

Chapter 13 – Structural Stormwater BMP Design Guidance

Introduction

This chapter provides detailed guidance on the design, construction, and maintenance of the structural stormwater Best Management Practices (BMPs) contained in this Manual. [Table 13- 1](#) lists each of the stormwater BMPs for which detailed guidance is provided. It is important to note this is not intended to be an exhaustive list, but rather a method to provide the soundest science available and develop guiding principles to BMP design. Hyperlinks are provided corresponding to sections of this chapter where information on specific BMPs can be found. Guidance for multiple types of BMPs is provided in a single combined section for several categories of BMPs (Pretreatment BMPs, Stormwater Pond and Wetland BMPs).

Table 13- 1 Structural Stormwater BMPs Addressed in Chapter 13

BMP Category	BMP Type
Pretreatment BMPs	Pretreatment BMPs Sediment Forebay Pretreatment Vegetated Filter Strip Pretreatment Swale Deep Sump Hooded Catch Basin Oil Grit Separator Proprietary Pretreatment Device
Infiltration BMPs	Infiltration Trench Underground Infiltration System Infiltration Basin Dry Well & Infiltrating Catch Basin Permeable Pavement
Filtering BMPs	Bioretention Tree Filter Sand Filter
Stormwater Pond and Wetland BMPs	Stormwater Pond Wet Pond Micropool Extended Detention Pond Wet Extended Detention Pond Multiple Pond System Stormwater Wetland Subsurface Gravel Wetland Shallow Wetland Extended Detention Shallow Wetland Pond/Wetland System
Water Quality Conveyance BMPs	Dry Water Quality Swale Wet Water Quality Swale
Stormwater Reuse BMPs	Rain Barrel and Cistern Rain Barrel Cistern
Other BMPs and BMP Accessories	Green Roof Dry Extended Detention Basin Underground Detention (no infiltration) Inlet and Outlet Controls

The following BMP-specific design guidance is provided in each section:

- **Description.** A brief description of the stormwater BMP and common design variations. The stormwater management benefits of the BMP (runoff volume and pollutant reduction, stormwater runoff quantity control, etc.) and effectiveness for removal of specific categories of pollutants are summarized at the beginning of each section for quick reference and screening.
- **Advantages.** The major beneficial factors or considerations (e.g., environmental, economic, safety) for selecting a specific stormwater BMP.
- **Limitations.** The major limitations or drawbacks of a stormwater BMP that may preclude its use for a given site.
- **Siting Considerations.** The site conditions required for implementation of a stormwater BMP such as subsurface conditions and minimum setbacks.
- **Soil Evaluation.** Where necessary, evaluation of the soil characteristics and subsurface conditions at the location of the proposed system including soil type, depth to the seasonal high groundwater table, depth to bedrock, and soil infiltration rate (for infiltration systems).
- **Design Requirements.** Specific technical requirements for designing the major elements of a stormwater BMP such as pretreatment, system sizing and dimensions for retention and treatment, drain time, conveyance, materials, vegetation, etc.⁷⁷
- **Construction Requirements.** Recommended construction procedures and methods, as well as recommended stages of construction to be inspected by a qualified inspector as defined in the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities, to ensure that stormwater BMPs are constructed as designed.
- **Maintenance Requirements.** Routine and non-routine operation and maintenance, including inspection frequencies, required for the stormwater treatment practice to function properly over time.

⁷⁷ Per the CTDOT MS4 Permit, linear projects have alternative standards and may take an alternative approach to address constraints that are different than those that affect traditional parcel development projects. These alternative linear project standards can be found in the CTDOT drainage manual, the CTDOT MS4 General Permit, the General Construction Permit and in the supporting materials that CTDOT has developed.