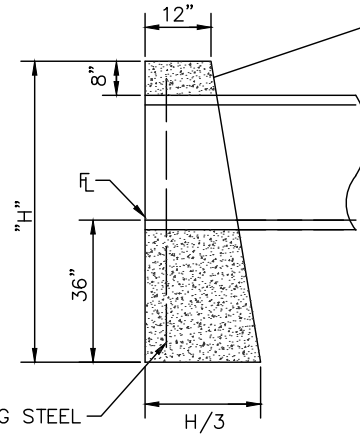


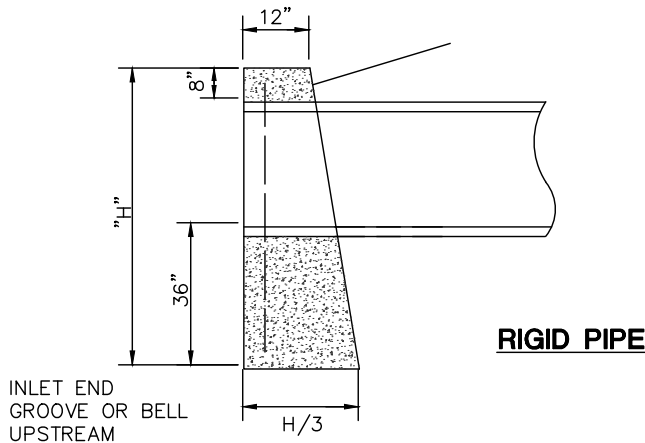
ELEVATION



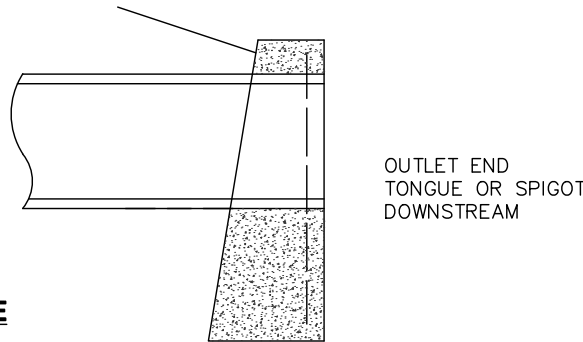
SECTION A-A

NOTES

- A.** THESE FULL HEIGHT HEADWALLS ARE FOR NONSKewed CULVERTS HAVING A DIAMETER OR RISE OF 36" OR LESS.
- B.** CONCRETE SHALL BE ODOT CLASS QC-1. REINFORCED STEEL BARS SHALL BE 5/8" ROUND.
- C.** DIMENSIONS AND QUANTITIES ARE SHOWN FOR CIRCULAR SECTIONS ONLY. IT WILL BE NECESSARY TO DETERMINE DIMENSIONS FOR THE HW-1 HEADWALL REQUIRED FOR REINFORCED ELLIPTICAL CONCRETE PIPE OR CORRUGATED METAL PIPE ARCHES IN ACCORDANCE WITH THE EQUATIONS LISTED ON THIS DRAWING.
- D.** CHAMFER ALL EXPOSED CORNERS 3/4".
- E.** WHERE THE SOIL BORINGS INDICATE A BEARING CAPACITY OF LESS THAN 2600 LBS. PER SQUARE FOOT, IT WILL BE NECESSARY TO INCREASE THE WIDTH OF THE BASE.
- F.** MINIMUM COVER FOR REINFORCING STEEL SHALL BE 2".
- G.** FOR PIPES HAVING A DIAMETER OR RISE OVER 36", REFERENCE ODOT HW-3 HEADWALLS FOR FULL HEIGHT HEADWALL.
- H.** FOR SKEWED CULVERTS HAVING A DIAMETER OR RISE OF 36" OR LESS, REFERENCE ODOT HW-2 HEADWALLS.
- I.** HEADWALLS MAY BE PRECAST CONCRETE CONSTRUCTED TO THE ABOVE REQUIREMENTS. GROUT AROUND PIPE AFTER INSTALLATION.



RIGID PIPE



OUTLET END TONGUE OR SPIGOT DOWNSTREAM

DIMENSIONS			QUANTITIES ONE HEADWALL	
DIAMETER	HEIGHT	LENGTH	CONCRETE C.Y.	REINFORCING STEEL LBS.
15"	5'-2"	7'-0"	1.7	41
18"	5'-5"	8'-4"	2.2	57
21"	5'-8"	9'-8"	2.8	62
24"	5'-11"	11'-0"	3.3	69
30"	6'-5"	13'-8"	4.7	92
36"	7'-0"	16'-4"	6.5	105

- L CIRCULAR SECTIONS = $5D + 4T$
- L ELLIPTICAL OR PIPE-ARCH = $4R + 4T + S$
- H CIRCULAR SECTIONS = $D + T + 44"$
- H ELLIPTICAL OR PIPE-ARCH = $R + T + 44"$
- D = DIAMETER OF PIPE
- R = RISE OF PIPE
- S = SPAN OF PIPE
- T = THICKNESS OF BARREL
- L = LENGTH OF HEADWALL
- H = HEIGHT OF HEADWALL