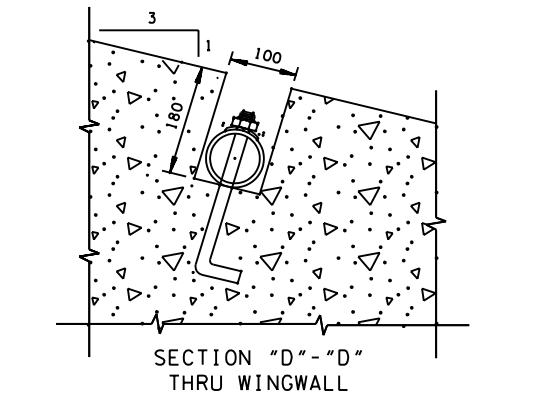
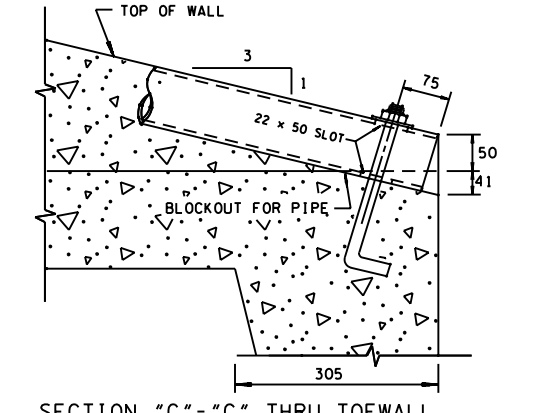
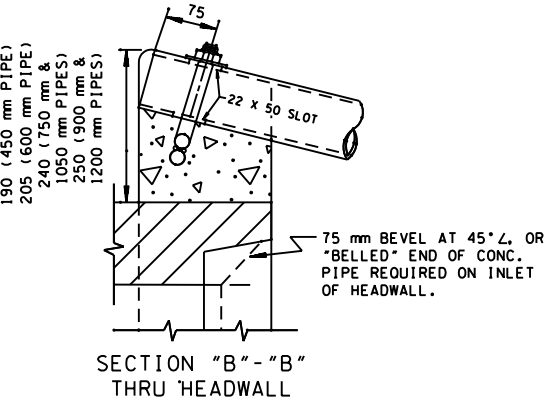
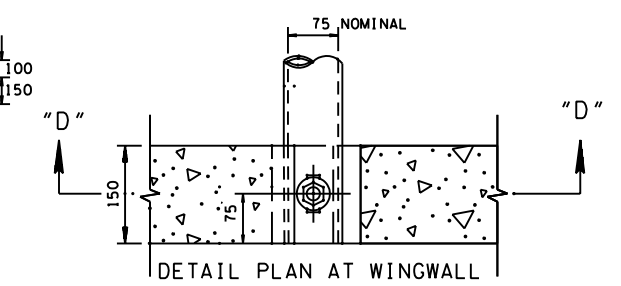
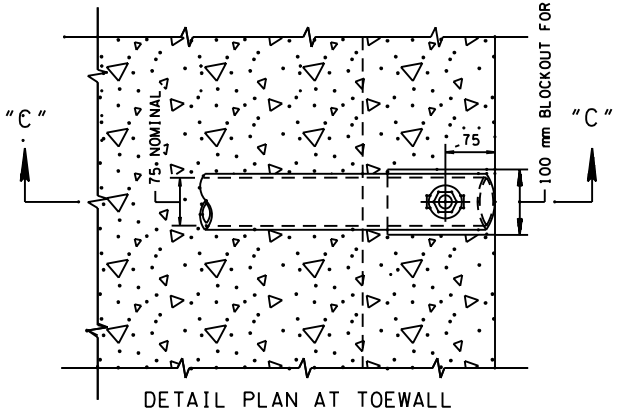
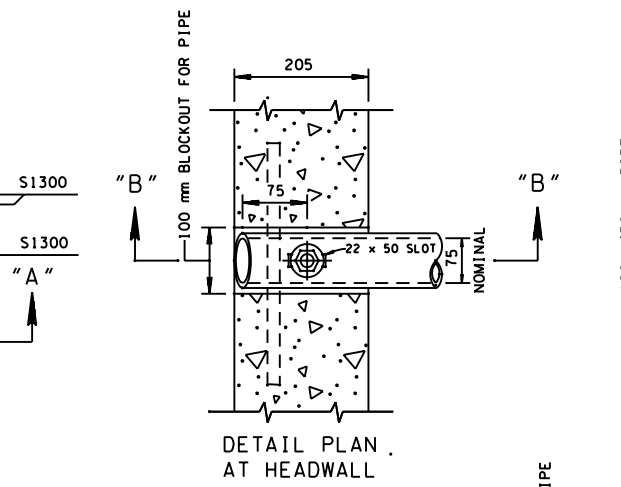
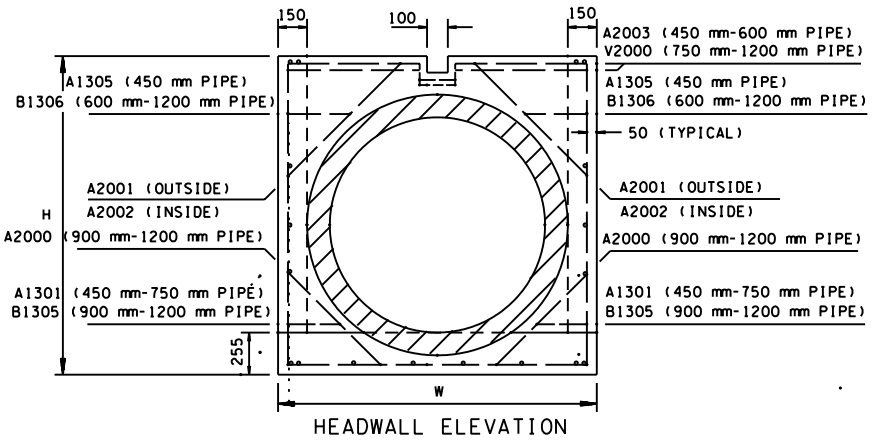
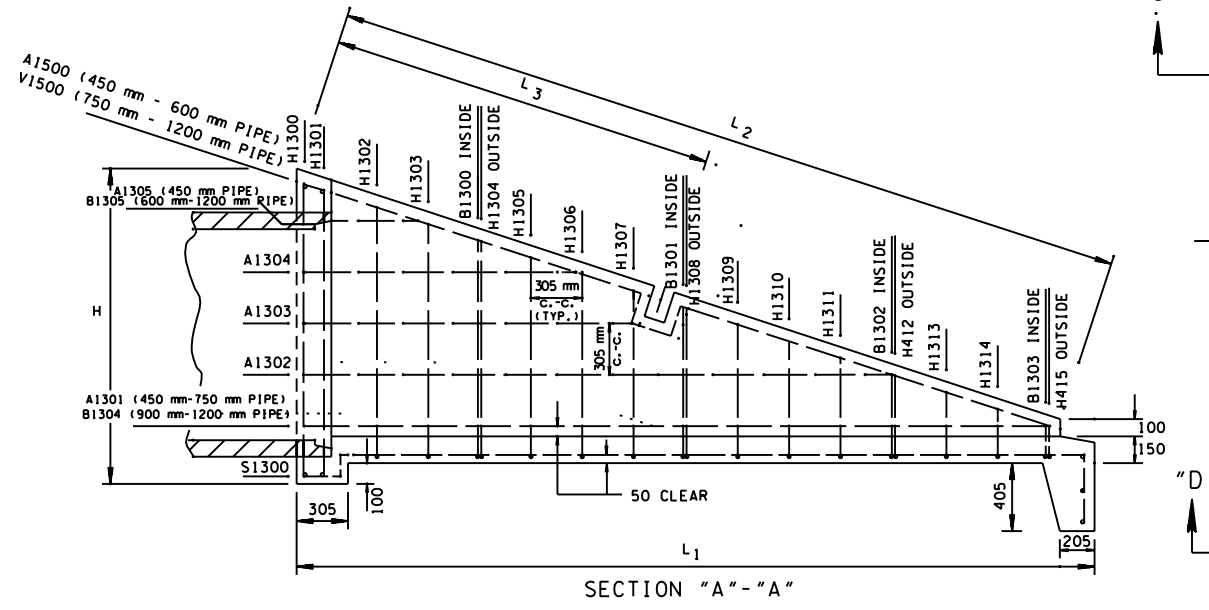
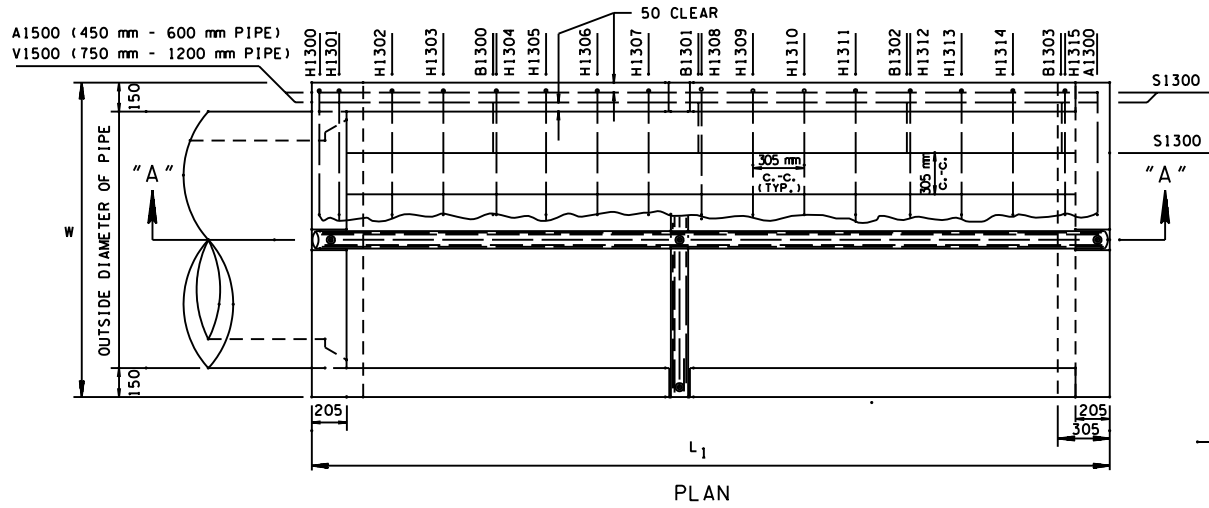
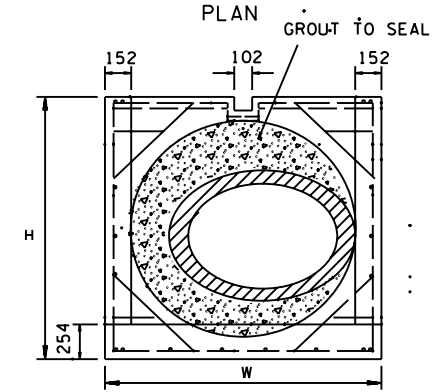
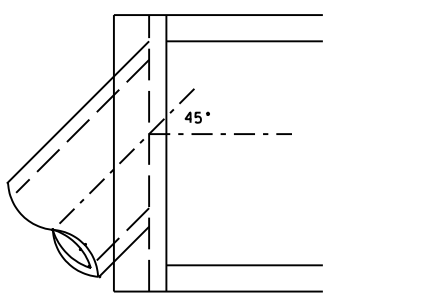


REV. 11-1-95: CHANGED TO METRIC.
REV. 3-30-00: MODIFIED TOE WALL AND CLASS "A" CONCRETE QUANTITIES.
REV. 7-17-07: ADDED SKEWED CONNECTION DETAIL.



SKEWED CONNECTION DETAIL



HEADWALL ELEVATION

UP SIZED TYPE U CONCRETE END WALL TO BE USED TO ACCOMMODATE THE SKEWED PIPE

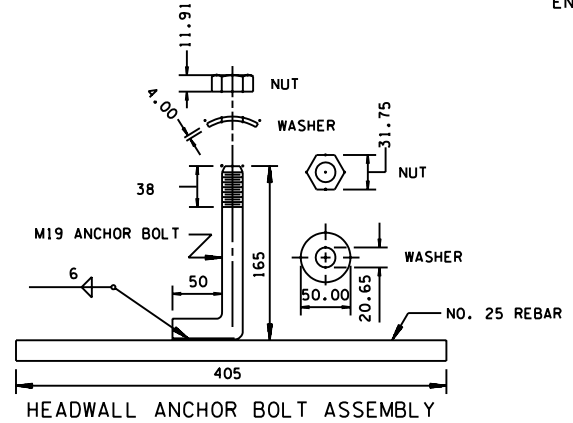
PIPE CULV. DIA.	PIPE SKEW		
	75°	60°	45°
457	610	610	762
610	762	914	1067
762	914	1067	1219
914	1067	1219	•
1067	1219	•	•
1219	•	•	•

• EXCEEDS 1219 mm TYPE U ENDWALL OPENING

NOTES
① ANCHOR BOLT ASSEMBLY FOR TOEWALL AND WINGWALLS SHALL BE AS SHOWN, EXCEPT WITHOUT REBAR AND LONG SHANK OF BOLT TO BE 280 mm INSTEAD OF 165 mm
② BOLTS SHALL NOT EXTEND MORE THAN 13 mm ABOVE TOP OF NUTS.

PIPE DIA.	CONCRETE ENDWALL DIMENSIONS IN METERS					STRUCTURAL STEEL PIPE DIMENSIONS IN METERS		ESTIMATED QUANTITIES		
	H	L ₁	L ₂	L ₃	W	LG	WG	CLASS "A" CONCRETE m ³	STEEL BAR REINF. kg	STRUCT. STEEL kg
450	0.965	2.030	1.925	—	0.890	—	—	0.80	60	① —
600	1.145	2.565	2.490	—	1.065	—	—	1.16	78	① —
750	1.345	3.175	3.130	1.720	1.245	3.325	1.245	1.64	105	52
900	1.525	3.710	3.695	1.950	1.420	3.885	1.420	2.11	140	60
1050	1.675	4.165	4.175	2.250	1.600	4.370	1.600	2.61	165	67
1200	1.855	4.700	4.740	2.310	1.780	4.930	1.780	3.23	200	76

① PIPE GRATE IS NOT REQUIRED FOR 450 mm OR 600 mm PIPE CULVERTS.
② SEE DM-PE-38B FOR BILL OF STEEL.



TO BE USED ON CROSSDRAINS ONLY AT 90 DEGREE SKEW TO CENTERLINE



ALL UNITS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

CONCRETE ENDWALL
TYPE "U" WITH STEEL
PIPE GRATE
FOR 450 mm THRU 1200 mm
PIPES 3:1 SLOPE

11-1-95 DM-PE-38A