

CHAPTER 3

STORM DRAINAGE SYSTEMS

3.1 Overview

3.1.1 Introduction

In this chapter, guidelines are given for evaluating roadway features and design criteria as they relate to gutter and inlet hydraulics and storm drain design. Procedures for performing gutter flow calculations are based on a modification of Manning's Equation. Inlet capacity calculations for grate and combination inlets are based on information contained in HEC-12 (USDOT, FHWA, 1984). Storm drain design is based on the use of the rational formula.

3.1.2 Inlet Definition

There are three stormwater inlet categories:

3.1.2.1 Curb opening inlets

3.1.2.2 Grated inlets

3.1.2.3 Combination inlets

In addition, inlets may be classified as being on a continuous grade or in a sump. The term "continuous grade" refers to an inlet located on the street with a continuous slope past the inlet with water entering from one direction. The "sump" condition exists when the inlet is located at a low point and water enters from both directions.

3.1.3 Criteria

The following criteria shall be used for inlet design.

3.1.3.1 Design Frequencies

3.1.3.1.1 Cross Drainage Facilities -100-year storm frequency
(Transport storm runoff under roadways)

3.1.3.1.2 Storm Drains (Lateral Closed Systems)
25-year storm frequency

3.1.3.1.3 Inlets - 10-year storm frequency

3.1.3.1.4 Outlet Protection - 25-year storm frequency

3.1.3.2 Spread Limits

Catch basins shall be spaced so that the spread in the street for the 10-year storm design flow shall not exceed the following, as measured from the face of the curb:

- 3.1.3.2.1 8 feet if the street is classified as a Minor Collector, Major Thoroughfare or Local Street.

END OF SECTION 3.1