

TIP PROJECT: U-5875

CONTRACT: C205092

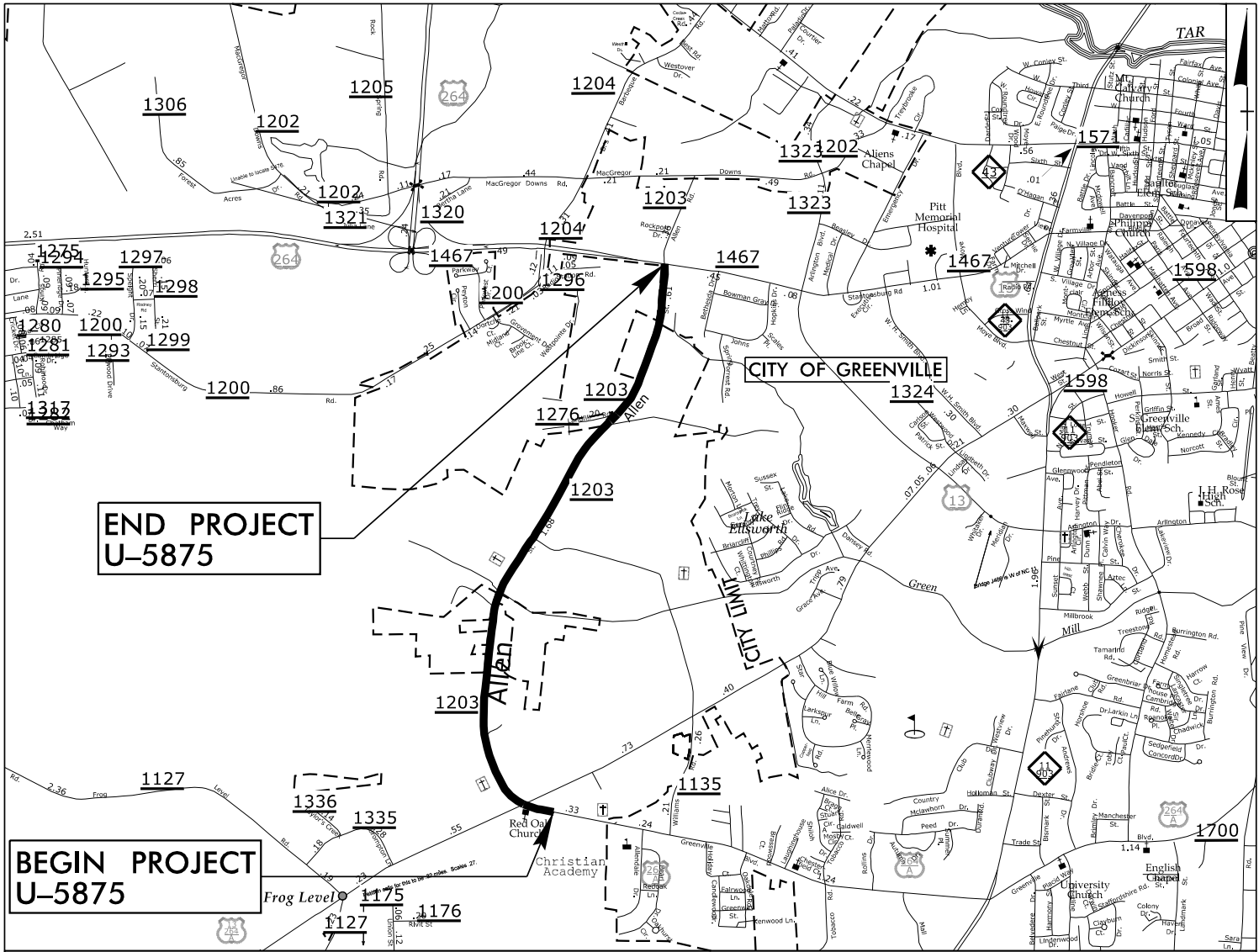
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PITT COUNTY

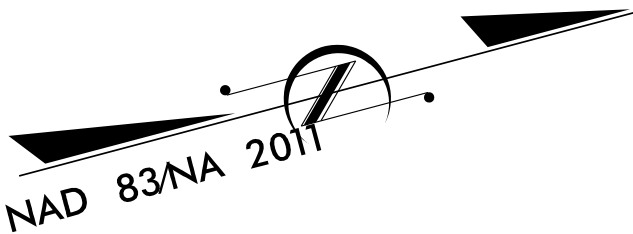
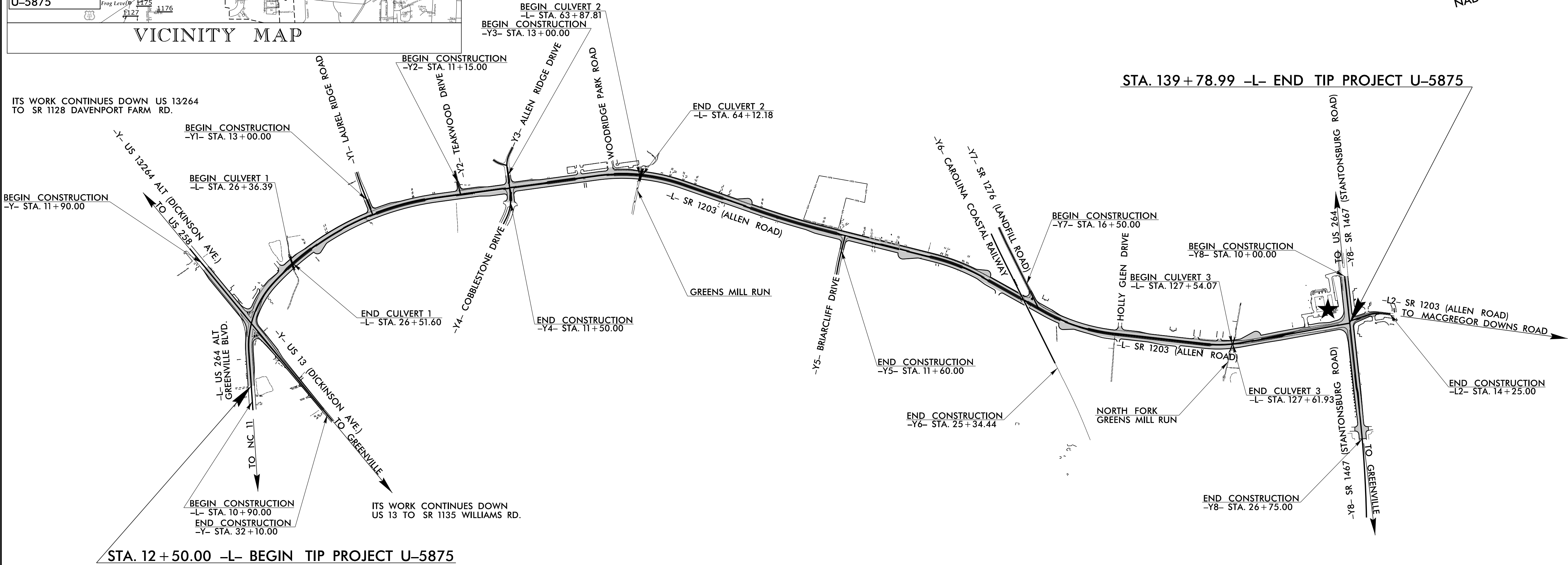
LOCATION: SR 1203 (ALLEN ROAD) FROM SR 1467 (STANTONSBURG ROAD)
TO US 13 (DICKINSON AVENUE EXTENSION)

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5875	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
44677.1.1		PE	
44677.2.1		RW	
44677.2.3		UTILITIES	
44677.3.1		CONST.	



VICINITY MAP



STRUCTURES

DESIGN DATA

ADT 2025 = 26,413
ADT 2040 = 35,100
K = 9 %
D = 60 %
T = 7 % *
V = 50 MPH
* TTST=2% DUAL=5%
FUNC CLASS =
MINOR ARTERIAL
"REGIONAL TIER"

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-5875 = 2.406 MILES
LENGTH STRUCTURE TIP PROJECT U-5875 = 0.005 MILES
TOTAL LENGTH TIP PROJECT U-5875 = 2.411 MILES

Prepared in the Office of:



Johnson, Mirmiran, & Thompson Inc.
4700 Falls of Neuse Rd, Suite 100,
Raleigh, NC, 27609
License No: C-3097

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MAY 14, 2018

LETTING DATE:
OCTOBER 21, 2025

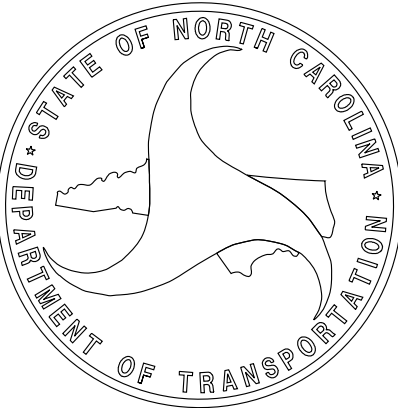
KYLE H. COMPTON, PE
PROJECT DESIGN ENGINEER

CASEY K. WHITLEY, PE, PLS
NCDOT CONTACT



8/6/2025 | 5:32:16 PM EDT

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED



LOAD FACTORS:

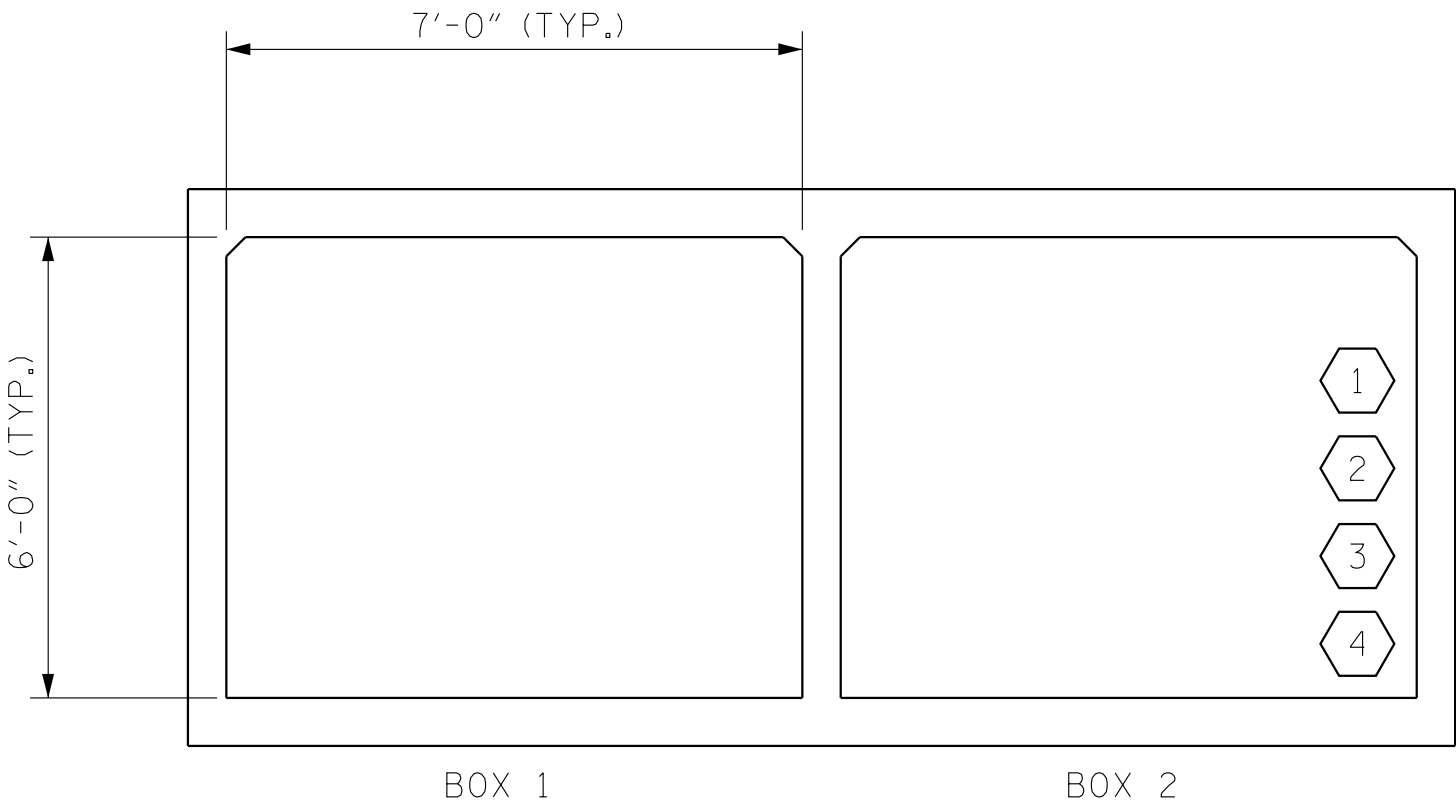
DESIGN LOAD RATING FACTORS		
LOAD TYPE	MAX FACTOR	MIN FACTOR
DC	1.25	0.90
DW	1.50	0.65
EV	1.30	0.90
EH	1.35	0.90
ES	1.35	0.90
LS	1.75	--
WA	1.00	--

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

COMMENTS:
1. ALL MEASUREMENTS ARE TAKEN FROM THE CENTER OF WALL AND CENTER OF SLAB OF THE BOX NUMBER INDICATED. WALL MEASUREMENTS TAKEN FROM THE CENTER OF BOTTOM SLAB.

#	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

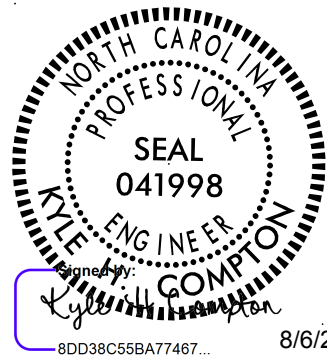
LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR REINFORCED CONCRETE BOX CULVERTS															
LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W × RF	STRENGTH I LIMIT STATE									COMMENT NUMBER
						LIVE-LOAD, FACTORS (γ _{LL})	MOMENT				SHEAR				
							RATING FACTOR	BOX NO.	ELEMENT TYPE	DISTANCE FROM LEFT END OF ELEMENT (ft)	RATING FACTOR	BOX NO.	ELEMENT TYPE	DISTANCE FROM LEFT END OF ELEMENT (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.03	--	1.75	1.16	2	BOTTOM SLAB	14.667	1.03	2	BOTTOM SLAB	14.667	1
	HL-93 (OPERATING)	N/A		1.34	--	1.35	1.51	2	BOTTOM SLAB	14.667	1.34	2	BOTTOM SLAB	14.667	
	HS-20 (INVENTORY)	36,000	②	1.08	38.88	1.75	1.21	2	BOTTOM SLAB	14.667	1.08	2	BOTTOM SLAB	14.667	
	HS-20 (OPERATING)	36,000		1.40	50.40	1.35	1.57	2	BOTTOM SLAB	14.667	1.40	2	BOTTOM SLAB	14.667	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH		2.94	39.69	1.40	3.13	2	BOTTOM SLAB	14.667	2.94	2	BOTTOM SLAB	14.667	
		SNGARBS2		2.75	55.00	1.40	2.93	2	BOTTOM SLAB	14.667	2.75	2	BOTTOM SLAB	14.667	
		SNAGRIS2		2.94	64.68	1.40	3.13	2	BOTTOM SLAB	14.667	2.94	2	BOTTOM SLAB	14.667	
		SNCOTTS3		1.29	35.15	1.40	1.45	2	BOTTOM SLAB	14.667	1.29	2	BOTTOM SLAB	14.667	
		SNAGGRS4		1.70	59.37	1.40	1.91	2	BOTTOM SLAB	14.667	1.70	2	BOTTOM SLAB	14.667	
		SNS5A		1.54	54.75	1.40	1.73	2	BOTTOM SLAB	14.667	1.54	2	BOTTOM SLAB	14.667	
		SNS6A		1.54	61.52	1.40	1.73	2	BOTTOM SLAB	14.667	1.54	2	BOTTOM SLAB	14.667	
		SNS7B		1.54	64.68	1.40	1.73	2	BOTTOM SLAB	14.667	1.54	2	BOTTOM SLAB	14.667	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3		2.94	97.02	1.40	3.13	2	BOTTOM SLAB	14.667	2.94	2	BOTTOM SLAB	14.667	
		TNT4A		1.54	50.94	1.40	1.73	2	BOTTOM SLAB	14.667	1.54	2	BOTTOM SLAB	14.667	
		TNT6A		1.54	64.06	1.40	1.73	2	BOTTOM SLAB	14.667	1.54	2	BOTTOM SLAB	14.667	
		TNT7A		1.54	64.68	1.40	1.73	2	BOTTOM SLAB	14.667	1.54	2	BOTTOM SLAB	14.667	
		TNT7B		1.54	64.68	1.40	1.73	2	BOTTOM SLAB	14.667	1.54	2	BOTTOM SLAB	14.667	
		TNAGRIT4	③	1.54	66.22	1.40	1.73	2	BOTTOM SLAB	14.667	1.54	2	BOTTOM SLAB	14.667	
		TNAGRT5A		1.54	69.30	1.40	1.73	2	BOTTOM SLAB	14.667	1.54	2	BOTTOM SLAB	14.667	
		TNAGRT5B		1.54	69.30	1.40	1.73	2	BOTTOM SLAB	14.667	1.54	2	BOTTOM SLAB	14.667	
EMERGENCY VEHICLE (EV)	EV2		2.01	57.79	1.30	2.01	2	BOTTOM SLAB	14.667	2.08	2	BOTTOM SLAB	14.667		
	EV3	④	1.12	48.16	1.30	1.27	2	BOTTOM SLAB	14.667	1.02	2	BOTTOM SLAB	14.667		



LRFR SUMMARY
(LOOKING DOWNSTREAM)

PROJECT NO. U-5875
PITT COUNTY
STATION: 26+44.00 -L-

SHEET 2 OF 12



DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

LRFR SUMMARY FOR

REINFORCED CONCRETE

BOX CULVERTS

(NON-INTERSTATE TRAFFIC)

NO.

BY:

DATE:

NO.

BY:

DATE:

1

3

2

4

SHEET NO.

C1-2

TOTAL SHEETS

12



CULVERT SECTION NORMAL TO ROADWAY

END ELEVATION NORMAL TO SKEW



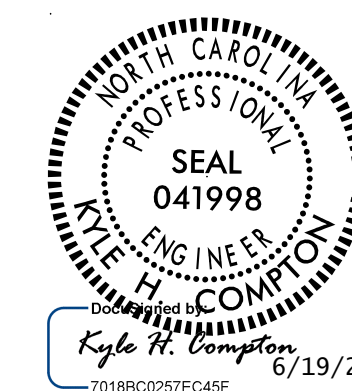
CULVERT SECTION NORMAL TO ROADWAY

END ELEVATION NORMAL TO SKEW



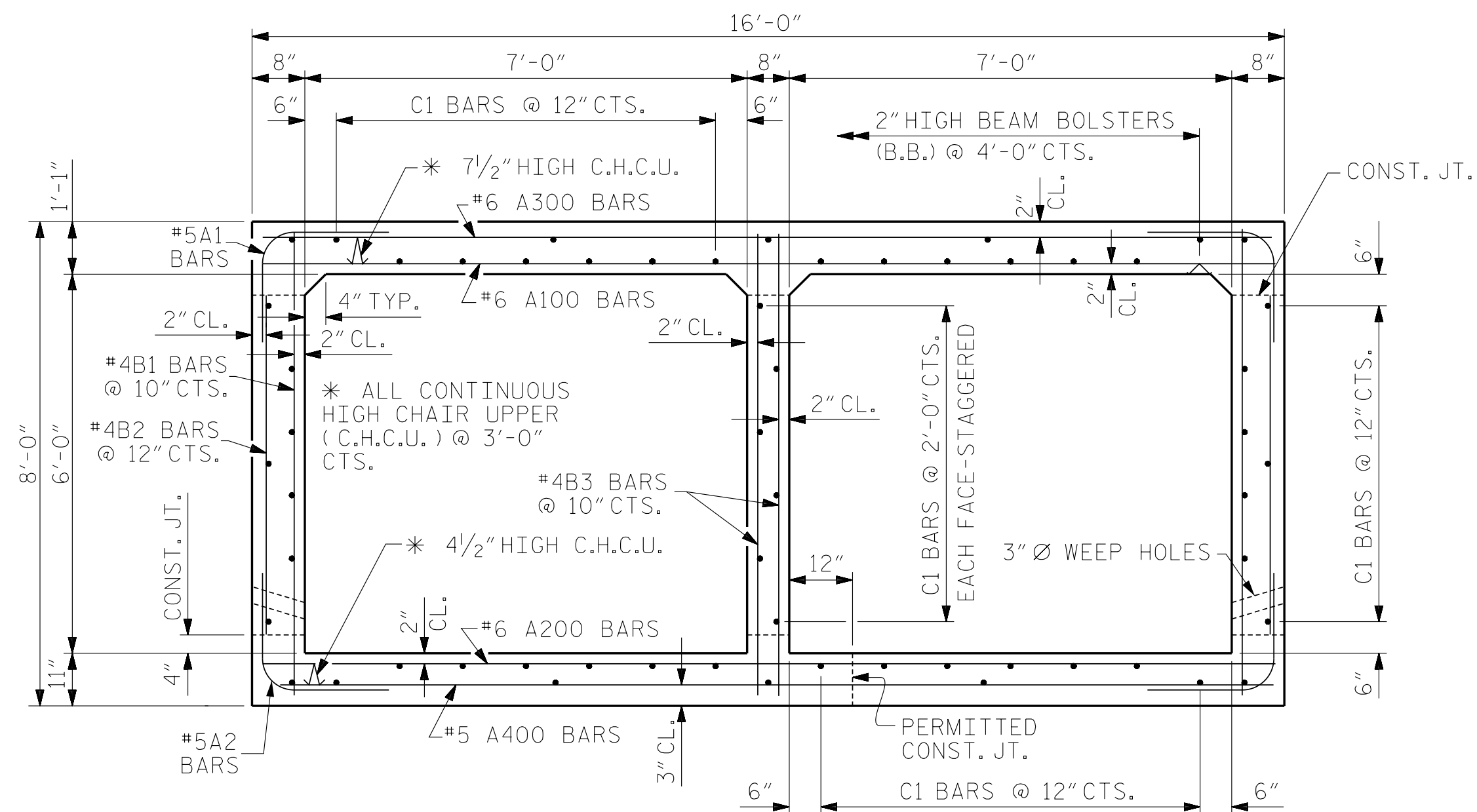
PITT COUNTY

SHEET 3 OF 12



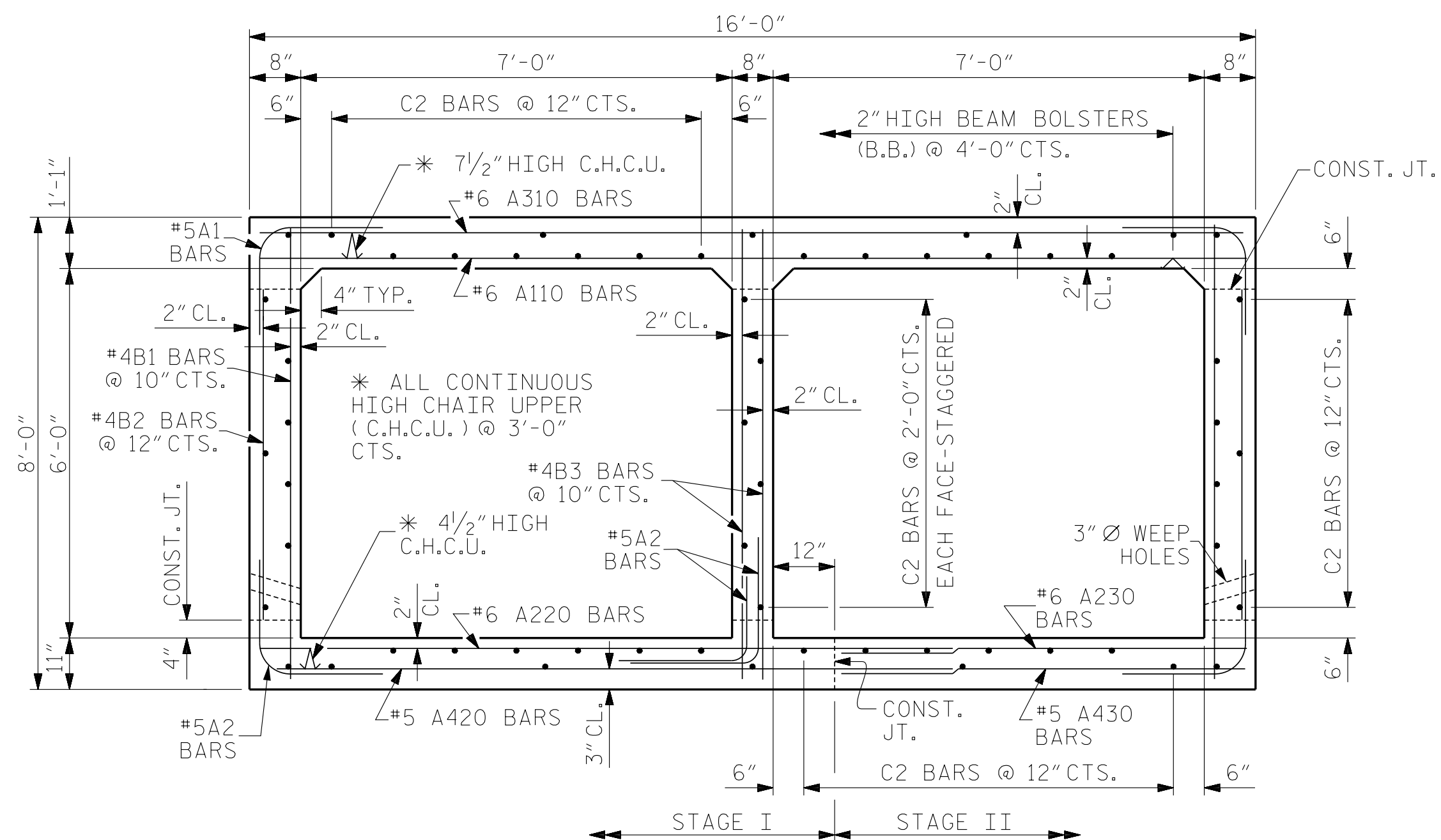
DOCUMENT NOT CONSIDERED
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SIGNATURES COMPLETED

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DATE: 7/18		1			3			TOTAL SHEETS	
CHKD. BY: KHC		2			4			12	
DATE: 7/18									



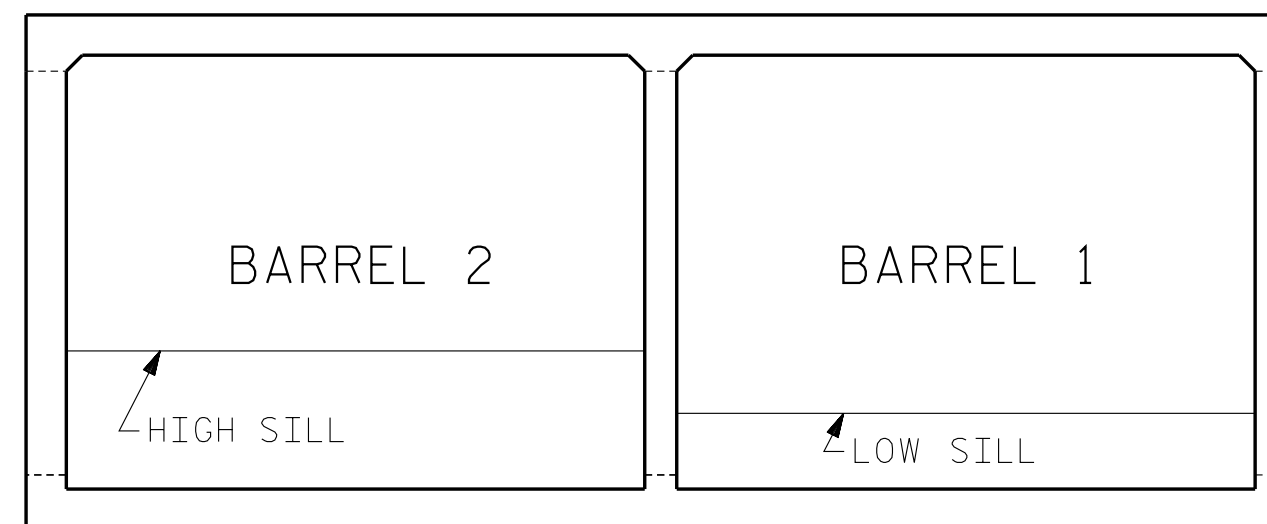
RIGHT ANGLE SECTION OF BARREL - PHASE I

LOOKING DOWNSTREAM
THERE ARE 58 C1 BARS IN PHASE I



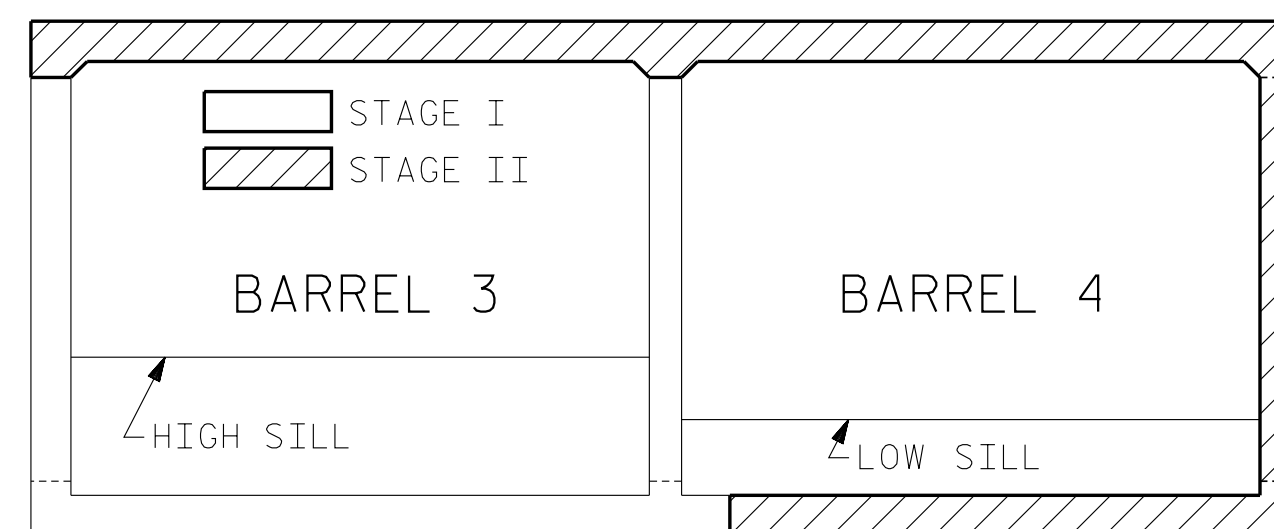
RIGHT ANGLE SECTION OF BARREL - PHASE II

LOOKING DOWNSTREAM
THERE ARE 24 C2 BARS IN STAGE I SECTION OF BARREL.
THERE ARE 34 C2 BARS IN STAGE II SECTION OF BARREL.



PHASE I

LOOKING DOWNSTREAM
(SEE SHEET C1-11 FOR SILL DETAILS)



PHASE II - STAGE I & II

LOOKING DOWNSTREAM
(SEE SHEET C1-11 FOR SILL DETAILS)

PROJECT NO. U-5875

PITT COUNTY

STATION: 26+44.00 -L-

SHEET 4 OF 12

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DOUBLE 7' X 6'
CONCRETE BOX CULVERT

ON UNNAMED TRIBUTARY
TO GREEN MILL RUN
UNDER SR 1203 (ALLEN ROAD) BETWEEN
US 13 AND SR 1467

SHEET NO.

C1-4

TOTAL
SHEETS

12

V&M
Vaughn & Melton
Consulting Engineers

New Bern
■ North Carolina
252-635-5185

□ Raleigh, NC
919-977-9455

□ Charlotte, NC
704-357-0488

□ Boone, NC
828-355-9933

□ Tri-Cities, TN
423-467-8401

□ Knoxville, TN
865-546-1800

□ Spartanburg, SC
864-574-4775

□ Charleston, SC
843-974-5650

□ Middleboro, KY
606-248-6600

□ Atlanta, GA
770-632-9590

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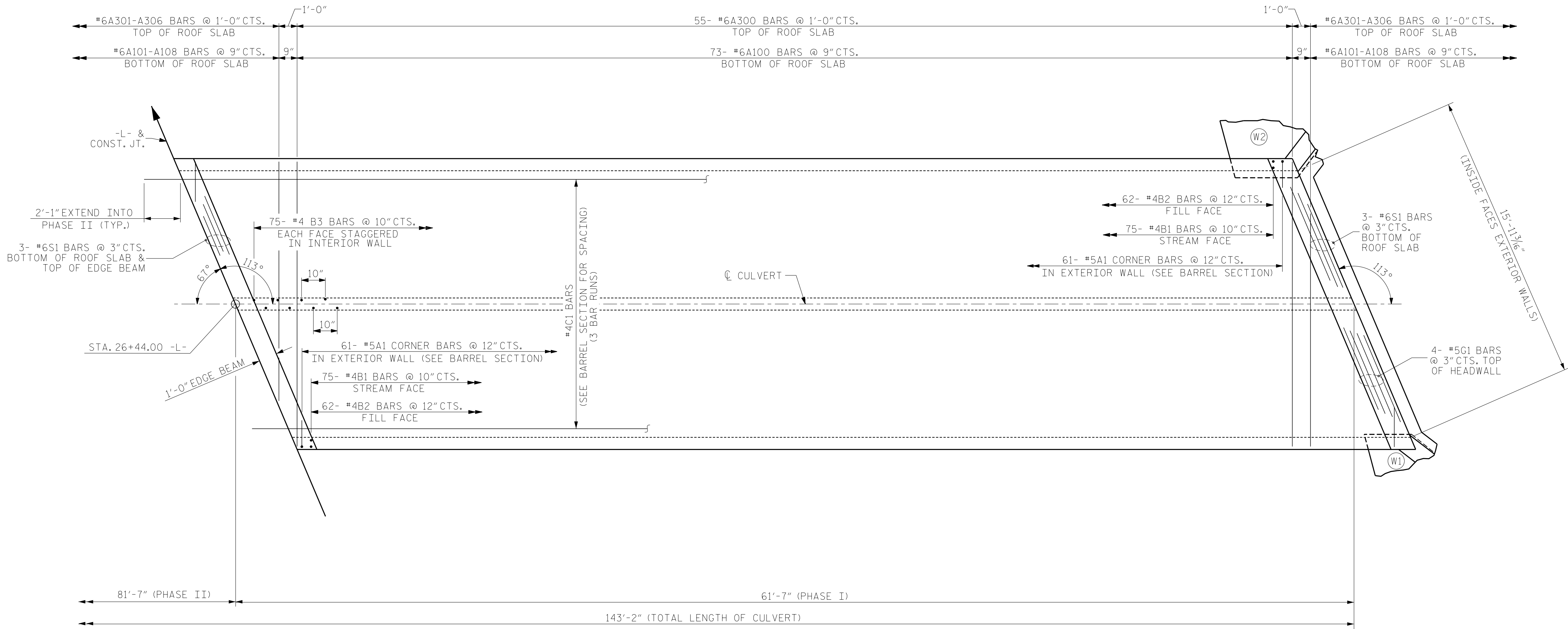


SHEET 5 OF 12



(PHASE I)

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User:wdcrutcher
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ROOF PLAN

PROJECT NO. U-5875

PITT COUNTY

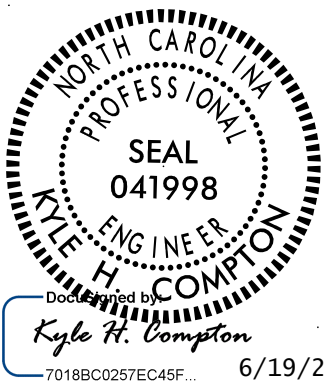
STATION: 26+44.00 -L-

SHEET 6 OF 12

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DOUBLE 7' X 6'
CONCRETE BOX CULVERT

(PHASE I)



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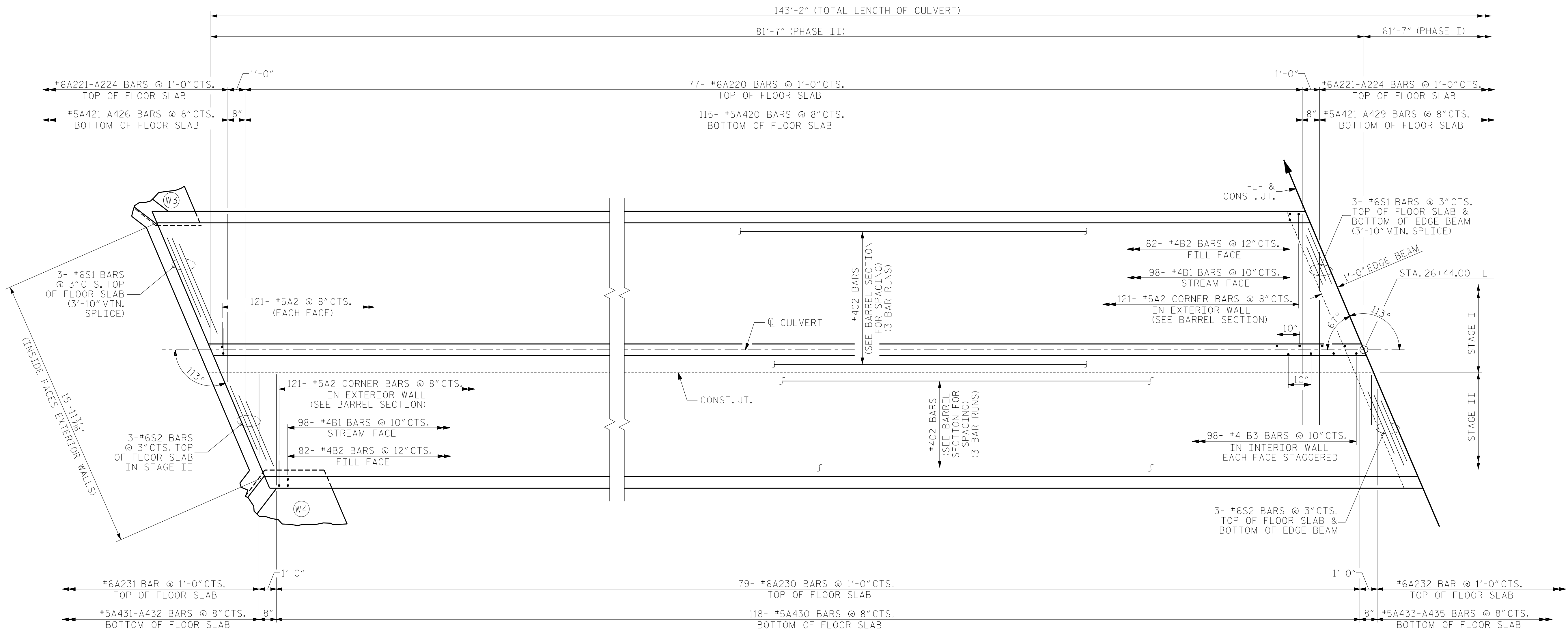
V&M
Vaughn & Melton
Consulting Engineers

New Bern
North Carolina
252-631-515

Boone, NC 828-355-9933
Tri-Cities, TN 423-467-8401
Knoxville, TN 865-546-5800
Spartanburg, SC 864-574-4775
Charleston, SC 843-974-5650
Middlesboro, KY 606-248-6600
Raleigh, NC 919-977-9455
Charlotte, NC 704-357-0488
Atlanta, GA 770-627-3590

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DSG. ENG. OF RECORD.: KHC		REVISIONS						SHEET NO.	
DWN. BY: WDC		DATE: 7/18		NO.	BY:	DATE:		C1-6	
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CHKD. BY: KHC		DATE: 7/18		2					
				3					
				4					



FLOOR PLAN

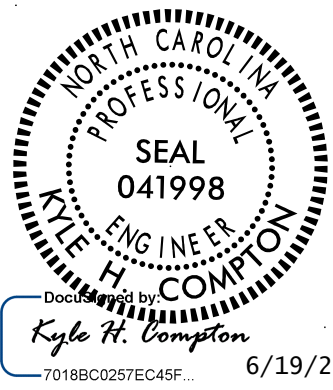
(SEE SHEET C1-11 FOR SILLS IN BARRELS)

PROJECT NO. U-5875

PITT COUNTY

STATION: 26+44.00 -L-

SHEET 7 OF 12



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V&M
Vaughn & Melton
Consulting Engineers

New Bern
North Carolina
252-631-515

Boone, NC 828-355-9933
Tri-Cities, TN 423-467-8401
Knoxville, TN 865-546-5800
Spartanburg, SC 864-574-4775
Charleston, SC 843-974-5650
Middlesboro, KY 606-248-6600
Atlanta, GA 770-627-3590

Raleigh, NC 919-977-9455
Charlotte, NC 704-357-0488

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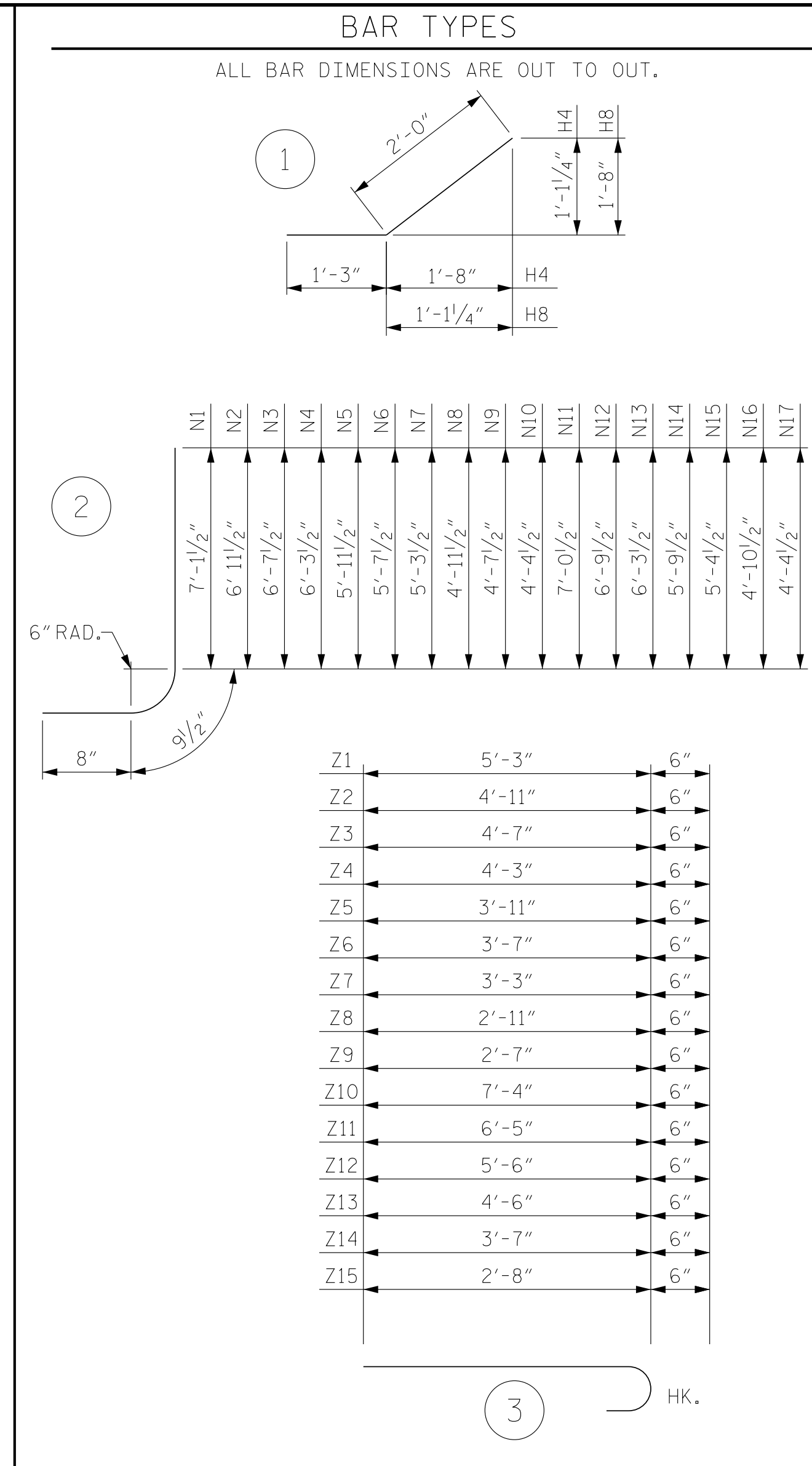
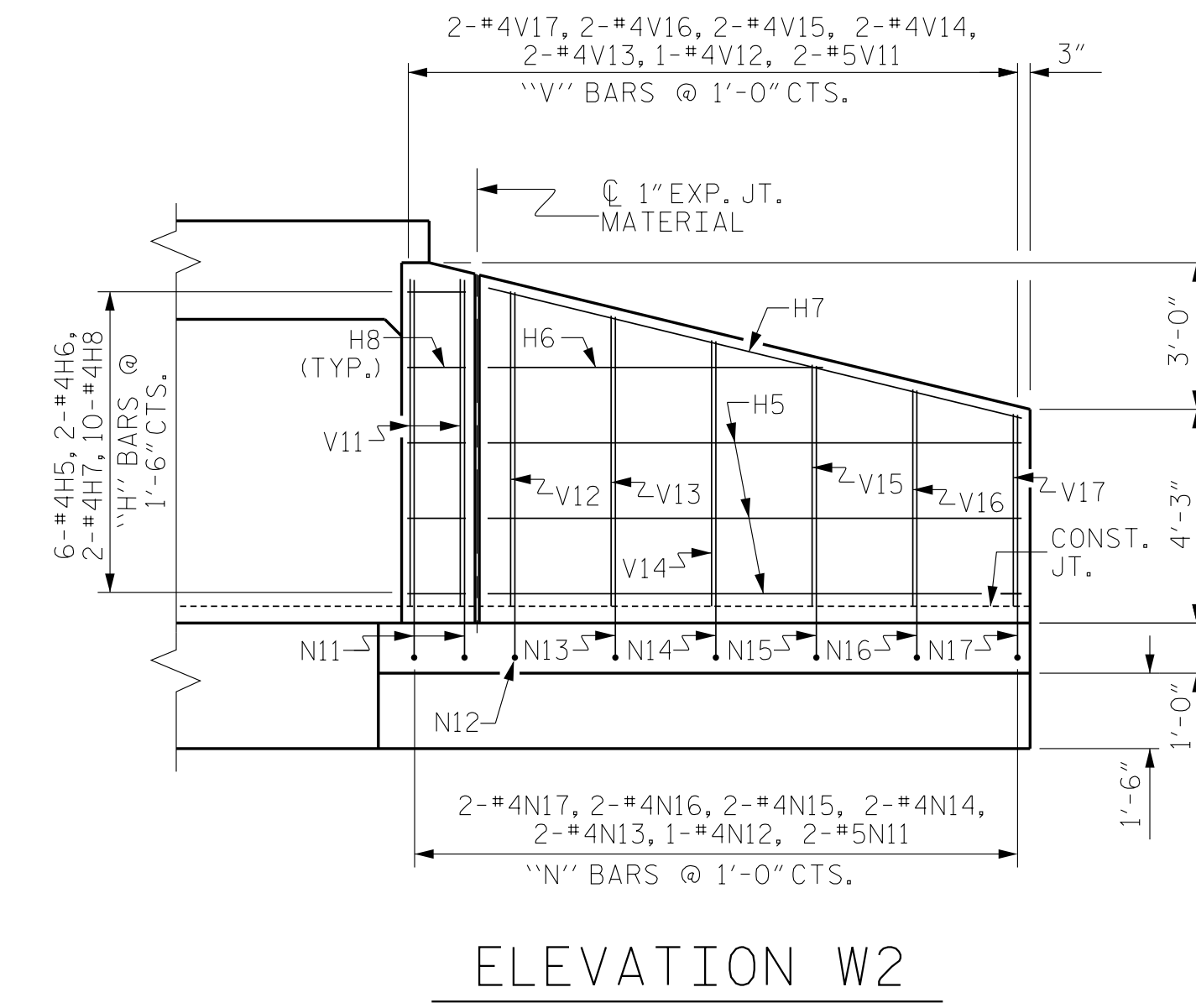
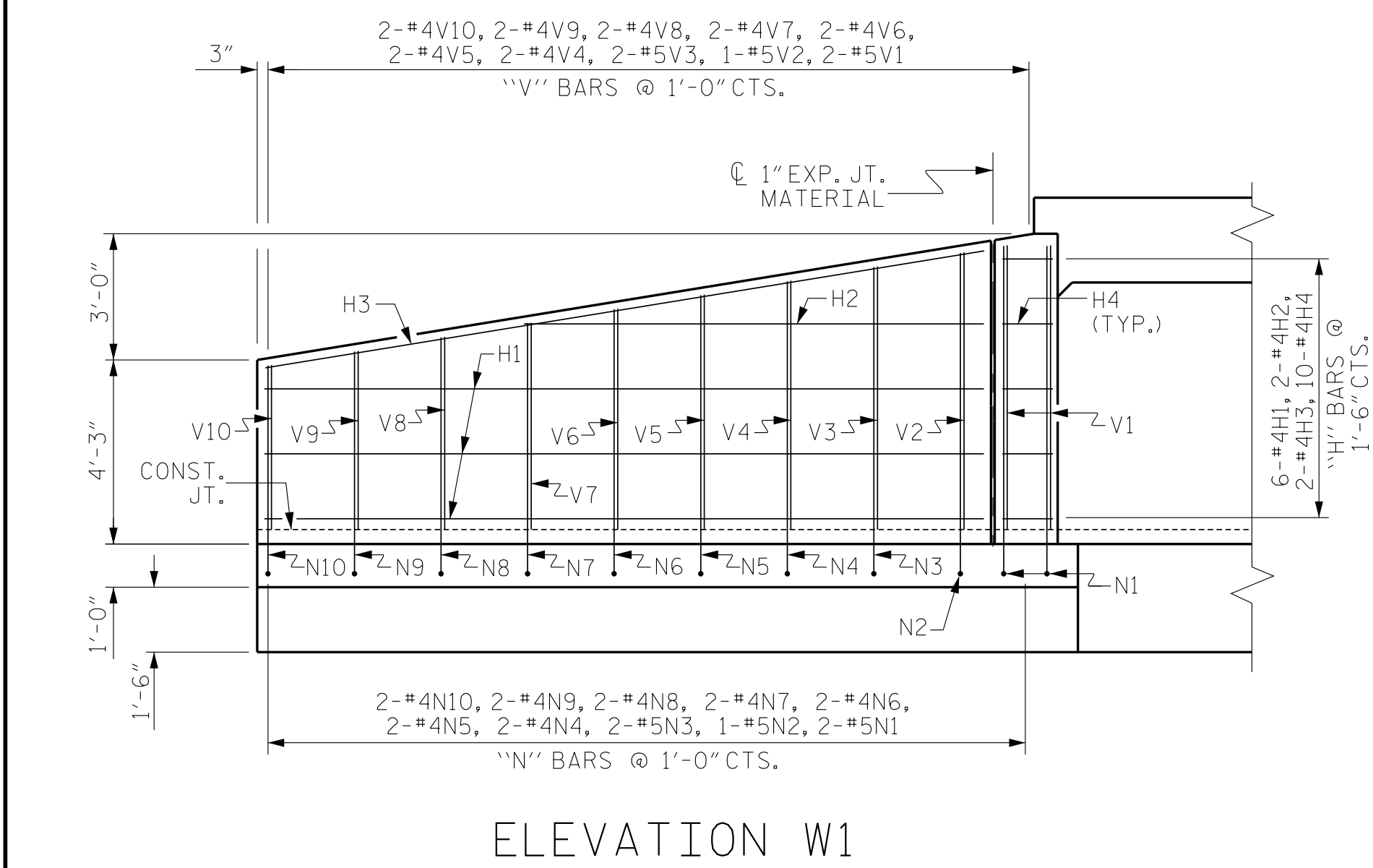
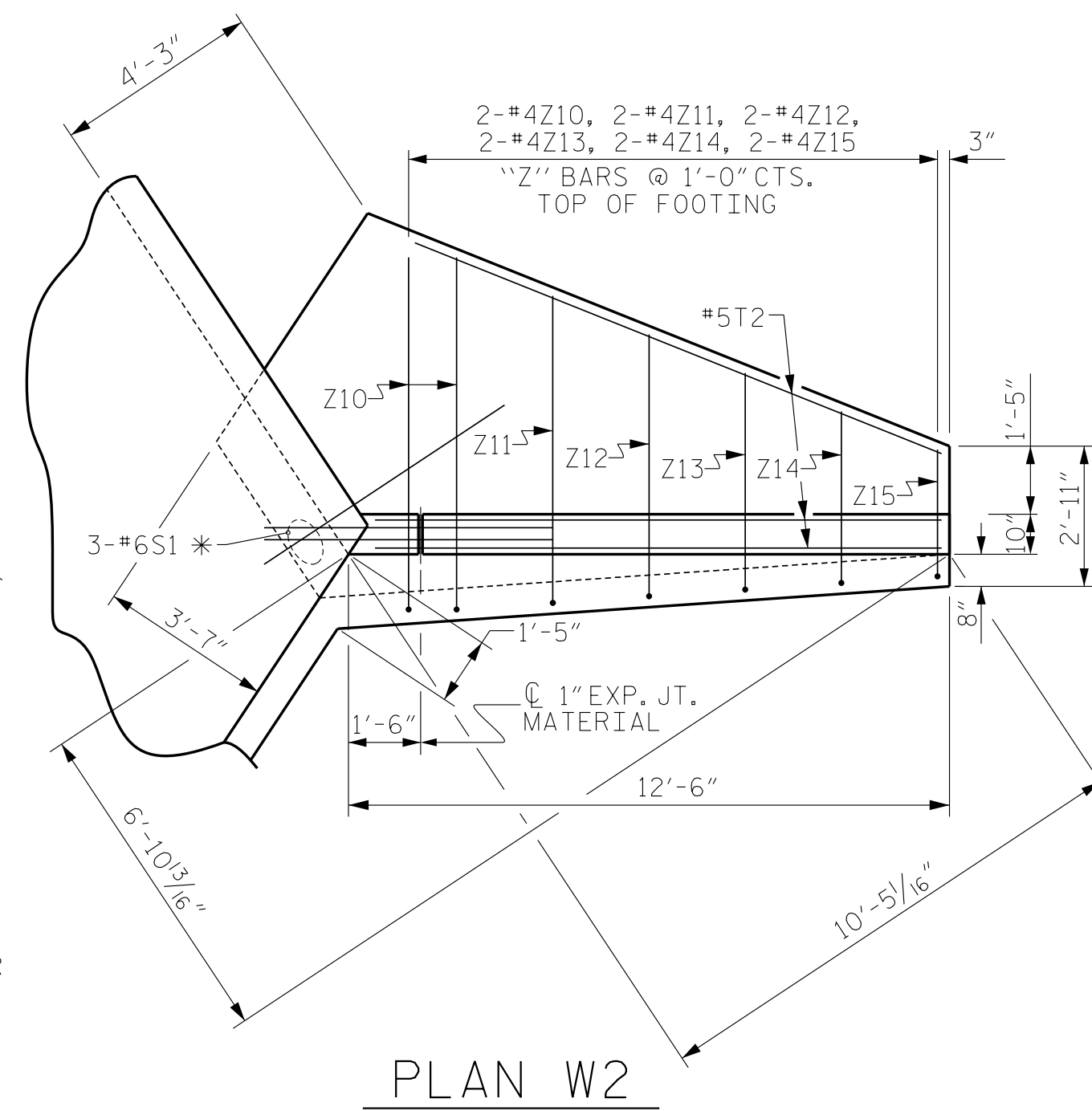
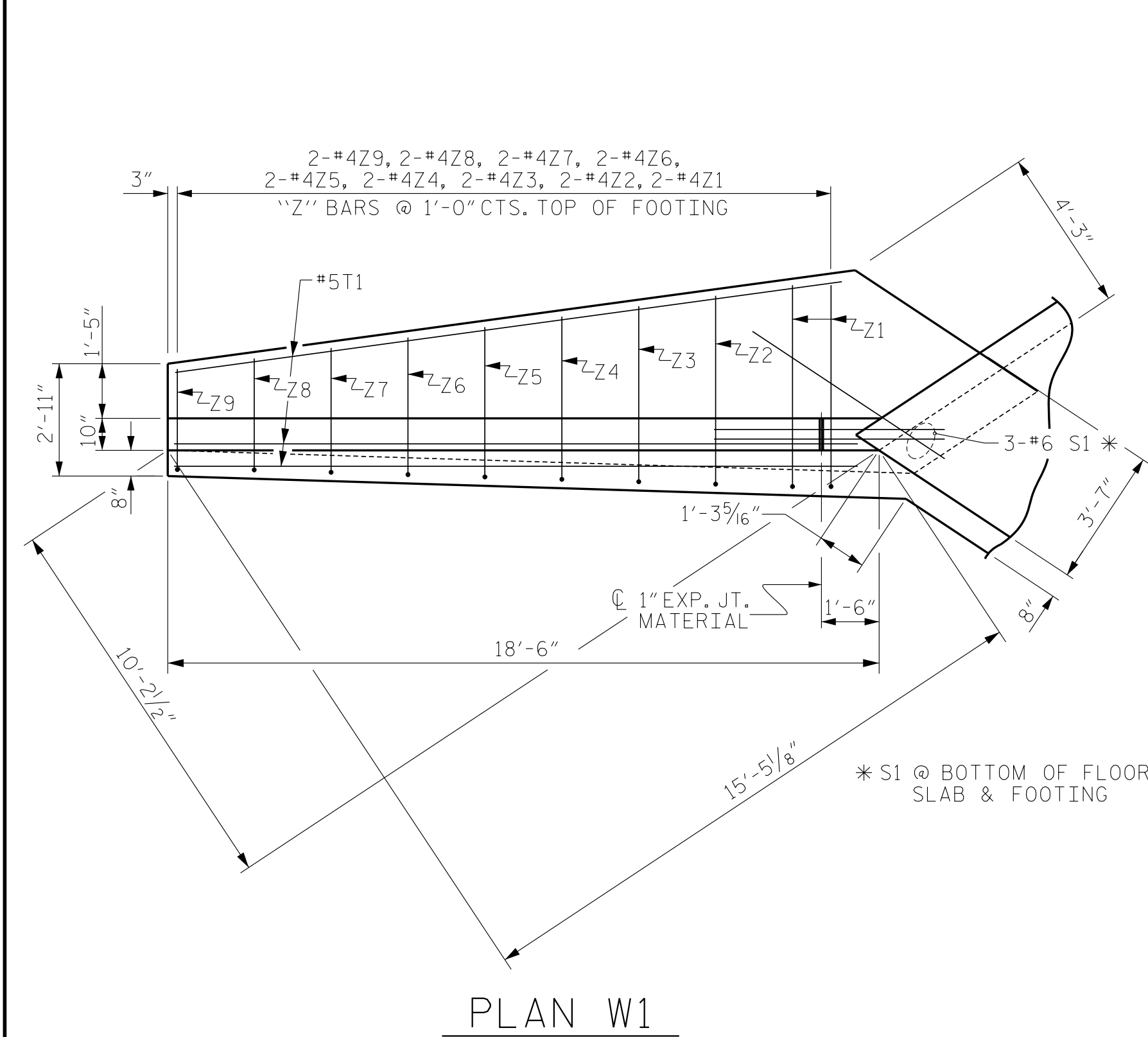
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DOUBLE 7' X 6'
CONCRETE BOX CULVERT

PHASE II
(STAGE I & STAGE II)

DSG. ENG. OF RECORD.: KHC		REVISIONS						SHEET NO.			
DWN. BY: WDC		DATE: 7/18		NO.		BY:		DATE:		C1-7	
CHKD. BY: KHC		DATE: 7/18		1		3		4		TOTAL SHEETS	
				2		4				12	

ROOF PLAN



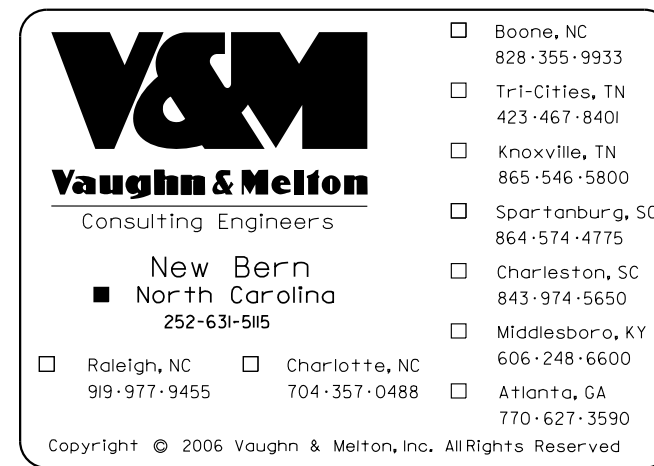
BILL OF MATERIAL - W1						BILL OF MATERIAL - W2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	6	#4	STR	16'-7"	66	H5	6	#4	STR	10'-7"	42
H2	2	#4	STR	10'-7"	14	H6	2	#4	STR	6'-8"	9
H3	2	#4	STR	16'-10"	22	H7	2	#4	STR	10'-11"	15
H4	10	#4	1	3'-3"	22	H8	10	#4	1	3'-3"	22
N1	2	#5	2	8'-7"	18	N11	2	#5	2	8'-6"	18
N2	1	#5	2	8'-5"	9	N12	1	#4	2	8'-3"	6
N3	2	#4	2	8'-1"	17	N13	2	#4	2	7'-9"	10
N4	2	#4	2	7'-9"	10	N14	2	#4	2	7'-3"	10
N5	2	#4	2	7'-5"	10	N15	2	#4	2	6'-10"	9
N6	2	#4	2	7'-1"	9	N16	2	#4	2	6'-4"	8
N7	2	#4	2	6'-9"	9	N17	2	#4	2	5'-10"	8
N8	2	#4	2	6'-5"	9						
N9	2	#4	2	6'-1"	8	S1	3	#6	STR	6'-0"	27
N10	2	#4	2	5'-10"	8						
S1	3	#6	STR	6'-0"	27	T2	3	#5	STR	11'-9"	37
						V11	2	#5	STR	6'-6"	14
T1	3	#5	STR	17'-9"	56	V12	1	#4	STR	6'-3"	4
						V13	2	#4	STR	5'-9"	8
V1	2	#5	STR	6'-6"	14	V14	2	#4	STR	5'-3"	7
V2	1	#5	STR	6'-4"	7	V15	2	#4	STR	4'-9"	6
V3	2	#5	STR	6'-0"	13	V16	2	#4	STR	4'-3"	6
V4	2	#4	STR	5'-9"	8	V17	2	#4	STR	3'-9"	5
V5	2	#4	STR	5'-5"	7						
V6	2	#4	STR	5'-1"	7	Z10	2	#4	3	7'-10"	10
V7	2	#4	STR	4'-9"	6	Z11	2	#4	3	6'-11"	9
V8	2	#4	STR	4'-5"	6	Z12	2	#4	3	6'-0"	8
V9	2	#4	STR	4'-1"	5	Z13	2	#4	3	5'-0"	7
V10	2	#4	STR	3'-9"	5	Z14	2	#4	3	4'-1"	5
						Z15	2	#4	3	3'-2"	4

Z1	2	#4	3	5'-9"	8	REINFORCING STEEL FOR W2 WING	= 314 LBS
Z2	2	#4	3	5'-5"	7		
Z3	2	#4	3	5'-1"	7		
Z4	2	#4	3	4'-9"	6		
Z5	2	#4	3	4'-5"	6		
Z6	2	#4	3	4'-1"	5		
Z7	2	#4	3	3'-9"	5		
Z8	2	#4	3	3'-5"	5		
Z9	2	#4	3	3'-1"	4		

REINFORCING STEEL	= 445 LBS
FOR W1 WING	

PHASE I WING QUANTITIES

CLASS A CONCRETE			
W1 WING & FOOTING	6.8	CY	
W2 WING & FOOTING	5.4	CY	
1 HEADWALL	0.8	CY	
1 END CURTAIN WALL	2.0	CY	
2 EDGE BEAMS	1.3	CY	
TOTAL	16.3	CY	
REINFORCING STEEL			
W1 WING & FOOTING	445	LBS	
W2 WING & FOOTING	314	LBS	
TOTAL	759	LBS	



PROJECT NO. U-5875

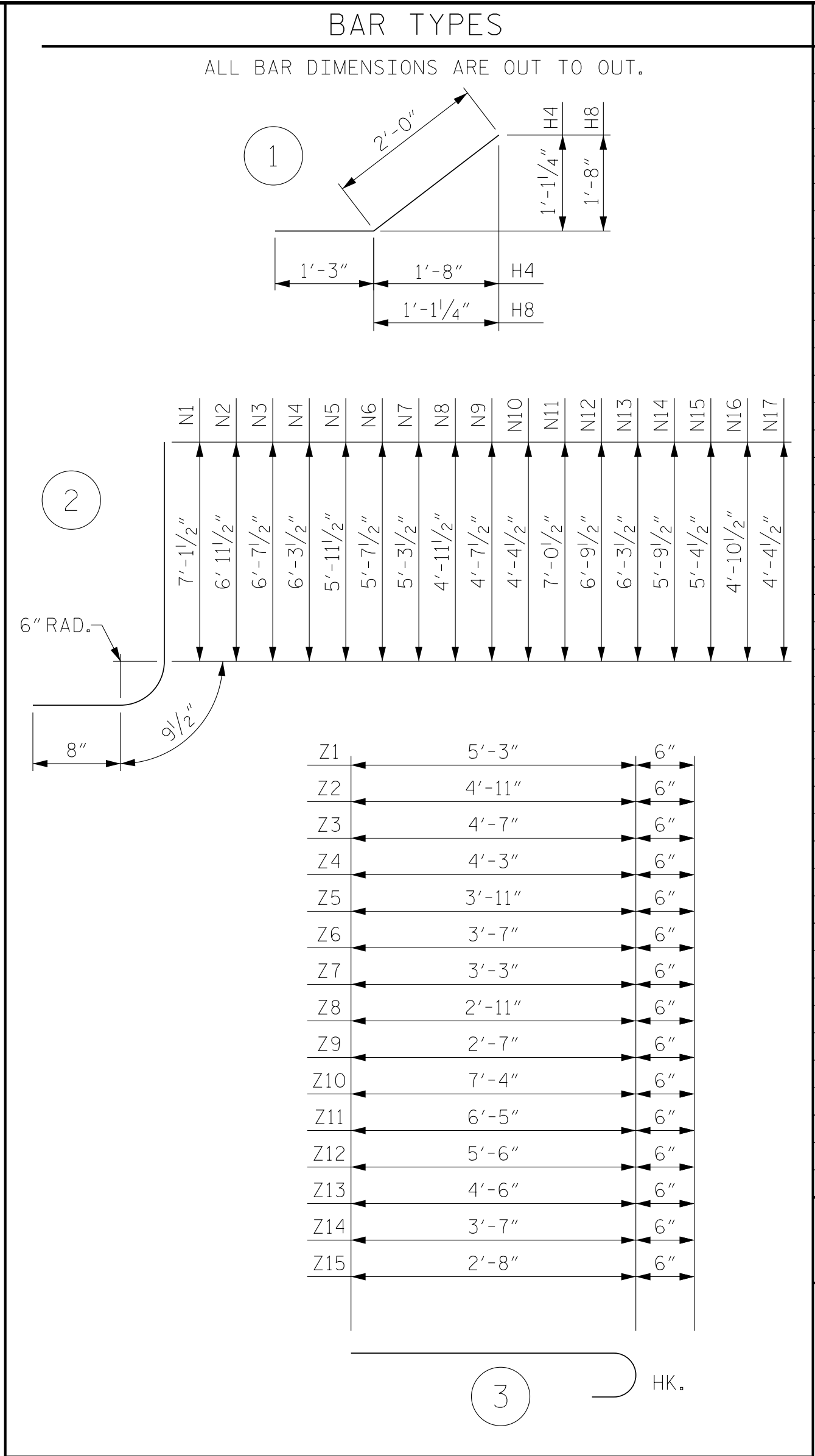
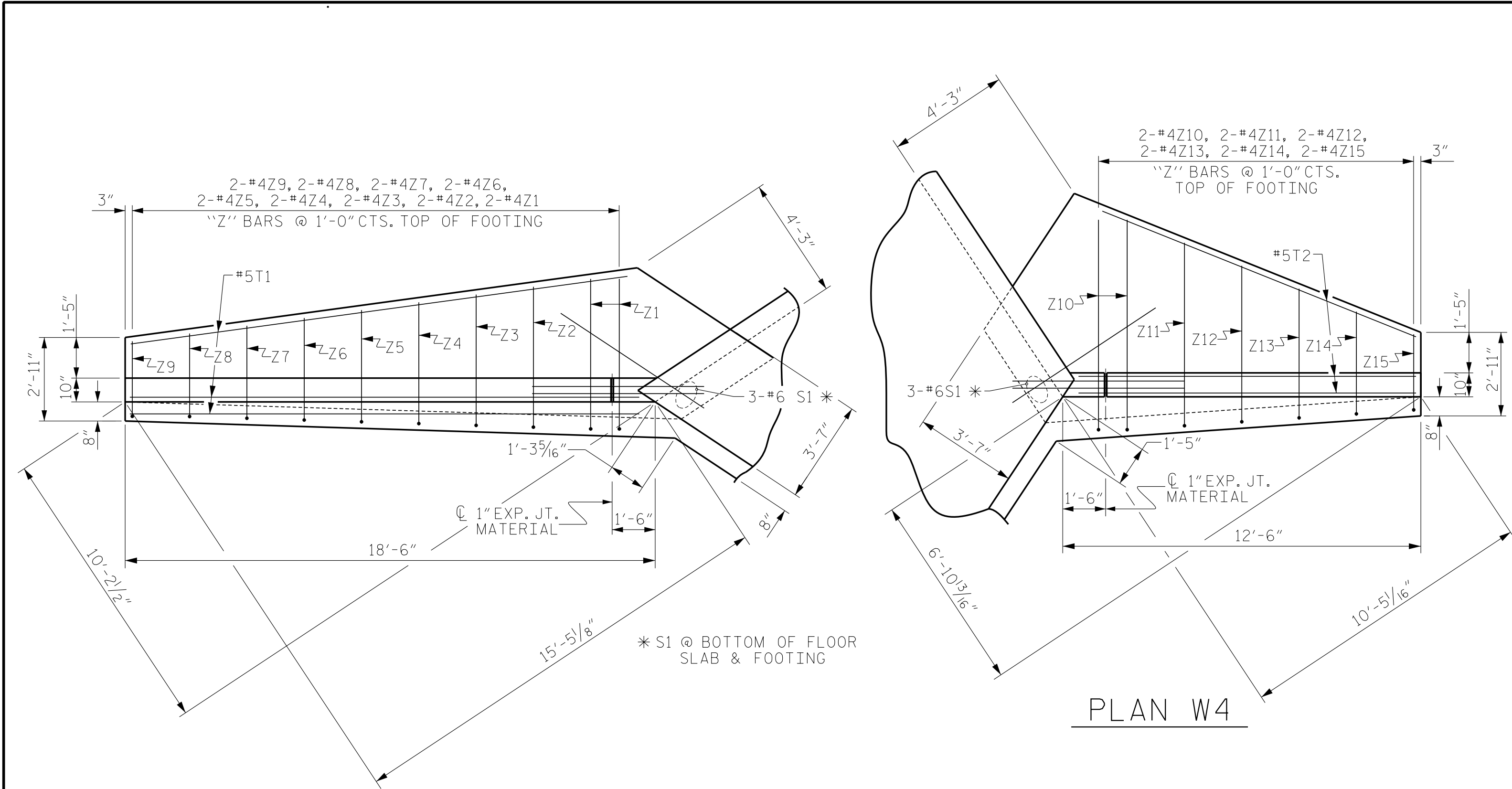
PITT COUNTY

STATION: 26+44.00 -L-

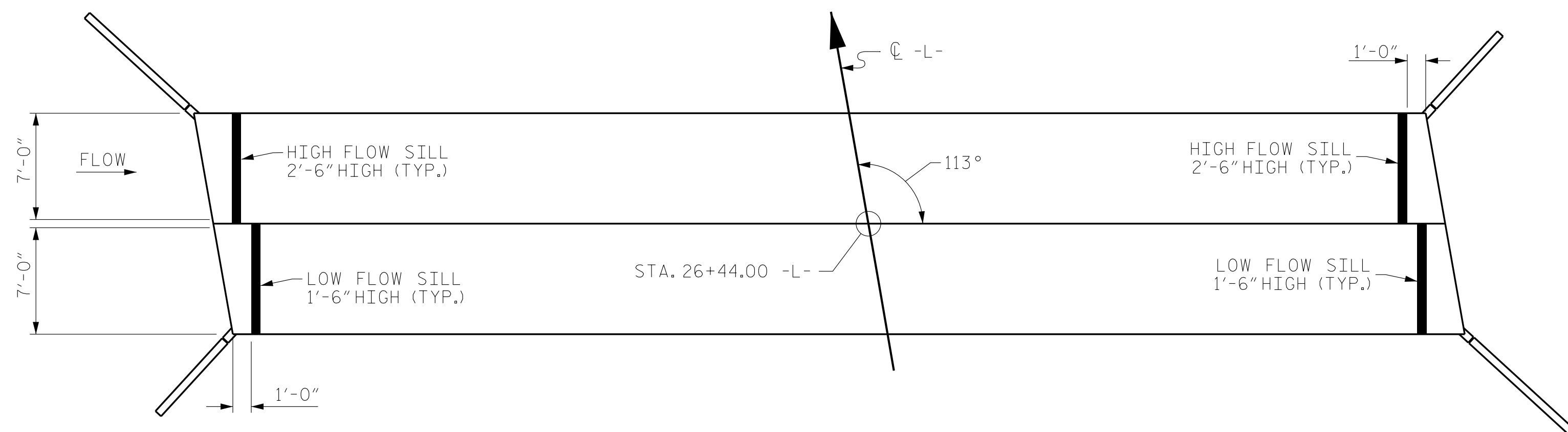
SHEET 9 OF 12

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
DOUBLE 7' X 6'
CONCRETE BOX CULVERT
W1 & W2 WING DETAILS
H= 7'-0" SLOPE= 3:1
113° SKEW

DSC. ENG. OF RECORD.: KHC		REVISIONS						SHEET NO.	
DWN. BY: WDC	DATE: 7/18	NO.	BY:	DATE:	NO.	BY:	DATE:	C1-9	
CHKD. BY: KHC	DATE: 7/18	1			3			TOTAL SHEETS	
		2			4			12	



BILL OF MATERIAL - W3						BILL OF MATERIAL - W4					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	6	#4	STR	16'-7"	66	H5	6	#4	STR	10'-7"	42
H2	2	#4	STR	10'-7"	14	H6	2	#4	STR	6'-8"	9
H3	2	#4	STR	16'-10"	22	H7	2	#4	STR	10'-11"	15
H4	10	#4	1	3'-3"	22	H8	10	#4	1	3'-3"	22
N1	2	#5	2	8'-7"	18	N11	2	#5	2	8'-6"	18
N2	1	#5	2	8'-5"	9	N12	1	#4	2	8'-3"	6
N3	2	#4	2	8'-1"	17	N13	2	#4	2	7'-9"	10
N4	2	#4	2	7'-9"	10	N14	2	#4	2	7'-3"	10
N5	2	#4	2	7'-5"	10	N15	2	#4	2	6'-10"	9
N6	2	#4	2	7'-1"	9	N16	2	#4	2	6'-4"	8
N7	2	#4	2	6'-9"	9	N17	2	#4	2	5'-10"	8
N8	2	#4	2	6'-5"	9						
N9	2	#4	2	6'-1"	8	S1	3	#6	STR	6'-0"	27
N10	2	#4	2	5'-10"	8						
						T2	3	#5	STR	11'-9"	37
S1	3	#6	STR	6'-0"	27						
						V11	2	#5	STR	6'-6"	14
T1	3	#5	STR	17'-9"	56	V12	1	#4	STR	6'-3"	4
						V13	2	#4	STR	5'-9"	8
V1	2	#5	STR	6'-6"	14	V14	2	#4	STR	5'-3"	7
V2	1	#5	STR	6'-4"	7	V15	2	#4	STR	4'-9"	6
V3	2	#5	STR	6'-0"	13	V16	2	#4	STR	4'-3"	6
V4	2	#4	STR	5'-9"	8	V17	2	#4	STR	3'-9"	5
V5	2	#4	STR	5'-5"	7						
V6	2	#4	STR	5'-1"	7	Z10	2	#4	3	7'-10"	10
V7	2	#4	STR	4'-9"	6	Z11	2	#4	3	6'-11"	9
V8	2	#4	STR	4'-5"	6	Z12	2	#4	3	6'-0"	8
V9	2	#4	STR	4'-1"	5	Z13	2	#4	3	5'-0"	7
V10	2	#4	STR	3'-9"	5	Z14	2	#4	3	4'-1"	5
						Z15	2	#4	3	3'-2"	4
Z1	2	#4	3	5'-9"	8						
Z2	2	#4	3	5'-5"	7						
Z3	2	#4	3	5'-1"	7						
Z4	2	#4	3	4'-9"	6						
Z5	2	#4	3	4'-5"	6						
Z6	2	#4	3	4'-1"	5						
Z7	2	#4	3	3'-9"	5						
Z8	2	#4	3	3'-5"	5						
Z9	2	#4	3	3'-1"	4						
REINFORCING STEEL FOR W3 WING						REINFORCING STEEL FOR W4 WING					
= 445 LBS						= 314 LBS					



CULVERT SILL LAYOUT

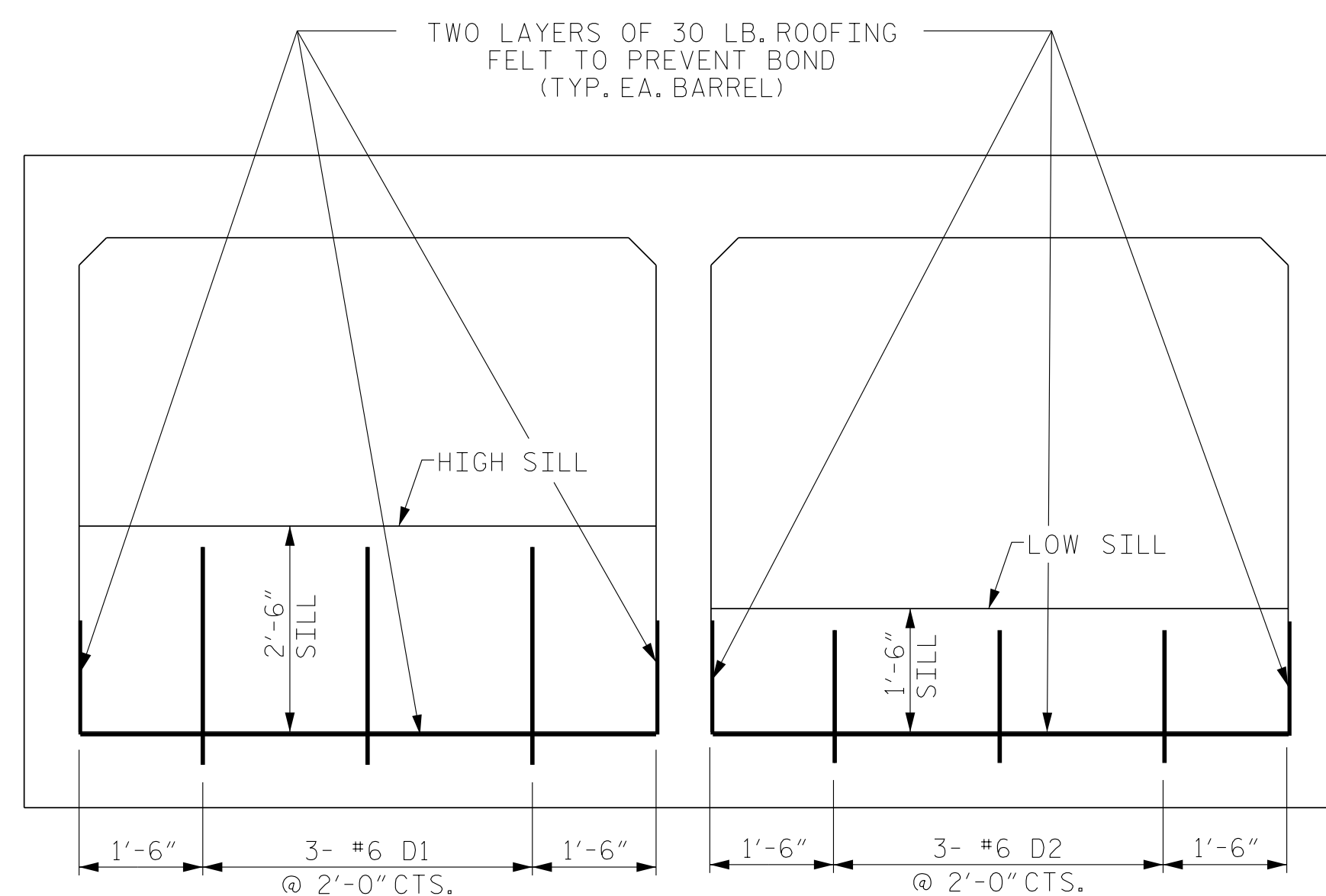
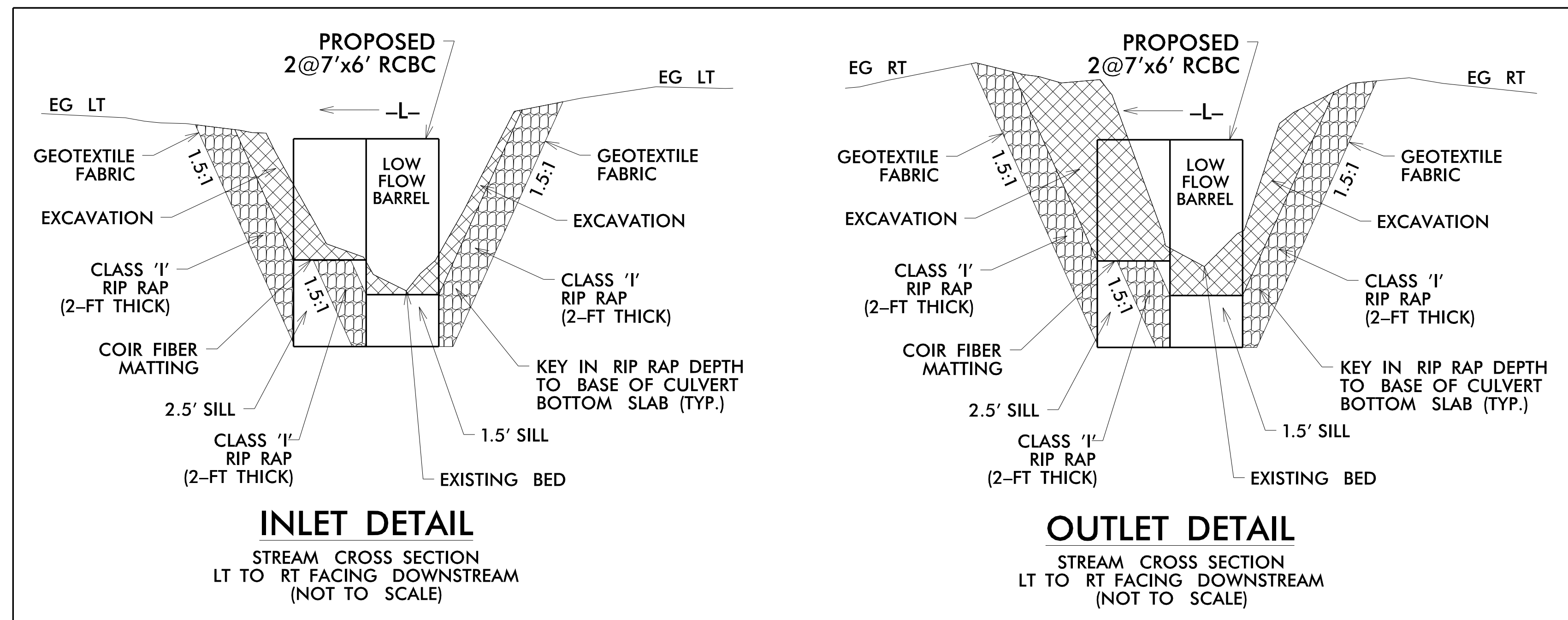
NOTES

SEE SHEET C1-12 FOR BAR SCHEDULE FOR DOWELS AND
FOR SILL CONCRETE QUANTITY.

EXCAVATE FLOODPLAIN BENCH 1.0' ABOVE STREAM BED TO MATCH WIDTH OF CULVERT. LAY BACK BANK SLOPES TO 1.5:1. LINE SLOPES WITH CLASS I RIP RAP BOULDERS AND LINE FLOODPLAIN BENCH WITH COIR FIBER MATTING.

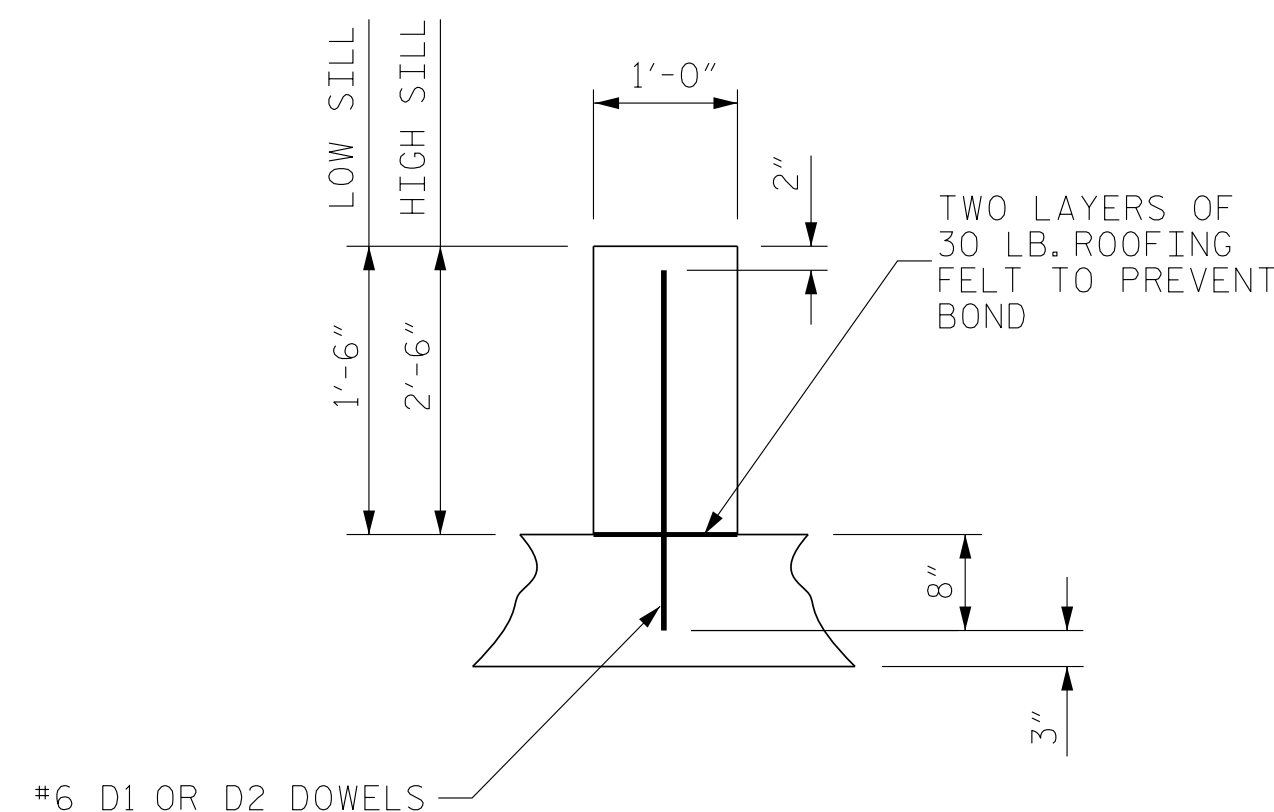
NATIVE BED MATERIAL SHALL BE PLACED BETWEEN THE SILLS IN THE LOW FLOW CULVERT. NATIVE MATERIALS CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED OR FLOODPLAIN AT THE PROJECT SITE DURING CULVERT CONSTRUCTION. RIP RAP MAY BE USED TO SUPPLEMENT THE NATIVE MATERIAL. IF RIP RAP IS USED, NATIVE MATERIAL SHOULD BE PLACED ON TOP TO FACILITATE ANIMAL PASSAGE. THE TOP SURFACE OF THE NATURAL STREAM BED MATERIAL SHALL BE PLACED AND LEVELED TO A FLAT SURFACE TO ALLOW FOR ANIMAL PASSAGE. THE HIGH FLOW BARRELS SHALL BE BACK FILLED WITH NATIVE MATERIAL AND/OR RIP RAP. NATIVE MATERIAL AND RIP RAP ARE SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.

BED MATERIALS: SAND, SILT, MUD, ORGANIC MATERIAL.



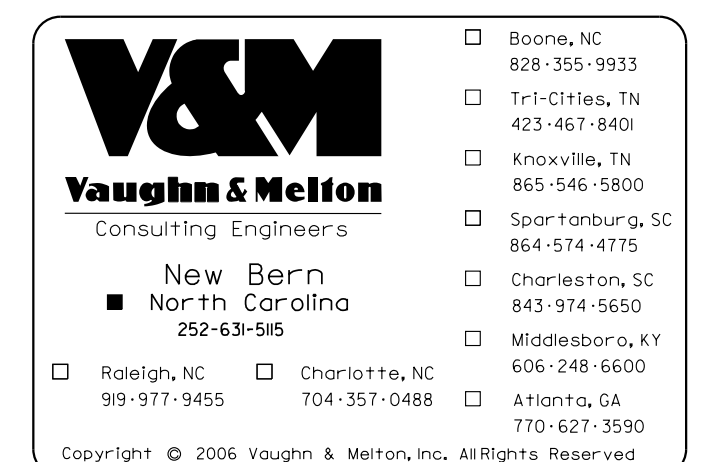
OUTLET END ELEVATION

LOOKING DOWNSTREAM



SECTION THROUGH SILL

DOWELS MAY BE PUSHED INTO GREEN CONCRETE
AFTER SLAB HAS BEEN FLOATED.



PROJECT NO. U-5875

PITT COUNTY

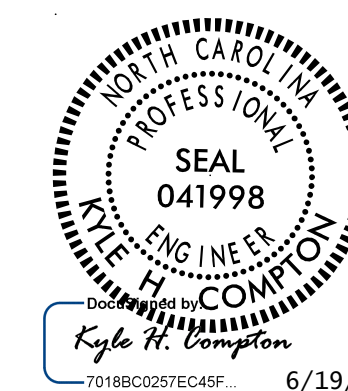
STATION: 26+44.00 -L-

SHEET 11 OF 12

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

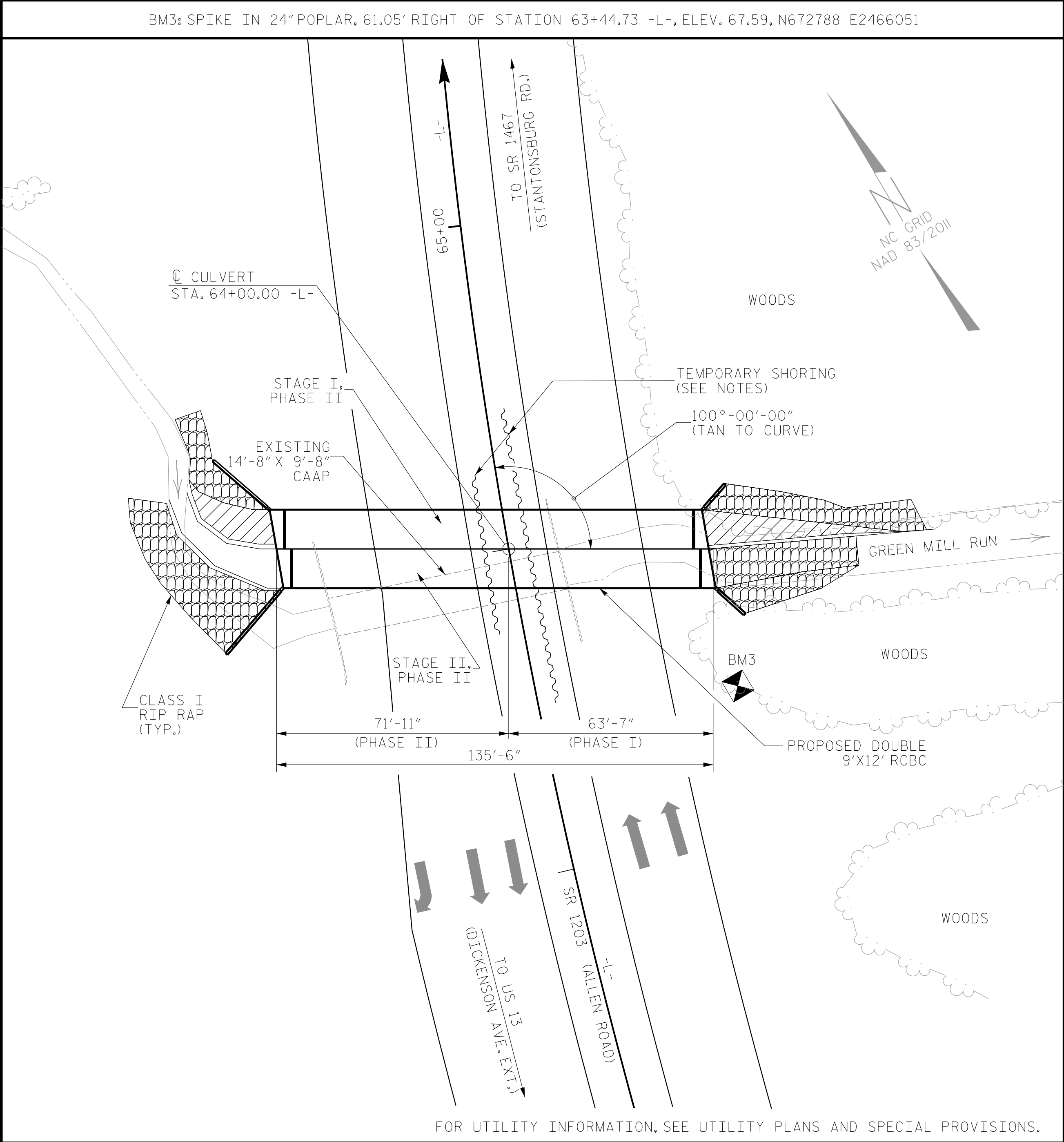
DOUBLE 7' X 6'
CONCRETE BOX CULVERT

SILL DETAILS

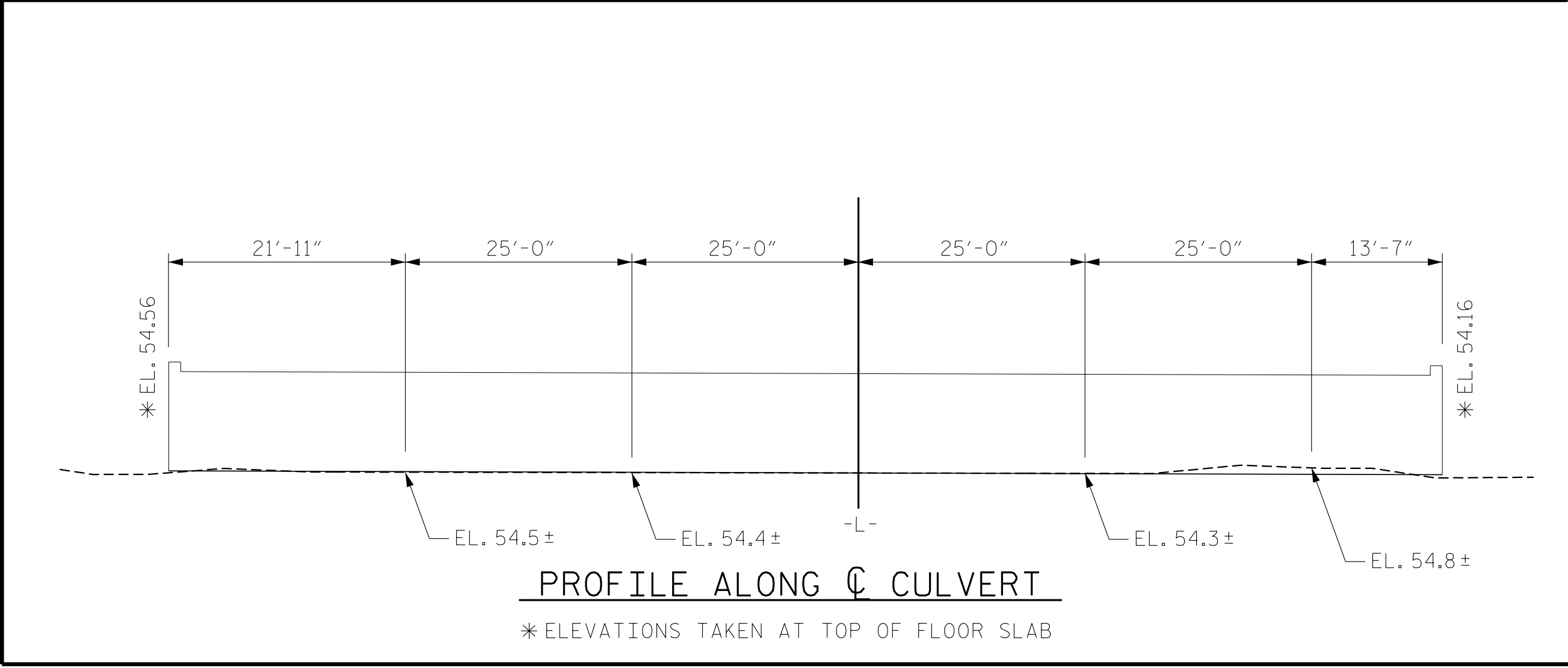


DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

DSG. ENG. OF RECORD.: KHC		REVISIONS						SHEET NO.
DWN. BY: WDC	DATE: 7/18	NO.	BY:	DATE:	NO.	BY:	DATE:	C1-11
CHKD. BY: KHC	DATE: 7/18	1			3			TOTAL SHEETS
		2			4			12



— LOCATION SKETCH —



NOTES

FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC MANAGEMENT PLAN.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

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

NO PRECAST REINFORCED BOX CULVERT OPTION WILL BE ALLOWED.

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.

EXCAVATE 1'-0" MIN. BENEATH CULVERT & WING FOOTING ELEVATIONS. REPLACE WITH FOUNDATION CONDITIONING MATERIAL IN ACCORDANCE WITH ARTICLE 414-4 OF THE STANDARD SPECIFICATIONS.

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

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

TOTAL STRUCTURE QUANTITIES			
CLASS A CONCRETE - PHASE I			
BARREL @	2.84	CY/FT	180.7 C.Y.
WING ETC.			27.0 C.Y.
SILL (BARREL 1)			0.4 C.Y. ★
SILL (BARREL 2)			0.9 C.Y. ★
CLASS A CONCRETE - PHASE II			
BARREL @	2.84	CY/FT	204.3 C.Y.
WING ETC.			29.5 C.Y.
SILL (BARREL 3)			0.9 C.Y. ★
SILL (BARREL 4)			0.4 C.Y. ★
TOTAL			444.1 C.Y.
REINFORCING STEEL - PHASE I			
BARREL			30,289 LBS.
WINGS ETC.			1,483 LBS.
REINFORCING STEEL - PHASE II			
BARREL			35,876 LBS.
WINGS ETC.			1,582 LBS.
TOTAL			69,230 LBS.
FOUNDATION CONDITIONING MAT'L.	135	TONS	PHASE I
FOUNDATION CONDITIONING MAT'L.	152	TONS	PHASE II
TOTAL			287 TONS
CLASS I RIP RAP (2'-0" THICK)	125	TONS	PHASE I
CLASS I RIP RAP (2'-0" THICK)	175	TONS	PHASE II
TOTAL			300 TONS
GEOTEXTILE FOR DRAINAGE	80	SQ. YDS.	PHASE I
GEOTEXTILE FOR DRAINAGE	115	SQ. YDS.	PHASE II
TOTAL			195 SQ. YDS.
COIR FIBER MATTING	40	SQ. YDS.	PHASE I
COIR FIBER MATTING	30	SQ. YDS.	PHASE II
TOTAL			70 SQ. YDS.
REMOVAL OF EXISTING STRUCTURE	LUMP	SUM	
CULVERT EXCAVATION	LUMP	SUM	

GRADE DATA

GRADE POINT ELEV. @ -L- STA. 64+00.00 = 68.84'

BED ELEV. @ -L- STA. 64+00.00 = 54.35'

ROADWAY SLOPES 3:1

HYDRAULIC DATA

DESIGN DISCHARGE = 600 CFS

FREQUENCY OF DESIGN DISCHARGE = 50 YRS

DESIGN HIGH WATER ELEVATION = 63.5 FT

DRAINAGE AREA = 1.6 SQ. MI

BASE DISCHARGE (Q100) = 650 CFS

BASE HIGH WATER ELEVATION = 63.7 FT

OVERTOPPING DATA

OVERTOPPING DISCHARGE = 2200 CFS

FREQUENCY OF OVERTOPPING = 500 (+) YRS

OVERTOPPING ELEVATION = 70.69 * FT

* HIGH SHOULDER AT SAG STA. 64+96.32 -L-



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DSG. ENG. OF RECORD.: KHC			
DWN. BY: WDC	DATE: 6/18		
CHKD. BY: KHC	DATE: 7/18		

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

DESIGN FILL----- 7'-8" MAX, 4'-9" MIN.

FOR OTHER DESIGN DATA AND NOTES SEE STANDARD NOTE SHEET.

3" $\varnothing$ WEEP HOLES INDICATED TO BE IN ACCORDANCE WITH THE SPECIFICATIONS.

CONCRETE IN PHASE I TO BE POURED IN THE FOLLOWING ORDER:

1. WING FOOTINGS AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS.
2. THE REMAINING PORTIONS OF THE WALLS AND WINGS FULL HEIGHT.
3. SILL IN BARREL 1 ONLY.
4. ROOF SLAB, EDGE BEAM, AND HEADWALL.

CONCRETE IN PHASE II TO BE POURED IN THE FOLLOWING ORDER:

1. BARREL 3 WING FOOTING AND FLOOR SLAB INCLUDING 4" OF VERTICAL WALLS.
2. THE REMAINING PORTIONS OF THE WALLS AND WINGS FULL HEIGHT.
3. BARREL 4 WING FOOTING AND FLOOR SLAB INCLUDING 4" OF VERTICAL WALL.
4. THE REMAINING PORTIONS OF THE WALL AND WING FULL HEIGHT.
5. BARREL 3 AND 4 ROOF SLAB AND HEADWALL.
6. SILL IN BARREL 4 ONLY.
7. SILL IN BARRELS 2 AND 3.

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.

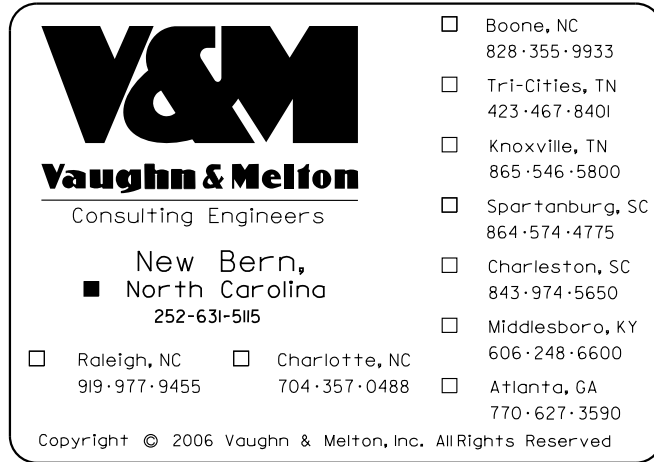
TRANSVERSE CONSTRUCTION JOINTS SHALL BE USED IN THE BARREL, SPACED TO LIMIT THE POURS TO A MAXIMUM OF 70 FT. LOCATION OF JOINTS SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER.

AT THE CONTRACTOR'S OPTION, HE MAY SPlice THE VERTICAL REINFORCING STEEL IN THE INTERIOR FACE OF EXTERIOR WALLS AND BOTH FACES OF INTERIOR 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 SPICES SHALL BE PAID FOR BY THE CONTRACTOR.

THE EXISTING STRUCTURE CONSISTING OF 14'-8" X 9'-8" CORRUGATED ALUMINUM ARCH CULVERT SHALL BE REMOVED.

REMOVAL OF THE EXISTING STRUCTURE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE STRUCTURE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

AT THE CONTRACTOR'S OPTION THE VERTICAL CONSTRUCTION JOINT BETWEEN THE OUTLET WINGS AND THE BARREL MAY BE ELIMINATED AND THE "C" BARS IN THE BARREL MAY BE EXTENDED TO REPLACE THE "D" AND "H" BARS IN THE WINGS AND SLAB.



PROJECT NO. U-5875

PITT COUNTY

STATION: 64+00.00 -L-

SHEET 1 OF 14

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DOUBLE 12' X 9'
CONCRETE BOX CULVERT
ON GREEN MILL RUN
UNDER SR 1203 (ALLEN ROAD) BETWEEN
US 13 AND SR 1467

REVISIONS

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

SHEET NO.

C2-1

TOTAL SHEETS

14

LOAD FACTORS:

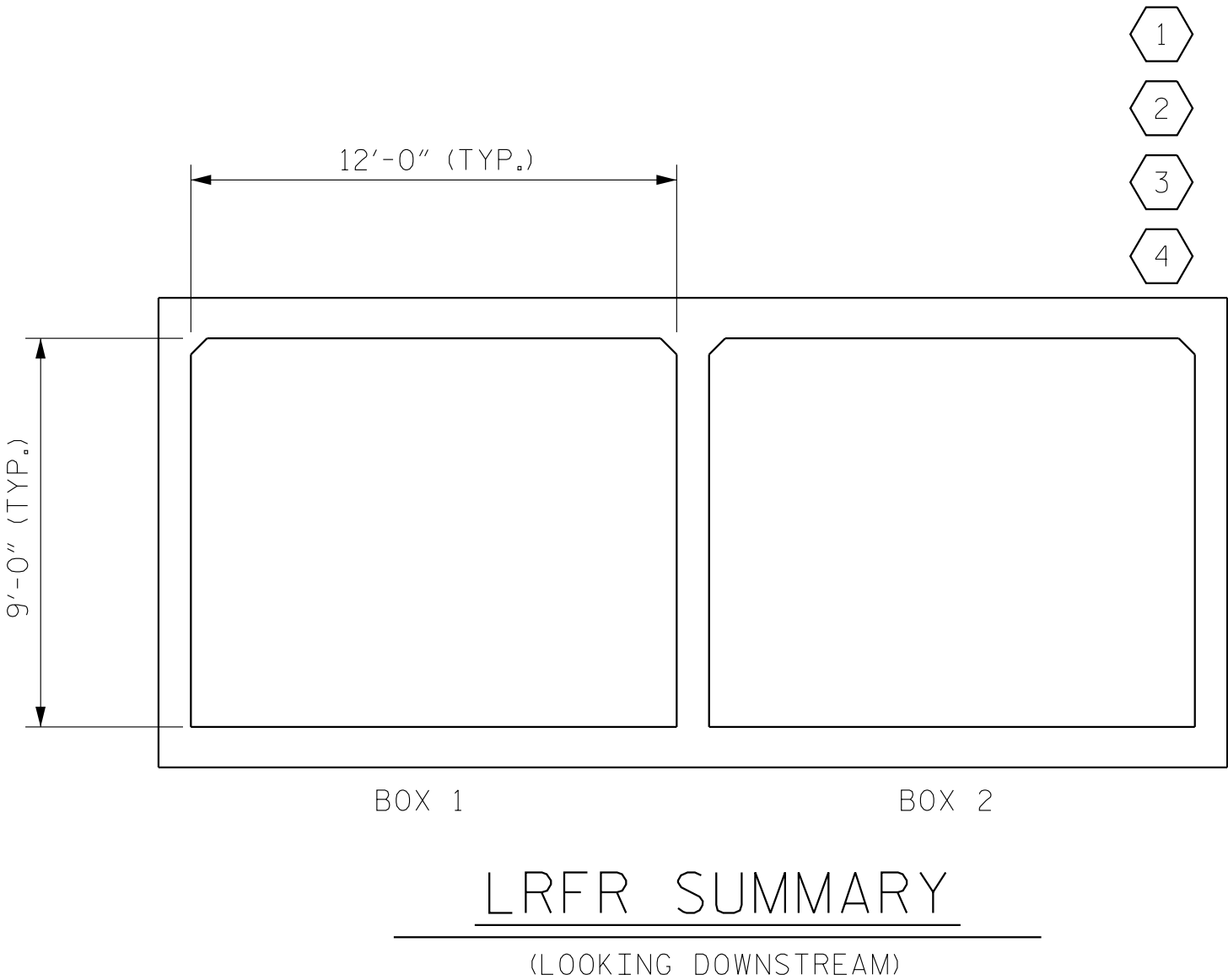
DESIGN LOAD RATING FACTORS		
LOAD TYPE	MAX FACTOR	MIN FACTOR
DC	1.25	0.90
DW	1.50	0.65
EV	1.30	0.90
EH	1.35	0.90
ES	1.35	0.90
LS	1.75	--
WA	1.00	--

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

COMMENTS:
1. ALL MEASUREMENTS ARE TAKEN FROM THE CENTER OF WALL AND CENTER OF SLAB OF THE BOX NUMBER INDICATED. WALL MEASUREMENTS TAKEN FROM THE CENTER OF BOTTOM SLAB.

#	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

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR REINFORCED CONCRETE BOX CULVERTS															
LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W × RF	STRENGTH I LIMIT STATE									COMMENT NUMBER
						LIVE-LOAD, FACTORS (γ _{LL})	MOMENT				SHEAR				
							RATING FACTOR	BOX NO.	ELEMENT TYPE	DISTANCE FROM LEFT END OF ELEMENT (ft)	RATING FACTOR	BOX NO.	ELEMENT TYPE	DISTANCE FROM LEFT END OF ELEMENT (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	1	1.10	--	1.75	1.35	2	TOP SLAB	24.67	1.10	2	TOP SLAB	24.67	1
	HL-93 (OPERATING)	N/A		1.43	--	1.35	1.75	2	TOP SLAB	24.67	1.43	2	TOP SLAB	24.67	
	HS-20 (INVENTORY)	36.000	2	1.15	41.40	1.75	1.30	2	TOP SLAB	24.67	1.15	2	TOP SLAB	24.67	
	HS-20 (OPERATING)	36.000		1.48	53.28	1.35	1.69	2	TOP SLAB	24.67	1.48	1	TOP SLAB	5.4	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH		2.39	32.27	1.40	2.68	1	TOP SLAB	5.4	2.39	2	TOP SLAB	24.67	
		SNGARBS2		2.19	43.80	1.40	2.51	1	TOP SLAB	5.4	2.19	2	TOP SLAB	24.67	
		SNAGRIS2		2.31	50.82	1.40	2.36	2	TOP SLAB	24.67	2.31	2	TOP SLAB	24.67	
		SNCOTTS3	3	1.32	35.97	1.40	1.59	1	TOP SLAB	5.4	1.32	2	TOP SLAB	24.67	
		SNAGGRS4		1.45	50.64	1.40	1.75	2	TOP SLAB	24.67	1.45	2	TOP SLAB	24.67	
		SNS5A		1.63	57.95	1.40	1.86	2	TOP SLAB	24.67	1.63	2	TOP SLAB	24.67	
		SNS6A		1.39	55.53	1.40	1.71	2	TOP SLAB	24.67	1.39	2	TOP SLAB	24.67	
		SNS7B		1.36	57.12	1.40	1.66	2	TOP SLAB	24.67	1.36	2	TOP SLAB	24.67	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3		1.85	61.05	1.40	2.16	2	TOP SLAB	24.67	1.85	2	BOT. SLAB	24.67	
		TNT4A		1.51	49.94	1.40	1.90	1	TOP SLAB	5.4	1.51	2	TOP SLAB	24.67	
		TNT6A		1.40	58.24	1.40	1.71	2	TOP SLAB	24.67	1.40	2	TOP SLAB	24.67	
		TNT7A		1.48	62.16	1.40	1.71	2	TOP SLAB	24.67	1.48	2	TOP SLAB	24.67	
		TNT7B		1.42	59.64	1.40	1.82	2	TOP SLAB	24.67	1.42	2	TOP SLAB	24.67	
		TNAGRIT4		1.41	60.63	1.40	1.66	2	TOP SLAB	24.67	1.41	2	BOT. SLAB	24.67	
		TNAGRT5A		1.46	65.70	1.40	1.65	2	TOP SLAB	24.67	1.46	2	TOP SLAB	24.67	
		TNAGRT5B		1.39	62.55	1.40	1.41	1	TOP SLAB	5.4	1.39	2	TOP SLAB	24.67	
EMERGENCY VEHICLE (EV)	EV2		1.70	48.88	1.30	1.99	1	TOP SLAB	5.4	1.70	2	TOP SLAB	24.67		
	EV3		4	1.19	51.17	1.30	1.39	1	TOP SLAB	5.4	1.19	2	TOP SLAB	24.67	



PROJECT NO. U-5875
PITT COUNTY
STATION: 64+00.00 -L-

SHEET 2 OF 14

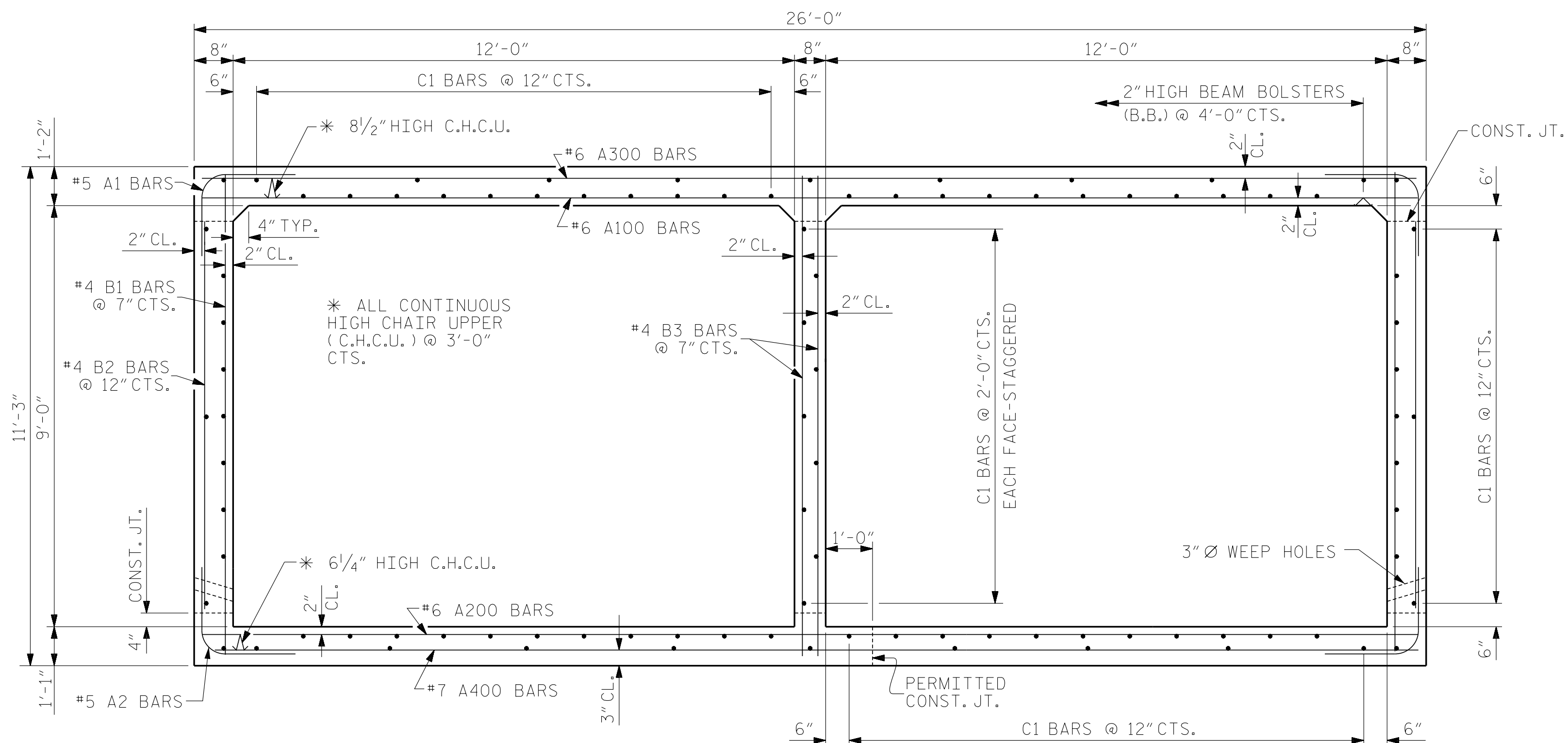


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SIGNATURES COMPLETED

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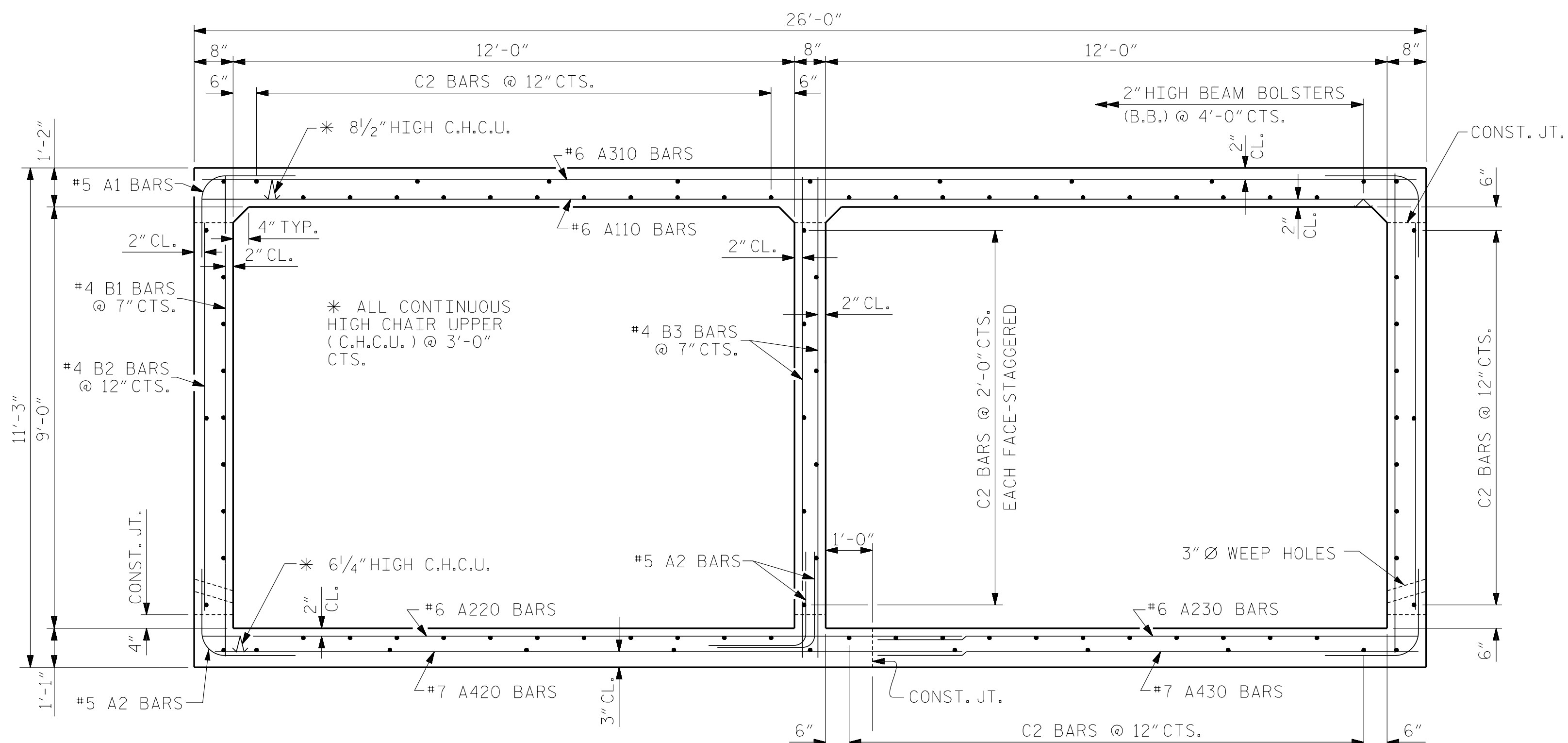
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LRFR SUMMARY FOR REINFORCED CONCRETE BOX CULVERTS (NON-INTERSTATE TRAFFIC)						
REVISIONS						SHEET NO. C2-2
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 14
1			3			
2			4			

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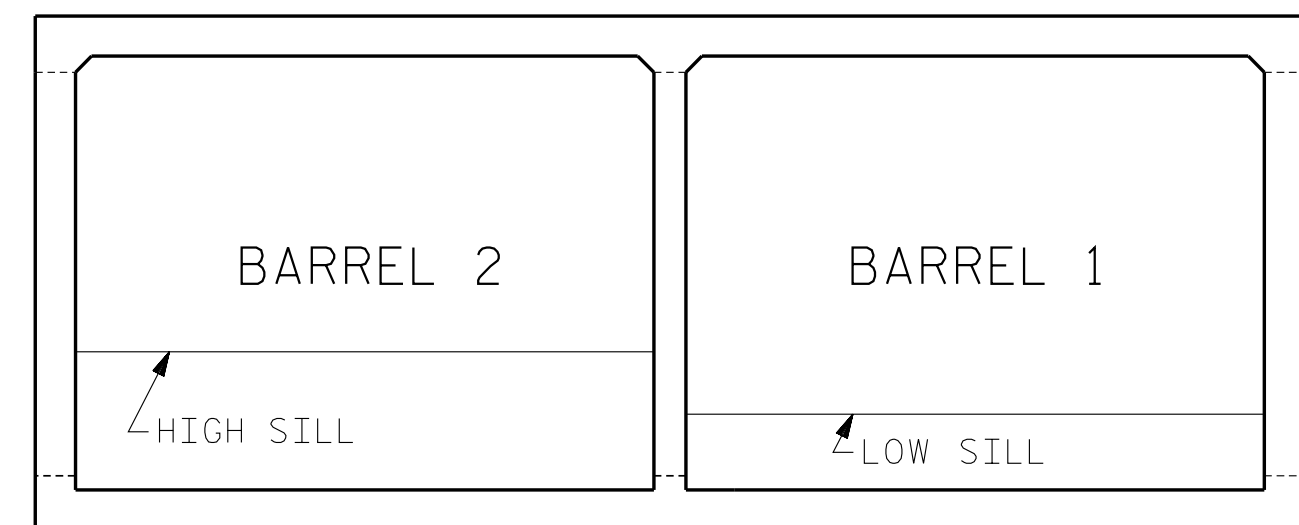
RIGHT ANGLE SECTION OF BARREL - PHASE I

LOOKING DOWNSTREAM
THERE ARE 95 "C" BARS IN PHASE I



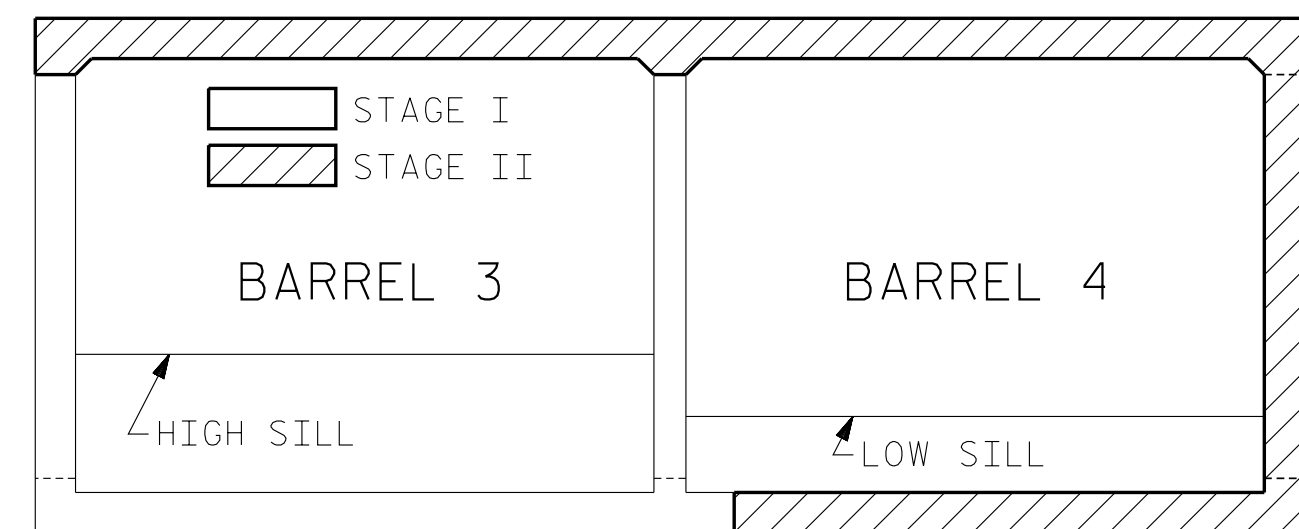
RIGHT ANGLE SECTION OF BARREL - PHASE II

LOOKING DOWNSTREAM
THERE ARE 37 "C" BARS IN STAGE I SECTION OF BARREL.
THERE ARE 58 "C" BARS IN STAGE II SECTION OF BARREL.



PHASE I

LOOKING DOWNSTREAM
(SEE SHEET C2-13 FOR SILL DETAILS)



PHASE II - STAGE I & II

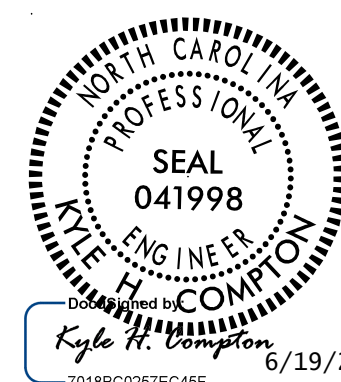
LOOKING DOWNSTREAM
(SEE SHEET C2-13 FOR SILL DETAILS)

PROJECT NO. U-5875

PITT COUNTY

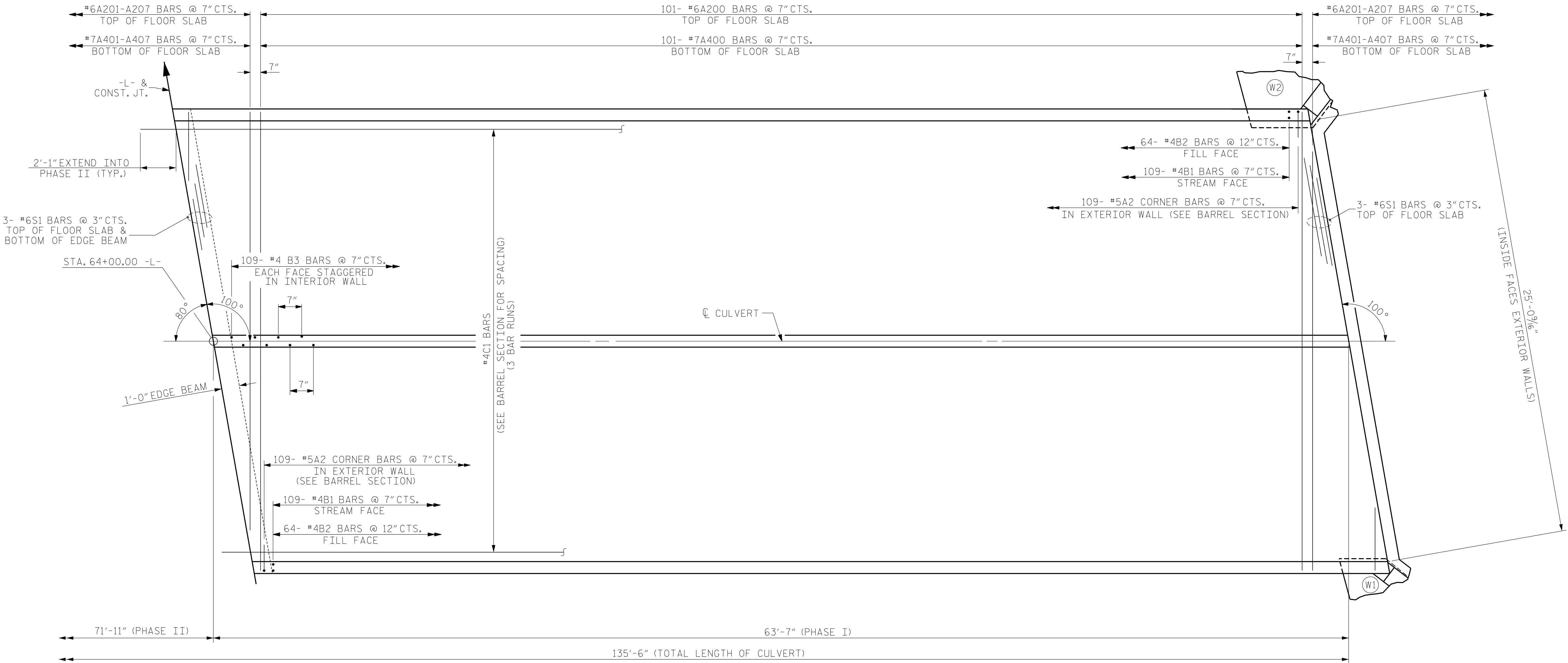
STATION: 64+00.00 -L-

SHEET 4 OF 14



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FINAL UNLESS ALL
SIGNATURES COMPLETED

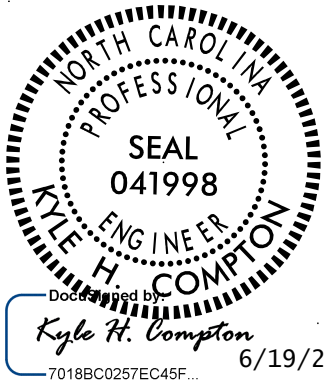
DSG. ENG. OF RECORD.: KHC		REVISIONS						SHEET NO.	
DWN. BY: WDC		DATE: 6/18		NO.		BY:		DATE:	
CHKD. BY: KHC		DATE: 7/18		NO.		BY:		DATE:	
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				7		8		9	
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				202		203		204	



FLOOR PLAN
(SEE SHEET C2-13 FOR SILLS IN BARRELS)

PROJECT NO. U-5875
PITT COUNTY
STATION: 64+00.00 -L-

SHEET 5 OF 14



DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
DOUBLE 12' X 9' CONCRETE BOX CULVERT (PHASE I)					
DSG. ENG. OF RECORD.: KHC			REVISIONS		
DWN. BY: WDC			NO.	BY:	DATE:
CHKD. BY: KHC			1		
			2		
			3		
			4		
DATE: 6/18			DATE: 7/18		
SHEET NO. C2-5			TOTAL SHEETS 14		

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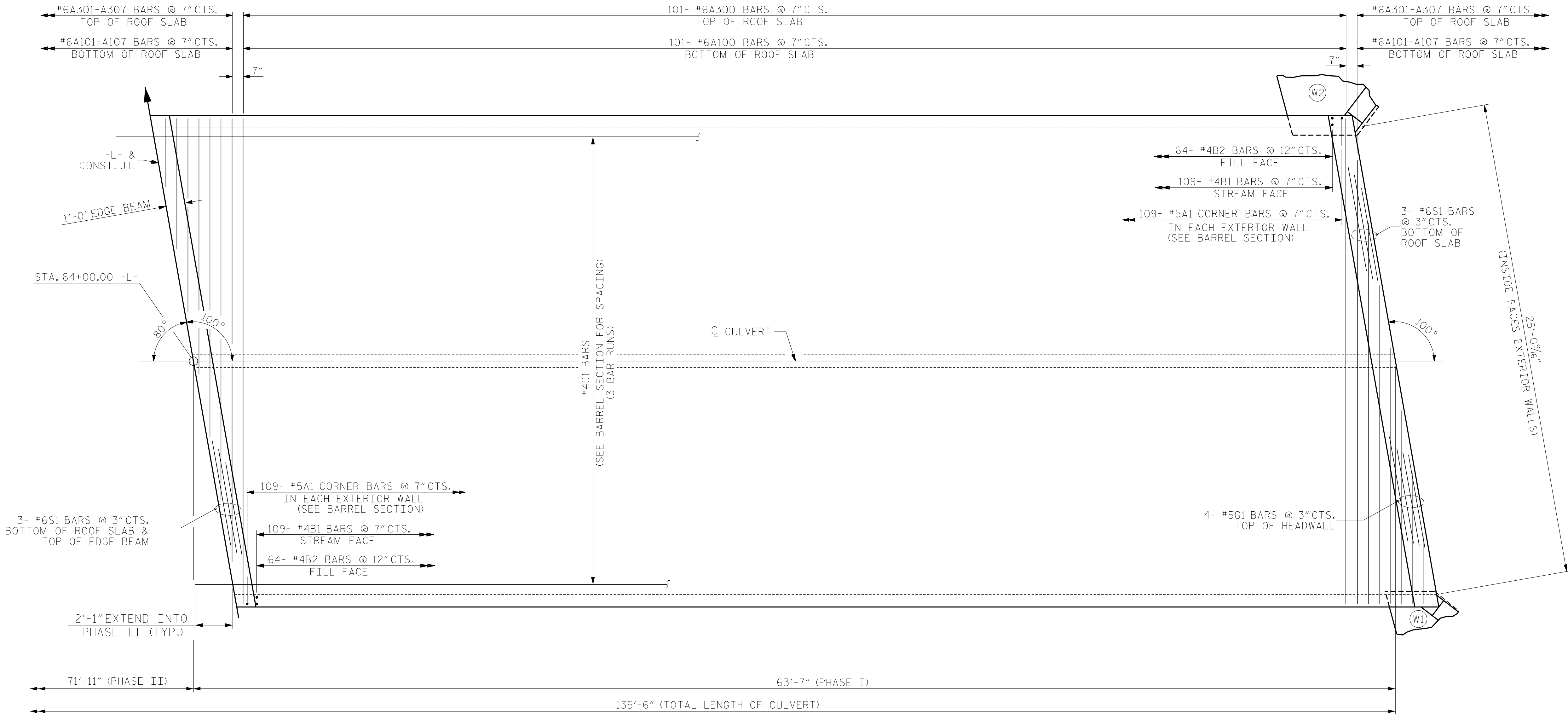
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ROOF PLAN

PROJECT NO. U-5875

PITT COUNTY

STATION: 64+00.00 -L-

SHEET 6 OF 14

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DOUBLE 12' X 9'
CONCRETE BOX CULVERT

(PHASE I)



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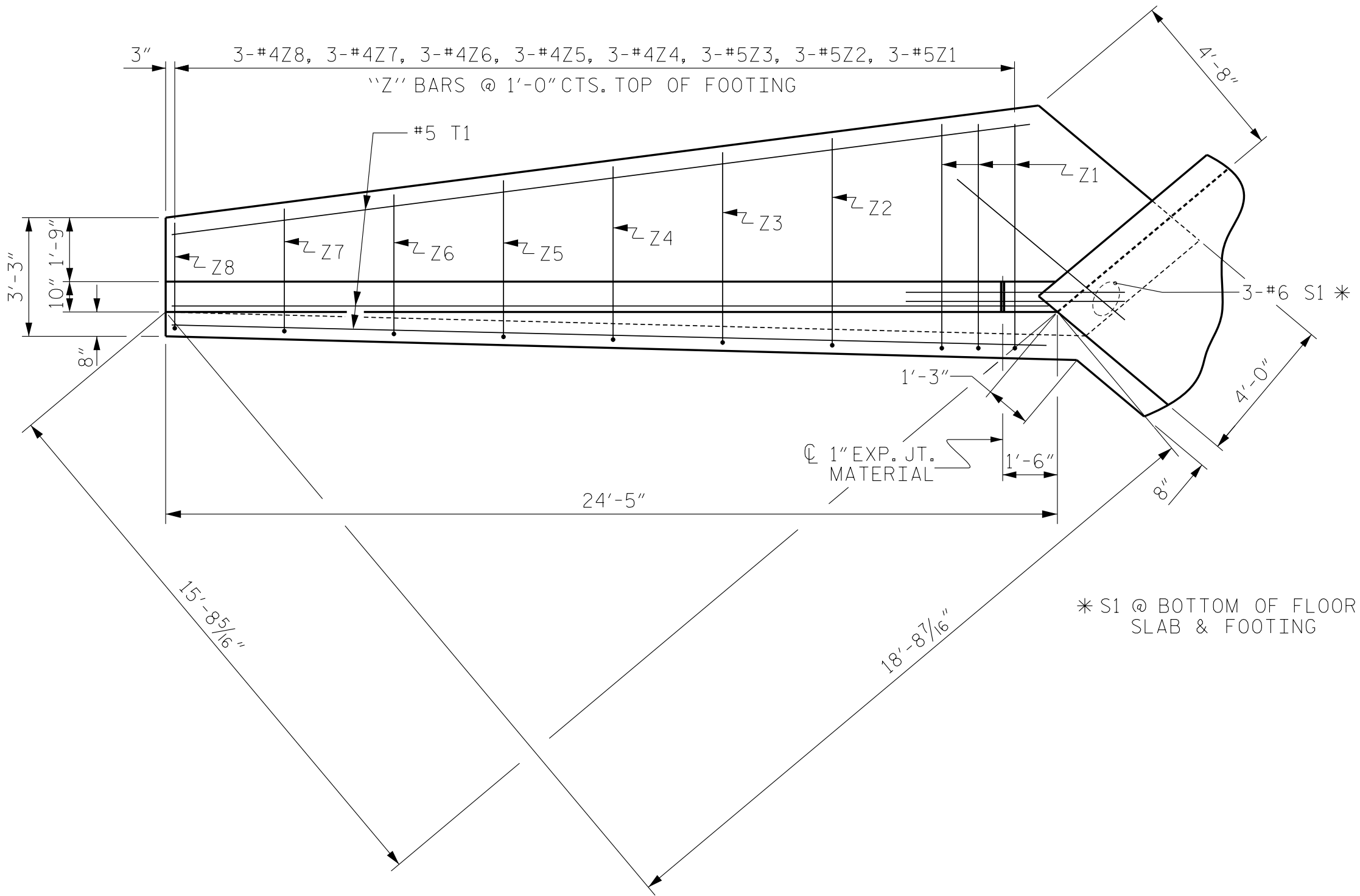
PITT COUNTY

SHEET 7 OF 14

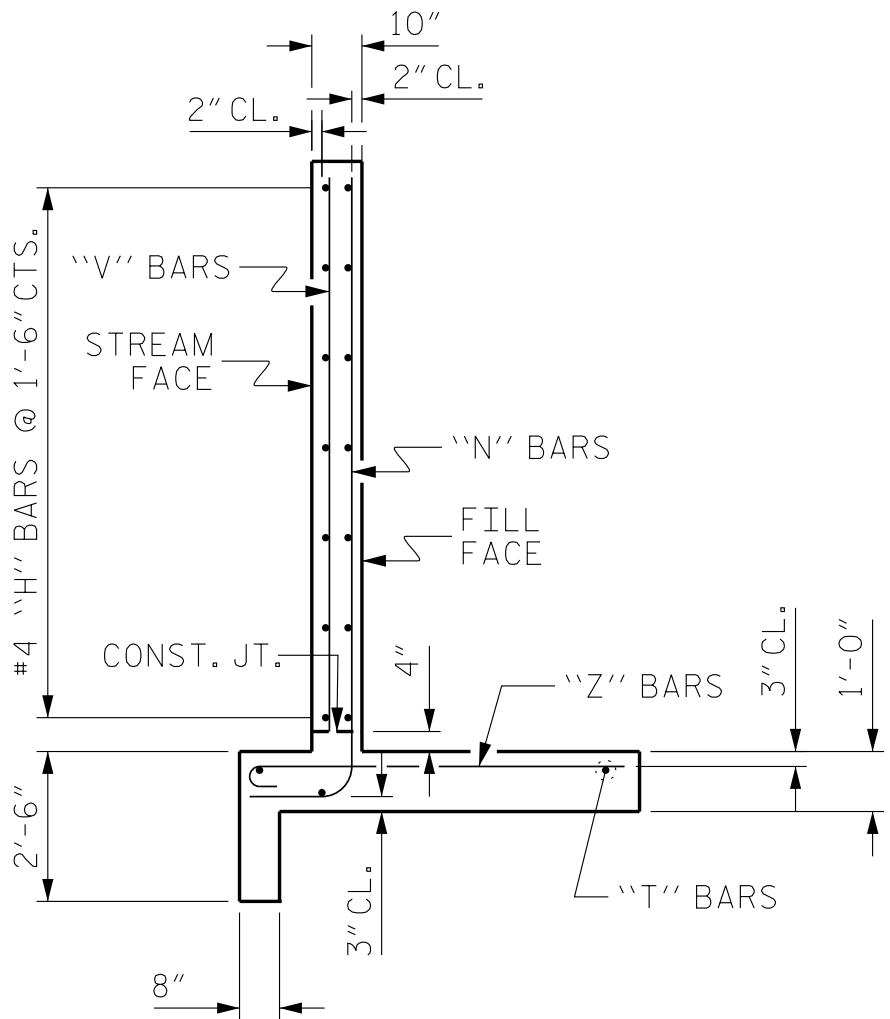


DOUBLE 12' X 9'
CONCRETE BOX CULVERT

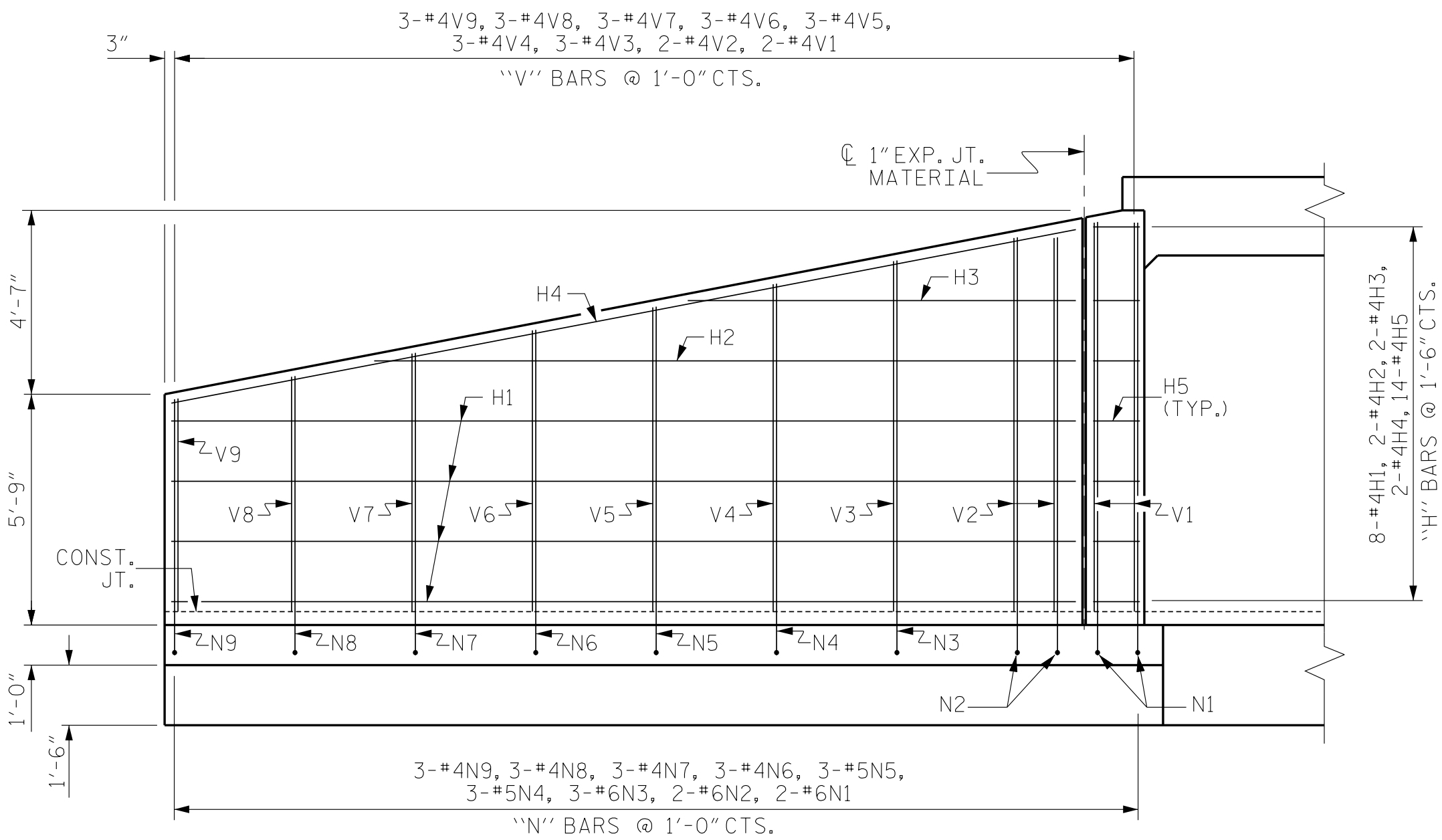
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PLAN W1



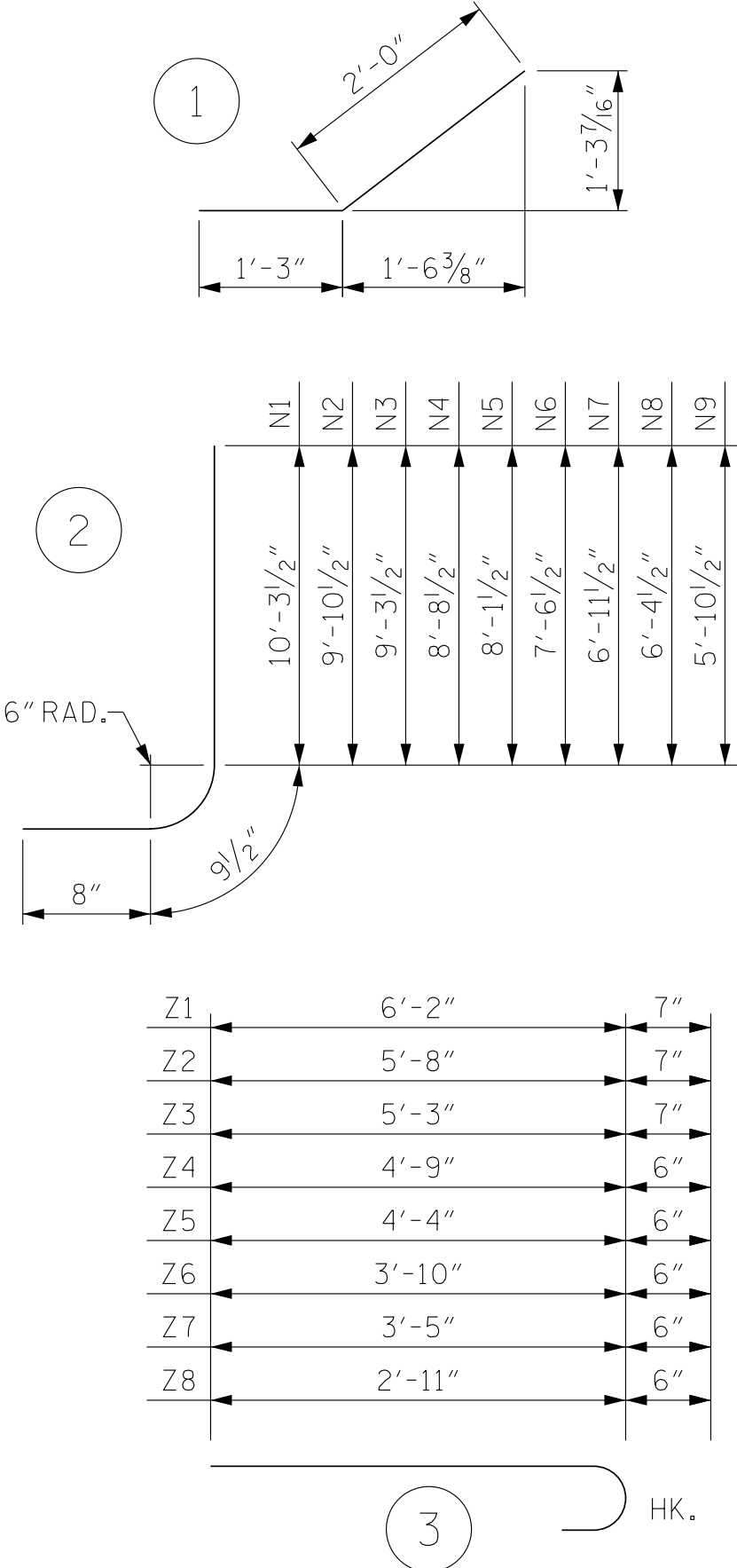
TYPICAL WING SECTION



ELEVATION W1

BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT.



BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	8	#4	STR	22'-6"	120
H2	2	#4	STR	17'-5"	23
H3	2	#4	STR	9'-8"	13
H4	2	#4	STR	22'-11"	31
H5	14	#4	1	3'-3"	30
N1	2	#6	2	11'-9"	35
N2	2	#6	2	11'-4"	34
N3	3	#6	2	10'-9"	48
N4	3	#5	2	10'-2"	32
N5	3	#5	2	9'-11"	30
N6	3	#4	2	9'-0"	18
N7	3	#4	2	8'-5"	17
N8	3	#4	2	7'-10"	16
N9	3	#4	2	7'-4"	15
S1	3	#6	STR	6'-0"	27
T1	3	#5	STR	24'-0"	75
V1	2	#5	STR	9'-8"	13
V2	2	#4	STR	9'-3"	12
V3	3	#4	STR	8'-8"	17
V4	3	#4	STR	8'-2"	16
V5	3	#4	STR	7'-7"	15
V6	3	#4	STR	6'-10"	14
V7	3	#4	STR	6'-5"	13
V8	3	#4	STR	5'-10"	12
V9	3	#4	STR	5'-3"	11
Z1	3	#5	3	6'-9"	21
Z2	3	#5	3	6'-3"	20
Z3	3	#5	3	5'-10"	18
Z4	3	#4	3	5'-3"	11
Z5	3	#4	3	4'-10"	10
Z6	3	#4	3	4'-4"	9
Z7	3	#4	3	3'-11"	8
Z8	3	#4	3	3'-5"	7
REINFORCING STEEL FOR W1 WING				= 791 LBS	

PROJECT NO. U-5875

PITT COUNTY

STATION: 64+00.00 -L-

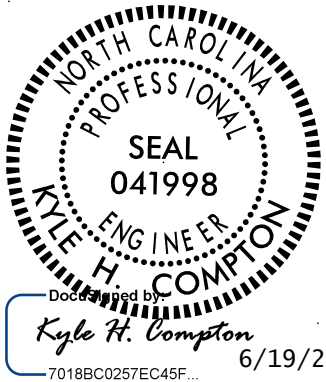
SHEET 9 OF 14

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DOUBLE 12' X 9'
CONCRETE BOX CULVERT

W1 WING DETAILS

H= 9'-0" SLOPE= 3:1
100° SKEW



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DWN. BY: WDC	DATE: 6/18	NO.	BY:	DATE:	NO.	BY:	DATE:	C2-9	
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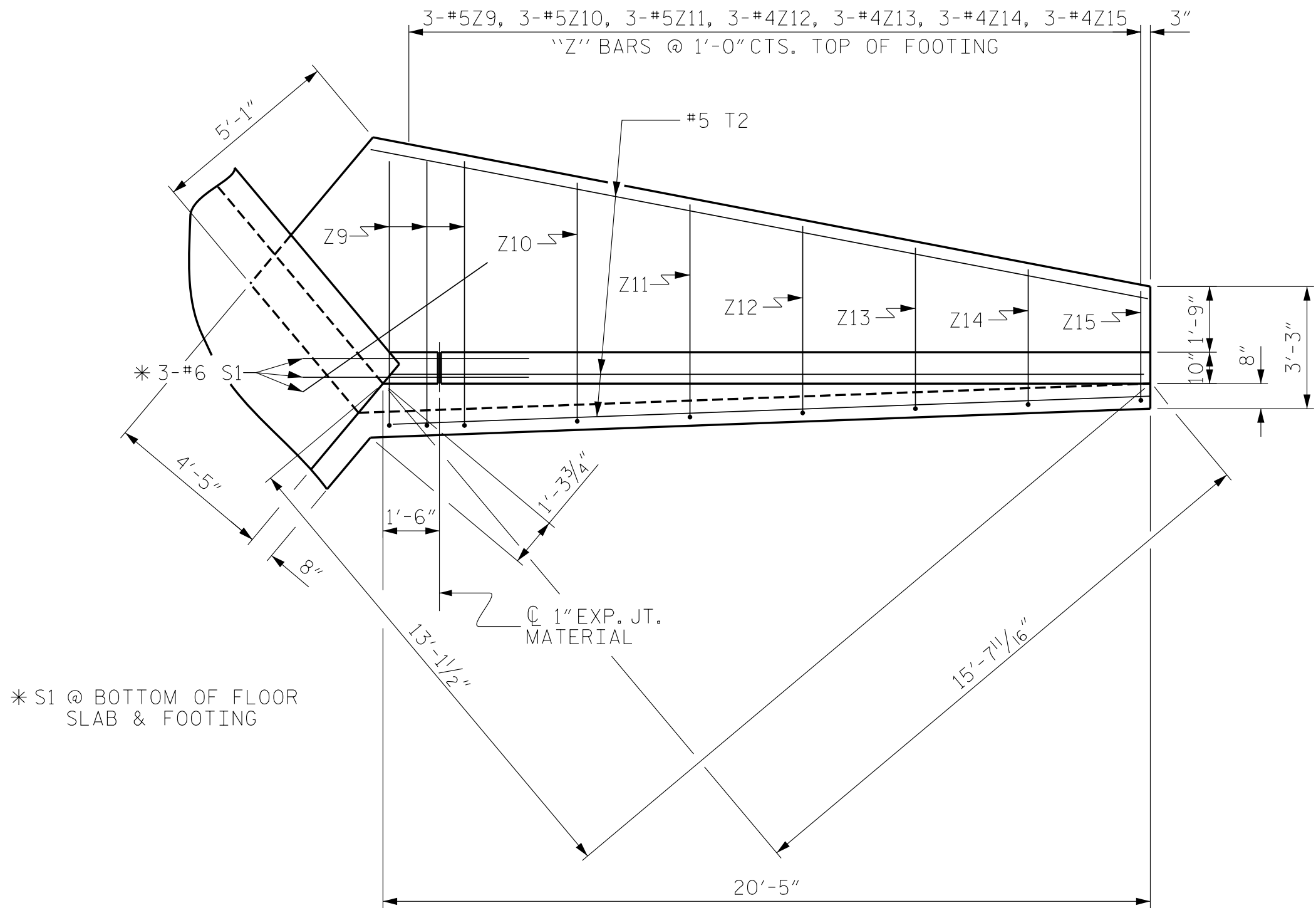
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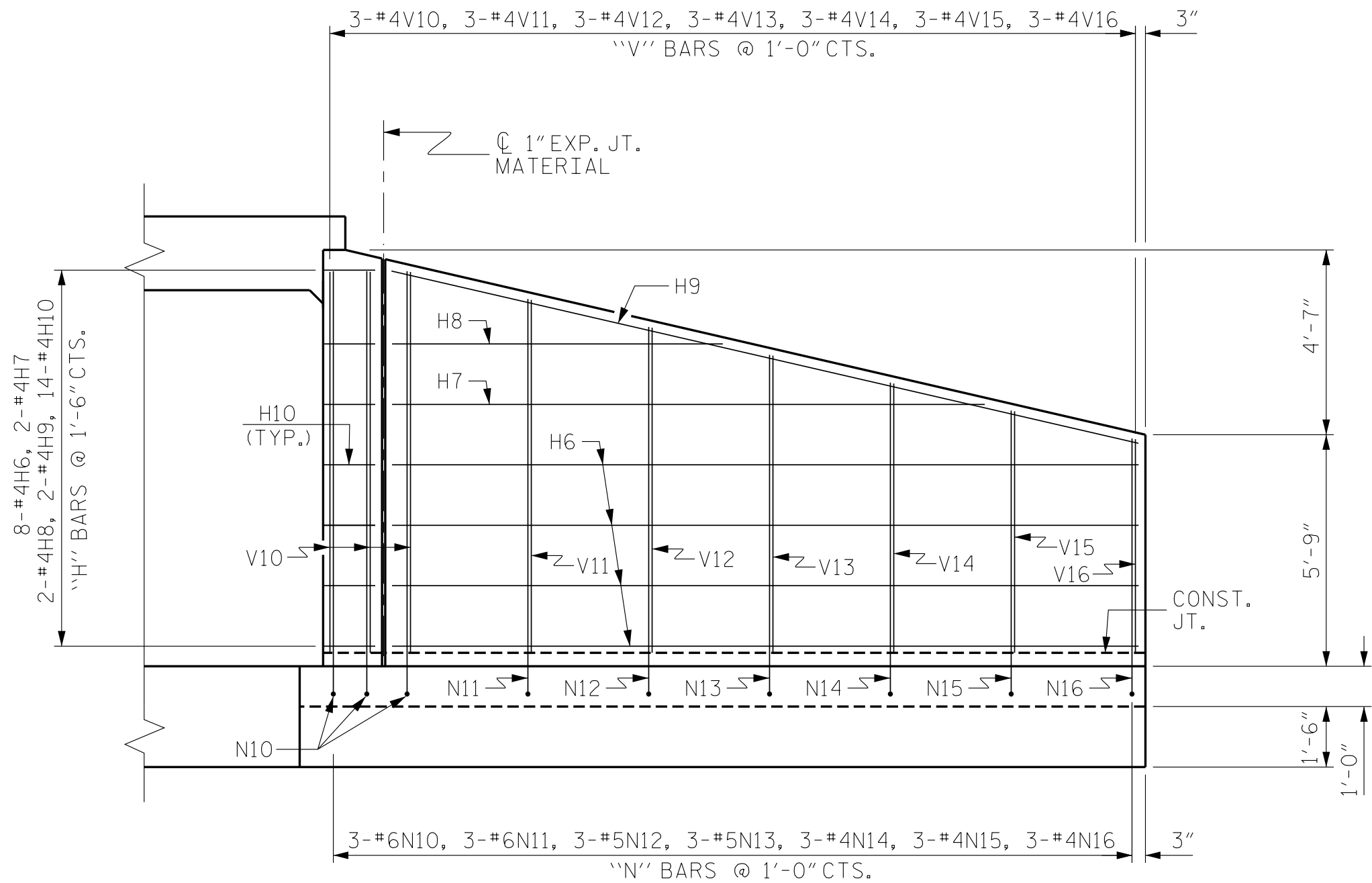
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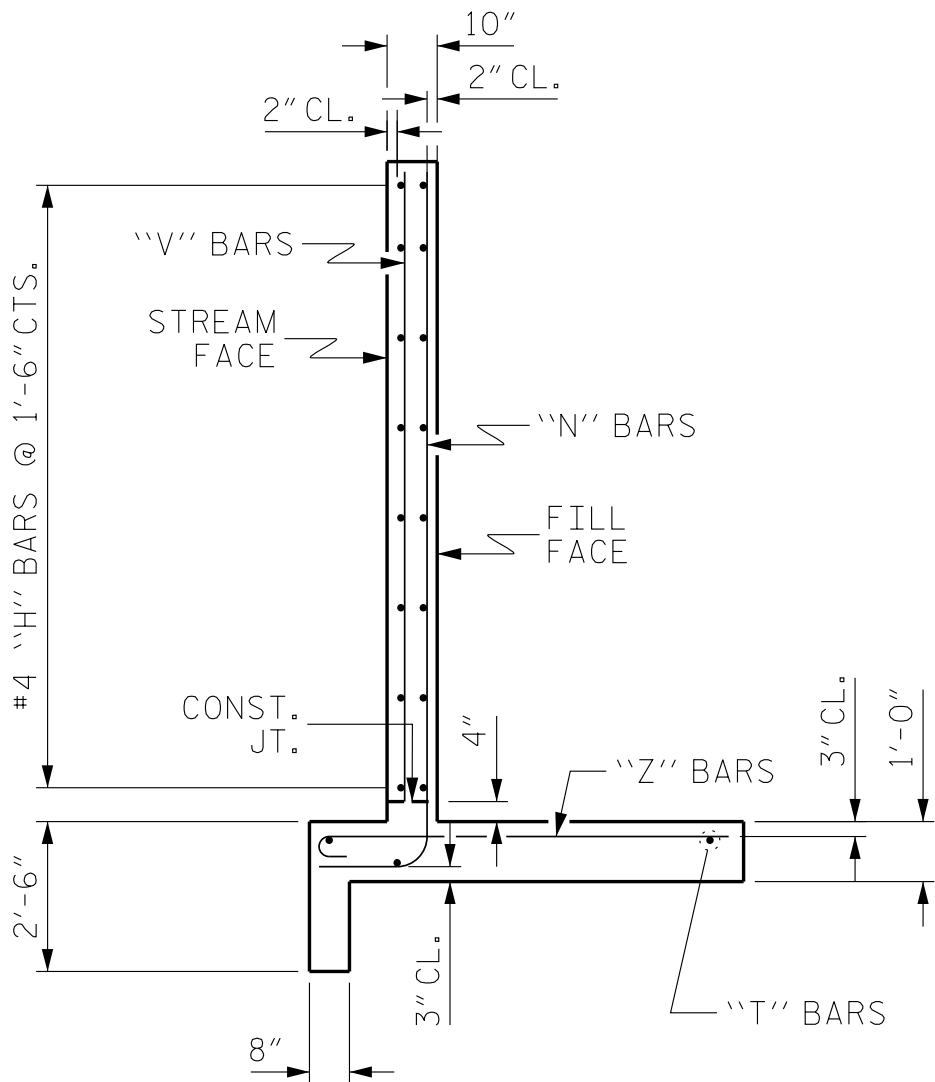
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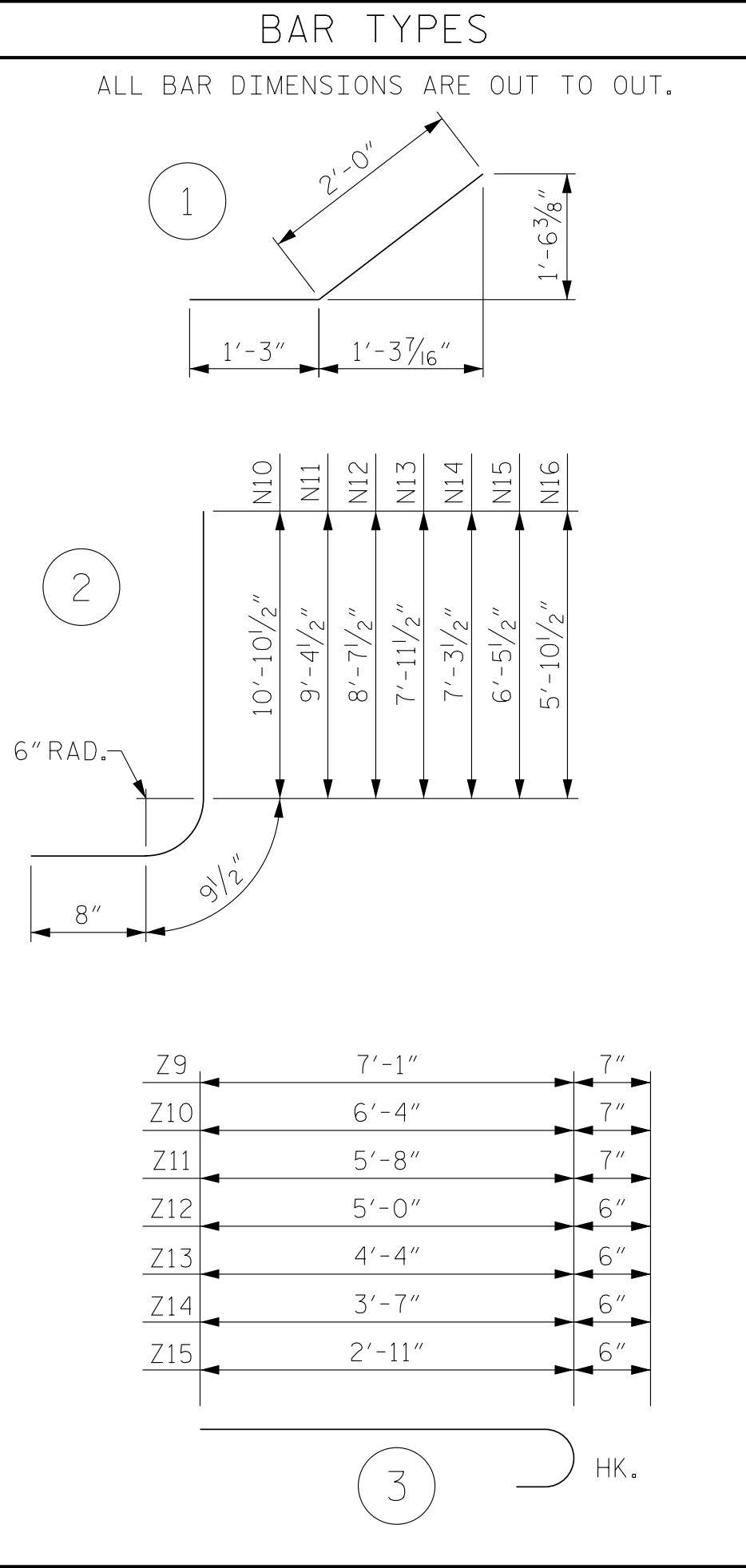
PLAN W2



ELEVATION W2



TYPICAL WING SECTION



BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H6	8	#4	STR	18'-6"	99
H7	2	#4	STR	14'-8"	20
H8	2	#4	STR	8'-2"	11
H9	2	#4	STR	19'-0"	25
H10	14	#4	1	3'-3"	30
N10	3	#6	2	11'-6"	52
N11	3	#6	2	10'-10"	49
N12	3	#5	2	10'-1"	32
N13	3	#5	2	9'-5"	29
N14	3	#4	2	8'-9"	18
N15	3	#4	2	8'-0"	16
N16	3	#4	2	7'-4"	15
S1	3	#6	STR	6'-0"	27
T2	3	#5	STR	20'-0"	63
V10	3	#4	STR	9'-5"	19
V11	3	#4	STR	8'-9"	18
V12	3	#4	STR	8'-0"	16
V13	3	#4	STR	7'-4"	15
V14	3	#4	STR	6'-8"	13
V15	3	#4	STR	6'-0"	12
V16	3	#4	STR	5'-3"	11
Z9	3	#5	3	7'-8"	24
Z10	3	#5	3	6'-11"	22
Z11	3	#5	3	6'-3"	20
Z12	3	#4	3	5'-6"	11
Z13	3	#4	3	4'-10"	10
Z14	3	#4	3	4'-1"	8
Z15	3	#4	3	3'-5"	7

REINFORCING STEEL = 692 LBS FOR W2 WING

PHASE I WING QUANTITIES			
CLASS A CONCRETE			
W1 WING & FOOTING	10.8	CY	
W2 WING & FOOTING	9.9	CY	
1 HEADWALL	1.2	CY	
1 END CURTAIN WALL	3.1	CY	
2 EDGE BEAMS	2.0	CY	
TOTAL	27.0	CY	
REINFORCING STEEL			
W1 WING & FOOTING	791	LBS	
W2 WING & FOOTING	692	LBS	
TOTAL	1483	LBS	

PROJECT NO. U-5875

PITT COUNTY

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SHEET 10 OF 14



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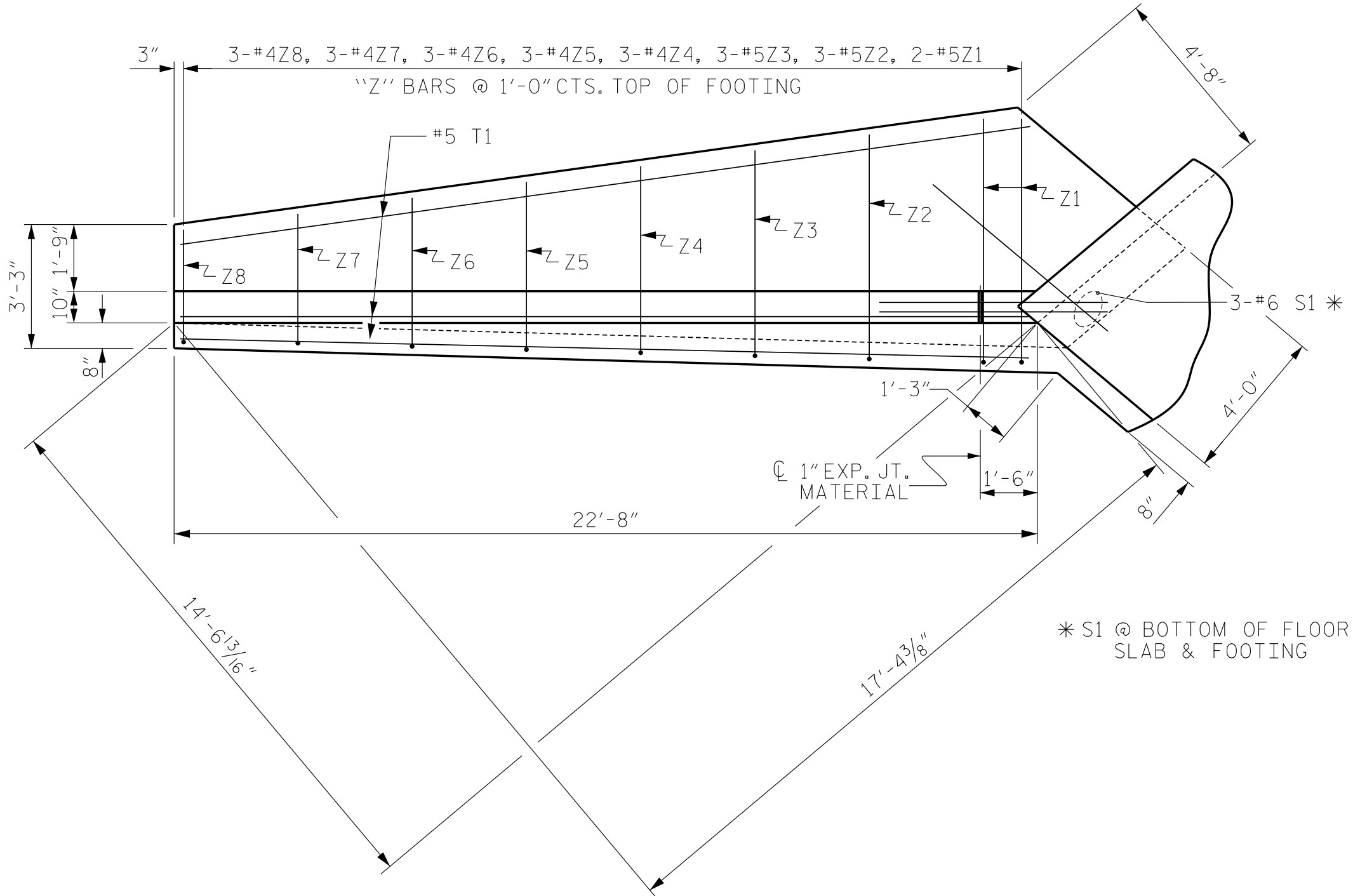
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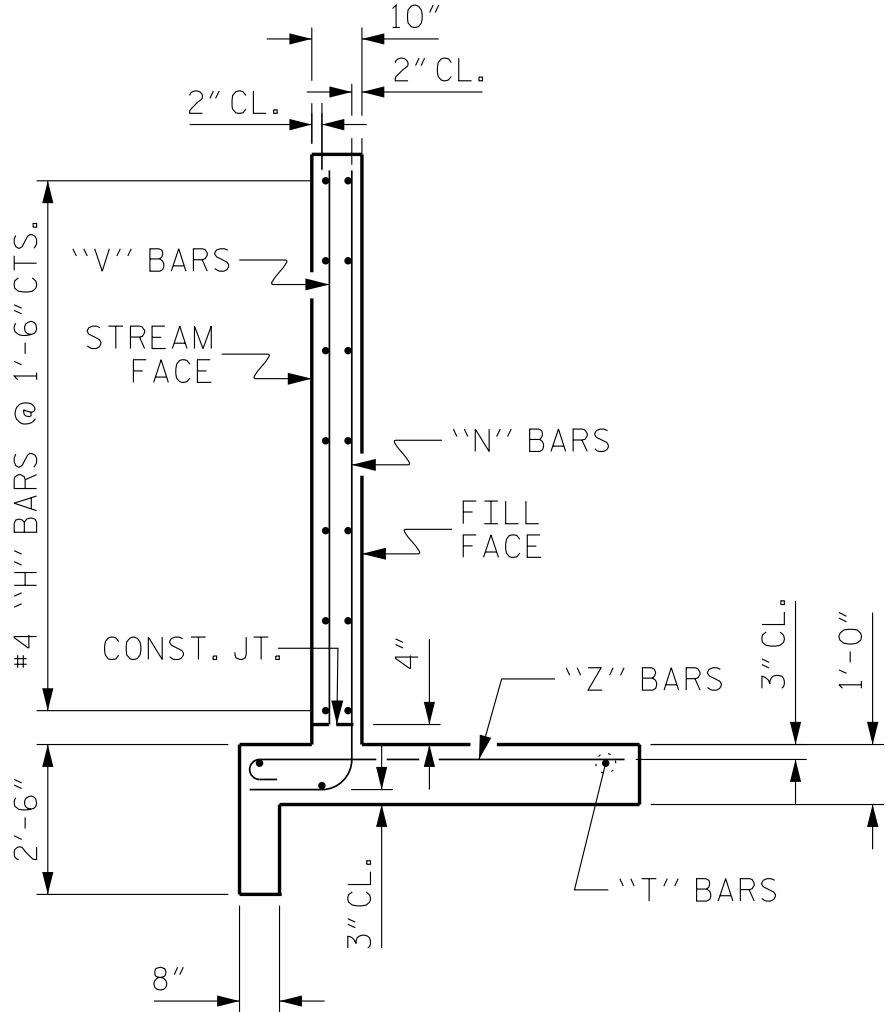
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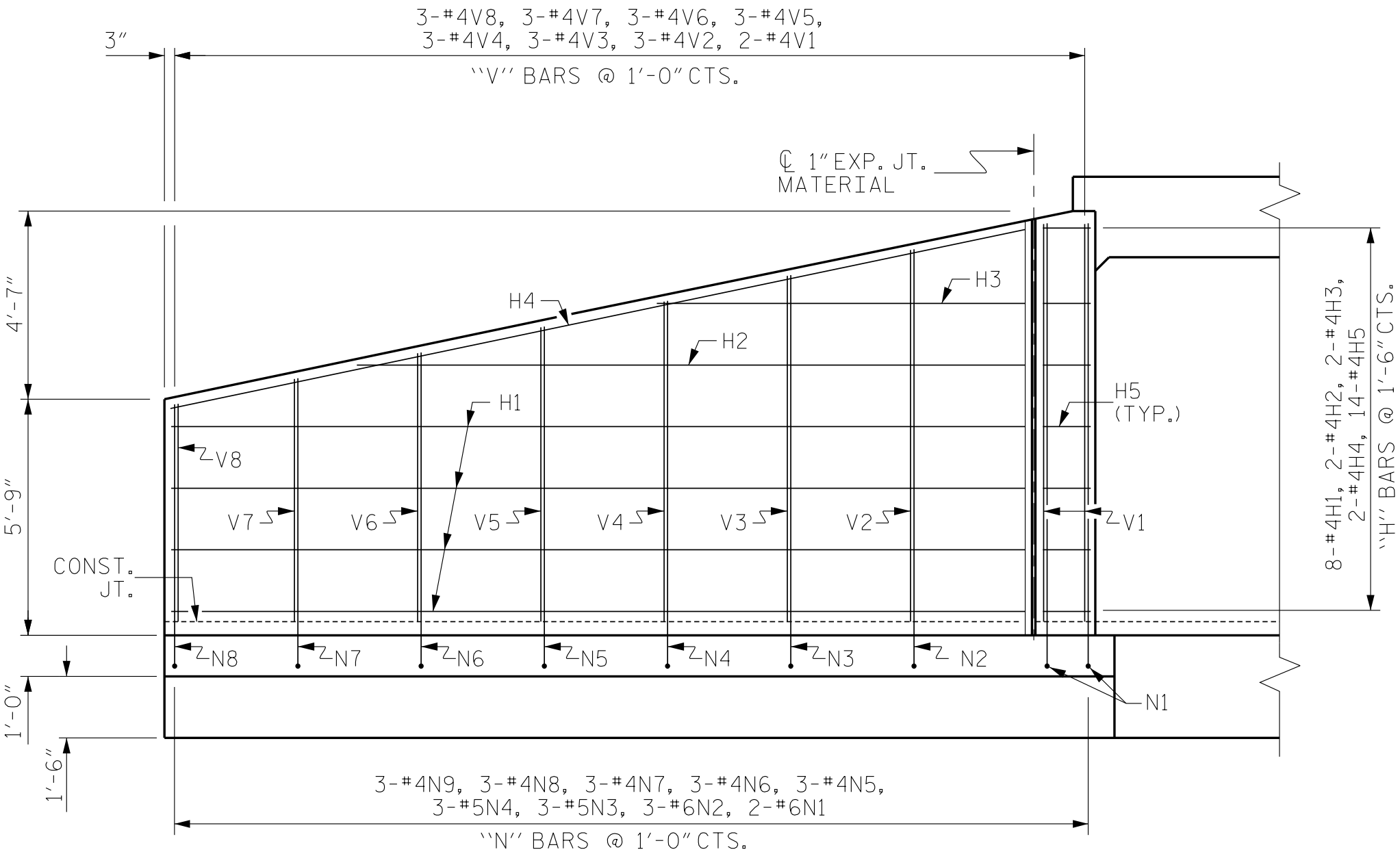
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				2			4				
								TOTAL SHEETS			
								14			



PLAN W3



TYPICAL WING SECTION



ELEVATION W3

BAR TYPES						BILL OF MATERIAL					
ALL BAR DIMENSIONS ARE OUT TO OUT.						BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
						H1	8	#4	STR	20'-9"	111
						H2	2	#4	STR	16'-3"	22
						H3	2	#4	STR	8'-11"	12
						H4	2	#4	STR	21'-3"	28
						H5	14	#4	1	3'-3"	30
						N1	2	#6	2	11'-9"	35
						N2	3	#6	2	11'-1"	50
						N3	3	#5	2	10'-5"	33
						N4	3	#5	2	9'-10"	31
						N5	3	#4	2	9'-2"	18
						N6	3	#4	2	8'-6"	17
						N7	3	#4	2	7'-11"	16
						N8	3	#4	2	7'-4"	15
						S1	3	#6	STR	6'-0"	27
						T1	3	#5	STR	22'-3"	70
						V1	2	#4	STR	9'-8"	13
						V2	3	#4	STR	9'-0"	18
						V3	3	#4	STR	8'-5"	17
						V4	3	#4	STR	7'-9"	16
						V5	3	#4	STR	7'-2"	14
						V6	3	#4	STR	6'-6"	13
						V7	3	#4	STR	5'-11"	12
						V8	3	#4	STR	5'-3"	11
						Z1	2	#5	3	7'-0"	15
						Z2	3	#5	3	6'-6"	20
						Z3	3	#5	3	6'-0"	19
						Z4	3	#4	3	5'-5"	11
						Z5	3	#4	3	4'-11"	10
						Z6	3	#4	3	4'-5"	9
						Z7	3	#4	3	3'-11"	8
						Z8	3	#4	3	3'-5"	7
						REINFORCING STEEL = 728 LBS FOR W3 WING					

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SEAL

041998

ENGINEER

Kyle H. Compton

7018BC0207EC45F...

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SHEET 11 OF 14

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

DOUBLE 12' X 9'

CONCRETE BOX CULVERT

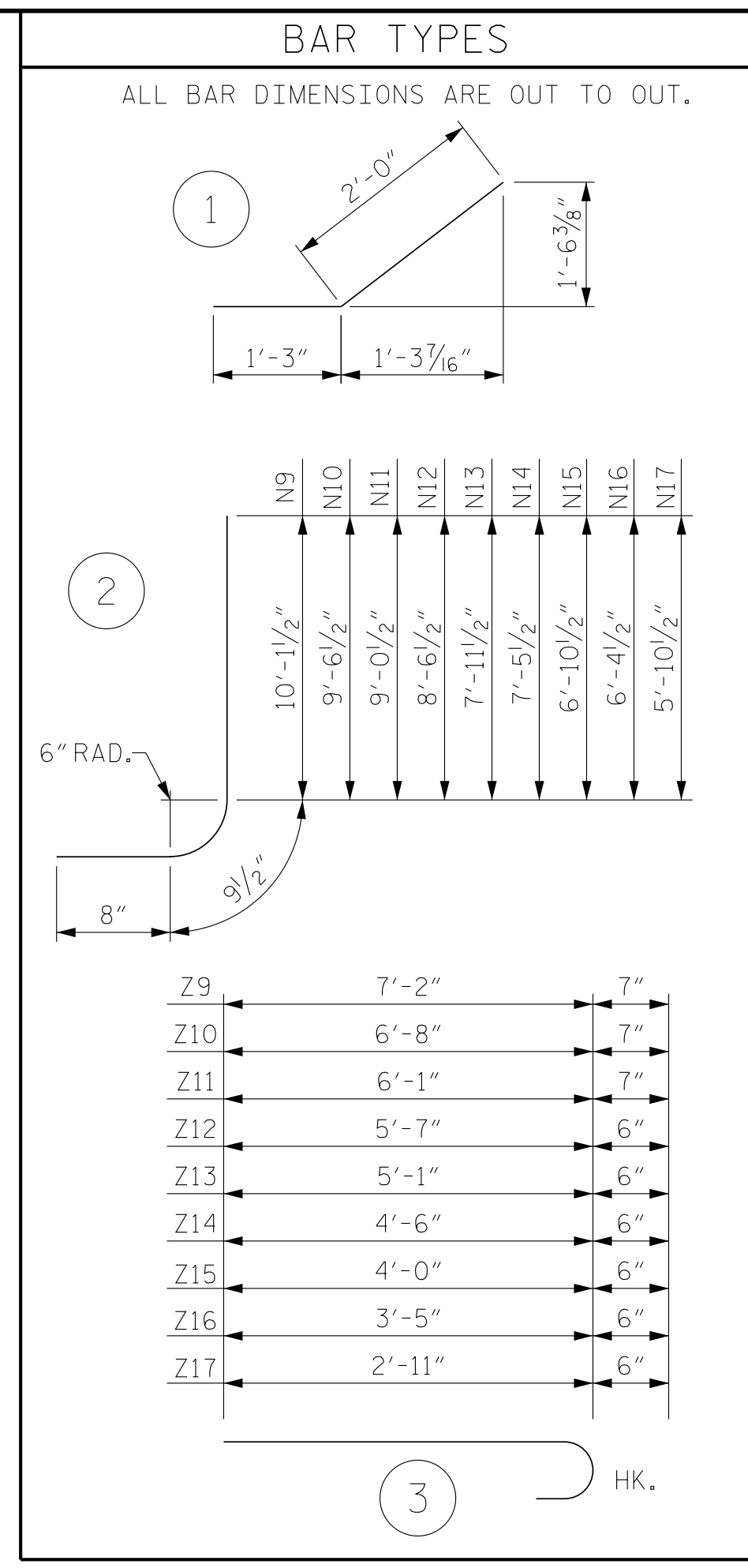
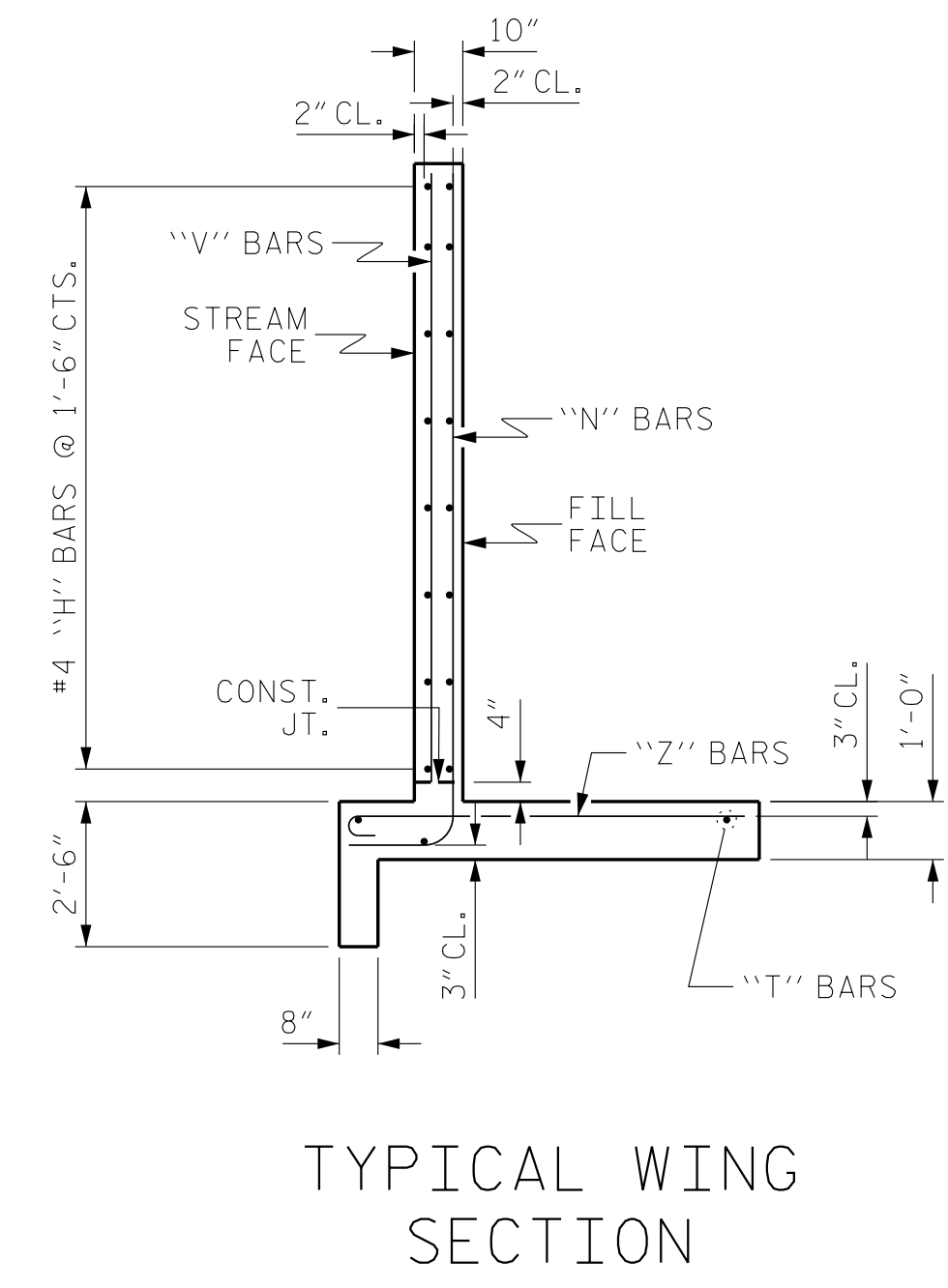
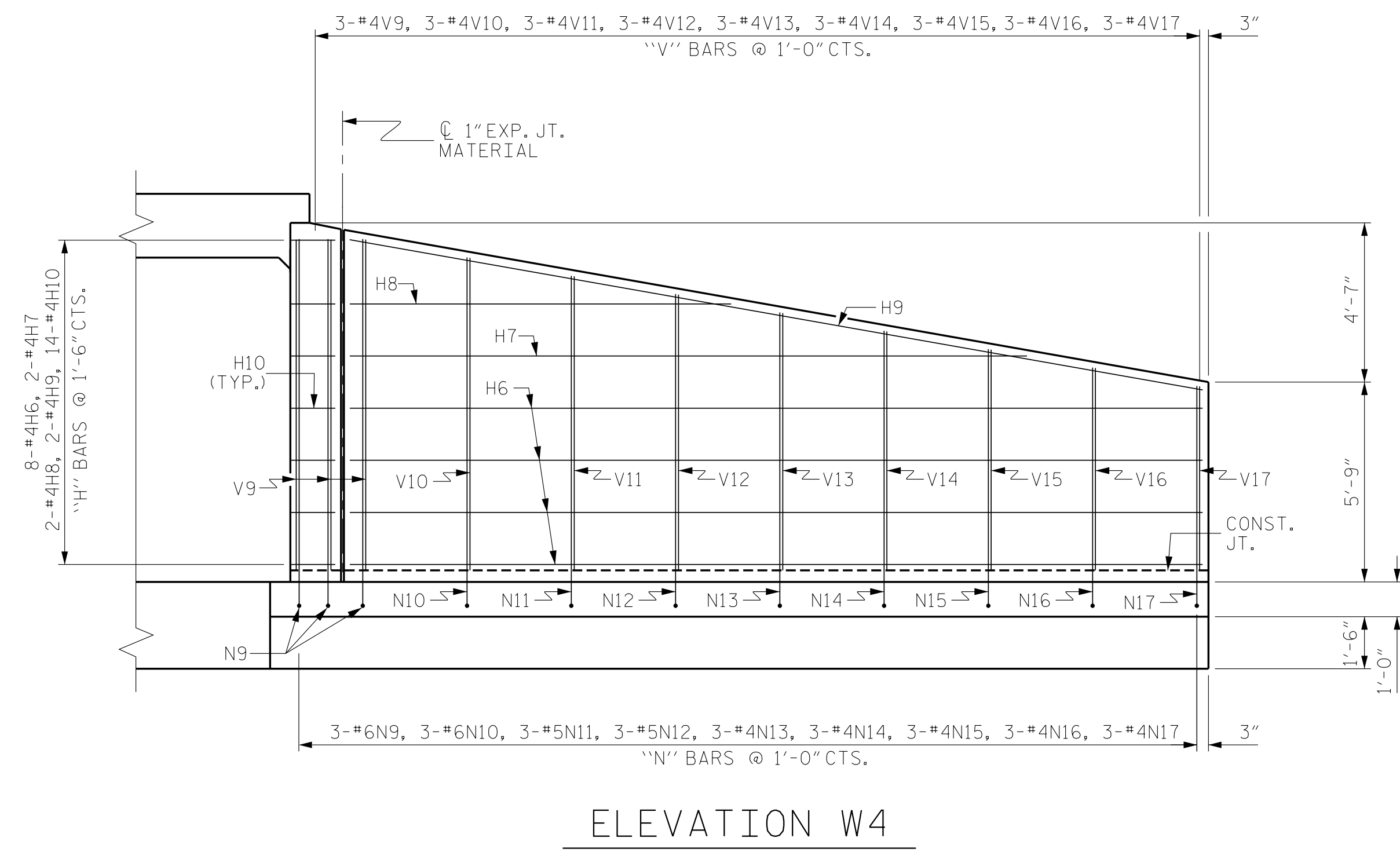
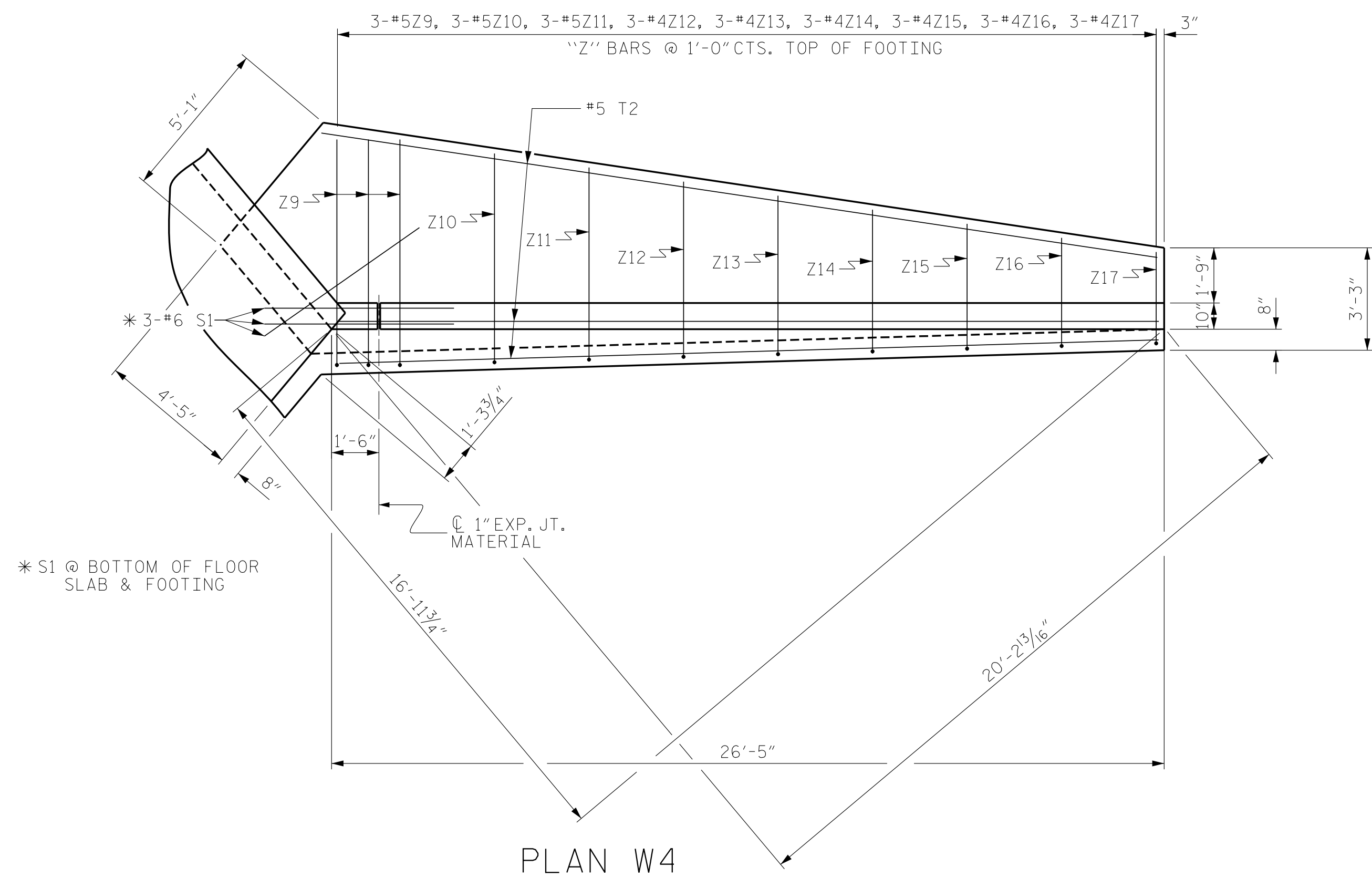
W3 WING DETAILS

H= 9'-0" SLOPE= 3:1

100° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			C2-11
2			4			
TOTAL SHEETS						14

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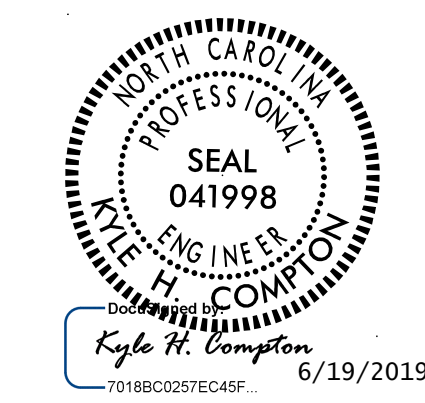


BILL OF MATERIAL						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
H6	8	#4	STR	24'-6"	131	
H7	2	#4	STR	19'-5"	26	
H8	2	#4	STR	10'-11"	35	
H9	2	#4	STR	24'-11"	13	
H10	14	#4	1	3'-3"	30	
N9	3	#6	2	11'-7"	52	
N10	3	#6	2	11'-0"	50	
N11	3	#5	2	10'-6"	33	
N12	3	#5	2	10'-0"	31	
N13	3	#4	2	9'-5"	19	
N14	3	#4	2	8'-11"	18	
N15	3	#4	2	8'-4"	17	
N16	3	#4	2	7'-10"	16	
N17	3	#4	2	7'-4"	15	
S1	3	#6	STR	6'-0"	27	
T2	3	#5	STR	26'-0"	81	
V9	3	#4	STR	9'-6"	19	
V10	3	#4	STR	8'-11"	18	
V11	3	#4	STR	8'-5"	17	
V12	3	#4	STR	7'-11"	16	
V13	3	#4	STR	7'-4"	15	
V14	3	#4	STR	6'-10"	14	
V15	3	#4	STR	6'-4"	13	
V16	3	#4	STR	5'-9"	12	
V17	3	#4	STR	5'-3"	11	
Z9	3	#5	3	7'-9"	24	
Z10	3	#5	3	7'-3"	23	
Z11	3	#5	3	6'-8"	21	
Z12	3	#4	3	6'-1"	12	
Z13	3	#4	3	5'-7"	11	
Z14	3	#4	3	5'-0"	10	
Z15	3	#4	3	4'-6"	9	
Z16	3	#4	3	3'-11"	8	
Z17	3	#4	3	3'-5"	7	
REINFORCING STEEL				= 854 LBS		
FOR W4 WING						

PHASE II WING QUANTITIES		
CLASS A CONCRETE		
W3 WING & FOOTING	10.4	CY
W4 WING & FOOTING	12.6	CY
1 HEADWALL	1.2	CY
1 END CURTAIN WALL	3.3	CY
2 EDGE BEAMS	2.0	CY
TOTAL	29.5	CY
REINFORCING STEEL		
W3 WING & FOOTING	728	LBS
W4 WING & FOOTING	854	LBS
TOTAL	1582	LBS

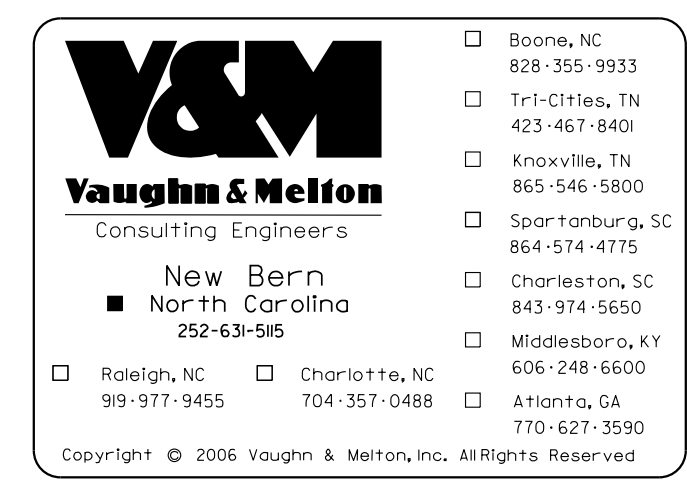
PROJECT NO. U-5875
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SHEET 12 OF 14



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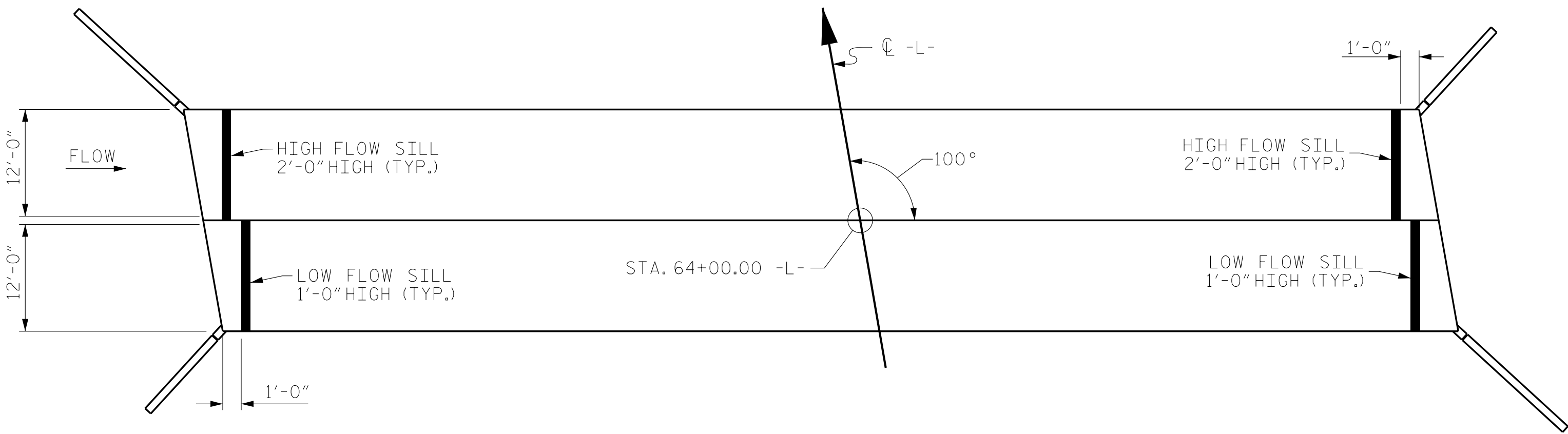
NOTES

SEE SHEET C2-14 FOR BAR SCHEDULE FOR DOWELS AND FOR SILL CONCRETE QUANTITY.

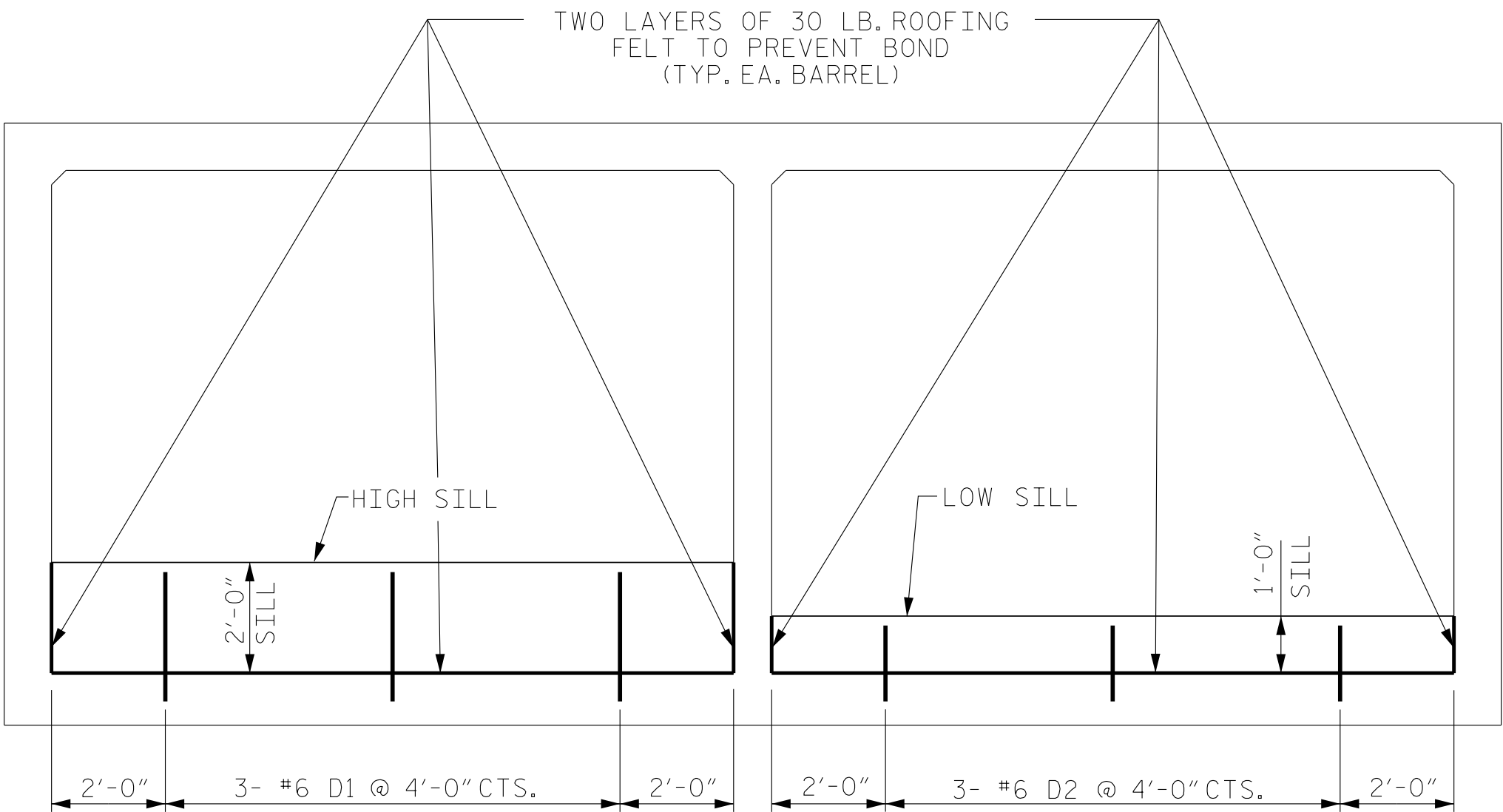
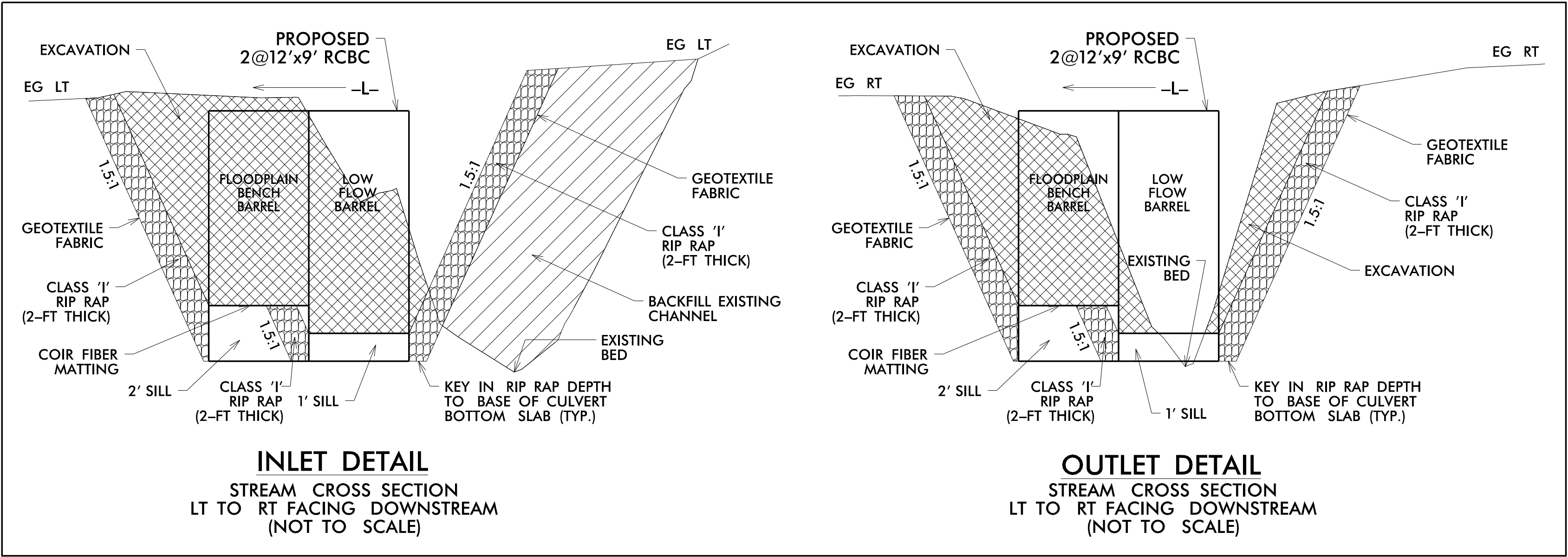
EXCAVATE FLOODPLAIN BENCH 1.0' ABOVE STREAM BED TO MATCH WIDTH OF CULVERT. LAY BACK BANK SLOPES TO 1.5:1. LINE SLOPES WITH CLASS I RIP RAP BOULDERS AND LINE FLOODPLAIN BENCH WITH COIR FIBER MATTING.

NATIVE BED MATERIAL SHALL BE PLACED BETWEEN THE SILLS IN THE LOW FLOW CULVERT. NATIVE MATERIALS CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED OR FLOODPLAIN AT THE PROJECT SITE DURING CULVERT CONSTRUCTION. RIP RAP MAY BE USED TO SUPPLEMENT THE NATIVE MATERIAL. IF RIP RAP IS USED, NATIVE MATERIAL SHOULD BE PLACED ON TOP TO FACILITATE ANIMAL PASSAGE. THE TOP SURFACE OF THE NATURAL STREAM BED MATERIAL SHALL BE PLACED AND LEVELED TO A FLAT SURFACE TO ALLOW FOR ANIMAL PASSAGE. THE HIGH FLOW BARRELS SHALL BE BACK FILLED WITH NATIVE MATERIAL AND/OR RIP RAP. NATIVE MATERIAL AND RIP RAP ARE SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.

BED MATERIALS: SAND, SILT, MUD, ORGANIC MATERIAL.

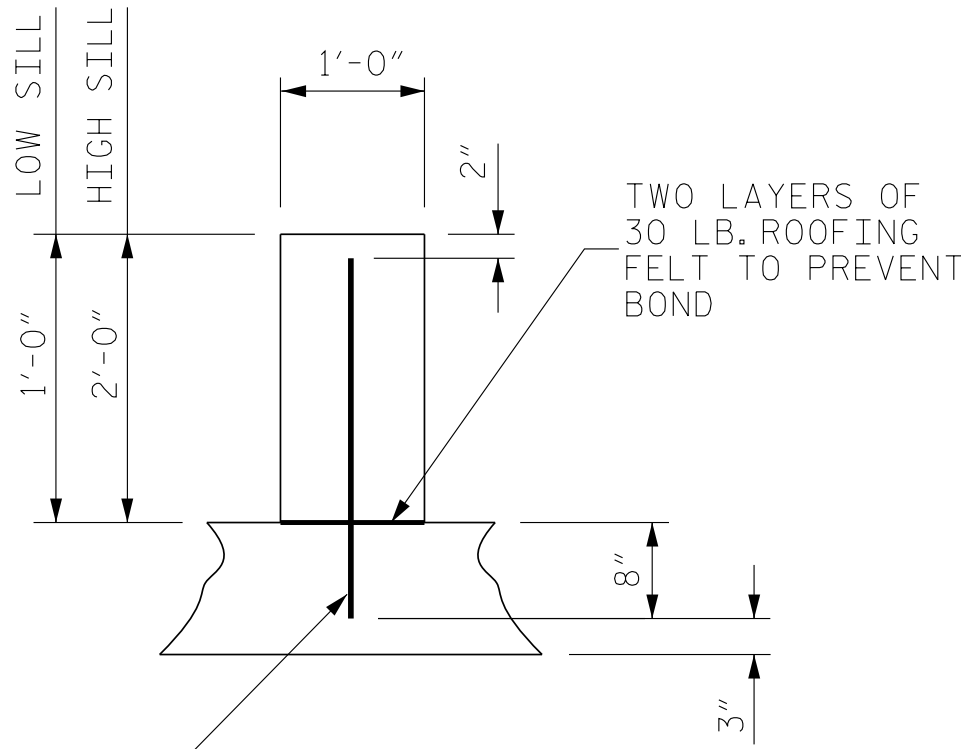


CULVERT SILL LAYOUT



OUTLET END ELEVATION

LOOKING DOWNSTREAM



SECTION THROUGH SILL

DOWELS MAY BE PUSHED INTO GREEN CONCRETE AFTER SLAB HAS BEEN FLOATED.

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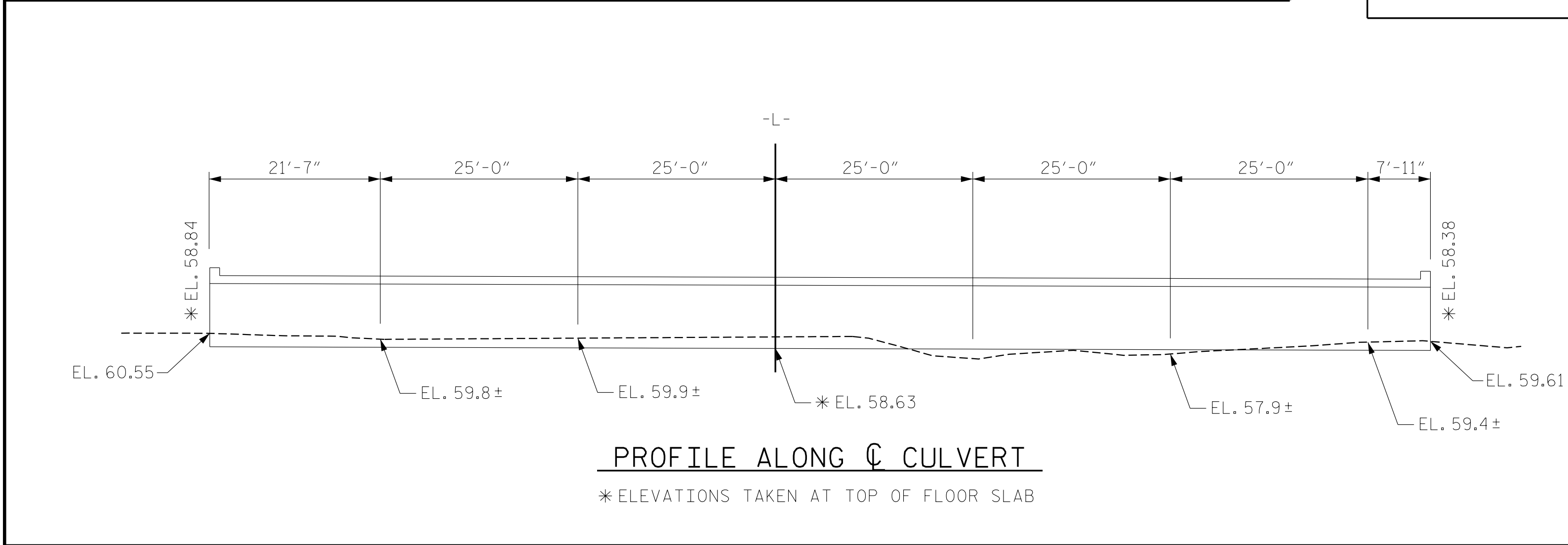
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SHEET 13 OF 14



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CHKD. BY: KHC		DATE: 7/18	1			3		TOTAL SHEETS 14
			2			4		



TOTAL STRUCTURE QUANTITIES		
CLASS A CONCRETE - PHASE I		
BARREL @	0.97	CY/FT
WING ETC.	80.3	C.Y.
SILL	20.7	C.Y.
	0.3	C.Y.
CLASS A CONCRETE - PHASE II		
BARREL @	0.97	CY/FT
WING ETC.	69.4	C.Y.
SILL	23.9	C.Y.
	0.3	C.Y.
TOTAL	194.9	C.Y.
REINFORCING STEEL - PHASE I		
BARREL	10,554	LBS.
WINGS ETC.	1,083	LBS.
REINFORCING STEEL - PHASE II		
BARREL	9,128	LBS.
WINGS ETC.	1,311	LBS.
TOTAL	22,076	LBS.
FOUNDATION CONDITIONING MAT'L	72 TONS	PHASE I
FOUNDATION CONDITIONING MAT'L	62 TONS	PHASE II
TOTAL	134 TONS	
CLASS I RIP RAP (2'-0" THICK)	75 TONS	PHASE I
CLASS I RIP RAP (2'-0" THICK)	75 TONS	PHASE II
TOTAL	150 TONS	
GEOTEXTILE FOR DRAINAGE	100 SQ. YDS.	PHASE I
GEOTEXTILE FOR DRAINAGE	100 SQ. YDS.	PHASE II
TOTAL	200 SQ. YDS.	
REMOVAL OF EXISTING STRUCTURE	LUMP SUM	
CULVERT EXCAVATION	LUMP SUM	

NOTES

FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC MANAGEMENT PLAN.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

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

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

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

DESIGN FILL----- 7'-6" MAX, 3'-10" MIN.

FOR OTHER DESIGN DATA AND NOTES SEE STANDARD NOTE SHEET.

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

CONCRETE IN CULVERTS TO BE POURED IN THE FOLLOWING ORDER:

1. WING FOOTINGS AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS.
2. THE REMAINING PORTIONS OF THE WALLS AND WINGS FULL HEIGHT FOLLOWED BY 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.

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.

AT THE CONTRACTOR'S OPTION, HE MAY SPLICE THE VERTICAL REINFORCING STEEL IN THE INTERIOR FACE OF EXTERIOR 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.

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.

REMOVAL OF THE EXISTING STRUCTURE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE STRUCTURE IN ACCORDANCE WITH ARTICLE 402-2 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.

EXCAVATE 1'-0" MIN. BENEATH CULVERT & WING FOOTING ELEVATIONS.
REPLACE WITH FOUNDATION CONDITIONING MATERIAL IN ACCORDANCE
WITH ARTICLE 414-4 OF THE STANDARD SPECIFICATIONS.

GRADE DATA

GRADE POINT ELEV. @ -L- STA. 127+58.00 = 72.66'

BED ELEV. @ -L- STA. 127+58.00 = 58.63'

ROADWAY SLOPES 3:1

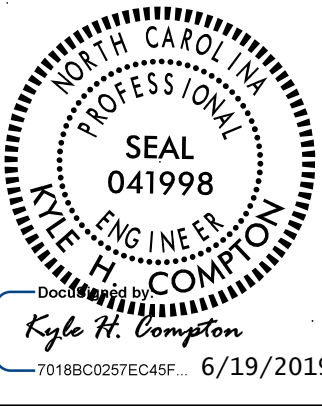
HYDRAULIC DATA

DESIGN DISCHARGE	=	420	CFS
FREQUENCY OF DESIGN DISCHARGE	=	50	YRS
DESIGN HIGH WATER ELEVATION	=	68.7	FT
DRAINAGE AREA	=	595	AC
BASE DISCHARGE (Q100)	=	470	CFS
BASE HIGH WATER ELEVATION	=	69.6	FT

OVERTOPPING DATA

OVERTOPPING DISCHARGE = 700 CFS
 FREQUENCY OF OVERTOPPING = 500 (+) YRS
 OVERTOPPING ELEVATION = 73.93 * FT

* HIGH SHOULDER AT
STA. 129+75 -L-



DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

DSG. ENG. OF RECORD: KHC		REVISIONS						SHEET NO.
DWN. BY: WDC	DATE: 7/18	NO.	BY:	DATE:	NO.	BY:	DATE:	C3-1
CHKD. BY: RRL	DATE: 8/18	1			3			TOTAL SHEETS
		2			4			10

LOAD FACTORS:

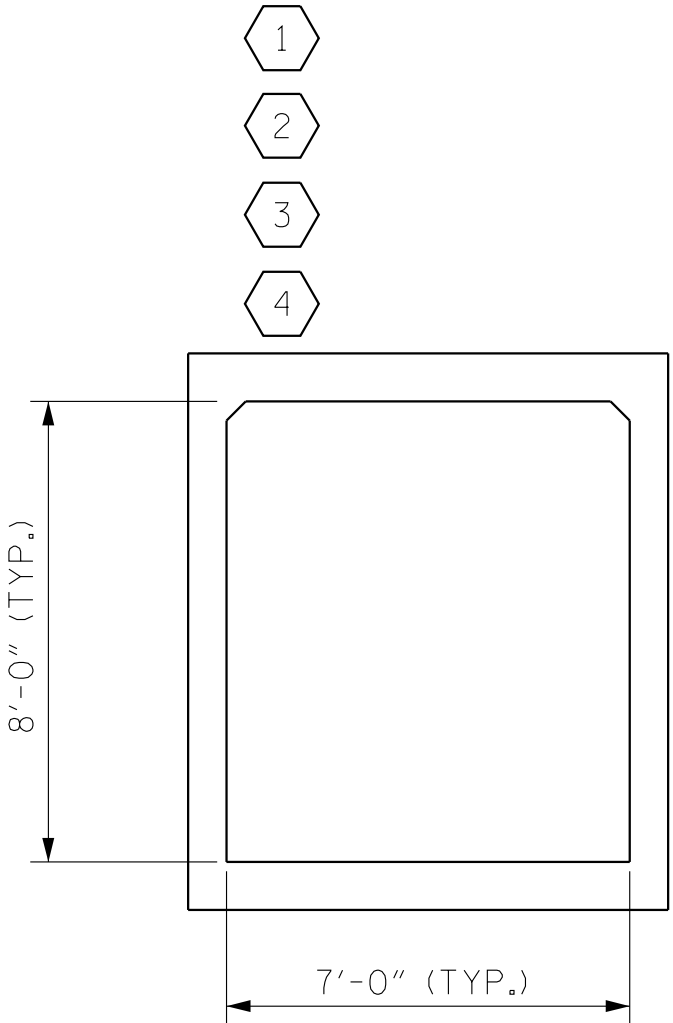
DESIGN LOAD RATING FACTORS		
LOAD TYPE	MAX FACTOR	MIN FACTOR
DC	1.25	0.90
DW	1.50	0.65
EV	1.30	0.90
EH	1.35	0.90
ES	1.35	0.90
LS	1.75	--
WA	1.00	--

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

COMMENTS:
1. ALL MEASUREMENTS ARE TAKEN FROM THE CENTER OF WALL AND CENTER OF SLAB OF THE BOX NUMBER INDICATED. WALL MEASUREMENTS TAKEN FROM THE CENTER OF BOTTOM SLAB.

#	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

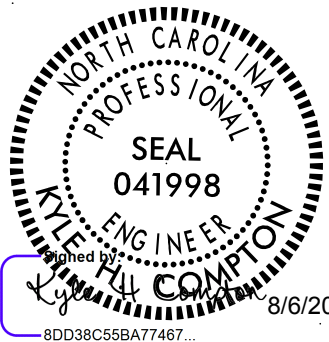
LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR REINFORCED CONCRETE BOX CULVERTS															
LEVEL	VEHICLE	WEIGHT (W) (TONS)	⬡ CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W × RF	STRENGTH I LIMIT STATE									COMMENT NUMBER
						LIVE-LOAD FACTORS (γ _{LL})	MOMENT				SHEAR				
							RATING FACTOR	BOX NO.	ELEMENT TYPE	DISTANCE FROM LEFT END OF ELEMENT (ft)	RATING FACTOR	BOX NO.	ELEMENT TYPE	DISTANCE FROM LEFT END OF ELEMENT (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.48	--	1.75	1.48	1	TOP SLAB	4.17	3.04	1	BOT. SLAB	0.67	1
	HL-93 (OPERATING)	N/A		1.92	--	1.35	1.92	1	TOP SLAB	4.17	3.95	1	BOT. SLAB	0.67	
	HS-20 (INVENTORY)	36.000	②	1.68	60.48	1.75	1.68	1	TOP SLAB	4.17	3.36	1	BOT. SLAB	0.67	
	HS-20 (OPERATING)	36.000		2.18	78.48	1.35	2.18	1	TOP SLAB	4.17	4.35	1	BOT. SLAB	0.67	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH		3.06	41.31	1.40	3.06	1	TOP SLAB	4.17	4.52	1	EXT. WALL	0.92	
		SNGARBS2		2.86	57.20	1.40	2.86	1	TOP SLAB	4.17	4.52	1	EXT. WALL	0.92	
		SNAGRIS2		3.06	67.32	1.40	3.06	1	TOP SLAB	4.17	4.52	1	EXT. WALL	0.92	
		SNCOTTS3	③	2.69	73.30	1.40	2.69	1	TOP SLAB	4.17	4.51	1	BOT. SLAB	0.67	
		SNAGGRS4		3.54	123.63	1.40	3.54	1	TOP SLAB	4.17	4.53	1	EXT. WALL	0.92	
		SNS5A		3.20	113.76	1.40	3.20	1	TOP SLAB	4.17	4.52	1	EXT. WALL	0.92	
		SNS6A		3.20	127.84	1.40	3.20	1	TOP SLAB	4.17	4.52	1	EXT. WALL	0.92	
		SNS7B		3.20	134.40	1.40	3.20	1	TOP SLAB	4.17	4.50	1	EXT. WALL	0.92	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3		3.06	100.98	1.40	3.06	1	TOP SLAB	4.17	4.52	1	EXT. WALL	0.92	
		TNT4A		3.20	105.84	1.40	3.20	1	TOP SLAB	4.17	4.52	1	EXT. WALL	0.92	
		TNT6A		3.20	133.12	1.40	3.20	1	TOP SLAB	4.17	4.52	1	EXT. WALL	0.92	
		TNT7A		3.20	134.40	1.40	3.20	1	TOP SLAB	4.17	4.52	1	EXT. WALL	0.92	
		TNT7B		3.20	134.40	1.40	3.20	1	TOP SLAB	4.17	4.52	1	EXT. WALL	0.92	
		TNAGRIT4		3.06	131.58	1.40	3.06	1	TOP SLAB	4.17	4.52	1	EXT. WALL	0.92	
		TNAGRT5A		3.06	137.70	1.40	3.06	1	TOP SLAB	4.17	4.52	1	EXT. WALL	0.92	
		TNAGRT5B		3.20	144.00	1.40	3.20	1	TOP SLAB	4.17	4.52	1	EXT. WALL	0.92	
EMERGENCY VEHICLE (EV)	EV2		1.91	54.91	1.30	1.91	1	TOP SLAB	4.17	3.92	1	BOT. SLAB	0.67		
	EV3		④	2.06	88.58	1.30	2.06	1	TOP SLAB	4.17	4.23	1	BOT. SLAB	0.67	



LRFR SUMMARY
(LOOKING DOWNSTREAM)

PROJECT NO. U-5875
PITT COUNTY
STATION: 127+58.00 -L-

SHEET 2 OF 10



DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LRFR SUMMARY FOR
REINFORCED CONCRETE
BOX CULVERTS
(NON-INTERSTATE TRAFFIC)

 **Johnson, Mirmiran, & Thompson Inc.**
4700 Falls of Neuse Rd, Suite 100,
Raleigh, NC, 27609
License No: C-3097

DSG. ENG. OF RECORD: KHC		REVISIONS						SHEET NO.
DWN. BY: WDC	DATE: 7/18	NO.	BY:	DATE:	NO.	BY:	DATE:	C3-2
CHKD. BY: RRL	DATE: 8/18	1			3			TOTAL SHEETS
		2			4			10



RIGHT ANGLE SECTION OF BARREL - PHASE I

LOOKING DOWNSTREAM
THERE ARE 46 C1 BARS IN PHASE I
THERE ARE 46 C2 BARS IN PHASE II



LOOKING DOWNSTREAM

 $+$

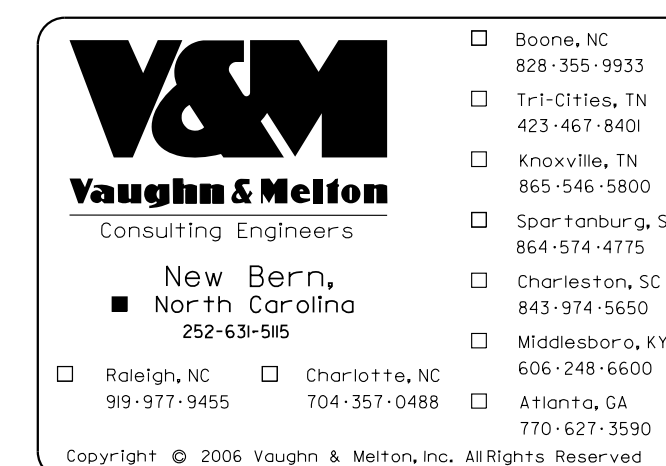
PITT COUNTY

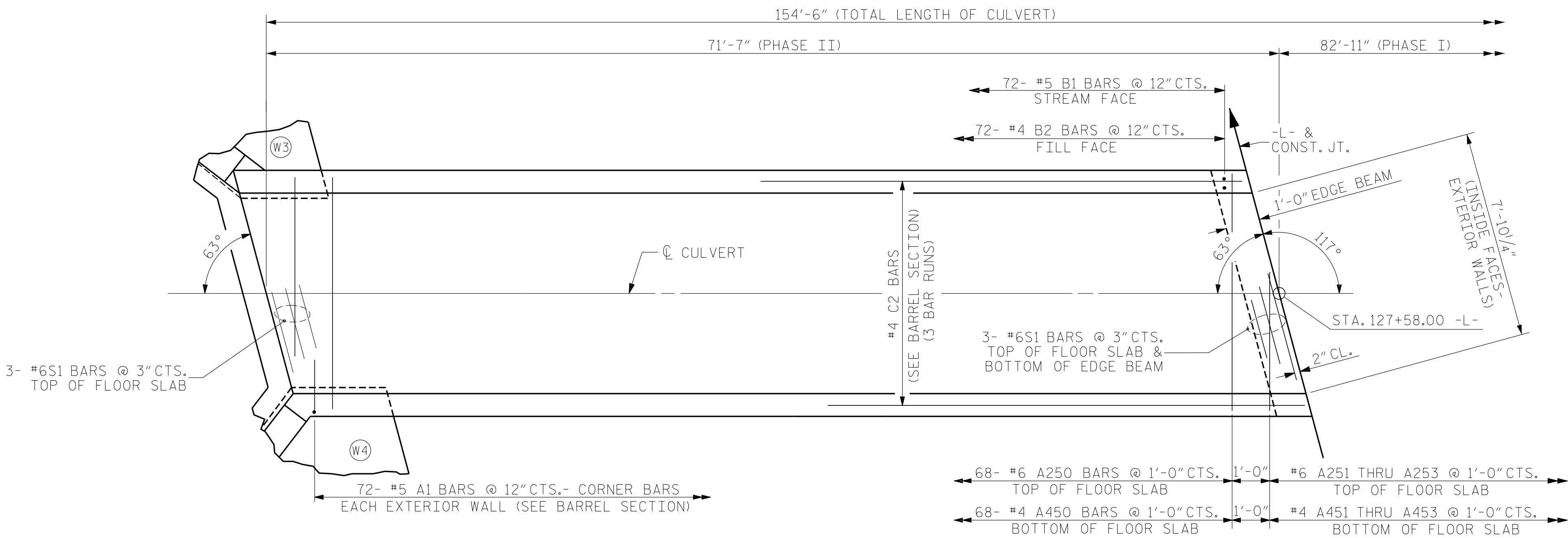
SHEET 3 OF 10



SINGLE 7' X 8'
CONCRETE BOX CULVERT
ON NORTH FORK GREEN MILL RUN
UNDER SR 1203 (ALLEN ROAD) BETWEEN
US 13 AND SR 1467

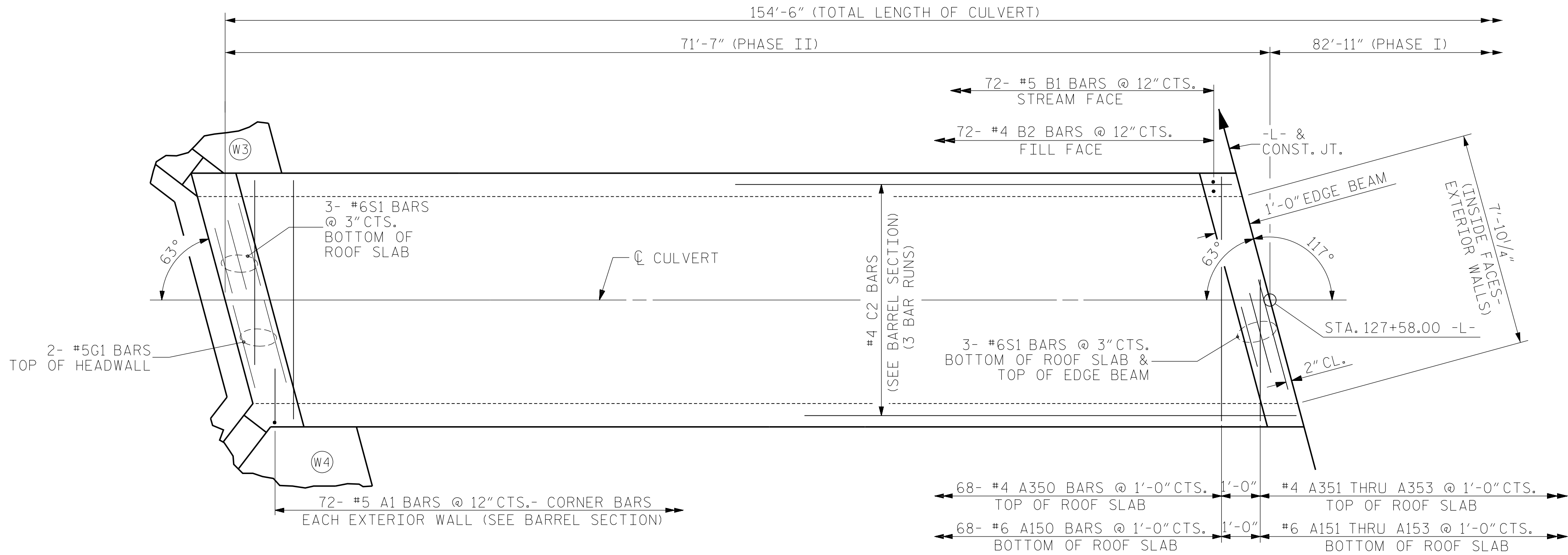
DSG. ENG. OF RECORD: KHC		REVISIONS						SHEET NO.	
DWN. BY: WDC DATE: 7/18		NO.	BY:	DATE:	NO.	BY:	DATE:	C3-3	
CHKD. BY: RRL DATE: 8/18		1			3			TOTAL SHEETS	
		2			4			10	





FLOOR PLAN - PHASE II

(SEE SHEET C3-10 FOR SILLS IN BARRELS)



ROOF PLAN - PHASE II

BILL OF MATERIAL

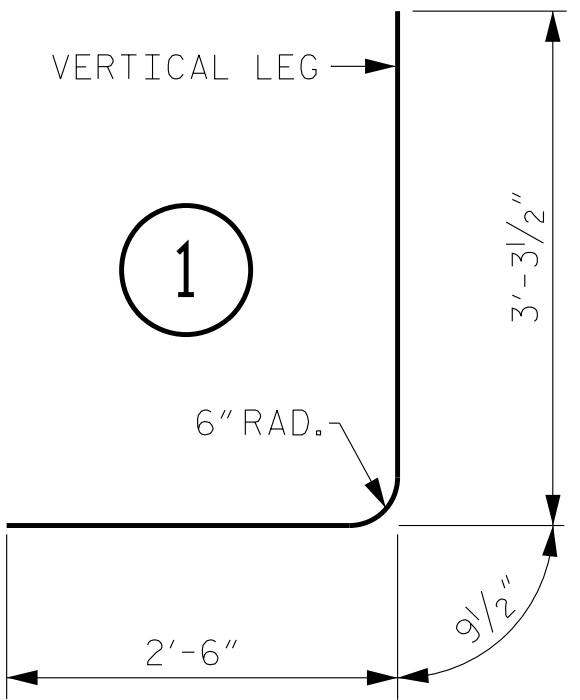
PHASE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	288	5	①	6'-7"	1978
A150	68	6	STR.	8'-0"	817
A151	2	6	STR.	6'-2"	19
A152	2	6	STR.	4'-2"	13
A153	2	6	STR.	2'-2"	7
A250	68	6	STR.	8'-0"	817
A251	2	6	STR.	6'-2"	19
A252	2	6	STR.	4'-2"	13
A253	2	6	STR.	2'-2"	7
A350	68	4	STR.	8'-0"	363
A351	2	4	STR.	6'-2"	8
A352	2	4	STR.	4'-2"	6
A353	2	4	STR.	2'-2"	3
A450	68	4	STR.	8'-0"	363
A451	2	4	STR.	6'-2"	8
A452	2	4	STR.	4'-2"	6
A453	2	4	STR.	2'-2"	3
B1	144	5	STR.	9'-6"	1427
B2	144	4	STR.	7'-1"	681
C2	138	4	STR.	25'-0"	2305
D1	2	6	STR.	1'-6"	5
G1	2	5	STR.	8'-11"	19
S1	18	6	STR.	8'-11"	241

REINFORCING STEEL 9,128 LBS.

CLASS A CONCRETE (BARREL ONLY) 69.4 C.Y.

BAR TYPE



BAR DIMENSIONS ARE OUT TO OUT.

SPLICE LENGTH CHART

BAR SIZE	SPLICE LENGTH
#4	1'-9"
#5	2'-2"

New Bern, North Carolina
252-631-5915

919-977-9455

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☐ Boone, NC 828-355-9933

☐ Tri-Cities, TN 423-467-8401

☐ Knoxville, TN 865-546-5800

☐ Spartanburg, SC 864-574-4715

☐ Charleston, SC 843-974-5650

☐ Middlesboro, KY 606-248-6600

☐ Raleigh, NC 919-977-9455

☐ Charlotte, NC 704-357-0488

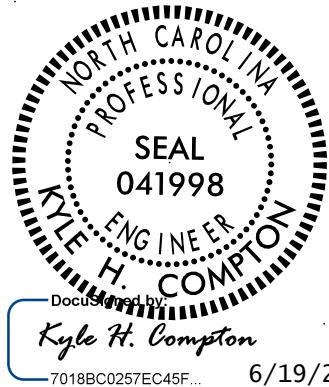
☐ Atlanta, GA 770-627-3590

PROJECT NO. U-5875

PITT COUNTY

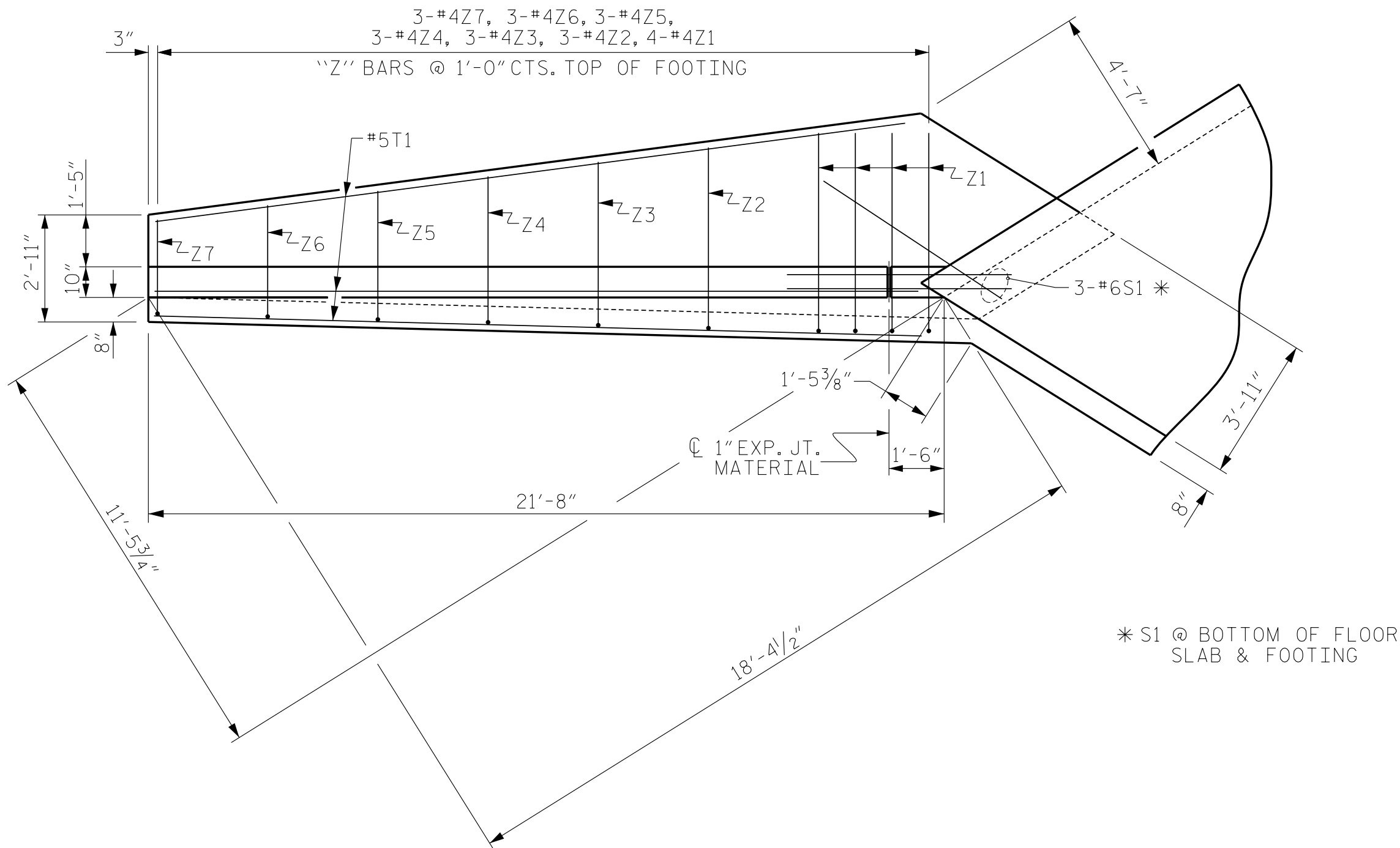
STATION: 127+58.00 -L-

SHEET 5 OF 10

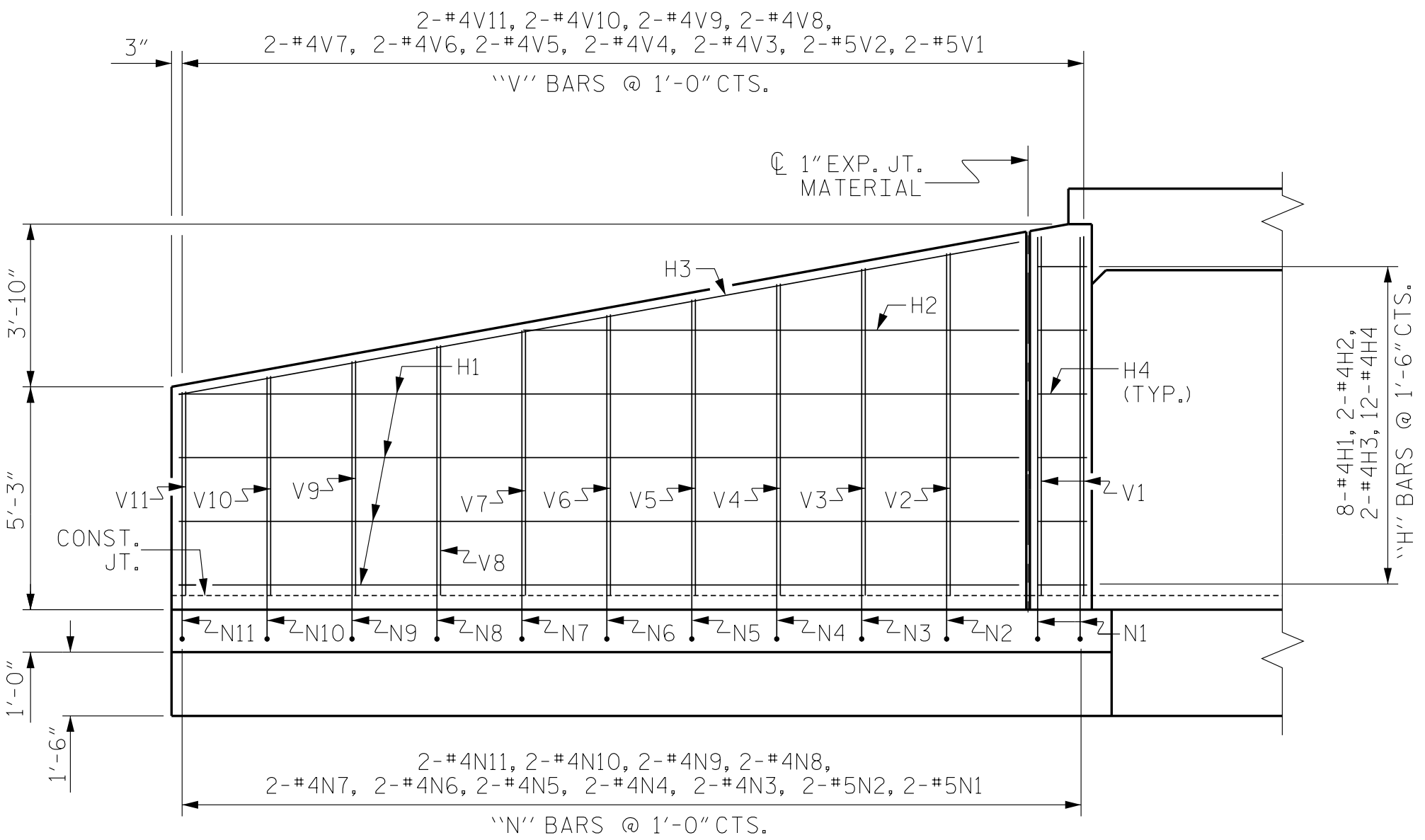


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DSG. ENG. OF RECORD: KHC		REVISIONS						SHEET NO.
DWN. BY: WDC	DATE: 7/18	NO.	BY:	DATE:	NO.	BY:	DATE:	C3-5
CHKD. BY: RRL	DATE: 8/18	1			3			TOTAL SHEETS
		2			4			10

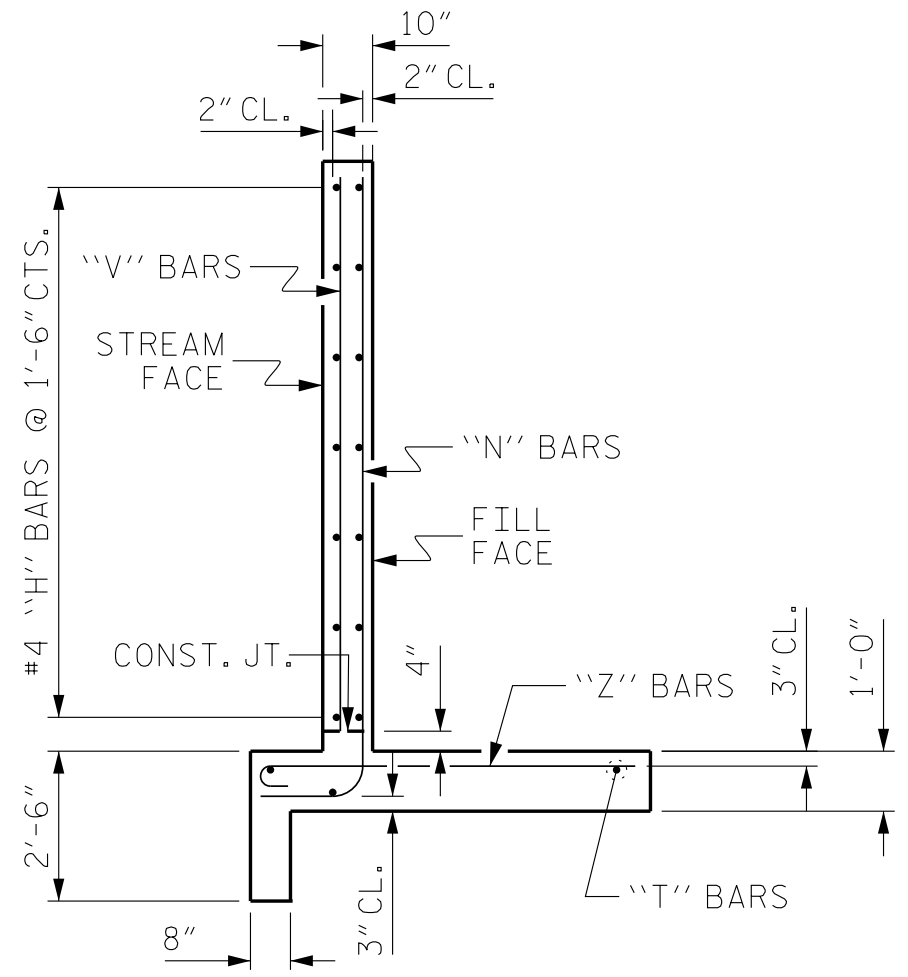


PLAN W1



ELEVATION W1

BAR TYPES				BILL OF MATERIAL - W1					
ALL BAR DIMENSIONS ARE OUT TO OUT.				BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
				H1	8	#4	STR	19'-9"	106
				H2	2	#4	STR	11'-8"	16
				H3	2	#4	STR	20'-1"	27
				H4	12	#4	1	3'-3"	26
				N1	2	#5	2	10'-5"	22
				N2	2	#5	2	10'-1"	21
				N3	2	#4	2	9'-8"	13
				N4	2	#4	2	9'-4"	12
				N5	2	#4	2	9'-0"	12
				N6	2	#4	2	8'-7"	11
				N7	2	#4	2	8'-3"	11
				N8	2	#4	2	7'-11"	11
				N9	2	#4	2	7'-6"	10
				N10	2	#4	2	7'-2"	10
				N11	2	#4	2	6'-10"	9
				S1	3	#6	STR	6'-0"	27
				T1	3	#5	STR	20'-9"	65
				V1	2	#5	STR	8'-5"	18
				V2	2	#5	STR	8'-0"	17
				V3	2	#4	STR	7'-8"	10
				V4	2	#4	STR	7'-4"	10
				V5	2	#4	STR	6'-11"	9
				V6	2	#4	STR	6'-7"	9
				V7	2	#4	STR	6'-3"	8
				V8	2	#4	STR	5'-10"	8
				V9	2	#4	STR	5'-6"	7
				V10	2	#4	STR	5'-2"	7
				V11	2	#4	STR	4'-9"	6
				Z1	4	#4	3	5'-11"	16
				Z2	3	#4	3	5'-5"	11
				Z3	3	#4	3	4'-11"	10
				Z4	3	#4	3	4'-6"	9
				Z5	3	#4	3	4'-0"	8
				Z6	3	#4	3	3'-7"	7
				Z7	3	#4	3	3'-1"	6
				REINFORCING STEEL = 585 LBS FOR W1 WING					



TYPICAL WING SECTION

V&M
Vaughn & Melton
Consulting Engineers
New Bern
North Carolina
252-631-595

☐ Raleigh, NC

☐ Charlotte, NC

☐ 919-977-9455

☐ 704-357-0488

☐ Boone, NC

☐ Tri-Cities, TN

☐ 828-355-9933

☐ 423-467-8401

☐ Knoxville, TN

☐ Spartanburg, SC

☐ 865-546-5800

☐ 864-574-4775

☐ Charleston, SC

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☐ 843-974-5650

☐ 606-248-5600

☐ Atlanta, GA

☐ 770-627-3530

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STATE OF NORTH CAROLINA
PROFESSIONAL SEAL
041998
KYLE H. COMPTON
ENGINEER
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6/19/2019

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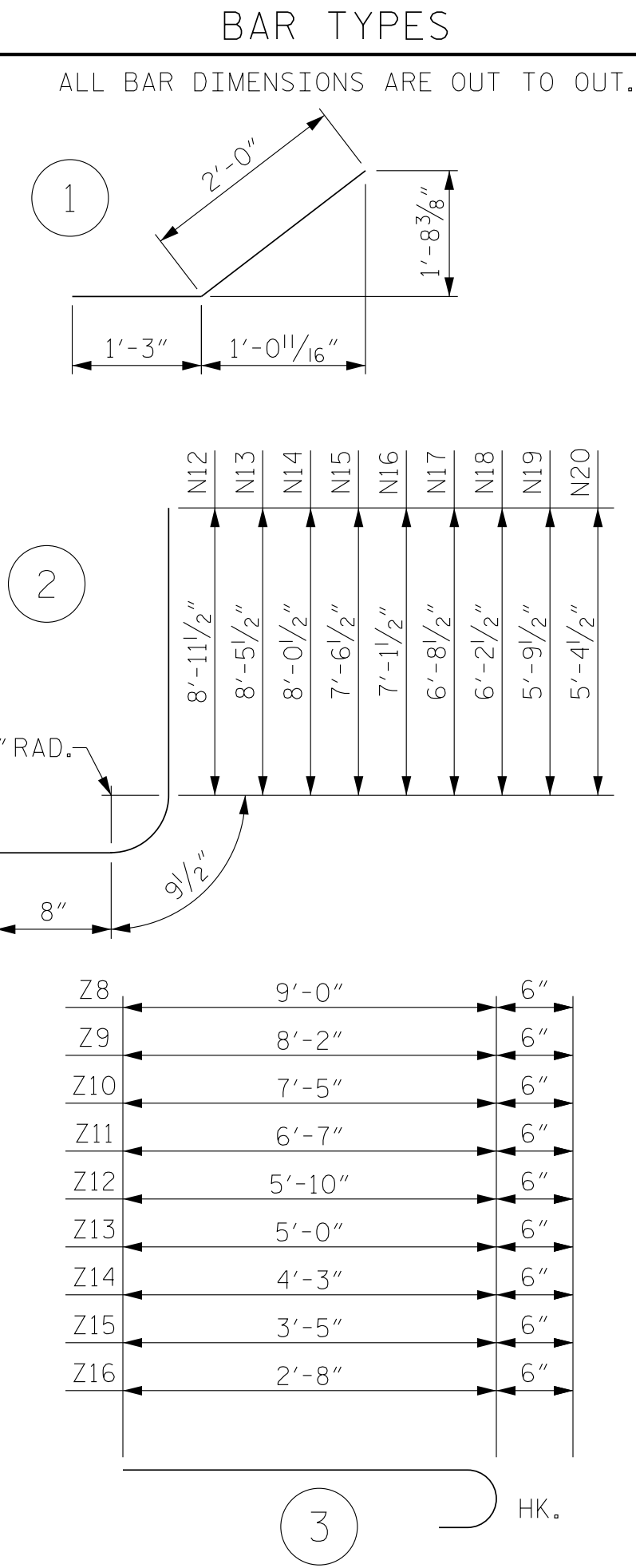
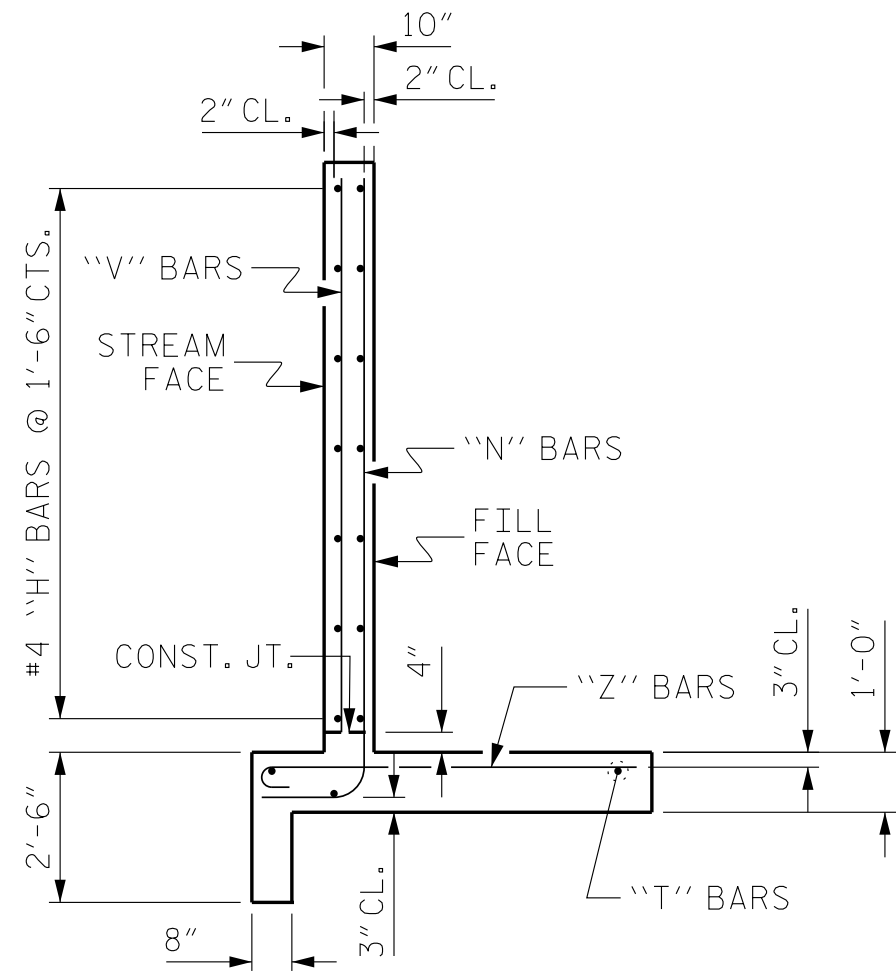
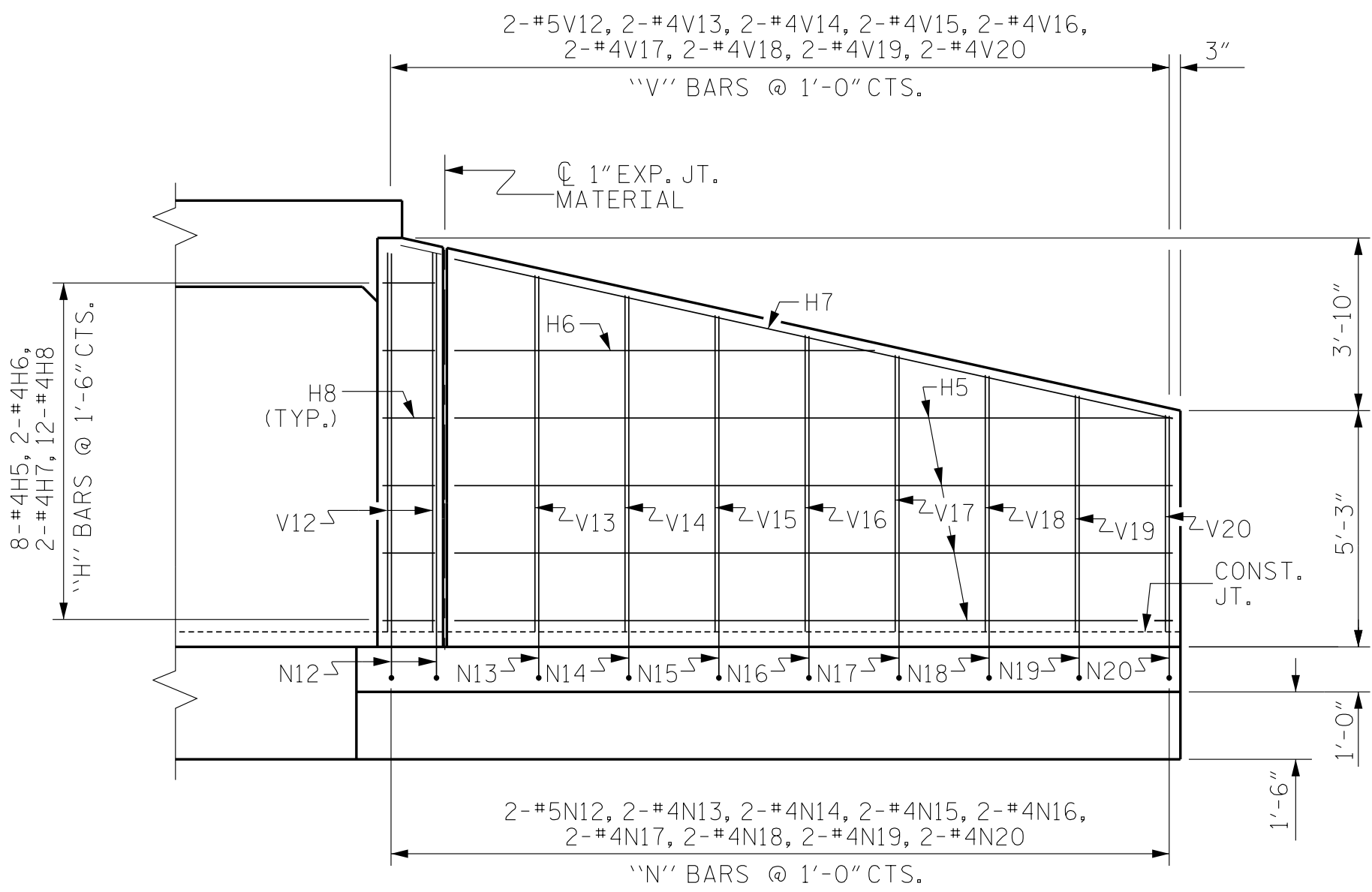
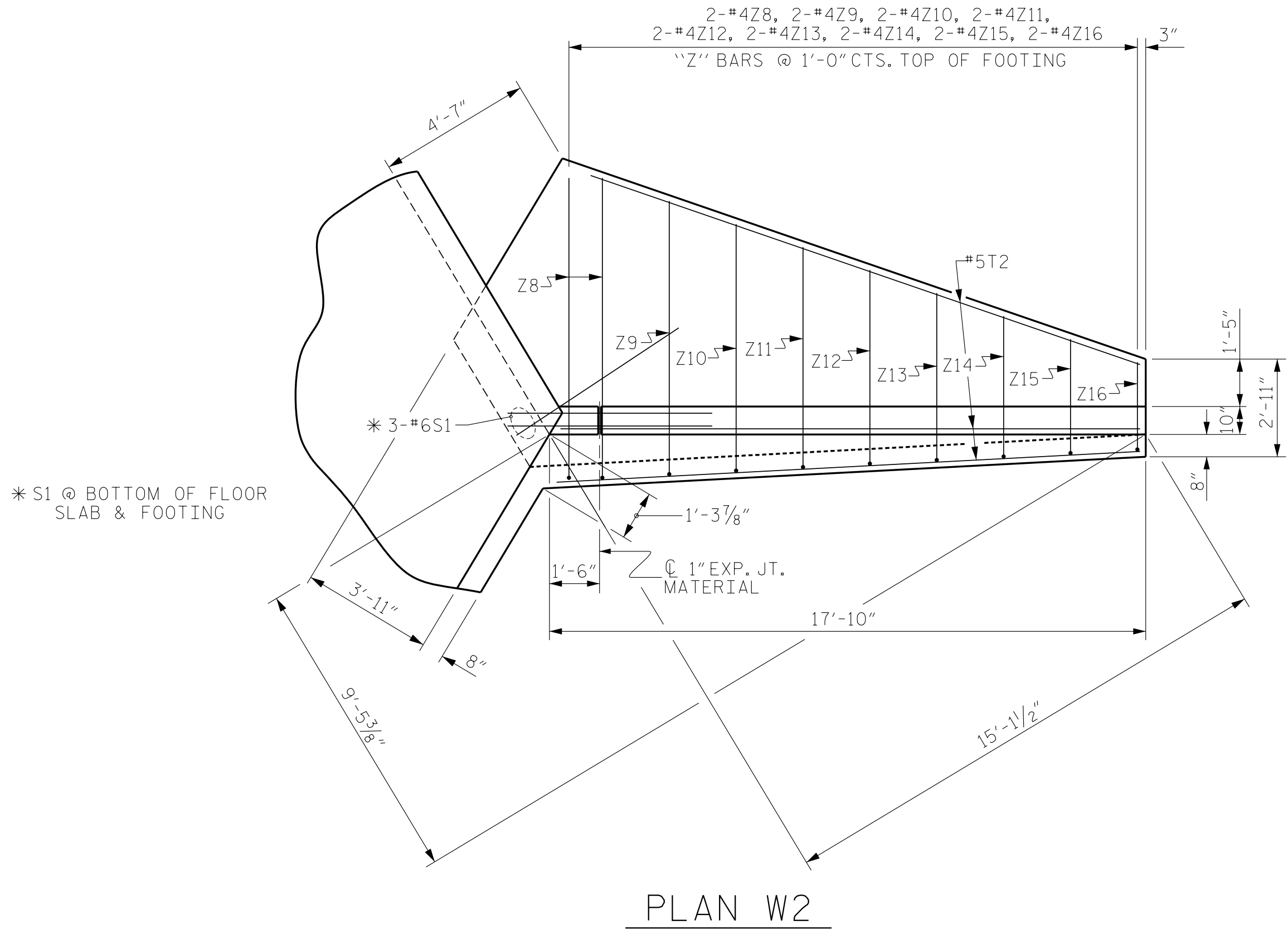
PROJECT NO. U-5875

PITT COUNTY

STATION: 127+58.00 -L-

SHEET 6 OF 10

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SINGLE 7' X 8' CONCRETE BOX CULVERT W1 WING DETAILS H= 8'-0" SLOPE= 3:1 117° SKEW					
DSG. ENG. OF RECORD: KHC			REVISIONS		
DWN. BY: WDC			NO.	BY:	DATE:
CHKD. BY: RRL			1		
			2		
			3		
			4		
			SHEET NO. C3-6		
			TOTAL SHEETS 10		



BILL OF MATERIAL - W2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H5	8	#4	STR	15'-11"	85
H6	2	#4	STR	9'-4"	12
H7	2	#4	STR	16'-4"	22
H8	12	#4	1	3'-3"	26
N12	2	#5	2	10'-5"	22
N13	2	#4	2	9'-11"	13
N14	2	#4	2	9'-6"	13
N15	2	#4	2	9'-0"	12
N16	2	#4	2	8'-7"	11
N17	2	#4	2	8'-2"	11
N18	2	#4	2	7'-8"	10
N19	2	#4	2	7'-3"	10
N20	2	#4	2	6'-10"	9
S1	3	#6	STR	6'-0"	27
T2	3	#5	STR	17'-4"	54
V12	2	#5	STR	8'-5"	18
V13	2	#4	STR	7'-11"	11
V14	2	#4	STR	7'-5"	10
V15	2	#4	STR	7'-0"	9
V16	2	#4	STR	6'-7"	9
V17	2	#4	STR	6'-1"	8
V18	2	#4	STR	5'-8"	8
V19	2	#4	STR	5'-3"	7
V20	2	#4	STR	4'-9"	6
Z8	2	#4	3	9'-6"	13
Z9	2	#4	3	8'-8"	12
Z10	2	#4	3	7'-11"	11
Z11	2	#4	3	7'-1"	9
Z12	2	#4	3	6'-4"	8
Z13	2	#4	3	5'-6"	7
Z14	2	#4	3	4'-9"	6
Z15	2	#4	3	3'-11"	5
Z16	2	#4	3	3'-2"	4

REINFORCING STEEL = 498 LBS
FOR W2 WING

PHASE I WING QUANTITIES

CLASS A CONCRETE		
W1 WING & FOOTING	9.0	CY
W2 WING & FOOTING	8.7	CY
1 HEADWALL	0.5	CY
1 END CURTAIN WALL	1.8	CY
2 EDGE BEAMS	0.7	CY
TOTAL	20.7	CY

REINFORCING STEEL		
W1 WING & FOOTING	585	LBS
W2 WING & FOOTING	498	LBS
TOTAL	1083	LBS

PROJECT NO. U-5875
PITT COUNTY
STATION: 127+58.00 -L-

SHEET 7 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SINGLE 7' X 8'
CONCRETE BOX CULVERT

W2 WING DETAILS

H= 8'-0" SLOPE= 3:1
117° SKEW



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DWN. BY: WDC	DATE: 7/18	NO.	BY:	DATE:	NO.	BY:	DATE:	C3-7	
CHKD. BY: RRL	DATE: 8/18	1			3			TOTAL SHEETS	
		2			4			10	

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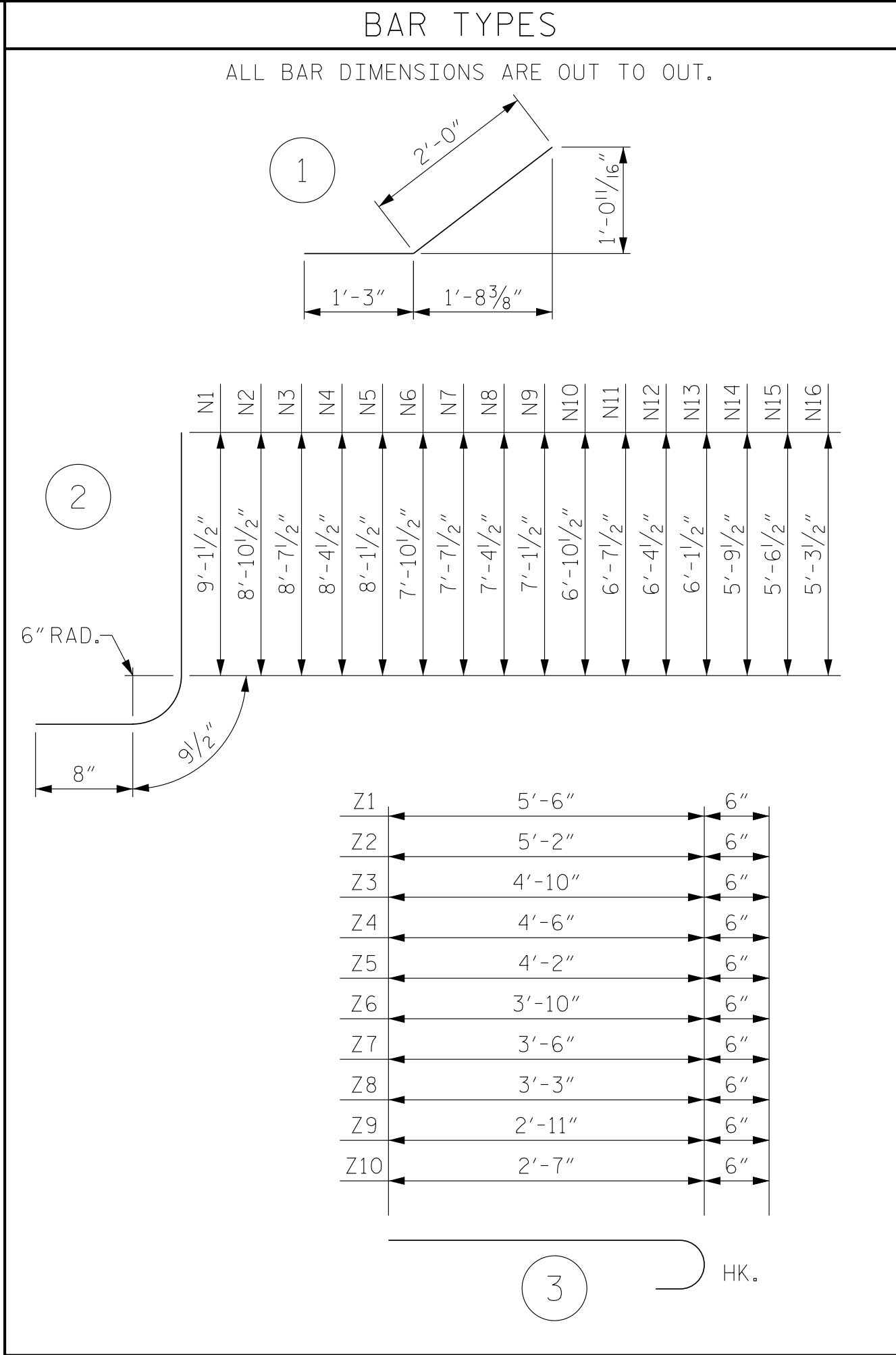
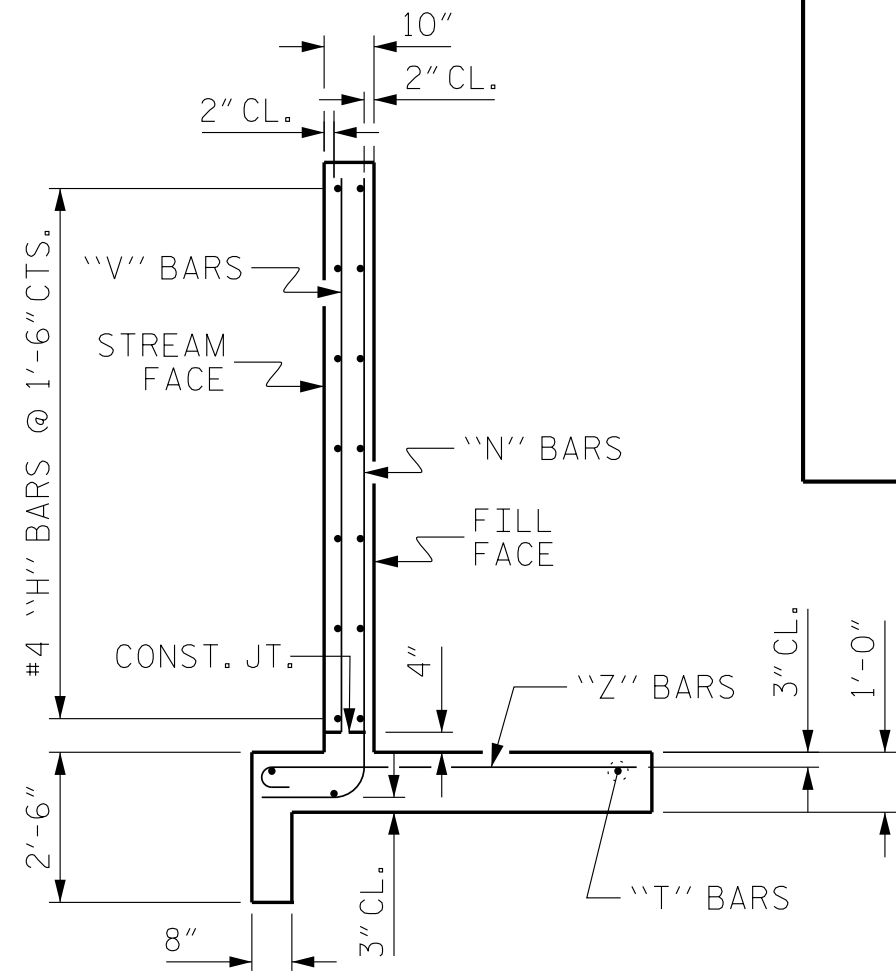
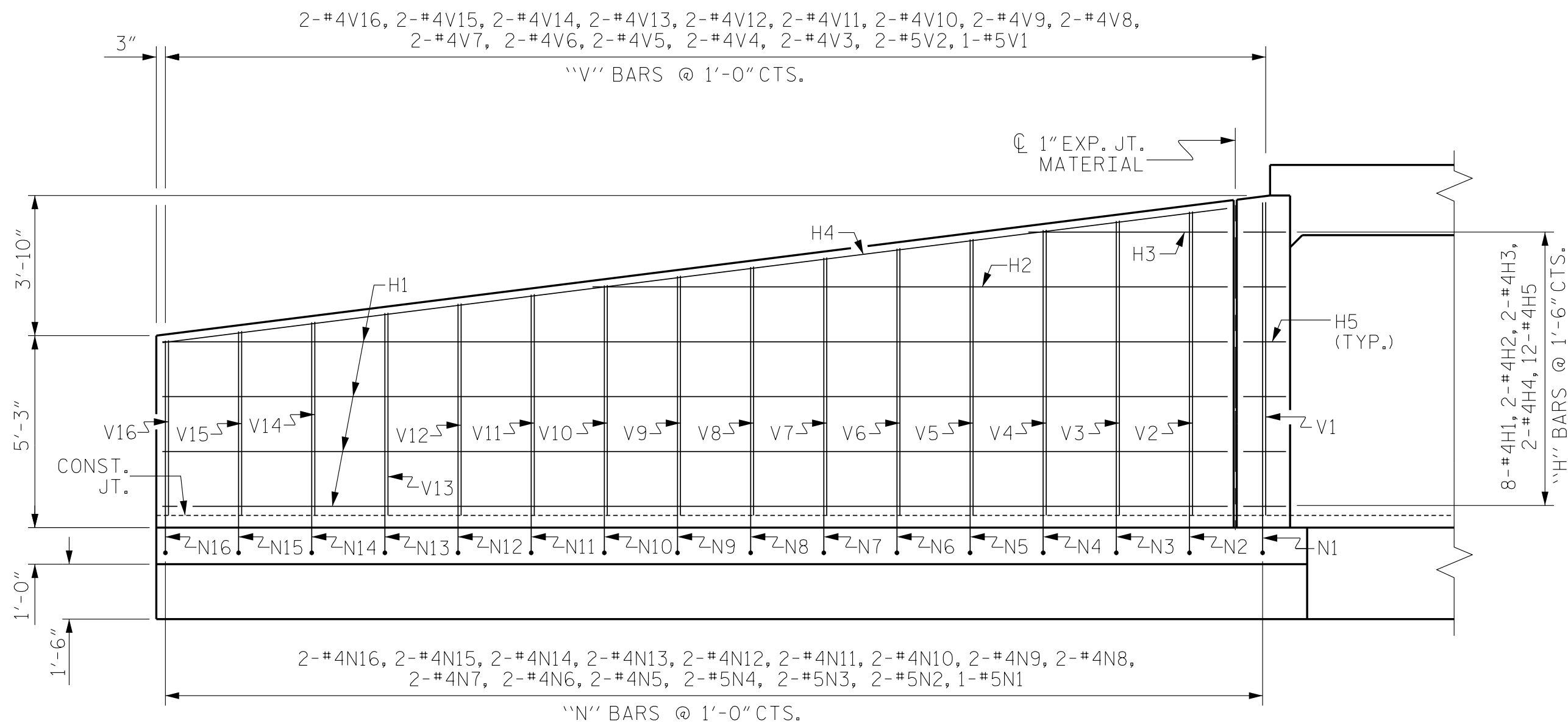
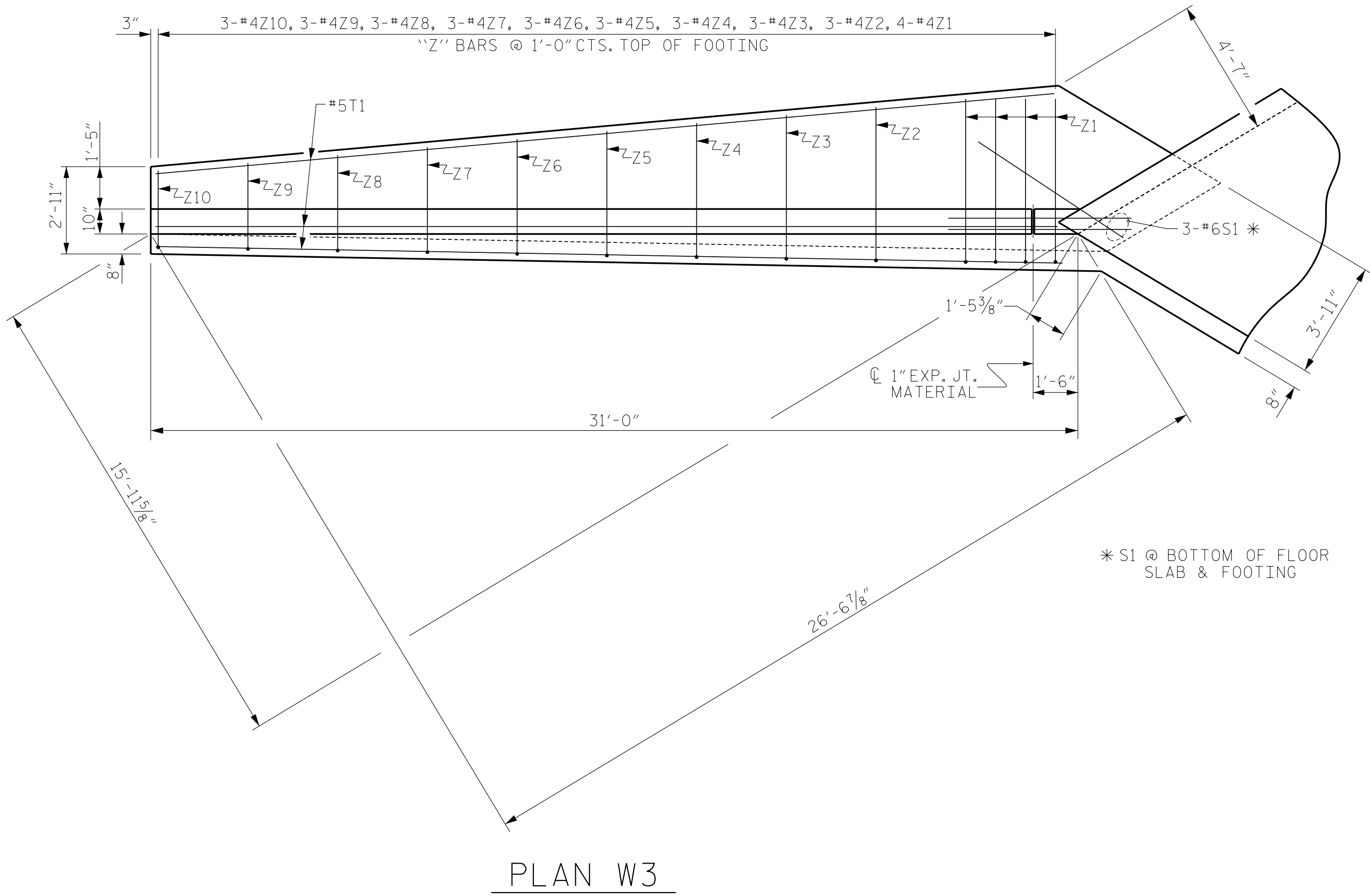
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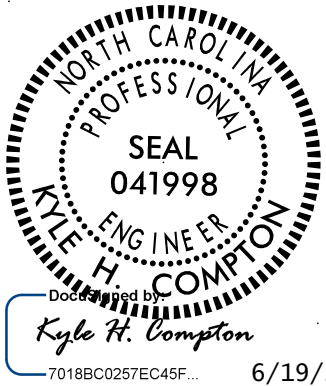
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BILL OF MATERIAL - W3					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	8	#4	STR	29'-1"	155
H2	2	#4	STR	17'-4"	23
H3	2	#4	STR	5'-5"	7
H4	2	#4	STR	29'-4"	39
H5	12	#4	1	3'-3"	26
N1	1	#5	2	10'-7"	11
N2	2	#5	2	10'-4"	22
N3	2	#5	2	10'-1"	21
N4	2	#5	2	9'-10"	21
N5	2	#4	2	9'-7"	13
N6	2	#4	2	9'-4"	12
N7	2	#4	2	9'-1"	12
N8	2	#4	2	8'-10"	12
N9	2	#4	2	8'-7"	11
N10	2	#4	2	8'-4"	11
N11	2	#4	2	8'-1"	11
N12	2	#4	2	7'-10"	10
N13	2	#4	2	7'-7"	10
N14	2	#4	2	7'-3"	10
N15	2	#4	2	7'-0"	9
N16	2	#4	2	6'-9"	9
S1	3	#6	STR	6'-0"	27
T1	3	#5	STR	30'-1"	94
V1	1	#5	STR	8'-6"	9
V2	2	#5	STR	8'-3"	17
V3	2	#4	STR	8'-0"	11
V4	2	#4	STR	7'-9"	10
V5	2	#4	STR	7'-6"	10
V6	2	#4	STR	7'-3"	10
V7	2	#4	STR	7'-0"	9
V8	2	#4	STR	6'-9"	9
V9	2	#4	STR	6'-6"	9
V10	2	#4	STR	6'-3"	8
V11	2	#4	STR	6'-0"	8
V12	2	#4	STR	5'-9"	8
V13	2	#4	STR	5'-6"	7
V14	2	#4	STR	5'-3"	7
V15	2	#4	STR	5'-0"	7
V16	2	#4	STR	4'-9"	6
Z1	4	#4	3	6'-0"	16
Z2	3	#4	3	5'-8"	11
Z3	3	#4	3	5'-4"	11
Z4	3	#4	3	5'-0"	10
Z5	3	#4	3	4'-8"	9
Z6	3	#4	3	4'-4"	9
Z7	3	#4	3	4'-0"	8
Z8	3	#4	3	3'-9"	8
Z9	3	#4	3	3'-5"	7
Z10	3	#4	3	3'-1"	6
REINFORCING STEEL FOR W3 WING					= 816 LBS

PROJECT NO. U-5875
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SHEET 8 OF 10



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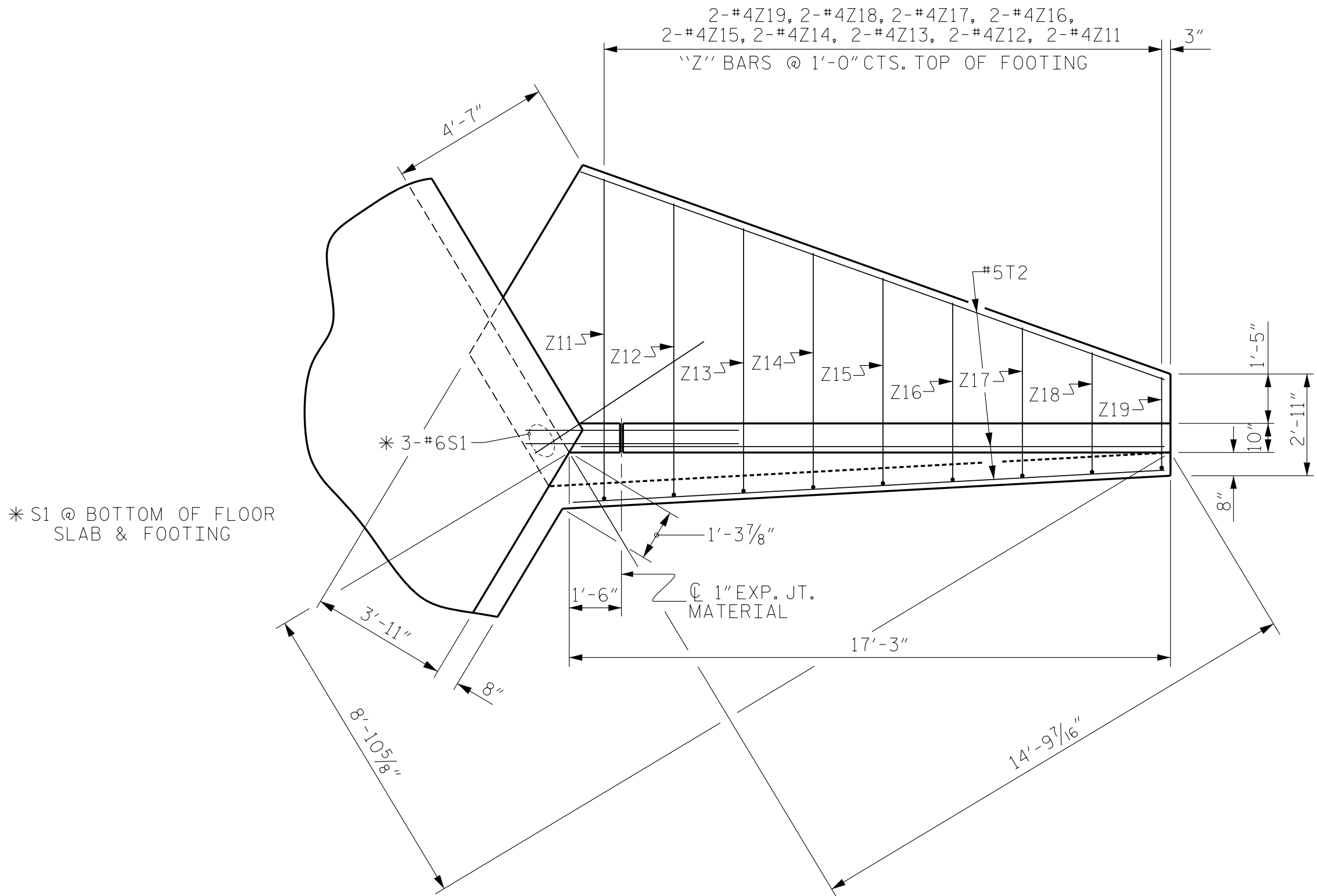
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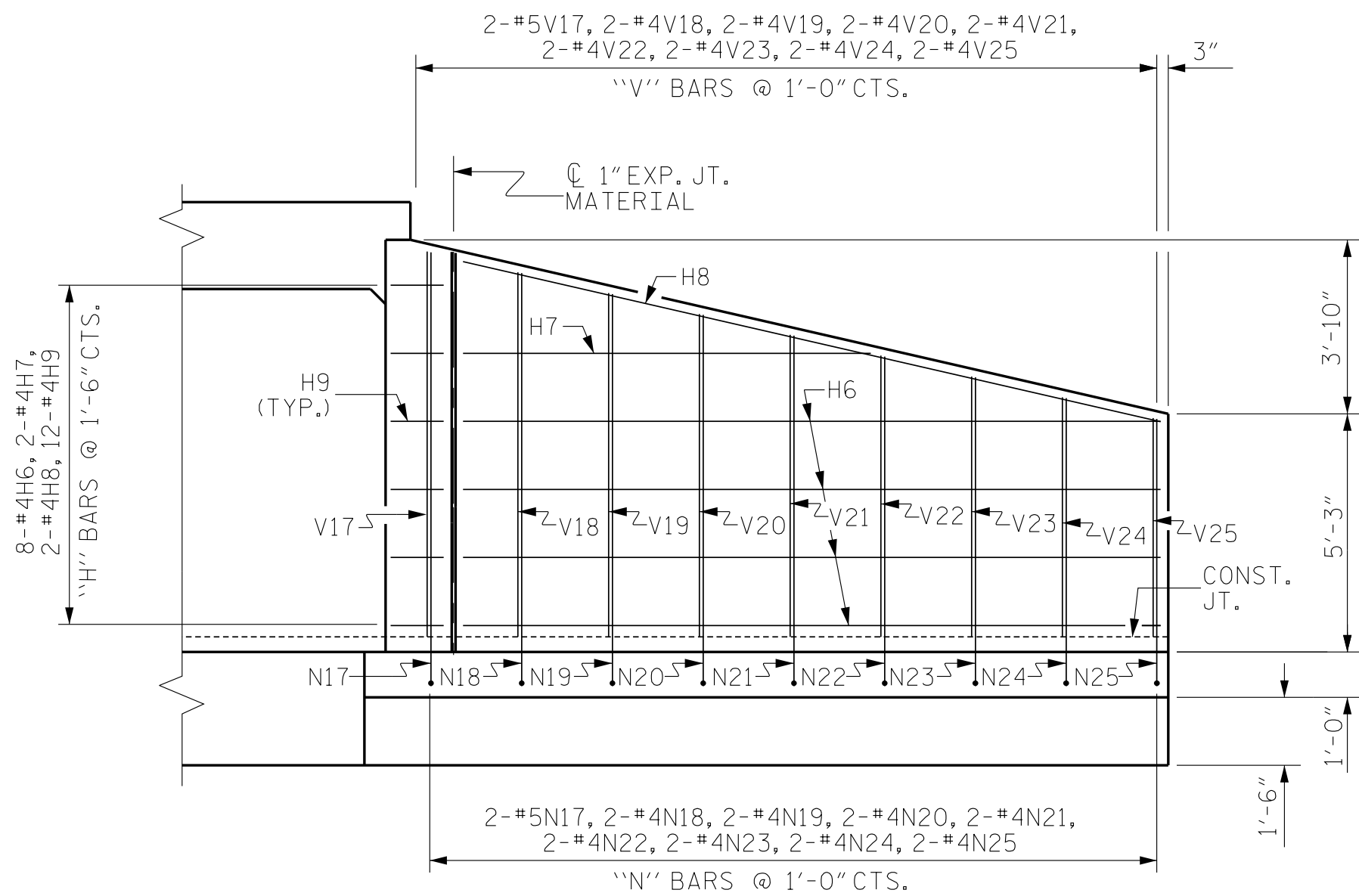
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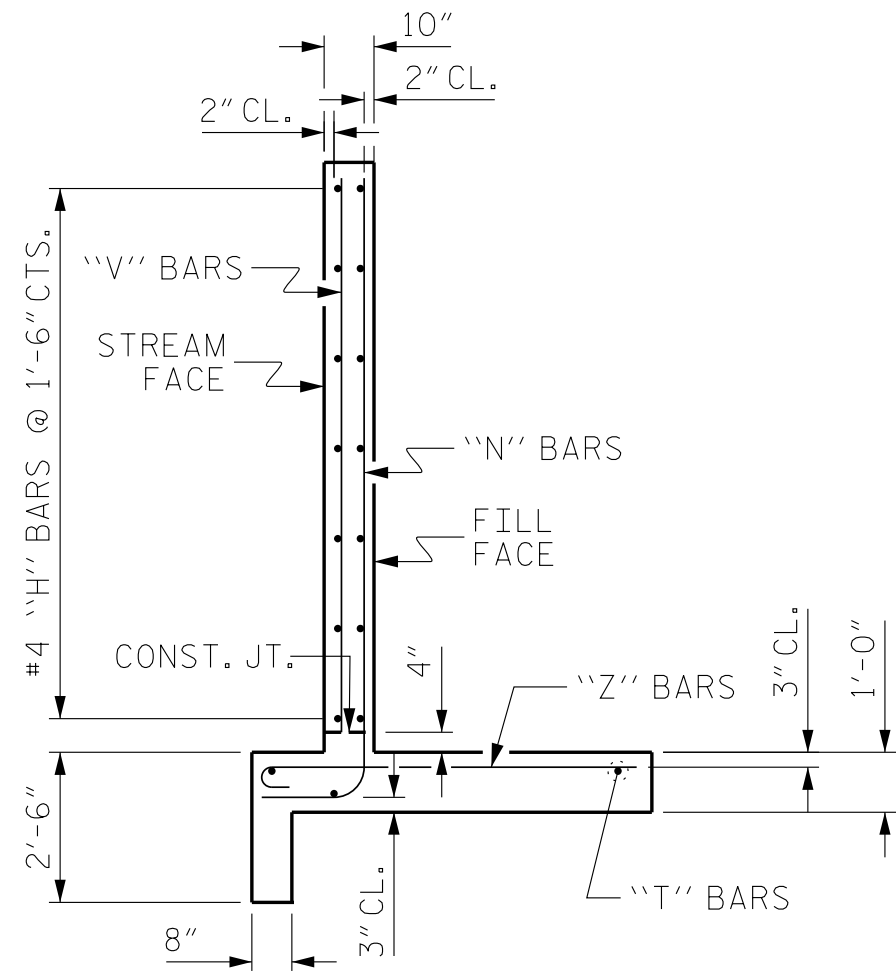
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NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS		C3-8	
1	WDC	7/18	3			10			
2	RRL	8/18	4						



PLAN W4



ELEVATION W4



TYPICAL WING SECTION

BAR TYPES				BILL OF MATERIAL - W4					
ALL BAR DIMENSIONS ARE OUT TO OUT.				BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
				H6	8	#4	STR	15'-4"	82
				H7	2	#4	STR	8'-11"	12
				H8	2	#4	STR	15'-9"	21
				H9	12	#4	1	3'-3"	26
				N17	2	#5	2	10'-6"	22
				N18	2	#4	2	10'-0"	13
				N19	2	#4	2	9'-7"	13
				N20	2	#4	2	9'-1"	12
				N21	2	#4	2	8'-8"	12
				N22	2	#4	2	8'-2"	11
				N23	2	#4	2	7'-9"	10
				N24	2	#4	2	7'-3"	10
				N25	2	#4	2	6'-10"	9
				S1	3	#6	STR	6'-0"	27
				T2	3	#5	STR	16'-9"	52
				V17	2	#5	STR	8'-5"	18
				V18	2	#4	STR	8'-0"	11
				V19	2	#4	STR	7'-6"	10
				V20	2	#4	STR	7'-1"	9
				V21	2	#4	STR	6'-7"	9
				V22	2	#4	STR	6'-2"	8
				V23	2	#4	STR	5'-8"	8
				V24	2	#4	STR	5'-3"	7
				V25	2	#4	STR	4'-9"	6
				Z11	2	#4	3	9'-8"	13
				Z12	2	#4	3	8'-11"	12
				Z13	2	#4	3	8'-1"	11
				Z14	2	#4	3	7'-3"	10
				Z15	2	#4	3	6'-5"	9
				Z16	2	#4	3	5'-7"	7
				Z17	2	#4	3	4'-9"	6
				Z18	2	#4	3	3'-11"	5
				Z19	2	#4	3	3'-2"	4
				REINFORCING STEEL = 495 LBS FOR W4 WING					

PHASE II
WING QUANTITIES

CLASS A CONCRETE		
W3 WING & FOOTING	12.7	CY
W4 WING & FOOTING	8.4	CY
1 HEADWALL	0.5	CY
1 END CURTAIN WALL	2.1	CY
2 EDGE BEAMS	0.7	CY
TOTAL	23.9	CY

REINFORCING STEEL		
W3 WING & FOOTING	816	LBS
W4 WING & FOOTING	495	LBS
TOTAL	1311	LBS

PROJECT NO. U-5875

PITT COUNTY

STATION: 127+58.00 -L-

SHEET 9 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SINGLE 7' X 8'
CONCRETE BOX CULVERT

W4 WING DETAILS

H= 8'-0" SLOPE= 3:1
117° SKEW



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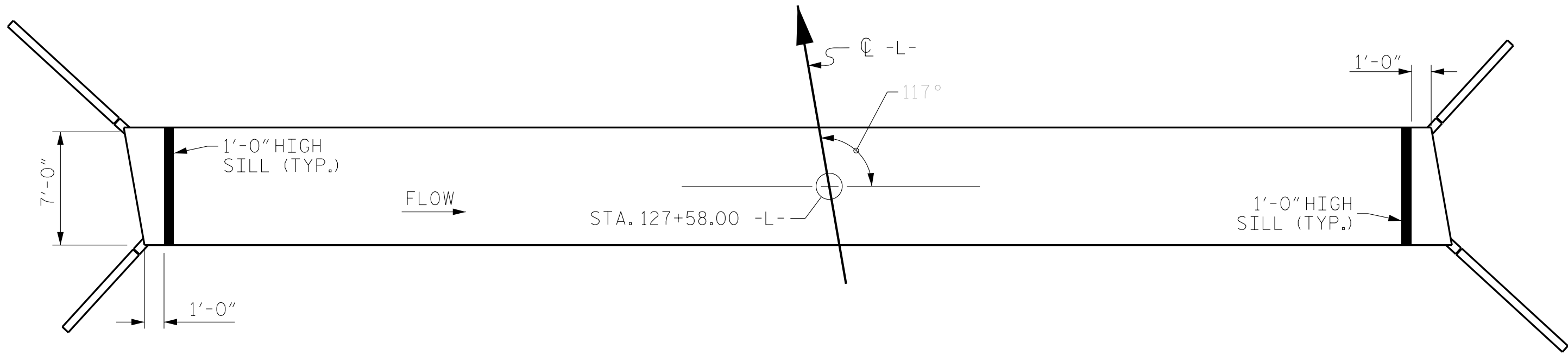
NOTES

SEE SHEETS C3-4 AND C3-5 FOR BAR SCHEDULE FOR DOWELS AND FOR SILL CONCRETE QUANTITY.

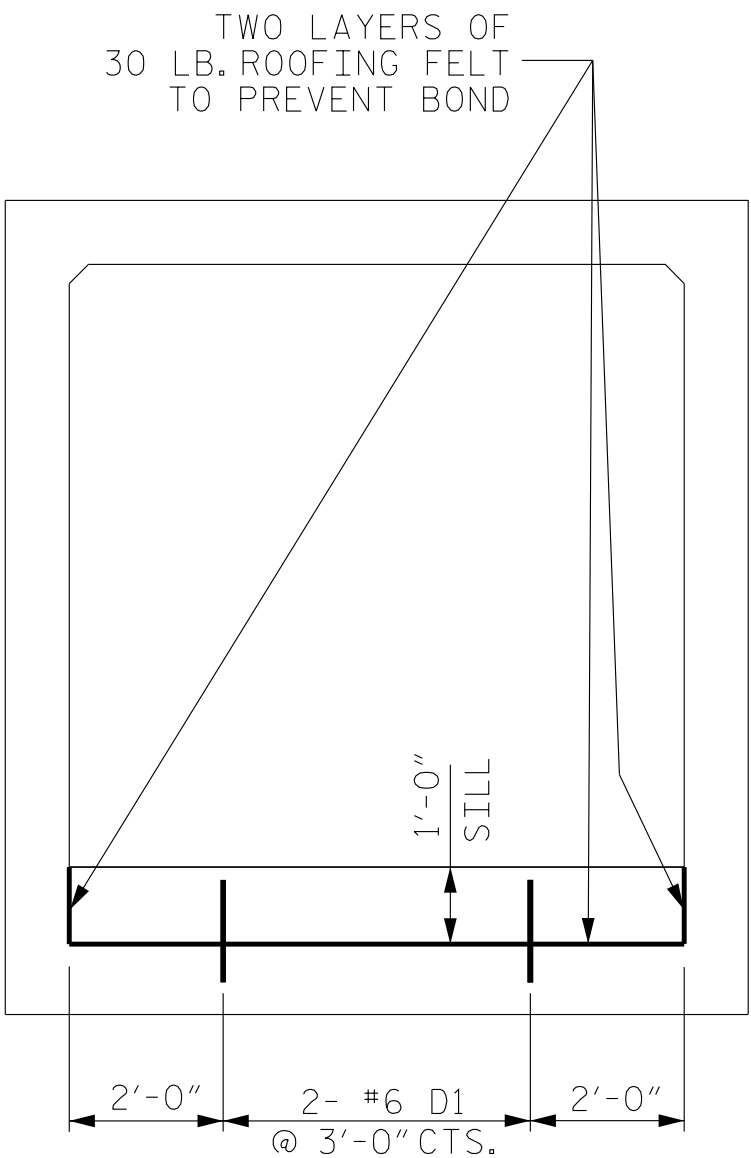
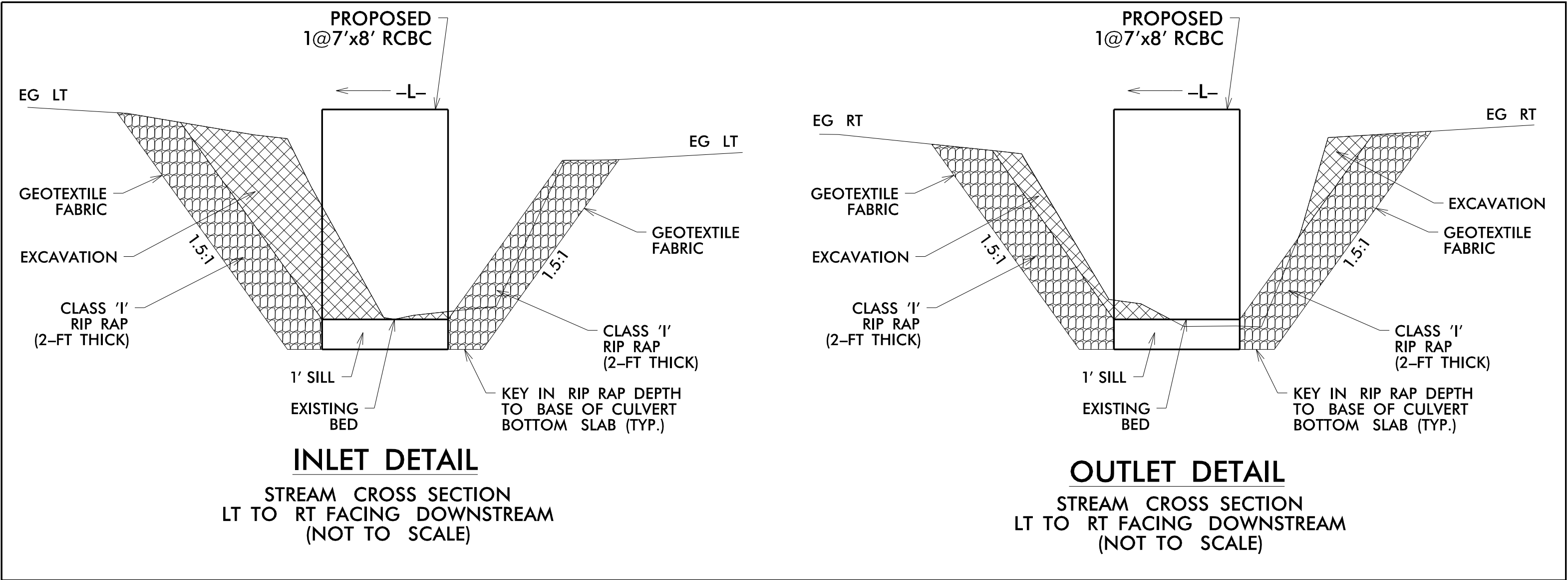
EXCAVATE FLOODPLAIN BENCH 1.0' ABOVE STREAM BED TO MATCH WIDTH OF CULVERT. LAY BACK BANK SLOPES TO 1.5:1. LINE SLOPES WITH CLASS I RIP RAP BOULDERS.

NATIVE BED MATERIAL SHALL BE PLACED BETWEEN THE SILLS IN THE LOW FLOW CULVERT. NATIVE MATERIALS CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED OR FLOODPLAIN AT THE PROJECT SITE DURING CULVERT CONSTRUCTION. RIP RAP MAY BE USED TO SUPPLEMENT THE NATIVE MATERIAL. IF RIP RAP IS USED, NATIVE MATERIAL SHOULD BE PLACED ON TOP TO FACILITATE ANIMAL PASSAGE. THE TOP SURFACE OF THE NATURAL STREAM BED MATERIAL SHALL BE PLACED AND LEVELED TO A FLAT SURFACE TO ALLOW FOR ANIMAL PASSAGE. THE HIGH FLOW BARRELS SHALL BE BACK FILLED WITH NATIVE MATERIAL AND/OR RIP RAP. NATIVE MATERIAL AND RIP RAP ARE SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.

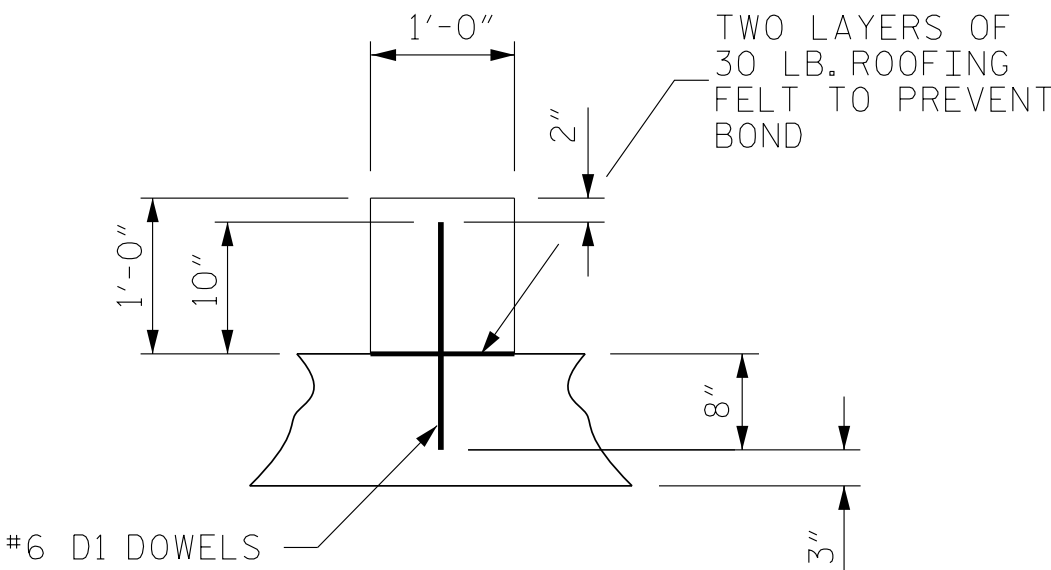
BED MATERIALS: SAND, SILT, MUD, ORGANIC MATERIAL.



CULVERT SILL LAYOUT



END ELEVATION



SECTION THROUGH SILL

DOWELS MAY BE PUSHED INTO GREEN CONCRETE AFTER SLAB HAS BEEN FLOATED.



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TOTAL SHEETS								10

PROJECT NO. U-5875

PITT COUNTY

STATION: 127+58.00 -L-

SHEET 10 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SINGLE 7' X 8'
CONCRETE BOX CULVERT

SILL DETAILS

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

SHEET NO.
C3-10

TOTAL SHEETS
10

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 APPROXIMATELY1⁄16" 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.