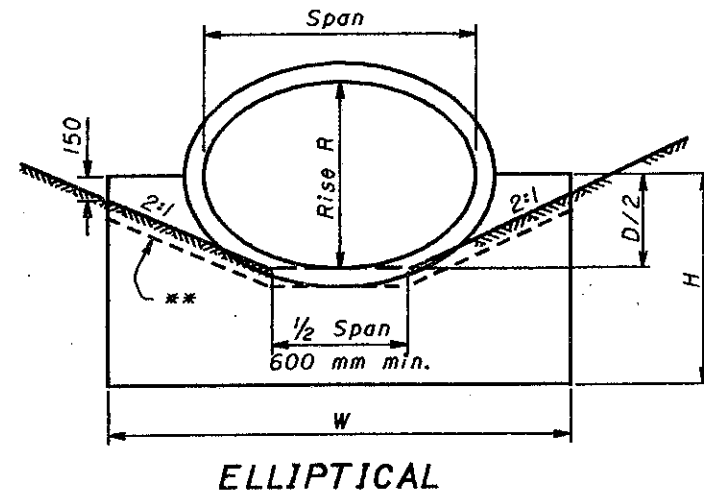
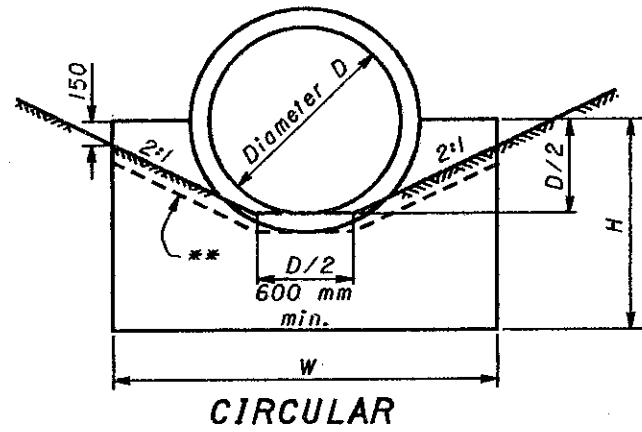
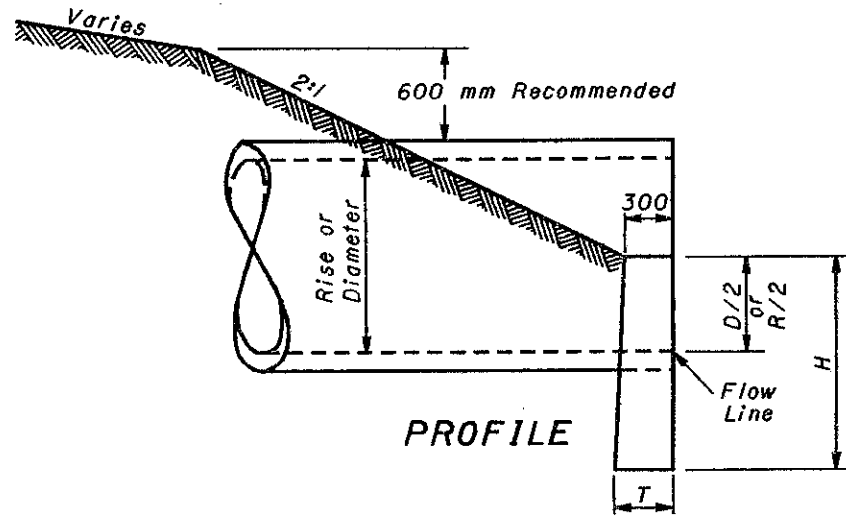
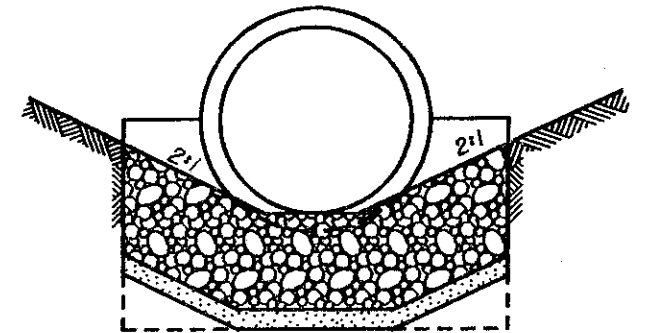


\*\* Top surface of 150 mm inlet headwall extension



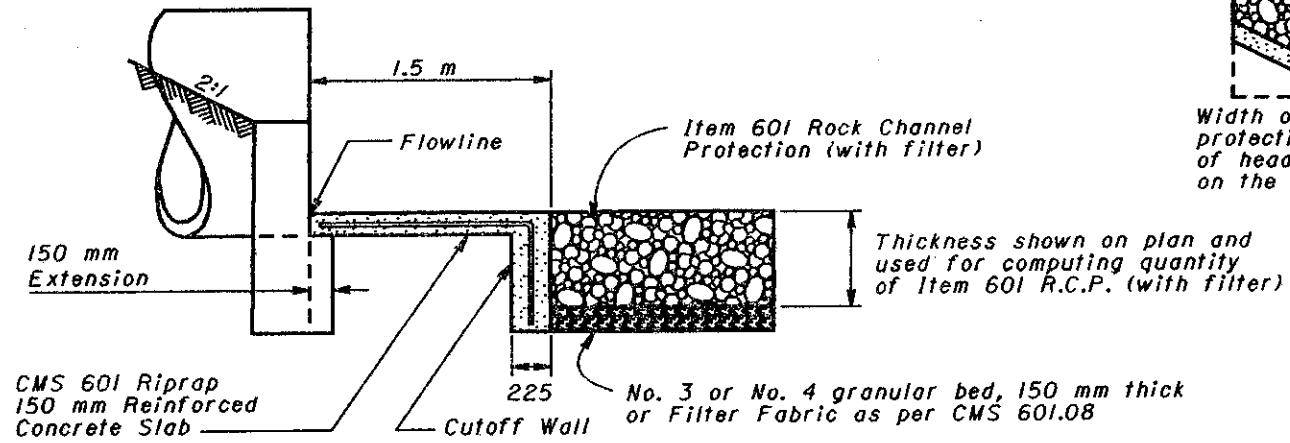
CONCRETE PIPE

**NOTE**  
**CONCRETE:** Concrete for headwalls shall be Class C. Concrete quantities are based on headwalls without the 150 mm extension under the channel protection.



Width of riprap and rock channel protection shall be equal to the width of headwall unless otherwise shown on the plans. (Minimum width 1.2 m.)

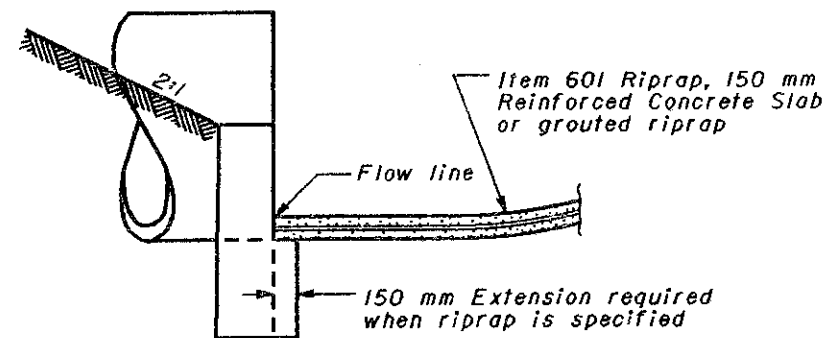
HEADWALL FOR CONCRETE PIPE										
CIRCULAR					ELLIPTICAL					
D	W	H	T	Conc. (m <sup>3</sup> )	Span	Rise	W	H	T	Conc. (m <sup>3</sup> )
300	600	925	300	0.17	575	350	925	975	300	0.27
375	750	975	300	0.22	750	475	1100	1025	300	0.34
450	900	1000	300	0.27	850	550	1200	1050	300	0.38
525	1050	1025	300	0.32	950	600	1375	1075	300	0.44
600	1200	1075	300	0.39	1050	675	1425	1100	300	0.47
675	1350	1125	300	0.46	1125	725	1575	1125	300	0.53
750	1500	1150	300	0.52	1225	800	1650	1175	300	0.58
825	1650	1175	300	0.58	1325	850	1800	1225	375	0.74
900	1800	1225	300	0.66	1500	950	2075	1275	375	0.89
975	1950	1275	300	0.75	1700	1075	2450	1325	400	1.14
1050	2100	1300	300	0.82	1900	1200	2800	1525	400	1.49
1200	2400	1375	350	1.07	2075	1325	3150	1575	450	1.86
1350	2775	1450	350	1.31	2275	1450	3500	1650	450	2.16
1500	3150	1675	400	1.85	2450	1575	3825	1700	500	2.60
1650	3525	1750	450	2.31	2650	1700	4200	1775	500	2.98
1800	3900	1825	450	2.67	2825	1800	4500	1825	550	3.49
1950	4275	1900	500	3.25	3025	1925	4850	1900	550	3.91
2100	4650	1975	550	3.90	3200	2050	5175	1950	600	4.54
2250	5025	2050	550	4.38	3400	2175	5525	2025	600	5.03
2400	5400	2125	600	5.16	3575	2300	5900	2075	650	5.81
2550	5775	2200	650	6.03	3775	2425	6250	2150	650	6.38
2700	6150	2275	650	6.64	4150	2650	6875	2250	700	7.73
2850	6525	2350	700	7.66	4500	2900	7575	2400	750	9.54
3000	6900	2450	750	8.87						
3150	7275	2525	750	9.64						
3300	7650	2600	825	11.18						
3600	8400	2750	875	13.57						



OUTLET CHANNEL PROTECTION DETAIL

The depth of the riprap cutoff wall (750 mm min.) shall match the thickness of the rock channel protection shown on the plan plus 150 mm.

All dimensions are in millimeters unless otherwise noted.



INLET CHANNEL PROTECTION DETAIL



This Drawing Replaces HW-4B.

BUREAU OF LOCATION AND DESIGN  
 OHIO DEPARTMENT OF TRANSPORTATION

HALF-HEIGHT  
 HEADWALLS FOR  
 CONCRETE PIPE

DATE  
 7-12-95

STANDARD  
 CONSTRUCTION  
 DRAWING  
**HW-2.2M**

APPROVED *D.K. Hulman*  
 ENGR., L & D