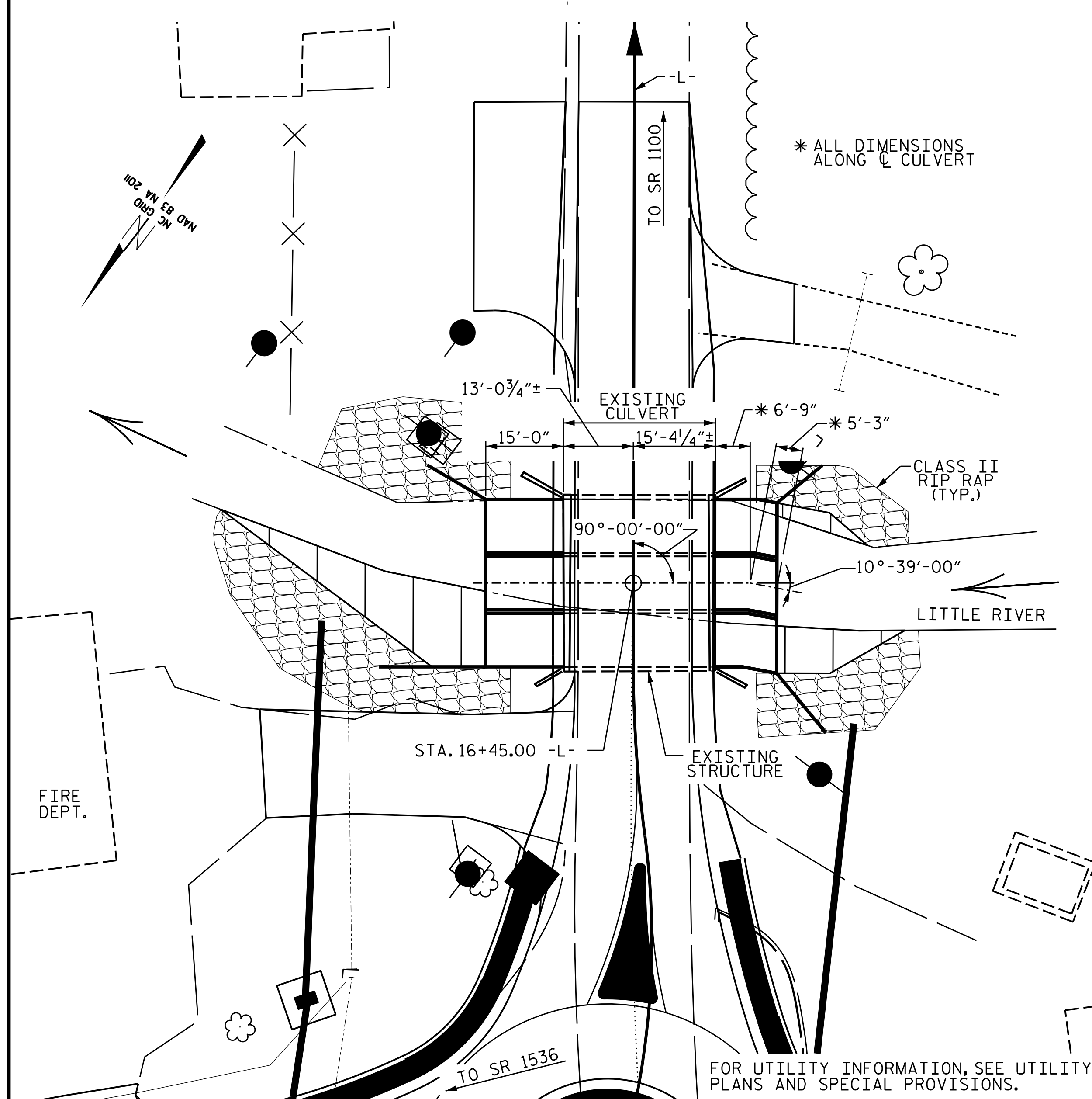


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BENCH MARK: 21.8' LT. OF STA. 15+91.60 -L-; ELEV. 2682.44  
NEAR FIRE DEPT. SIGN



LOCATION SKETCH

TOTAL STRUCTURE QUANTITIES

CLASS A CONCRETE	
LEFT EXTENSION	68.0 C.Y.
RIGHT EXTENSION	53.3 C.Y.
TOTAL	121.3 C.Y.
REINFORCING STEEL	
LEFT EXTENSION	7,324 LBS
RIGHT EXTENSION	6,497 LBS
TOTAL	13,821 LBS
CULVERT EXCAVATION	LUMP SUM
FOUNDATION COND. MAT'L.	
LEFT EXTENSION	39 TONS
RIGHT EXTENSION	32 TONS
TOTAL	71 TONS
CLASS II RIP RAP	260 TONS

ROADWAY DATA

GRADE POINT ELEV. @ STA. 16+45.00 -L- = 2682.81  
BED ELEV. @ STA. 16+45.00 -L- = 2671.7  $\pm$   
ROADWAY SLOPES = 2 : 1 MAX

HYDRAULIC DATA

DESIGN DISCHARGE = 1700 CFS  
FREQUENCY OF DESIGN FLOOD = 50 YRS  
DESIGN HIGH WATER ELEVATION = 2682.3  
DRAINAGE AREA = 7.38 SQ. MI.  
BASIC DISCHARGE (Q100) = 2000 CFS  
BASIC HIGH WATER ELEVATION = 2683.1

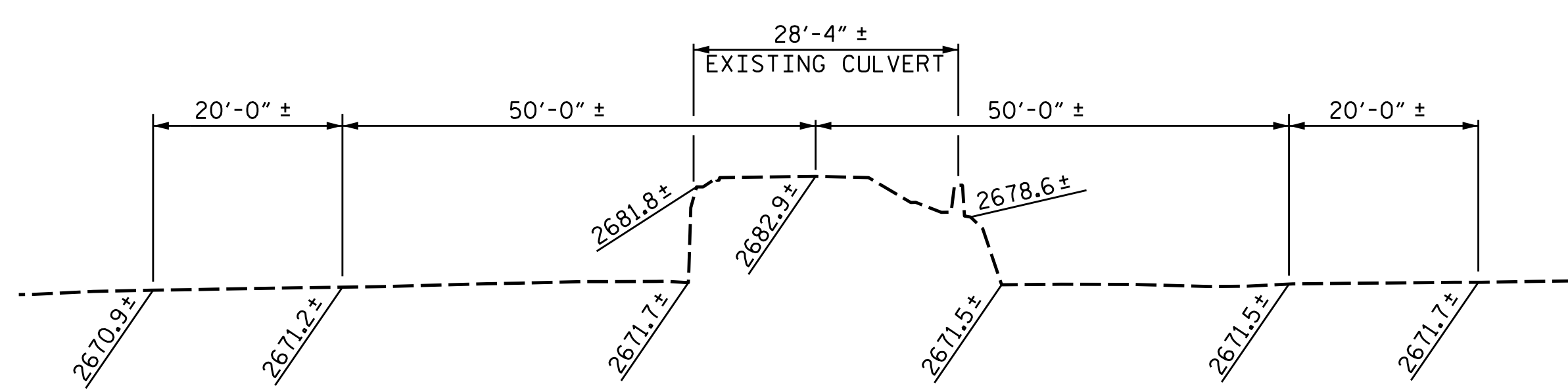
OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = 1900 CFS  
FREQUENCY OF OVERTOPPING FLOOD = 100  $\pm$  YRS  
OVERTOPPING FLOOD ELEVATION = 2682.9 \*

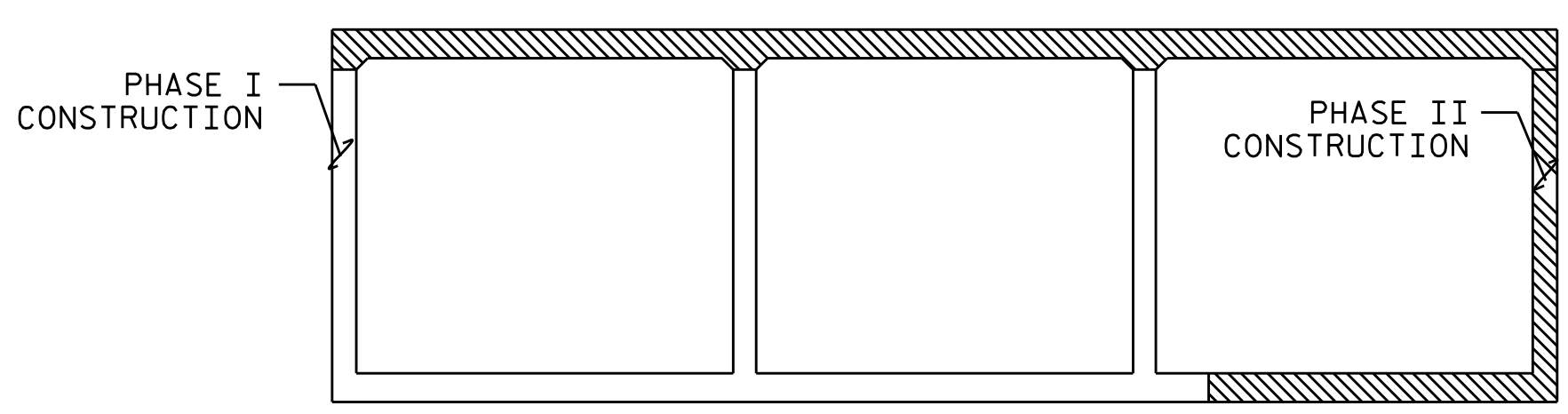
\* OVERTOPPING OCCURS AT STA. 16+25.00 -L-  
WS ELEV. TAKEN AT RIVER STATION 82791

NOTES:

- ASSUMED LIVE LOAD ----- HL-93 OR ALTERNATE LOADING.
- DESIGN FILL----- 2.01' MAX., 1.25' MIN.
- FOR OTHER DESIGN DATA AND NOTES, SEE STANDARD NOTES SHEET.
- 3"  $\varnothing$  WEEP HOLES INDICATED TO BE IN ACCORDANCE WITH THE SPECIFICATIONS.
- CONCRETE IN EACH CULVERT EXTENSION TO BE POURED IN THE FOLLOWING ORDER:
  1. PHASE I WING FOOTINGS AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS.
  2. THE REMAINING PORTIONS OF PHASE I WALLS AND PHASE I WINGS FULL HEIGHT.
  3. PHASE II WING FOOTINGS AND FLOOR SLAB INCLUDING 4" OF PHASE II VERTICAL WALLS.
  4. THE REMAINING PORTIONS OF PHASE II WALLS AND PHASE II WINGS FULL HEIGHT.
  5. ROOF SLAB AND HEADWALLS.
- THE RESIDENT ENGINEER SHALL CHECK THE LENGTH OF CULVERT BEFORE STAKING IT OUT TO MAKE CERTAIN THAT IT WILL PROPERLY TAKE CARE OF THE FILL.
- DIMENSIONS FOR WING LAYOUT AS WELL AS ADDITIONAL REINFORCING STEEL EMBEDDED IN BARREL ARE SHOWN ON WING SHEET.
- AT THE CONTRACTOR'S OPTION, HE MAY SPLICE THE VERTICAL REINFORCING STEEL IN THE INTERIOR FACE OF EXTERIOR WALL ABOVE LOWER WALL CONSTRUCTION JOINT. THE SPLICE LENGTH SHALL BE AS PROVIDED IN THE SPLICE LENGTH CHART SHOWN ON THE PLANS. EXTRA WEIGHT OF STEEL DUE TO THE SPLICES SHALL BE PAID FOR BY THE CONTRACTOR.
- FOR CULVERT DIVERSION DETAILS AND PAY ITEM, SEE EROSION CONTROL PLANS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- IF APPROVED BY THE ENGINEER, THE CONTRACTOR MAY USE THE EXISTING WINGS AS TEMPORARY SHORING FOR THE CONSTRUCTION OF THE CULVERT EXTENSION. IN THIS CASE, THE BOTTOM SLAB OF THE EXTENSION SHALL BE POURED AT LEAST 72 HOURS PRIOR TO CUTTING THE WINGS. THE WINGS MAY BE CUT EARLIER PROVIDED THE SLAB CONCRETE STRENGTH HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI.
- AT THE CONTRACTOR'S OPTION HE MAY SUBMIT, TO THE ENGINEER FOR APPROVAL, DESIGN AND DETAIL DRAWINGS FOR A PRECAST REINFORCED CONCRETE BOX CULVERT IN LIEU OF THE CAST-IN-PLACE CULVERT SHOWN ON THE PLANS. THE DESIGN SHALL PROVIDE THE SAME SIZE AND NUMBER OF BARRELS AS USED ON THE CAST-IN-PLACE DESIGN. FOR OPTIONAL PRECAST REINFORCED CONCRETE BOX CULVERT, SEE SPECIAL PROVISIONS.
- EXCAVATE 1 FOOT BELOW CULVERT AND REPLACE WITH FOUNDATION CONDITIONING MATERIAL IN ACCORDANCE WITH ARTICLE 414-4 OF THE STANDARD SPECIFICATIONS. FOUNDATION CONDITIONING MATERIAL SHOULD CONSIST OF SELECT MATERIAL CLASS V OR VI FOR RCBC.
- DOWELS SHALL BE USED TO CONNECT THE PROPOSED EXTENSIONS TO THE EXISTING CULVERT AS SHOWN. FOR NOTE REGARDING SETTING OF DOWELS, SEE SHEET SN.
- FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS.



PROFILE ALONG  $\hat{C}$  CULVERT



CONSTRUCTION PHASING

(LOOKING DOWNSTREAM)

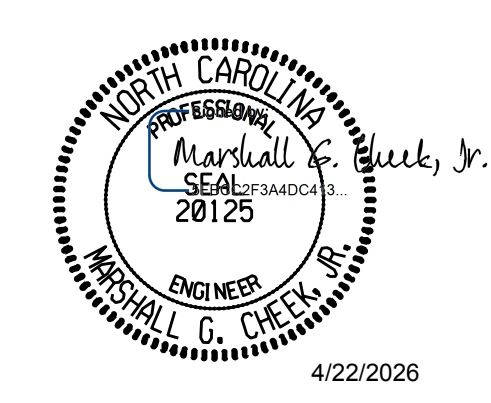
- PHASE I CONSTRUCTION
- PHASE II CONSTRUCTION

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS.

SEAL

PROJECT NO. HN-0031  
TRANSYLVANIA COUNTY  
STATION: 16+45.00 -L-

SHEET 1 OF 12 STRUCTURE No. 870003



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

TRIPLE 10 FT. X 8 FT.  
CONCRETE BOX CULVERT  
LT & RT EXTENSION

DRAWN BY : ZCS DATE : 1/26  
CHECKED BY : MGC DATE : 2/26  
DESIGN ENGINEER OF RECORD: ZCS DATE : 2/26

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED						REVISIONS			SHEET NO.			
TGS ENGINEERS 201 W. MARION ST STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275						NO.	BY:	DATE:	NO.	BY:	DATE:	C-1
						1			3			TOTAL SHEETS
						2			4			12

### 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		
						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	1.27	--	1.75	1.32	1	TOP SLAB	4.93	1.27	1	TOP SLAB	9.40		
	HL-93 (OPERATING)	N/A		1.65	--	1.35	1.71	1	TOP SLAB	4.93	1.65	1	TOP SLAB	9.40		
	HS-20 (INVENTORY)	36.000	②	1.32	47.52	1.75	1.32	1	TOP SLAB	4.93	1.32	1	TOP SLAB	9.40		
	HS-20 (OPERATING)	36.000		1.72	61.92	1.35	1.72	1	TOP SLAB	4.93	1.72	1	TOP SLAB	9.40		
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH		2.55	34.43	1.40	2.55	1	TOP SLAB	4.93	2.81	1	TOP SLAB	9.40		
		SNGARBS2	20.000		2.38	47.60	1.40	2.38	1	TOP SLAB	4.93	2.63	1	TOP SLAB	9.40	
		SNAGRIS2	22.000		2.50	55.00	1.40	2.50	2	TOP SLAB	16.33	2.64	1	BOTTOM SLAB	9.79	
		SNCOTTS3	27.250		1.58	43.06	1.40	1.64	1	TOP SLAB	4.93	1.58	1	TOP SLAB	9.40	
		SNAGGRS4	34.925		1.67	58.32	1.40	1.71	1	BOTTOM SLAB	10.33	1.67	1	BOTTOM SLAB	9.79	
		SNS5A	35.550		1.64	58.30	1.40	1.69	1	BOTTOM SLAB	10.33	1.64	1	BOTTOM SLAB	9.79	
		SNS6A	39.950		1.46	58.33	1.40	1.54	1	BOTTOM SLAB	10.33	1.46	1	BOTTOM SLAB	9.79	
	SNS7B	42.000		1.40	58.80	1.40	1.47	1	BOTTOM SLAB	10.33	1.40	1	BOTTOM SLAB	9.79		
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.78	58.74	1.40	1.86	1	BOTTOM SLAB	10.33	1.78	1	BOTTOM SLAB	9.79	
		TNT4A	33.075		1.77	58.54	1.40	1.82	1	TOP SLAB	10.33	1.77	1	BOTTOM SLAB	9.79	
		TNT6A	41.600		1.47	61.15	1.40	1.52	1	BOTTOM SLAB	10.33	1.47	1	BOTTOM SLAB	9.79	
		TNT7A	42.000		1.47	61.74	1.40	1.57	1	BOTTOM SLAB	10.33	1.47	1	BOTTOM SLAB	9.79	
		TNT7B	42.000		1.47	61.74	1.40	1.58	1	BOTTOM SLAB	10.33	1.47	1	BOTTOM SLAB	9.79	
		TNAGRIT4	43.000		1.35	58.05	1.40	1.45	1	BOTTOM SLAB	10.33	1.35	1	BOTTOM SLAB	9.79	
TNAGT5A		45.000		1.26	56.70	1.40	1.36	1	BOTTOM SLAB	10.33	1.26	1	BOTTOM SLAB	9.79		
TNAGT5B	45.000		③	1.25	56.25	1.40	1.36	1	BOTTOM SLAB	10.33	1.25	1	BOTTOM SLAB	9.79		
EMERGENCY VEHICLE (EV)	EV2	28.750		1.80	51.75	1.30	1.80	1	TOP SLAB	4.93	1.99	1	TOP SLAB	9.40		
	EV3	43.000	④	1.38	59.34	1.30	1.39	1	TOP SLAB	4.93	1.38	1	TOP SLAB	9.40		

**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	--

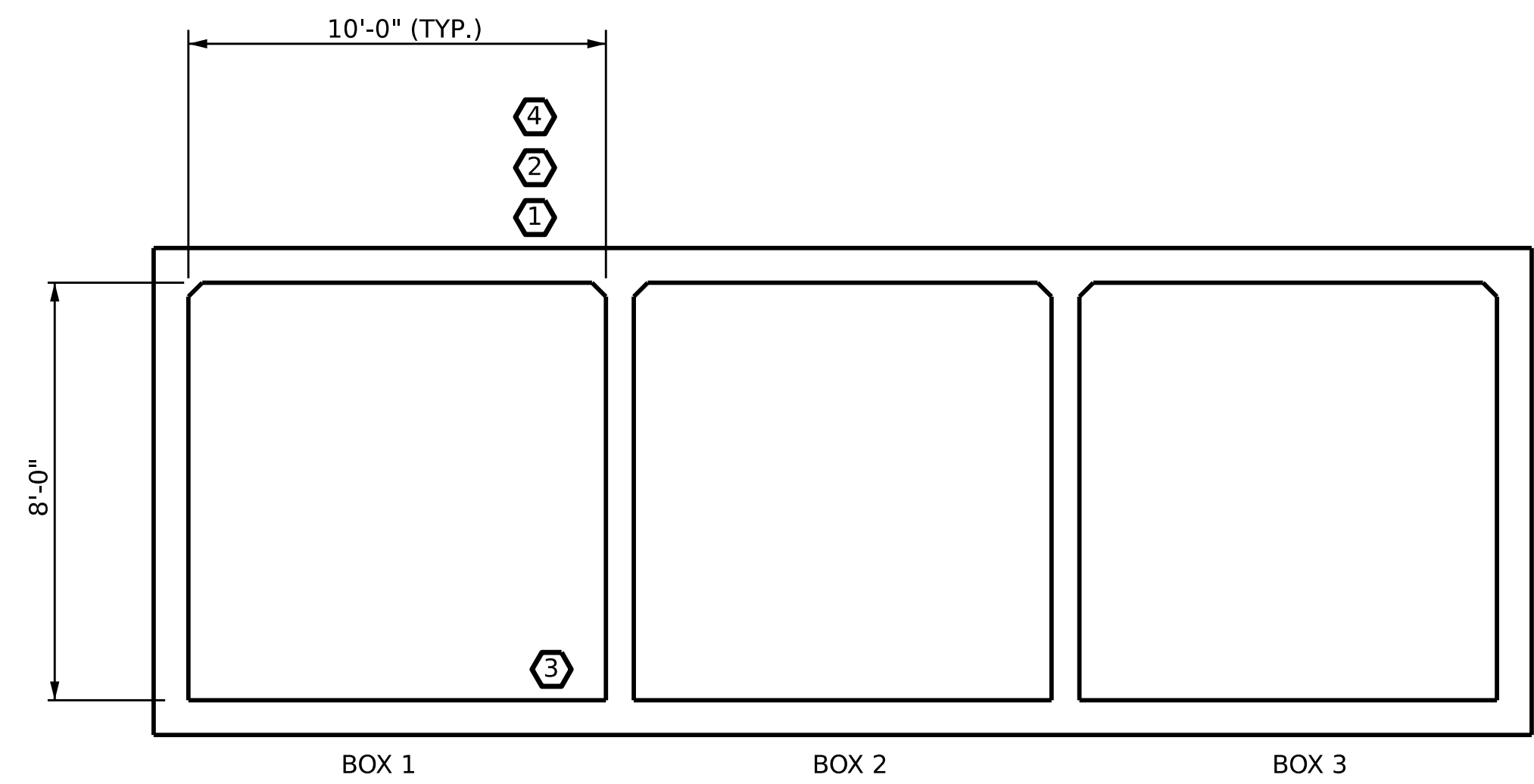
**NOTES:**

RATING FACTORS ARE BASED ON THE STRENGTH I LIMIT STATES.

**COMMENTS:**

- 1.
- 2.
- 3.
- 4.

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



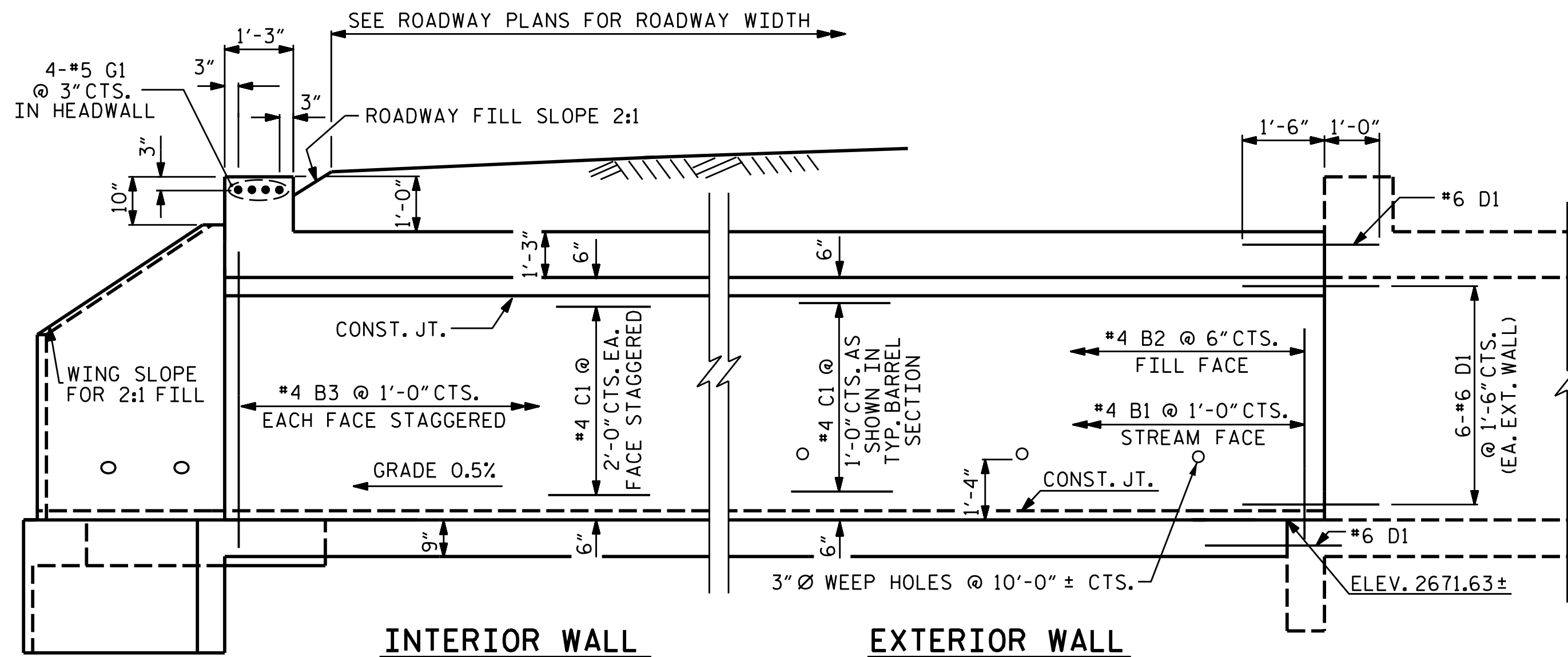
**LRFR SUMMARY**  
(LOOKING DOWNSTREAM)

PROJECT NO. HN-0031  
TRANSYLVANIA COUNTY  
 STATION: 16+45.00 -L-  
 SHEET 2 OF 12

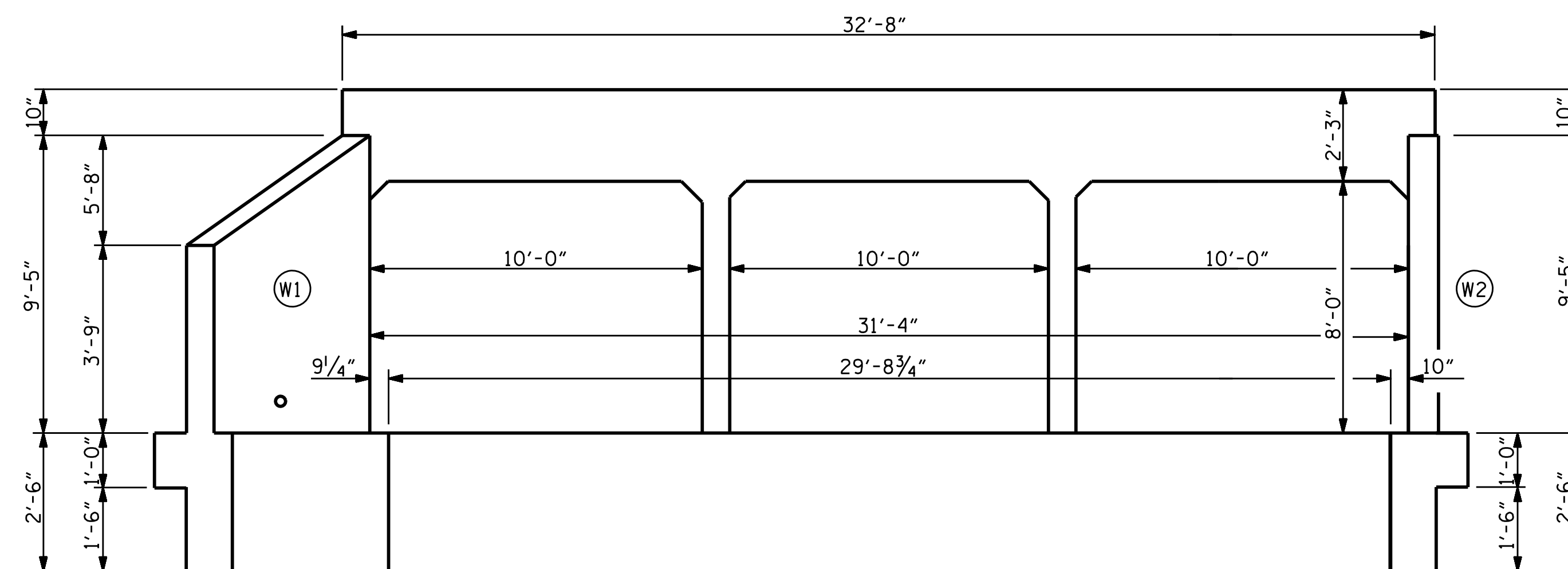
	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD <b>LRFR SUMMARY FOR REINFORCED CONCRETE BOX CULVERTS</b> (NON-INTERSTATE TRAFFIC)
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	TGS ENGINEERS 201 W. MARION ST STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275
	REVISIONS
	SHEET NO. C-2 TOTAL SHEETS 12

ASSEMBLED BY: ZCS	DATE: 1/26
CHECKED BY: MGC	DATE: 2/26
DRAWN BY: WMC	7/11
CHECKED BY: GM	7/11

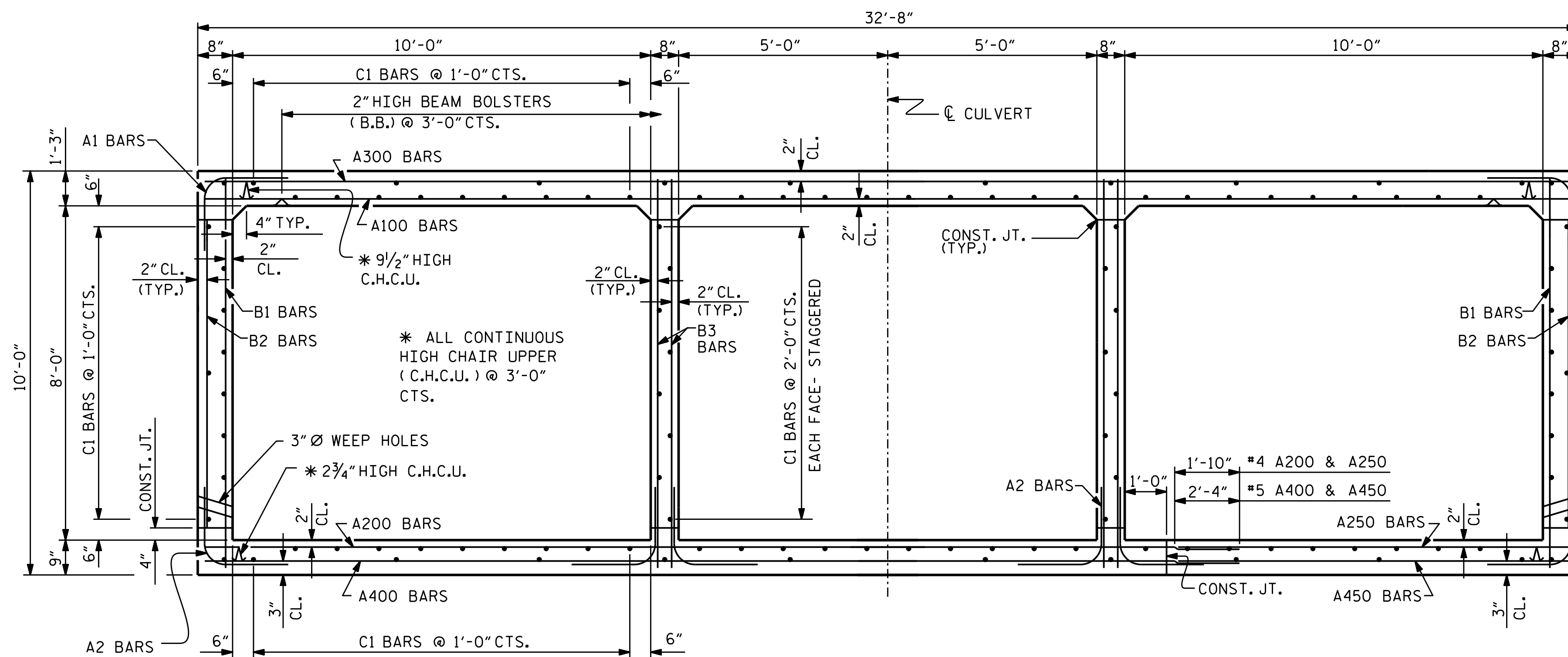
REV. 10/1/11	MAA/GM
REV. 12/17	MAA/THC
REV. 04/23	BNB/AAI



**CULVERT EXTENSION SECTION NORMAL TO ROADWAY**



**OUTLET END ELEVATION NORMAL TO SKEW**



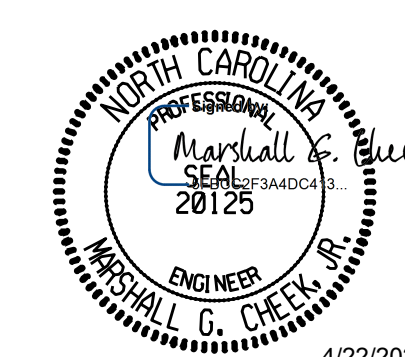
**RIGHT ANGLE SECTION OF BARREL**

THERE ARE 114 "C" BARS IN SECTION OF BARREL. LOOKING DOWNSTREAM

LEFT EXTENSION QUANTITIES		
CLASS A CONCRETE		
BARREL @	3.22 CY/FT	48.3 C.Y.
WINGS, ETC.		19.7 C.Y.
TOTAL		68.0 C.Y.
REINFORCING STEEL		
BARREL		6,153 LBS.
WINGS, ETC.		1,171 LBS.
TOTAL		7,324 LBS.
CULVERT EXCAVATION		LUMP SUM
FOUNDATION COND. MAT'L.		39 TONS

PROJECT NO. HN-0031  
TRANSYLVANIA COUNTY  
 STATION: 16+45.00 -L-

SHEET 3 OF 12



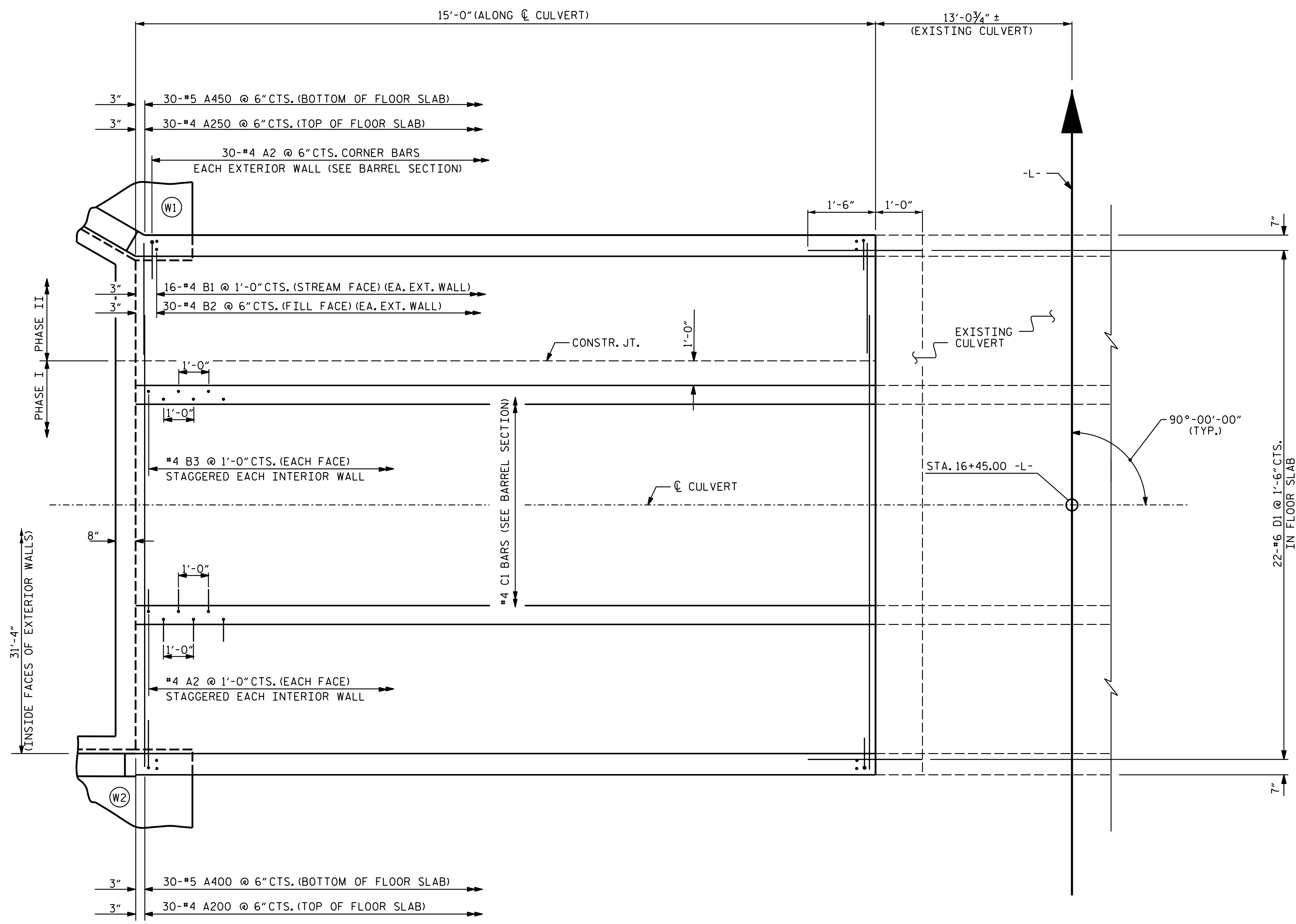
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

TRIPLE 10 FT. X 8 FT.  
 CONCRETE BOX CULVERT  
 LEFT EXTENSION  
 90°-00'-00" SKEW

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

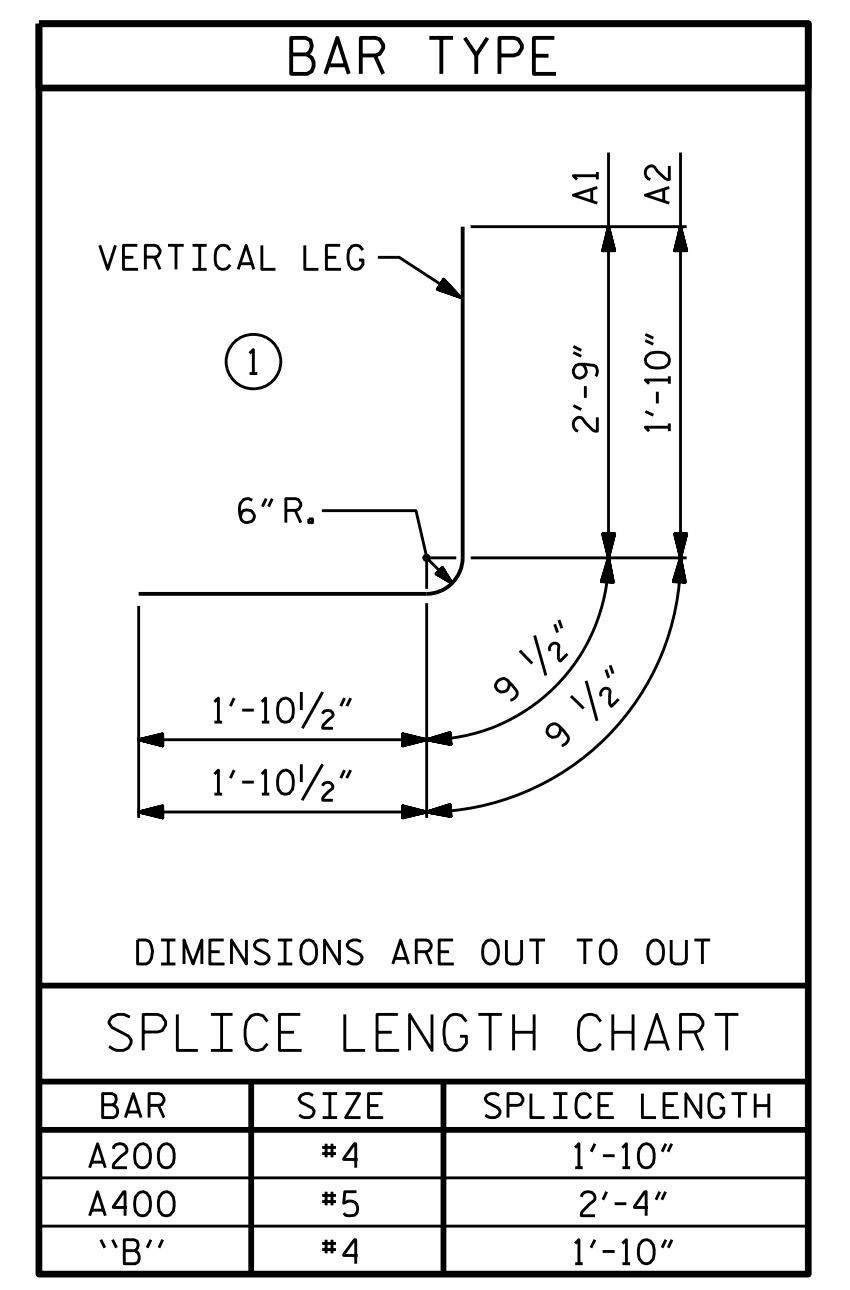
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 CHECKED BY: MGC DATE: 1/26  
 DESIGN ENGINEER OF RECORD: ZCS DATE: 1/26

SHEET NO.  
 C-3  
 TOTAL SHEETS  
 12



**PLAN OF FLOOR SLAB**  
FOR S1 IN FLOOR SLAB & WING FOOTINGS, SEE WING SHEETS.

BAR SCHEDULE					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	60	#4	1	5'-5"	217
A2	118	#4	1	4'-6"	355
A100	17	#6	STR	32'-4"	826
A200	30	#4	STR	24'-10"	498
A250	30	#4	STR	9'-5"	189
A300	30	#4	STR	32'-4"	648
A400	30	#5	STR	25'-4"	793
A450	30	#5	STR	9'-5"	295
B1	32	#4	STR	9'-7"	205
B2	60	#4	STR	7'-4"	294
B3	58	#4	STR	9'-7"	371
C1	114	#4	STR	14'-8"	1117
D1	56	#6	STR	2'-6"	210
G1	4	#5	STR	32'-4"	135
REINFORCING STEEL					6,153 LBS



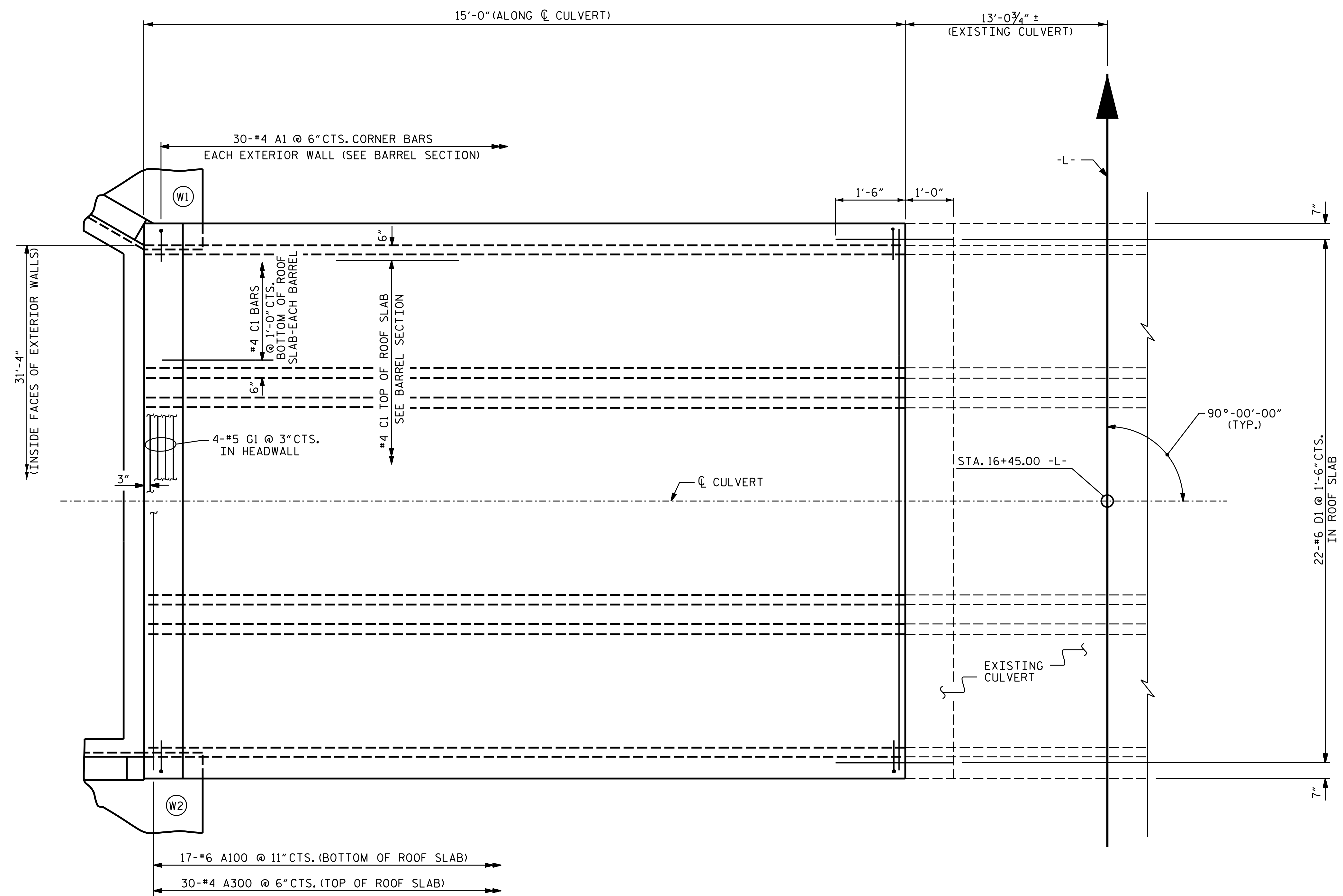
PROJECT NO. HN-0031  
TRANSYLVANIA COUNTY  
 STATION: 16+45.00 -L-  
 SHEET 4 OF 12

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**TGS ENGINEERS**  
 201 W. MARION ST STE 200  
 SHELBY, NC 28150  
 PH (704) 476-0003  
 CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**TRIPLE 10 FT. X 8 FT.  
 CONCRETE BOX CULVERT  
 LEFT EXTENSION  
 90°-00'-00" SKEW**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-4
1			3			TOTAL SHEETS
2			4			12

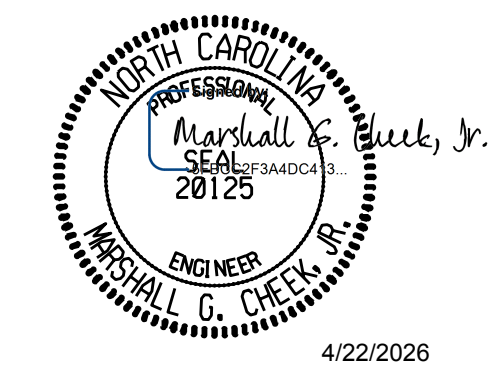
ASSEMBLED BY : ZCS DATE : 1/26  
 CHECKED BY : MGC DATE : 2/26  
 DESIGN ENGINEER OF RECORD: ZCS DATE : 2/26



PLAN OF ROOF SLAB

PROJECT NO. HN-0031  
TRANSYLVANIA COUNTY  
 STATION: 16+45.00 -L-

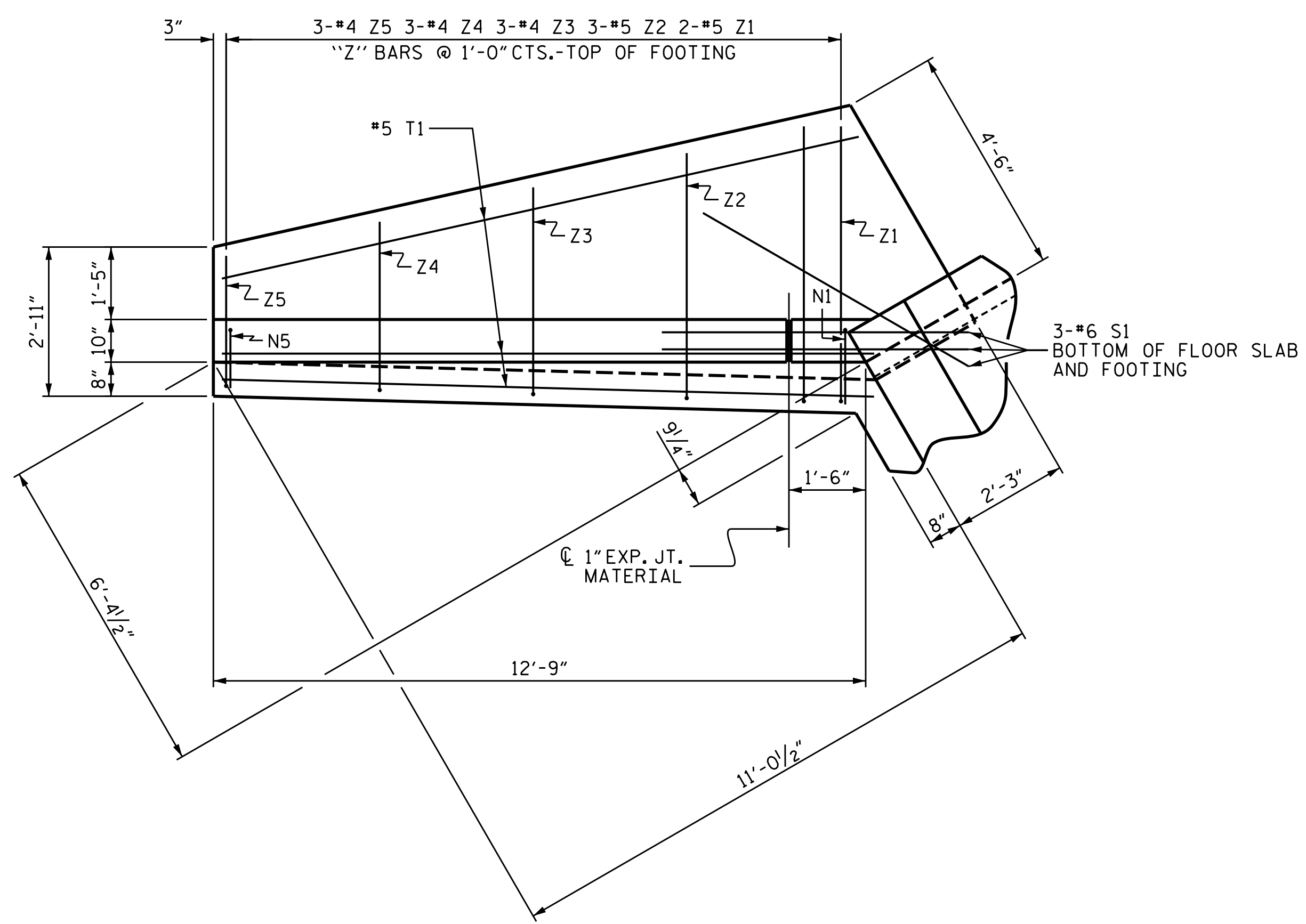
SHEET 5 OF 12



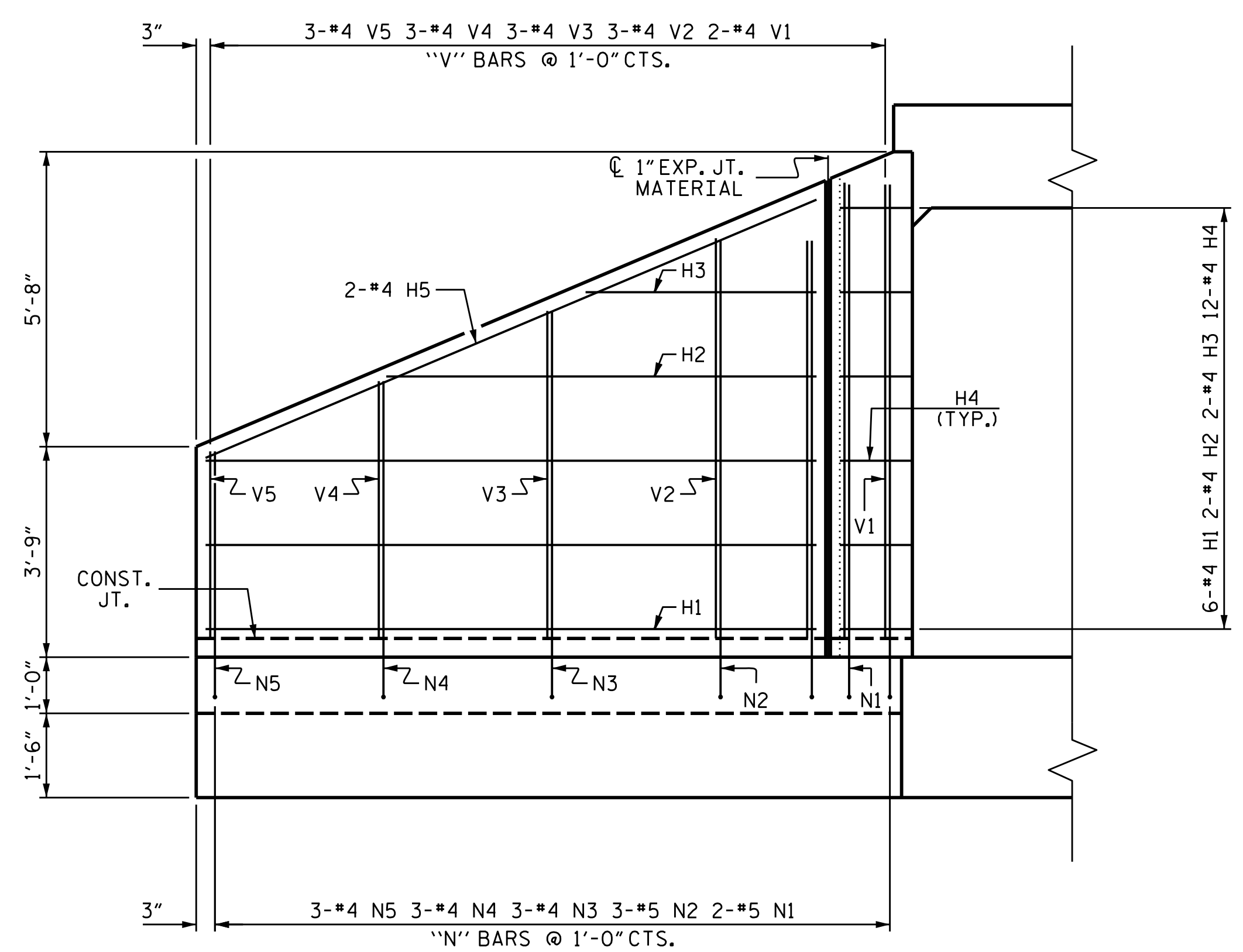
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 TRIPLE 10 FT. X 8 FT.  
 CONCRETE BOX CULVERT  
 LEFT EXTENSION  
 90°-00'-00" SKEW

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED					
TGS ENGINEERS 201 W. MARION ST STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. C-5
					TOTAL SHEETS 12

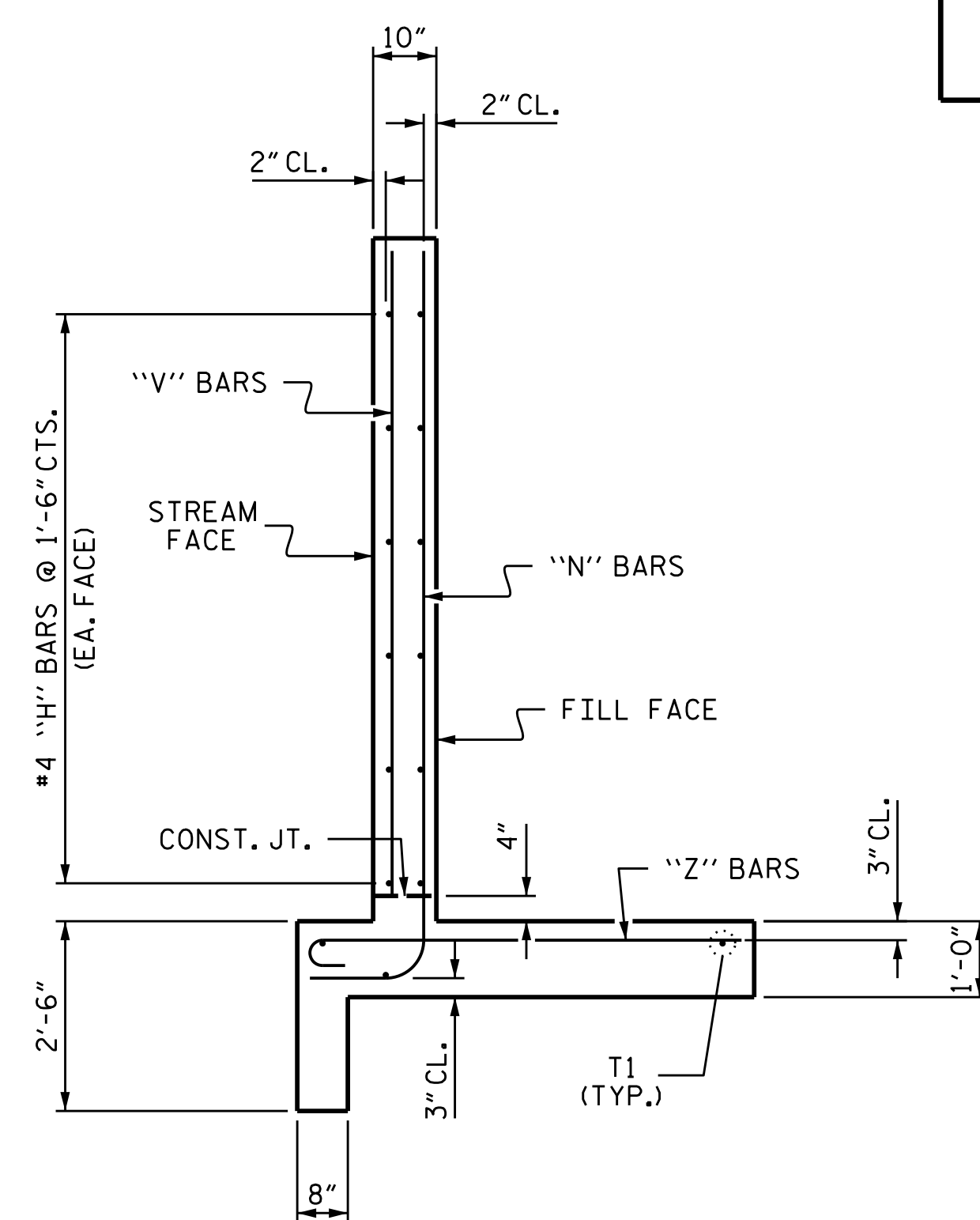
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 CHECKED BY : MGC DATE : 2/26  
 DESIGN ENGINEER OF RECORD: ZCS DATE : 2/26



PLAN

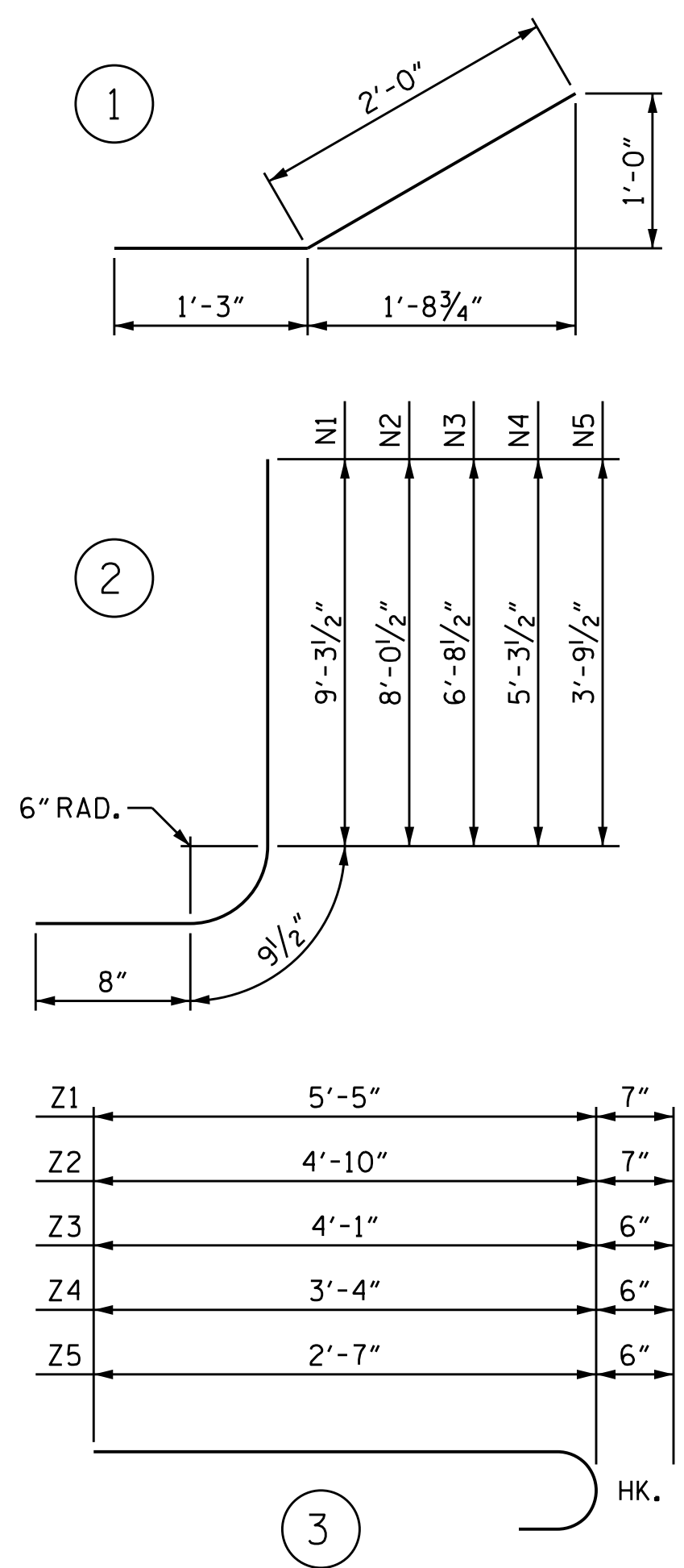


ELEVATION



TYPICAL WING SECTION

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL WING W1

BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	#4	STR	10'-10"	43
H2	#4	STR	7'-8"	10
H3	#4	STR	4'-1"	5
H4	#4	1	3'-3"	26
H5	#4	STR	11'-9"	16
N1	#5	2	10'-9"	22
N2	#5	2	9'-6"	30
N3	#4	2	8'-2"	16
N4	#4	2	6'-9"	14
N5	#4	2	5'-3"	11
S1	#6	STR	6'-0"	27
T1	#5	STR	12'-9"	40
V1	#4	STR	8'-4"	11
V2	#4	STR	7'-1"	14
V3	#4	STR	5'-10"	12
V4	#4	STR	4'-7"	9
V5	#4	STR	3'-3"	7
Z1	#5	3	6'-0"	13
Z2	#5	3	5'-5"	17
Z3	#4	3	4'-7"	9
Z4	#4	3	3'-10"	8
Z5	#4	3	3'-1"	6

REINFORCING STEEL FOR WING W1 366 LBS

CLASS A CONCRETE

1 WING	5.4	CY
1 HEADWALL	1.5	CY
1 END CURTAIN WALL	1.8	CY
TOTAL	8.7	CY

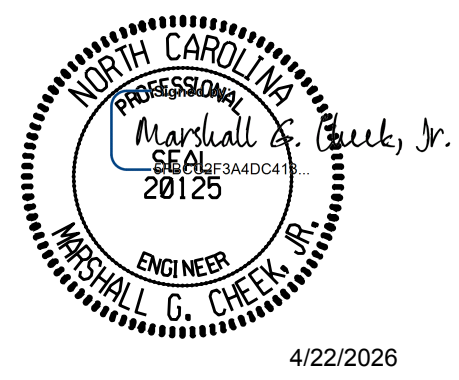
NOTES

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.

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

PROJECT NO. HN-0031  
TRANSYLVANIA COUNTY  
 STATION: 16+45.00 -L-

SHEET 6 OF 12



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**STANDARD WING W1**  
 FOR  
**LEFT EXTENSION**  
 H = 8'-0" SLOPE = 2:1  
 90° SKEW

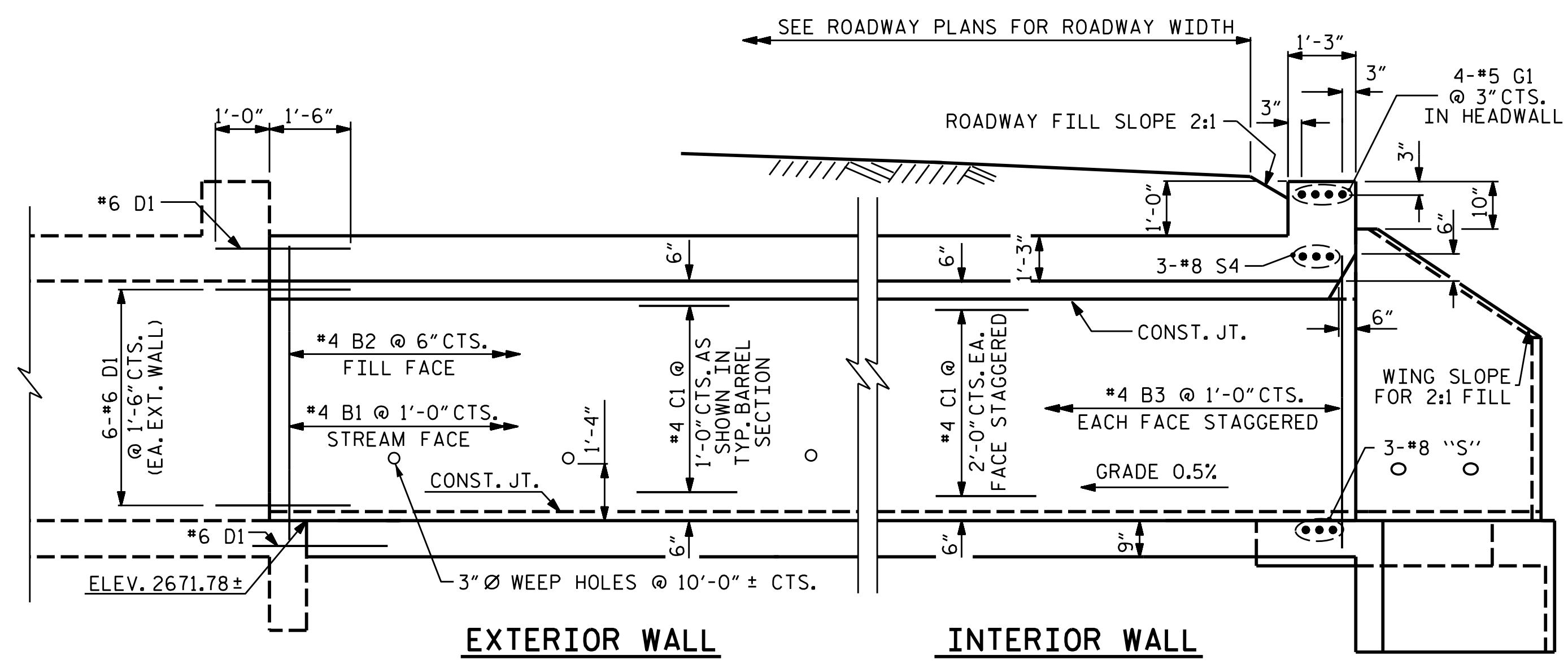
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
 201 W. MARION ST STE 200  
 SHELBY, NC 28150  
 PH (704) 476-0003  
 CORP. LICENSE NO.: C-0275

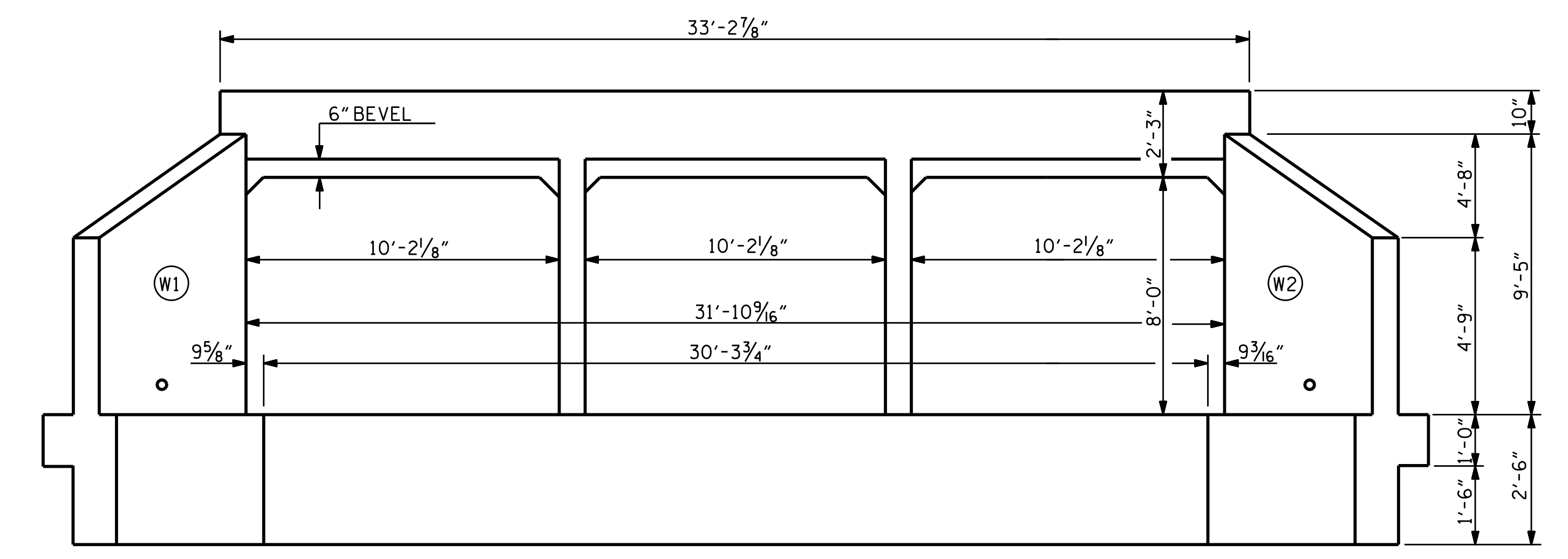
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-6
1			3			TOTAL SHEETS
2			4			12

ASSEMBLED BY : ZCS	DATE : 1/26
CHECKED BY : MGC	DATE : 2/26
DRAWN BY : CCJ 10/99	REV. 6/19 MAA/THC
CHECKED BY : RWW 03/00	

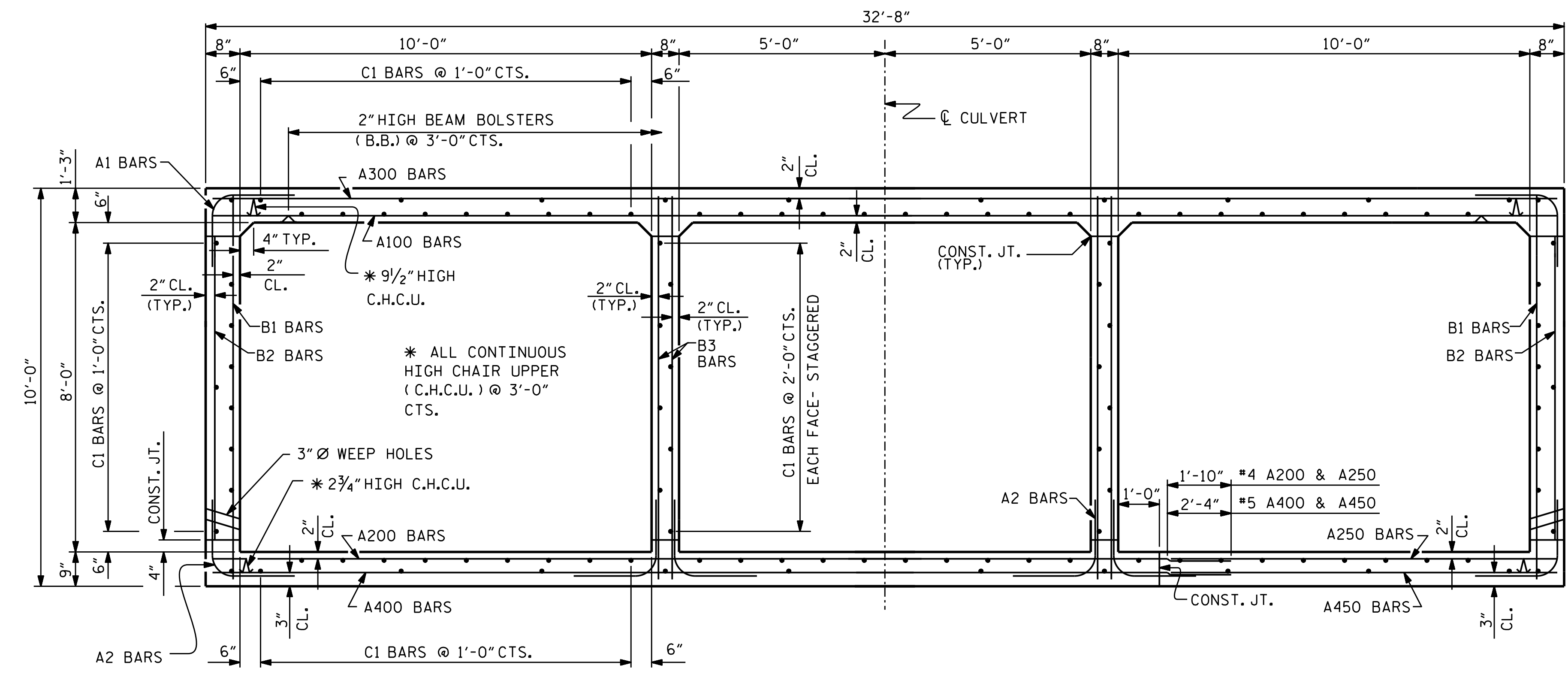




**CULVERT EXTENSION SECTION NORMAL TO ROADWAY**



**INLET END ELEVATION NORMAL TO SKEW**



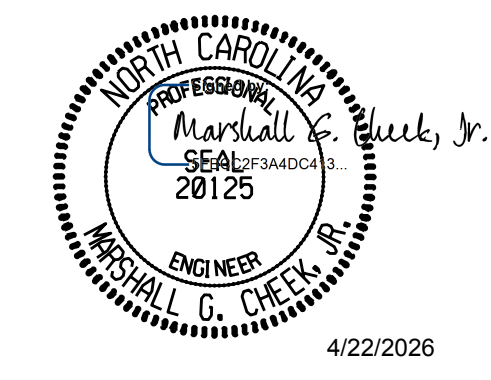
**RIGHT ANGLE SECTION OF BARREL**

THERE ARE 114 "C" BARS IN SECTION OF BARREL.  
FIELD BEND C1 AS NECESSARY  
LOOKING DOWNSTREAM

RIGHT EXTENSION QUANTITIES	
CLASS A CONCRETE	
BARREL @ 3.22 CY/FT	38.6 C.Y.
WINGS, ETC.	14.7 C.Y.
<b>TOTAL</b>	<b>53.3 C.Y.</b>
REINFORCING STEEL	
BARREL	5,719 LBS.
WINGS, ETC.	778 LBS.
<b>TOTAL</b>	<b>6,497 LBS.</b>
CULVERT EXCAVATION	LUMP SUM
FOUNDATION COND. MAT'L.	32 TONS

PROJECT NO. HN-0031  
TRANSYLVANIA COUNTY  
 STATION: 16+45.00 -L-

SHEET 8 OF 12

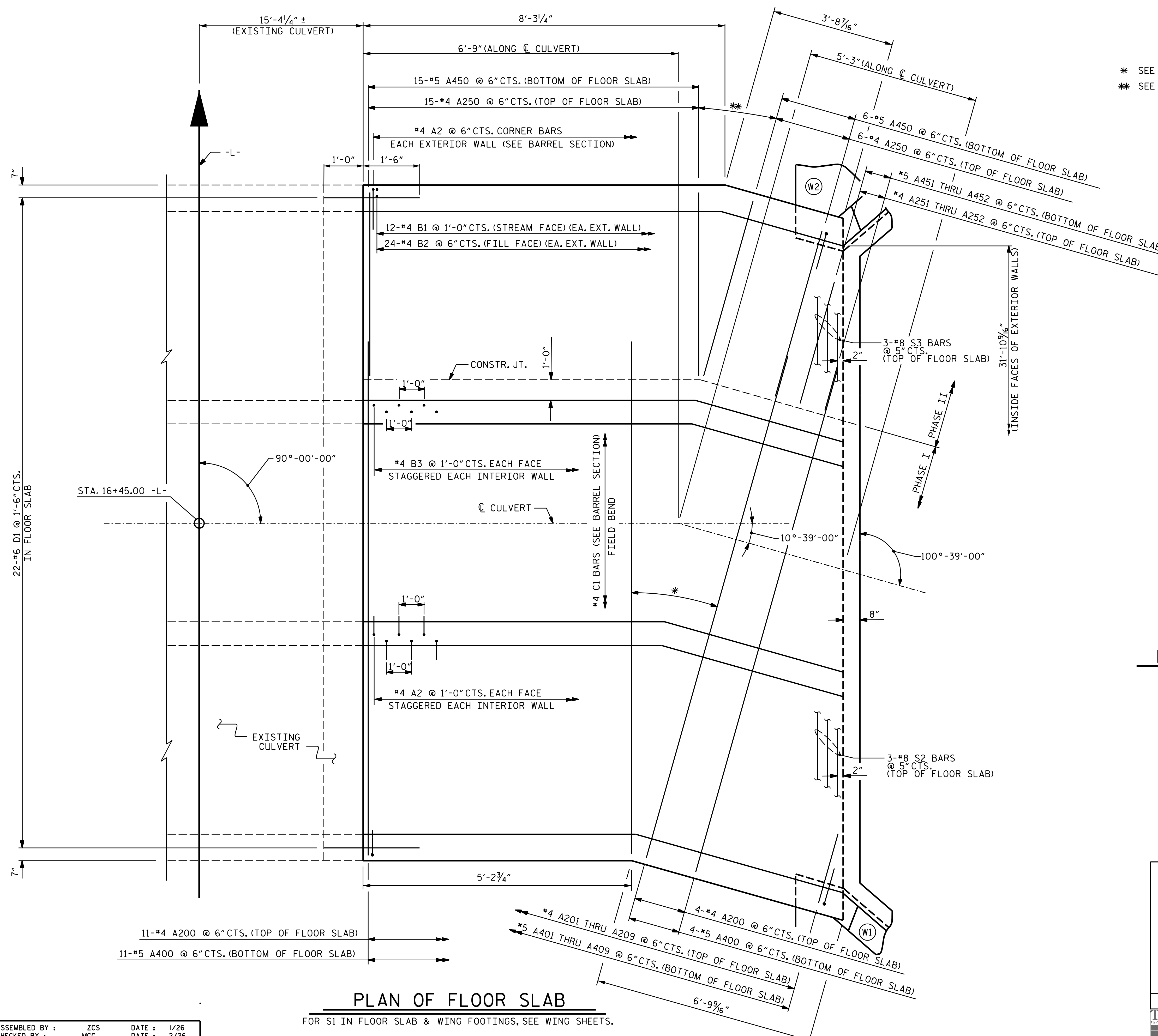


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**TRIPLE 10 FT. X 8 FT.  
 CONCRETE BOX CULVERT  
 RIGHT EXTENSION**

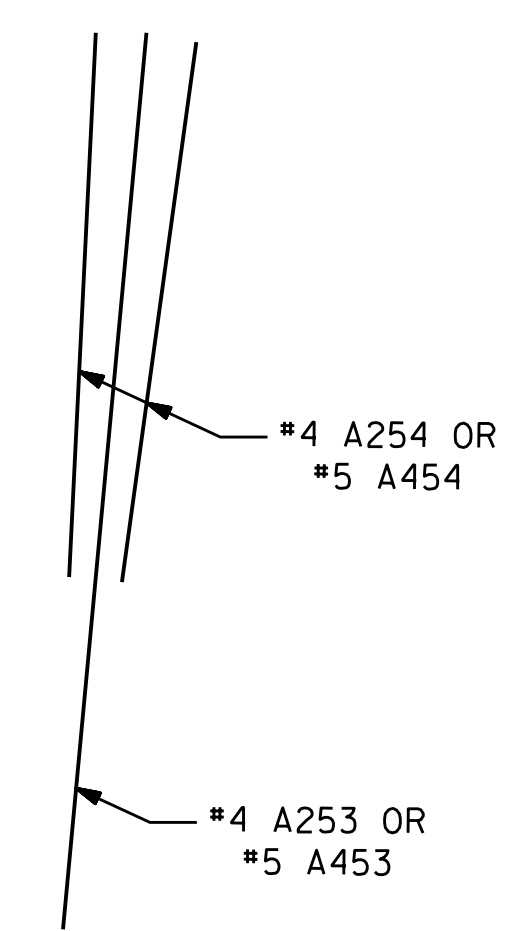
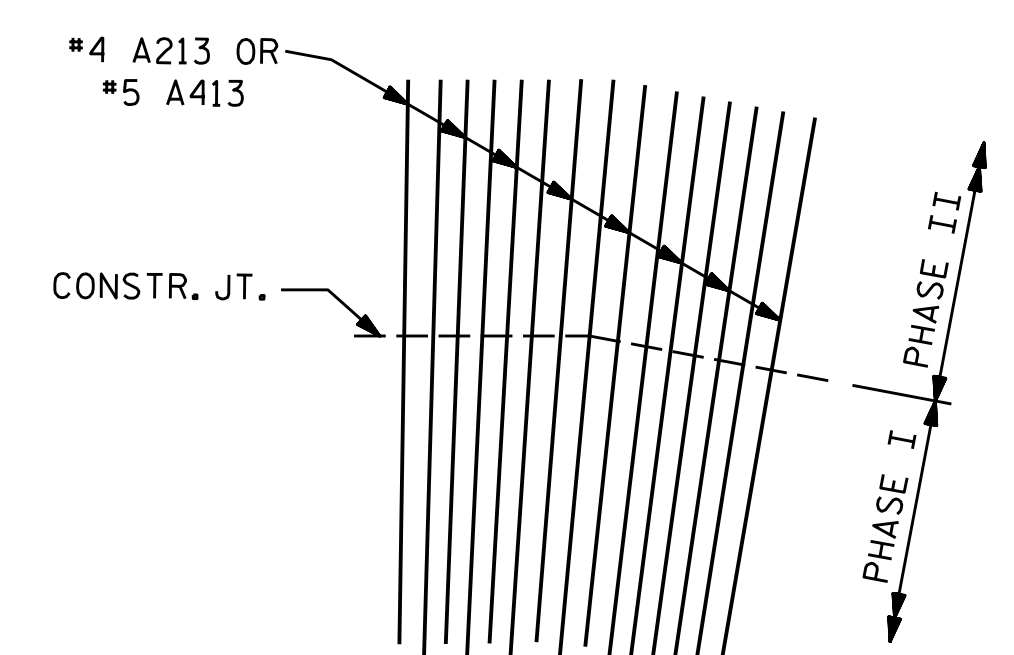
ASSEMBLED BY : ZCS DATE : 1/26  
 CHECKED BY : MGC DATE : 2/26  
 DESIGN ENGINEER OF RECORD: ZCS DATE : 2/26

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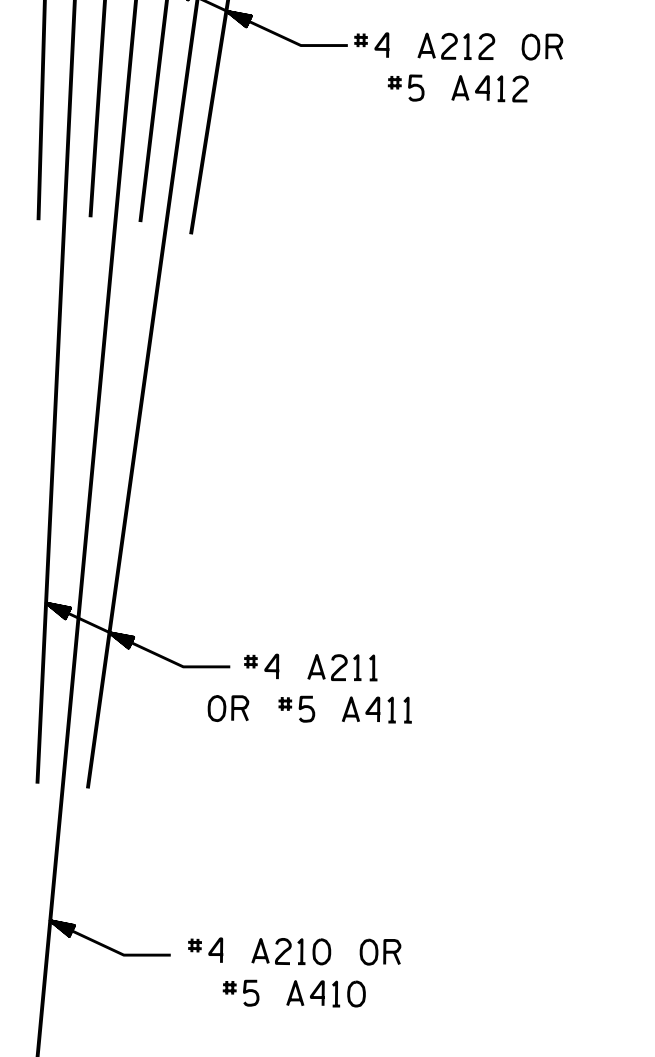
SHEET NO.	C-8
TOTAL SHEETS	12



\* SEE DETAIL 'A'  
 \*\* SEE DETAIL 'B'



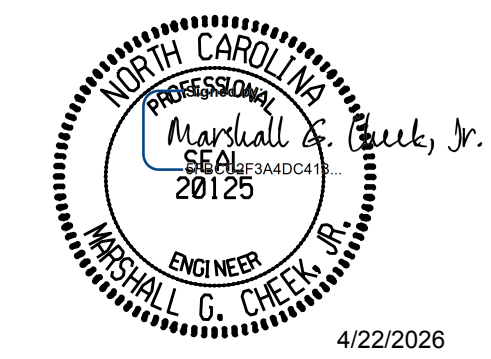
DETAIL B



DETAIL A

PLAN OF FLOOR SLAB  
 FOR S1 IN FLOOR SLAB & WING FOOTINGS, SEE WING SHEETS.

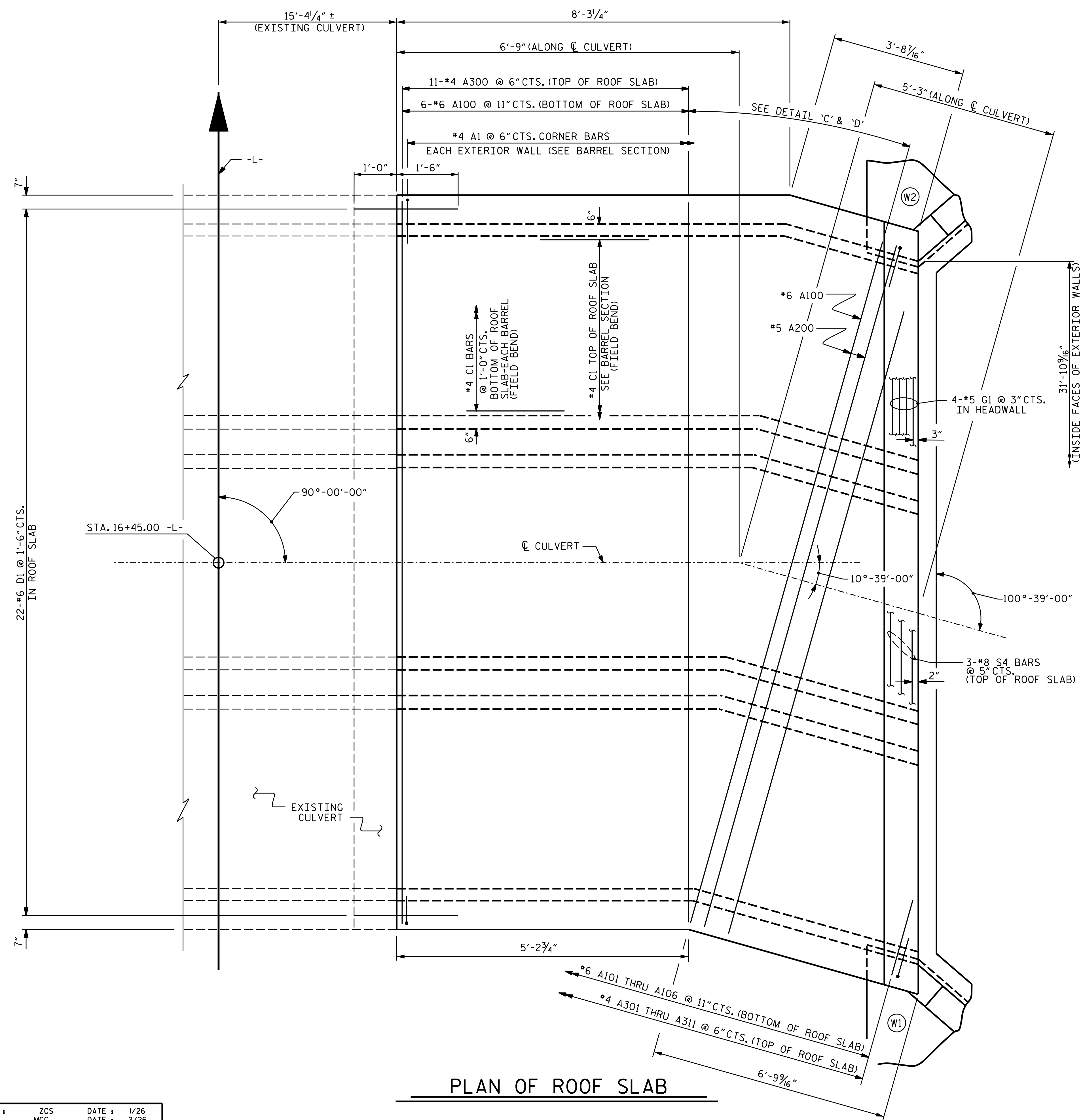
PROJECT NO. HN-0031  
 TRANSYLVANIA COUNTY  
 STATION: 16+45.00 -L-  
 SHEET 9 OF 12



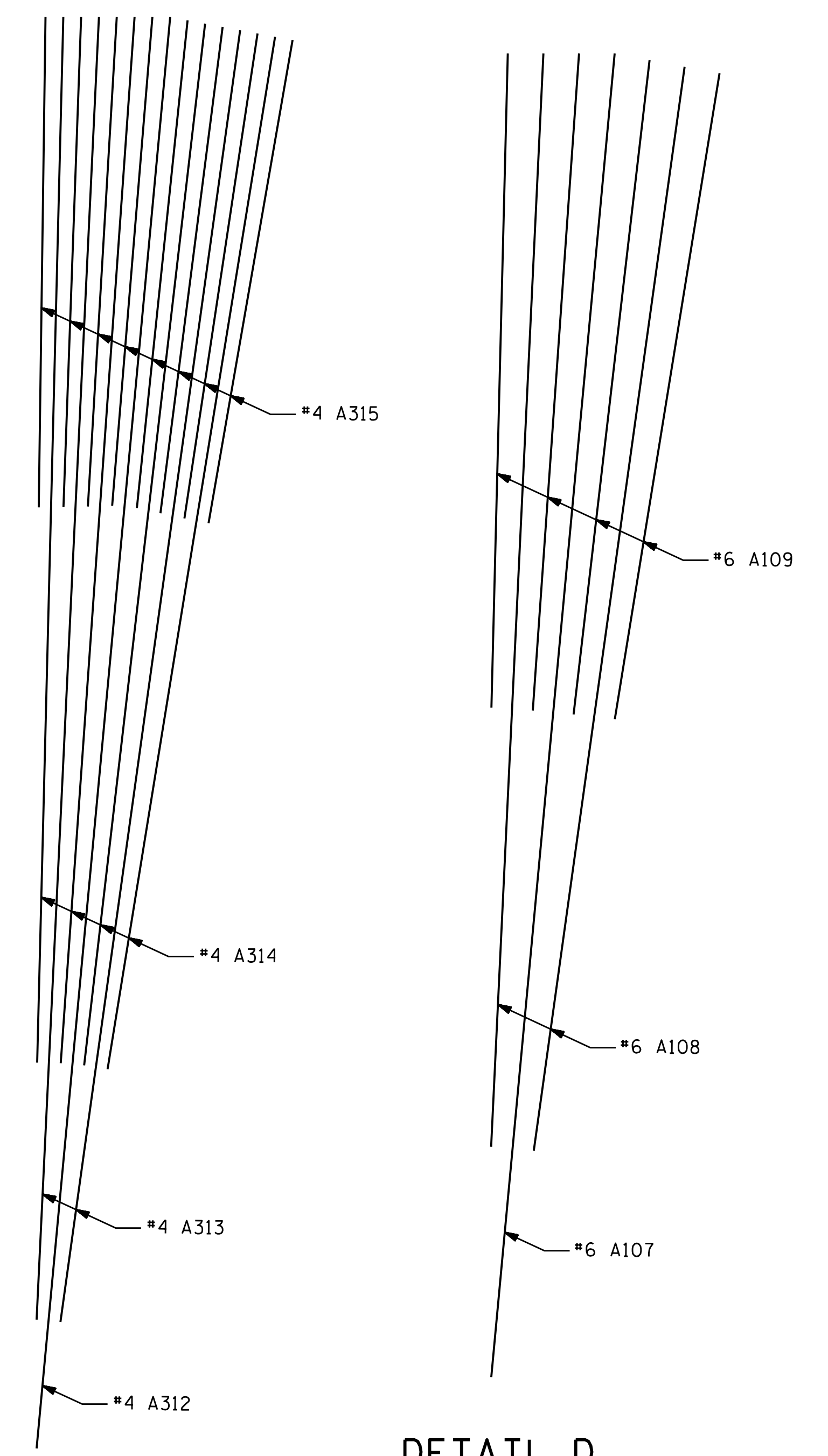
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 TRIPLE 10 FT. X 8 FT.  
 CONCRETE BOX CULVERT  
 RIGHT EXTENSION

ASSEMBLED BY : ZCS DATE : 1/26  
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1			3			C-9			
2			4			TOTAL SHEETS 12			



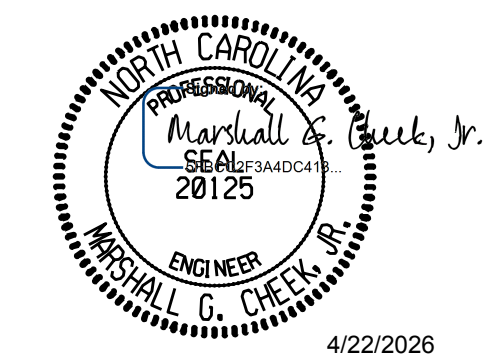
**PLAN OF ROOF SLAB**



**DETAIL C**  
TOP OF ROOF SLAB

**DETAIL D**  
BOTTOM OF ROOF SLAB

PROJECT NO. HN-0031  
TRANSYLVANIA COUNTY  
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 SHEET 10 OF 12



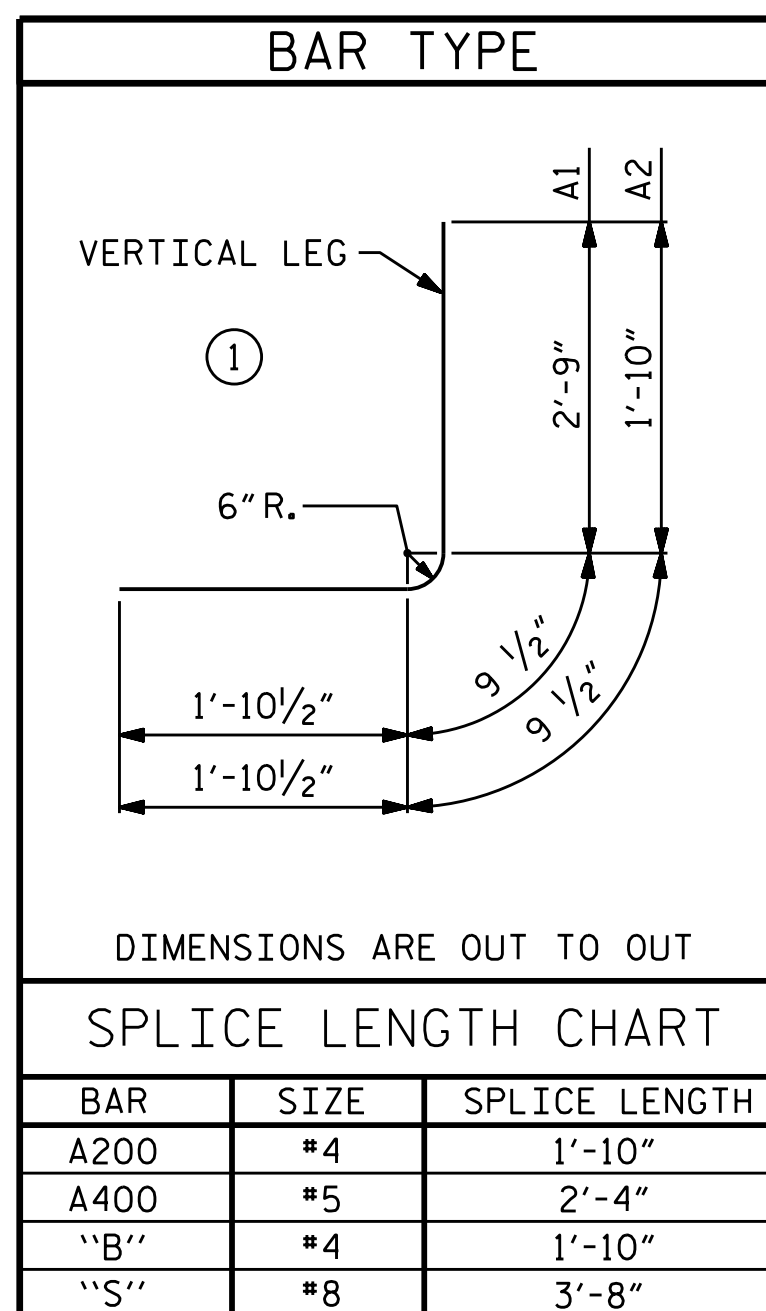
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**TRIPLE 10 FT. X 8 FT.  
 CONCRETE BOX CULVERT  
 RIGHT EXTENSION**

ASSEMBLED BY :	ZCS	DATE :	1/26
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DESIGN ENGINEER OF RECORD:	ZCS	DATE :	2/26

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1			3			TOTAL SHEETS			
2			4			12			

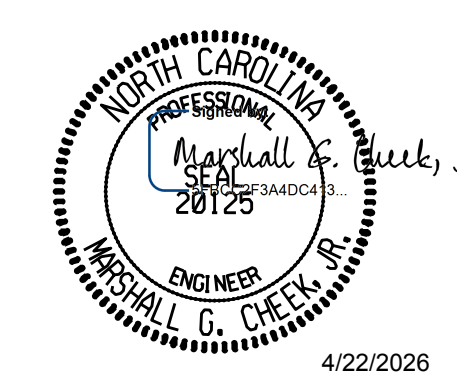
## BAR SCHEDULE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	48	#4	1	5'-5"	174	A200	15	#4	STR	24'-10"	249	A300	13	#4	STR	32'-4"	281	A400	15	#5	STR	25'-4"	396	B1	24	#4	STR	9'-7"	154
A2	96	#4	1	4'-6"	289																			B2	48	#4	STR	7'-4"	235
						A201	1	#4	STR	24'-8"	16	A301	1	#4	STR	30'-0"	20	A401	1	#5	STR	24'-8"	26	B3	48	#4	STR	9'-7"	307
A100	7	#6	STR	32'-4"	340	A202	1	#4	STR	22'-0"	15	A302	1	#4	STR	27'-4"	18	A402	1	#5	STR	22'-0"	23						
						A203	1	#4	STR	19'-4"	13	A303	1	#4	STR	24'-8"	16	A403	1	#5	STR	19'-4"	20	C1	114	#4	STR	11'-7"	882
A101	1	#6	STR	30'-6"	46	A204	1	#4	STR	16'-7"	11	A304	1	#4	STR	22'-0"	15	A404	1	#5	STR	16'-7"	17						
A102	1	#6	STR	25'-7"	38	A205	1	#4	STR	13'-11"	9	A305	1	#4	STR	19'-4"	13	A405	1	#5	STR	13'-11"	15	D1	56	#6	STR	2'-6"	210
A103	1	#6	STR	20'-8"	31	A206	1	#4	STR	11'-3"	8	A306	1	#4	STR	16'-7"	11	A406	1	#5	STR	11'-3"	12						
A104	1	#6	STR	15'-8"	24	A207	1	#4	STR	8'-7"	6	A307	1	#4	STR	13'-11"	9	A407	1	#5	STR	8'-7"	9	G1	4	#5	STR	32'-10"	137
A105	1	#6	STR	10'-9"	16	A208	1	#4	STR	5'-10"	4	A308	1	#4	STR	11'-3"	8	A408	1	#5	STR	5'-10"	6						
A106	1	#6	STR	5'-10"	9	A209	1	#4	STR	3'-2"	2	A309	1	#4	STR	8'-7"	6	A409	1	#5	STR	3'-2"	3	S2	3	#8	STR	27'-1"	217
A107	1	#6	STR	27'-9"	42	A210	1	#4	STR	22'-7"	15	A310	1	#4	STR	5'-10"	4	A410	1	#5	STR	22'-11"	24	S3	3	#8	STR	9'-7"	77
A108	2	#6	STR	22'-10"	69	A211	2	#4	STR	19'-9"	26	A311	1	#4	STR	3'-2"	2	A411	2	#5	STR	20'-1"	42	S4	3	#8	STR	32'-10"	263
A109	4	#6	STR	13'-8"	82	A212	4	#4	STR	14'-4"	38	A312	1	#4	STR	30'-0"	20	A412	4	#5	STR	14'-7"	61						
						A213	8	#4	STR	3'-2"	17	A313	2	#4	STR	27'-3"	36	A413	8	#5	STR	3'-7"	30						
												A314	4	#4	STR	21'-10"	58												
												A315	8	#4	STR	10'-3"	55	A450	21	#5	STR	9'-5"	206						
						A251	1	#4	STR	7'-3"	5							A451	1	#5	STR	7'-3"	8	REINFORCING STEEL		5,719 LBS			
						A252	1	#4	STR	4'-7"	3							A452	1	#5	STR	4'-7"	5						
						A253	1	#4	STR	8'-6"	6							A453	1	#5	STR	8'-6"	9						
						A254	2	#4	STR	5'-2"	7							A454	2	#5	STR	5'-2"	11						



PROJECT NO. HN-0031  
TRANSYLVANIA COUNTY  
 STATION: 16+45.00 -L-

SHEET 11 OF 12



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

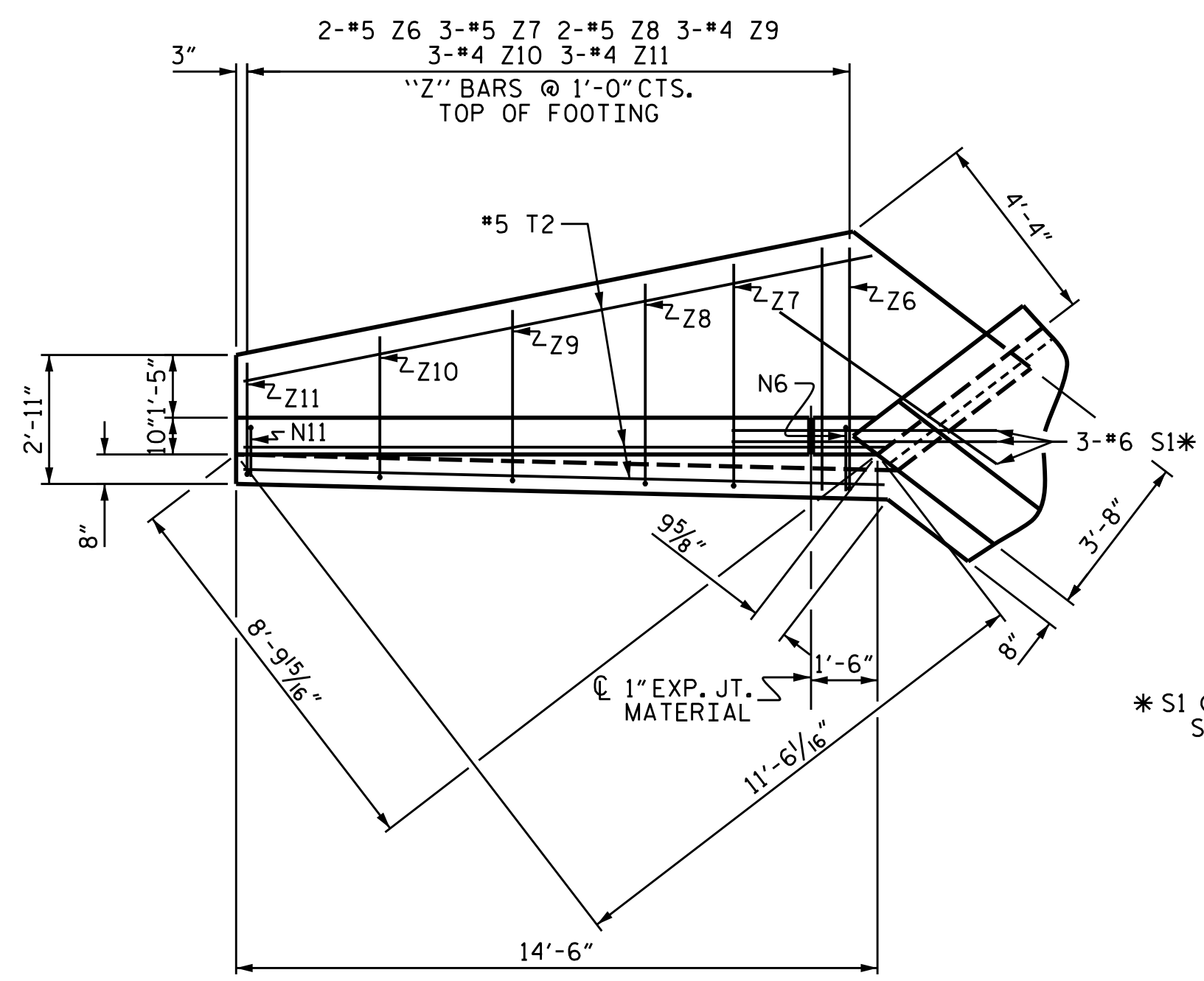
TRIPLE 10 FT. X 8 FT.  
 CONCRETE BOX CULVERT  
 RIGHT EXTENSION

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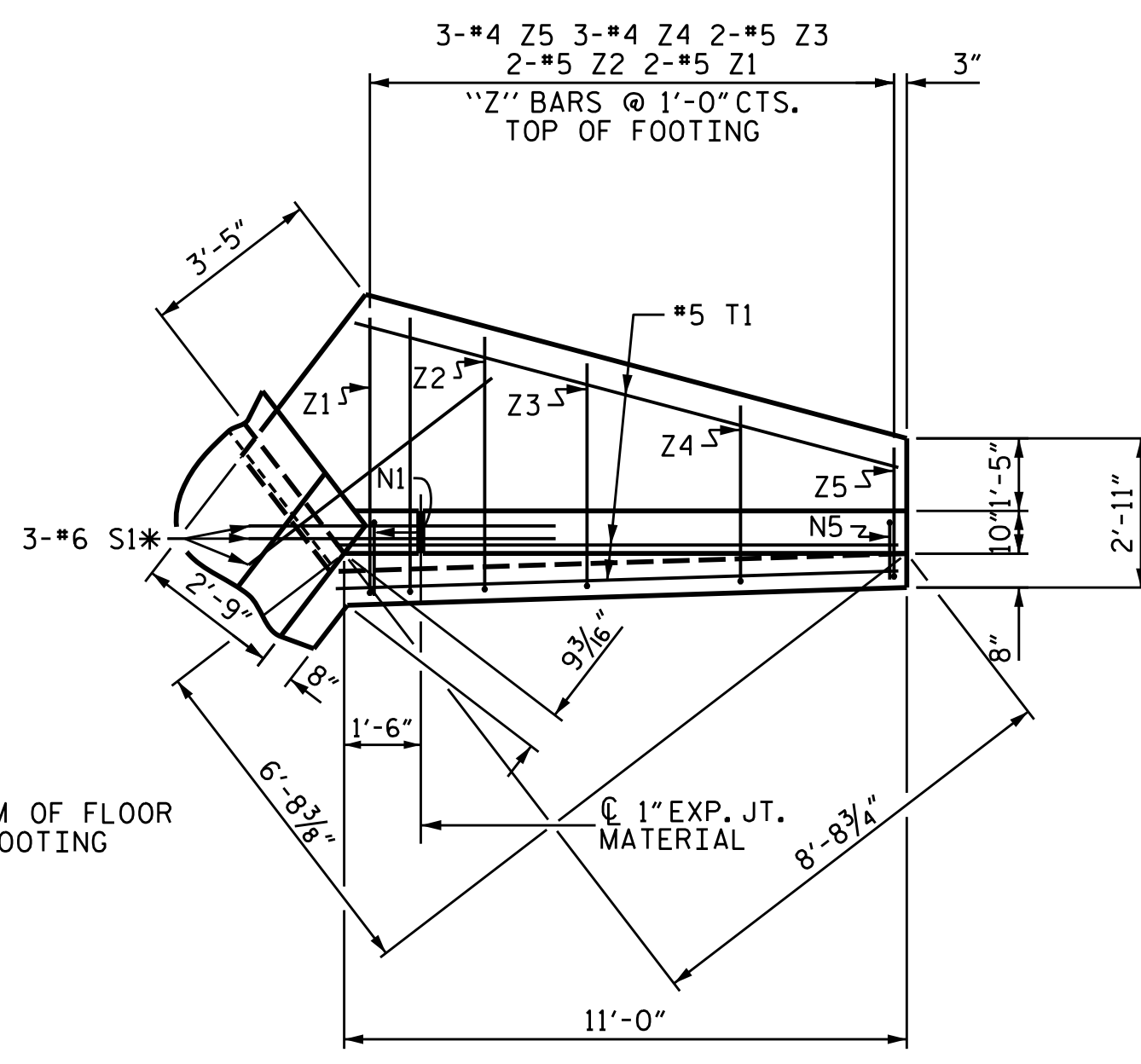
**TGS ENGINEERS**  
 201 W. MARION ST STE 200  
 SHELBY, NC 28150  
 PH (704) 476-0003  
 CORP. LICENSE NO.: C-0275

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DRAWN BY : ZCS DATE : 1/26  
 CHECKED BY : MGC DATE : 2/26  
 DESIGN ENGINEER OF RECORD: ZCS DATE : 2/26



PLAN W1

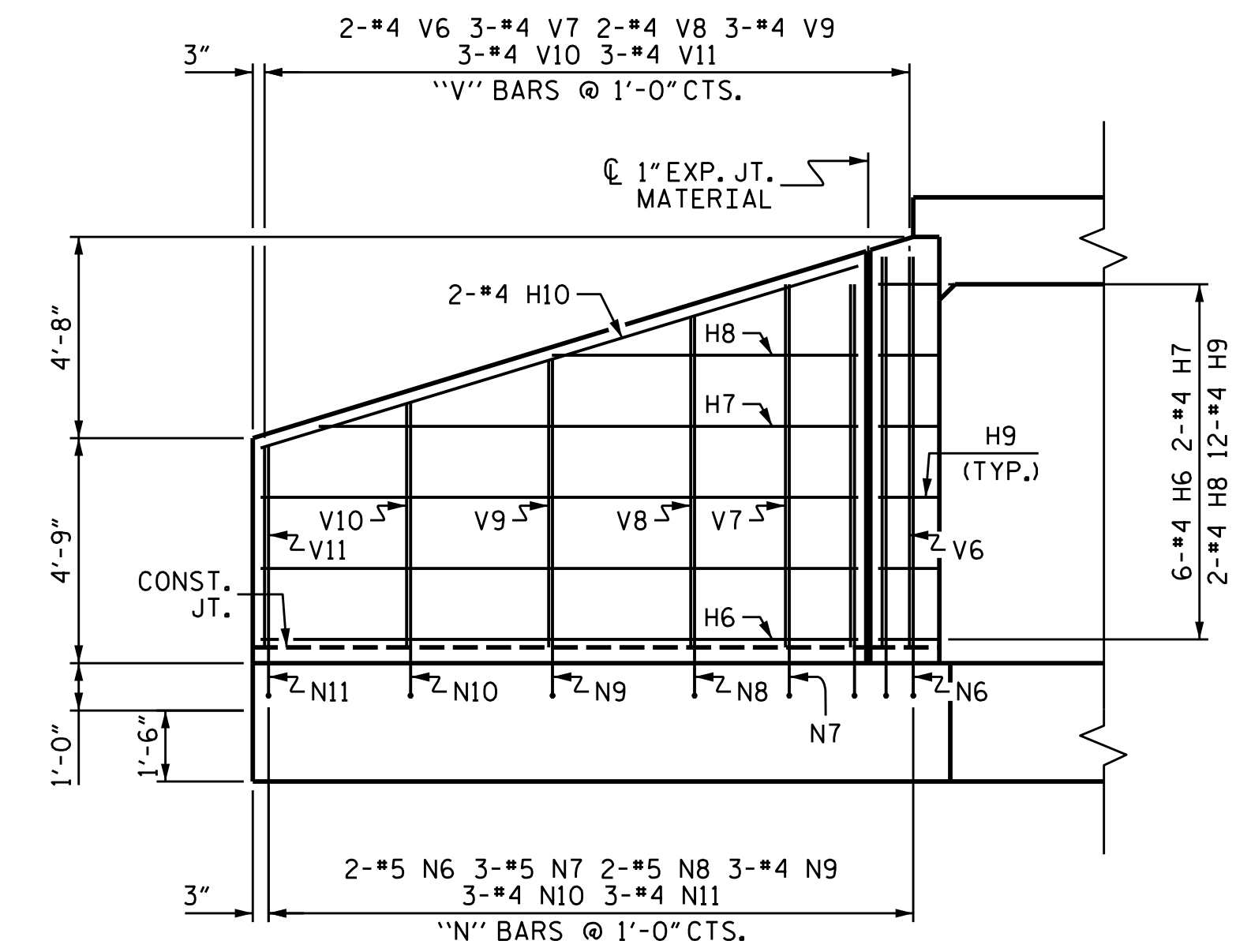


PLAN W2

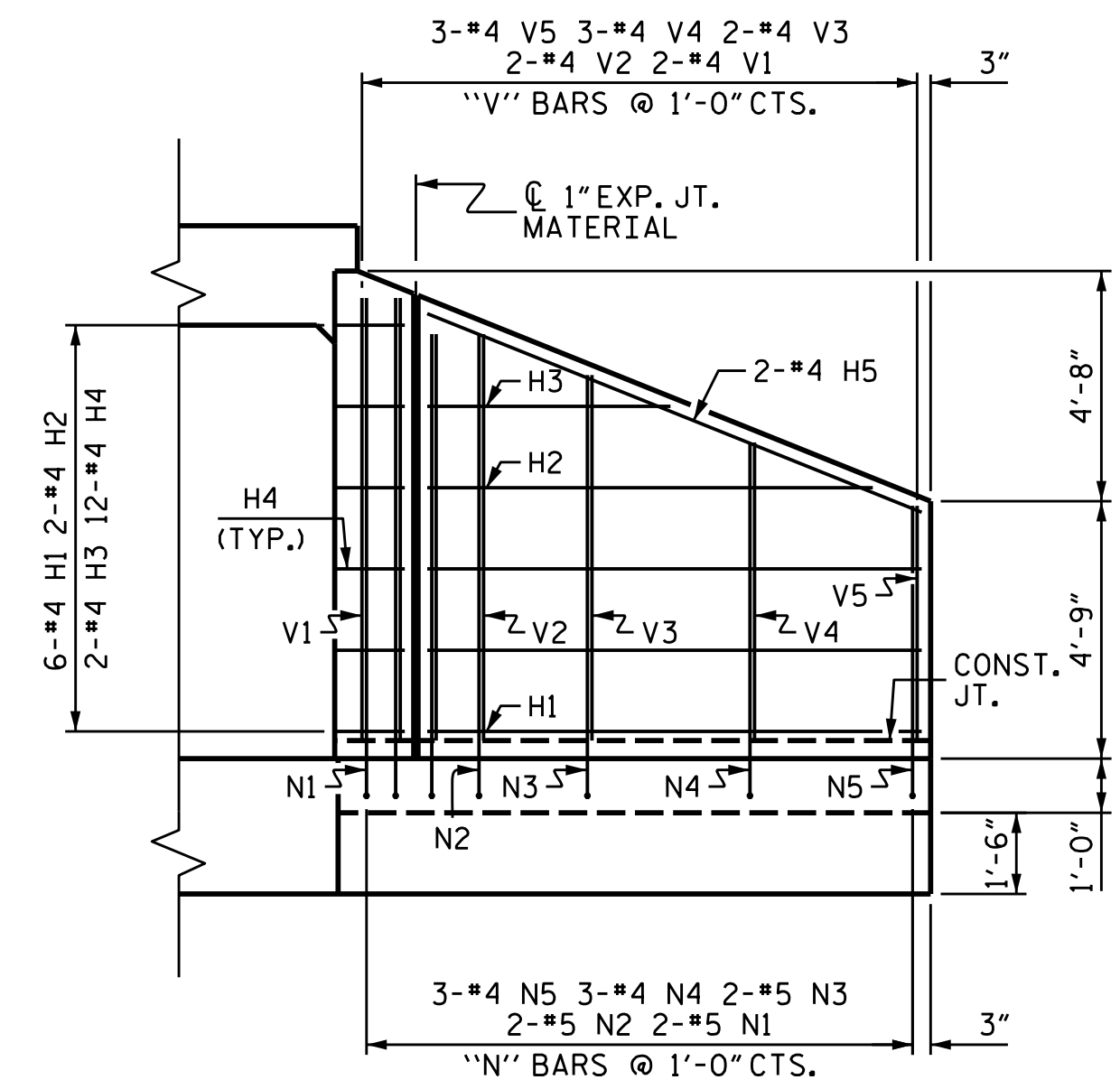
\* S1 @ BOTTOM OF FLOOR SLAB & FOOTING

NOTES

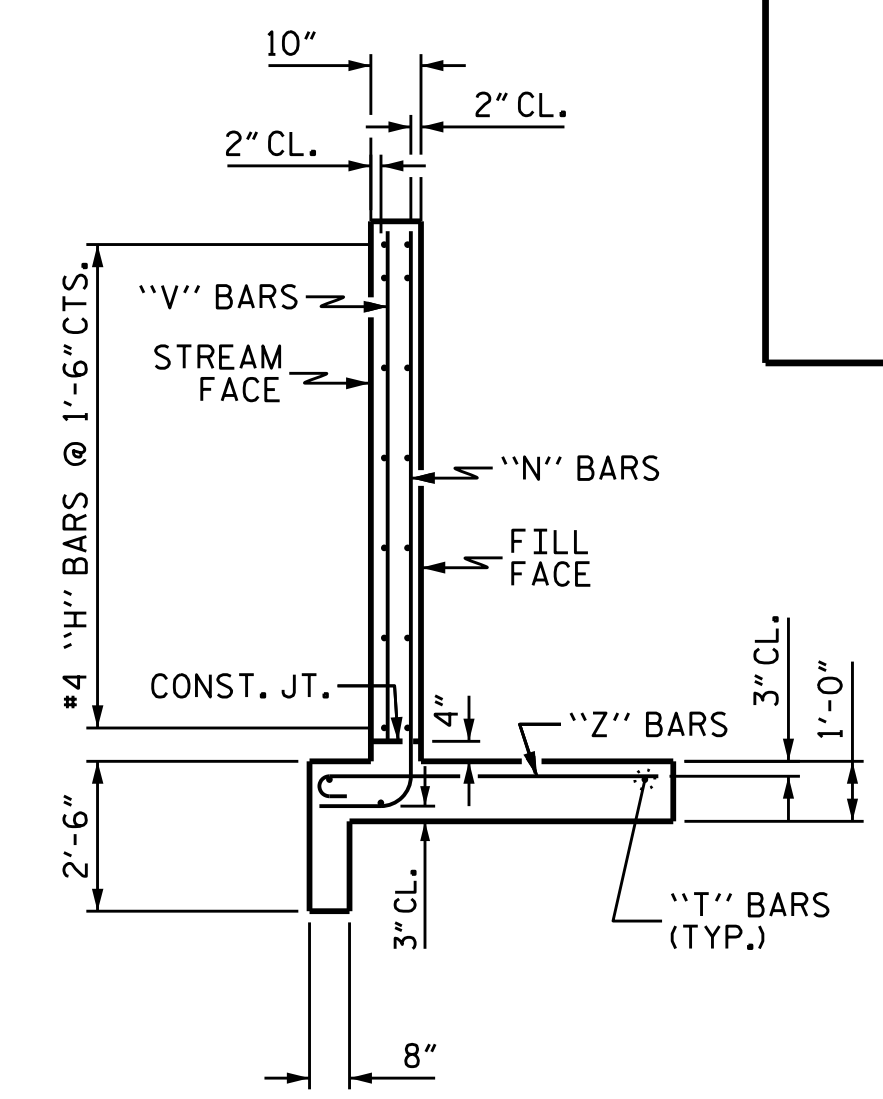
A 3 FOOT STRIP OF FILTER FABRIC SHALL BE ATTACHED TO THE FILL FACE OF THE WING COVERING THE ENTIRE LENGTH OF THE EXPANSION JOINT.  
G1 BARS IN HEADWALL ARE INCLUDED WITH THE BARREL REINFORCING STEEL.



ELEVATION W1



ELEVATION W2



TYPICAL WING SECTION

**BAR TYPES**

**BILL OF MATERIAL**

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	6	#4	STR	9'-1"	36
H2	2	#4	STR	8'-2"	11
H3	2	#4	STR	4'-5"	6
H4	12	#4	1	3'-3"	26
H5	2	#4	STR	9'-10"	13
H6	6	#4	STR	12'-7"	50
H7	2	#4	STR	11'-4"	15
H8	2	#4	STR	6'-5"	9
H9	12	#4	2	3'-3"	26
H10	2	#4	STR	13'-2"	18
N1	2	#5	3	10'-2"	21
N2	2	#5	3	9'-7"	20
N3	2	#5	3	8'-9"	18
N4	3	#4	3	7'-7"	15
N5	3	#4	3	6'-4"	13
N6	2	#5	3	10'-5"	22
N7	3	#5	3	10'-1"	32
N8	2	#5	3	9'-3"	19
N9	3	#4	3	8'-2"	16
N10	3	#4	3	7'-3"	15
N11	3	#4	3	6'-4"	13
S1	6	#6	STR	6'-0"	54
T1	3	#5	STR	11'-0"	34
T2	3	#5	STR	14'-6"	45
V1	2	#4	STR	8'-2"	11
V2	2	#4	STR	7'-6"	10
V3	2	#4	STR	6'-9"	9
V4	3	#4	STR	5'-6"	11
V5	3	#4	STR	4'-3"	9
V6	2	#4	STR	8'-3"	11
V7	3	#4	STR	8'-0"	16
V8	2	#4	STR	7'-0"	9
V9	3	#4	STR	6'-1"	12
V10	3	#4	STR	5'-2"	10
V11	3	#4	STR	4'-3"	9
Z1	2	#5	4	6'-0"	13
Z2	2	#5	4	5'-7"	12
Z3	2	#5	4	5'-0"	10
Z4	3	#4	4	4'-0"	8
Z5	3	#4	4	3'-1"	6
Z6	2	#5	4	6'-1"	13
Z7	3	#5	4	5'-8"	18
Z8	2	#5	4	5'-2"	11
Z9	3	#4	4	4'-5"	9
Z10	3	#4	4	3'-9"	8
Z11	3	#4	4	3'-1"	6

REINFORCING STEEL FOR 2 WINGS: 778 LBS  
CLASS A CONCRETE: 11.3 CY  
2 WINGS: 1.5 CY  
1 HEADWALL: 1.9 CY  
1 END CURTAIN WALL: 1.9 CY  
TOTAL: 14.7 CY

ALL BAR DIMENSIONS ARE OUT TO OUT.

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TRANSYLVANIA COUNTY  
STATION: 16+45.00 -L-

SHEET 12 OF 12



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD WINGS  
FOR  
RIGHT EXTENSION  
H = 8'-0" SLOPE = 2:1  
105° SKEW

ASSEMBLED BY : ZCS	DATE : 2/26
CHECKED BY : MGC	DATE : 2/26
DRAWN BY : CCJ 01/00	REV. 6/19 MAA/THC
CHECKED BY : RWW 03/00	

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TGS ENGINEERS  
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