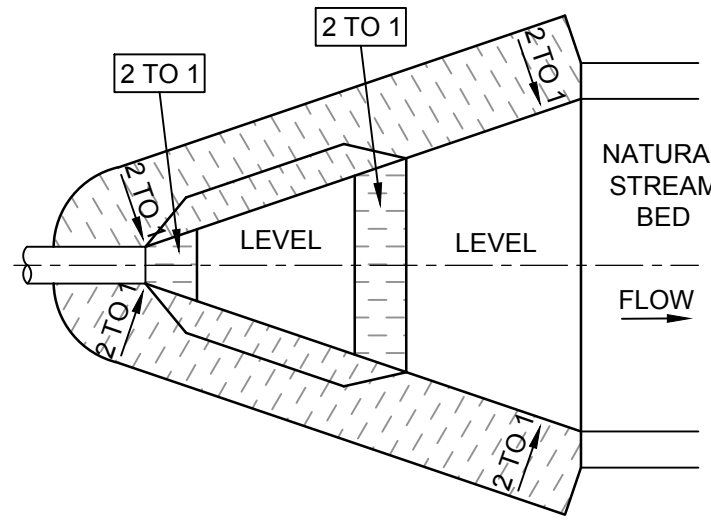
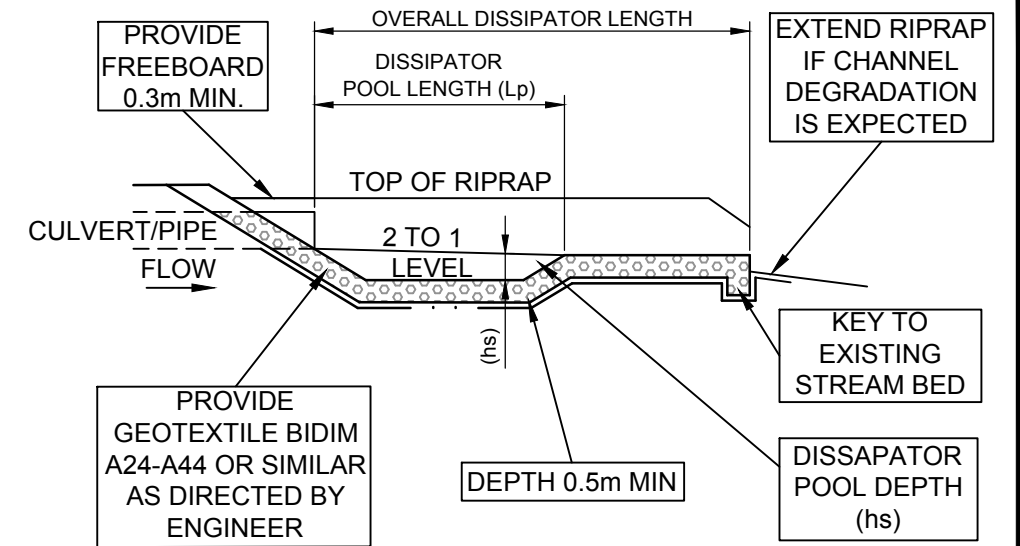


PIPE CULVERT RIP RAP OUTLET TREATMENT

PIPE SIZE (mm)	PIPE GRADE %	OUTLET ROCK DIA. (m)	OVERALL LENGTH (m)	EXIT WIDTH (m)	DISSIPATOR POOL LENGTH Lp (m)	DISSIPATOR POOL DEPTH hs (m)
Ø 750	0.0 - 1.0	0.2	1.5	1.5	n/a	n/a
	1.0 - 2.0	0.3	1.0	1.0	0.5	0.10
	2.0 - 3.0	0.3	1.0	1.0	1.0	0.10
	3.0 - 4.0	0.3	2.0	2.0	1.5	0.15
	4.0 - 5.0	0.3	3.0	3.0	2.0	0.20
	>5.0	DETAILED DESIGN RQD. BASED ON FLOW & VELOCITY				
Ø 900	0.0 - 1.0	0.2	3.0	3.0	n/a	n/a
	1.0 - 2.0	0.3	2.0	2.0	1.0	0.10
	2.0 - 3.0	0.3	3.5	3.5	2.5	0.25
	3.0 - 4.0	0.3	4.0	4.0	3.0	0.30
	4.0 - 5.0	0.3	7.0	6.5	4.5	0.35
	>5.0	DETAILED DESIGN RQD. BASED ON FLOW & VELOCITY				
Ø 1050	<0.5	0.2	3.0	3.1	n/a	n/a
	0.5 - 1.0	0.3	4.0	4.0	2.5	0.25
	1.0 - 2.0	0.3	5.0	5.0	3.5	0.3
	2.0 - 5.0	0.3	5.0	5.0	3.5	0.35
	>5.0	DETAILED DESIGN RQD. BASED ON FLOW & VELOCITY				
Ø 1200	<0.5	0.2	6.0	6.5	n/a	n/a
	<0.5	0.3	5.0	5.5	3.5	0.30
	0.5 - 1.0	0.3	7.0	7.0	4.5	0.45
	1.0 - 4.0	0.4	3.0	3.0	2.0	0.20
	4.0 - 5.0	0.4	4.5	5.0	3.0	0.30
	>5.0	DETAILED DESIGN RQD. BASED ON FLOW & VELOCITY				
Ø 1500	<0.5	0.2	6.0	7.0	n/a	n/a
	<0.5	0.3	5.0	6.0	3.5	0.4
	0.5 - 2.0	0.4	3.0	3.5	2.0	0.2
	2.0 - 4.0	0.4	4.5	5.5	3.0	0.3
	4.0 - 5.0	0.4	5.5	7.0	4.0	0.4
	>5.0	DETAILED DESIGN RQD. BASED ON FLOW & VELOCITY				
Ø 1800	<0.5	0.3	6.0	8.0	n/a	n/a
	<0.5	0.4	4.5	6.0	3.0	0.3
	0.5 - 5.0	0.4	10.0	13.0	7.0	0.7
	>5.0	DETAILED DESIGN RQD. BASED ON FLOW & VELOCITY				
Ø 2100	<0.5	0.4	7.5	10.5	n/a	n/a
	<0.5	0.4	10.0	13.5	7.0	0.8
	<0.5	0.5	8.0	11.0	5.5	0.7
	>1.0	DETAILED DESIGN RQD. BASED ON FLOW & VELOCITY				

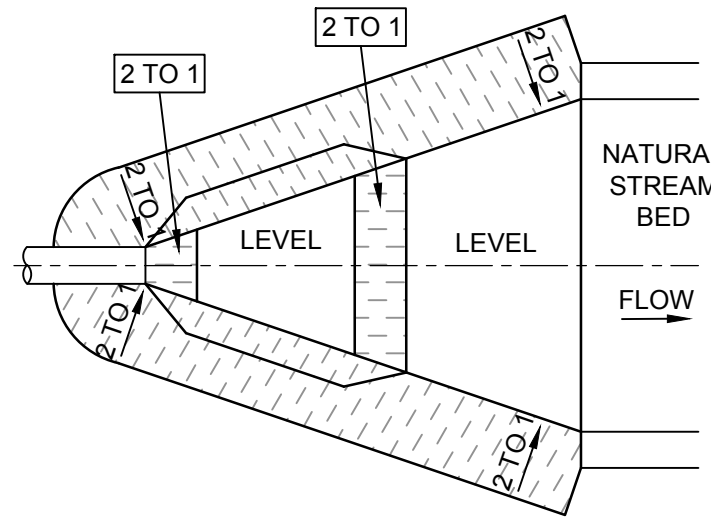


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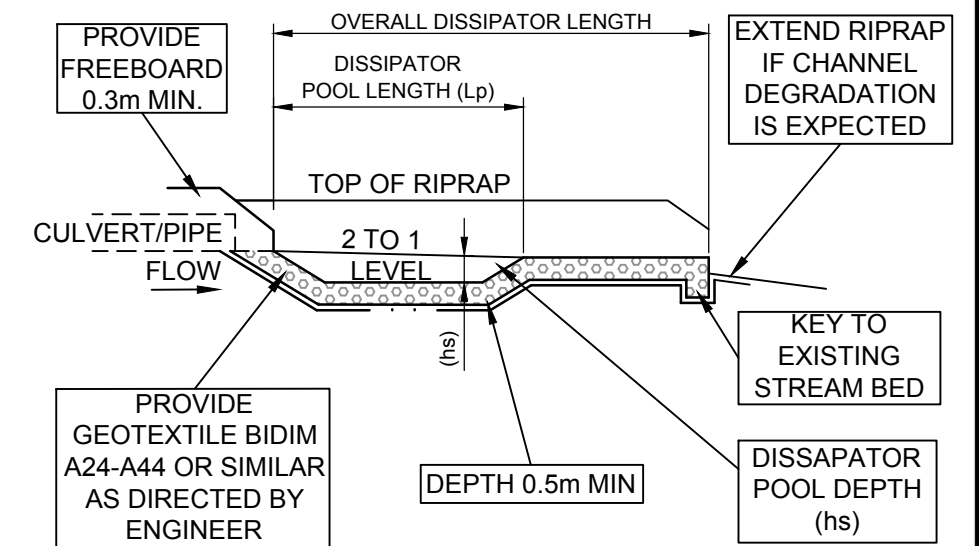


ELEVATION (SECTIONED ALONG CENTRELINE)

RIPRAP OUTLET PROTECTION / ENERGY DISSIPATOR PIPE OUTLET ONLY



PLAN



ELEVATION (SECTIONED ALONG CENTRELINE)

RIPRAP OUTLET PROTECTION / ENERGY DISSIPATOR PIPE WITH HEADWALL

NOTES

1. WARP BASIN TO CONFORM TO NATURAL STREAM CHANNEL. TOP OF RIPRAP IN FLOOR OF BASIN SHOULD BE AT THE SAME LEVEL OR LOWER THAN NATURAL CHANNEL AT THE END OF THE BASIN.
2. CULVERT AND TREATMENT MAY BE VARIED TO SUIT SITE CONDITIONS.
3. A SMALL DIAMETER PIPE SHOULD BE PROVIDED TO DRAIN POOL DURING PERIODS OF LOW FLOW.

	SCALES NTS	APPROVED D. MAUNDER 31/08/2016 MANAGER ENGINEERING AND STANDARDS SUPPORT	SHEET 1 OF 1	
		SURV DRWN ST DES MW CHKD MW	AS SHEET SIZE A3	DRAWING No 080-044
TYPICAL RIPRAP OUTLET PROTECTION DN750 TO DN2100 PIPE		CADFILE 080-44.dwg DATE 31/08/2016		