

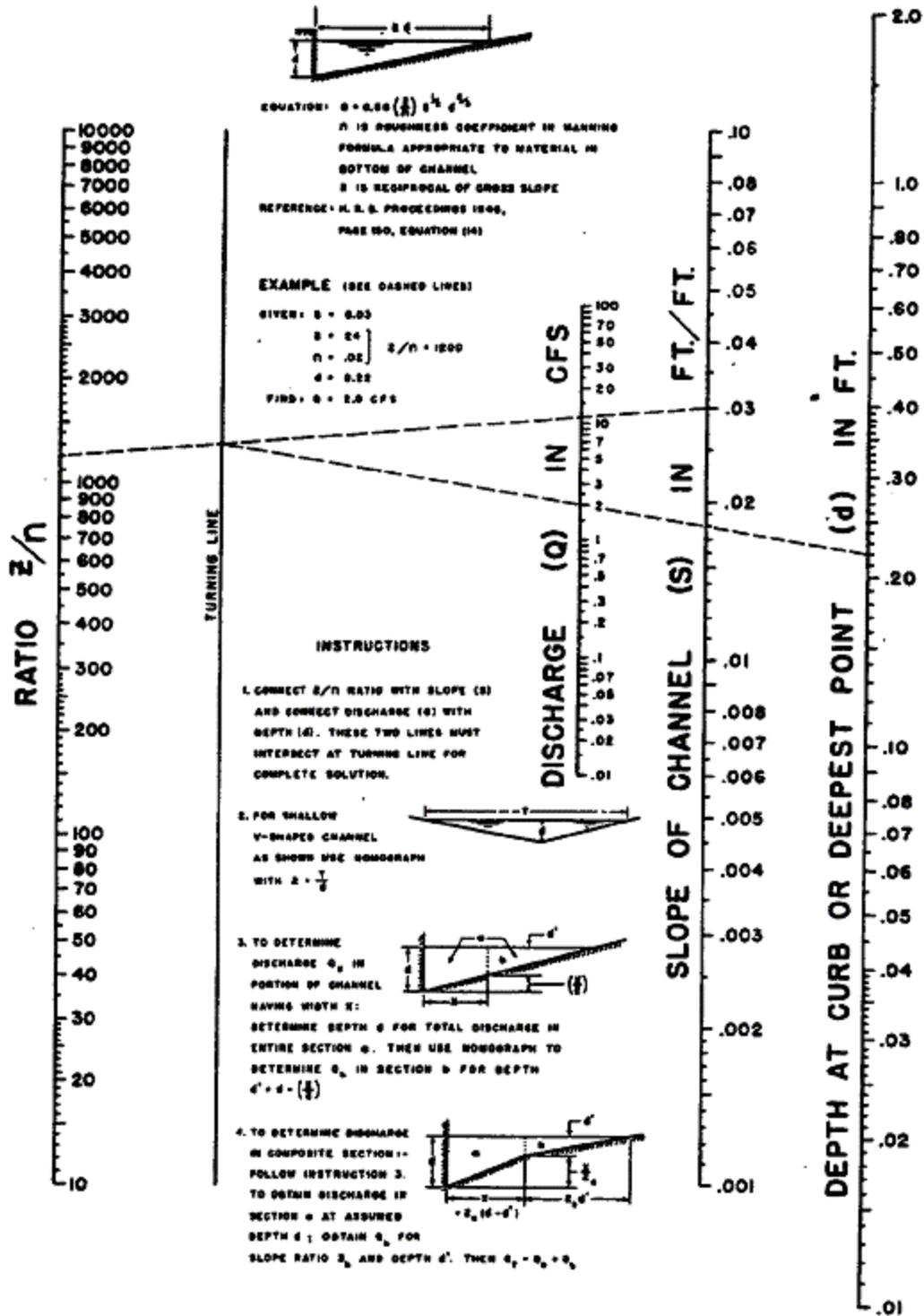
Manning's Roughness Coefficients Table

		n - value		
		Depth Ranges		
Lining Category	Lining Type	0 - 0.5 ft (0 - 150mm)	0.5 - 2.0 ft (150-600mm)	> 2.0 ft (> 600mm)
Rigid	Concrete	0.015	0.013	0.013
	Grouted Riprap	0.040	0.030	0.028
	Stone Masonry	0.042	0.032	0.030
	Soil Cement	0.025	0.022	0.020
	Asphalt	0.018	0.016	0.016
Unlined	Bare soil	0.023	0.020	0.020
	Rock Cut	0.045	0.035	0.025
Temporary*	Jute Net	0.028	0.022	0.019
	Straw with Net	0.065	0.033	0.025
	Curled Wood Mat	0.066	0.035	0.028
	Synthetic Mat	0.036	0.025	0.021
Gravel Riprap	1-inch (25mm) _{D₅₀}	0.044	0.033	0.030
	2-inch (50mm) _{D₅₀}	0.066	0.041	0.034
Rock Riprap	6-inch (150mm) _{D₅₀}	0.104	0.069	0.035
	12-inch (300mm) _{D₅₀}	--	0.078	0.040

Note: Values listed are representative values for the respective depth ranges. Manning's roughness coefficients, n, vary with the flow depth.

* Some temporary linings become permanent when buried.

(FHWA Hydraulic Engineering Circular No: 15).



NOMOGRAPH FOR FLOW IN TRIANGULAR CHANNELS

Source: FHWA Hydraulic Design Series No. 3