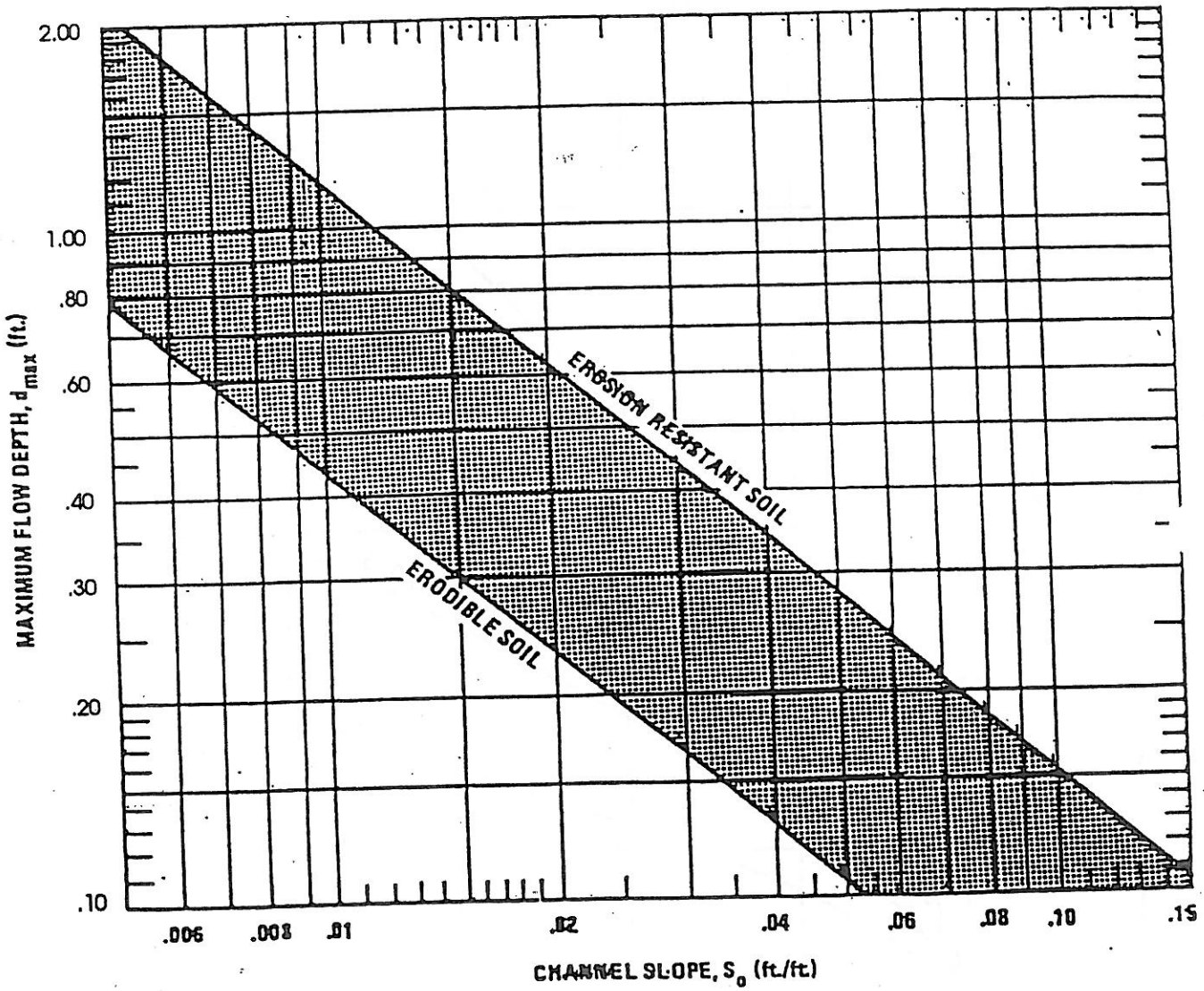
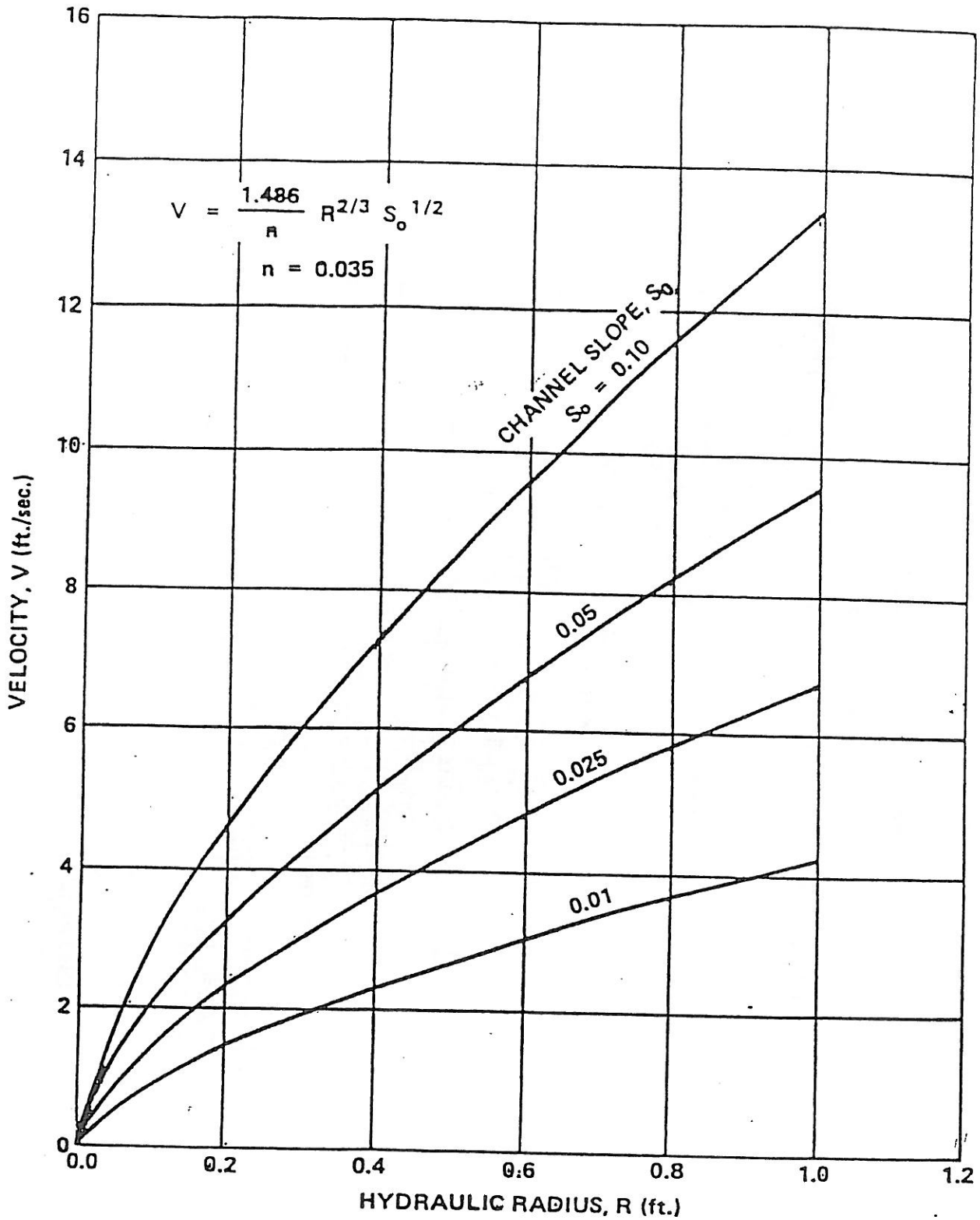
APPENDIX 9



City of
SPRINGDALE
Arkansas

MAXIMUM PERMISSIBLE DEPTH OF FLOW ($d_{max.}$)
FOR CHANNELS LINED WITH JUTE MESH

Figure 9.



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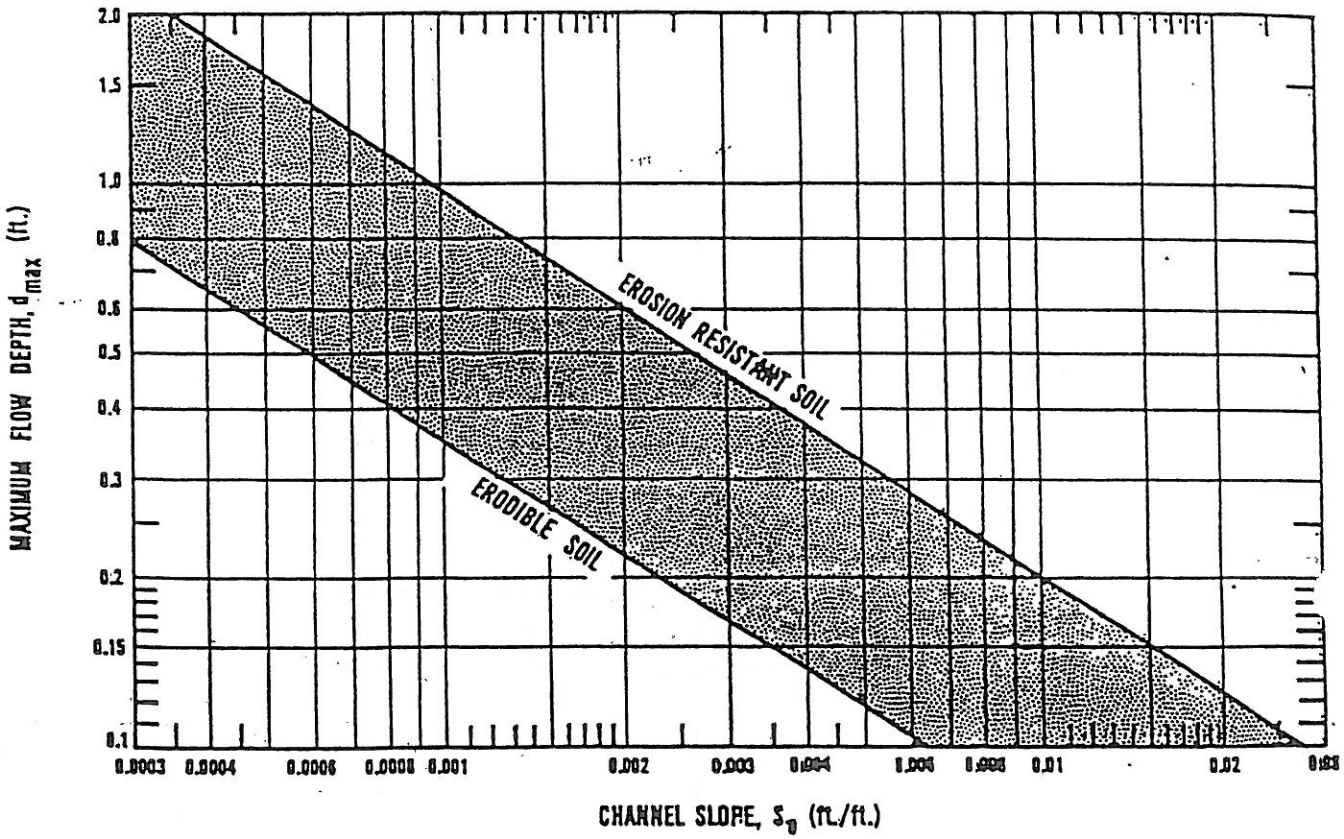
FLOW VELOCITY FOR CHANNELS LINED WITH FIBER GLASS ROVING TACKED WITH ASPHALT SINGLE LAYER

Figure 9.6



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MAXIMUM PERMISSIBLE DEPTH OF FLOW ($d_{max.}$) FOR UNLINED CHANNELS (BARE SOIL)

Figure 9.4

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DITCH DESIGN FORM

LOCATION	AREA ACRES	C	EA X C	ΣA X C	T_o MIN	T_d MIN	I IN/HR	Q CFS	TYPICAL SECTION	S_o f/f	n	V. CALC FT/SEC	WATER DEPTH	LINING DEPTH	TYPE LINING	REMARKS

DITCH DESIGN FORM

Figure 9.2

PERMISSIBLE VELOCITIES FOR CHANNELS LINED WITH GRASS*

Cover	Slope range, %	Permissible velocity, fps: Erosion-resistant soils	Permissible velocity, fps: Easily eroded soils
Bermuda grass	0-5	8	6
	5-10	7	5
	>10	6	4
Buffalo grass, Kentucky bluegrass, smooth brome, blue grama	0-5	7	5
	5-10	6	4
	>10	5	3
Grass mixture	0-5	5	4
	5-10	4	3
	Do not use on slopes steeper than 10%		
Lespedeza sericea, weeping love grass, ischaemum (yellow bluestem), kudzu, alfalfa, crabgrass	0-5	3.5	2.5
	Do not use on slopes steeper than 5%; except for side slopes in a combinatuon channel		
Annuals—used on mild slopes or as temporary protection until permanent covers are established, common lespedeza, Sudan grass	0-5	3.5	2.5
	Use on slopes steeper than 5% is not recommended		

REMARKS. The values apply to average, uniform stands of each type of cover. Use velocities exceeding 5 fps only where good covers and proper maintenance can be obtained.

TABLE 9.1

COMPUTATION OF COMPOSITE ROUGHNESS COEFFICIENT FOR EXCAVATED AND NATURAL CHANNELS

$$n = (n_o + n_1 + n_2 + n_3 + n_4)\ m$$

	CHANNEL CONDITIONS	VALUE
Material Involved n_0	Earth	0.020
	Rockcut	0.025
	Final Gravel	0.024
	Coarse Gravel	0.028
Degree of Irregularity n_1	Smooth	0.000
	Minor	0.005
	Moderate	0.010
	Severe	0.020
Variation of Channel Cross Section n_2	Gradual	0.000
	Alternating Occasionally	0.005
	Alternating Frequently	0.010-0.015
Relative Effect Of Obstructions n_3	Negliible	0.000
	Minor	0.010-0.015
	Appreciable	0.020-0.030
	Severe	0.040-0.060
Vegetation n_4	Low	0.005-0.010
	Medium	0.010-0.025
	High	0.025-0.050
	Very High	0.050-0.100
Degree of Meandering m	Minor	1.000-1.200
	Appreciable	1.200-1.500
	Severe	1.500

Roughness Coefficient For Lined Channels

Concrete Lined - n = 0.017
Rubble RipRap - n = 0.022

Open Channel Hydraulics
Ven Te Chow, PhD