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.				
68"x43"	54"	16.62	7.19	628	7.82	683	7.98	720	8.34	767	9.86	789	10.58	848	11.07	897	12.11	1031	1'-2 1/2 "	2'-2 "	12'-9"	6'-11"
76"x48"	60"	20.55	8.39	746	9.13	805	9.32	813	9.71	889	11.47	921	12.31	985	13.06	1075	15.66	1207	1'-2 1/2 "	2'-2 1/2 "	14'-3"	7'-5"
91"x58"	72"	29.71	12.11	1168	13.18	1273	13.43	1321	14.02	1412	16.59	1495	17.82	1616	18.61	1730	20.36	1965	1'-3 1/2 "	2'-3 1/2 "	17'-0"	8'-5"

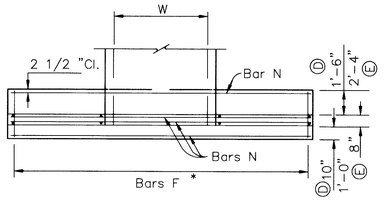
QUANTITIES SHOWN BELOW ARE FOR ONE HEADWALL.

OVAL RCP SIZE W & H	LENGTH OF REINFORCING BARS																					
	SINGLE OVAL RCP																					
	0° SKEW						15° Skew						30° SKEW						45° SKEW					
	No. 5		No. 4				No. 5		No. 4				No. 5		No. 4				No. 5		No. 4			
	F	G	M	N	K		F	G	M	M1	N	K	F	G	M	M1	N	K	F	G	M	M1	N	K
68"x43"	13@2'-9"	10@7'-10"	12@5'-8"	9@18'-2"	10@6'-0"		14@2'-9"	12@7'-10"	6@5'-6"	6@6'-10"	9@19'-8"	11@6'-0"	15@2'-9"	12@7'-10"	6@5'-4"	6@6'-10"	9@20'-4"	12@6'-0"	16@2'-9"	13@7'-10"	6@5'-2"	6@6'-10"	9@21'-10"	13@6'-0"
76"x48"	15@2'-9"	12@8'-4"	12@6'-4"	9@20'-4"	12@6'-6"		16@2'-9"	13@8'-4"	6@6'-2"	6@7'-7"	9@22'-0"	13@6'-6"	16@2'-9"	13@8'-4"	6@6'-0"	6@7'-7"	9@22'-9"	13@6'-6"	17@2'-9"	15@8'-4"	6@5'-10"	6@7'-7"	9@24'-5"	15@6'-6"
91"x58"	25@3'-9"	18@9'-8"	16@7'-7"	10@20'-4"	12@7'-6"		27@3'-9"	20@9'-8"	8@7'-5"	8@9'-1"	10@26'-4"	13@7'-6"	28@3'-9"	21@9'-8"	8@7'-3"	8@9'-1"	10@27'-9"	14@7'-6"	30@3'-9"	23@9'-8"	8@7'-1"	8@9'-1"	10@29'-2"	15@7'-6"
DOUBLE OVAL RCP																						
68"x43"	19@2'-9"	11@7'-10"	12@6'-8"	9@26'-8"	11@6'-0"		20@2'-9"	12@7'-10"	6@5'-6"	6@6'-10"	9@28'-6"	12@6'-0"	21@2'-9"	13@7'-10"	6@5'-4"	6@6'-11"	9@30'-2"	13@6'-0"	24@2'-9"	16@7'-10"	6@5'-2"	6@6'-10"	9@33'-10"	16@6'-0"
76"x48"	21@3'-9"	13@8'-4"	12@6'-4"	9@29'-10"	13@6'-6"		22@2'-9"	14@8'-4"	6@6'-2"	6@7'-7"	9@31'-10"	14@6'-6"	24@2'-9"	16@8'-4"	6@6'-0"	6@7'-7"	9@34'-2"	13@6'-6"	26@2'-9"	19@8'-4"	6@5'-10"	6@7'-7"	9@37'-10"	19@6'-6"
91"x58"	37@3'-9"	21@9'-8"	16@7'-7"	10@35'-9"	14@7'-6"		39@3'-9"	23@9'-8"	8@7'-5"	8@9'-1"	10@38'-2"	16@7'-6"	41@3'-9"	26@9'-8"	8@7'-3"	8@9'-1"	10@40'-5"	17@7'-6"	46@3'-9"	31@9'-8"	8@7'-1"	8@9'-1"	10@45'-4"	20@7'-6"

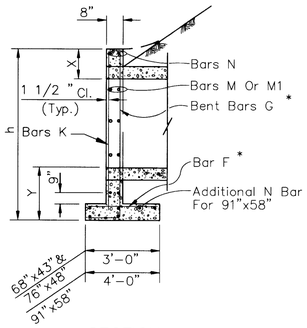
GENERAL NOTES:

1. CONCRETE SHALL BE CLASS A OR AA.
2. REINFORCING STEEL SHALL BE DEFORMED BARS WITH MAXIMUM SPACING OF 18" SET 2 1/2" CLEAR OF SURFACE OF CONCRETE EXCEPT AS NOTED. BAR ENDS SHALL BE KEPT 1 1/2" CLEAR OF SURFACE OF CONCRETE. REINFORCING BARS MAY BE CUT AND BENT IN FIELD.
3. FOOTINGS SHOWN ARE OF MINIMUM DEPTH AND SHALL BE EXTENDED IF SOIL IS UNSUITABLE OR LIABLE TO SCOUR.
4. 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.
5. DIMENSIONS X,Y,L, AND h TO REMAIN CONSTANT REGARDLESS OF MINOR VARIATIONS IN WALL THICKNESS DUE TO CLASS OF PIPE USED.
6. 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.

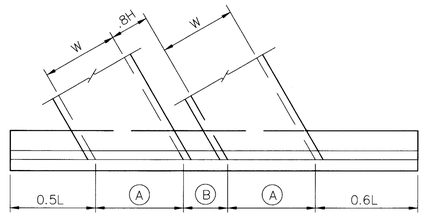
CULVERTS SHOULD BE INSTALLED ON 5° INCREMENTS WHERE IT IS FEASIBLE.



PLAN



SECTION
(FOR ALL HEADWALLS)



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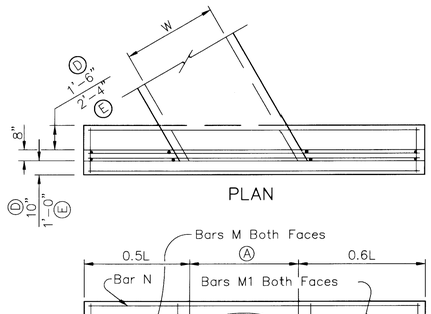

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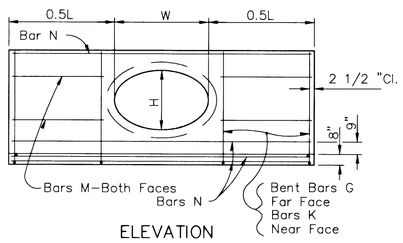
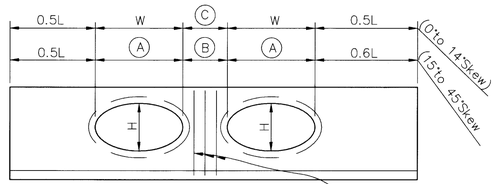
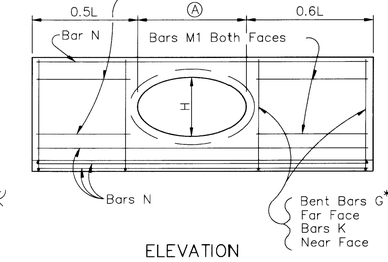


ELEVATION
SINGLE OVAL RCP
0° SKEW



ELEVATION
DOUBLE OVAL RCP
15° TO 45° SKEW



ELEVATION
SINGLE OVAL RCP
0° TO 45° SKEW

(A) — W/cos Skew Angle
(B) — .8H/cos Skew Angle
(C) — .8H at Right Angle to Pipe
(D) — For 68"x43" & 76"x48"
(E) — For 91"x58"

NOTE: For Details Of Other Reinforcing Bars, See Single Culvert Headwalls.

0° TO 45° SKEW
Add 1–G Bar & 1–K Bar for 68"x43" & 76"x48"
Add 3–G Bars & 2–K Bars for 91"x58"

* –@18" ctrs. 68"x43" & 76"x48" @ 12" ctrs. 91"x58"

NDOT HEADWALL DETAIL

N.T.S. (PER NDOT STANDARD R-2.7.2)

REVISIONS

NO.	DATE:	DESCRIPTION	APP'D

DEPARTMENT OF PUBLIC WORKS
ENGINEERING DESIGN SECTION
CITY ENGINEER: JORGE CERVANTES, P.E.
PROGRAM MANAGER: MARK SORENSEN, P.E.
DESIGNED BY: RCB
DRAWN BY: MHF
CHECKED BY: HT
HDR Engineering, Inc.
HORIZONTAL SCALE:
VERTICAL SCALE:
DATE: 10/2007

TITLE: TENAYA WAY OVERPASS AT SUMMERLIN PKWY

SHEET: NDOT HEADWALL DETAIL

PROFESSIONAL ENGINEER STATE OF NEVADA
HUAGAO TAN
Exp. 6/30/08
CIVIL
No. 14016
11/1/08

Sheet
SD-12
28 of 96
DRAWING NO.
107Y4452

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