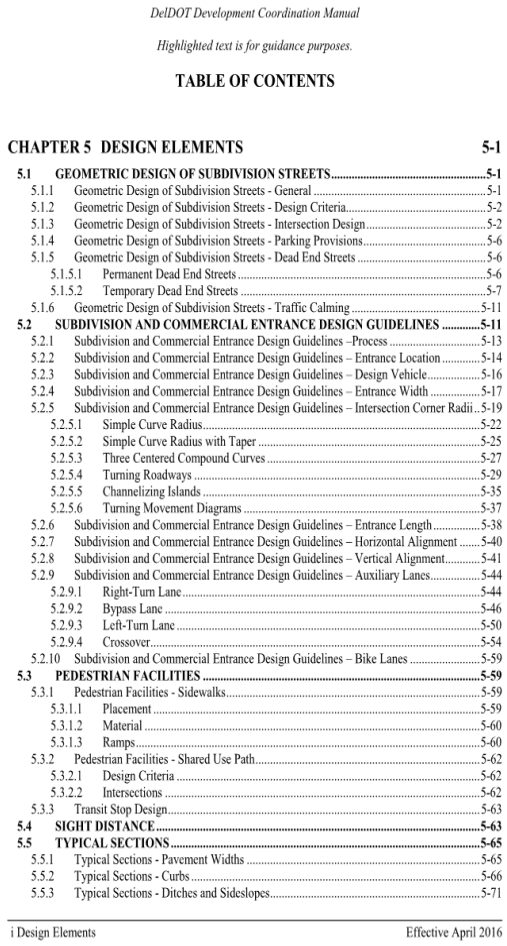
JMT Reviewers

- **Open End Review Contract:**
- Review all existing or proposed DelDOT maintained drainage conveyance systems
- Review proposed DelDOT Maintained BMPs
- Review onsite discharge to DelDOT Right of Way

Agency Coordination and Review Responsibilities

Drainage Review – Guidelines and Procedures



DelDOT Development Coordination Manual

Highlighted text is for guidance purposes.

TABLE OF CONTENTS

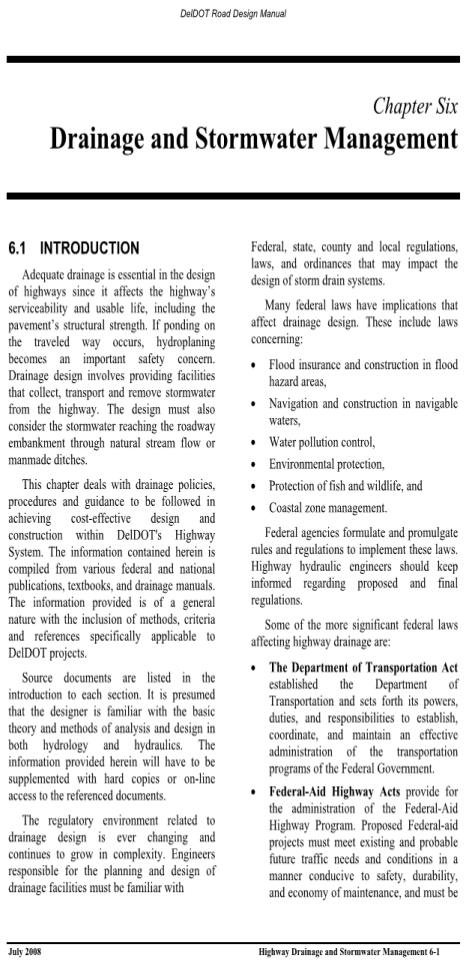
- DelDOT Development Coordination Manual
- For roads within the subdivision only
- Specifically Chapters 5.7-5.9

Drainage Review

- **DCM Section 5.7.1 Guidance**

The following sections apply to drainage design within subdivisions. For drainage and stormwater management design of entrances, offsite and frontage road improvements, applicable regulations shall be followed and relevant guidelines, standards and DelDOT policies should be applied to the design process, such as: Chapter 6 *Drainage and Stormwater Management* of DelDOT's *Road Design Manual;* and the reference materials found on DelDOT's Website under the Design Resource Center's *Hydraulics and Hydrology Tab* (http://deldot.gov/information/business/drc/hydrology.shtml) .

Drainage Review



DelDOT Road Design Manual

Chapter Six

Drainage and Stormwater Management

6.1 INTRODUCTION

Adequate drainage is essential in the design of highways since it affects the highway's serviceability and usable life, including the pavement's structural strength. If ponding on the traveled way occurs, hydroplaning becomes an important safety concern. Drainage design involves providing facilities that collect, transport and remove stormwater from the highway. The design must also consider the stormwater reaching the roadway embankment through natural stream flow or manmade ditches.

This chapter deals with drainage policies, procedures and guidance to be followed in achieving cost-effective design and construction within DelDOT's Highway System. The information contained herein is compiled from various federal and national publications, textbooks, and drainage manuals. The information provided is of a general nature with the inclusion of methods, criteria and references specifically applicable to DelDOT projects.

Source documents are listed in the introduction to each section. It is presumed that the designer is familiar with the basic theory and methods of analysis and design in both hydrology and hydraulics. The information provided herein will have to be supplemented with hard copies or on-line access to the referenced documents.

The regulatory environment related to drainage design is ever changing and continues to grow in complexity. Engineers responsible for the planning and design of drainage facilities must be familiar with Federal, state, county and local regulations, laws, and ordinances that may impact the design of storm drain systems.

Many federal laws have implications that affect drainage design. These include laws concerning:

- Flood insurance and construction in flood hazard areas,
- Navigation and construction in navigable waters,
- Water pollution control,
- Environmental protection,
- Protection of fish and wildlife, and
- Coastal zone management.

Federal agencies formulate and promulgate rules and regulations to implement these laws. Highway hydraulic engineers should keep informed regarding proposed and final regulations.

Some of the more significant federal laws affecting highway drainage are:

- **The Department of Transportation Act** established the Department of Transportation and sets forth its powers, duties, and responsibilities to establish, coordinate, and maintain an effective administration of the transportation programs of the Federal Government.
- **Federal-Aid Highway Acts** provide for the administration of the Federal-Aid Highway Program. Proposed Federal-aid projects must meet existing and probable future traffic needs and conditions in a manner conducive to safety, durability, and economy of maintenance, and must be

July 2008 Highway Drainage and Stormwater Management 6-1

- DelDOT Road Design Manual Chapter 6
- For Frontage Road and Entrance Road drainage / SWM
- Noteworthy Differences
  - Design Storm Requirements
  - Allowable Spread
  - Pipe Materials and Min. Size

Drainage Review – Check List

- **Development Coordination Gate Keeping Check List**
  - Required Items

Pipe, catchbasin, flared-end sect., curb, underdrain schedules	4.3.5.F, Fig. 4.3.5-b, & 4.3.5-c
Stormwater management report and plans	5.8, ES_2M Sec. 1
Drainage report with spread calcs, HGL, etc. and completed pipe cover/angle chart: http://www.deldot.gov/information/business/subdivisions/Pipe_Cover_Angle_Worksheet.xlsm	5.7.2.7
E&S plans w/ sequence of construction	5.9, ES2M Sec. 1
H&H calculations for ditches - Provide typical sections and shear stress calcs	5.7.2.1, 7.2.3.5.1 RDM 6.7.3
H&H calculations for culverts	5.7.2.2, Fig. 5.7.2.5a -5b & RDM Fig. 6-1 & 6-3, RDM 6.9

SWM Review

- **DelDOT Review Requirements**
- How are improvements along the Frontage Road and Entrance being mitigated
  - Is there more than 5,000 sf of NEW impervious area?
  - Can the runoff be directed back on-site for treatment
  - Can credits on-site be applied to the QUALITY requirements
  - Will post condition flows be increased?

SWM Review

- **DelDOT Specific Interests Regarding Private Maintained Facilities**
  - Coordinate as necessary with other Delegated Agencies
    - IMPORTANT: DelDOT is NOT re-reviewing items already reviewed, commented on, and approved by the other Delegated Agencies.
- SWM Report Narrative
- Maps
  - Identify discharge locations
  - Confirm frontage/entrance road conveyance
- SWM Report Summary
  - Confirm post construction discharge flows

SWM Review

- DelDOT Review of Potential DelDOT Maintained Facilities
- At present, DelDOT following the 2014 Regulations
  - Note that if the onsite SWM procedures have been approved to be grandfathered under the previous regulation by the appropriate Delegated Agency, DelDOT will also accept that decision.
- If Applicable, Follow DelDOT SWM Report Format Guidance
  - Official guidance will be on the website shortly
- Fill out the BMP ID Request Form found on DelDOT Design Resources Website
  - Once inventory number has been assigned, plans and report will need to be updated and resubmitted to DelDOT for official records

Questions ??