

APPROVED BY: DATE: 6/22/2023
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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
TRIPLE CELL - 7' HEIGHT - 0° SKEW
SHEET NO. 1 OF 2

Drawing Number
RCB-072

APRON AND HEADWALL BAR LIST

| MARK | SIZE | FORM | 7' SPAN | | | 8' SPAN | | | 9' SPAN | | | 10' SPAN | | | 11' SPAN | | | 12' SPAN | | |
|------|------|------|---------|-------------|------------------|---------|-------------|------------------|---------|-------------|------------------|----------|-------------|------------------|----------|--------------|------------------|----------|-------------|-------------------|
| | | | NO. | LENGTH | LENGTH VARIATION | NO. | LENGTH | LENGTH VARIATION | NO. | LENGTH | LENGTH VARIATION | NO. | LENGTH | LENGTH VARIATION | NO. | LENGTH | LENGTH VARIATION | NO. | LENGTH | LENGTH VARIATION |
| ABD1 | #4 | STR. | 54 | 4'-3" | | 60 | 4'-3" | | 66 | 4'-3" | | 72 | 4'-3" | | 78 | 4'-3" | | 84 | 4'-3" | |
| ABD2 | #4 | BNT. | 4 | 5'-0" | | 4 | 5'-0" | | 4 | 5'-0" | | 4 | 5'-0" | | 4 | 5'-0" | | 4 | 5'-0" | |
| AD | #4 | STR. | 4 | 27'-1" | | 4 | 27'-1" | | 4 | 27'-1" | | 4 | 27'-1" | | 4 | 27'-1" | | 4 | 27'-1" | |
| AL1 | #4 | STR. | 54 | 24'-7" | | 60 | 24'-7" | | 66 | 24'-7" | | 72 | 24'-7" | | 78 | 24'-7" | | 84 | 24'-7" | |
| AL2 | #4 | STR. | 52 | 12'-8" AVG. | 2'-4" TO 23'-0" | 52 | 12'-8" AVG. | 2'-4" TO 23'-0" | 52 | 12'-8" AVG. | 2'-4" TO 23'-0" | 52 | 12'-8" AVG. | 2'-4" TO 23'-0" | 52 | 12'-8" AVG. | 2'-4" TO 23'-0" | 52 | 12'-8" AVG. | 2'-4" TO 23'-0" |
| AT1 | #4 | STR. | 4 | 51'-3" | | 4 | 54'-3" | | 4 | 57'-3" | | 4 | 63'-1" | | 4 | 66'-1" | | 4 | 69'-1" | |
| AT2 | #4 | STR. | | | | | | | | | | | | | 3 | 64'-4" AVG. | 63'-2" TO 65'-6" | 6 | 65'-8" AVG. | 62'-10" TO 68'-6" |
| AT3 | #5 | STR. | | | | | | | | | | | | | 3 | 64'-4" AVG. | 63'-2" TO 65'-6" | 6 | 65'-8" AVG. | 62'-10" TO 68'-6" |
| AT4 | #4 | STR. | 24 | 37'-4" AVG. | 24'-0" TO 50'-8" | 24 | 40'-4" AVG. | 27'-0" TO 53'-8" | 24 | 43'-4" AVG. | 30'-0" TO 56'-8" | 24 | 46'-8" AVG. | 33'-4" TO 60'-0" | 21 | 47'-11" AVG. | 36'-4" TO 59'-6" | 18 | 49'-2" AVG. | 39'-4" TO 59'-0" |
| AT5 | #5 | STR. | 24 | 37'-4" AVG. | 24'-0" TO 50'-8" | 24 | 40'-4" AVG. | 27'-0" TO 53'-8" | 24 | 43'-4" AVG. | 30'-0" TO 56'-8" | 24 | 46'-8" AVG. | 33'-4" TO 60'-0" | 21 | 47'-11" AVG. | 36'-4" TO 59'-6" | 18 | 49'-2" AVG. | 39'-4" TO 59'-0" |
| CH | #4 | STR. | 4 | 24'-0" | | 4 | 27'-0" | | 4 | 30'-0" | | 4 | 33'-4" | | 4 | 36'-4" | | 4 | 39'-4" | |
| CL1 | #4 | BNT. | 29 | 4'-4" | | 32 | 4'-4" | | 35 | 4'-4" | | 38 | 4'-4" | | 41 | 4'-4" | | 44 | 4'-4" | |
| CL2 | #4 | BNT. | 29 | 4'-4" | | 32 | 4'-4" | | 35 | 4'-4" | | 38 | 4'-4" | | 41 | 4'-4" | | 44 | 4'-4" | |

- ① 4 SETS OF 13 BARS
- ② ALL BARS OVER 60' LONG INCLUDES 2'-6" LAP

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.

QUANTITIES

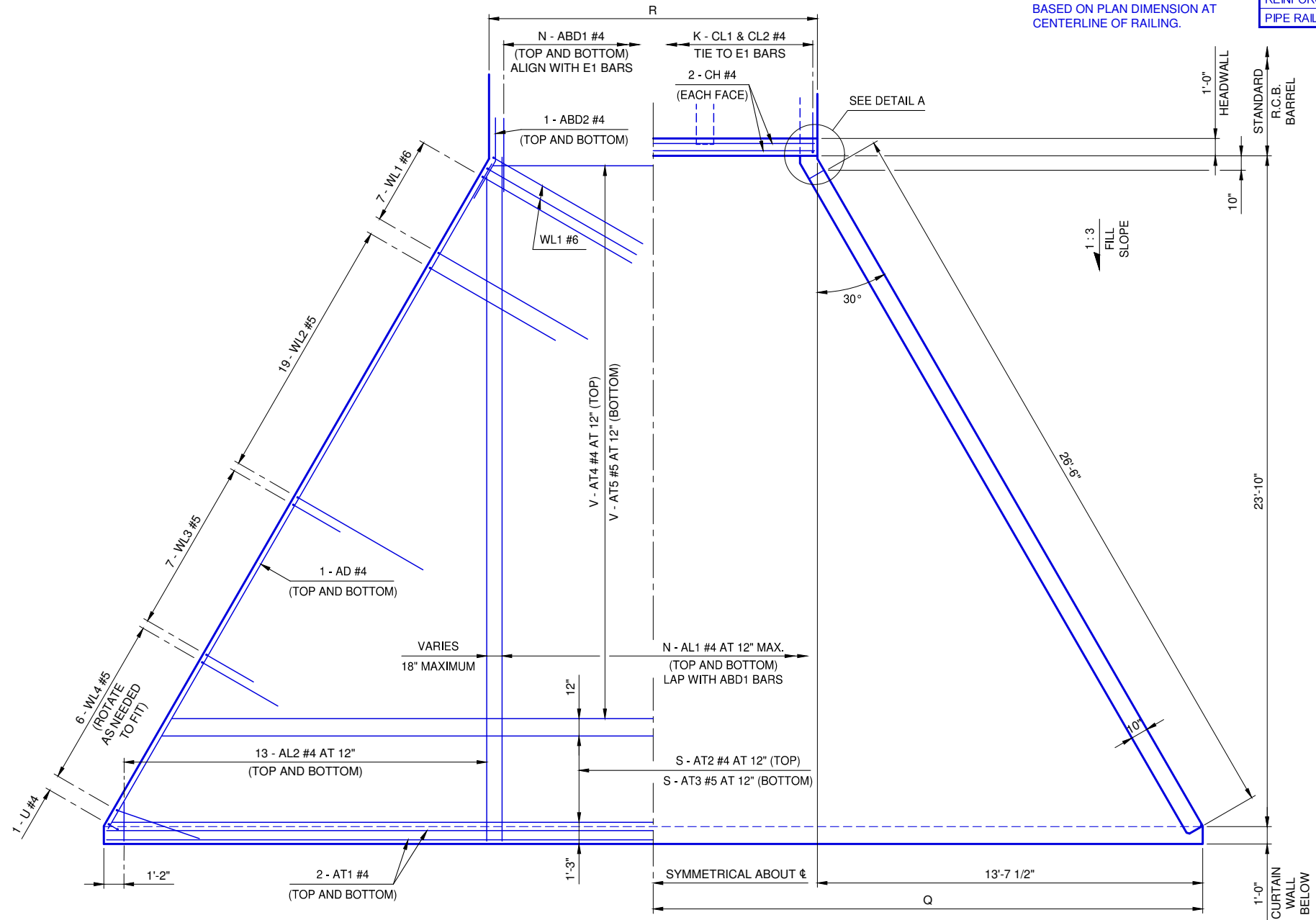
| ITEM | UNIT | 7' SPAN | 8' SPAN | 9' SPAN | 10' SPAN | 11' SPAN | 12' SPAN |
|-------------------|------|---------|---------|---------|----------|----------|----------|
| CLASS AA CONCRETE | C.Y. | 43.4 | 46.1 | 48.7 | 51.7 | 54.3 | 57.0 |
| REINFORCING STEEL | LB. | 6,030 | 6,260 | 6,530 | 6,820 | 7,080 | 7,340 |
| PIPE RAILING | L.F. | 79 | 82 | 85 | 88 | 91 | 94 |

APRON VARIABLES

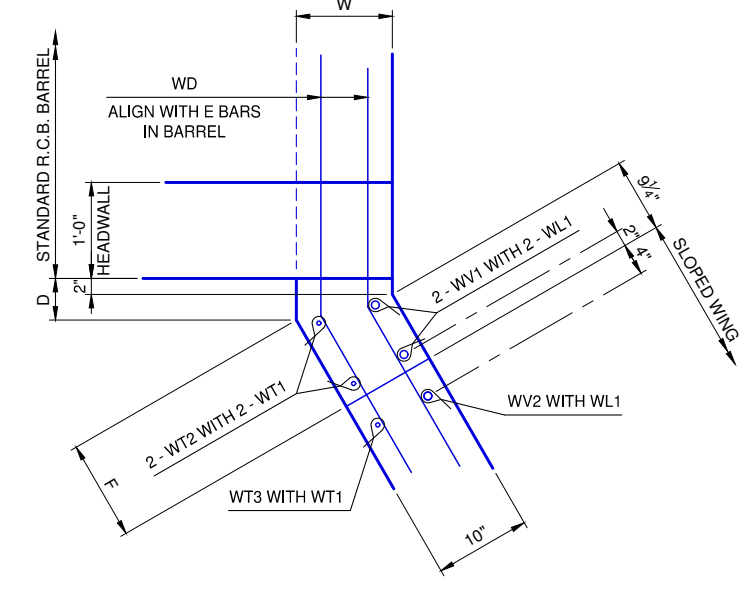
| SPAN | DIMENSIONS | | | NUMBER OF BARS | | |
|------|------------|-------------|----|----------------|---|----|
| | R | Q | K | N | S | V |
| 7' | 24'-4" | 25'-9 1/2" | 29 | 27 | | 24 |
| 8' | 27'-4" | 27'-3 1/2" | 32 | 30 | | 24 |
| 9' | 30'-4" | 28'-9 1/2" | 35 | 33 | | 24 |
| 10' | 33'-8" | 30'-5 1/2" | 38 | 36 | | 24 |
| 11' | 36'-8" | 31'-11 1/2" | 41 | 39 | 3 | 21 |
| 12' | 39'-8" | 33'-5 1/2" | 44 | 42 | 6 | 18 |

WINGWALL DIMENSIONS

| SPAN | W | D | F |
|------|-----|----------|-------------|
| 7' | 10" | 4 11/16" | 11 15/16" |
| 8' | 10" | 4 11/16" | 11 15/16" |
| 9' | 10" | 4 11/16" | 11 15/16" |
| 10' | 11" | 2 15/16" | 1'-1 15/16" |
| 11' | 11" | 2 15/16" | 1'-1 15/16" |
| 12' | 11" | 2 15/16" | 1'-1 15/16" |

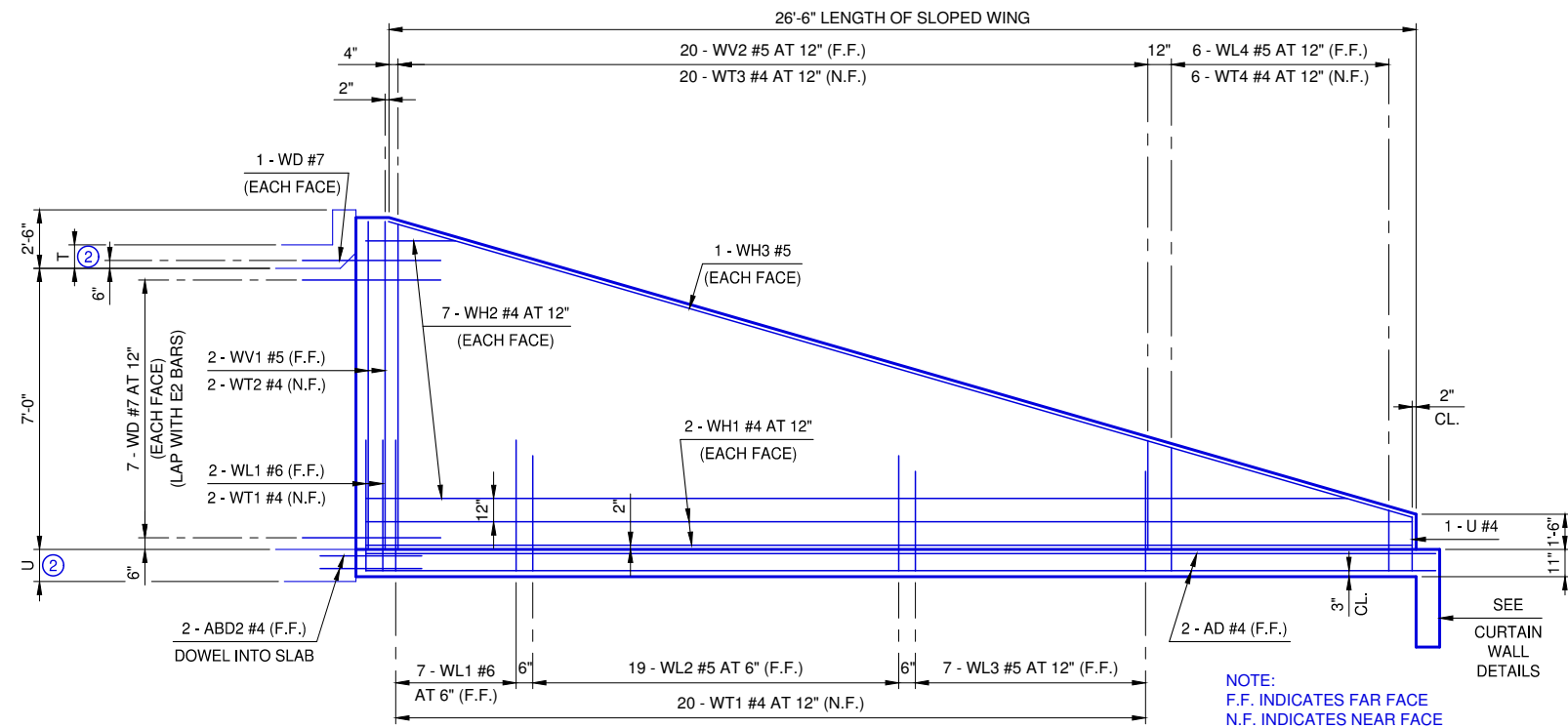


APRON PLAN



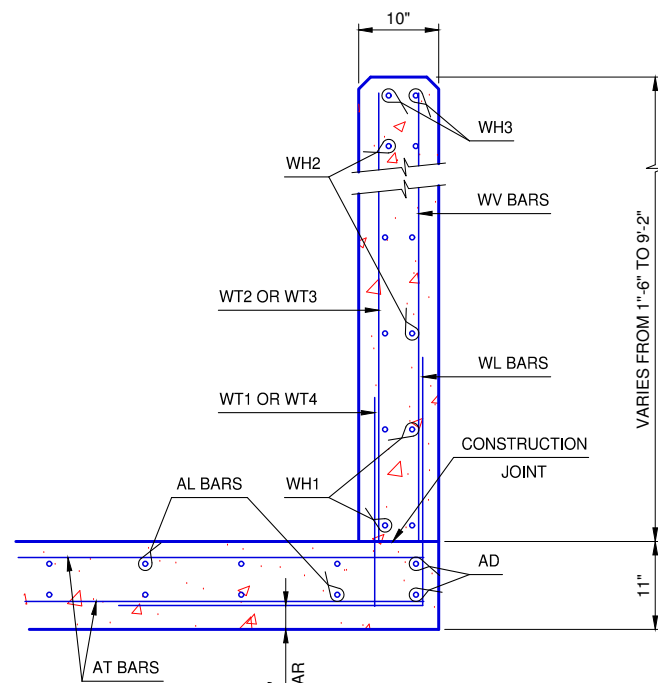
DETAIL A

| |
|--------------|
| REVISION NO. |
| DATE |

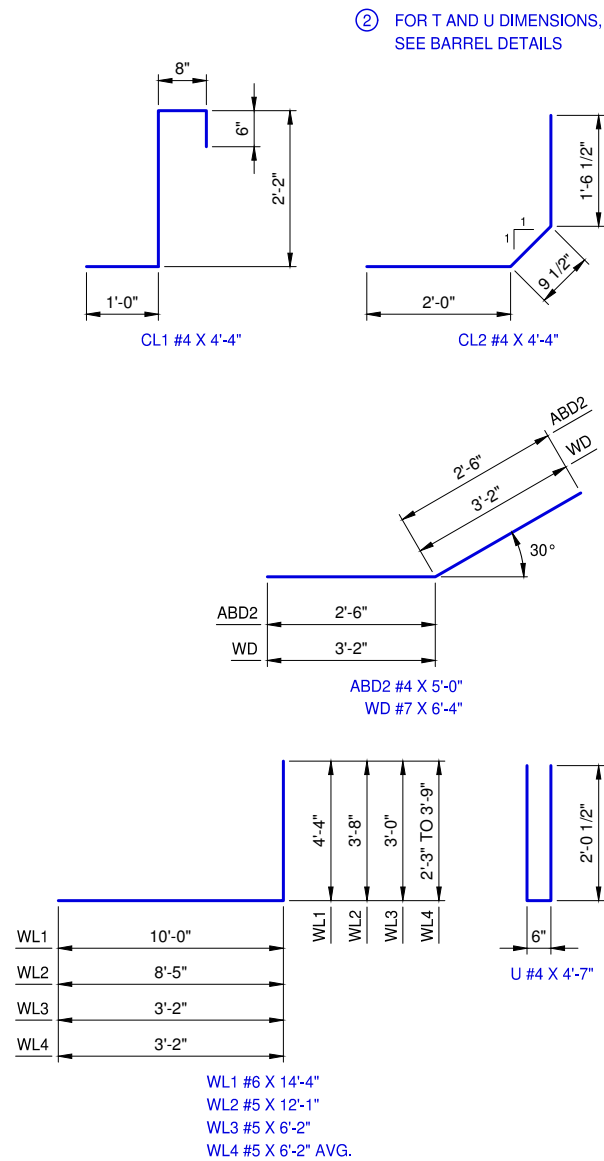


WINGWALL ELEVATION

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 |
| 7' | +1 | | | | | -4 | -4 | +2 | +2 |
| 8' | | -1 | | | | -4 | -4 | +2 | +2 |
| 9' | | -1 | | | | -4 | -4 | +2 | +2 |
| 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.

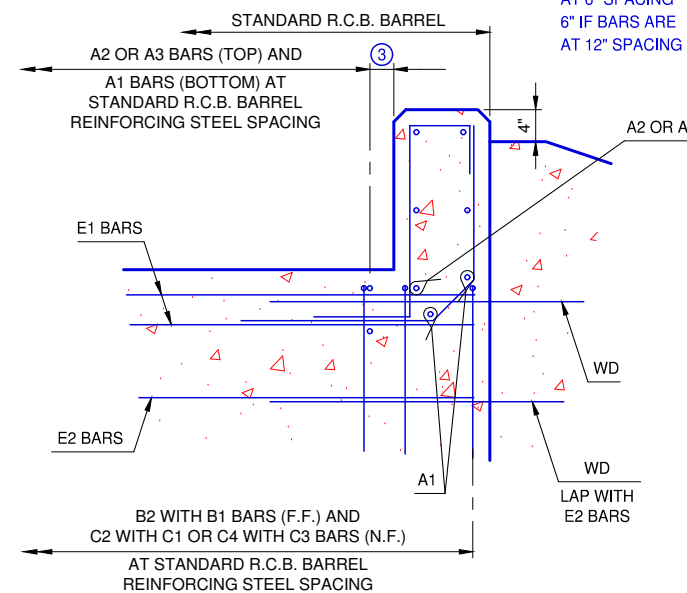
WINGWALL BAR LIST

ONE WINGWALL SHOWN, TWO REQUIRED

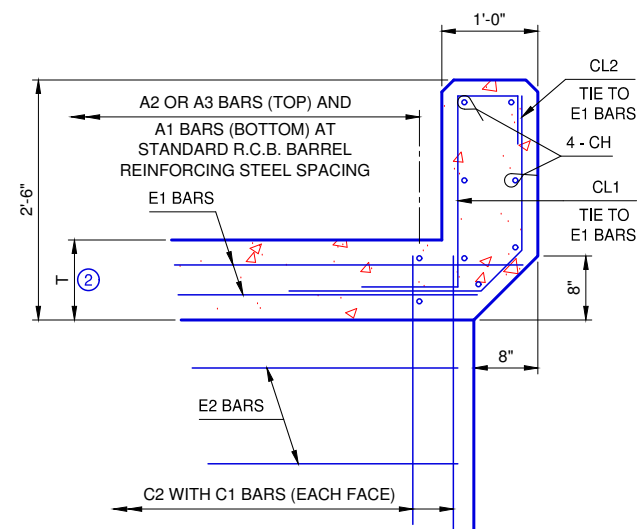
| MARK | SIZE | NO. | FORM | LENGTH | LENGTH VARIATION |
|------|------|-----|------|--------------|------------------|
| WD | #7 | 16 | BNT. | 6'-4" | |
| WH1 | #4 | 4 | STR. | 27'-1" | |
| WH2 | #4 | 14 | STR. | 13'-11" AVG. | 3'-7" TO 24'-3" |
| WH3 | #5 | 2 | STR. | 27'-5" | |
| WL1 | #6 | 9 | BNT. | 14'-4" | |
| WL2 | #5 | 19 | BNT. | 12'-1" | |
| WL3 | #5 | 7 | BNT. | 6'-2" | |
| WL4 | #5 | 6 | BNT. | 6'-2" AVG. | 5'-5" TO 6'-11" |
| WT1 | #4 | 22 | STR. | 2'-4" | |
| WT2 | #4 | 2 | STR. | 9'-0" | |
| WT3 | #4 | 20 | STR. | 6'-1" AVG. | 3'-4" TO 8'-10" |
| WT4 | #4 | 6 | STR. | 3'-0" AVG. | 2'-3" TO 3'-9" |
| WV1 | #5 | 2 | STR. | 9'-0" | |
| WV2 | #5 | 20 | STR. | 6'-1" AVG. | 3'-4" TO 8'-10" |
| U | #4 | 1 | BNT. | 4'-7" | |

① 2 SETS OF 7 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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