

Appendix 8D-1 Recommended Manning's n-Values

Type of Conduit	Wall Description	Manning's n
Concrete Pipe	Smooth walls	0.010-0.013
Concrete Boxes	Smooth walls	0.012-0.015
Corrugated Metal	2 2/3 by 1/2 inch corrugations	0.022-0.027
Pipes and Boxes Annular or Helical Pipe (n varies Barrel size) See HDS5	6 by 1 inch corrugations	0.022-0.025
	5 by 1 inch corrugations	0.025-0.026
	3 by 1 inch corrugations	0.027-0.028
	6 by 2 inch structural plate	0.033-0.035
Corrugated Metal Pipes, Helical Corrugations, Full Circular Flow	9 by 2 1/2 inch structural plate	0.033-0.037
	2 2/3 by 1/2 inch corrugations	0.012-0.024
Spiral Rib Metal	Smooth walls	0.011-0.012

*Note 1: The Values indicated in this table are recommended Manning's "n" design values. Actual Field values for older existing pipelines may vary depending on the effects of abrasion, corrosion, deflection and joint conditions. Concrete pipe with poor joints and deteriorated walls may have "n" values of 0.014 to 0.018. Corrugated metal pipe with joint and wall problems may also have higher "n" values, and in addition, may experience shape changes which could adversely effect the general hydraulic characteristics of the culvert.

Note 2: For further information concerning Manning n values for selected conduits consult Hydraulic Design of Highway Culverts, Federal Highway Administration, HDS No. 5, Table 4.

Source: HDS-5