CITY OF NEWARK
DIVISION OF ENGINEERING

# STORMWATER MANAGEMENT DESIGN MANUAL

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# Stormwater Management Design Manual

## *City of Newark*
## *Division of Engineering*

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# PREFACE

The stormwater design manual is not a text of hydrology or hydraulic design. It assumes that the user has an understanding of hydrology and hydraulic engineering. It does not provide uniform solutions to all drainage problems. Stormwater system design presents an opportunity for the creative and innovative design engineer. The engineer should not be restricted to standardized designs or procedures, nor should the City insist on rigid adherence to a standard set of design specifications. As reflected in the design manual, the emphasis should be on performance.

The design manual provides a uniform design procedure and worksheets for summarizing and submitting the design plans in an acceptable and understandable manner to the City. While the designer is not restricted to these recommended procedures or worksheets, sufficient documentation must be provided with any submission to ensure that methods, procedures, and data are clear.

The design manual provides sufficient information to develop drainage systems in accord with local policy. For a design engineer, such systems begin with the first drop of rainfall and end when the water is safely discharged to receiving waters of adequate capacity.

Rainfall is the first design element to be considered. This phenomenon is basic to the design of stormwater facilities. The design manual outlines the proper use of rainfall information and appropriate data sources relevant to the City of Newark.

The behavior of rainfall on the ground when it becomes runoff is responsive to a number of variables. Watershed area and shape, ground slope, soils, seasons, and impervious areas determine the characteristics of runoff. Conveyance facilities such as streets, storm sewers, culverts, and open channels, need to be used. Sample calculations, acceptable performance standards, and design situations are contained within the design manual.

In order to ensure that the streets do not lose any stormwater carrying capacity due to being resurfaced, the design criteria recommends a policy of maintaining a 5 3/4 inch flow depth at the face of the curb.

Often, temporary storage of stormwater through controlled release is required to meet runoff control requirements. Stormwater runoff storage may be accomplished in many ways. Controlled release of stormwater runoff is the fundamental policy in the design manual (i.e., that the post-development runoff does not exceed the predevelopment runoff). Standards for achieving a controlled release rate are detailed within this design manual.

Drainage is only one part of a complex urban system. Drainage considerations do not have to dominate site development decisions. Yet, drainage does have its place on the site planner's checklist and plays a very important part in the City's role of providing proper health and welfare to its citizens.

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