

This spreadsheet calculates the amount of flow a Reinforced Concrete Pipe can carry based on diameter and slope. The calculations are based upon free flow inside the culvert and no tailwater conditions existing to impede flow.

Overlying Equation $Q = 1.486 / n ARh^{(2/3)}So^{(1/2)}$

Diameter 15 in	
D =	1.25 ft
A =	1.23 sqft
P =	3.93 ft
Rh =	0.31 ft
Slope	Q (cfs)
0.50%	4.6
1.00%	6.5
2.00%	9.1
3.00%	11.2
5.00%	14.4
7.50%	17.7
10.00%	20.4

Diameter 18 in	
D =	1.50 ft
A =	1.77 sqft
P =	4.71 ft
Rh =	0.38 ft
Slope	Q (cfs)
0.50%	7.4
1.00%	10.5
2.00%	14.9
3.00%	18.2
5.00%	23.5
7.50%	28.8
10.00%	33.2

Diameter 24 in	
D =	2.00 ft
A =	3.14 sqft
P =	6.28 ft
Rh =	0.50 ft
Slope	Q (cfs)
0.50%	16.0
1.00%	22.6
2.00%	32.0
3.00%	39.2
5.00%	50.6
7.50%	62.0
10.00%	71.5

D = Diameter
A = Area
P = Perimeter
Rh = Hydraulic Radius
Mannings n : 0.013

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