

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.

R.C.B. CULVERTS - END SECTION DETAILS
DOUBLE CELL - 11' HEIGHT - 0° SKEW

SHEET NO. 1 OF 2

Drawing Number
RCB-056

APRON AND HEADWALL BAR LIST								
MARK	SIZE	FORM	11' SPAN			12' SPAN		
			NO.	LENGTH	LENGTH VARIATION	NO.	LENGTH	LENGTH VARIATION
ABD1	#4	STR.	52	4'-3"		56	4'-3"	
ABD2	#4	BNT.	4	5'-0"		4	5'-0"	
AD	#4	STR.	4	41'-0"		4	41'-0"	
AL1	#4	STR.	52	36'-7"		56	36'-7"	
AL2	#4	STR.	80	18'-7" AVG.	2'-3" TO 34'-11"	80	18'-7" AVG.	2'-3" TO 34'-11"
AT1	#4	STR.	4	68'-4"		4	70'-4"	
AT2	#4	STR.	5	65'-4" AVG.	63'-0" TO 67'-8"	7	66'-2" AVG.	62'-8" TO 69'-8"
AT3	#5	STR.	5	65'-4" AVG.	63'-0" TO 67'-8"	7	66'-2" AVG.	62'-8" TO 69'-8"
AT4	#4	STR.	31	42'-0" AVG.	24'-8" TO 59'-4"	29	42'-10" AVG.	26'-8" TO 59'-0"
AT5	#5	STR.	31	42'-0" AVG.	24'-8" TO 59'-4"	29	42'-10" AVG.	26'-8" TO 59'-0"
CH	#4	STR.	4	24'-8"		4	26'-8"	
CL1	#4	BNT.	28	4'-4"		30	4'-4"	
CL2	#4	BNT.	28	4'-4"		30	4'-4"	

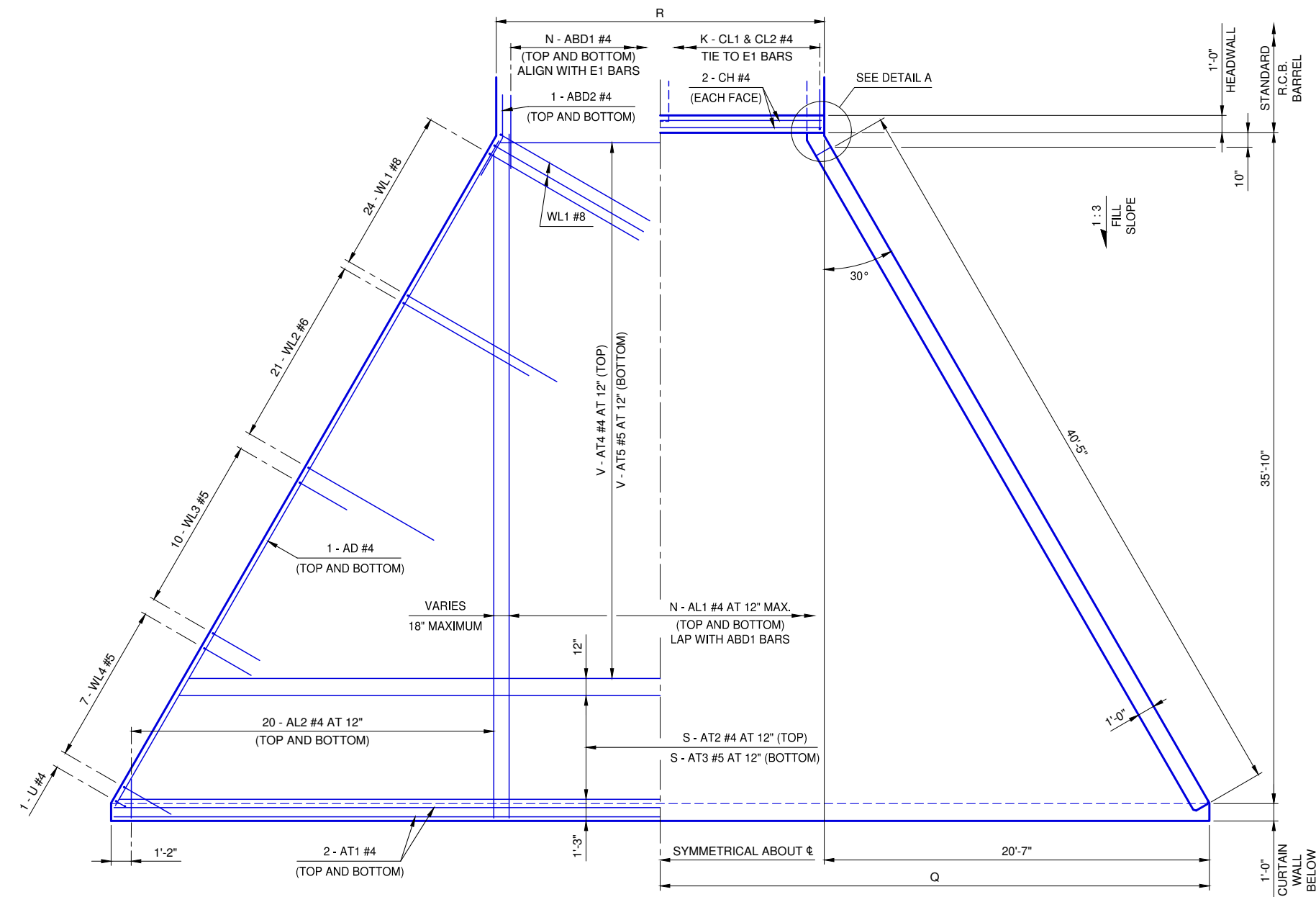
- ① 4 SETS OF 20 BARS
- ② LENGTH INCLUDES 2'-6" LAP

QUANTITIES				
ITEM	UNIT	11' SPAN	12' SPAN	
CLASS AA CONCRETE	C.Y.	98.0	101.2	
REINFORCING STEEL	L.B.	12,570	12,810	
PIPE RAILING	L.F.	107	109	

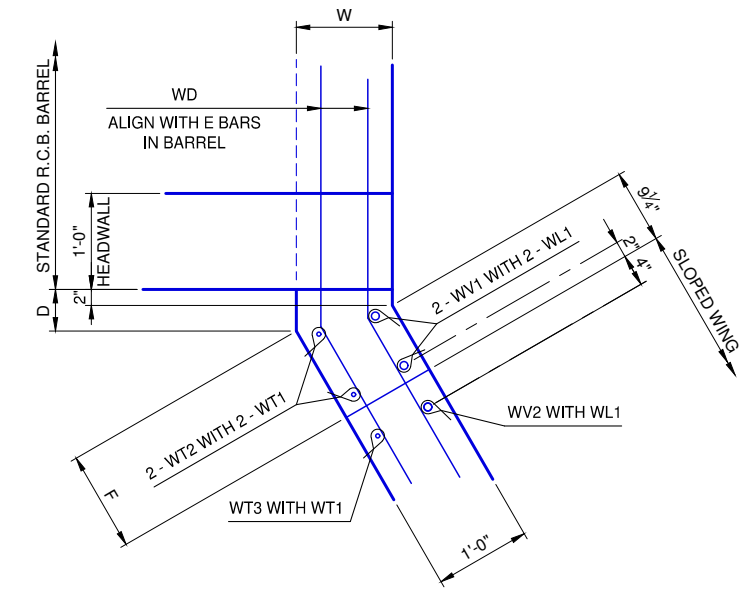
NOTE:
QUANTITIES ARE FOR ONE END SECTION WHICH INCLUDES ONE HEADWALL, ONE APRON AND TWO WINGWALLS. PIPE RAILING IS BASED ON PLAN DIMENSION AT CENTERLINE OF RAILING.

SPAN	APRON VARIABLES					
	DIMENSIONS	NUMBER OF BARS				
	R	Q	K	N	S	V
11'	25'-0"	33'-1"	28	26	5	31
12'	27'-0"	34'-1"	30	28	7	29

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

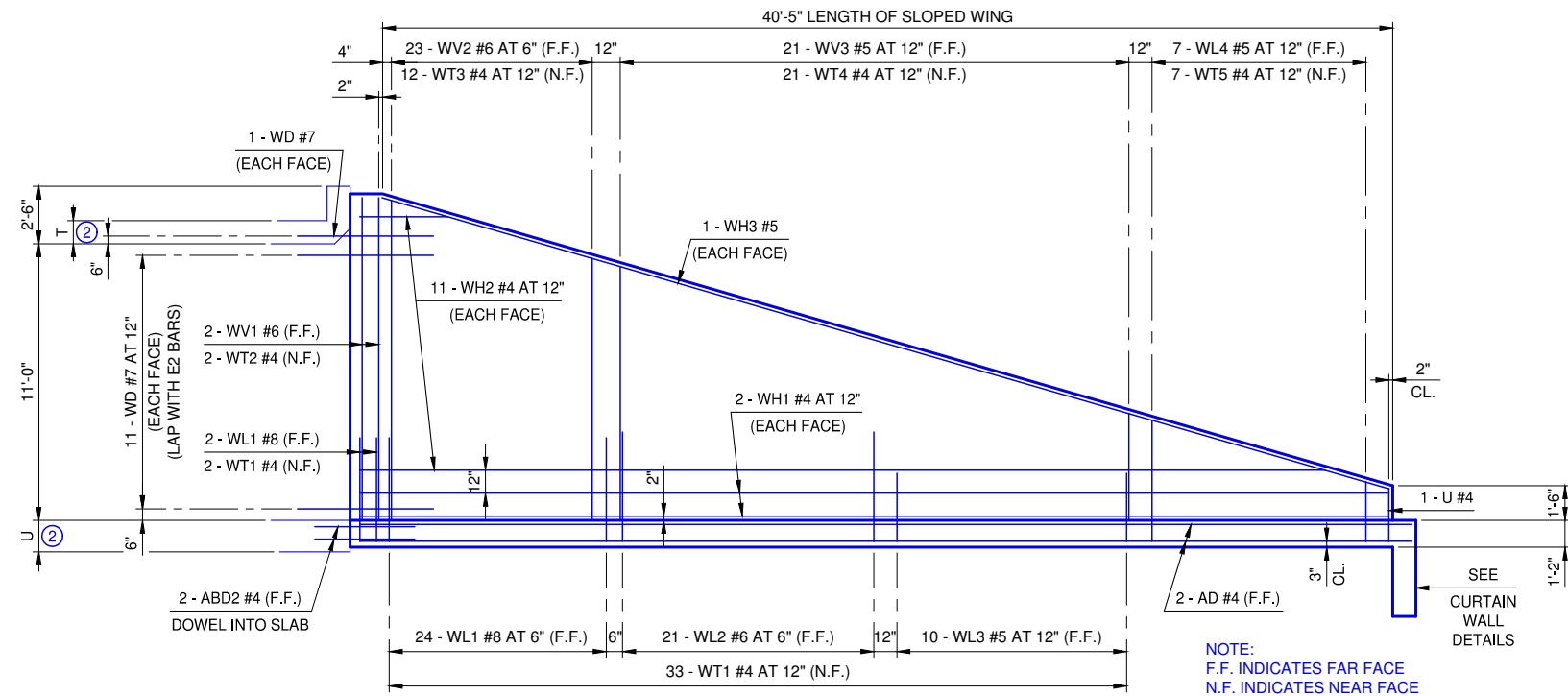


APRON PLAN



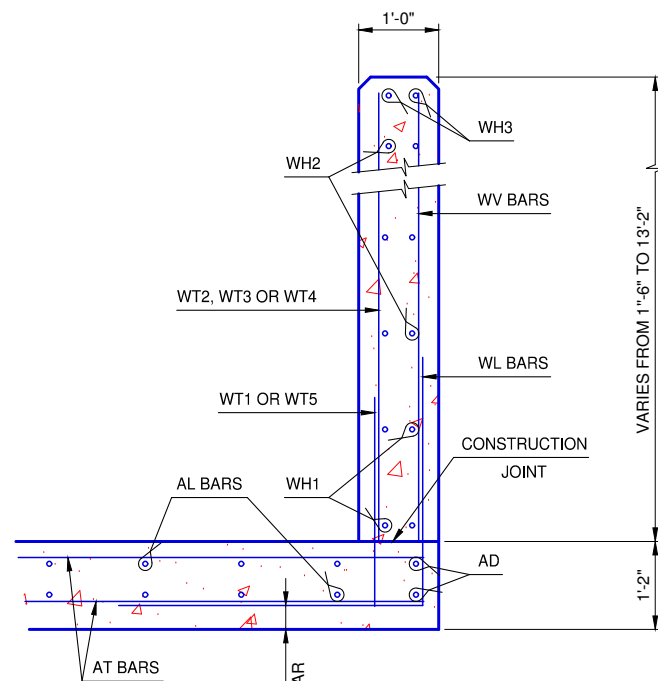
DETAIL A

REVISION NO.	DATE

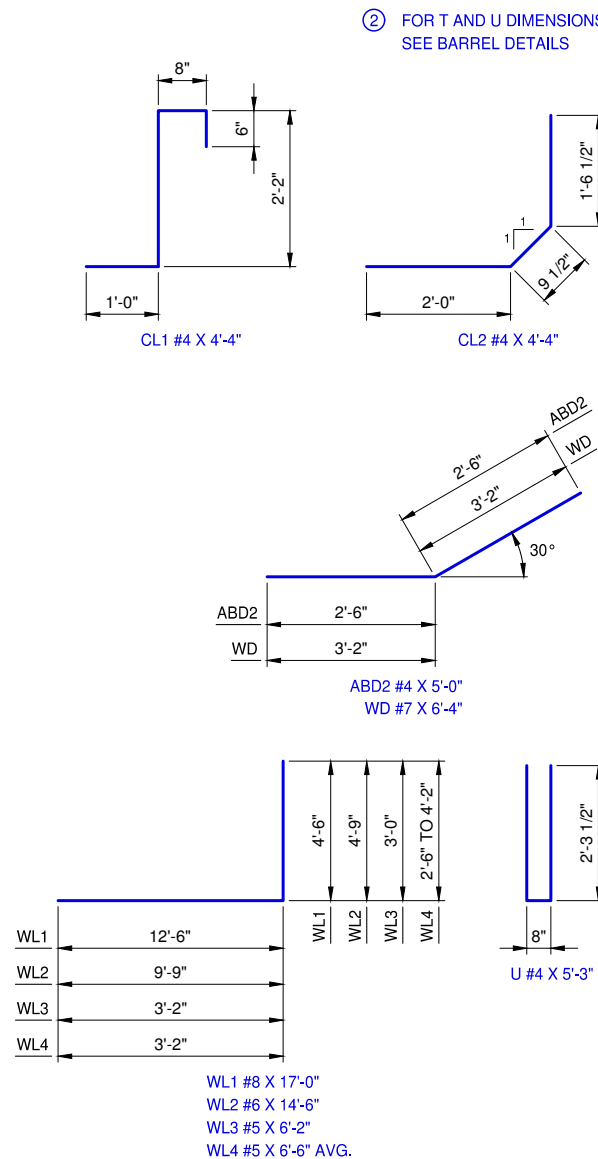


WINGWALL ELEVATION

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



TYPICAL SECTION THRU WING



ADJUSTMENT IN NUMBER OF BARREL BARS IN END SECTION

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

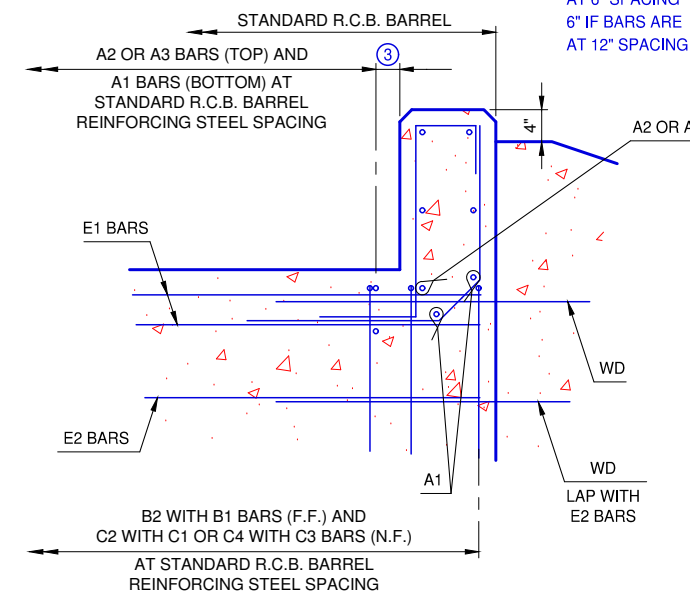
NOTE:
TO CONSTRUCT ONE END SECTION AS SHOWN, THE NUMBER OF BARS SHOWN NEED TO BE ADDED TO OR SUBTRACTED FROM THE TOTAL WEIGHT OF REINFORCING FOR THE BARREL. THIS WEIGHT ADJUSTMENT IS INCLUDED IN THE END SECTION QUANTITY. SEE BARREL DETAILS FOR BAR LENGTHS, SIZES AND BENDS.

WINGWALL BAR LIST

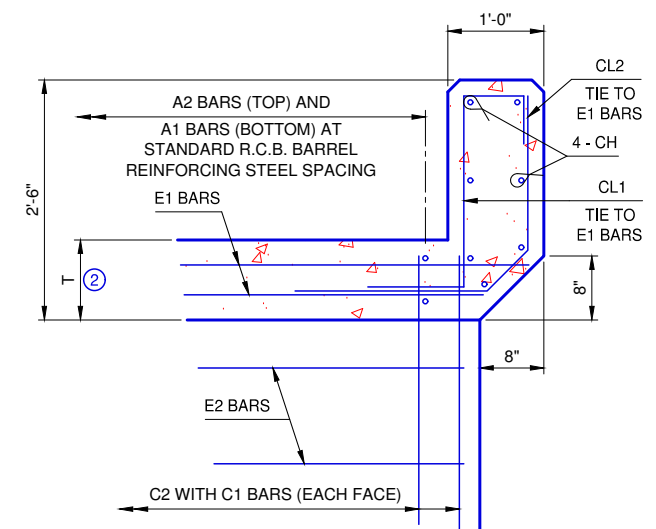
ONE WINGWALL SHOWN, TWO REQUIRED					
MARK	SIZE	NO.	FORM	LENGTH	LENGTH VARIATION
WD	#7	24	BNT.	6'-4"	
WH1	#4	4	STR.	41'-3"	
WH2	#4	22	STR.	21'-1" AVG.	3'-9" TO 38'-5"
WH3	#5	2	STR.	41'-11"	
WL1	#8	26	BNT.	17'-0"	
WL2	#6	21	BNT.	14'-6"	
WL3	#5	10	BNT.	6'-2"	
WL4	#5	7	BNT.	6'-6" AVG.	5'-8" TO 7'-4"
WT1	#4	35	STR.	2'-7"	
WT2	#4	2	STR.	13'-0"	
WT3	#4	12	STR.	11'-3" AVG.	9'-8" TO 12'-10"
WT4	#4	21	STR.	6'-6" AVG.	3'-7" TO 9'-5"
WT5	#4	7	STR.	3'-4" AVG.	2'-6" TO 4'-2"
WV1	#6	2	STR.	13'-0"	
WV2	#6	23	STR.	11'-3" AVG.	9'-8" TO 12'-10"
WV3	#5	21	STR.	6'-6" AVG.	3'-7" TO 9'-5"
U	#4	1	BNT.	5'-3"	

① 2 SETS OF 11 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

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DOUBLE CELL - 11' HEIGHT - 0° SKEW

SHEET NO. 2 OF 2

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The City of
Oklahoma City
Public Works Department
Engineering Division

