Manning's "n" Values for Street and Pavement Gutters	
Type of Gutter or Pavement	**Range of Manning's "n"**
Concrete gutter, troweled finish	0.012
Asphalt pavement: Smooth texture Rough texture	 0.013 0.016
Concrete gutter with 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 values of "n" by	0.002

Table A3-1 - Manning's "n" Values for Street and Pavement Gutters

For conditions where the pavement cross slope is curved or parabolic instead of straight, a special adaptation of Equation A3-3 is required to evaluate gutter capacity. Additional information for these conditions is presented in HEC-12 (USDOT, FHWA, 1984).

The relative effects of spread, cross slope, and longitudinal slope on the capacity of a gutter with a straight cross slope are presented in Figure A3-2. Each of the lines is based on the relationship between these variables, as expressed by Equation A3-3. Gutter spread is shown to have the greatest impact on gutter capacity, followed by cross-slope and, to an even lesser degree, by longitudinal slope. For example, doubling the spread would increase gutter capacity by 6 times, while doubling cross slope or longitudinal slope would result in increases of only about 3 and 1.4 times, respectively.

A nomograph for solving Equation A3-3 is presented in Figure A3-3. Manning's "n" values for various pavement surfaces are presented in Table A3-1.

The nomograph in Figure A3-3 is used with the following procedures to find gutter capacity for *uniform cross slopes:*

Condition 1: Find spread, given gutter flow.

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

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

c. Draw a line between the intersection point from Step b and the appropriate gutter flow value on the capacity scale. If Manning's "n" is 0.016, use Q from Step a; if not, use the product of Q and n.

d. Read the value of the spread (T) at the intersection of the line from Step c and the spread scale.