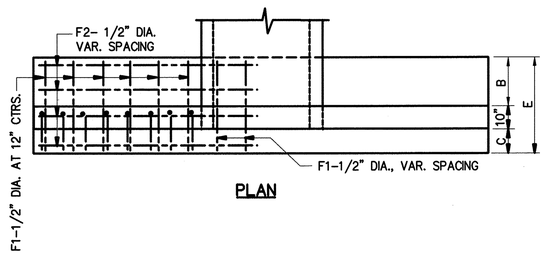
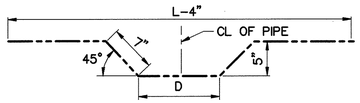
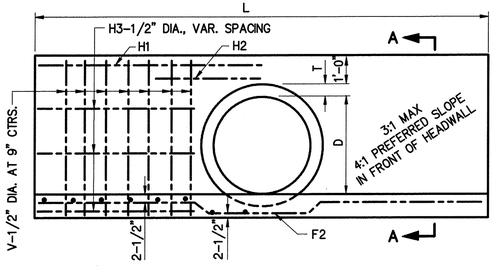


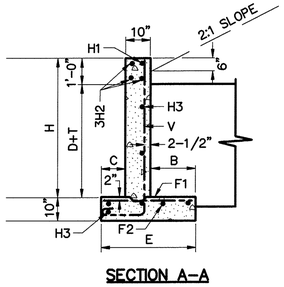
PLAN



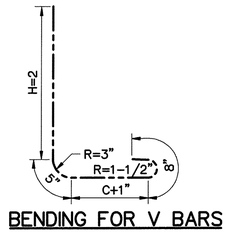
BENDING FOR F2 BARS



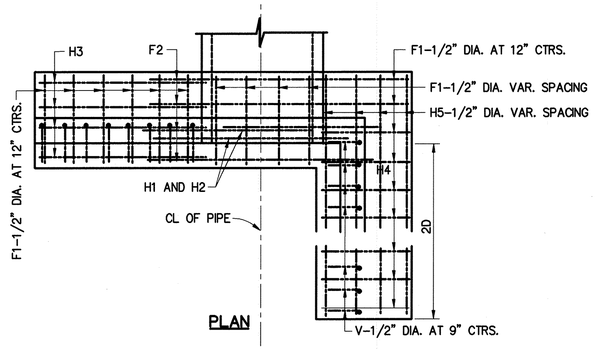
ELEVATION
STRAIGHT HEADWALL



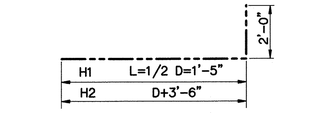
SECTION A–A



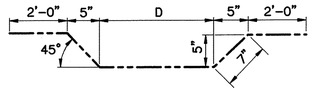
BENDING FOR V BARS



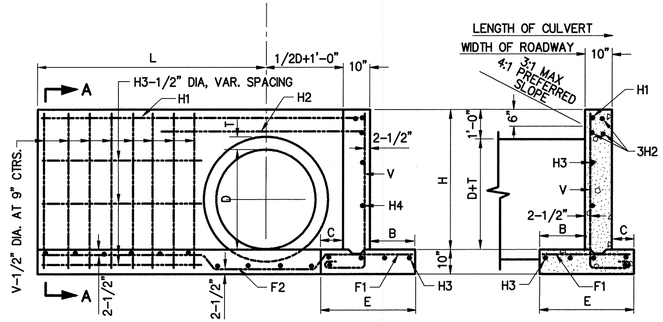
PLAN



BENDING FOR H1 AND H2 BARS

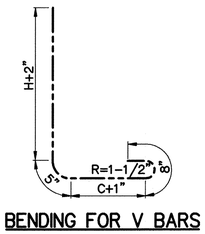


BENDING FOR F2 BARS



ELEVATION
HEADWALL W/90° WINGS

SECTION A–A



BENDING FOR V BARS

DIMENSIONS AND QUANTITIES FOR HEADWALLS WITH 90° WINGS

DIMENSIONS								REINFORCING STEEL																QUANTITIES*	
								F1–1/2" DIA.		F2–1/2" DIA.		H1–1/2" DIA.		H2–1/2" DIA.		H3–1/2" DIA.		H4–1/2" DIA.		H5–1/2" DIA.		V–1/2" DIA.			
D	AREA S.F.	T	H	L	E	B	C	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	CLASS 'A' CONC., C.Y.	REINF. STEEL, LBS.
15"	1.23	2–1/4"	2' 5–1/4"	3'–0"	2'–2"	10"	6"	10	1'–10"	3	6'–5"	1	7'–0"	3	6'–9"	5	2'–0"	2	3'–0"	4	3'–10"	7	4'–3"	1.09	84
18"	1.77	2–1/2"	2' 8–1/2"	3'–6"	2'–3"	11"	6"	10	1'–11"	3	6'–8"	1	7'–8"	3	7'–0"	5	2'–0"	2	3'–6"	4	4'–5"	9	4'–6"	1.32	97
24"	3.14	3"	3'–3"	4'–6"	2'–7"	1'–3"	6"	14	2'–3"	3	7'–2"	1	8'–11"	3	7'–6"	6	3'–1"	3	4'–6"	4	5'–9"	11	5'–1"	1.94	131
30"	4.91	3–1/2"	3' 9–1/2"	5'–6"	2'–10"	1'–4"	8"	16	2'–6"	3	7'–8"	1	10'–2"	3	8'–0"	6	3'–9"	3	5'–6"	4	6'–10"	14	5'–9"	2.59	163
36"	7.07	4"	4'–4"	7'–0"	3'–1"	1'–7"	8"	19	2'–9"	4	8'–2"	1	11'–11"	3	8'–6"	7	5'–0"	4	6'–6"	4	8'–1"	17	6'–4"	3.47	216
42"	9.62	4–1/2"	4' 10–1/2"	8'–0"	3'–4"	1'–8"	10"	21	3'–0"	4	8'–8"	1	13'–2"	3	9'–0"	7	5'–8"	4	7'–6"	4	9'–2"	19	7'–0"	4.32	252

*FOR ONE HEADWALL

DIMENSIONS AND QUANTITIES FOR STRAIGHT HEADWALLS

DIMENSIONS								REINFORCING STEEL												QUANTITIES*	
								F1–1/2" DIA.		F2–1/2" DIA.		H1–1/2" DIA.		H2–1/2" DIA.		H3–1/2" DIA.		V–1/2" DIA.			
D	AREA S.F.	T	H	L	E	B	C	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	CLASS 'A' CONC., C.Y.	REINF. STEEL, LBS.
15"	1.23	2–1/4"	2' 5–1/4"	6'–0"	2'–2"	10"	6"	6	1'–10"	3	6'–0"	1	5'–8"	3	5'–3"	4	2'–0"	6	4'–3"	0.78	56
18"	1.77	2–1/2"	2' 8–1/2"	7'–0"	2'–3"	11"	6"	8	1'–11"	3	7'–0"	1	6'–8"	3	5'–6"	4	2'–4"	8	4'–6"	0.98	70
24"	3.14	3"	3'–3"	9'–0"	2'–7"	1'–3"	6"	11	2'–3"	3	9'–0"	1	8'–8"	3	6'–0"	4	3'–1"	10	5'–1"	1.46	95
30"	4.91	3–1/2"	3' 9–1/2"	11'–0"	2'–10"	1'–4"	8"	11	2'–6"	3	11'–0"	1	10'–8"	3	6'–6"	6	3'–9"	12	5'–9"	2.00	122
36"	7.07	4"	4'–4"	14'–0"	3'–1"	1'–7"	8"	16	2'–9"	4	14'–0"	1	13'–8"	3	7'–0"	6	5'–0"	14	6'–4"	2.85	170
42"	9.62	4–1/2"	4' 10–1/2"	16'–0"	3'–4"	1'–8"	10"	16	3'–0"	4	16'–0"	1	15'–8"	3	7'–6"	6	5'–8"	16	7'–0"	3.58	198

*FOR ONE HEADWALL

GENERAL NOTES

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CITY OF TULSA STANDARD SPECIFICATIONS.

ALL EXPOSED CONCRETE SURFACES SHALL HAVE A CARBORUNDUM FINISH.

ALL EXPOSED CONCRETE EDGES SHALL HAVE A 3/4" CHAMFER.

REINFORCED CONCRETE PIPE SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M–170 (ASTM C–76) CLASS III UNLESS OTHERWISE DESIGNATED.

MINIMUM DEPTH OF FILL OVER CULVERTS SHALL BE 1'–0" WITH 6" AT HEADWALL.

WALL THICKNESS (DIMENSION "T") OF PIPES SHOWN ARE TAKEN FROM "WALL B" COLUMN OF ASTM AND AASHTO TABLES.

REVISION	BY	DATE

CITY ENGINEER

DESIGN MANAGER

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

STANDARD PIPE HEADWALLS
15" TO 42"

DATE: OCTOBER 2013 STD. 776

PATH NAME: /E1/PARTS/STD/DGN_STDS/776-STD-PIPE-HDWALLS-15-42.DGN LFM 05/16/2012