



VELOCITY (FEET PER SECOND)	RIP-RAP SIZE (INCHES)	CULVERT SIZE ϕ (INCHES)	MINIMUM DEPTH AND WIDTH OF RIP-RAP (FEET)	MINIMUM LENGTH OF RIP-RAP (FEET)	ROCK LINING (CU.YD.)	EQUIVALENT PIPE ARCH CULVERT (APPROXIMATE)	EQUIVALENT CONC. BOX CULVERT (FEET) (APPROXIMATE)
4 FPS	6"–12"	18"	1' x 4'	12'	2		
		24"	1' x 6'	14'	3		2' x 1-1/2'
		30"	1' x 7'	16'	4	B-5	2' x 2'
9 FPS	12"–18"	36"	1.5' x 9'	18'	9	B-6	3' x 2'
		42"	2' x 10'	20'	15	B-7	3' x 3'
		48"	2' x 12'	20'	18	B-8	4' x 3'
14 FPS	18"–24"	54"	2' x 13.5'	22'	22	B-9	4' x 4'
		60"	2' x 15'	25'	28	B-10	5' x 4'
		66"	2' x 18'	25'	33	B-11	5' x 5'
		72"	2' x 20'	30'	44	B-12	5' x 6'
20 FPS	24"–30"	84"	2.5' x 25'	35'	81		6' x 6'
		96"	2.5' x 30'	40'	111		7' x 7'
		108"	3' x 32'	40'	142		8' x 8'

RIP-RAP CONSTRUCTION DETAIL

NO SCALE

RIP-RAP TO BE PLACED AT ALL FLARED END SECTIONS.

*RIP-RAP SIZE TO BE DETERMINED BY DESIGN DISCHARGE VELOCITY.