

Introduction

Purpose of The ES₂M Design Guide

This manual is intended to serve as a guide for designers when preparing erosion, sediment control, and stormwater management plans for the Delaware Department of Transportation. It contains DelDOT specific guidance as well as requirements which are applicable statewide, such as the Sediment and Stormwater Regulations and Pond Code 378. The goal of the manual is to provide all the information necessary to design an erosion, sediment control, and stormwater management plan in conformance with DelDOT specifications and the State of Delaware's regulations.

Applicability

Designers should start using the information contained in this guide now. Some Sections (Hydrology and Hydraulics) are still under development and will be sent to all holders of the ES₂M Design Guide when they are finished.

In general, distribution of this manual will be within DelDOT for use by DelDOT designers. Distribution to consulting engineers working on a Department project may be made at the discretion of the design section managing the project. This manual is specific to DelDOT and it is not intended to apply to those engaged in other public agency or private development projects.

Eventually, the DelDOT Road Design Manual will incorporate portions of this design guide into Chapter 6 on Drainage. In the interim, this guide will provide the criteria by which all projects will be reviewed and approved for erosion, sediment control, and stormwater management.

Use of the Manual

The Erosion and Sediment Control and Stormwater Management (ES₂M) Design Guide was compiled from many separate documents. Previously, this information was not available in one binder and it was difficult for designers to obtain a complete set of up-to-date guidance documents. This manual should help alleviate that problem by combining all this information in one binder and making sure all documents are dated.

Revisions will be sent out as they are made and we expect there will be regular updates. In this field, it is not realistic to expect a design guide to remain static. Our understanding of erosion and sediment control and stormwater management is evolving. Our design guidance should evolve with it. Designers should keep their copy of the ES₂M Design Guide updated at all times so that project designers and plan reviewers are working from the same design criteria.

We want this guidebook to contain the most accurate and useful information. Any questions, concerns, or comments regarding its content should be forwarded to the Stormwater Engineer's Office. We will incorporate your input.

Organization of The ES₂M Design Guide

Organization of the manual is as follows:

- Section 1 contains a comprehensive checklist of the items to include on project plans. The checklist brings uniformity to project designs and project reviews. It was developed with input from the various design sections within DelDOT. Designers should use this checklist and refer to it often when developing plans so they will know what are expected of them in advance by the person who will perform the review.
- Sections 2-7 focus on stormwater management ponds. They contain design guidance and example problems related to performing stormwater computations for report preparation and presentation. These sections are intended to help someone who is already trained in performing these types of analyses familiarize themselves with the various conventions specific to stormwater management requirements at DelDOT.
- Section 8 is for use only on projects seeking a variance from the stormwater regs.
- Sections 9-13 contain standard reference materials.

Availability of ES₂M Design Guide

To order official copies of this manual contact the Stormwater Engineer's Office at the following address:

Stormwater Engineer
DelDOT Team Support Section
P.O. Box 778
Dover, DE 19903

Phone: (302) 760-2191
FAX: (302) 739-6360

Contents of this Guide will be updated as needed when procedures and guidance are revised. When only pages of a Section are revised, revisions will be indicated by notations on the side and revision date at the bottom of the page. Any question on this guide should be directed to the Stormwater Engineer.

Please do not copy and redistribute the contents of this manual to avoid confusion by redistributing contents that may be outdated. Obtain up to date contents from the DelDOT's website.

DelDOT Sediment & Stormwater Program History

Legislative Background

In June of 1990, Chapter 40, Title 7, of the Delaware code was amended to include stormwater management requirements in the Erosion and Sedimentation Control Act. This amendment promulgated a set of regulations (effective January 1991) governing all new development over 5,000 square feet. This legislation required the plan review and approval for all design plans, comprehensive inspection for all construction, and compliance standards that were enforceable for the first time with significant penalties in terms of fines against an owner/developer, contractor, or both.

On November 16, 1990, the Federal Register published the final rule regarding 40 CFR Parts 122, 123 and 124 National Pollutant Discharge Elimination System (NPDES) Permit Application Regulations for Storm Water Discharges. This ruling was the first step in implementing section 402(p) of the Clean Water Act of 1987 which requires the Environmental Protection Agency to establish regulations and NPDES permit application requirements for stormwater discharges associated with industrial activity and from large (pop. \geq 250,000) and medium (pop. of 100,000 or more but less than 250,000) municipal separate storm sewer systems

Impacts of Legislation on DelDOT

These new stormwater programs posed some concerns to DelDOT since DNREC and the EPA had been empowered to impose additional requirements on transportation projects. From a project planning and design standpoint, the objectives, goals, and timetables of DelDOT projects might be effected by the plan review and permit approval process. From a construction standpoint, the prospect of falling into noncompliance with the approved sediment and stormwater plan and its permit conditions could very well result in DelDOT facing substantial fines and penalties. It was apparent that DelDOT needed to establish a partnership with the environmental agencies to incorporate their requirements in our project plans while still maintaining control over our transportation goals, objectives, and timetables.

Delegation of Program To DelDOT

A provision in the new regulations allowed DNREC to acquire general permit authority for construction activities under the NPDES stormwater regulations and to delegate certain aspects of the overall State Sediment and Stormwater Program to soil conservation districts, municipalities, and other state or federal agencies. In 1991, DelDOT sought and received delegation through DNREC to implement its own stormwater program which would address both the state and federal stormwater requirements for all construction activities. Through the establishment of the Stormwater Engineer position, DelDOT was able to demonstrate its ability to perform several of the following elements of the Sediment and Stormwater Program:

1. Plan review and approval;
2. Inspection during construction;
3. Maintenance inspection.

This design guide will help enable DelDOT to conduct effective and fair sediment and stormwater management plan reviews in accordance with program element #1 above. It is recognized that guidance is also needed for construction inspection and maintenance inspection. Preparation of a construction inspection field manual and a set of maintenance inspection checklists are in the planning stages.

Program Review

DelDOT's Stormwater Program is reviewed by DNREC every three years to assess how well the Department is implementing the program. If found satisfactory, delegation can be renewed for another three year period. If found unsatisfactory, DNREC can take the program back. The first review was conducted in 1994.