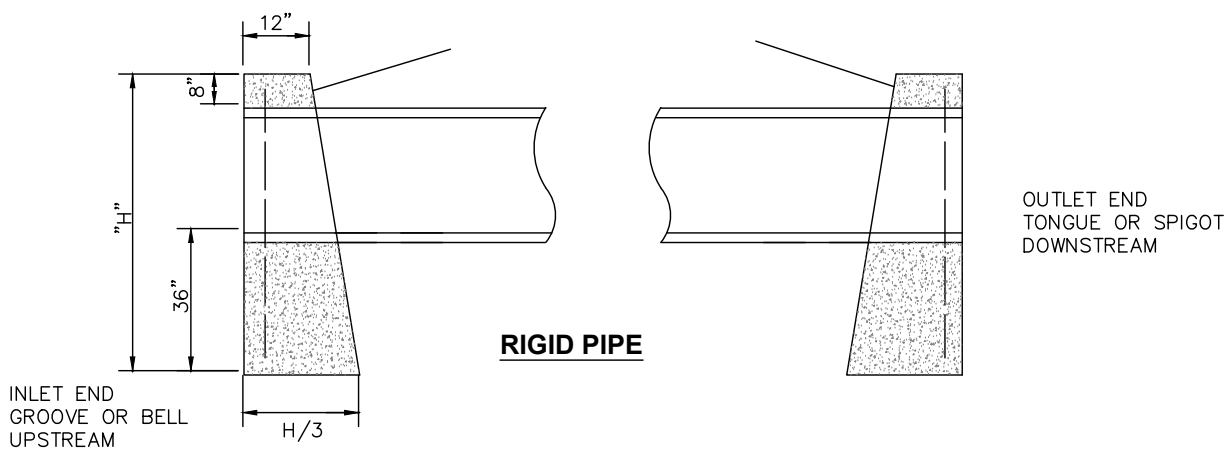


**ELEVATION**

**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 C. REINFORCING 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