

VEGETATED SWALE

DESIGN & INSTALLATION



Photo credit: Blue Vervain

DESIGN INFORMATION

DESCRIPTION

A Vegetated Swale is a broad, shallow, trapezoidal or triangular channel, densely planted with a variety of trees, shrubs, and grasses. It is designed to attenuate and infiltrate runoff volume from adjacent impervious surfaces, allowing some pollutants to settle out in the process.

BENEFITS

1. Aesthetically pleasing; integrated into Landscape
2. Potential pollutant removal
3. More water uptake through plant roots and evapotranspiration than grassed swales

DESIGN CONSIDERATIONS

1. Variety of lengths depending on storage volume needed.
2. Runoff can be directed into Vegetated Swales either as concentrated flows or as lateral sheet flow drainage.
3. Minimum 60% planting density.
4. Planting dense, low-growing native vegetation that is water-resistant, drought and salt tolerant is ideal. See town recommended plant list.

SIZING CALCULATIONS

1. Calculate Tributary area in square feet.
2. Divide tributary area by 100, then multiply by 15 to get water quality volume requirement in cubic feet.
3. Calculate the storage volume of your proposed vegetated swale; **see worksheet B for more detail.**
4. Trapezoidal = $L \times W \times D \times L_{\text{sideslope}} \times R_{\text{sideslope}}$ = storage Volume (cubic feet)
5. Triangular = $L \times D \times L_{\text{sideslope}} \times R_{\text{sideslope}}$ = storage Volume (cubic feet)
6. The total storage volume shall exceed the minimum required water quality volume.
7. If you are taking advantage of open space/tree credits and storm water control measure credits, see worksheet A for confirmation of volume requirement.

Siting

Drainage Area

Small to medium drainage area; 500 to 1000 SF.

Space

Swales should not be constructed on or near septic storage or drainage area.

Topography

Max 3:1 side slopes.

Soils

Permeable soils are best suited for Vegetated Swales.

Setbacks

Min. 5' from building foundations
 Min 10' from septic systems
 Min. 25' from "404" wetlands

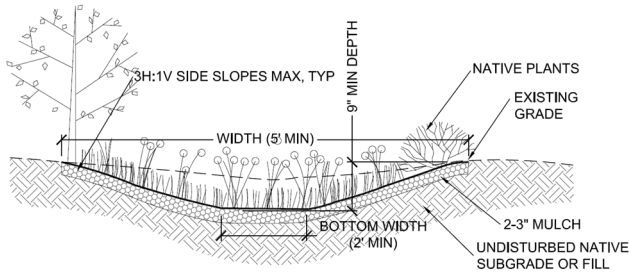
Vertical Separation

Min. 12" separation from bottom of swale to seasonal high-water table.

INSTALLATION

MATERIALS

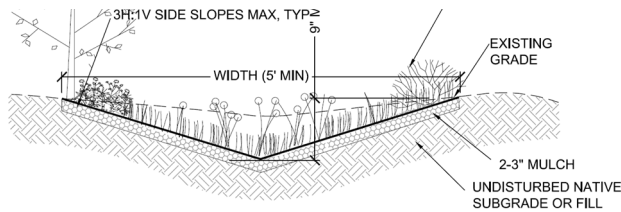
- Scarify the soil before construction to alleviate any compaction that may have occurred during construction.
- Rough grade the vegetated swale. Use light equipment to avoid excessive compaction and/or land disturbance.
- Fine grade the vegetated swale.
- Plantings should be **dense to reduce flow velocities, prevent erosion, and control weeds.**
- Swale bottom = 3 plugs per 1 square foot (min. 1-inch diameter by 6-inch tall) (plants that like standing water)
Swale sides = Grasses – planted 2' o.c.
Shrubs – planted 6'-8' o.c.
Trees – if desired, near top of swale, planted 10' o.c.
- Plant the swale at a time of the year when successful establishment without irrigation is most likely. (Nov-March.) However temporary irrigation may be needed in periods of drought. Vegetation should be established as soon as possible to prevent erosion.



Typical Trapezoidal Vegetated Swale Cross

Section

Not to Scale



Typical Triangular Vegetated Swale Cross

Section

Not to Scale

Operation & Maintenance

(TO BE CONDUCTED POST-CONSTRUCTION & ANNUALLY)

Annual maintenance is not necessarily different than traditional landscaping and includes removal of dead vegetation each spring, addition of mulch, periodic inspection of soil erosion, plant health and removal of litter as needed.

Watering – During the first year, water during the growing season during periods of drought. Drip Irrigation is recommended.

Weeding – Required as needed during the growing season for first year.

Typical planting plan for a 10' length of swale. Not to Scale

