STR.	9'-3"	19	N65	3	#5	1	12'-5"	39												
N10	1	#5	STR.	3'-7"	4	V29	1	#4	STR.	4'-0"	3	Z24	1	#4	STR.	10'-0"	7	N66	3	#5	1	13'-1"	41												
N11	1	#5	STR.	3'-11"	4	V30	1	#4	STR.	3'-8"	2	Z25	1	#7	3	9'-9"	20																		
N12	1	#5	STR.	4'-4"	5	V31	1	#4	STR.	3'-5"	2	Z26	1	#7	3	12'-6"	26	V59	3	#4	STR.	6'-6"	13												
N13	1	#5	STR.	5'-0"	5	V32	1	#4	STR.	3'-9"	3	Z27	1	#7	3	9'-11"	20	V60	3	#4	STR.	7'-1"	14												
N14	1	#5	STR.	6'-1"	6	V33	1	#4	STR.	4'-1"	3	Z28	1	#7	3	12'-3"	25	V61	3	#4	STR.	7'-7"	15												
N15	1	#5	STR.	6'-1"	6	V34	1	#4	STR.	4'-7"	3	Z29	1	#7	3	9'-6"	19	V62	3	#4	STR.	8'-1"	16												
N16	1	#5	STR.	5'-0"	5	V35	1	#4	STR.	5'-5"	4	Z30	1	#7	3	11'-11"	24	V63	3	#4	STR.	8'-7"	17												
N17	1	#5	STR.	4'-4"	5	V36	1	#4	STR.	2'-7"	2	Z31	1	#7	3	9'-5"	19	V64	3	#4	STR.	9'-1"	18												
N18	1	#5	STR.	3'-11"	4	V37	1	#4	STR.	1'-9"	1	Z32	1	#4	STR.	8'-11"	6	V65	3	#4	STR.	9'-8"	19												
N19	1	#5	STR.	3'-7"	4	V38	1	#4	STR.	1'-2"	1	Z33	1	#4	STR.	11'-8"	8	V66	3	#4	STR.	10'-4"	21												
N20	1	#5	STR.	3'-4"	3	V39	1	#4	STR.	1'-0"	1	Z34	1	#4	STR.	9'-1"	6	V68	2	#4	STR.	10'-9"	14												
N21	1	#5	STR.	3'-6"	4	V40	1	#4	STR.	1'-4"	1	Z35	1	#4	STR.	11'-5"	8	PROJECT NO. BP10-C011 CABARRUS COUNTY STATION: 14+83.00 - L SHEET 8 OF 13 STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH BILL OF MATERIALS FOR INLET HEADWALL, FOOTING, WINGWALLS, & SILLS REVISIONS <table><tr><td>NO.</td><td>BY:</td><td>DATE:</td><td>NO.</td><td>BY:</td><td>DATE:</td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table> SHE						NO.	BY:	DATE:	NO.	BY:	DATE:						
NO.	BY:	DATE:	NO.	BY:	DATE:																														
N22	1	#5	STR.	3'-10"	4	V41	1	#4	STR.	2'-0"	1	Z36	1	#4	STR.	8'-8"	6																		
N23	1	#5	STR.	4'-3"	4	V42	1	#4	STR.	3'-1"	2	Z37	1	#4	STR.	11'-1"	7																		
N24	1	#5	STR.	4'-10"	5	V43	1	#4	STR.	3'-0"	2	Z38	1	#4	STR.	8'-7"	6																		
N25	1	#5	STR.	5'-8"	6	V44	1	#4	STR.	1'-11"	1	Z39	1	#7	3	9'-5"	19																		
N26	1	#5	STR.	6'-9"	7	V45	1	#4	STR.	1'-4"	1	Z40	1	#7	3	9'-7"	20																		
N27	1	#5	STR.	5'-3"	5	V46	1	#4	STR.	1'-2"	1	Z41	1	#7	3	12'-2"	25																		
N28	1	#5	STR.	4'-6"	5	V47	1	#4	STR.	1'-9"	1	Z42	1	#7	3	10'-4"	21																		
N29	1	#5	STR.	4'-0"	4	V48	1	#4	STR.	2'-8"	2	Z43	1	#7	3	11'-5"	23																		
N30	1	#5	STR.	3'-8"	4	V49	1	#4	STR.	3'-8"	2	Z44	1	#7	3	12'-9"	26																		
N31	1	#5	STR.	3'-5"	4	V50	1	#4	STR.	2'-2"	1	Z45	1	#7	3	9'-11"	20																		
N32	1	#5	STR.	3'-9"	4	V51	1	#4	STR.	1'-6"	1	Z46	1	#7	3	9'-4"	19																		
N33	1	#5	STR.	4'-1"	4	V52	1	#4	STR.	1'-1"	1	Z47	1	#4	STR.	8'-7"	6																		
N34	1	#5	STR.	4'-7"	5	V53	1	#4	STR.	1'-7"	1	DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED CDM Smith CDM SMITH Inc. 4600 Park Road, Suite 240 Charlotte, NC 28209-3730 NC COA No. F-1255 NORTH CAROLINA PROFE																							

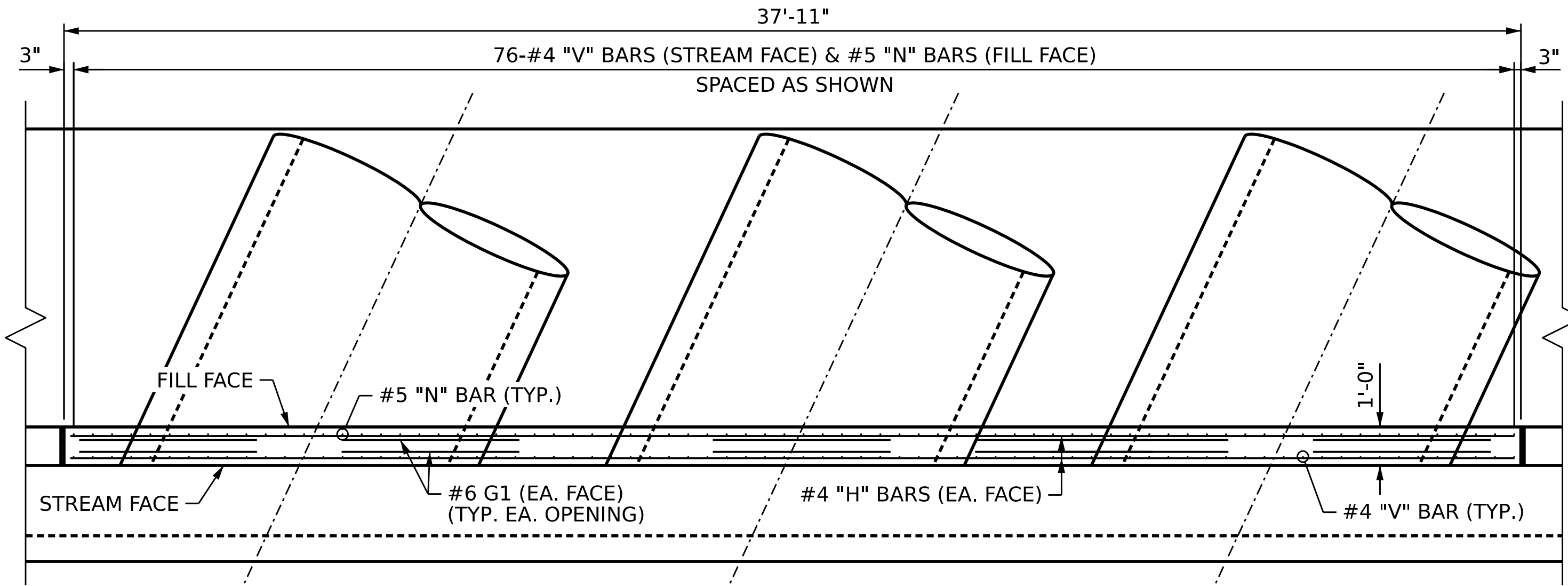
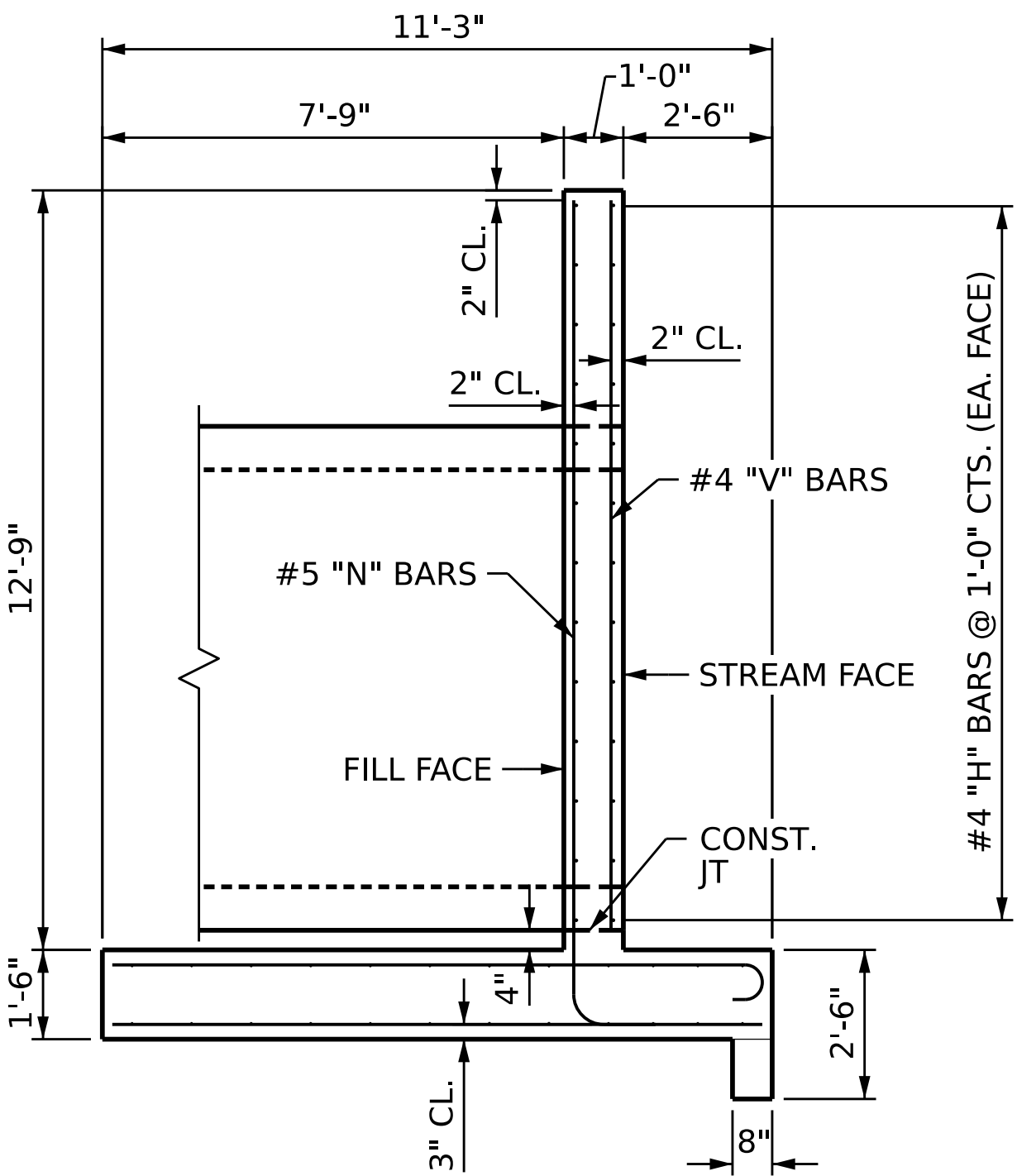


OUTLET HEADWALL ELEVATION

WINGS & SILL NOT SHOWN FOR CLARITY

OUTLET HEADWALL SECTION

SILL NOT SHOWN FOR CLARITY
FOOTING REBAR NOT SHOWN FOR CLARITY



OUTLET HEADWALL PLAN

WINGS & SILL NOT SHOWN FOR CLARITY
FOR HEADWALL LAYOUT DIMENSIONS, SEE SHEET C-4

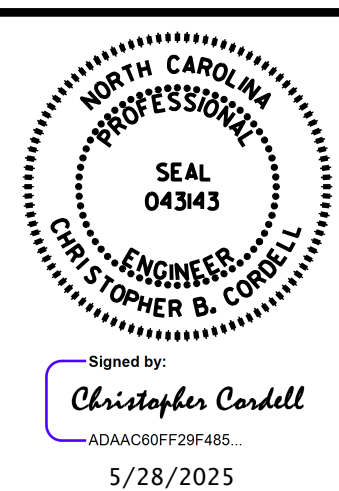
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FINAL UNLESS ALL
SIGNATURES COMPLETED

CDM Smith

CDM SMITH Inc.
4600 Park Road, Suite 240
Charlotte, NC 28209-3730
NC COA No. F-1255

DRAWN BY : JJR DATE : 2/25
CHECKED BY : CBC DATE : 2/25
DESIGN ENGINEER : CBC DATE : 2/25

DWG. No.



PROJECT NO. **BP10-C011**
CABARRUS COUNTY
STATION: **14+83.00 -L-**

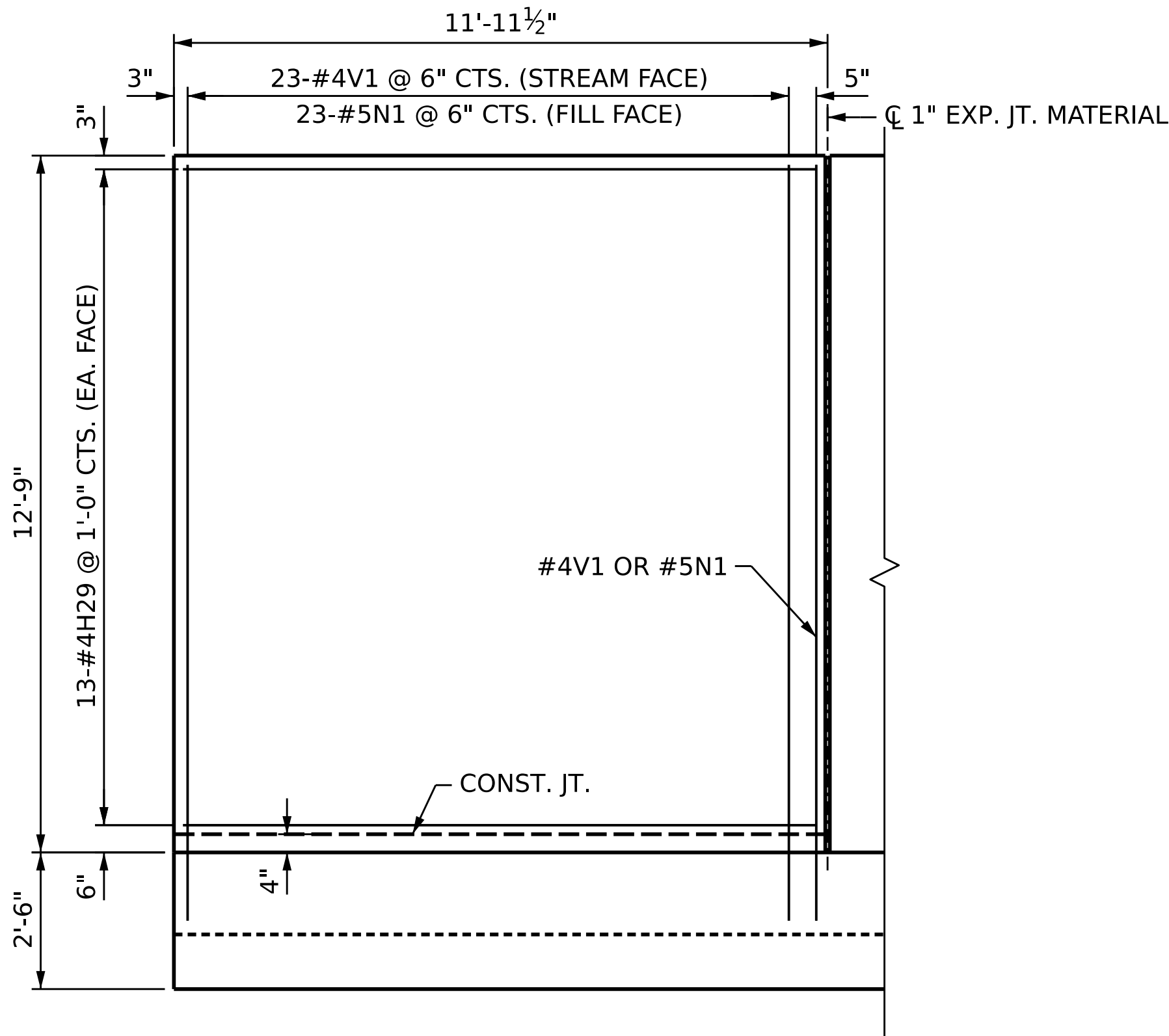
SHEET 9 OF 13

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

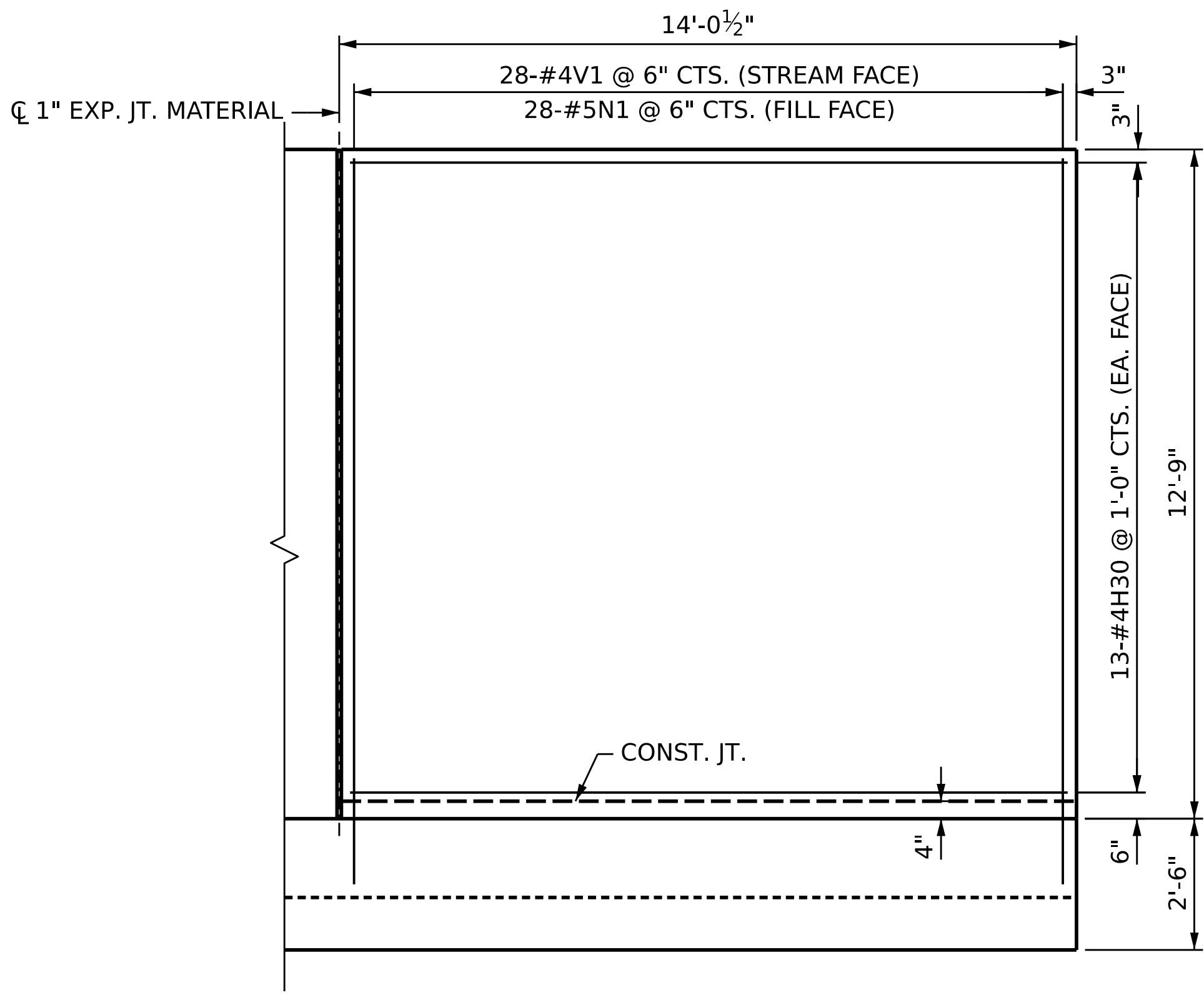
**OUTLET HEADWALL
DETAILS**

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

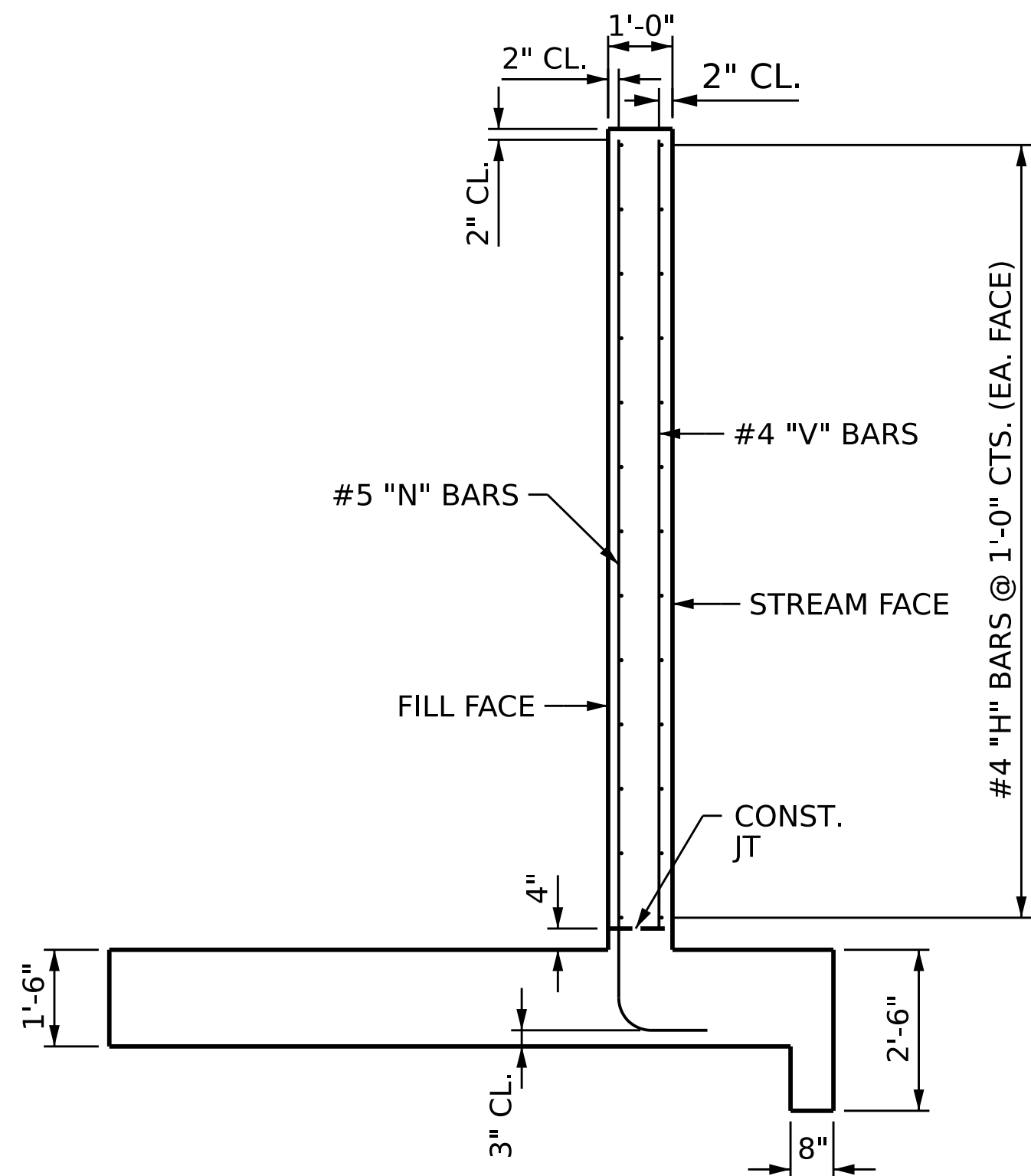
C-9
TOTAL SHEETS
13



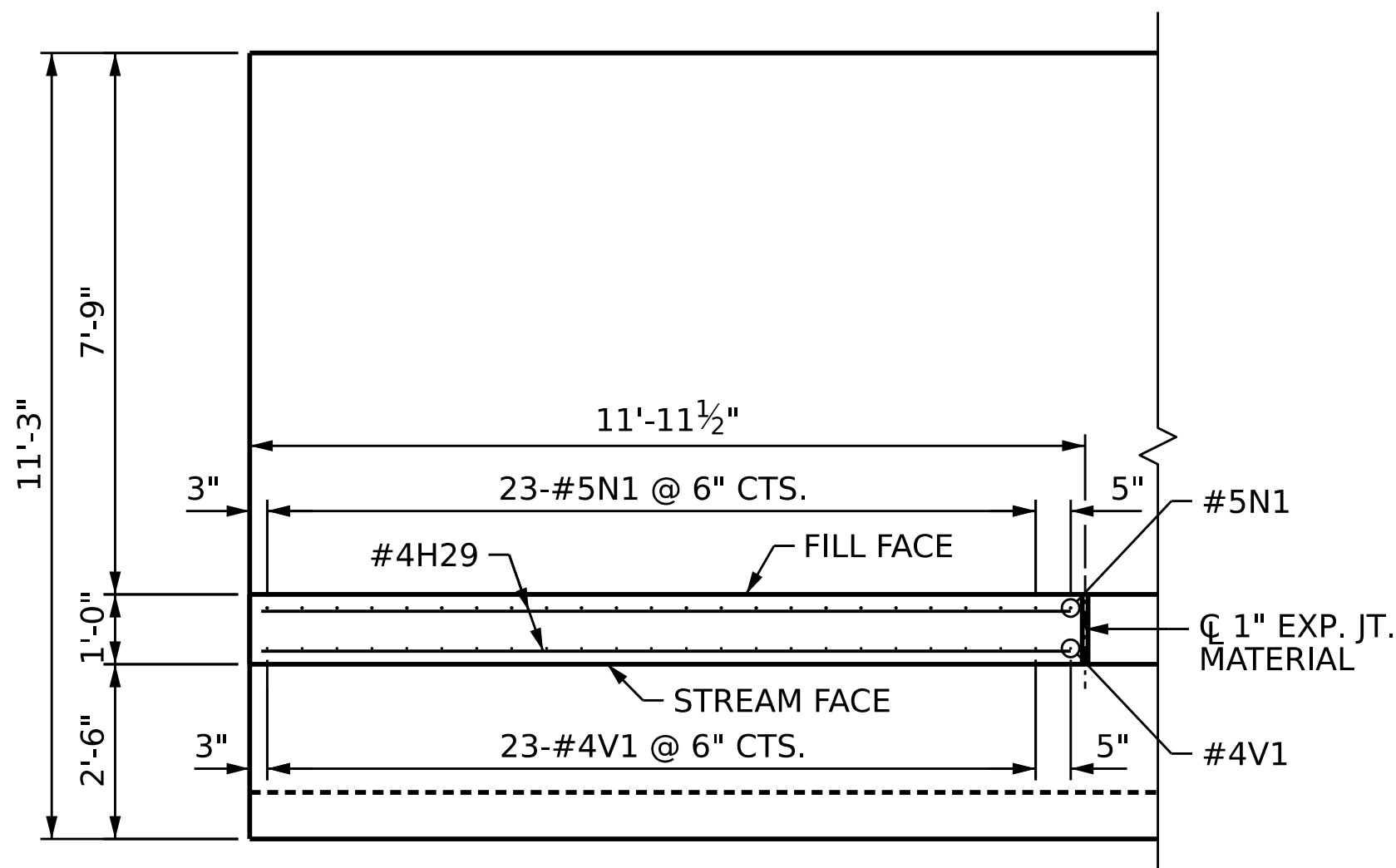
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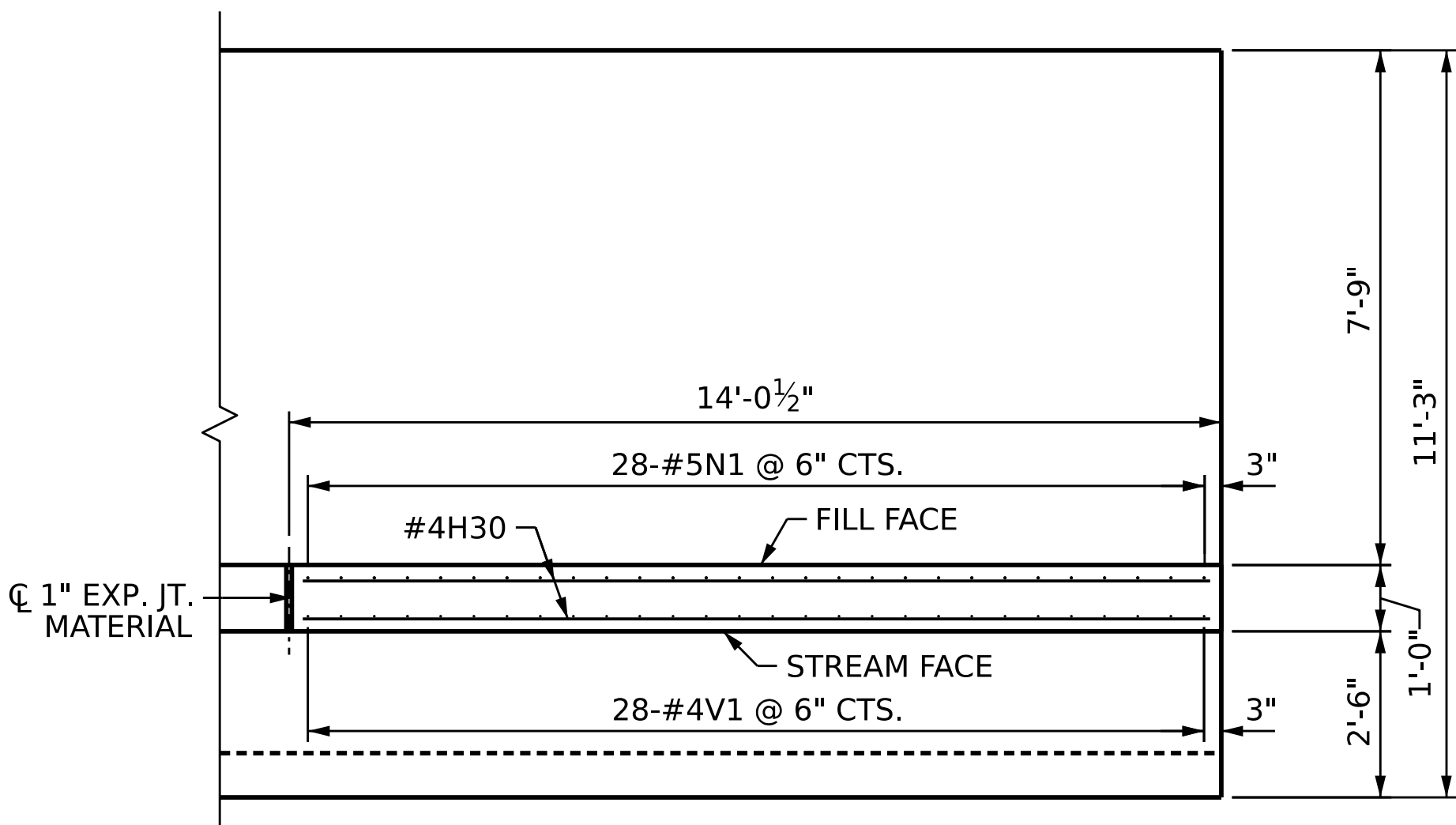
W4 ELEVATION



TYP. WING SECTION



W3 PLAN



W4 PLAN

PROJECT NO. **BP10-C011**

CABARRUS COUNTY

STATION: **14+83.00 -L-**

SHEET 10 OF 13

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**OUTLET WINGWALL
DETAILS**

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SIGNATURES COMPLETED

CDM Smith

CDM SMITH Inc.
4600 Park Road, Suite 240
Charlotte, NC 28209-3730
NC COA No. F-1255

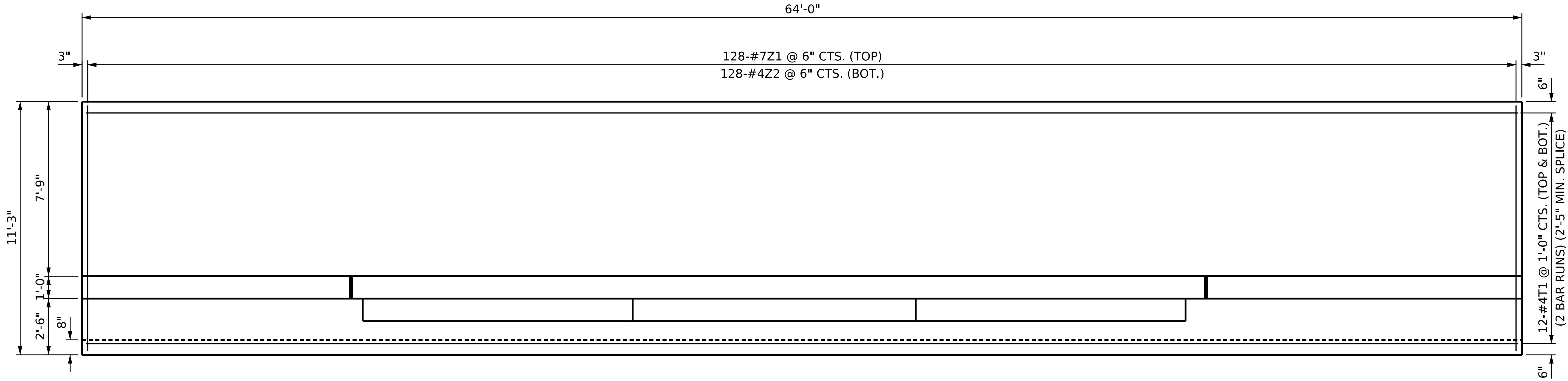
DRAWN BY : JJR DATE : 2/25
CHECKED BY : CBC DATE : 2/25
DESIGN ENGINEER : CBC DATE : 2/25

DWC. No.

NORTH CAROLINA
PROFESSIONAL
ENGINEER
SEAL
043143
CHRISTOPHER B. CORDELL

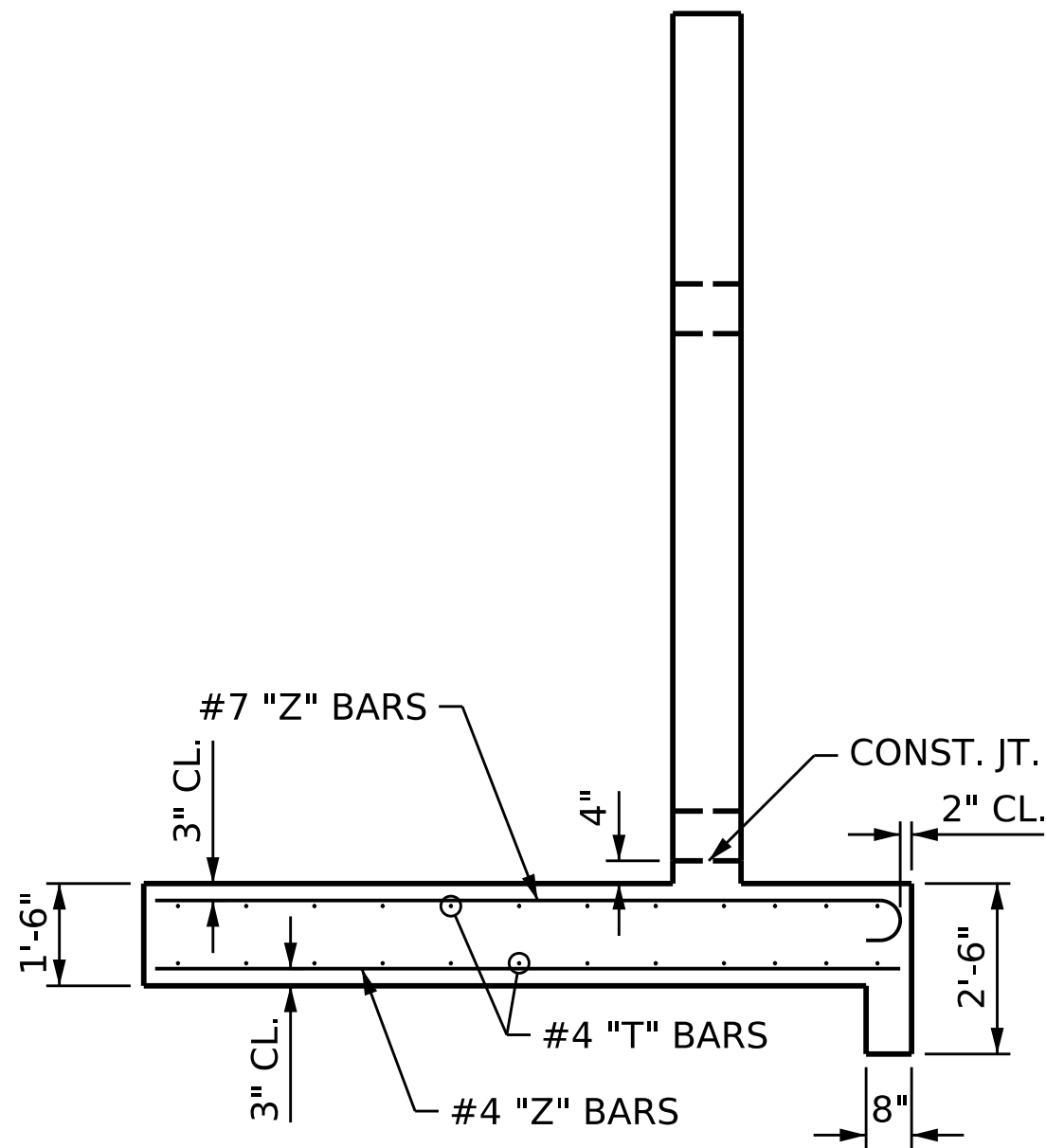
Signed by:
Christopher Cordell
ADAAC0007205-405
5/28/2025

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			C-10
2			4			TOTAL SHEETS 13



OUTLET FOOTING PLAN

FOR FOOTING LAYOUT DIMENSIONS, SEE SHEET C-4



OUTLET FOOTING SECTION

HEADWALL & WINGWALL REINFORCEMENT
NOT SHOWN FOR CLARITY

PROJECT NO. **BP10-C011**
CABARRUS COUNTY
STATION: **14+83.00 -L-**

SHEET 11 OF 13

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

OUTLET FOOTING
DETAILS

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

TOTAL SHEETS

13

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

CDM
Smith

CDM SMITH Inc.
4600 Park Road, Suite 240
Charlotte, NC 28209-3730
NC COA No. F-1255

DRAWN BY : JJR

CHECKED BY : CBC

DESIGN ENGINEER : CBC

DATE : 2/25

DATE : 2/25

DATE : 2/25

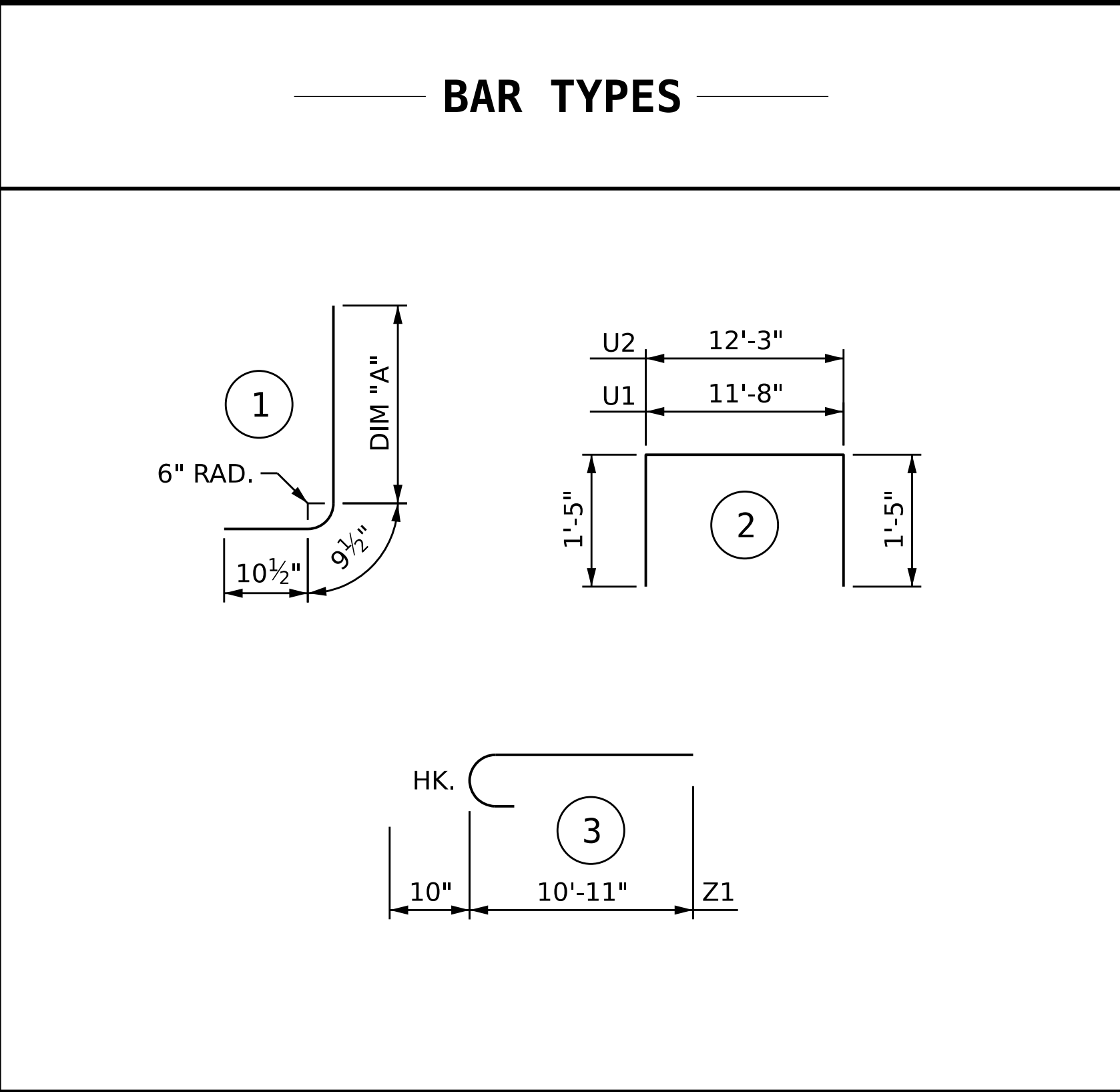
DWC. No.

NORTH CAROLINA
PROFESSIONAL
ENGINEER
CHRISTOPHER B. CORDELL

SEAL
043143

Signed by:
Christopher Cordell

ADAAAC05FF29F485...
5/28/2025



DIM "A"			
BAR	LENGTH	BAR	LENGTH
N1	13'-4"	N40	2'-4"
N31	3'-6"	N41	2'-4"
N32	2'-9"	N42	3'-0"
N33	2'-2"	N43	3'-11"
N34	2'-0"	N44	4'-4"
N35	2'-6"	N45	3'-2"
N36	3'-2"	N46	2'-6"
N37	4'-6"	N47	2'-3"
N38	3'-10"	N48	2'-9"
N39	2'-11"	N49	3'-7"

REINFORCING STEEL BREAKDOWN	
HEADWALL:	2,013 LBS.
WINGWALLS:	1,458 LBS.
FOOTING:	5,068 LBS.
SILLS:	230 LBS.
TOTAL REINFORCING STEEL	8,769 LBS.
CLASS A CONCRETE BREAKDOWN	
POUR #1: FOOTINGS & LOWER PART OF HEADWALL & WINGS	42.4 C.Y.
POUR #2: UPPER PART OF HEADWALL & WINGS	29.4 C.Y.
POUR #3: SILLS	3.7 C.Y.
TOTAL CLASS A CONCRETE	75.5 C.Y.

BILL OF MATERIAL															
OUTLET HEADWALL						OUTLET HEADWALL (CONT.)					OUTLET HEADWALL (CONT.)				
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE
G1	48	#6	STR.	6'-6"	469	N24	1	#5	STR.	5'-2"	5	V28	1	#4	STR.
						N25	1	#5	STR.	4'-8"	5	V29	1	#4	STR.
H1	8	#4	STR.	37'-7"	201	N26	1	#5	STR.	4'-4"	5	V30	1	#4	STR.
H2	2	#4	STR.	3'-10"	5	N27	1	#5	STR.	4'-6"	5	V31	1	#4	STR.
H3	2	#4	STR.	2'-5"	3	N28	1	#5	STR.	4'-11"	5	V32	1	#4	STR.
H4	2	#4	STR.	1'-8"	2	N29	1	#5	STR.	5'-6"	6	V33	1	#4	STR.
H5	2	#4	STR.	1'-3"	2	N30	1	#5	STR.	6'-4"	7	V34	1	#4	STR.
H6	2	#4	STR.	1'-2"	2	N31	1	#5	1	5'-2"	5	V35	1	#4	STR.
H7	2	#4	STR.	1'-3"	2	N32	1	#5	1	4'-5"	5	V36	1	#4	STR.
H8	2	#4	STR.	1'-9"	2	N33	1	#5	1	3'-10"	4	V37	1	#4	STR.
H9	2	#4	STR.	2'-6"	3	N34	1	#5	1	3'-8"	4	V38	1	#4	STR.
H10	2	#4	STR.	3'-10"	5	N35	1	#5	1	4'-2"	4	V39	1	#4	STR.
H11	4	#4	STR.	8'-4"	22	N36	1	#5	1	4'-10"	5	V40	1	#4	STR.
H12	4	#4	STR.	5'-5"	14	N37	1	#5	1	6'-2"	6	V41	1	#4	STR.
H13	4	#4	STR.	3'-11"	10	N38	1	#5	1	5'-6"	6	V42	1	#4	STR.
H14	4	#4	STR.	3'-2"	8	N39	1	#5	1	4'-7"	5	V43	1	#4	STR.
H15	4	#4	STR.	2'-11"	8	N40	1	#5	1	4'-0"	4	V44	1	#4	STR.
H16	4	#4	STR.	3'-3"	9	N41	1	#5	1	4'-0"	4	V45	1	#4	STR.
H17	4	#4	STR.	4'-1"	11	N42	1	#5	1	4'-8"	5	V46	1	#4	STR.
H18	4	#4	STR.	5'-8"	15	N43	1	#5	1	5'-7"	6	V47	1	#4	STR.
H19	4	#4	STR.	8'-6"	23	N44	1	#5	1	6'-0"	6	V48	1	#4	STR.
H20	2	#4	STR.	3'-10"	5	N45	1	#5	1	4'-10"	5	V49	1	#4	STR.
H21	2	#4	STR.	2'-4"	3	N46	1	#5	1	4'-2"	4				
H22	2	#4	STR.	1'-7"	2	N47	1	#5	1	3'-11"	4	OUTLET FOOTING			
H23	2	#4	STR.	1'-3"	2	N48	1	#5	1	4'-5"	5	T1	48	#4	STR.
H24	2	#4	STR.	1'-1"	1	N49	1	#5	1	5'-3"	5				
H25	2	#4	STR.	1'-3"	2										
H26	2	#4	STR.	1'-8"	2	V1	16	#4	STR.	12'-3"	131	Z1	128	#7	3
H27	2	#4	STR.	2'-6"	3	V2	1	#4	STR.	6'-3"	4	Z2	128	#4	STR.
H28	2	#4	STR.	4'-1"	5	V3	1	#4	STR.	5'-5"	4				
						V4	1	#4	STR.	4'-11"	3	WINGWALL 3			
N1	16	#5	1	15'-0"	250	V5	1	#4	STR.	4'-6"	3	H29	13	#4	STR.
N2	1	#5	STR.	6'-3"	7	V6	12	#4	STR.	3'-10"	31				
N3	1	#5	STR.	5'-5"	6	V7	21	#4	STR.	3'-7"	50				
N4	1	#5	STR.	4'-11"	5	V8	1	#4	STR.	4'-4"	3	N1	24	#5	1
N5	1	#5	STR.	4'-6"	5	V9	1	#4	STR.	4'-9"	3				
N6	12	#5	STR.	3'-10"	48	V10	1	#4	STR.	5'-3"	4	V1	24	#4	STR.
N7	21	#5	STR.	3'-7"	78	V11	1	#4	STR.	5'-11"	4				
N8	1	#5	STR.	4'-4"	5	V12	1	#4	STR.	7'-2"	5	WINGWALL 4			
N9	1	#5	STR.	4'-9"	5	V13	1	#4	STR.	6'-7"	4	H30	13	#4	STR.
N10	1	#5	STR.	5'-3"	5	V14	1	#4	STR.	5'-8"	4				
N11	1	#5	STR.	5'-11"	6	V15	1	#4	STR.	5'-0"	3	N1	28	#5	1
N12	1	#5	STR.	7'-2"	7	V16	1	#4	STR.	4'-7"	3				
N13	1	#5	STR.	6'-7"	7	V17	1	#4	STR.	4'-3"	3	V1	28	#4	STR.
N14	1	#5	STR.	5'-8"	6	V18	1	#4	STR.	4'-7"	3				
N15	1	#5	STR.	5'-0"	5	V19	1	#4	STR.	5'-1"	3				
N16	1	#5	STR.	4'-7"	5	V20	1	#4	STR.	5'-8"	4	OUTLET SILLS			
N17	1	#5	STR.	4'-3"	4	V21	1	#4	STR.	6'-8"	4	D1	18	#6	STR.
N18	1	#5	STR.	4'-7"	5	V22	1	#4	STR.	7'-1"	5	D2	9	#6	STR.
N19	1	#5	STR.	5'-1"	5	V23	1	#4	STR.	5'-10"	4				
N20	1	#5	STR.	5'-8"	6	V24	1	#4	STR.	5'-2"	3	U1	6	#4	2
N21	1	#5	STR.	6'-8"	7	V25	1	#4	STR.	4'-8"	3	U2	2	#4	2
N22	1	#5	STR.	7'-1"	7	V26	1	#4	STR.	4'-4"	3				
N23	1	#5	STR.	5'-10"	6	V27	1	#4	STR.	4'-6"	3				

PROJECT NO. **BP10-C011**

CABARRUS COUNTY

STATION: **14+83.00 -L-**

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
BILL OF MATERIALS FOR OUTLET HEADWALL FOOTING, WINGWALLS, & SILLS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
C-12					TOTAL SHEETS 13

CDM Smith

CDM SMITH Inc.
4600 Park Road, Suite 240
Charlotte, NC 28209-3730
NC COA No. F-1255

DRAWN BY : JJR
CHECKED BY : CBC
DESIGN ENGINEER : CBC

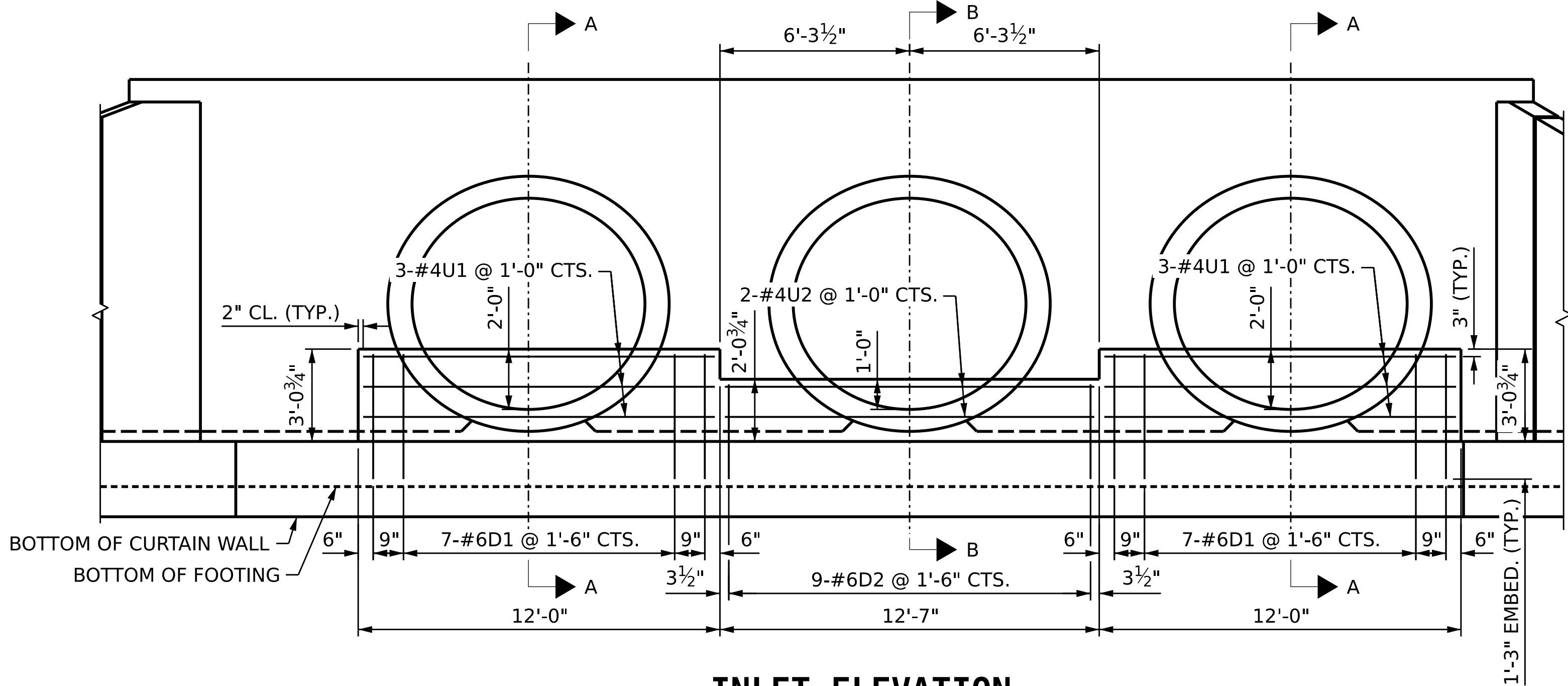
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DATE : 2/25
DATE : 2/25

DWC. No.

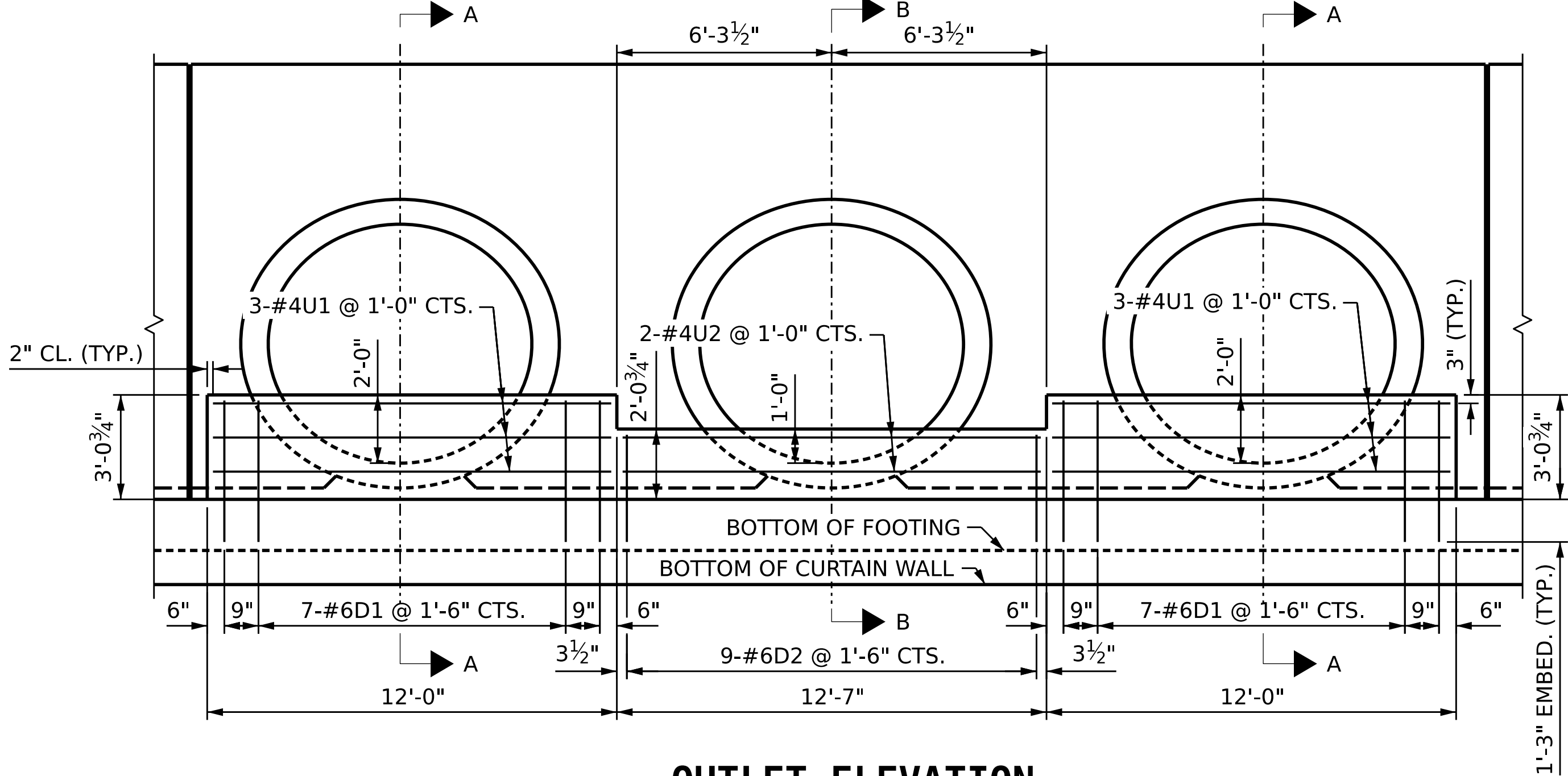
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FINAL UNLESS ALL
SIGNATURES COMPLETED

Seal of Christopher Cordell, Engineer
Seal 043143
Signature of Christopher Cordell
ADAAC60FF26F4B5
5/28/2025

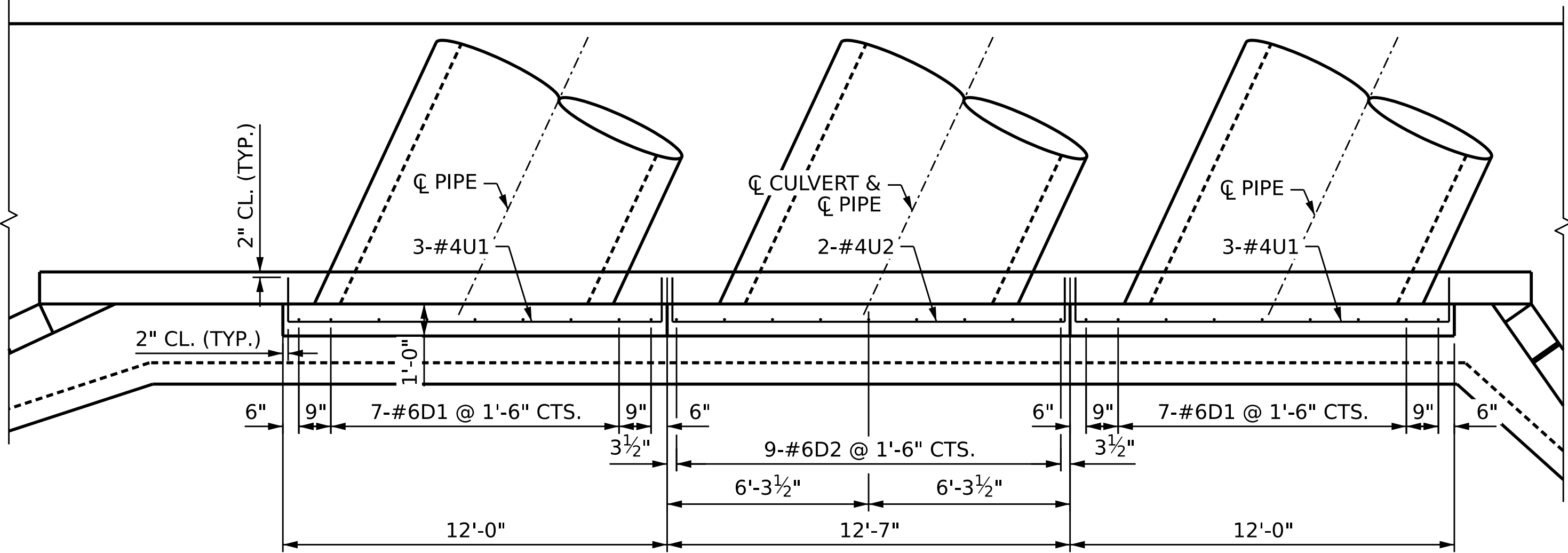
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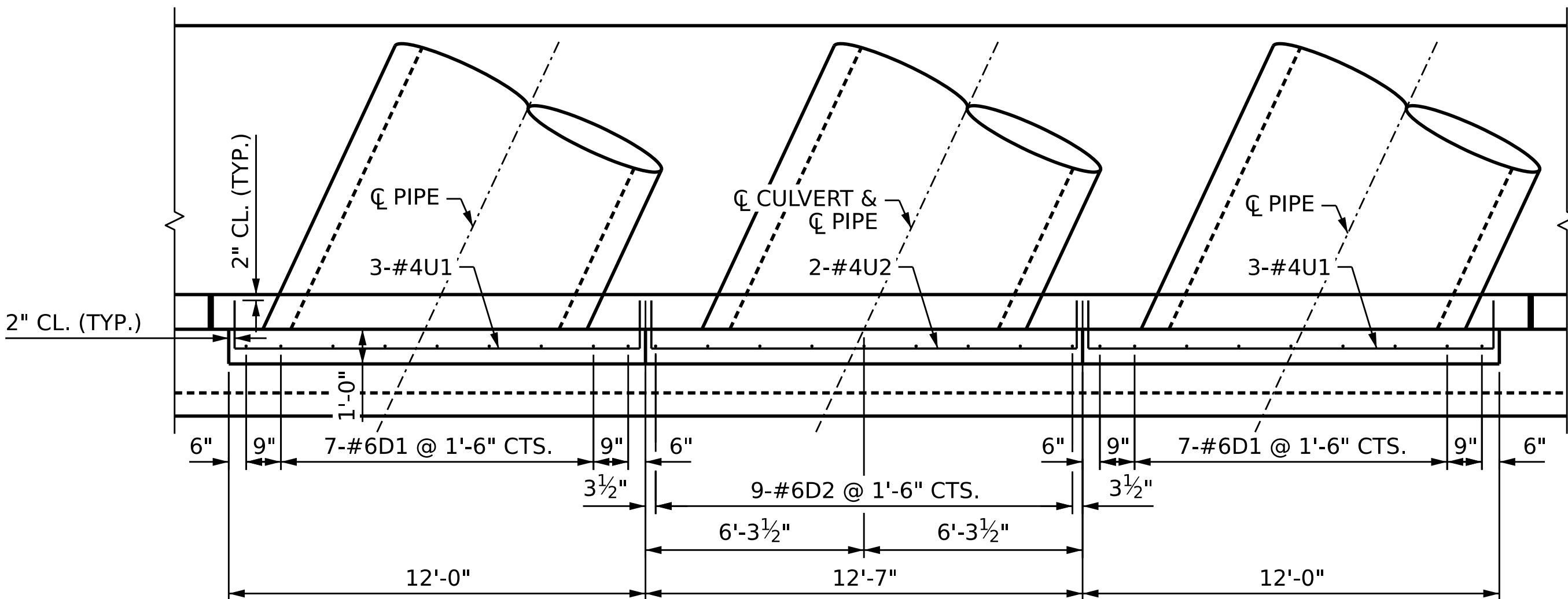
INLET ELEVATION
"D" DOWELS MAY BE PUSHED INTO GREEN CONCRETE
AFTER FOOTING HAS BEEN FLOAT FINISHED



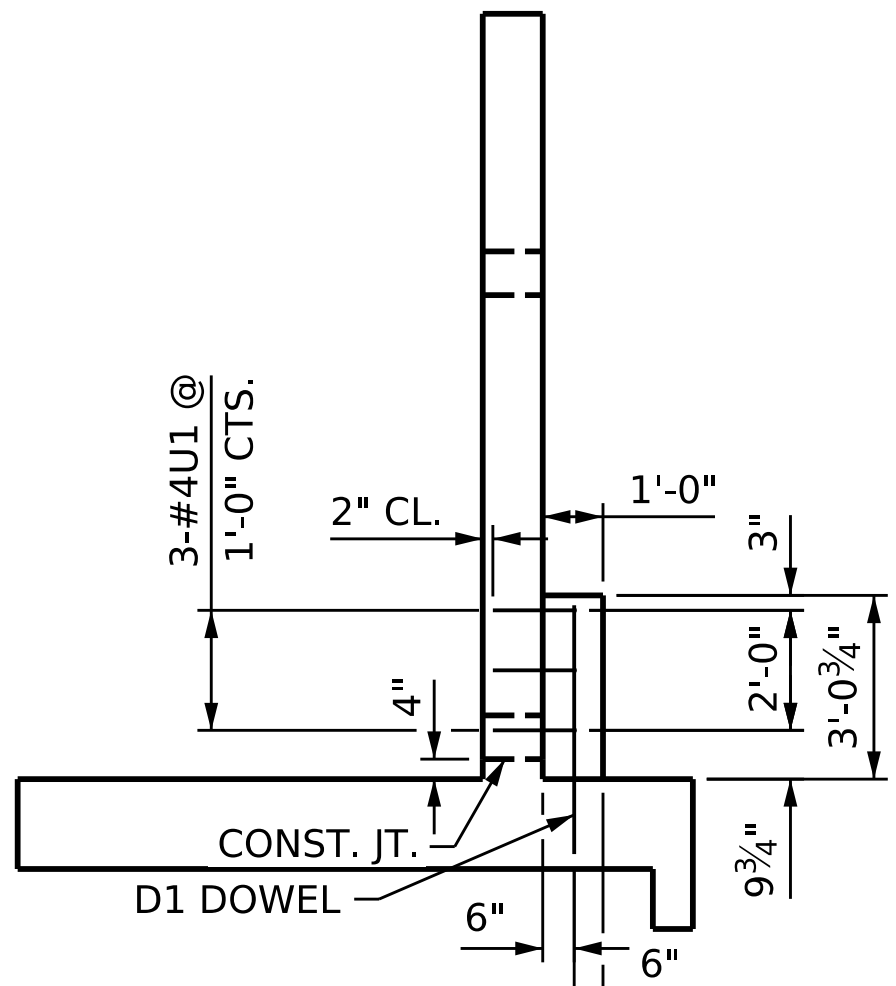
OUTLET ELEVATION
"D" DOWELS MAY BE PUSHED INTO GREEN CONCRETE
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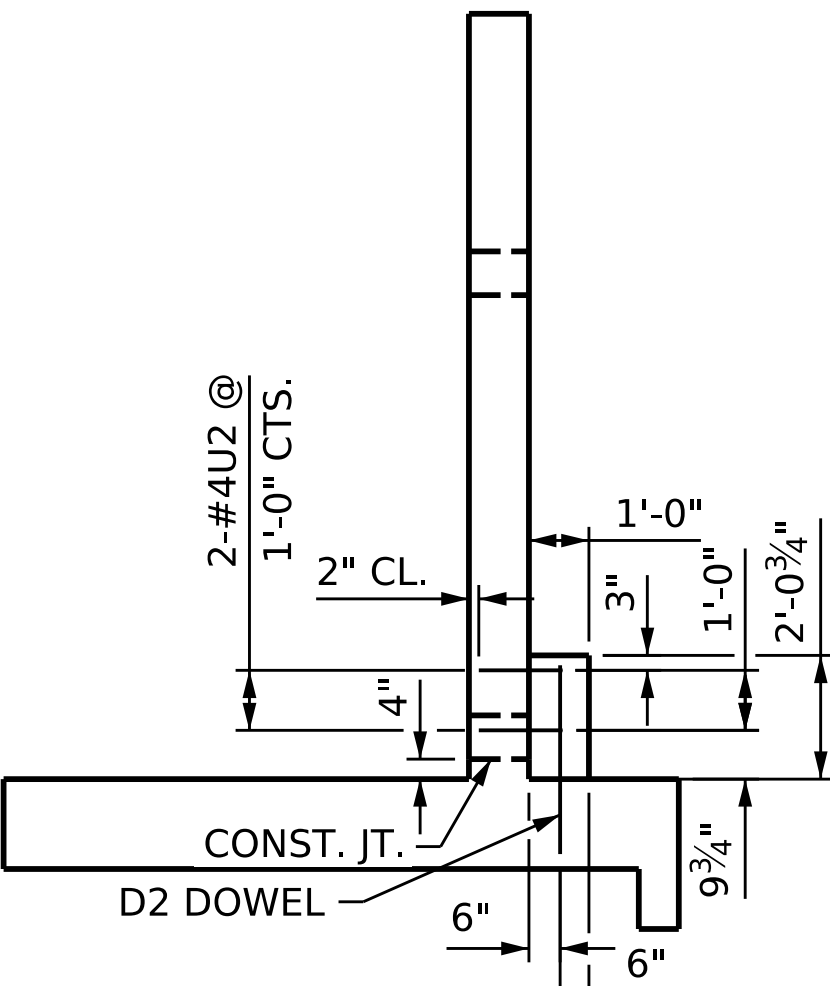
INLET PLAN
(LOOKING DOWNSTREAM)



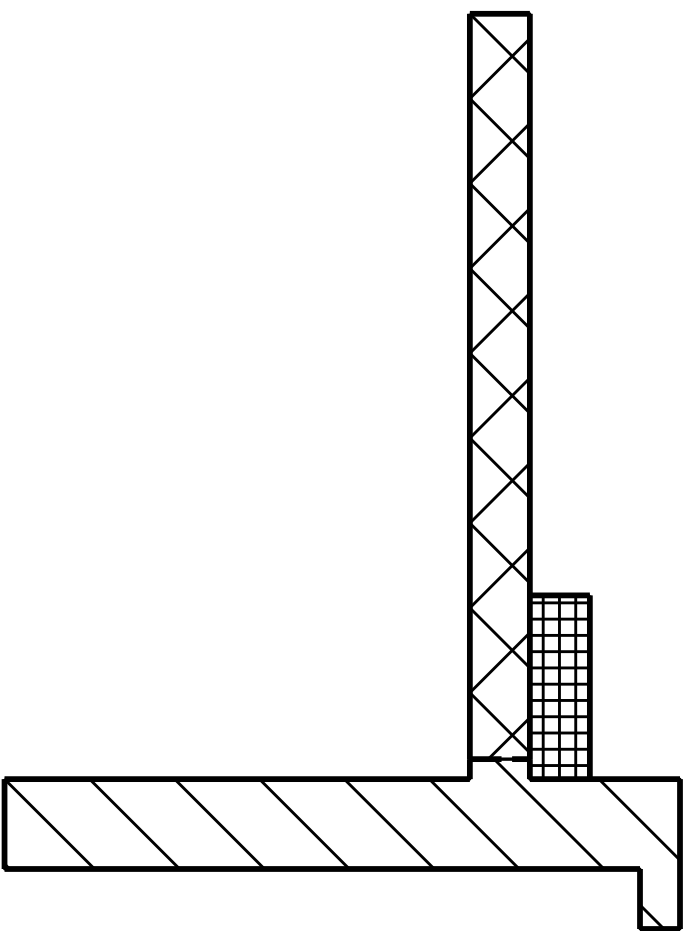
OUTLET PLAN
(LOOKING UPSTREAM)



SECTION A-A



SECTION B-B



POUR SEQUENCE

- POUR #1
- POUR #2
- POUR #3

CDM Smith
CDM SMITH Inc.
4600 Park Road, Suite 240
Charlotte, NC 28209-3730
NC COA No. F-1255

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

DWG. No.

DRAWN BY : JJR DATE : 2/25
CHECKED BY : CBC DATE : 2/25
DESIGN ENGINEER : CBC DATE : 2/25

NORTH CAROLINA PROFESSIONAL ENGINEER
SEAL 043143
Christopher Correll
5/28/2025

PROJECT NO. **BP10-C011**
CABARRUS COUNTY
STATION: **14+83.00 -L-**
SHEET 13 OF 13

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			C-13
2			4			TOTAL SHEETS 13

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" Ø SHEAR STUDS FOR THE ¾" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7⁄8" Ø STUDS FOR 4 - ¾" 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 ¾" Ø STUDS BASED ON THE RATIO OF 3 - 7⁄8"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 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.

Signed by:
Christopher Cordell
ADAAC00FF20F485..

5/28/2025