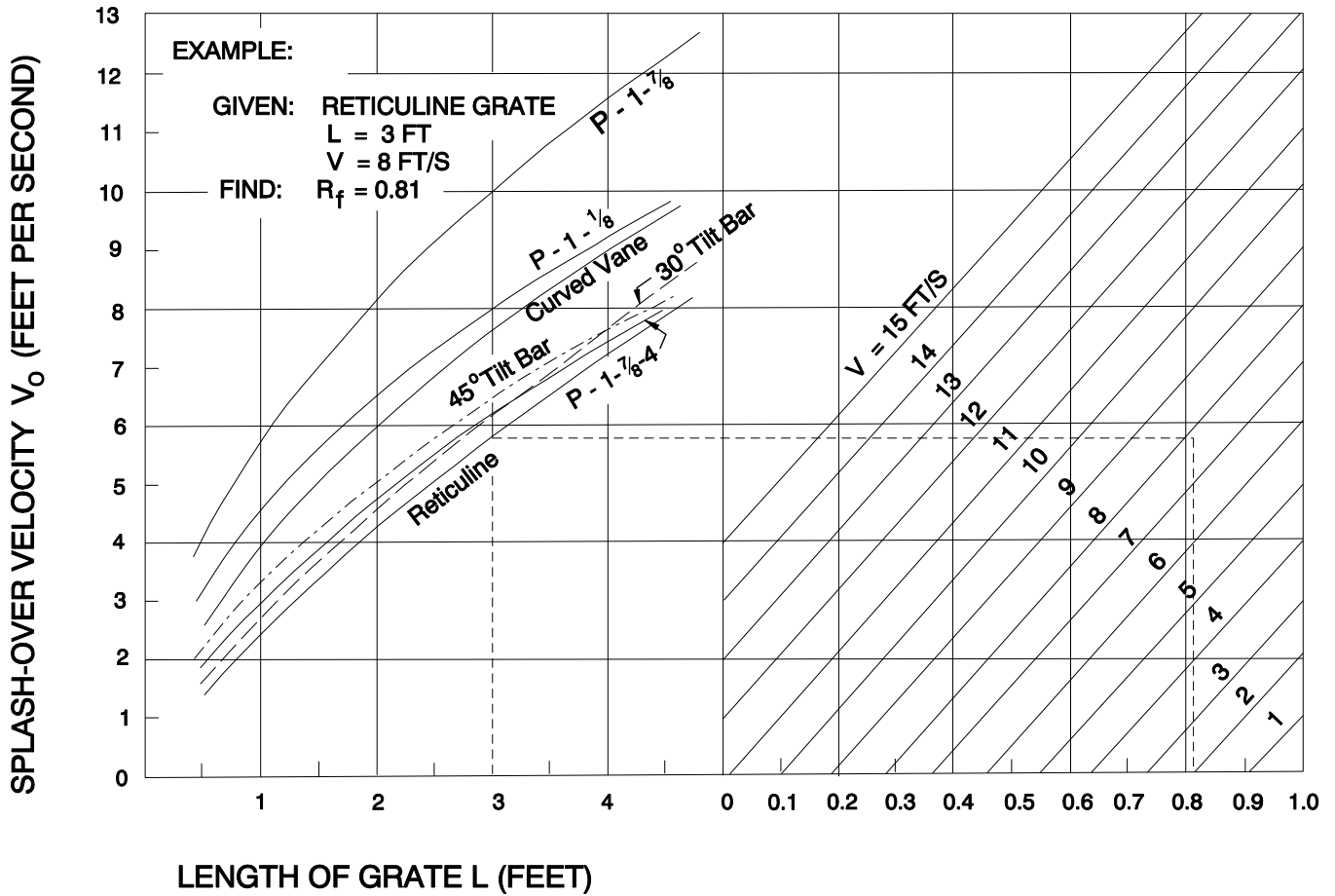


## APPENDIX H – DESIGN CHARTS

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$R_f$  = The ratio of frontal flow intercepted to total frontal flow

Chart 1 - Grate Inlet Frontal Flow Interception Efficiency

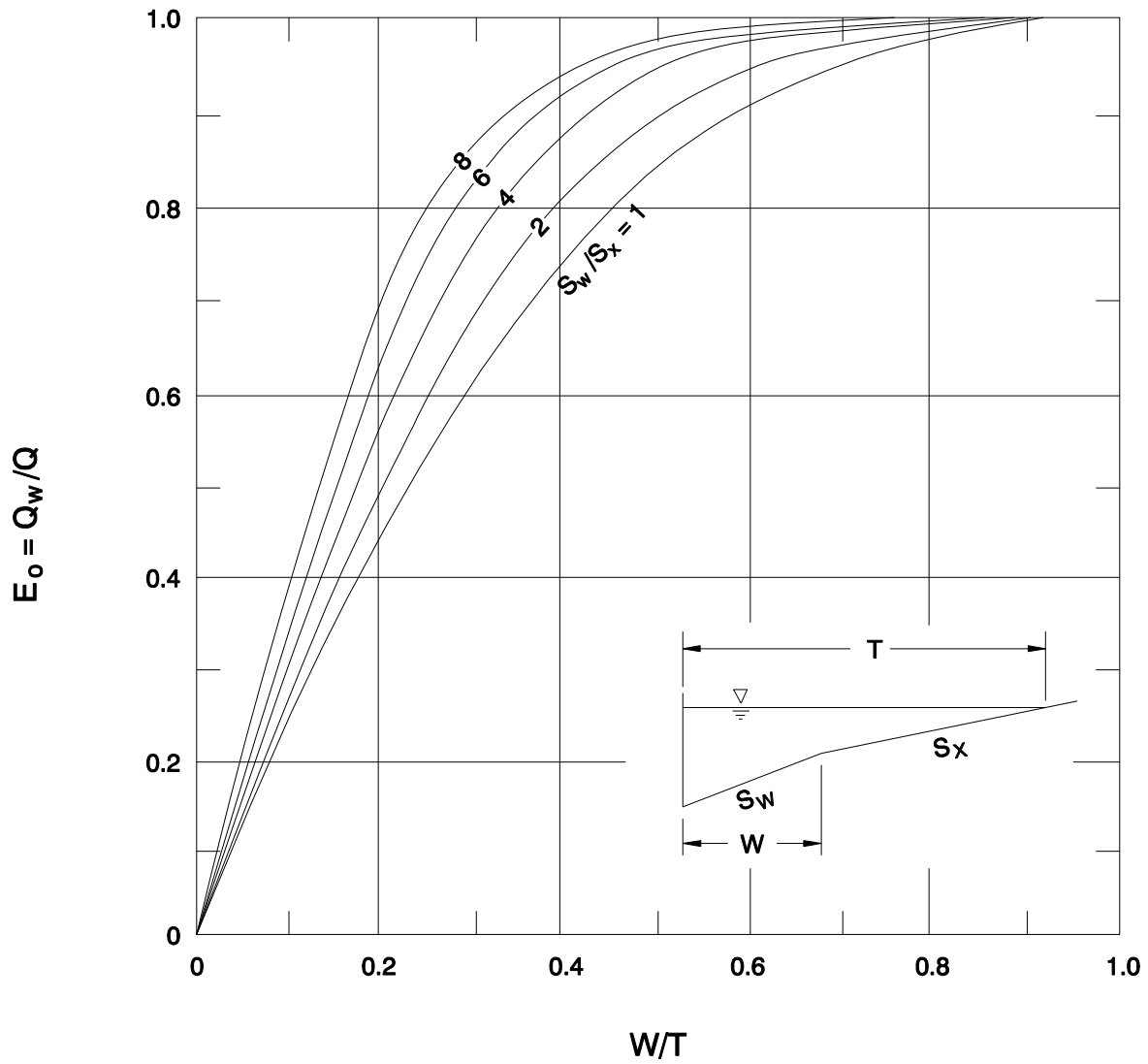


Chart 2 - Ratio of Frontal Flow to Total Gutter Flow

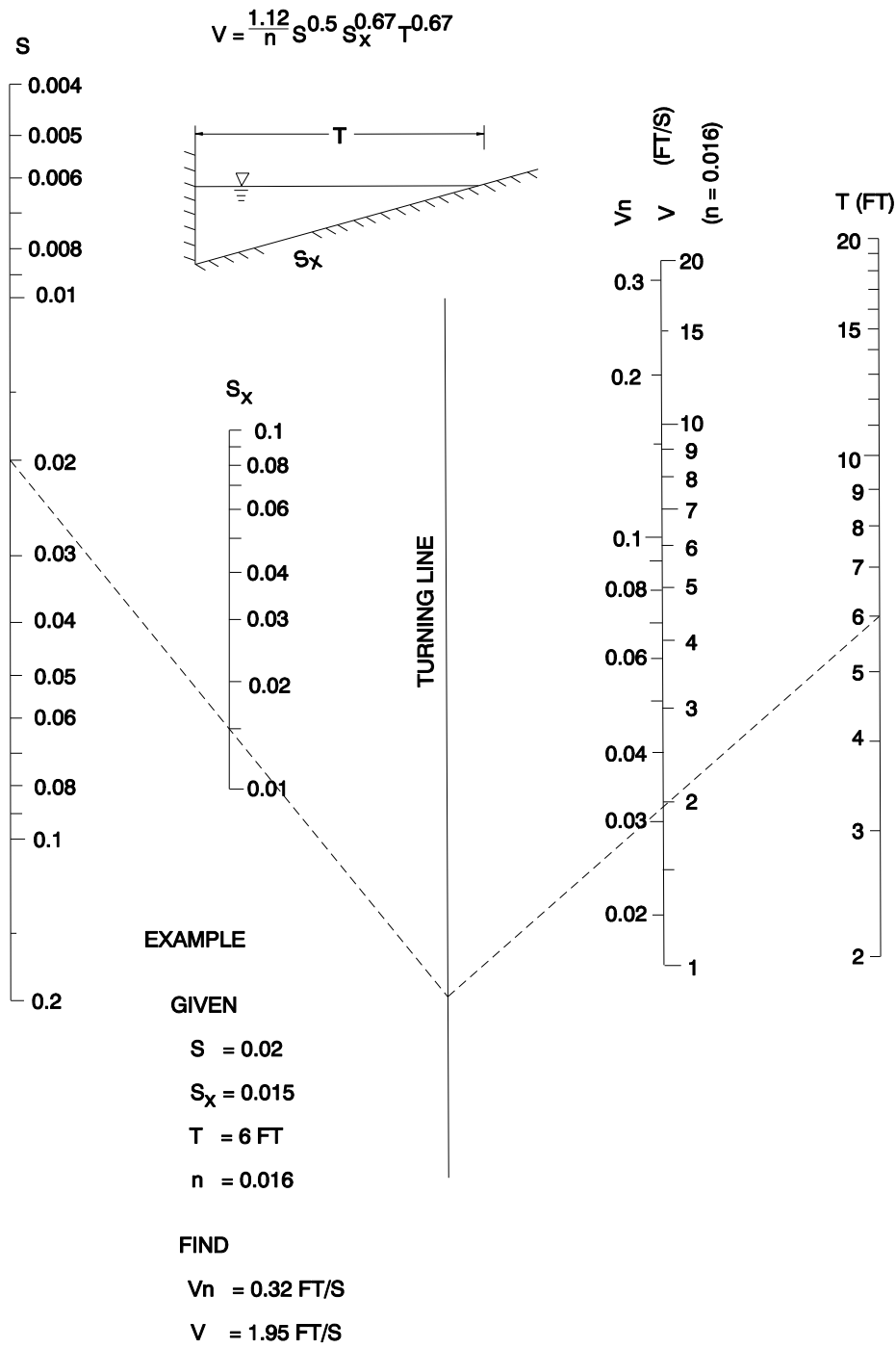


Chart 3 - Velocity in Triangular Gutter Sections

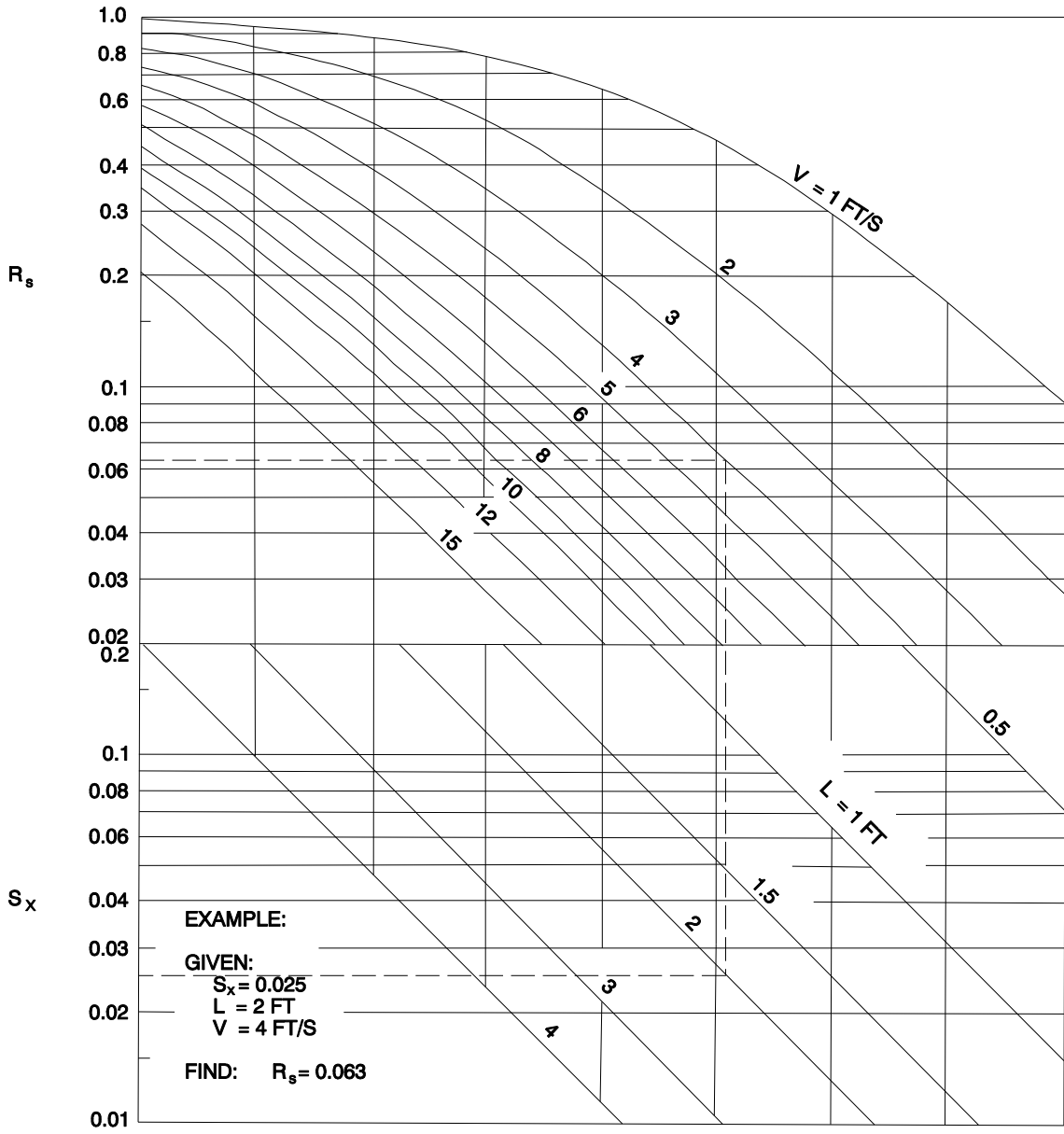


Chart 4 - Grate Inlet Side Flow Intercept Efficiency

$$Q = \frac{0.56}{n} S_x^{1.67} S^{0.5} T^{2.67}$$

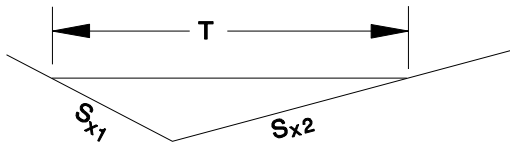
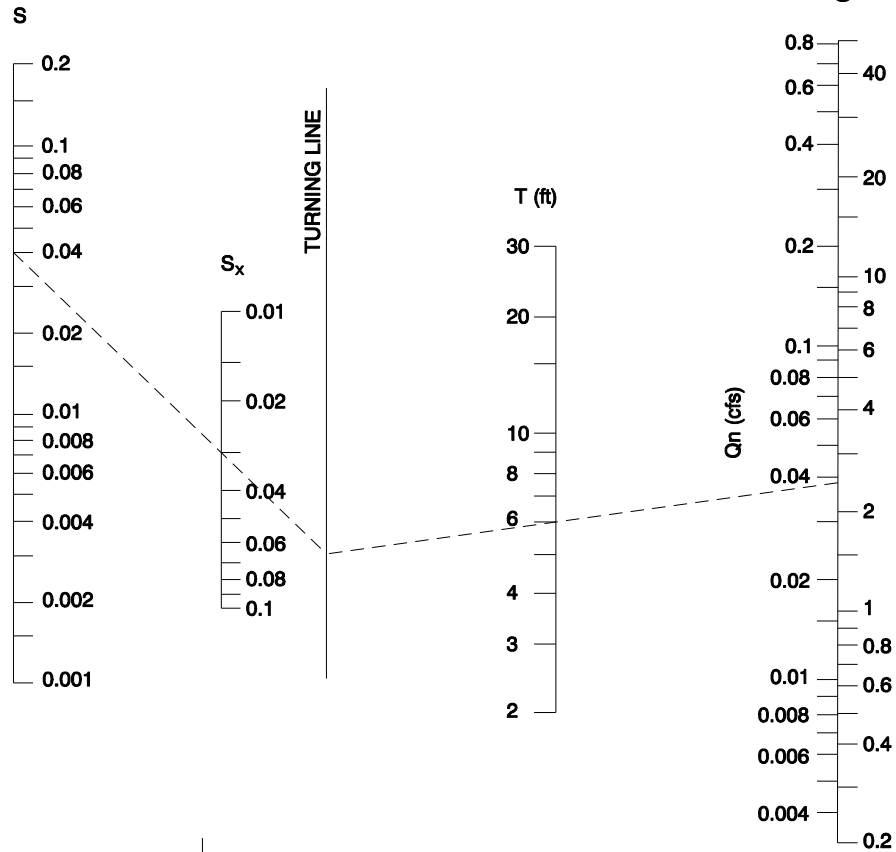
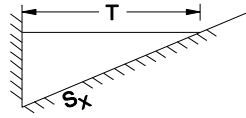
Example:

Given:

$n = 0.016$ ,  $S_x = 0.03$   
 $S = 0.04$ ,  $T = 6$  ft

Find:

$Q = 2.4$  ft<sup>3</sup>/s  
 $Qn = 0.038$  ft<sup>3</sup>/s



1) For V-Shape, use the nomograph with  $S_x = S_{x1}S_{x2}/(S_{x1} + S_{x2})$

2) To Determine discharge in gutter with composite cross slopes, find  $Q_s$  using  $T_s$  and  $S_x$ . Then use Chart 2 to find  $E_o$ . The total discharge is  $Q = Q_s/(1 - E_o)$ , and  $Q_w = Q - Q_s$ .

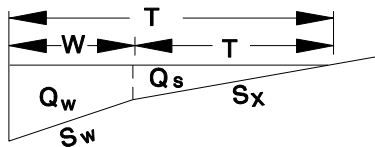
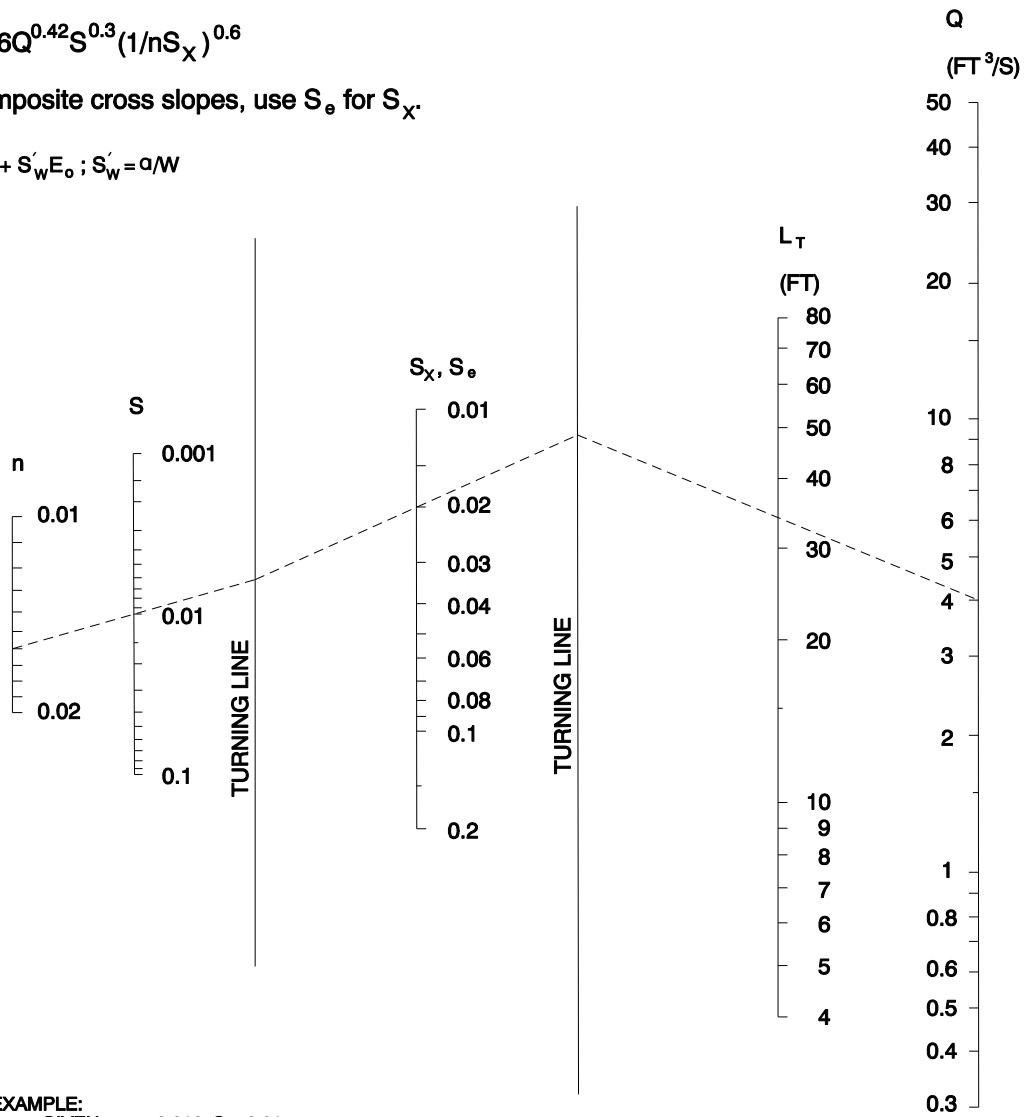


Chart 5 - Flow in Triangular Gutter Sections

$$L_T = 0.6Q^{0.42}S^{0.3}(1/nS_x)^{0.6}$$

For composite cross slopes, use  $S_e$  for  $S_x$ .

$$S_e = S_x + S'_w E_o; S'_w = a/W$$



EXAMPLE:  
 GIVEN:  $n = 0.016$ ;  $S = 0.01$   
 $S_x = 0.02$ ;  $Q = 4 \text{ ft}^3/\text{S}$   
 FIND:  $L_T = 34 \text{ FT}$

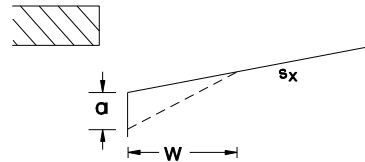
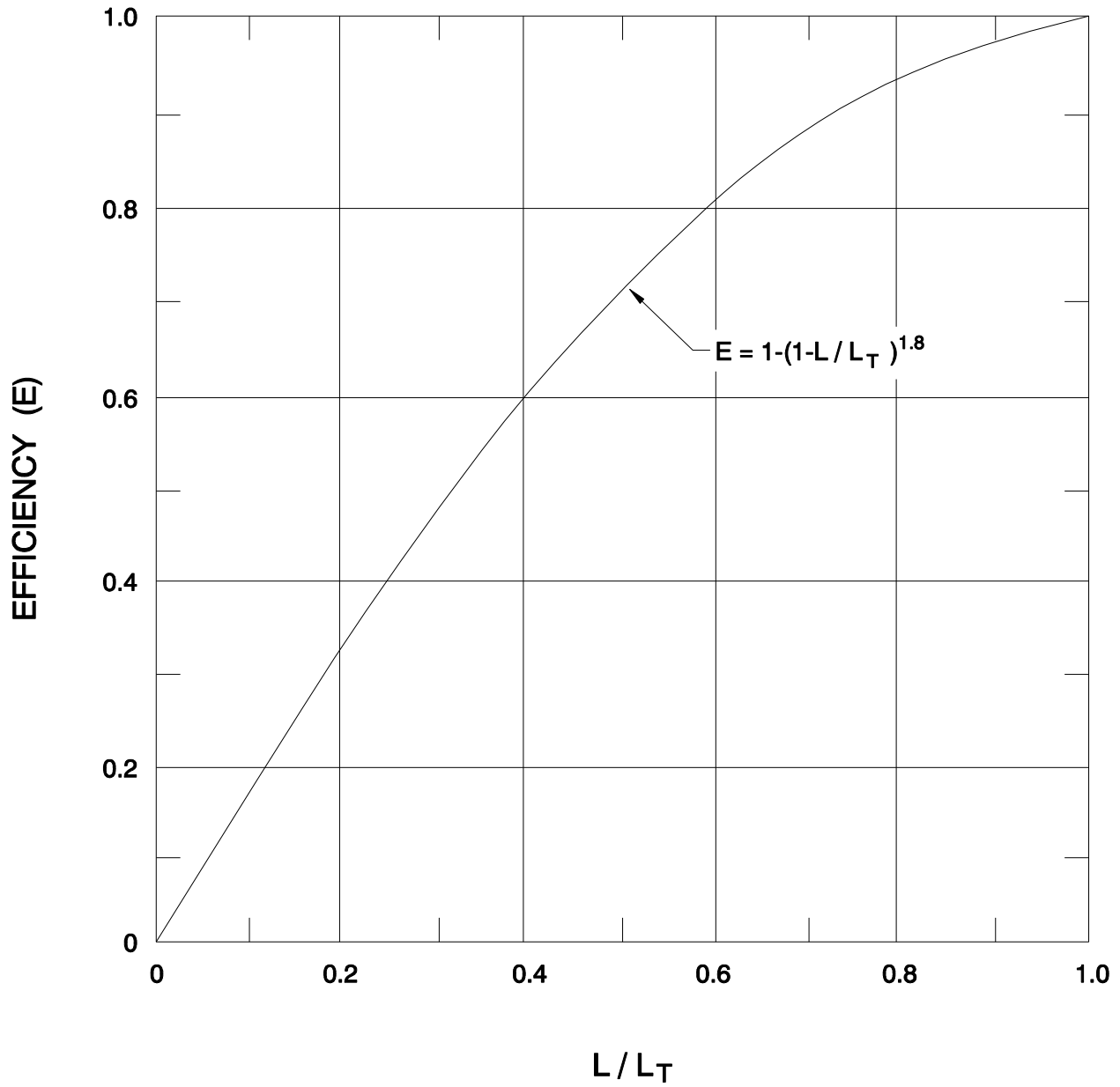


Chart 6 - Curb-Opening and Slotted Drain Inlet Length for Total Interception



**Chart 7 – Curb-Opening and Slotted Drain Inlet Interception Efficiency**

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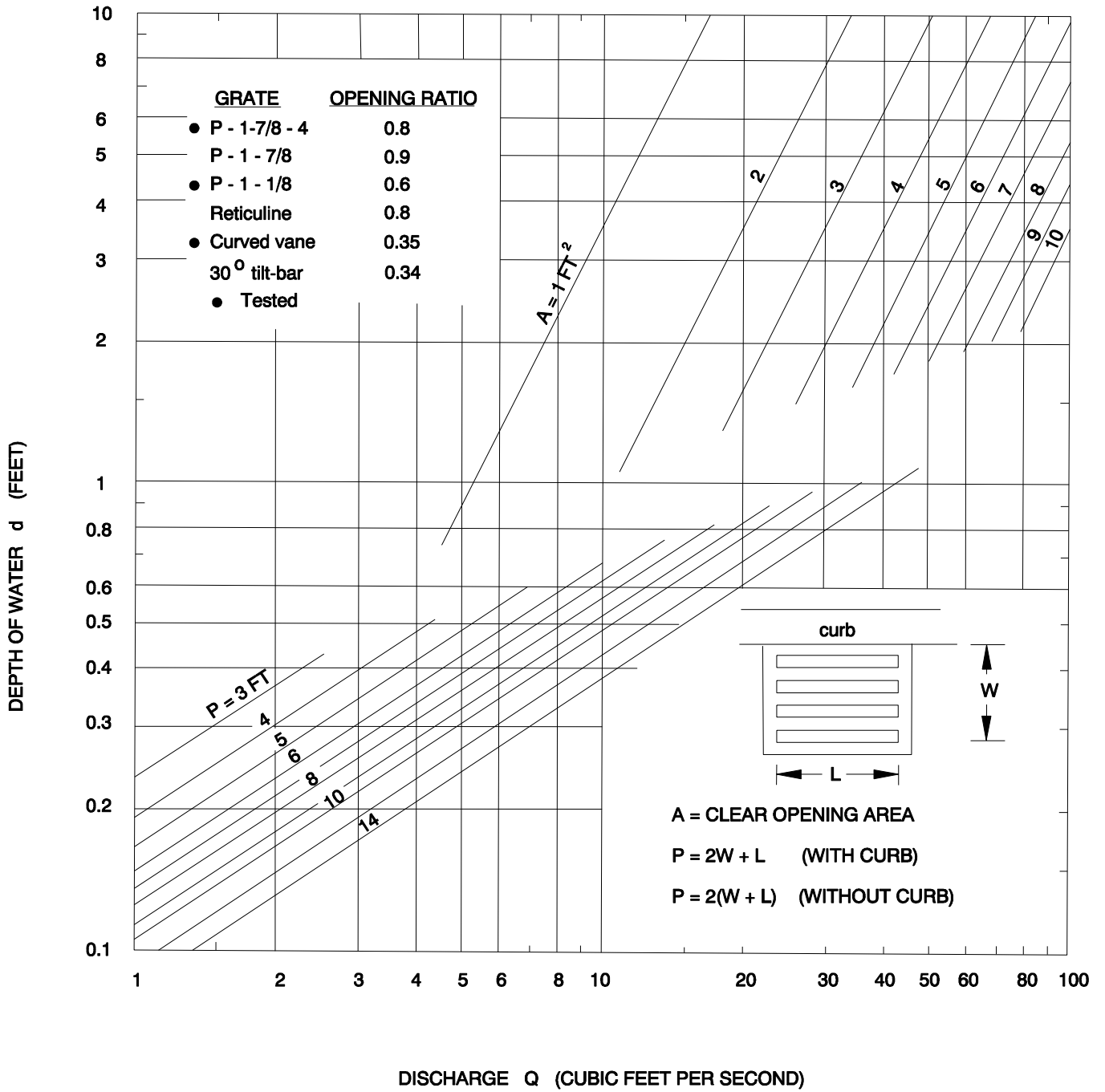


Chart 8 - Grate Inlet Capacity in Sump Conditions

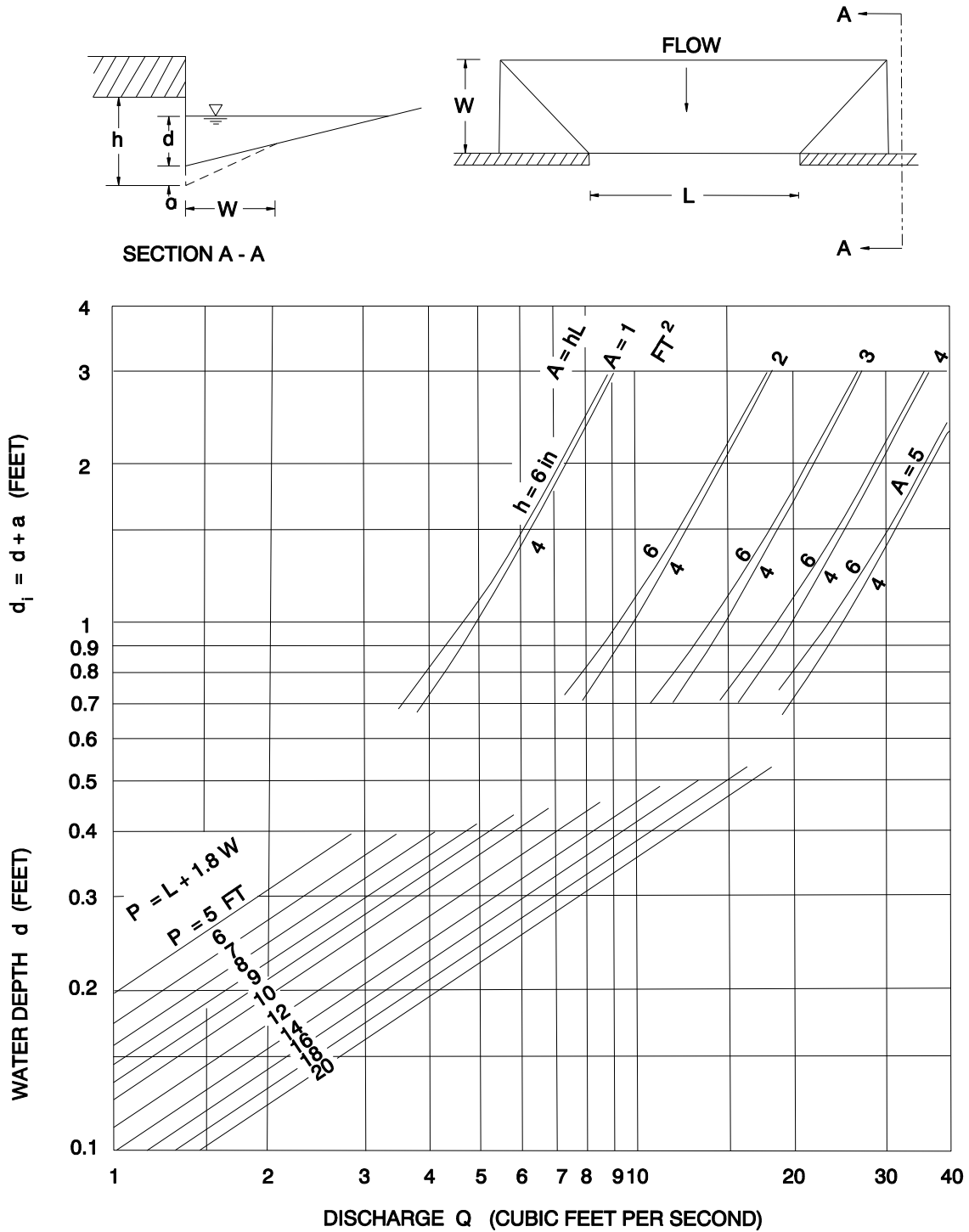


Chart 9 - Depressed Curb-opening Inlet Capacity in Sump Locations

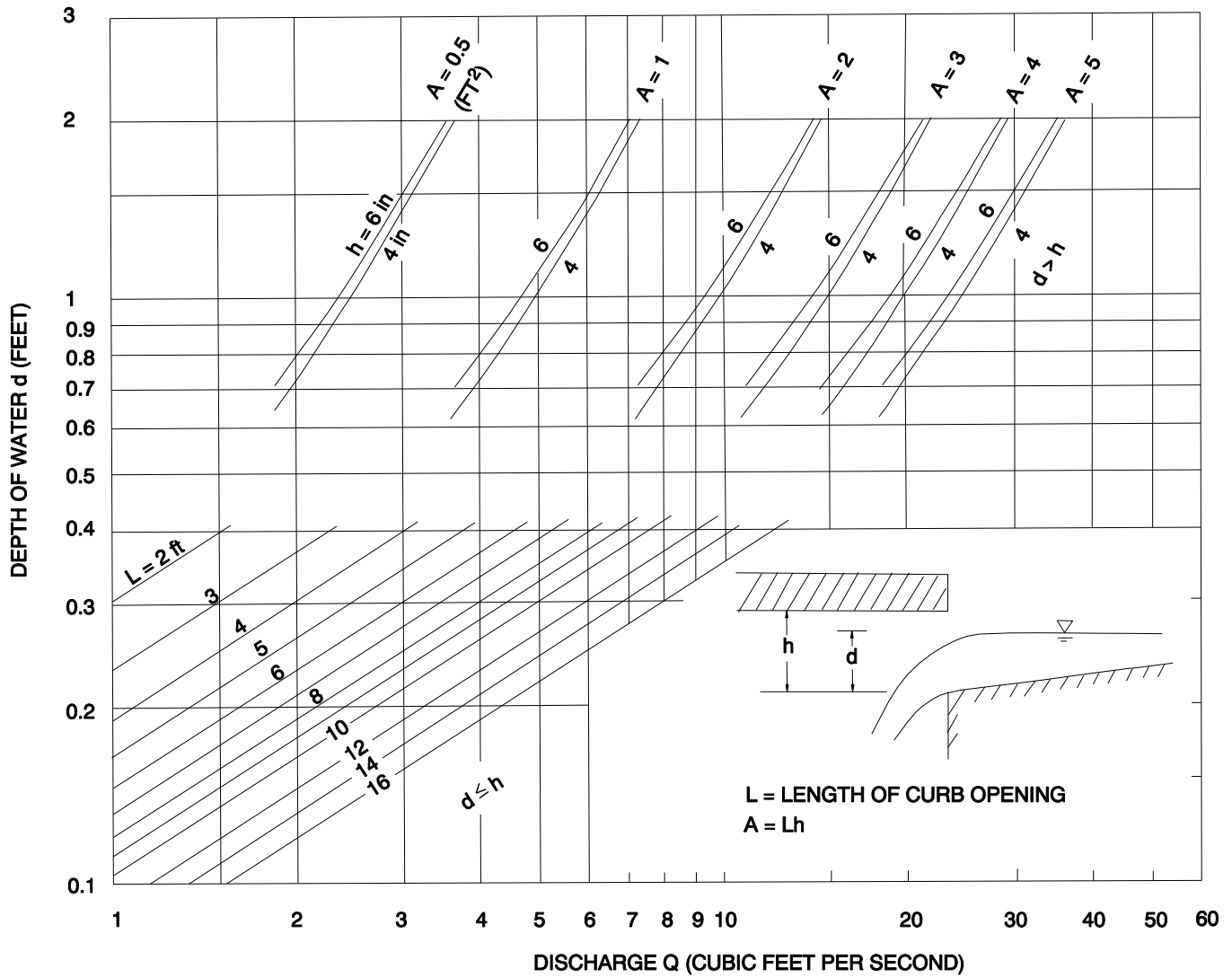


Chart 10 - Undepressed Curb Opening Inlet Capacity in Sump Conditions

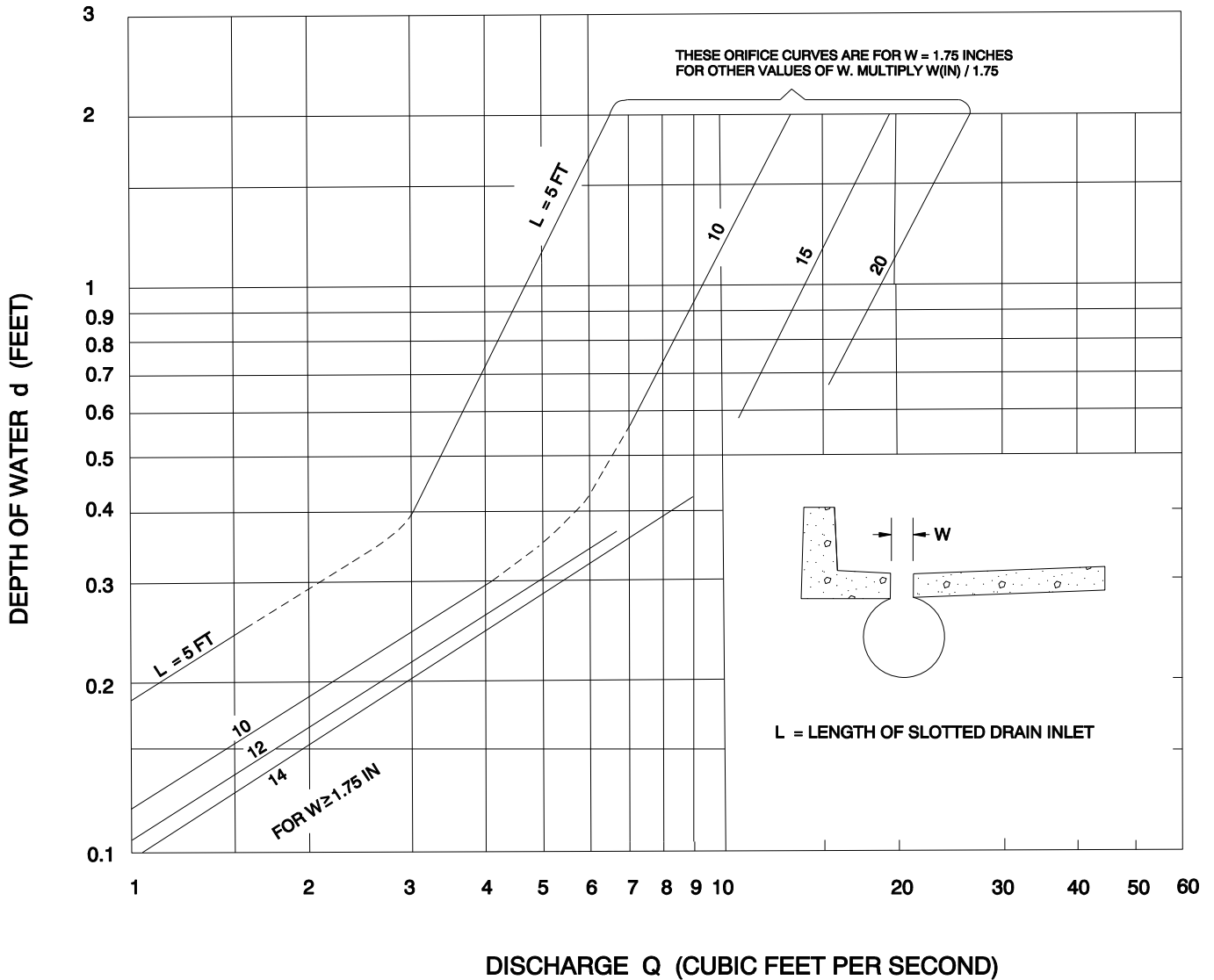
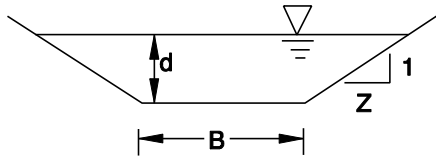


Chart 11 – Slotted Drain Inlet Capacity in Sump Location



Note: Project horizontally from Z = 0 Scale  
To obtain values for Z = 1 to 6

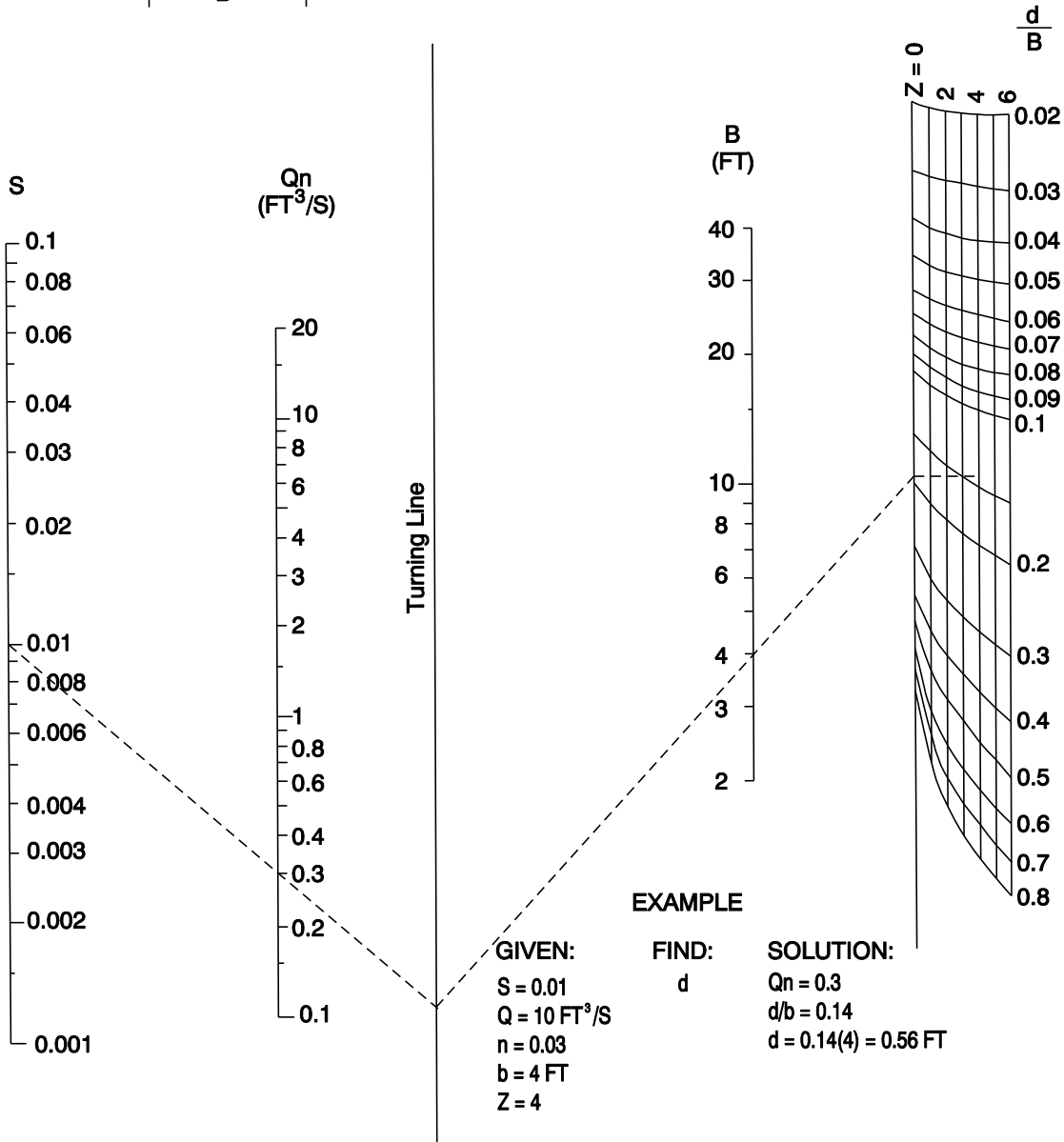


Chart 12 - Solution to Manning's Equation for Channels of Various Side Slopes

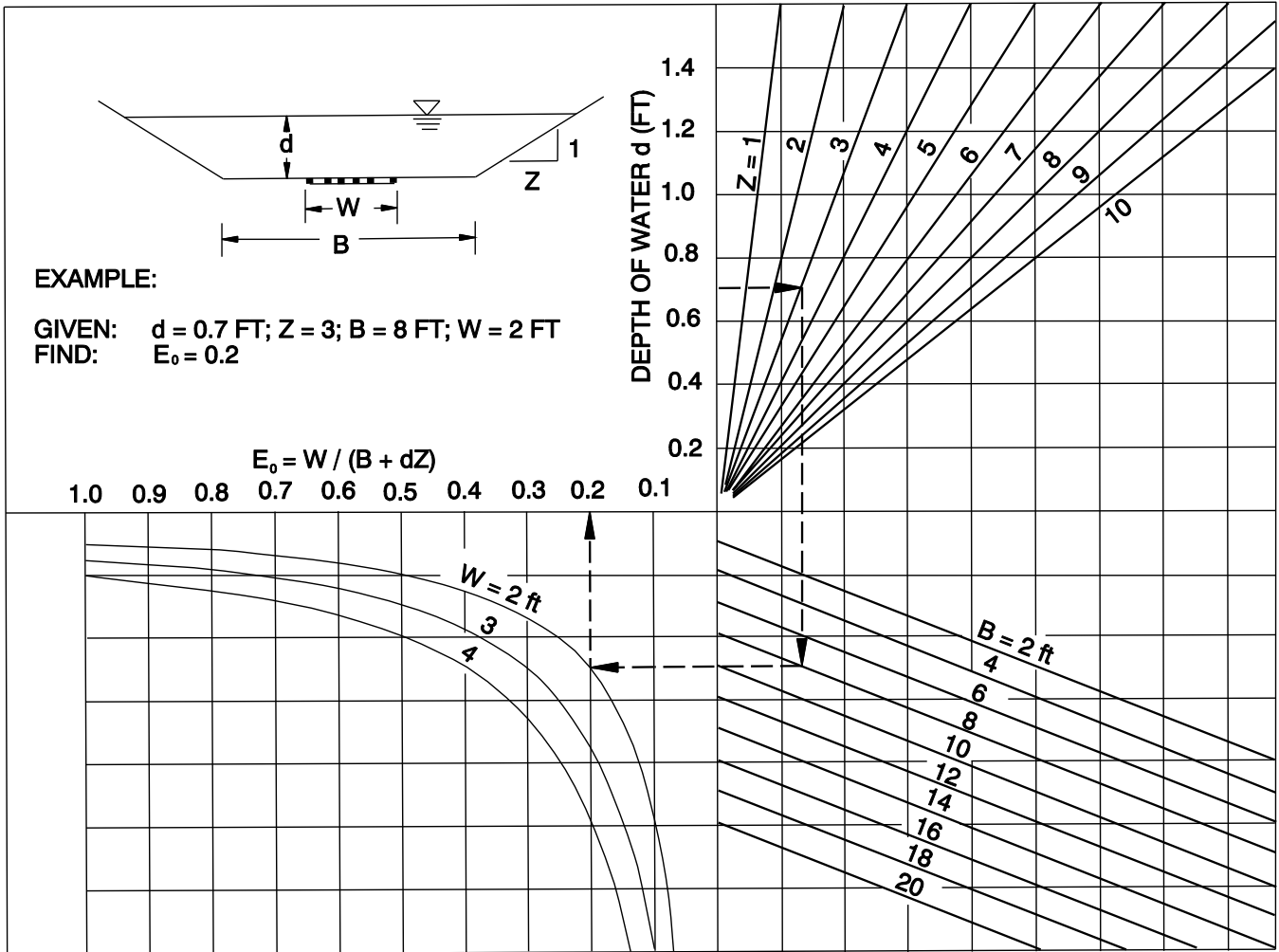


Chart 13 - Ratio of Frontal Flow to Total Flow in a Trapezoidal Channel