

2.0 SITE DESIGN AND STORMWATER TREATMENT PRACTICE SIZING CRITERIA

Introduction. This section leads designers through a predictable site design process that seeks to minimize impervious surfaces, ensure adequate soil depth and quality post-construction, and treat runoff from impervious surfaces with distributed STPs.

Pervious surfaces. For purposes of this Manual, pervious or porous pavement, concrete, pavers, and similar manmade materials are not “impervious surface,” as defined in this Manual, when design specifications demonstrate that the material in question has the capacity to infiltrate the 1-year 24-hour storm event, under a type II distribution. In assessing the infiltrative capacity, the designer shall account for factors related to the specific application, including the effect of base and sub-base materials, slope, and maintenance practices.

2.1. Site Planning and Design

Design Guidance: Initial Site Layout

During initial site layout, the designer should carefully consider the locations of existing drainage features, forest blocks, stream buffers, lake shorelands, wetlands, floodplains, river corridors, recharge areas, habitat, steep slopes, zero-order streams, and other natural areas present on the site. Working to minimize impervious cover and mass grading and the retention of forest cover, natural areas, and undisturbed soils will reduce the generation of stormwater runoff from the site that will ultimately need to be managed and will reduce stream instability. Further, all disturbed areas of the site will be subject to a post-construction soil depth and quality standard (see Section 3.0), whereas undisturbed areas are presumed to comply with the standard without additional requirements.

1-yr 24-hr storm = 1.93 inches (from NOAA Atlas 14)
stone meets ASTM #57 or equal: void ratio = 0.40 (40%)
9" X 0.40 = 3.6" of voids
parking lot material can hold more than 1-yr 24-hr storm
subsoils are sand to sandy loam w/ groundwater at ±24"

Design Guidance: Conserving Natural Vegetation and Minimizing Impervious Cover

In the 2002 Vermont Stormwater Management Manual (VSMM), several of the site-design approaches described below were offered as optional “credits” that could be applied to reduce the required water quality and groundwater recharge volumes. In this manual, site planning and design practices are not credited as explicitly. Rather, the strategies for site planning and design discussed below can result in smaller development footprints that will reduce the need for building and maintaining structural STPs in order to meet the treatment standards in Section 2.2.

Natural Area Conservation

- Consider conserving trees and other existing vegetation at each site or establishing new natural areas by planting additional vegetation, establishing no-mow zones, clustering tree areas, and promoting the use of native plants.

Natural Drainage, Buffer and Floodplain Protection

- Where possible, establish and protect a naturally vegetated buffer system along all perennial streams and other water features that encompass critical environmental features such as the 100-year floodplain, steep slopes (in excess of 15%), lake shorelands, and wetlands.
- Preserve or restore riparian stream buffers with native vegetation. Buffers are most effective when maintained in an undisturbed condition, mowing and brush hogging should not take place within a buffer.