

### APRON AND HEADWALL BAR LIST

MARK	SIZE	FORM	10' SPAN			11' SPAN			12' SPAN		
			NO.	LENGTH	LENGTH VARIATION	NO.	LENGTH	LENGTH VARIATION	NO.	LENGTH	LENGTH VARIATION
ABD1	#4	STR.	72	4'-3"		78	4'-3"		84	4'-3"	
ABD2	#4	BNT.	4	5'-0"		4	5'-0"		4	5'-0"	
AD	#4	STR.	4	37'-6"		4	37'-6"		4	37'-6"	
AL1	#4	STR.	72	33'-7"		78	33'-7"		84	33'-7"	
AL2	#4	STR.	72	16'-11" AVG.	2'-3" TO 31'-7"	72	16'-11" AVG.	2'-3" TO 31'-7"	72	16'-11" AVG.	2'-3" TO 31'-7"
AT1	#4	STR.	4	73'-10"		4	76'-10"		4	79'-10"	
AT2	#4	STR.	10	68'-1" AVG.	62'-10" TO 73'-4"	12	69'-11" AVG.	63'-7" TO 76'-3"	15	71'-2" AVG.	63'-1" TO 79'-3"
AT3	#5	STR.	10	68'-1" AVG.	62'-10" TO 73'-4"	12	69'-11" AVG.	63'-7" TO 76'-3"	15	71'-2" AVG.	63'-1" TO 79'-3"
AT4	#4	STR.	23	46'-5" AVG.	33'-8" TO 59'-2"	21	48'-3" AVG.	36'-8" TO 59'-10"	18	49'-6" AVG.	39'-8" TO 59'-4"
AT5	#5	STR.	23	46'-5" AVG.	33'-8" TO 59'-2"	21	48'-3" AVG.	36'-8" TO 59'-10"	18	49'-6" AVG.	39'-8" TO 59'-4"
CH	#4	STR.	4	33'-8"		4	36'-8"		4	39'-8"	
CL1	#4	BNT.	38	4'-4"		41	4'-4"		44	4'-4"	
CL2	#4	BNT.	38	4'-4"		41	4'-4"		44	4'-4"	

- ① 4 SETS OF 18 BARS
- ② LENGTH INCLUDES 2'-6" LAP

### QUANTITIES

ITEM	UNIT	10' SPAN	11' SPAN	12' SPAN
CLASS AA CONCRETE	C.Y.	94.2	98.3	102.6
REINFORCING STEEL	LB.	11,080	11,450	11,770
PIPE RAILING	L.F.	109	112	115

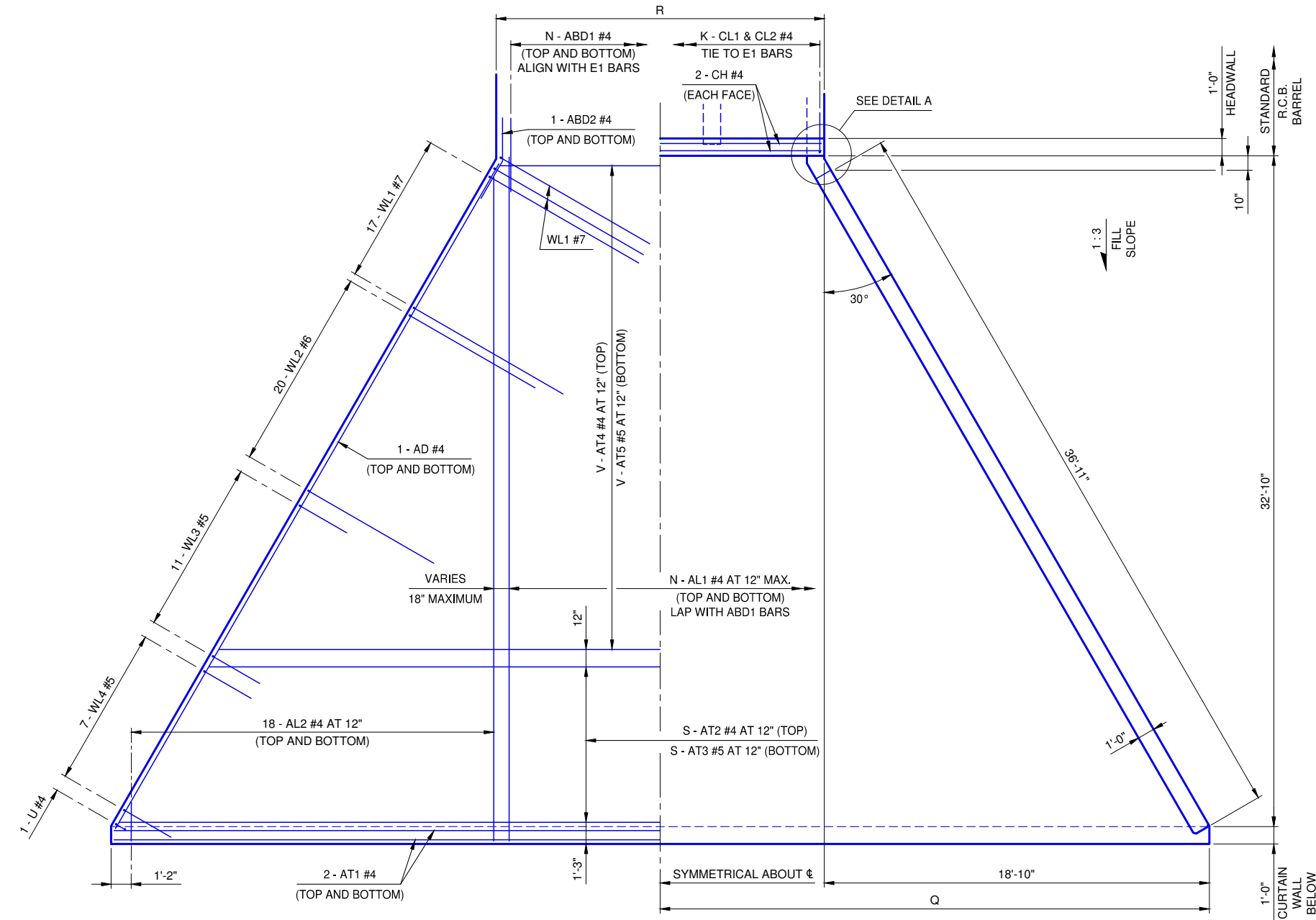
NOTE:  
 QUANTITIES ARE FOR ONE END SECTION WHICH INCLUDES ONE HEADWALL, ONE APRON AND TWO WINGWALLS. PIPE RAILING IS BASED ON PLAN DIMENSION AT CENTERLINE OF RAILING.

### APRON VARIABLES

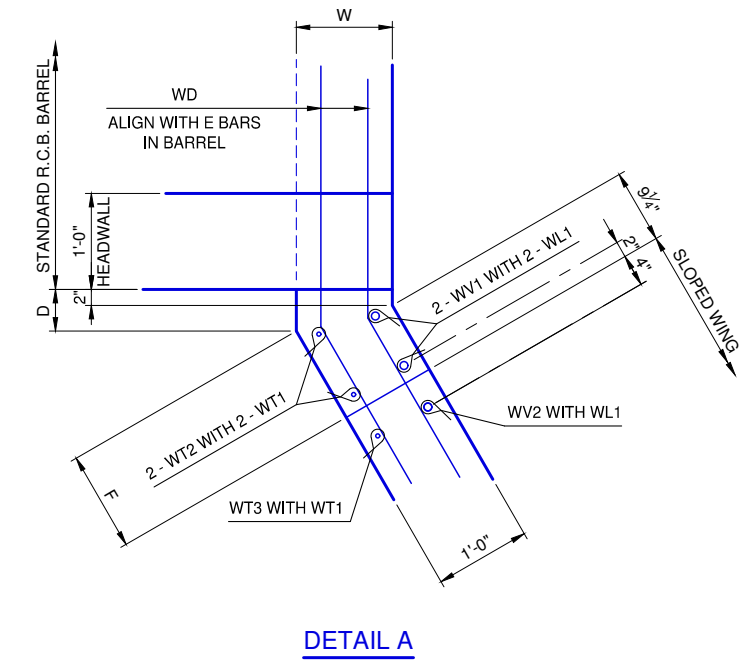
SPAN	DIMENSIONS		NUMBER OF BARS					
	R	Q	K	N	S	V		
10'	34'-0"	35'-10"	38	36	10	23		
11'	37'-0"	37'-4"	41	39	12	21		
12'	40'-0"	38'-10"	44	42	15	18		

### WINGWALL DIMENSIONS

SPAN	W	D	F
10'	12"	5 3/16"	1'-0 7/16"
11'	12"	5 3/16"	1'-0 7/16"
12'	12"	5 3/16"	1'-0 7/16"



**APRON PLAN**

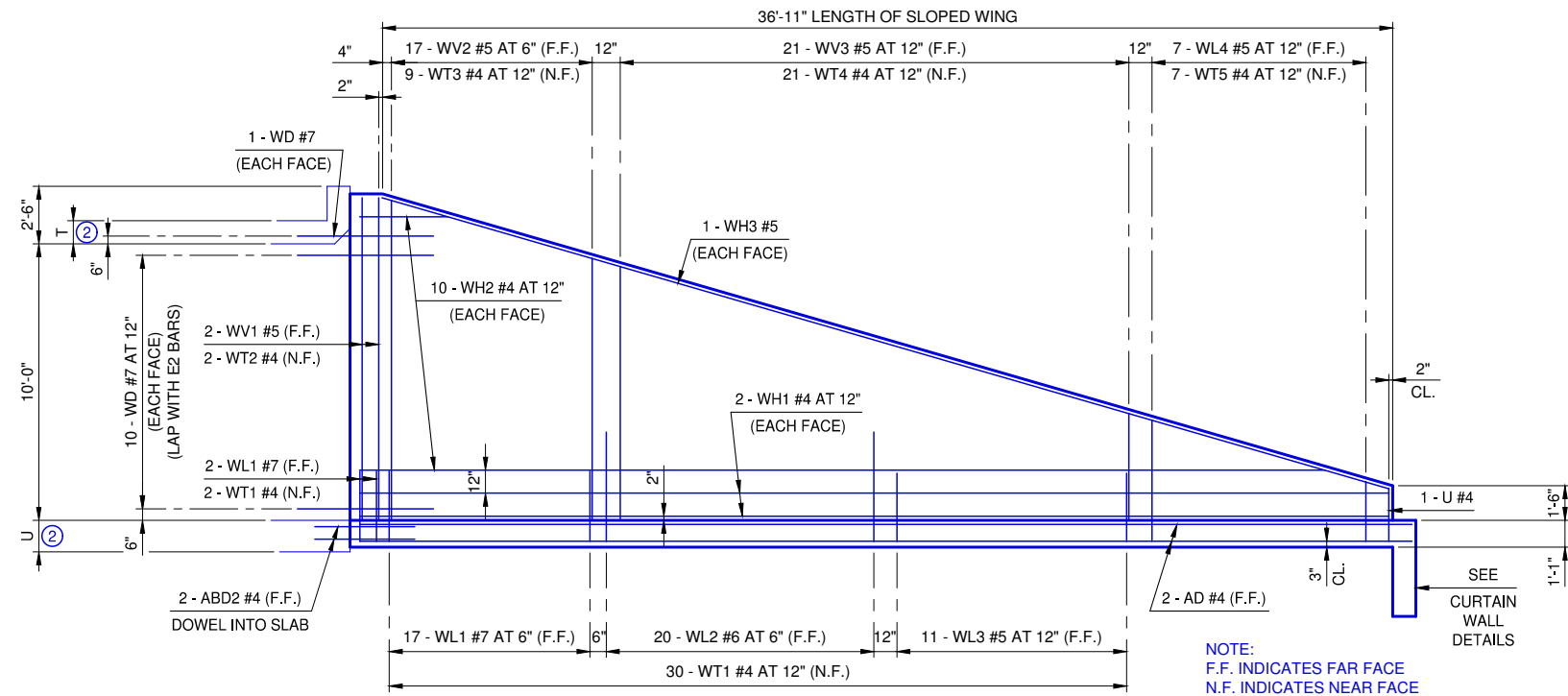


**DETAIL A**

REVISION NO.
DATE

APPROVED BY: DATE: 6/22/2023  
 ERIC J. WENGER, P.E.  
 CITY ENGINEER

THESE STANDARD DRAWINGS AND ASSOCIATED CALCULATIONS HAVE BEEN PREPARED BY CEC CORPORATION UNDER CONTRACT WITH THE CITY OF OKLAHOMA CITY.



**WINGWALL ELEVATION**

NOTE:  
F.F. INDICATES FAR FACE  
N.F. INDICATES NEAR FACE

**ADJUSTMENT IN NUMBER OF BARREL BARS IN END SECTION**

SPAN	BAR MARKS								
	A1	A2	A3	B1	B2	C1	C2	C3	C4
10'		-1				-4	-4	+2	+2
11'		-1				-4	-4	+2	+2
12'		-1	-2			-4	-4	+2	+2

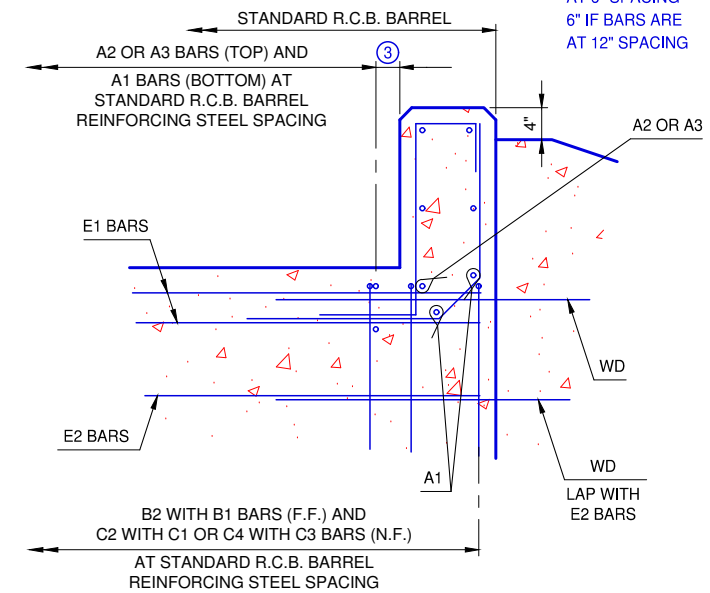
NOTE:  
TO CONSTRUCT ONE END SECTION AS SHOWN, THE NUMBER OF BARS SHOWN NEED TO BE ADDED TO OR SUBTRACTED FROM THE TOTAL WEIGHT OF REINFORCING FOR THE BARREL. THIS WEIGHT ADJUSTMENT IS INCLUDED IN THE END SECTION QUANTITY. SEE BARREL DETAILS FOR BAR LENGTHS, SIZES AND BENDS.

**WINGWALL BAR LIST**

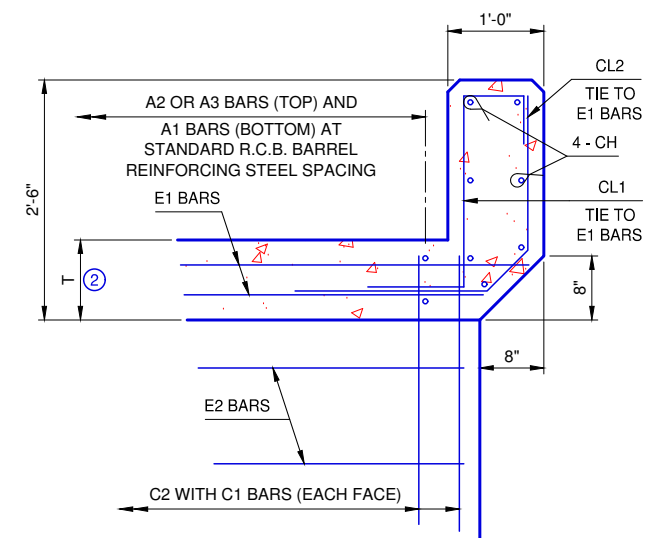
ONE WINGWALL SHOWN, TWO REQUIRED					
MARK	SIZE	NO.	FORM	LENGTH	LENGTH VARIATION
WD	#7	22	BNT.	6'-8"	
WH1	#4	4	STR.	37'-9"	
WH2	#4	20	STR.	19'-4" AVG.	3'-9" TO 34'-11"
WH3	#5	2	STR.	38'-3"	
WL1	#7	19	BNT.	14'-2"	
WL2	#6	20	BNT.	14'-6"	
WL3	#5	11	BNT.	6'-2"	
WL4	#5	7	BNT.	6'-3" AVG.	5'-5" TO 7'-1"
WT1	#4	32	STR.	2'-6"	
WT2	#4	2	STR.	12'-0"	
WT3	#4	9	STR.	10'-8" AVG.	9'-6" TO 11'-10"
WT4	#4	21	STR.	6'-4" AVG.	3'-5" TO 9'-3"
WT5	#4	7	STR.	3'-1" AVG.	2'-3" TO 3'-11"
WV1	#5	2	STR.	12'-0"	
WV2	#5	17	STR.	10'-8" AVG.	9'-6" TO 11'-10"
WV3	#5	21	STR.	6'-4" AVG.	3'-5" TO 9'-3"
U	#4	1	BNT.	5'-1"	

① 2 SETS OF 10 BARS

③ 3" IF BARS ARE AT 6" SPACING  
6" IF BARS ARE AT 12" SPACING

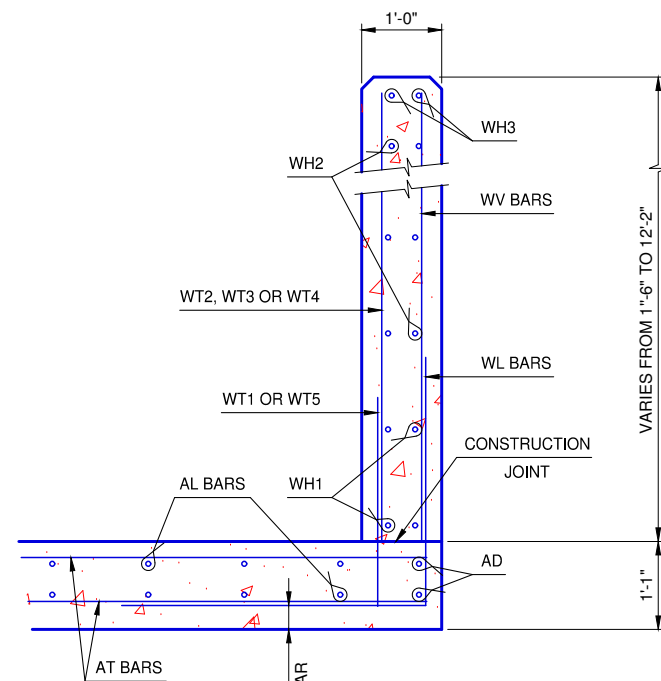
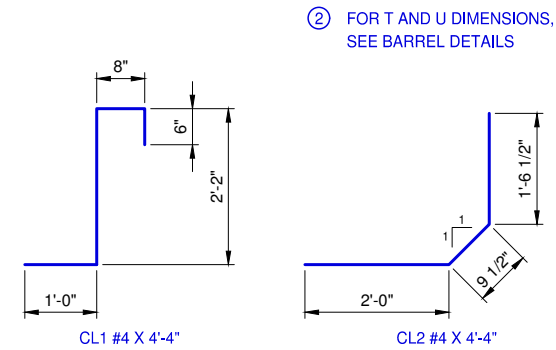


**HEADWALL DETAIL AT EXTERIOR WALL**

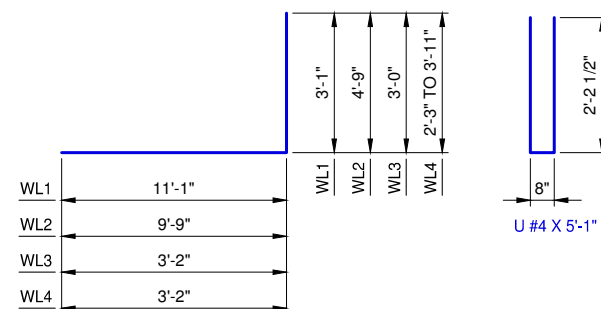


**HEADWALL DETAIL AT INTERIOR WALL**

SEE STD. RCB-015 PipeRailing FOR DETAILS OF RAIL REQUIRED ON TOP OF HEADWALL AND WINGS



**TYPICAL SECTION THRU WING**



WL1 #7 X 14'-2"  
WL2 #6 X 14'-6"  
WL3 #5 X 6'-2"  
WL4 #5 X 6'-3" AVG.

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**R.C.B. CULVERTS - END SECTION DETAILS**  
**TRIPLE CELL - 10' HEIGHT - 0° SKEW**

SHEET NO. 2 OF 2

Drawing Number  
RCB-079

REVISION NO.  
DATE

