

QUANTITIES SHOWN BELOW ARE FOR TWO HEADWALLS.

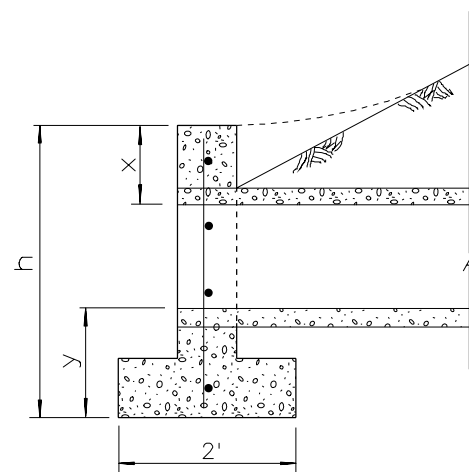
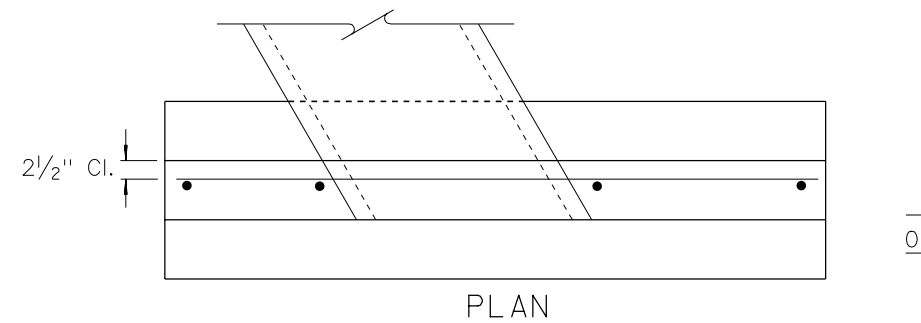
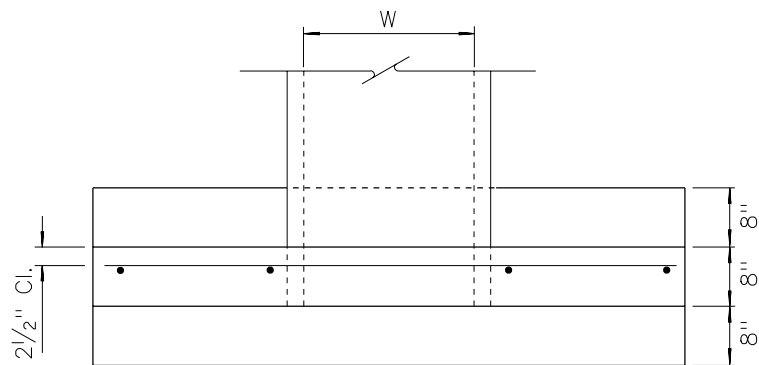
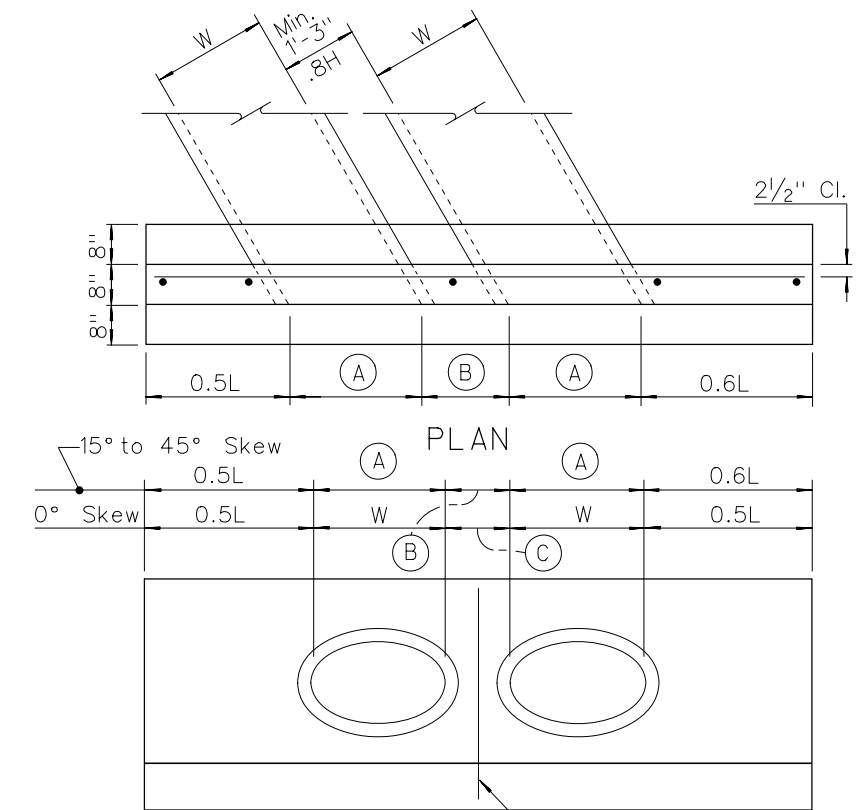
OVAL RCP SIZE W X H	RCP SIZE	OVAL RCP AREA SQ.FT	SINGLE OVAL RCP								DOUBLE OVAL RCP								X	Y	L	h
			0° SKEW		15° SKEW		30° SKEW		45° SKEW		0° SKEW		15° SKEW		30° SKEW		45° SKEW					
			CONC. CU. YD.	STEEL LB.	CONC. CU. YD.	STEEL LB.	CONC. CU. YD.	STEEL LB.	CONC. CU. YD.	STEEL LB.	CONC. CU. YD.	STEEL LB.	CONC. CU. YD.	STEEL LB.	CONC. CU. YD.	STEEL LB.	CONC. CU. YD.	STEEL LB.				
23"x14"	18"	1.82	1.37	57	1.49	60	1.52	61	1.60	63	1.94	74	2.08	77	2.18	80	2.40	86	10 ³ / ₄ "	1'-2 ³ / ₄ "	4'-9"	3'-3 ¹ / ₂ "
30"x19"	24"	3.21	1.95	79	2.13	82	2.17	83	2.27	86	2.64	98	2.85	103	2.97	106	3.25	113	11 ¹ / ₄ "	1'-3 ¹ / ₄ "	6'-3"	3'-9 ¹ / ₂ "
34"x22"	27"	4.20	2.30	87	2.50	92	2.55	93	2.66	96	3.11	110	3.34	116	3.49	119	3.81	127	11 ¹ / ₂ "	1'-3 ¹ / ₂ "	7'-0"	4'-1"
38"x24"	30"	5.15	2.57	93	2.79	99	2.85	100	2.98	104	3.49	119	3.75	125	4.07	129	4.28	137	11 ³ / ₄ "	1'-3 ³ / ₄ "	7'-6"	4'-3 ¹ / ₂ "
42"x27"	33"	6.39	2.94	113	3.20	120	3.26	121	3.40	125	4.00	141	4.30	148	4.49	153	4.91	162	11 ³ / ₄ "	1'-3 ³ / ₄ "	8'-3"	4'-6 ¹ / ₂ "
45"x29"	36"	7.37	3.31	122	3.53	128	3.68	130	3.82	134	4.48	152	4.81	159	5.04	164	5.47	174	1'-0 ¹ / ₂ "	1'-4 ¹ / ₂ "	9'-0"	4'-10"
53"x34"	42"	10.15	4.06	164	4.42	173	4.50	175	4.68	180	5.48	199	5.90	209	6.14	214	6.69	226	1'-1"	1'-5"	10'-3"	5'-4"
60"x38"	48"	12.86	4.81	182	5.24	192	5.33	194	5.54	199	6.49	221	6.98	231	7.26	238	7.90	251	1'-1 ¹ / ₂ "	1'-5 ¹ / ₂ "	11'-6"	5'-9"

QUANTITIES SHOWN BELOW ARE FOR ONE HEADWALL.

OVAL RCP SIZE W & H	LENGTH OF REINFORCING BARS																																	
	SINGLE OVAL RCP					SINGLE OR DOUBLE OVAL RCP								DOUBLE OVAL RCP																				
	0°-45°		0°		15°	30°		45°		0°		15°		30°		45°		0°-45°		0°	15°	30°	45°											
	No. 4	No. 5	No. 5	No. 5	No. 5	No. 4	No. 4	No. 4	No. 4	No. 4	No. 4	No. 4	No. 4	No. 4	No. 4	No. 4	No. 4	No. 4	No. 5	No. 5	No. 5	No. 5												
23"x14"	6e3'-1"	2e6'-5"	2e7'-0"	2e7'-2"	2e7'-8"	2e1'-11"	1e1'-9"	1e2'-6"	1e1'-8"	1e2'-7"	1e1'-5"	1e2'-10"	7e3'-1"	2e9'-7"	2e10'-3"	2e10'-10"	2e12'-2"	6e3'-6"	2e8'-6"	2e9'-3"	2e9'-6"	2e10'-2"	4e2'-7"	2e2'-5"	2e3'-3"	2e2'-4"	2e3'-4"	2e2'-1"	2e3'-7"	7e3'-6"	2e12'-3"	2e13'-1"	2e13'-11"	2e15'-6"
30"x19"	6e3'-10"	2e9'-7"	2e10'-4"	2e10'-9"	2e11'-5"	4e3'-0"	2e2'-10"	2e3'-9"	2e2'-9"	2e3'-10"	2e2'-6"	2e4'-1"	7e3'-10"	2e13'-11"	2e14'-10"	2e15'-8"	2e17'-6"	6e3'-10"	2e9'-7"	2e10'-4"	2e10'-9"	2e11'-5"	4e3'-0"	2e2'-10"	2e3'-9"	2e2'-9"	2e3'-10"	2e2'-6"	2e4'-1"	7e3'-10"	2e13'-11"	2e14'-10"	2e15'-8"	2e17'-6"
34"x22"	6e4'-1"	2e10'-5"	2e11'-3"	2e11'-8"	2e12'-6"	4e3'-2"	2e3'-0"	2e4'-0"	2e2'-11"	2e4'-1"	2e2'-8"	2e4'-4"	7e4'-1"	2e15'-2"	2e16'-3"	2e17'-2"	2e19'-3"	6e4'-1"	2e10'-5"	2e11'-3"	2e11'-8"	2e12'-6"	4e3'-2"	2e3'-0"	2e4'-0"	2e2'-11"	2e4'-1"	2e2'-8"	2e4'-4"	7e4'-1"	2e15'-2"	2e16'-3"	2e17'-2"	2e19'-3"
38"x24"	8e4'-4"	2e11'-6"	2e12'-5"	2e12'-11"	2e13'-9"	4e3'-7"	2e3'-5"	2e4'-6"	2e3'-6"	2e4'-9"	2e3'-3"	2e5'-0"	9e4'-4"	2e16'-10"	2e17'-11"	2e19'-0"	2e21'-3"	8e4'-4"	2e11'-6"	2e12'-5"	2e12'-11"	2e13'-9"	4e3'-7"	2e3'-5"	2e4'-6"	2e3'-6"	2e4'-9"	2e3'-3"	2e5'-0"	9e4'-4"	2e16'-10"	2e17'-11"	2e19'-0"	2e21'-3"
42"x27"	8e4'-7"	2e12'-6"	2e13'-6"	2e14'-0"	2e14'-11"	4e3'-10"	2e3'-8"	2e4'-9"	2e3'-7"	2e4'-10"	2e3'-4"	2e5'-1"	9e4'-7"	2e18'-2"	2e19'-5"	2e20'-7"	2e23'-0"	8e4'-7"	2e12'-6"	2e13'-6"	2e14'-0"	2e14'-11"	4e3'-10"	2e3'-8"	2e4'-9"	2e3'-7"	2e4'-10"	2e3'-4"	2e5'-1"	9e4'-7"	2e18'-2"	2e19'-5"	2e20'-7"	2e23'-0"
45"x29"	10e5'-1"	2e14'-5"	2e15'-7"	2e16'-2"	2e17'-3"	6e4'-6"	3e4'-4"	3e5'-7"	3e4'-3"	3e5'-8"	3e4'-0"	3e5'-11"	11e5'-1"	2e21'-1"	2e22'-6"	2e23'-10"	2e26'-9"	10e5'-1"	2e14'-5"	2e15'-7"	2e16'-2"	2e17'-3"	6e4'-6"	3e4'-4"	3e5'-7"	3e4'-3"	3e5'-8"	3e4'-0"	3e5'-11"	11e5'-1"	2e21'-1"	2e22'-6"	2e23'-10"	2e26'-9"
60"x38"	10e5'-6"	2e16'-3"	2e17'-7"	2e18'-2"	2e19'-6"	6e5'-1"	3e4'-11"	3e6'-3"	3e4'-10"	3e6'-4"	3e4'-7"	3e6'-7"	11e5'-6"	2e23'-9"	2e25'-5"	2e26'-10"	2e30'-2"	10e5'-6"	2e16'-3"	2e17'-7"	2e18'-2"	2e19'-6"	6e5'-1"	3e4'-11"	3e6'-3"	3e4'-10"	3e6'-4"	3e4'-7"	3e6'-7"	11e5'-6"	2e23'-9"	2e25'-5"	2e26'-10"	2e30'-2"

GENERAL NOTES:

- CONCRETE SHALL BE CLASS A OR AA.
- REINFORCING STEEL SHALL BE DEFORMED BARS WITH MAXIMUM SPACING OF 18" SET 2¹/₂" CLEAR OF SURFACE OF CONCRETE EXCEPT AS NOTED. BAR ENDS SHALL BE KEPT 1¹/₂" CLEAR OF SURFACE OF CONCRETE. REINFORCING BARS MAY BE CUT AND BENT IN FIELD.
- FOOTINGS SHOWN ARE OF MINIMUM DEPTH AND SHALL BE EXTENDED IF SOIL IS UNSUITABLE OR LIABLE TO SCOUR.
- CULVERT PIPES TO BE SET ON A SKEW SHALL BE MITERED WHEN HEADWALLS ARE CONSTRUCTED. WHEN HEADWALLS ARE NOT CONSTRUCTED THE PIPES SHALL NOT BE MITERED EXCEPT IN OVERFLOW SECTION.
- DIMENSIONS X, Y, L, AND h TO REMAIN CONSTANT REGARDLESS OF MINOR VARIATIONS IN WALL THICKNESS DUE TO CLASS OF PIPE USED.
- FOR ESTIMATING HEADWALL QUANTITIES ON SKEWED CULVERTS:
 - 0° to 10° - USE QUANTITIES FOR 0° SKEW.
 - 11° to 25° - USE QUANTITIES FOR 15° SKEW.
 - 26° to 40° - USE QUANTITIES FOR 30° SKEW.
 - 41° to 55° - USE QUANTITIES FOR 45° SKEW.
 - OVER 55° - CALCULATE QUANTITIES REQUIRED.
 CULVERTS SHOULD BE INSTALLED ON 5° INCREMENTS WHERE IT IS FEASIBLE.



ELEVATION
SINGLE OVAL RCP
0° SKEW

SECTION
FOR ALL HEADWALLS

ELEVATION
SINGLE OVAL RCP
15° TO 45° SKEW

LEGEND:

- (A) - W/Cos. Skew Angle
- (B) - .8H/Cos. Skew Angle
- (C) - .8H @ Right Angle to Pipe

NEVADA DEPARTMENT OF TRANSPORTATION

CULVERT HEADWALLS

23"x14" OVAL RCP TO
60" x 38" OVAL RCP

Signed Original On File R-2.7.1 (502)
CHIEF HYDRAULICS ENGINEER ADOPTED 8/69 REVISION 12/94