11.9 Gutter Flow Calculations

11.9.1 Introduction

Gutter flow calculations are necessary in order to relate the quantity of flow (Q) in the curbed channel to the spread of water on the shoulder, parking lane, or pavement section. The nomograph on Figure 11-1 can be utilized to solve uniform cross slope channels, composite gutter sections and V shape gutter sections. Figure 11-3 is also very useful in solving composite gutter section problems. Computer programs such as the FHWA HEC 12 program is also very useful for this computation as well as inlet capacity. Example problems for each gutter section are shown in the following sections.

11.9.2 Manning's n For Pavements

Table 11-3 Manning's n For Streets and Pavement Gutters

Type of Gutter or Pavement	Manning's n
Concrete gutter, troweled finish	0.012
Asphalt Pavement: Smooth texture Rough texture	 0.013 0.016
Concrete gutter-asphalt pavement Smooth Rough	 0.013 0.015
Concrete pavement Float finish Broom finish	 0.014 0.016
For gutters with small slope, where sediment may accumulate, increase above n values by:	0.002
Reference: USDOT, FHWA, HDS-3 (1961)	

11.9.3 Uniform Cross Slope Procedure

The nomograph in Figure 11-1 is used with the following procedures to find gutter capacity for uniform cross slopes:

CONDITION 1: Find spread (T), given gutter flow (Q).

Step 1 Determine input parameters, including longitudinal slope (S), cross slope (S_x), gutter flow (Q) and Manning's n.

Step 2 Draw a line between the S and S_x scales and note where it intersects the turning line.