

SECTION I

PURPOSE AND SCOPE

Stormwater drainage is a major problem in the City of Charleston. The existing facilities for the removal of stormwater runoff at an acceptable level are inadequate in a large portion of the City, as is evidenced by the numerous and recurrent incidents of surface flooding during periods of moderate to heavy rainfall.

The severity of flooding varies from area to area and with the intensity and duration of the rain. Flooding can result in hardships to the City residents in the form of disruption of vital services and the loss of mobility and income. In some instances, the flooding has also resulted in property loss or damage, and most importantly, has posed a potential hazard to the health and safety of the population. With the continued growth, and the resulting land development, the frequency of flooding and its impact can only be expected to increase due to the increased quantities and concentration of stormwater runoff.

In recognition of the problem and the need for remedial action, the City of Charleston engaged Davis & Floyd, Inc. to provide the engineering services necessary to analyze and recommend corrective measures for the existing stormwater facilities in the City of Charleston. The study area comprises all of the area within the Charleston City boundaries as delineated on Figure No. 1 - Location Map.

The agreement between the City and the Engineers is the first of four phases required to reduce the City's existing drainage problems. The phases are as follows:

1. First Phase - study and report on the condition and capabilities of the existing stormwater drainage facilities and make recommendations as to improvements required.
2. Second Phase - secure funds for the construction of recommended improvements.
3. Third Phase - preparation of plans and specifications for recommended improvements.
4. Fourth Phase - construction of recommended improvements.

This report is submitted in compliance with the agreement between the City and the Engineers and constitutes completion of the First Phase of identifying the existing drainage problems and recommending improvements.

The flooding which is frequently experienced in the City of Charleston can be attributed to a number of causes, specifically: flat terrain which reduces runoff capacity; improper sizing and spacing of stormwater inlets; clogged inlets, pipes, culverts, and ditches; high ground water table; undersized pipes, culverts, and ditches; and tidal influence. While all of these causes will be addressed to some

extent in the subsequent sections, the primary focus of this study pertains to the analysis of major (24 inch diameter or larger) stormwater conveyance facilities with the detailed improvements addressed as the major drainage improvements are implemented.

This report presents the results of a field survey of the major existing drainage facilities, the methodology developed for use in evaluating the existing facilities, specific recommendations as to improvements needed to provide an adequate and coordinated stormwater drainage system for the City of Charleston, a floodplain management program recommendation, the estimated construction and total project costs for the proposed improvements, and a schedule for their construction on a priority basis. Subsequent sections of the report contain discussions of the following:

The Study Area. This section includes a description of the boundaries, topography, land use and other characteristics of the area which are pertinent to the design and configuration of stormwater drainage facilities.

Design Criteria. This section evaluates rainfall and tidal data, discusses the degree of protection desired or economically feasible, and develops a specific design criteria for use in the evaluation of the existing system and the design of proposed improvements.

Evaluation of Existing Stormwater Drainage Facilities and Recommended Improvements. Included in this section are detailed descriptions and evaluations of the existing drainage system components as to type, condition and capacity, and the designation of those which are deficient and require replacement, enlargement or relief. Preliminary designs have been prepared and total project cost estimates for the recommended facilities are presented.

Construction Program. Components of the overall recommended facilities are rated on the basis of capacity deficiency, greatest benefit to the most people at least cost, most urgent need, and health and safety of the public. A priority construction program based upon the above has been developed for recommended drainage improvements within the City.

Floodplain Management Program. This section presents a recommended program that the City should consider implementing to assure that future development in the City will be compatible with an orderly drainage plan so that new developments will not have an adverse impact upon the drainage of areas either upstream or downstream of the proposed development site.