

Grass Channel

Description: Open vegetative conveyance channels using native soils that provide a modest amount of water quality treatment and infiltration. Grass channels are preferable to curb and gutter and storm drains as conveyance systems. Grass channels generally have lower pollutant removal efficiencies compared to wet or dry water quality swales.

BMP Information

BMP Type: Conveyance

Targeted Pollutants: N/A - Not suitable for use to target specific pollutant reductions

WQV / Disconnection Credit

Runoff Retention Credit: 0%

Treatment Credit: 15%

Disconnection Credit: 15%

Design Criteria

Shape: Trapezoidal or parabolic side slopes $\leq 4:1$; bottom width 2' to 8', $\geq 4'$ recommended

Length: Minimum of 100' for flow entering channel

Longitudinal Slope: 0.5% to 6%

Flow Depth: ≤ 4 inches for water quality storm

Flow Velocity: ≤ 1 ft/s for water quality storm

Soils: NRCS Hydrologic Soil Groups A, B, C, D

Pretreatment: A scour hole or sediment forebay should be provided for concentrated inflow.

Plantings: Grass species that can withstand sustained wet & dry periods, high velocities & are salt tolerant

Channel must be designed in accordance with CTDOT Drainage Manual including but not limited to, storm frequency, freeboard, velocity, width and depth.



Limitations

Lower runoff /pollutant reductions compared to water quality swales

Requires gentle slopes for water quality benefits

Can require more maintenance vs. curb and gutter

Maintenance Requirements

Annual inspections

Access for maintenance should be considered as part of the design

Remove sediment, trash and debris as needed

Repair any sections of erosion

Cost Considerations:

Capital Cost: Low

O&M Cost: Low

Notes:

Vegetated cover for the channel should be selected to withstand erosive forces present during larger events. Check dams can be included to retain a designated volume. Refer to supplemental Stone Check Dam one-pager. Trapezoidal shaped channels are preferable for promoting sheet flow at the channel bottom. Maintain shallow sheet flow at entry points

References:

2004 Connecticut Stormwater Quality Manual - <http://www.ct.gov/deep/cwp/view.asp?a=2721&q=325704>

Massachusetts Stormwater Handbook - <https://www.mass.gov/files/documents/2016/08/qj/v2c2.pdf>

New Jersey Stormwater BMP Manual - http://www.njstormwater.org/bmp_manual2.htm

Virginia Stormwater BMP Clearinghouse - <http://www.vwrrc.vt.edu/swc/NonProprietaryBMPs.html>

Washington State DOT Highway Runoff Manual - <https://www.wsdot.wa.gov/publications/manuals/fulltext/M31-16/highwayrunoff.pdf>