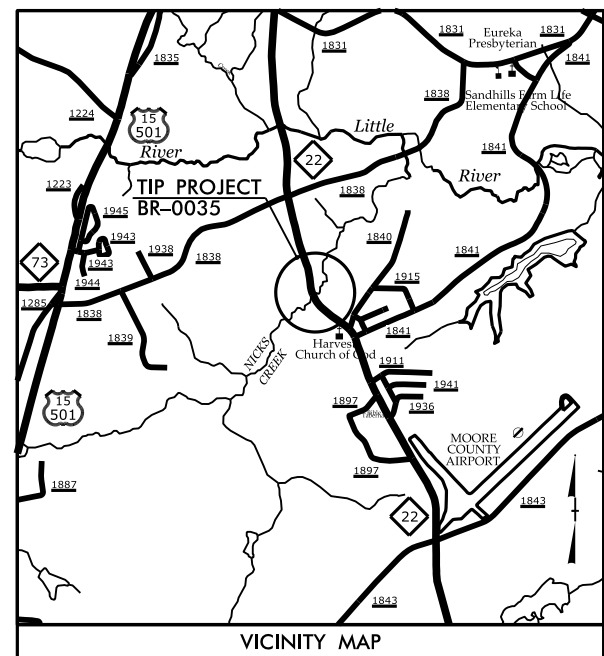


TIP PROJECT: BR-0035

CONTRACT: C204692

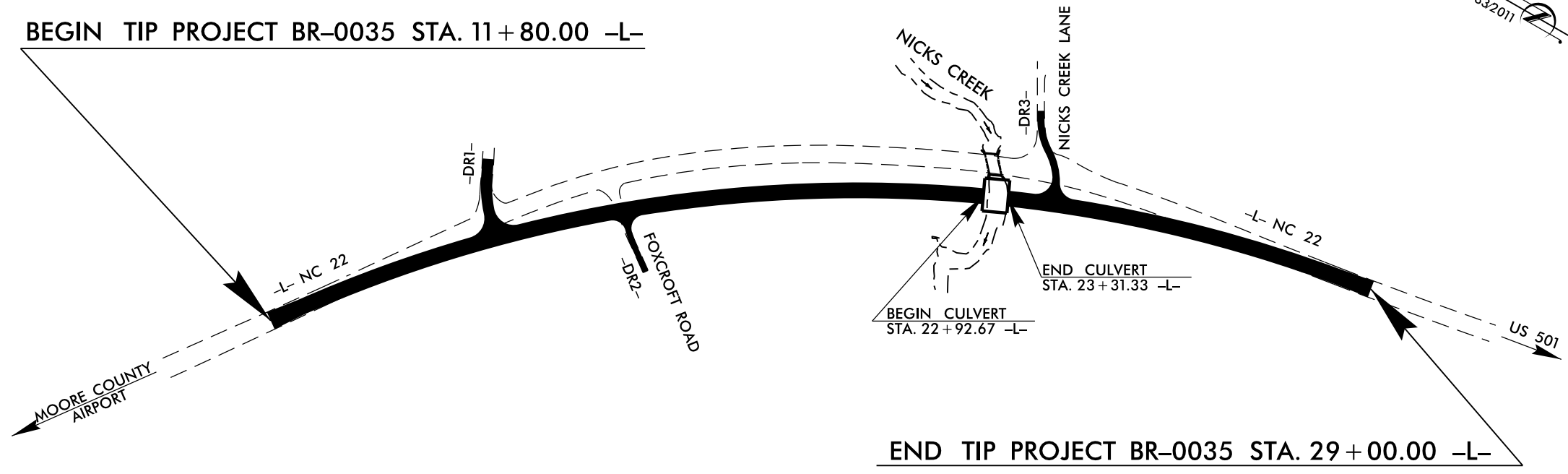


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
MOORE COUNTY

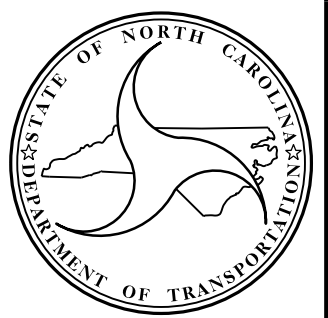
LOCATION: BRIDGE NO. 24 ON NC 22 OVER NICKS CREEK

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND CULVERT

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR-0035	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
49073.1.1	-	P.E.	
49073.2.1	-	ROW/UTIL	
49073.3.1	0022015	CONST.	



CULVERT



DESIGN DATA

ADT 2020 =	6650
ADT 2040 =	8000
K =	11 %
D =	60 %
T =	4 % *
V =	60 MPH

* (TTST=1% + DUAL=3%)
FUNC CLASS =
MINOR ARTERIAL
STATEWIDE TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT BR-0035	=	0.319 MI
LENGTH OF STRUCTURE TIP PROJECT BR-0035	=	0.007 MI
TOTAL LENGTH OF TIP PROJECT BR-0035	=	0.326 MI

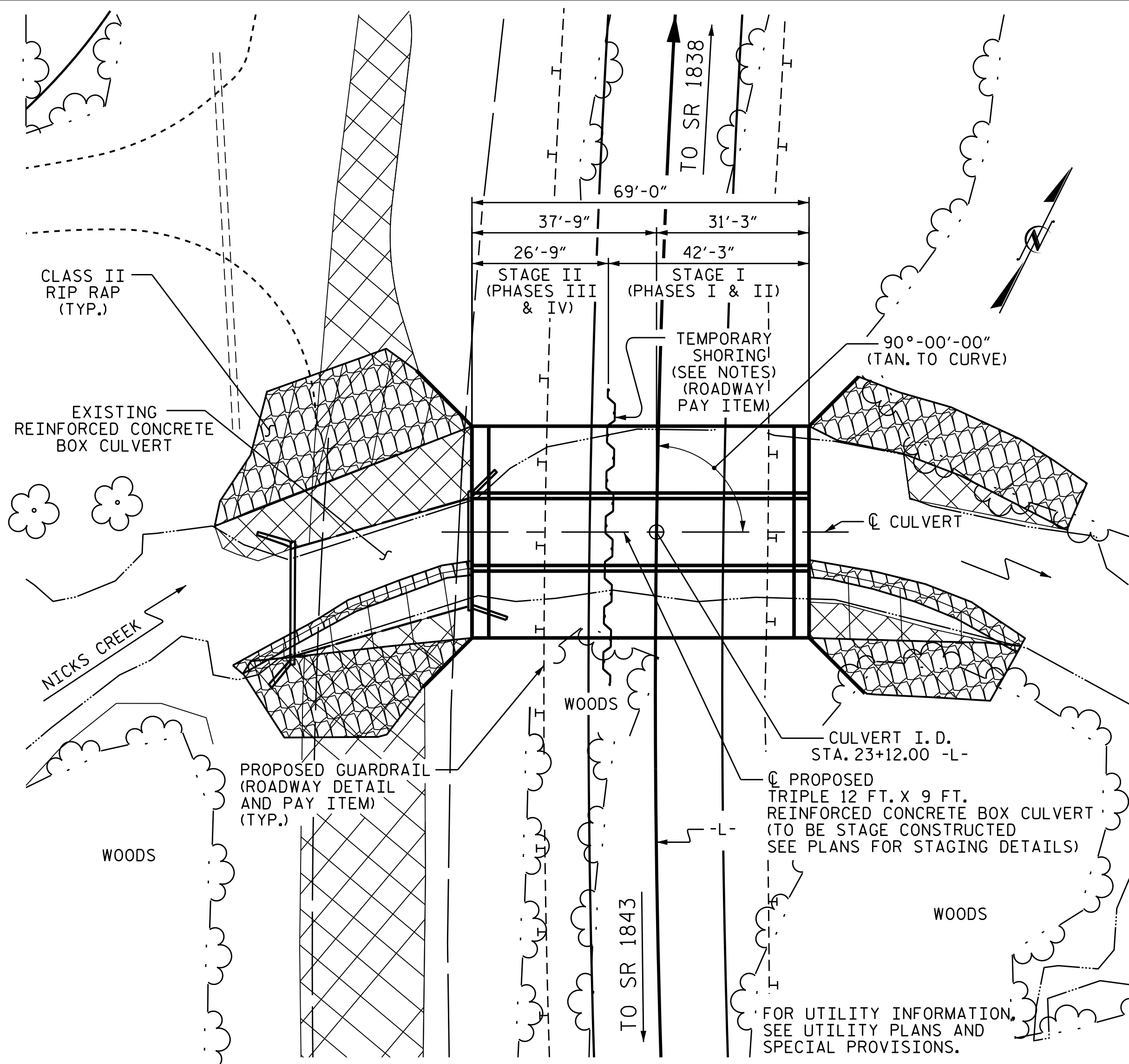
Prepared in the Office of:
DIVISION OF HIGHWAYS
STRUCTURES MANAGEMENT UNIT
1000 BIRCH RIDGE DR.
RALEIGH, N.C. 27610

2018 STANDARD SPECIFICATIONS

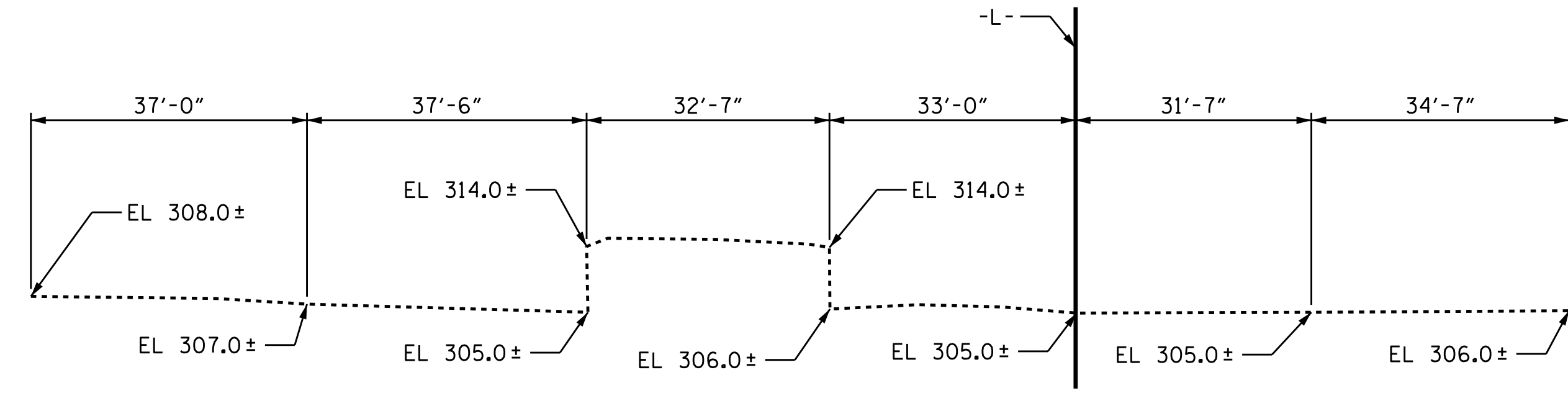
LETTING DATE : JANUARY 18, 2022

W. KEVIN FISCHER, P.E.
PROJECT ENGINEER

KRISHNA P. SEDAI, P.E.
PROJECT DESIGN ENGINEER



LOCATION SKETCH



PROFILE ALONG CULVERT

GRADE DATA

GRADE PT. EL. @ STA. 23+12.00 -L-	= 318.91'
BED EL. @ STA. 23+12.00 -L-	= 304.80'
ROADWAY SLOPES	= 3:1

HYDRAULIC DATA

DESIGN DISCHARGE	= 2,050 CFS
FREQUENCY OF DESIGN FLOOD	= 50 YEARS
DESIGN HIGH WATER ELEVATION	= 314.6 FT.
DRAINAGE AREA	= 26.7 SQ. MI.
BASE DISCHARGE (Q100)	= 2,370 CFS
BASE HIGH WATER ELEVATION	= 315.22 FT.

OVERTOPPING DATA

OVERTOPPING DISCHARGE	= +3,160 CFS
FREQUENCY OF OVERTOPPING FLOOD	= 500+ YEARS
OVERTOPPING FLOOD ELEVATION	= 319.4 FT.

ASSUMED LIVE LOAD -----HL-93 OR ALTERNATE LOADING.
 DESIGN FILL-----MAX. 6.38 FT.
 MIN. 3.69 FT.
 FOR OTHER DESIGN DATA AND NOTES SEE STANDARD NOTE SHEET.
 3" Ø WEEP HOLES INDICATED TO BE IN ACCORDANCE WITH THE SPECIFICATIONS.

CONCRETE IN STAGE I/STAGE II CULVERTS TO BE POURED IN THE FOLLOWING ORDER:

1. WING FOOTING, CURTAIN WALL AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS IN STAGE I (PHASE I).
2. THE REMAINING PORTIONS OF THE WALLS, SILL AND WING FULL HEIGHT IN STAGE I (PHASE I).
3. WING FOOTING, CURTAIN WALL AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS IN STAGE I (PHASE II).
4. THE REMAINING PORTIONS OF THE WALLS, SILLS AND WING FULL HEIGHT IN STAGE I (PHASE II) FOLLOWED BY ROOF SLAB AND HEADWALL IN STAGE I.
5. WING FOOTING, CURTAIN WALL AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS IN STAGE II (PHASE III).
6. THE REMAINING PORTIONS OF THE WALLS, SILL AND WING FULL HEIGHT IN STAGE II (PHASE III).
7. WING FOOTING, CURTAIN WALL AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS IN STAGE II (PHASE IV).
8. THE REMAINING PORTIONS OF THE WALLS, SILLS AND WING FULL HEIGHT IN STAGE II (PHASE IV) FOLLOWED BY ROOF SLAB AND HEADWALL IN STAGE II.

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

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

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

STEEL IN THE BOTTOM SLAB MAY BE SPLICED 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.

AFTER SERVING AS A TEMPORARY STRUCTURE THE EXISTING STRUCTURE CONSISTING OF RC DECK ON CONCRETE ENCASED STEEL PLATES WIDENED WITH SINGLE 19' X 6' RBC ON ABUTMENTS; REINFORCED CONCRETE STUB AND LOCATED AT THE SAME LOCATION AS THE PROPOSED CULVERT SHALL BE REMOVED. THE EXISTING STRUCTURE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE STRUCTURE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED CULVERT, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

TOTAL STRUCTURE QUANTITIES				
		FOUNDATION CONDITIONING MATERIAL (TONS)	CLASS A CONCRETE (CY)	REINFORCING STEEL (LBS)
STAGE I	PHASE I	49	51.1	6,361
	PHASE II	78	131.4	15,889
STAGE II	PHASE III	31	36.7	4,196
	PHASE IV	50	88.4	10,149
TOTAL		208	307.6	36,595
REMOVAL OF EXISTING STRUCTURE @ STA. 23+12.00 -L-				LUMP SUM
CULVERT EXCAVATION @ STA. 23+12.00 -L-				LUMP SUM
ASBESTOS ASSESSMENT				LUMP SUM

NOTES:

AT THE CONTRACTOR'S OPTION, HE MAY SPLICE THE VERTICAL REINFORCING STEEL IN THE INTERIOR FACES 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

THE REINFORCED CONCRETE BOX CULVERT SHALL BE PLACED ON THE STANDARD 1.0 FOOT BLANKET OF FOUNDATION CONDITIONING MATERIAL, SEE SECTION 414 OF THE STANDARD SPECIFICATIONS.

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 CONSTRUCTION SEQUENCE, SEE EROSION CONTROL PLANS.

FOR TEMPORARY SHORING AND POSITIVE PROTECTION FOR TEMPORARY SHORING, SEE PLANS AND TEMPORARY SHORING PROVISION.

DESIGN TEMPORARY SHORING FROM STATION 18+00± -L-, 37 FT. LT. TO STATION 24+00± -L- 15 FT. LT. FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:
 UNIT WEIGHT OF SOIL ABOVE WATER TABLE, $\gamma = 120$ PCF
 UNIT WEIGHT OF SOIL BELOW WATER TABLE, $\gamma = 60$ PCF
 FRICTION ANGLE, $\phi = 30^\circ$
 COHESION, $c = 0$ PSF
 GROUNDWATER ELEVATION = 312 FT.

BEFORE BEGINNING TEMPORARY SHORING DESIGN OR CONSTRUCTION, SURVEY EXISTING GROUND ELEVATIONS IN THE VICINITY OF SHORING LOCATIONS TO DETERMINE ACTUAL SHORING HEIGHTS.

LIMITED SUBSURFACE INFORMATION IS AVAILABLE IN THE VICINITY OF TEMPORARY SHORING FROM STATION 18+00± -L-, 37 FT. LT. TO STATION 24+00± -L-, 15 FT. LT. THE INFORMATION PROVIDED FOR TEMPORARY SHORING DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

AT THE CONTRACTOR'S OPTION, USE A STANDARD TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION 18+00± -L-, 37 FT. LT. TO STATION 24+00± -L-, 15 FT. LT. SEE GEOTECHNICAL STANDARD DETAIL 1801.02 FOR STANDARD TEMPORARY WALLS.

DO NOT USE CANTILEVER, BRACED, OR ANCHORED SHORING FOR TEMPORARY SHORING FROM STATION 18+00± -L-, 37 FT. LT. TO STATION 24+00± -L-, 15 FT. LT.

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

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

NO PRECAST REINFORCED BOX CULVERT OPTION WILL BE ALLOWED.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

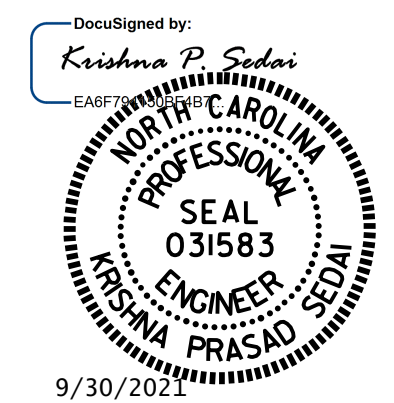
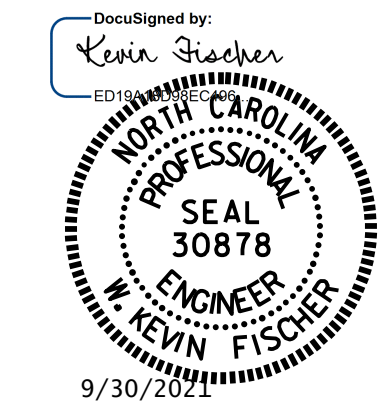
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

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"

SAMPLE BAR REPLACEMENT LENGTHS BASED ON 30" (SAMPLE LENGTH) PLUS TWO SPLICE LENGTHS AND $F_y = 60$ KSI.

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS



PROJECT NO. BR-0035
 MOORE COUNTY
 STATION: 23+12.00 -L-

SHEET 1 OF 8 REPLACES BRIDGE NO. 24

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 TRIPLE 12 FT. X 9 FT.
 CONCRETE BOX CULVERT
 90° SKEW

DRAWN BY: A. SORSENGINH DATE: 8/2021
 CHECKED BY: M. G. SHAIKH DATE: 8/2021
 DESIGN ENGINEER OF RECORD: A. YASMEEN DATE: 8/2021

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

**LOAD AND RESISTANCE FACTOR RATING (LRFR)
SUMMARY FOR REINFORCED CONCRETE BOX CULVERTS**

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE								COMMENT NUMBER		
						LIVE-LOAD FACTORS (LL)	MOMENT				SHEAR					
							RATING FACTOR	BOX NO.	ELEMENT TYPE	DISTANCE FROM LEFT END OF ELEMENT (ft)	RATING FACTOR	BOX NO.	ELEMENT TYPE		DISTANCE FROM LEFT END OF ELEMENT (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.37	--	1.75	1.42	1	TOP SLAB	5.70	1.37	1	BOTTOM SLAB	11.67		
	HL-93 (OPERATING)	N/A		1.78	--	1.35	1.84	1	TOP SLAB	5.70	1.78	1	BOTTOM SLAB	11.67		
	HS-20 (INVENTORY)	36.000	②	1.37	49.35	1.75	1.93	1	TOP SLAB	5.38	1.37	1	BOTTOM SLAB	11.67		
	HS-20 (OPERATING)	36.000		1.78	63.98	1.35	2.50	1	TOP SLAB	5.38	1.78	1	BOTTOM SLAB	11.67		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.33	44.91	1.40	3.51	1	TOP SLAB	5.38	3.33	1	TOP SLAB	11.56	
		SNGARBS2	20.000		3.02	60.46	1.40	3.29	1	TOP SLAB	5.38	3.02	1	TOP SLAB	11.56	
		SNAGRIS2	22.000		2.79	61.28	1.40	3.19	1	BOT. CORNER WALL	9.73	2.79	1	BOTTOM SLAB	11.67	
		SNCOTTS3	27.250		1.78	48.57	1.40	1.78	1	TOP SLAB	5.38	1.93	1	TOP SLAB	11.56	
		SNAGGRS4	34.930		1.77	61.82	1.40	2.10	1	TOP SLAB	5.38	1.77	1	BOTTOM SLAB	11.67	
		SNS5A	35.550		1.75	62.27	1.40	1.97	1	TOP SLAB	5.70	1.75	1	BOTTOM SLAB	11.67	
		SNS6A	39.950		1.56	62.41	1.40	1.96	1	TOP SLAB	5.70	1.56	1	BOTTOM SLAB	11.67	
		SNS7B	42.000		1.48	62.14	1.40	2.03	1	TOP SLAB	5.38	1.48	1	BOTTOM SLAB	11.67	
		TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.87	61.85	1.40	2.70	1	BOT. CORNER WALL	9.73	1.87	1	BOTTOM SLAB	11.67
	TNT4A		33.080		1.88	62.06	1.40	2.12	1	TOP SLAB	5.38	1.88	1	BOTTOM SLAB	11.67	
	TNT6A		41.600		1.49	62.03	1.40	2.13	1	TOP SLAB	5.38	1.49	1	BOTTOM SLAB	11.67	
	TNT7A		42.000		1.52	63.69	1.40	2.22	2	BOTTOM SLAB	0.95	1.52	1	BOTTOM SLAB	11.67	
	TNT7B		42.000		1.52	63.95	1.40	2.02	1	TOP SLAB	5.38	1.52	1	BOTTOM SLAB	11.67	
	TNAGRIT4		43.000		1.45	62.48	1.40	2.03	1	TOP SLAB	5.38	1.45	1	BOTTOM SLAB	11.67	
	TNAGT5A		45.000		1.39	62.65	1.40	2.03	2	BOTTOM SLAB	11.72	1.39	1	BOTTOM SLAB	11.67	
	TNAGT5B		45.000	③	1.39	62.64	1.40	2.04	1	BOTTOM SLAB	11.72	1.39	1	BOTTOM SLAB	11.67	
	EMERGENCY VEHICLE (EV)		EV2	28.750		2.30	66.15	1.30	2.48	1	TOP SLAB	5.38	2.30	1	BOTTOM SLAB	11.67
		EV3	43.000	④	1.54	66.21	1.30	1.54	1	TOP SLAB	5.70	1.54	1	BOTTOM SLAB	11.67	

LOAD FACTORS:

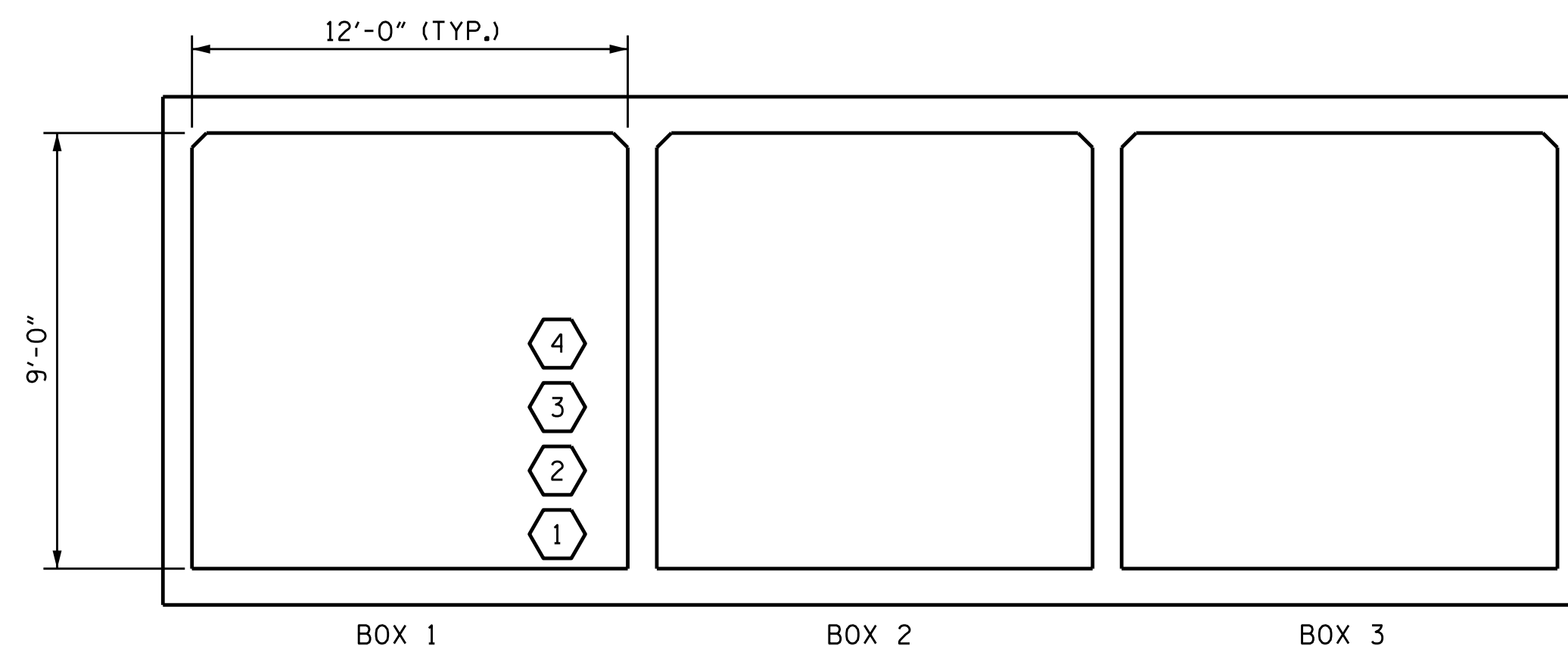
DESIGN LOAD RATING FACTORS

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.

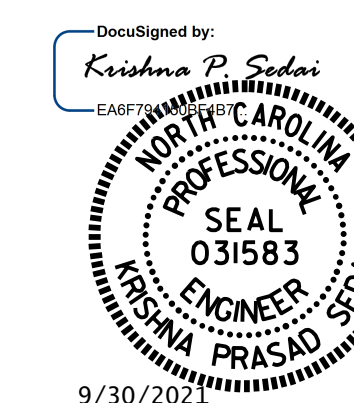
①	CONTROLLING LOAD RATING
①	DESIGN LOAD RATING (HL-93)
②	DESIGN LOAD RATING (HS-20)
③	LEGAL LOAD RATING **
④	EMERGENCY VEH. LOAD RATING **
** SEE CHART FOR VEHICLE TYPE	



LRFR SUMMARY
(LOOKING DOWNSTREAM)

PROJECT NO. BR-0035
MOORE COUNTY
 STATION: 23+12.00 -L-

SHEET 2 OF 8

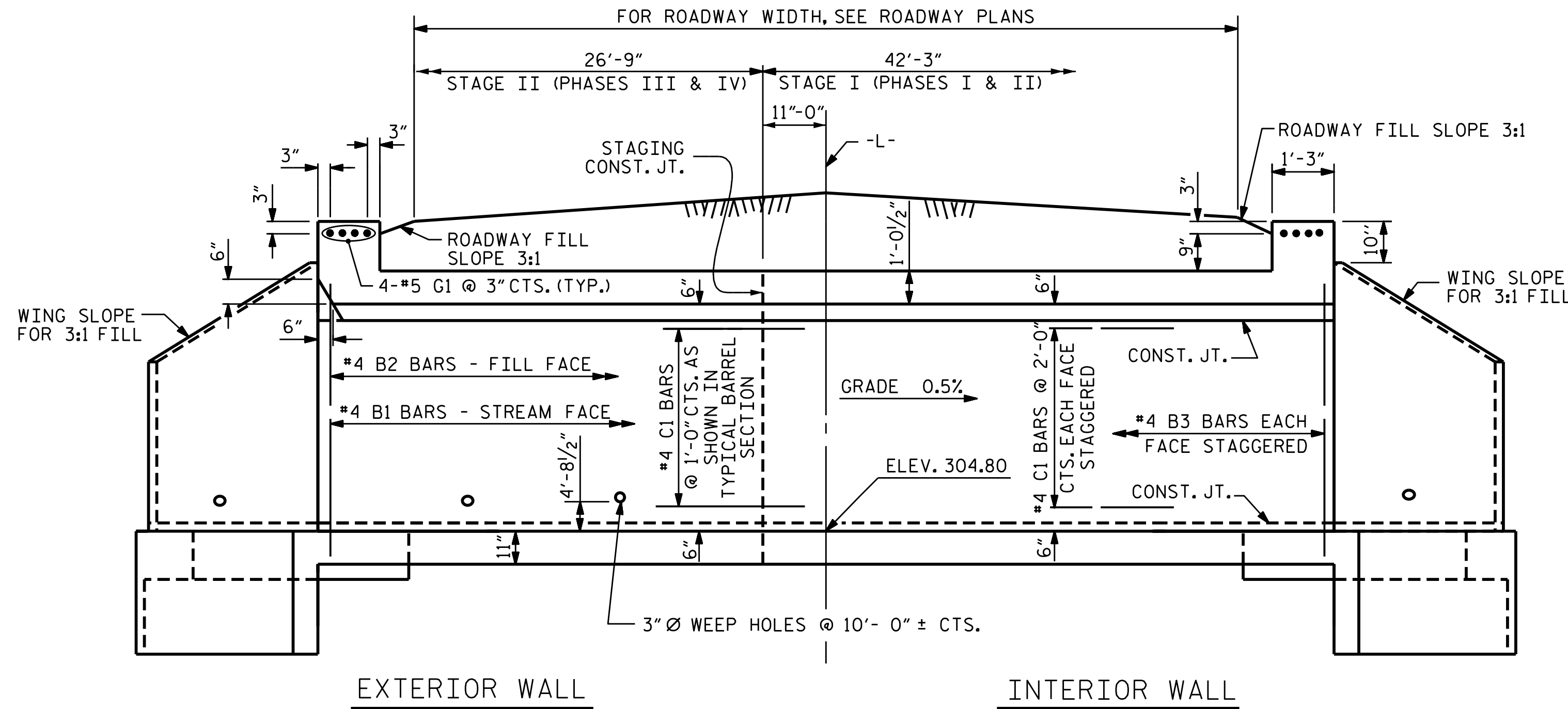


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
**LRFR SUMMARY FOR
 REINFORCED CONCRETE
 BOX CULVERTS**
 (NON-INTERSTATE TRAFFIC)

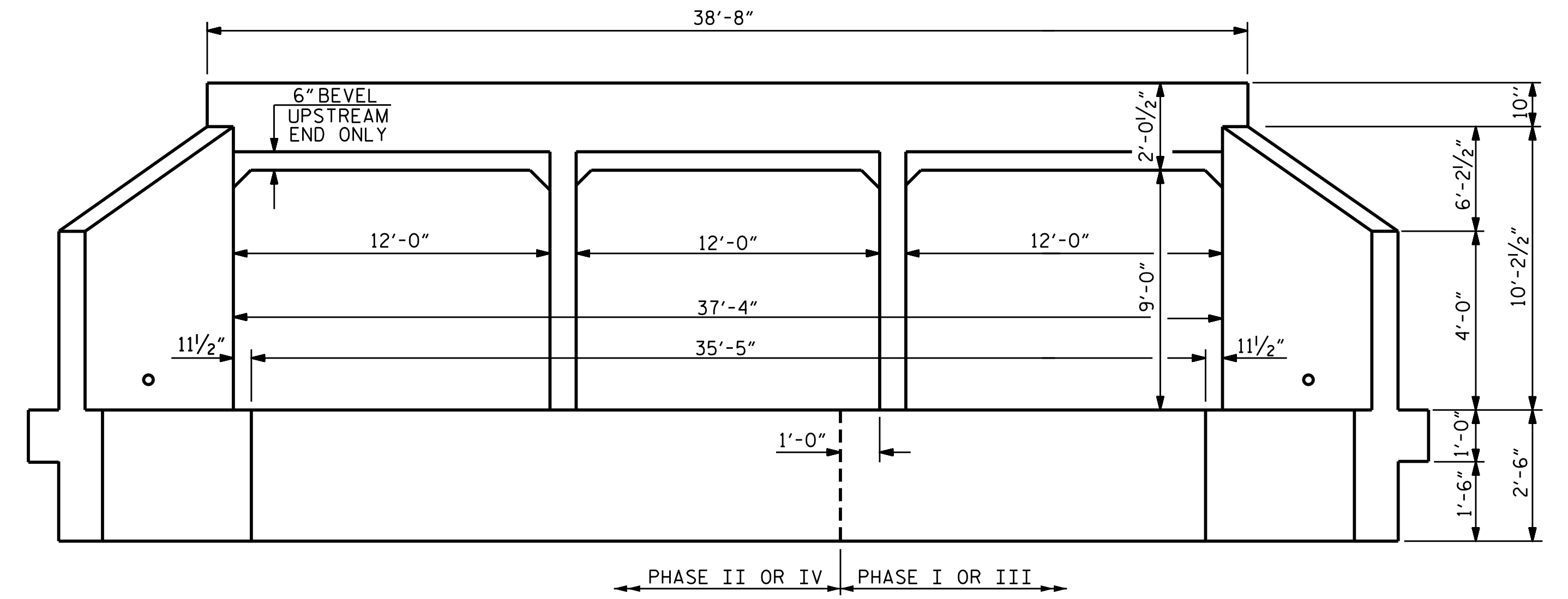
DRAWN BY : A. SORSENGINH DATE : 08/2021
 CHECKED BY : M. G. SHAIKH DATE : 08/2021
 DESIGN ENGINEER OF RECORD: A. YASMEEN DATE : 08/2021

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

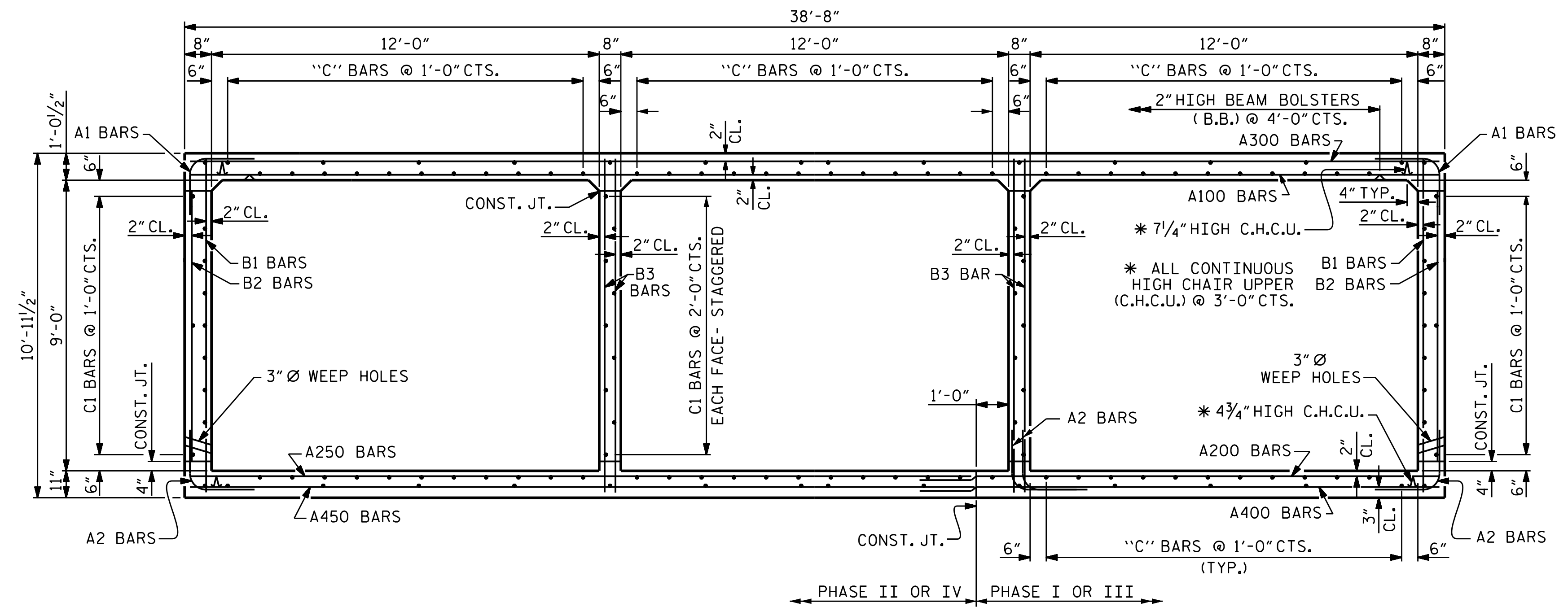
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-2
1			3			TOTAL SHEETS
2			4			8



CULVERT SECTION NORMAL TO ROADWAY



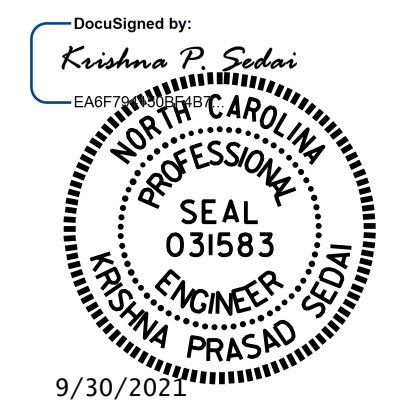
END ELEVATION



RIGHT ANGLE SECTION OF BARREL

THERE ARE 136 "C" BARS IN SECTION OF BARREL.

PROJECT NO. BR-0035
 MOORE COUNTY
 STATION: 23+12.00 -L-
 SHEET 3 OF 8



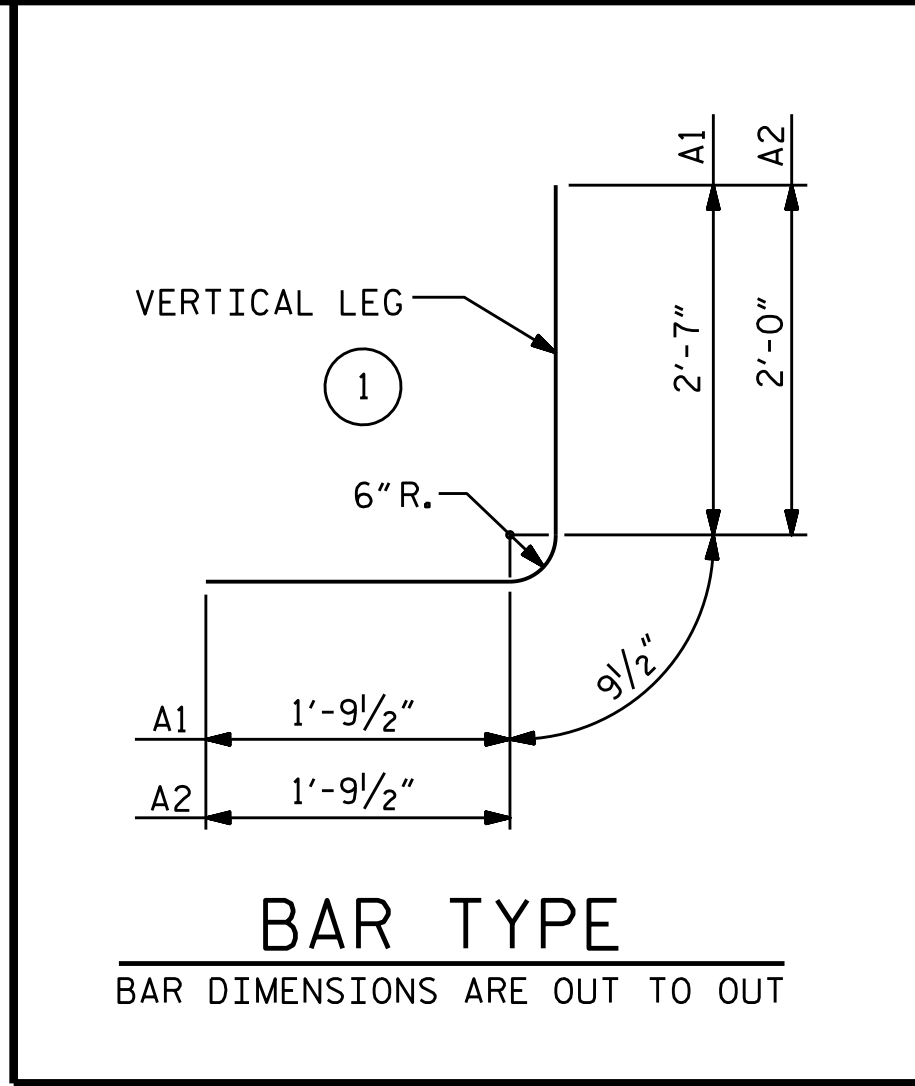
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 TRIPLE 12 FT. X 9 FT.
 CONCRETE BOX CULVERT
 90° SKEW

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

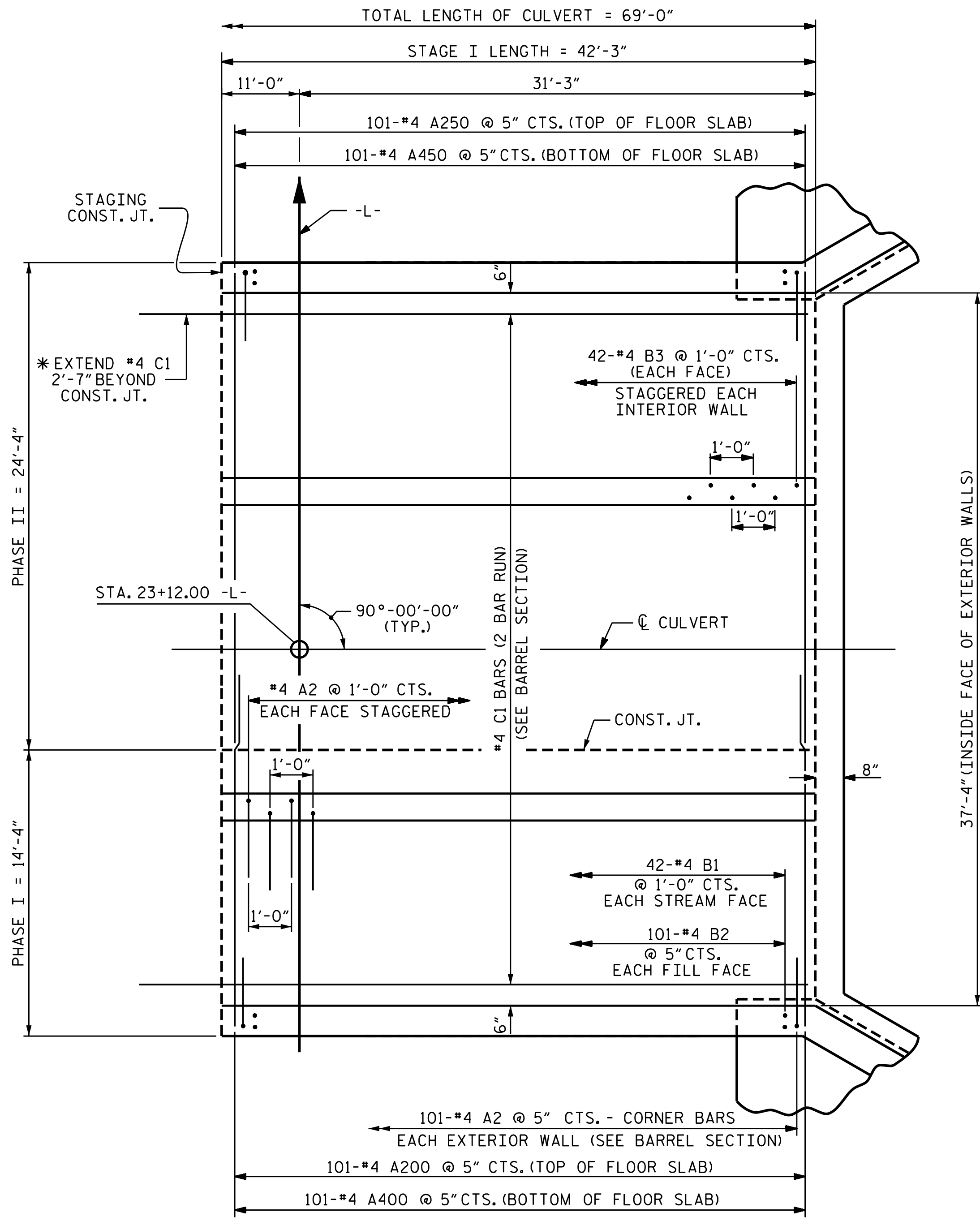
DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

DRAWN BY: A. SORSENGINH DATE: 8/2021
 CHECKED BY: M. G. SHAIKH DATE: 8/2021
 DESIGN ENGINEER OF RECORD: A. YASMEEN DATE: 8/2021

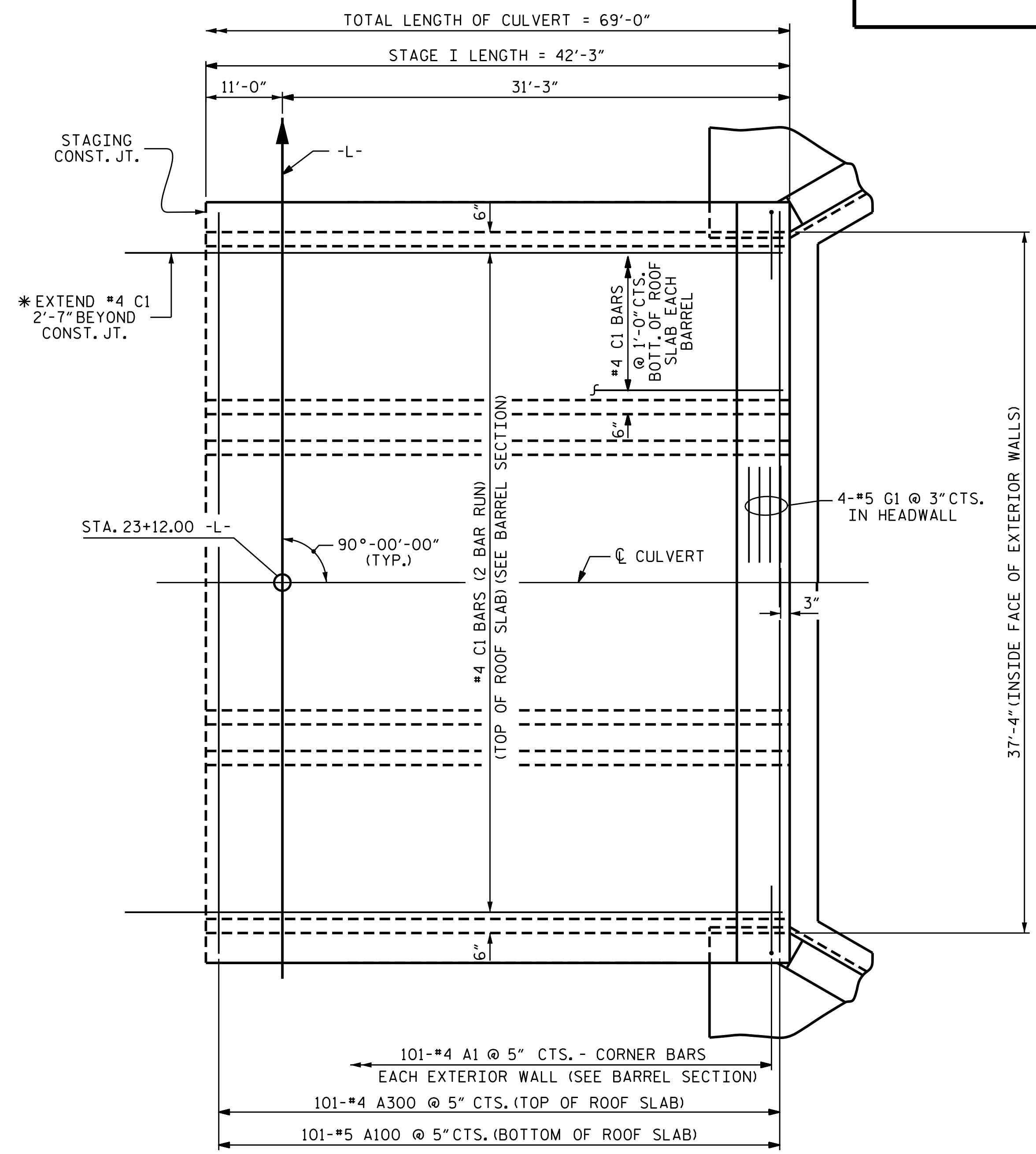
STAGE I		STAGE I	
PHASE I		PHASE II	
CLASS A CONCRETE		CLASS A CONCRETE	
BARREL @ 0.931	CY/FT 39.3 C.Y.	BARREL @ 2.775	CY/FT 117.2 C.Y.
WING, ETC.	10.9 C.Y.	WING, ETC.	13.3 C.Y.
SILLS	0.9 C.Y.	SILLS	0.9 C.Y.
TOTAL	51.1 C.Y.	TOTAL	131.4 C.Y.
REINFORCING STEEL		REINFORCING STEEL	
BARREL	5,699 LBS.	BARREL	15,224 LBS.
WING, ETC.	647 LBS.	WING, ETC.	647 LBS.
SILLS	15 LBS.	SILLS	18 LBS.
TOTAL	6,361 LBS.	TOTAL	15,889 LBS.



BILL OF MATERIAL					
STAGE I PHASE I					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	101	#4	1	5'-2"	349
A2	184	#4	1	4'-7"	563
A200	101	#4	STR.	16'-2"	1091
A400	101	#4	STR.	16'-2"	1091
B1	42	#4	STR.	10'-5"	292
B2	101	#4	STR.	8'-4"	562
B3	84	#4	STR.	10'-5"	585
C1	74	#4	STR.	23'-7"	1166
REINFORCING STEEL =					5,699 LBS
STAGE I PHASE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	101	#4	1	5'-2"	349
A2	101	#4	1	4'-7"	309
A100	101	#5	STR.	38'-3"	4029
A250	101	#4	STR.	24'-0"	1619
A300	101	#4	STR.	38'-3"	2581
A450	101	#4	STR.	24'-0"	1619
B1	42	#4	STR.	10'-5"	292
B2	101	#4	STR.	8'-4"	562
B3	84	#4	STR.	10'-5"	585
C1	198	#4	STR.	23'-7"	3119
G1	4	#5	STR.	38'-4"	160
REINFORCING STEEL =					15,224 LBS



PLAN OF FLOOR SLAB
STAGE I

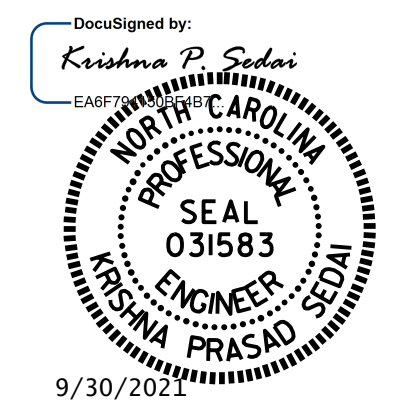


PLAN OF ROOF SLAB
STAGE I

* #4 C1 SHALL BE FIELD BENT AS NECESSARY.

SPLICE LENGTHS CHART		
BAR	SIZE	SPLICE LENGTH
A100	#5	2'-4"
A200	#4	1'-10"
A250	#4	1'-10"
A300	#4	1'-10"
A400	#4	1'-10"
A450	#4	1'-10"
B1	#4	1'-10"
B3	#4	1'-10"
C1	#4	2'-5"
G2	#5	3'-0"

PROJECT NO. BR-0035
MOORE COUNTY
STATION: 23+12.00 -L-
SHEET 4 OF 8



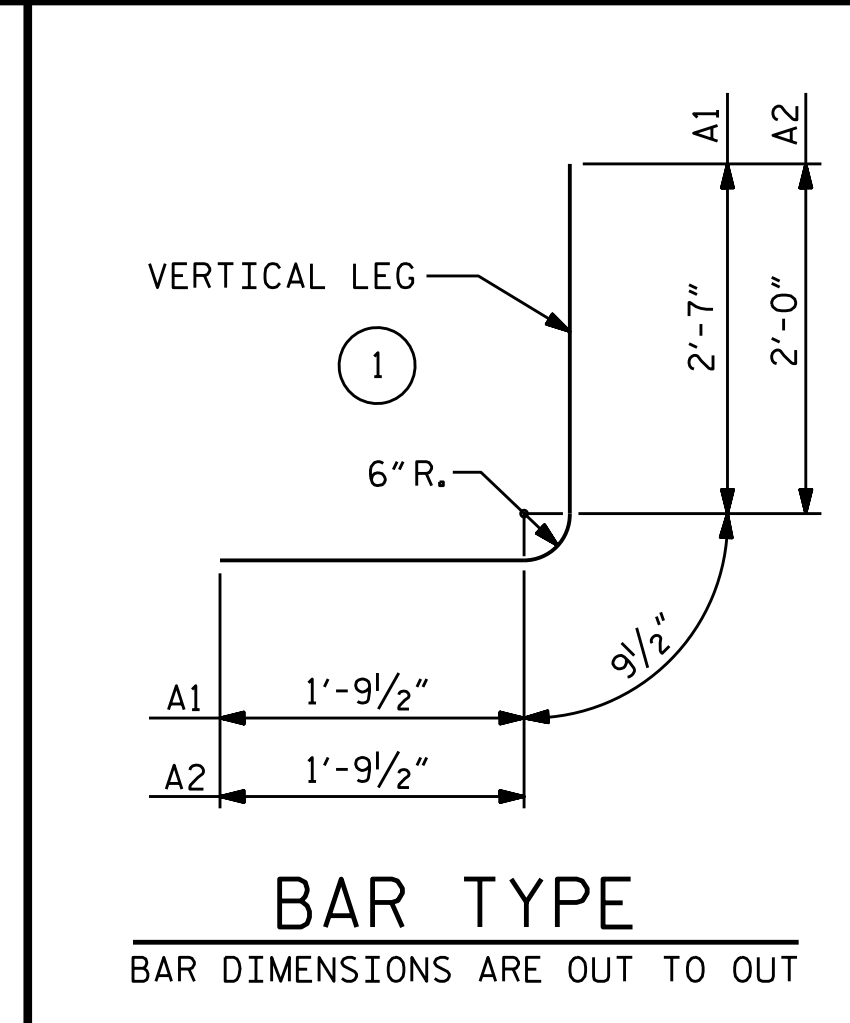
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
TRIPLE 12 FT. X 9 FT.
CONCRETE BOX CULVERT
STAGE I
90° SKEW

REDRAWN NOV. 1990
DRAWN BY: A. SORSENGINH DATE: 8/2021
CHECKED BY: M. G. SHAIKH DATE: 8/2021
DESIGN ENGINEER OF RECORD: A. YASMEEN DATE: 8/2021

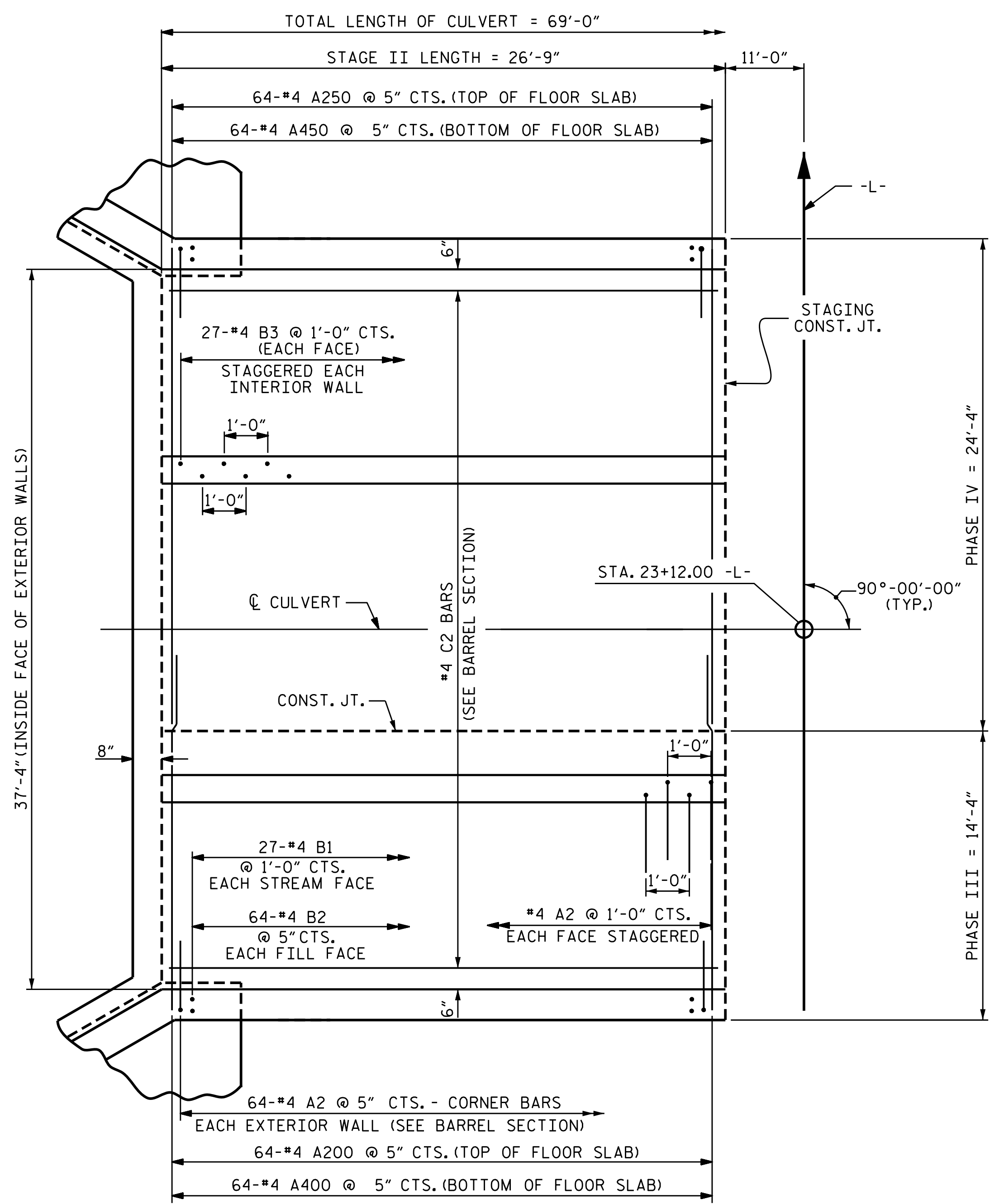
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-4
1			3			TOTAL SHEETS
2			4			8

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

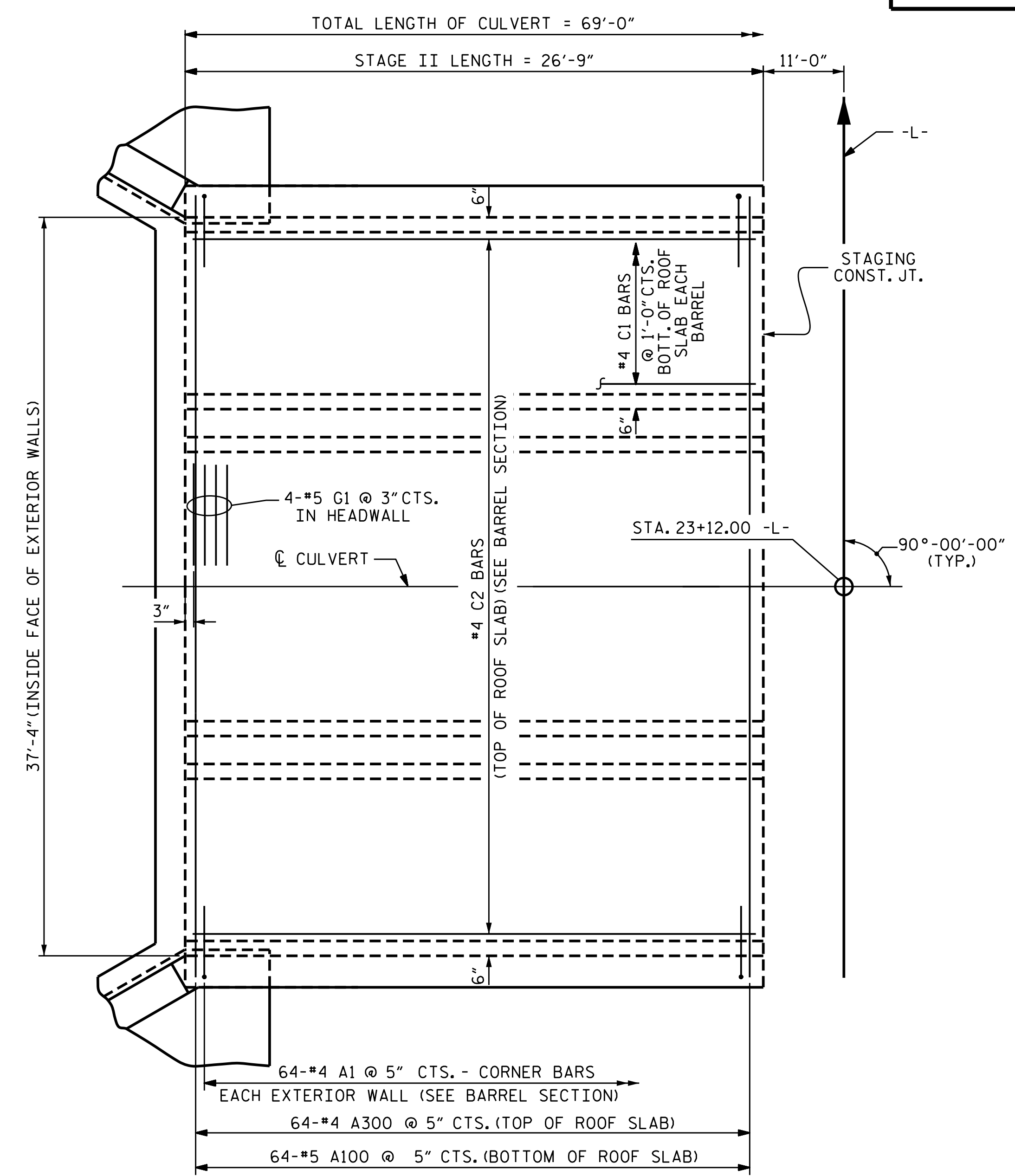
STAGE II	
PHASE III	PHASE IV
CLASS A CONCRETE	CLASS A CONCRETE
BARREL @ 0.931 CY/FT 24.9 C.Y.	BARREL @ 2.775 CY/FT 74.2 C.Y.
WING, ETC. 10.9 C.Y.	WING, ETC. 13.3 C.Y.
SILLS 0.9 C.Y.	SILLS 0.9 C.Y.
TOTAL 36.7 C.Y.	TOTAL 88.4 C.Y.
REINFORCING STEEL	REINFORCING STEEL
BARREL 3,534 LBS.	BARREL 9,484 LBS.
WING, ETC. 647 LBS.	WING, ETC. 647 LBS.
SILLS 15 LBS.	SILLS 18 LBS.
TOTAL 4,196 LBS.	TOTAL 10,149 LBS.



BILL OF MATERIAL					
STAGE II PHASE III					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	64	#4	1	5'-2"	221
A2	117	#4	1	4'-7"	358
A200	64	#4	STR.	16'-2"	691
A400	64	#4	STR.	16'-2"	691
B1	27	#4	STR.	10'-5"	188
B2	64	#4	STR.	8'-4"	356
B3	54	#4	STR.	10'-5"	376
C2	37	#4	STR.	26'-5"	653
REINFORCING STEEL = 3,534 LBS					
STAGE II PHASE IV					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	64	#4	1	5'-2"	221
A2	64	#4	1	4'-7"	196
A100	64	#5	STR.	38'-3"	2553
A250	64	#4	STR.	24'-0"	1026
A300	64	#4	STR.	38'-3"	1635
A450	64	#4	STR.	24'-0"	1026
B1	27	#4	STR.	10'-5"	188
B2	64	#4	STR.	8'-4"	356
B3	54	#4	STR.	10'-5"	376
C2	99	#4	STR.	26'-5"	1747
G1	4	#5	STR.	38'-4"	160
REINFORCING STEEL = 9,484 LBS					

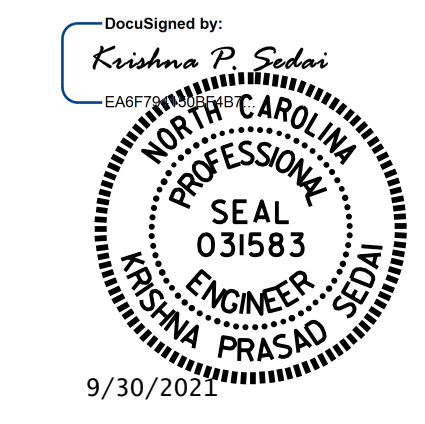


PLAN OF FLOOR SLAB
STAGE II



PLAN OF ROOF SLAB
STAGE II

PROJECT NO. BR-0035
MOORE COUNTY
STATION: 23+12.00 -L-
SHEET 5 OF 8



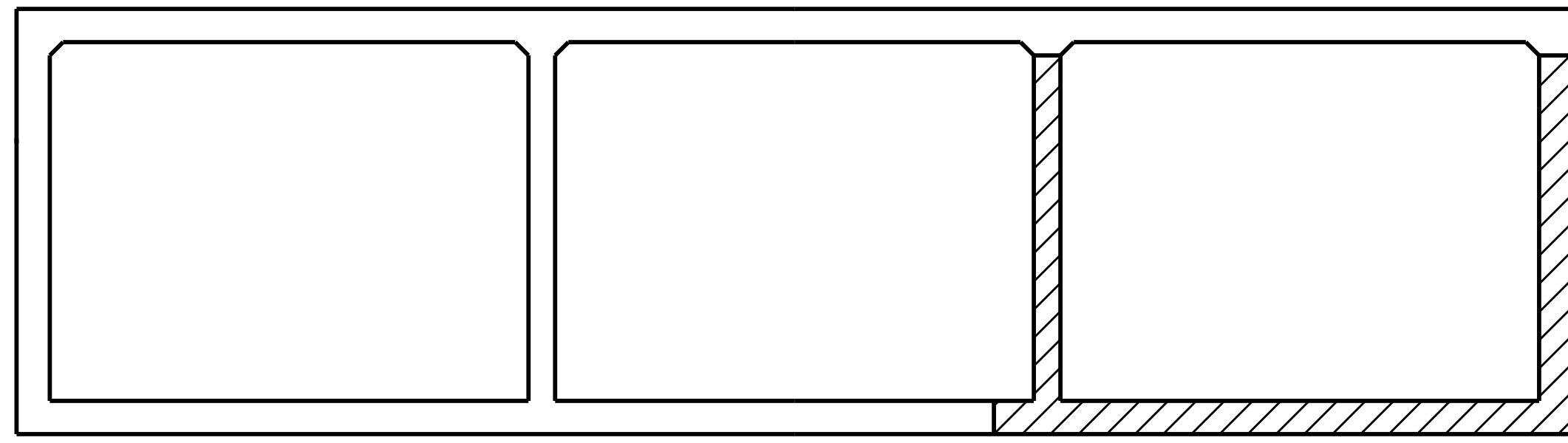
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
TRIPLE 12 FT. X 9 FT.
CONCRETE BOX CULVERT
STAGE II
90° SKEW

DRAWN BY: A. SORSENGINH DATE: 8/2021
CHECKED BY: M. G. SHAIKH DATE: 8/2021
DESIGN ENGINEER OF RECORD: A. YASMEEN DATE: 8/2021

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-5
1			3			TOTAL SHEETS
2			4			8

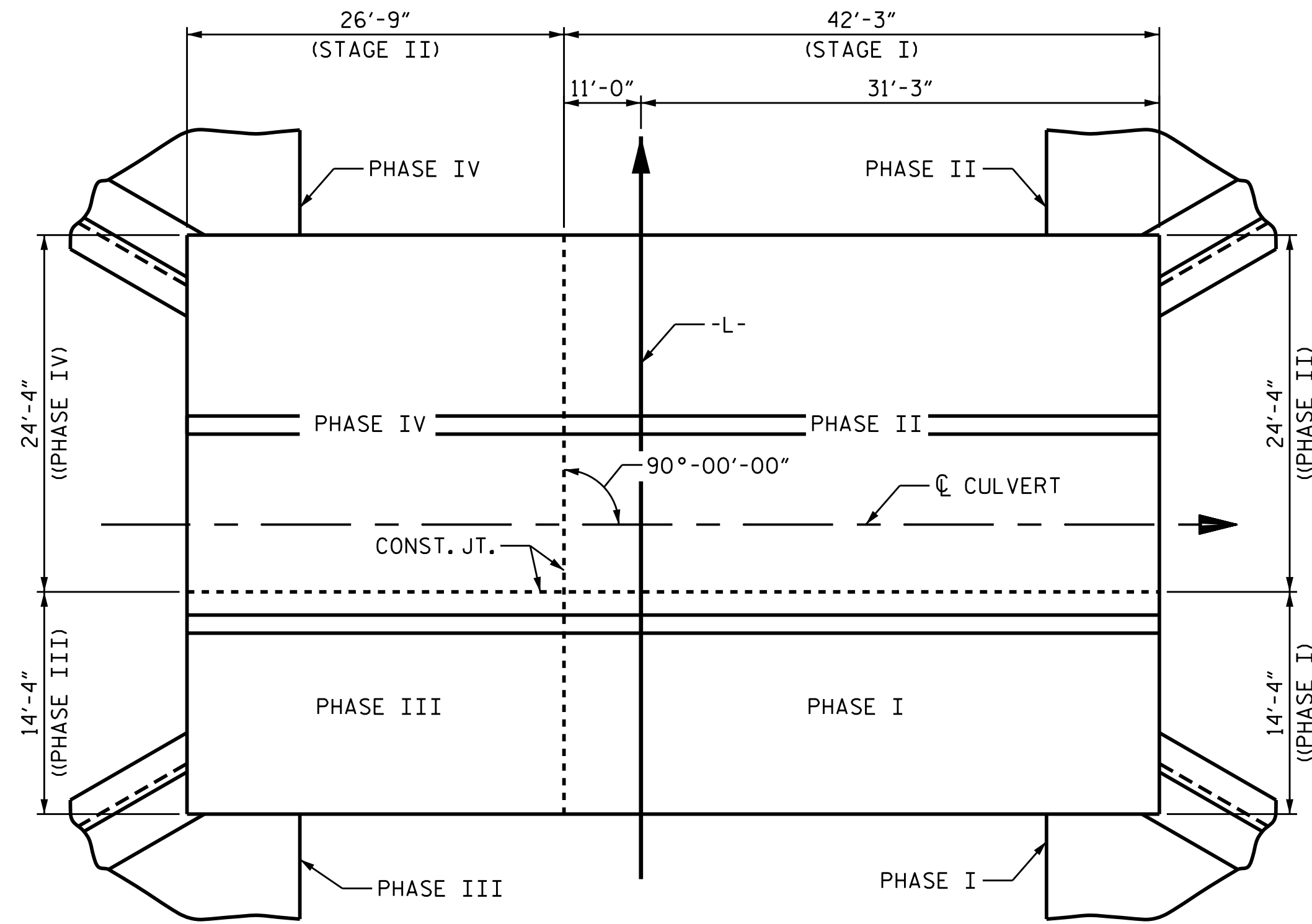
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REDRAWN NOV. 1990



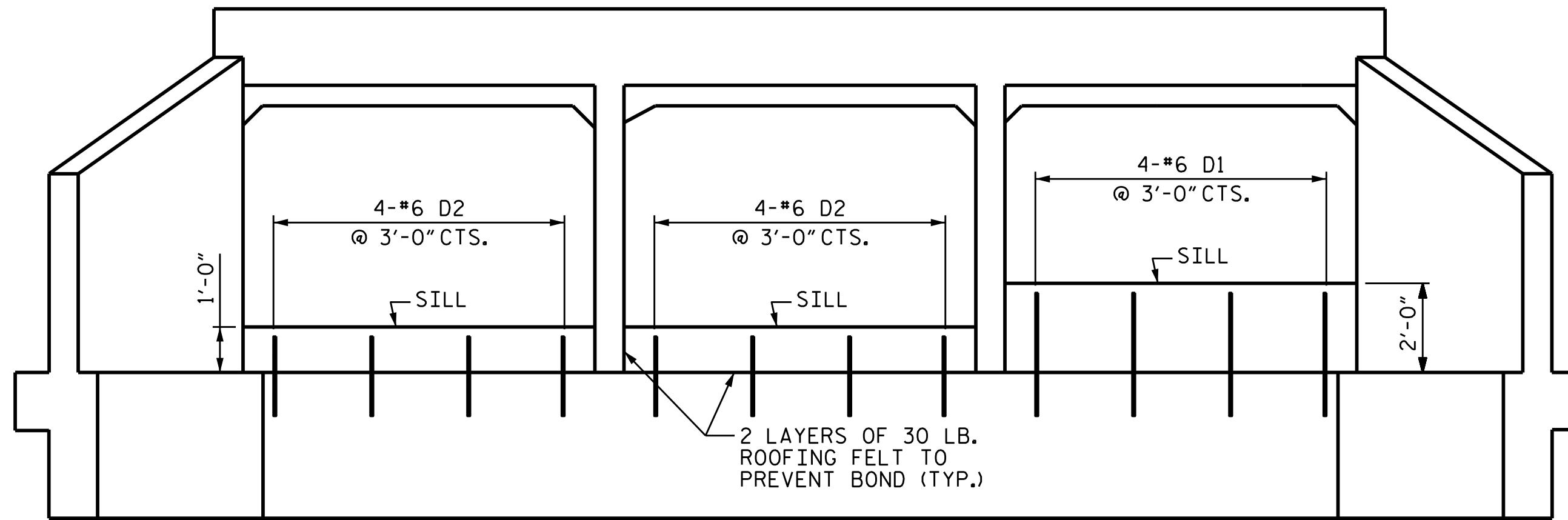
ELEVATION
(LOOKING DOWNSTREAM)

 PHASE I OR PHASE III CONSTRUCTION
  PHASE II OR PHASE IV CONSTRUCTION

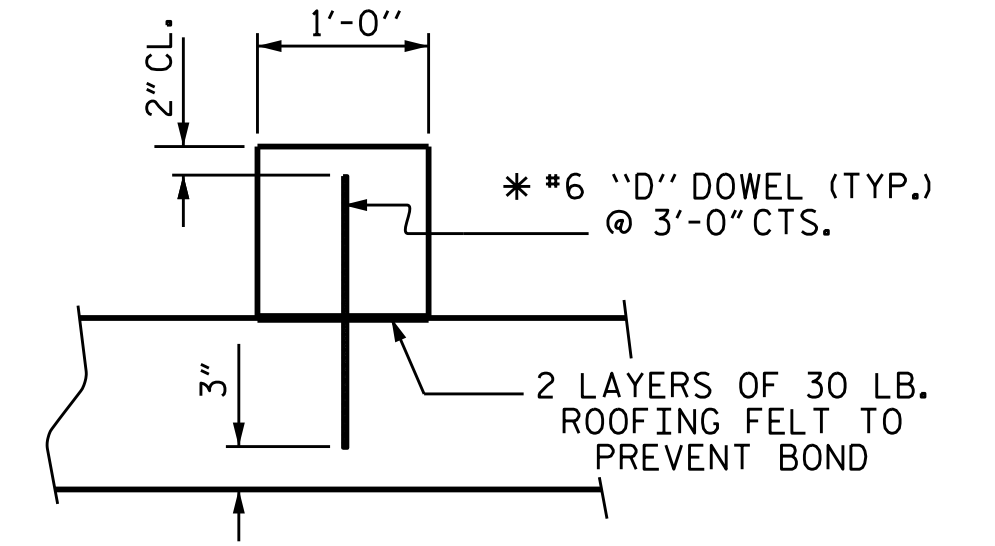


PLAN

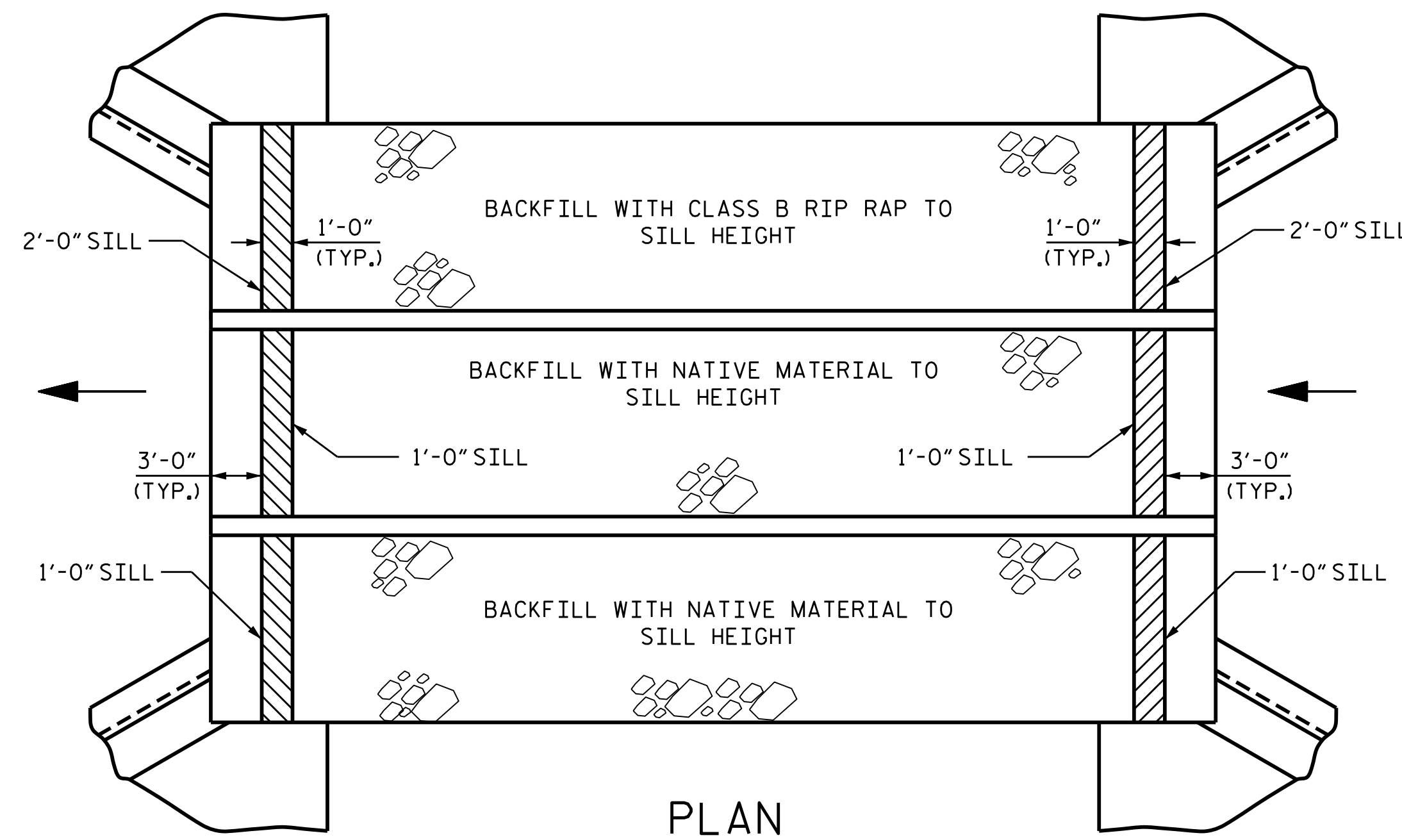
CONSTRUCTION SEQUENCE



ELEVATION



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



PLAN
CULVERT SILL DETAILS

BILL OF MATERIALS						
STAGE I	PHASE I					
	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
	D1	4	#6	STR	2'-6"	15
	REINFORCING STEEL					15 LBS.
STAGE II	PHASE II					
	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
	D2	8	#6	STR	1'-6"	18
	REINFORCING STEEL					18 LBS.
STAGE III	PHASE III					
	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
	D1	4	#6	STR	2'-6"	15
	REINFORCING STEEL					15 LBS.
STAGE IV	PHASE IV					
	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
	D2	8	#6	STR	1'-6"	18
	REINFORCING STEEL					18 LBS.
CLASS A CONCRETE						0.9 CY

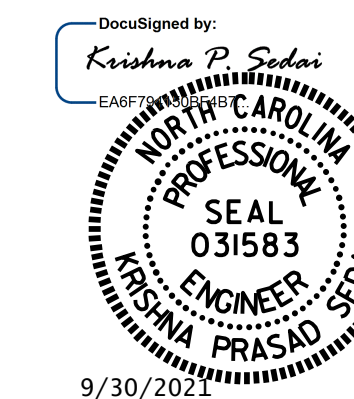
NOTES

NATIVE MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED OR FLOODPLAIN AT THE PROJECT SITE DURING 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 NATIVE MATERIAL IN THE HIGH FLOW 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 ENTIRE COST OF WORK REQUIRED TO PLACE THE EXCAVATED MATERIAL OR SUPPLEMENTAL MATERIAL AS SHOWN ON THE PLANS SHALL BE INCLUDED IN THE CONTRACT LUMP SUM PRICE BID FOR CULVERT EXCAVATION.

THE ENTIRE COST OF WORK REQUIRED TO CONSTRUCT THE SILLS SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

STREAM BED MATERIAL SHOULD BE PLACED LEVEL WITH THE TOP OF THE SILLS.



PROJECT NO. BR-0035
MOORE COUNTY
 STATION: 23+12.00 -L-

SHEET 6 OF 8

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**TRIPLE 12 FT. X 9 FT.
 CONCRETE BOX CULVERT
 90° SKEW**

DRAWN BY : A. SORSENGINH DATE : 08/2021
 CHECKED BY : M. G. SHAIKH DATE : 08/2021
 DESIGN ENGINEER OF RECORD: A. YASMEEN DATE : 08/2021

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			C-6
2			4			TOTAL SHEETS 8

NOTES

* THIS DIMENSION TO BE VERIFIED BY THE ENGINEER

THE GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS SHALL CONSIST OF THE FOLLOWING COMPONENTS :

- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF $2\frac{1}{2}$ ".
- B. 4 - $1" \times 2\frac{1}{4}"$ BOLTS WITH WASHERS, BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE $1" \times 2\frac{1}{4}"$ GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
- C. WIRE STRUTS SHOWN IN THE GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS DETAIL ARE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 P.S.I. AS AN OPTION, A $\frac{1}{16}"$ WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

GUARDRAIL ANCHOR ASSEMBLY WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP. BOLT THREADS MAY BE RECUT AS NECESSARY TO INSURE FIT.

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CLASS "A" CONCRETE.

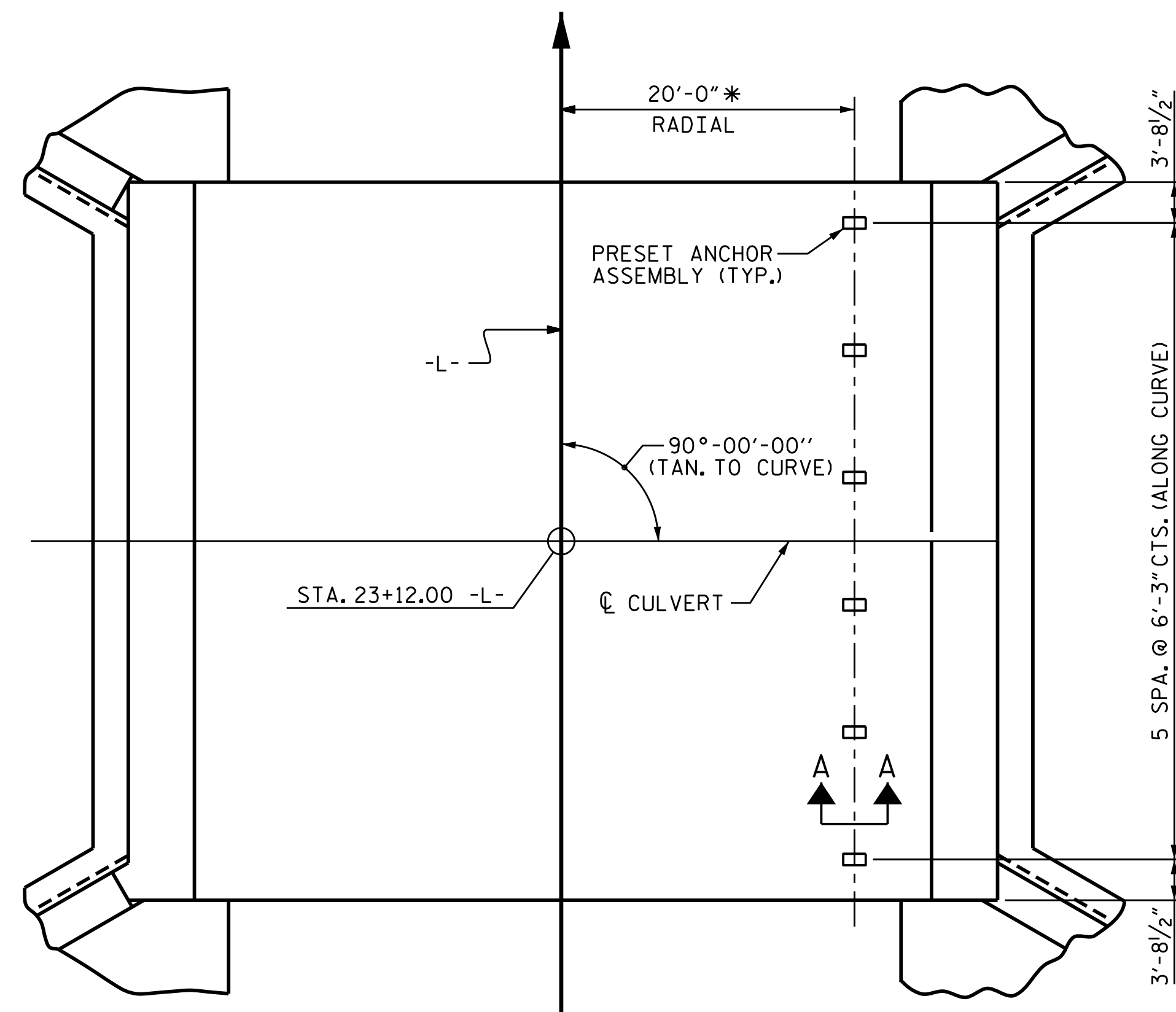
FERRULES TO BE PLUGGED DURING POURING OF SLAB AS RECOMMENDED BY THE MANUFACTURER.

AT THE CONTRACTOR'S OPTION, FERRULES WITH OPEN OR CLOSED ENDS MAY BE USED.

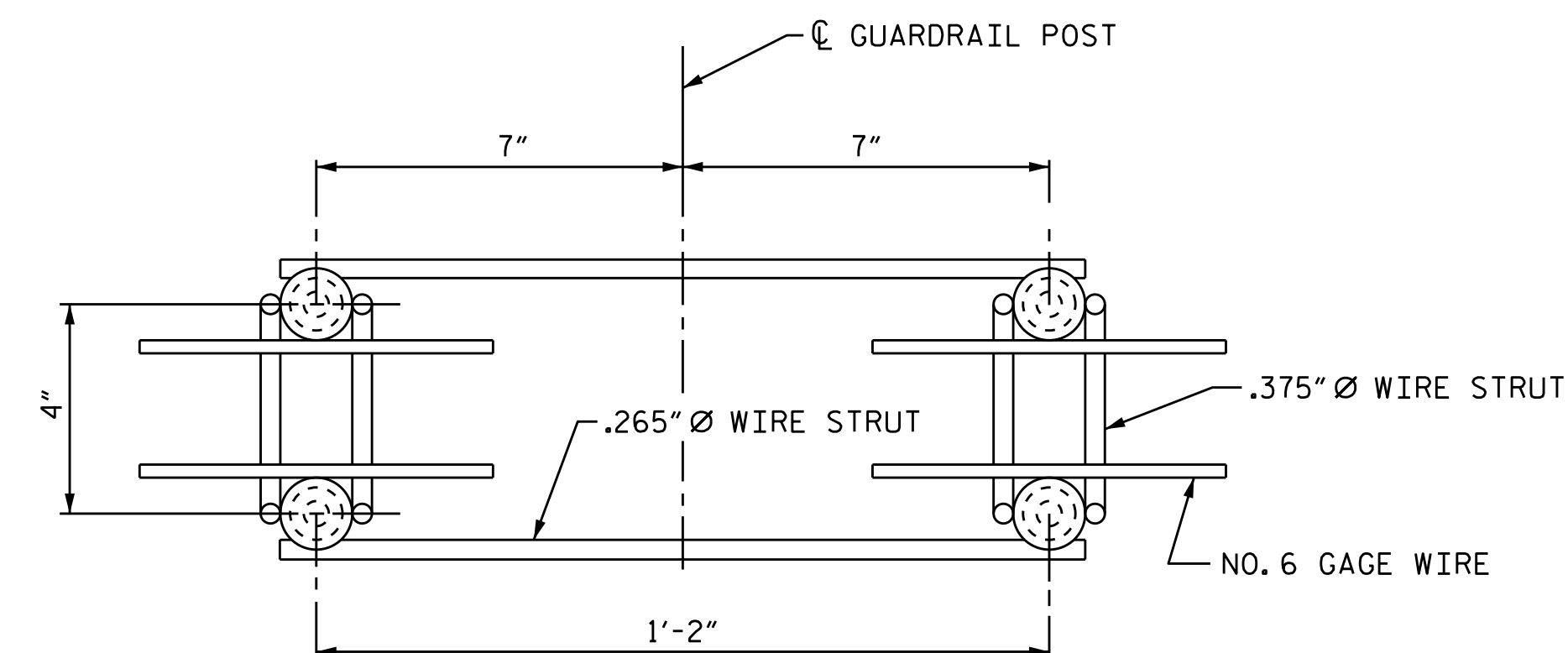
PAYMENT FOR GUARDRAIL, POSTS, AND POST BASE PLATES IS INCLUDED IN ROADWAY PAY ITEMS.

SLAB REINFORCING STEEL MAY BE SHIFTED AS NECESSARY TO CLEAR GUARDRAIL ANCHOR ASSEMBLY. CARE SHOULD BE TAKEN TO KEEP THE SHIFTING OF REINFORCING STEEL TO A MINIMUM.

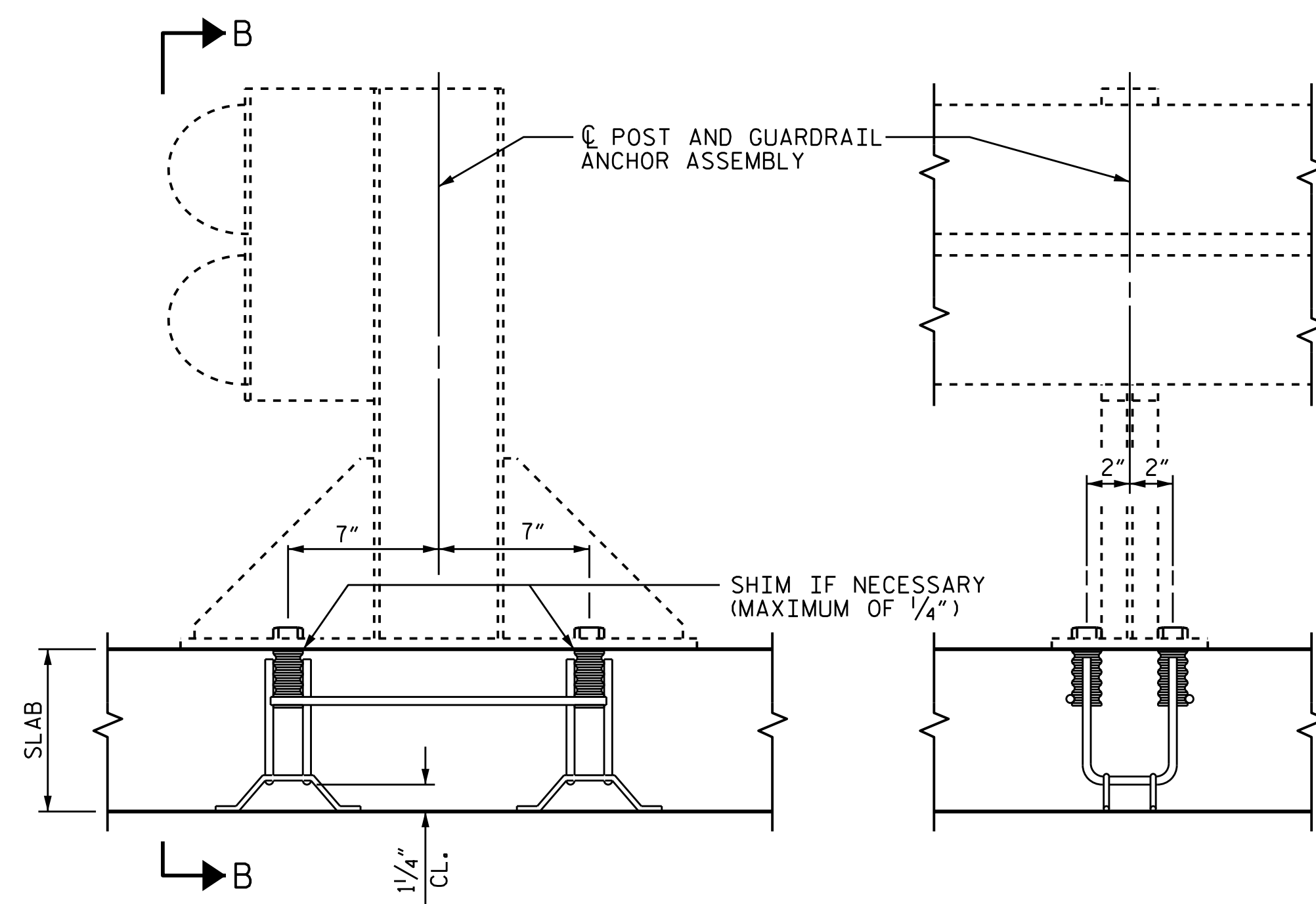
THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF GUARDRAIL ANCHOR ASSEMBLY. LEVEL TWO FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE $1" \times 2\frac{1}{4}"$ BOLT IS 21.8 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS.



PLAN OF CULVERT GUARDRAIL ANCHOR ASSEMBLY SPACING

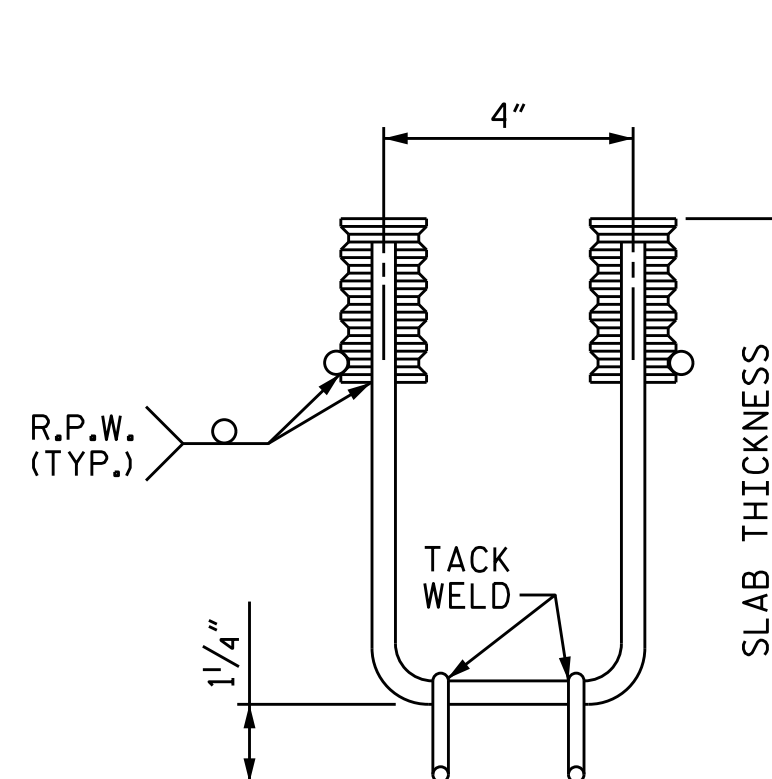


PLAN

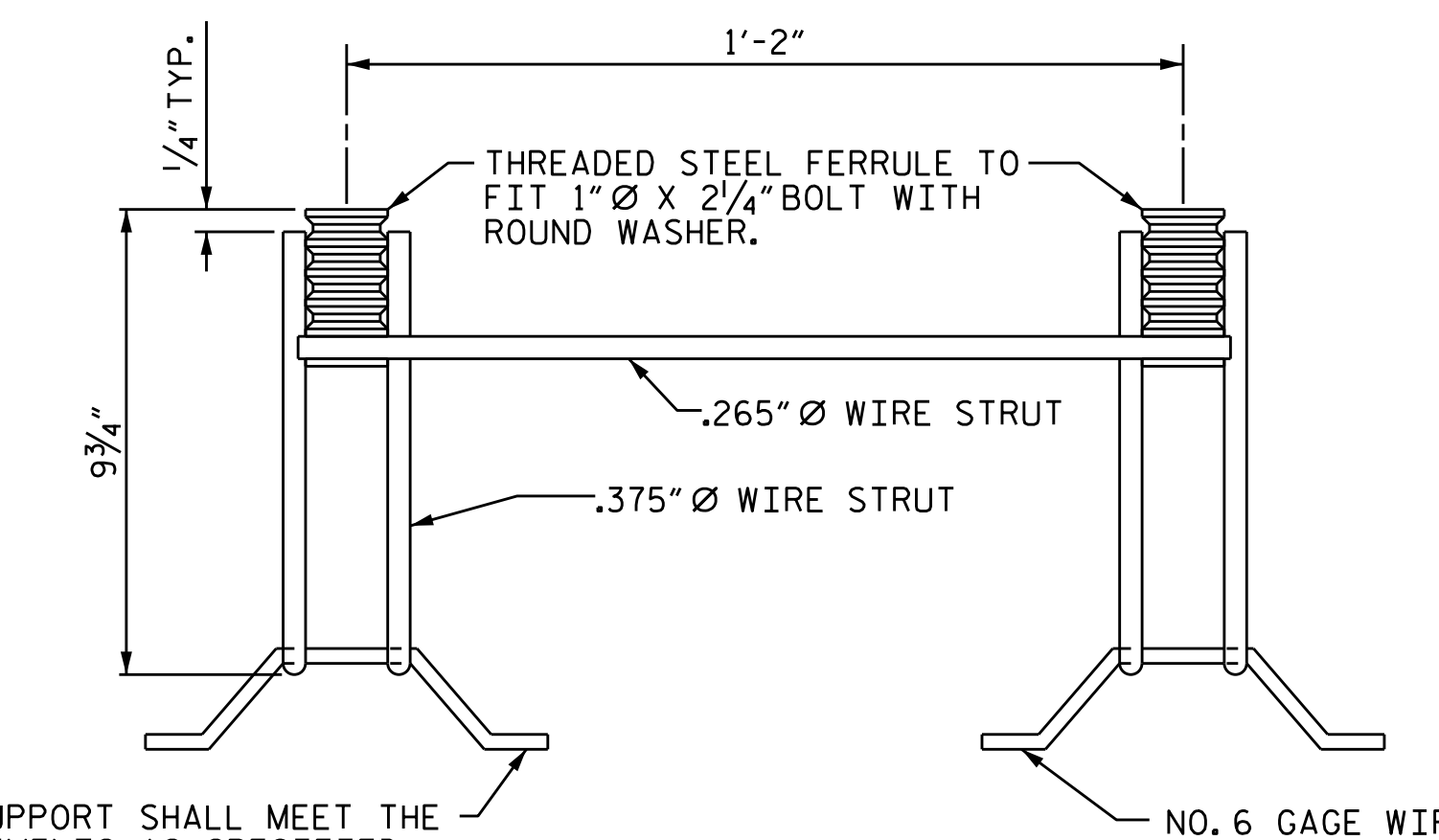


SECTION A-A

SECTION B-B



ELEVATION

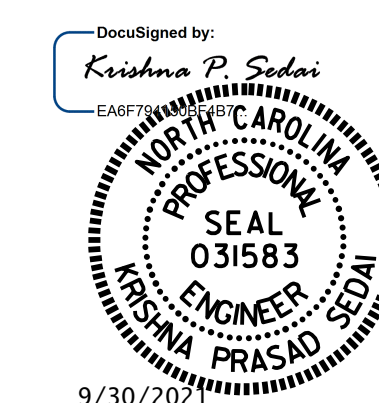


SIDE VIEW

THIS SUPPORT SHALL MEET THE REQUIREMENTS AS SPECIFIED FOR SUPPORTS FOR REINFORCING STEEL. SEE SPECIFICATIONS.

PROJECT NO. BR-0035
MOORE COUNTY
STATION: 23+12.00 -L-

SHEET 7 OF 8



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
ANCHORAGE DETAILS FOR
GUARDRAIL ANCHOR ASSEMBLY
FOR CULVERTS

ASSEMBLED BY : A. SORSENGINH DATE : 08/2021
CHECKED BY : M. G. SHAIKH DATE : 08/2021
DRAWN BY : FCJ 6/88
CHECKED BY : ARB 6/88

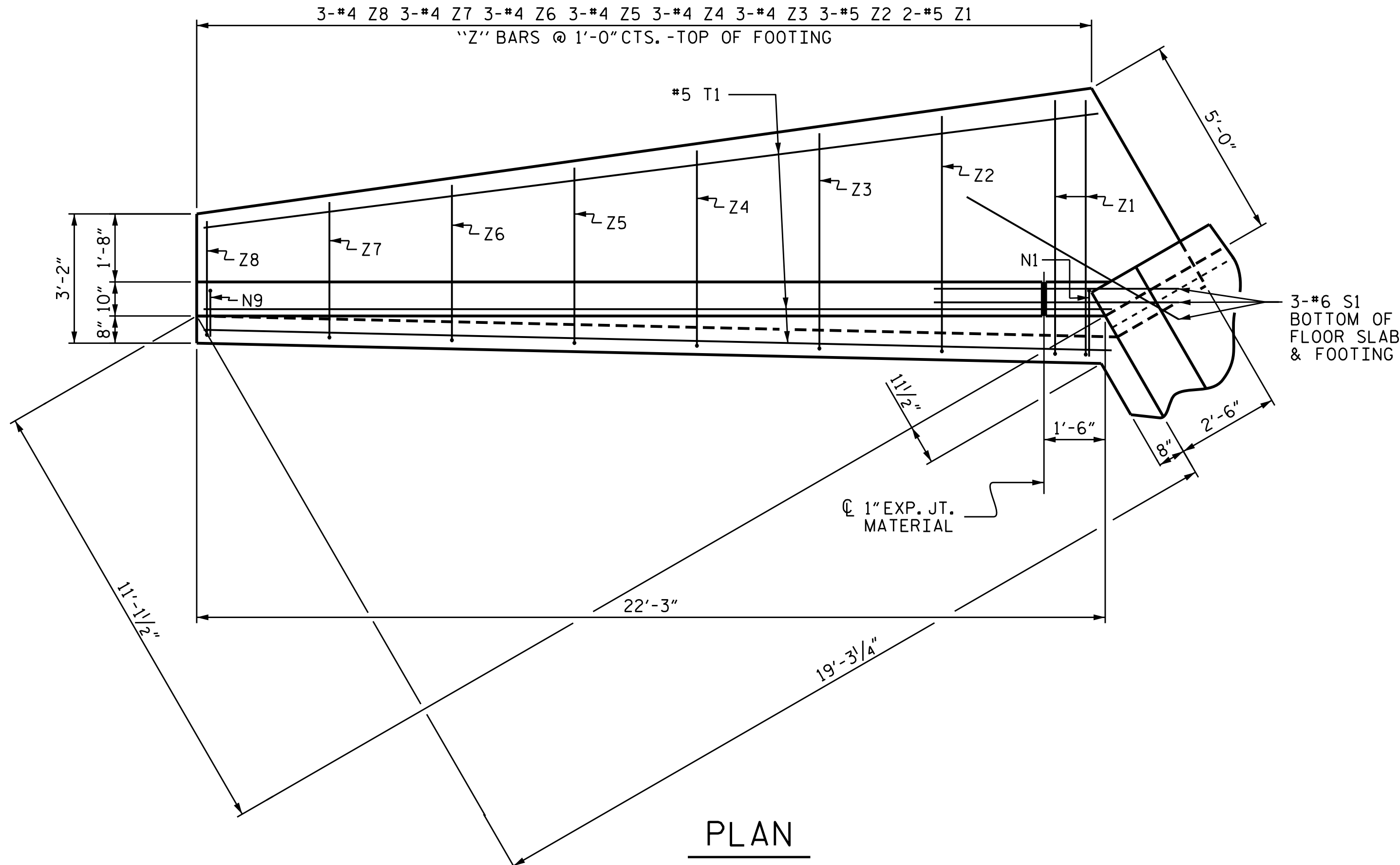
REV. 10/11/11 MAA/GM
REV. 12/17 MAA/THC
REV. 6/19 MAA/THC

GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS

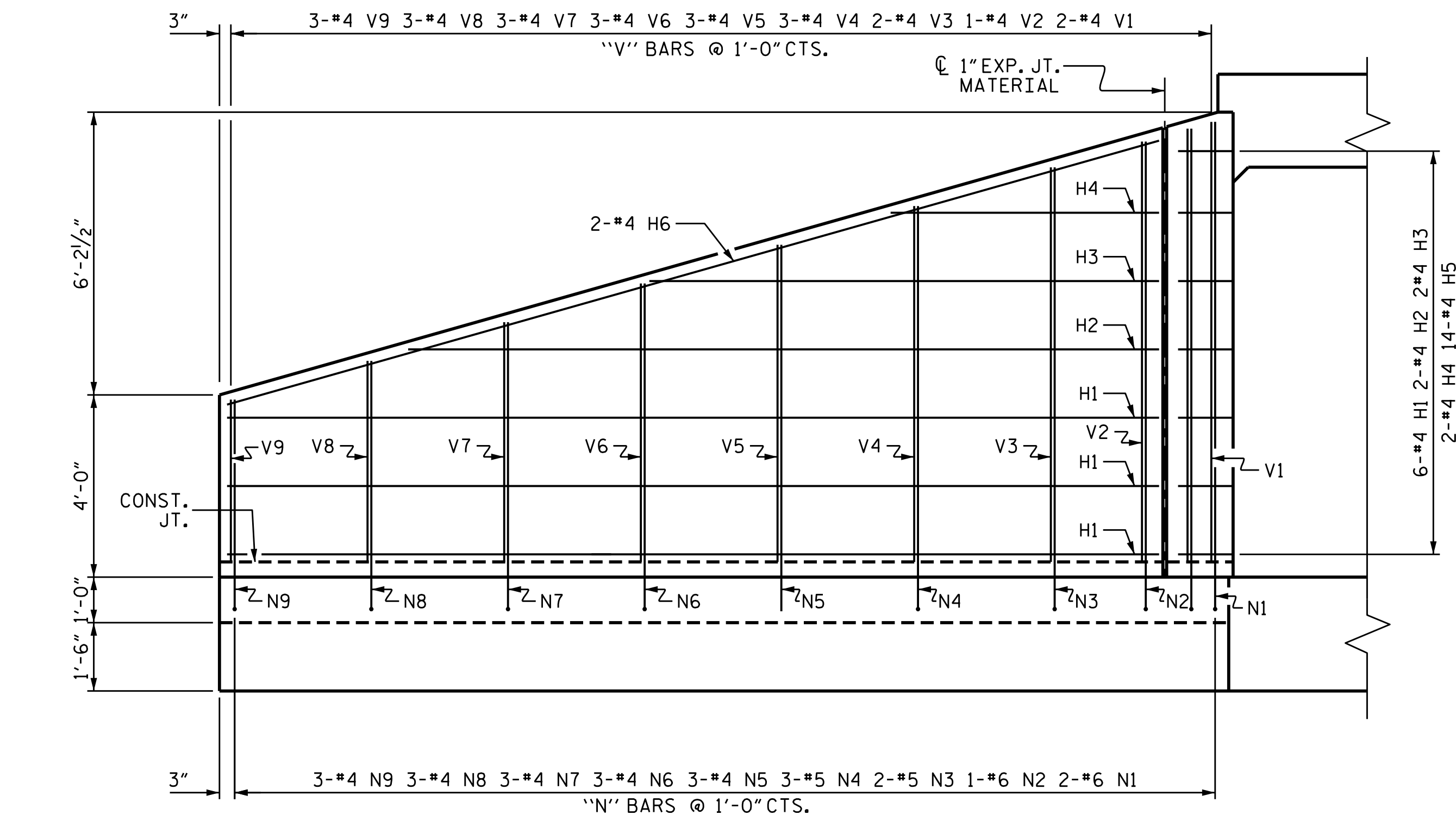
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-7
1			3			TOTAL SHEETS
2			4			8

STD. NO. GRA1

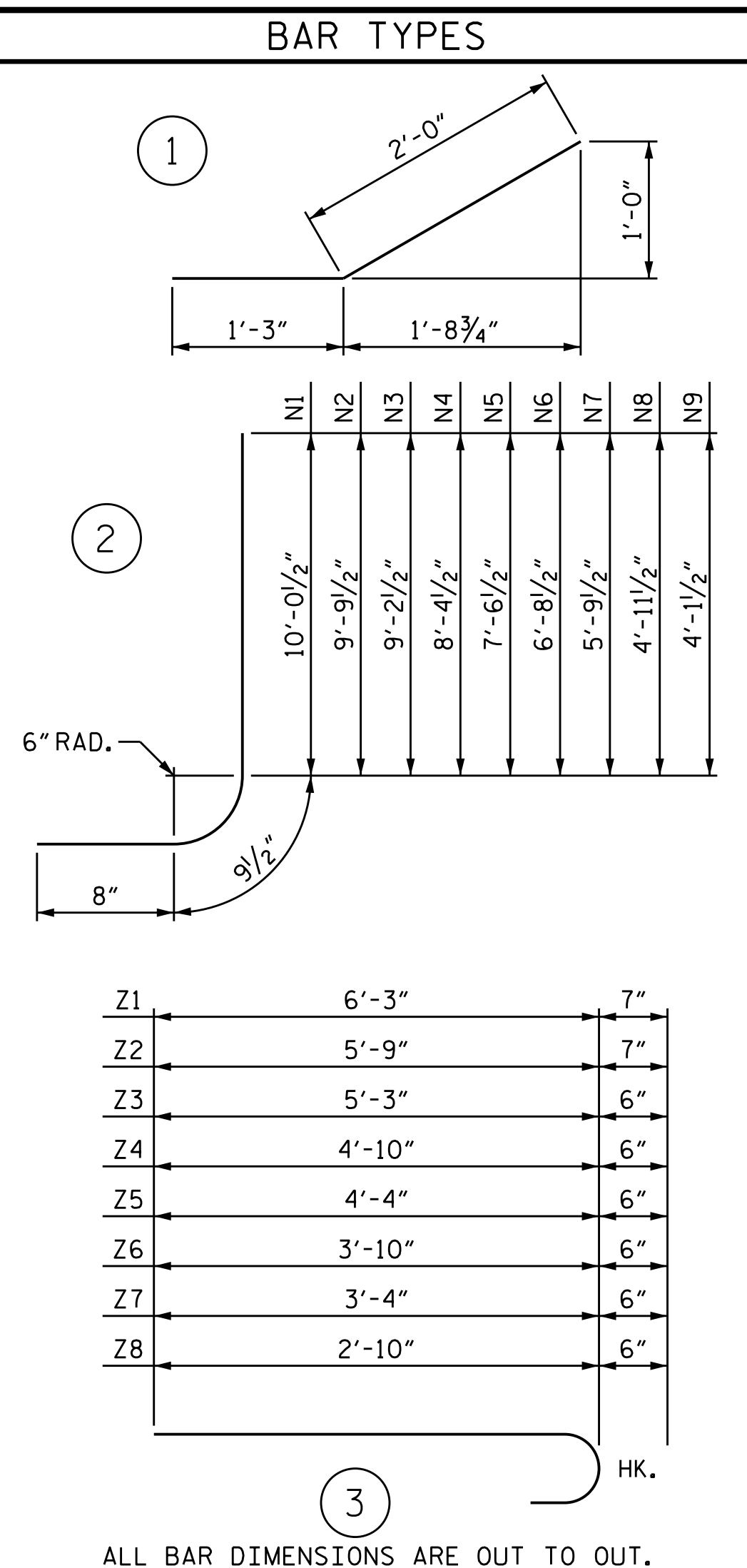


PLAN

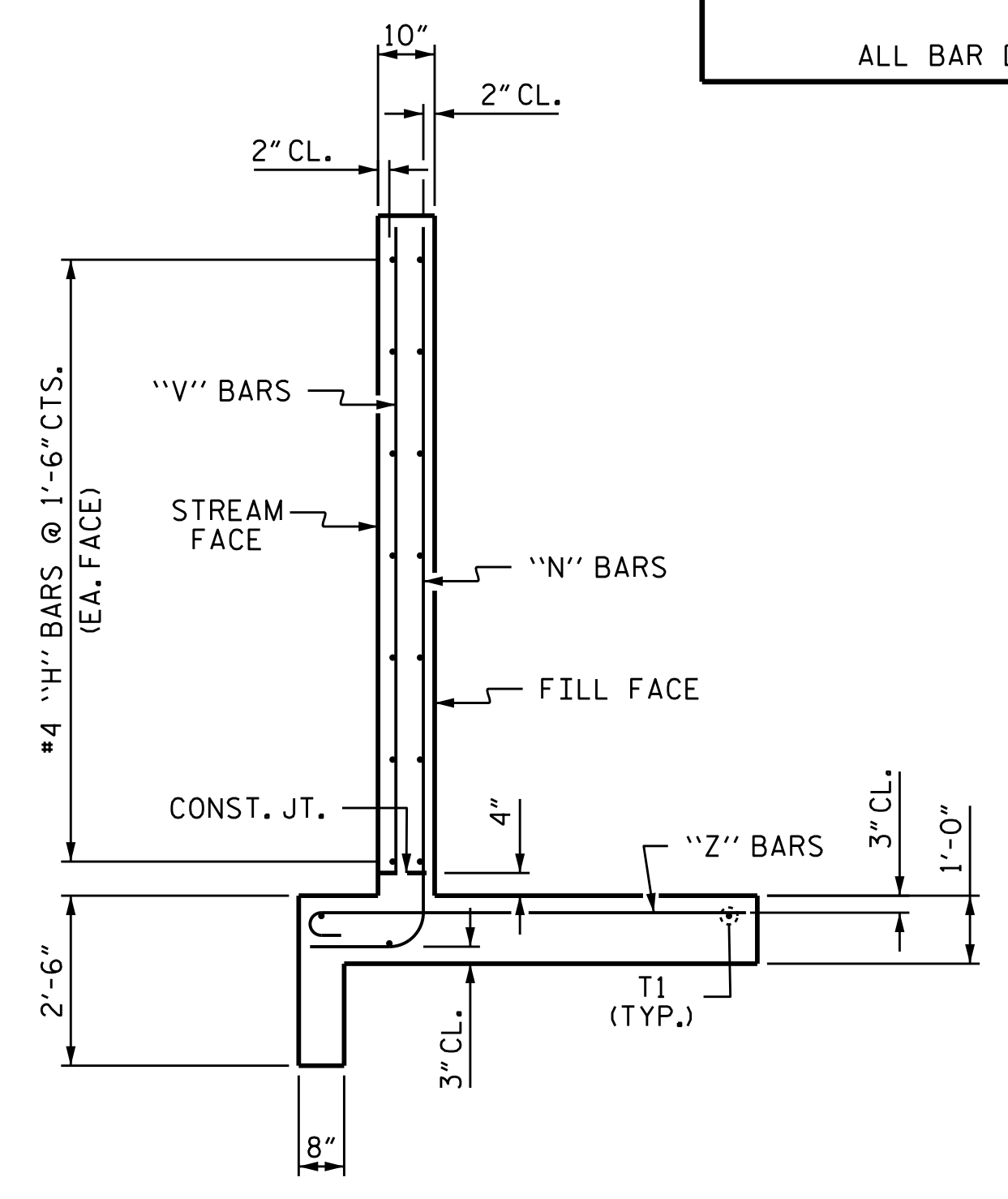


ELEVATION

CLASS A CONCRETE	
STAGE I	PHASE I WING - PHASE I 10.1 C.Y. END CURTAIN WALL 0.8 C.Y. TOTAL 10.9 C.Y.
	PHASE II WING - PHASE II 10.1 C.Y. 1 HEADWALL 1.8 C.Y. END CURTAIN WALL 1.4 C.Y. TOTAL 13.3 C.Y.
	PHASE III WING - PHASE III 10.1 C.Y. END CURTAIN WALL 0.8 C.Y. TOTAL 10.9 C.Y.
STAGE II	PHASE IV WING - PHASE IV 10.1 C.Y. 1 HEADWALL 1.8 C.Y. END CURTAIN WALL 1.4 C.Y. TOTAL 13.3 C.Y.



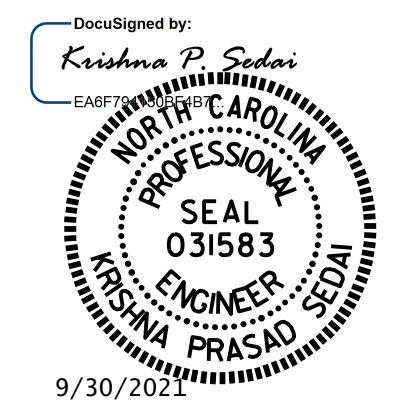
BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	24	#4	STR	20'-5"	327
H2	8	#4	STR	16'-5"	88
H3	8	#4	STR	11'-2"	60
H4	8	#4	STR	5'-10"	31
H5	56	#4	1	3'-3"	122
H6	8	#4	STR	21'-3"	114
N1	8	#6	2	11'-6"	138
N2	4	#6	2	11'-3"	68
N3	8	#5	2	10'-8"	89
N4	12	#5	2	9'-10"	123
N5	12	#4	2	9'-0"	72
N6	12	#4	2	8'-2"	65
N7	12	#4	2	7'-3"	58
N8	12	#4	2	6'-5"	51
N9	12	#4	2	5'-7"	45
S1	12	#6	STR	6'-0"	108
T1	12	#5	STR	22'-1"	276
V1	8	#4	STR	9'-6"	51
V2	4	#4	STR	9'-2"	24
V3	8	#4	STR	8'-8"	46
V4	12	#4	STR	7'-10"	63
V5	12	#4	STR	6'-11"	55
V6	12	#4	STR	6'-1"	49
V7	12	#4	STR	5'-3"	42
V8	12	#4	STR	4'-5"	35
V9	12	#4	STR	3'-6"	28
Z1	8	#5	3	6'-10"	57
Z2	12	#5	3	6'-4"	79
Z3	12	#4	3	5'-9"	46
Z4	12	#4	3	5'-6"	44
Z5	12	#4	3	4'-10"	39
Z6	12	#4	3	4'-4"	35
Z7	12	#4	3	3'-10"	31
Z8	12	#4	3	3'-4"	27
REINFORCING STEEL FOR 4 WINGS				2586 LBS	



TYPICAL WING SECTION

PROJECT NO. BR-0035
 MOORE COUNTY
 STATION: 23+12.00 -L-

SHEET 8 OF 8



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
WINGS FOR CONCRETE BOX CULVERT
 H = 9'-0" SLOPE = 3:1
 90° SKEW

DRAWN BY: A. SORSENGINH DATE: 08/2021
 CHECKED BY: M. G. SHAIKH DATE: 08/2021
 DESIGN ENGINEER OF RECORD: A. YASMEEN DATE: 08/2021

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

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	-----	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	-----	SEE PLANS
IMPACT ALLOWANCE	-----	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF STRUCTURAL STEEL - AASHTO M270 GRADE 36	--	20,000 LBS. PER SQ. IN.
	--	27,000 LBS. PER SQ. IN.
	--	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION - GRADE 60	----	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	-----	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	-----	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR UNTREATED EXTREME FIBER STRESS	----	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	-----	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	-----	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2018 "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 $\frac{3}{4}$ " WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO $1\frac{1}{2}$ " RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A $\frac{1}{4}$ " FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A $\frac{1}{4}$ " RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE $\frac{7}{8}$ " \emptyset SHEAR STUDS FOR THE $\frac{3}{4}$ " \emptyset STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - $\frac{7}{8}$ " \emptyset STUDS FOR 4 - $\frac{3}{4}$ " \emptyset STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF $\frac{7}{8}$ " \emptyset STUDS ALONG THE BEAM AS SHOWN FOR $\frac{3}{4}$ " \emptyset STUDS BASED ON THE RATIO OF 3 - $\frac{7}{8}$ " \emptyset STUDS FOR 4 - $\frac{3}{4}$ " \emptyset 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 $\frac{3}{16}$ " 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 $\frac{1}{16}$ " INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

ENGLISH

JANUARY, 1990

STD. NO. SN