



TO: Paul Goodrich, Town of Shelburne

FROM: Jessica Louisos, MS, PE, Milone & MacBroom

DATE: 7/22/2016

RE: Planting and Maintenance Plans
 Brook Lane Demonstration
 Shelburne Stormwater Mitigation BMP Design and Implementation Project
 MMI #3452-24

Planting Plan

Swale and Disturbed Areas:

- The swale and all disturbed areas will be planted with conservation grass seed mix applied at 20 pounds/ acre.
- Lightly rake seed mix into the first one inch of topsoil.
- Lightly tamp seed and soil.
- Apply a weed free straw mulch over entire seeded area.

Raingarden:

- The Raingarden will be planted with a mix of perennial vegetation. A list of possible native and salt-tolerant vegetation has been selected (Table 1). Additional plant information can be found in the Vermont Rain Garden Manual, published by the Winooski Natural Resource Conservation District.
- Plant one perennial every 2.5 feet on center (~50 plants).
- Plant in groupings of same species by hand.
- Apply a weed free straw or wood chip mulch around plants.

Table 1: Native and Salt Tolerant Vegetation

Perennials		Fern:	
<i>Anemone canadensis</i>	Windflower	<i>Athyrium filix-femina</i>	Lady Fern
<i>Aquilegia canadensis</i>	Colombine	<i>Osmunda cinnamomea</i>	Cinnamon Fern
<i>Aster novae-angliae</i>	New England Aster		
<i>Aster umbellatus</i>	Flat-topped Aster	Grasses:	
<i>Baptisia australis</i>	Blue False Indigo	<i>Carex Grayi</i>	Gray Sedge
<i>Iris versicolor</i>	Blue Flag Iris	<i>Panicum virgatum</i>	Switch Grass
<i>Lobelia cardinalis</i>	Cardinal Flower	<i>Schizachyrium scoparium</i>	Little Bluestem
<i>Lobelia spicata</i>	Spiked Lobelia		
<i>Rudbeckia hirta</i>	Black-Eyed Susan		
<i>Caltha palustris</i>	Marsh Marigold		
<i>Echinacea purpurea spp.</i>	Coneflower		
<i>Hemerocallis</i>	Daylilies		

Maintenance Plan

Year 1: Successful establishment of raingarden vegetation requires that the following tasks be undertaken in the first year immediately following installation:

- The construction site should be inspected following the first two precipitation events of at least 0.5 to 1.0 inch to ensure that the system is functioning properly. Thereafter, inspections shall be conducted on an annual basis.
- Spot Reseeding. Bare or eroding areas in the swale or around the bioretention area shall be immediately stabilized with grass cover.
- Watering. Depending on rainfall, watering may be necessary once a week during the first growing season (April-October). Vegetation shall receive ½ inch to 1 inch of water per week, whether through rainfall or watering.
- Weeding and invasive species control. Inspect for, and remove, any undesired plant growth, whether weeds or invasive plant species.
- Removal and replacement of dead plants in Raingarden. Construction contracts shall include a care and replacement warranty to ensure that vegetation is properly established and survives during the first growing season following construction. The typical thresholds below which replacements are required within the first year after planting are 85% survival of plant material, including shrubs, and 100% survival of trees.
- Swale and disturbed areas can be maintained as lawn and mowed following establishment.

Annual: Long-term performance of the project requires annual maintenance that can be completed annually:

- In the fall, brushhog or mow raingarden and rake dead plant material.
- Sediment shall be cleaned out of the raingarden when it accumulates to a depth of more than 4 inches.
- When water ponds on the surface of the raingarden for more than 48 hours, the top 1-3 inches of discolored material shall be removed and shall be replaced with fresh material. The removed sediments shall be disposed in an acceptable manner.
- Trash and debris shall be removed as necessary
- Look for any bare soil or sediment sources in the contributing drainage area, and stabilize them immediately.
- Check for presence of accumulated sand, sediment and trash at pipe inlets and remove it and properly dispose.
- Inspect bioretention side slopes and grass filter strips for evidence of any rill or gully erosion, and repair as needed.
- Check to see if 75% to 90% cover (mulch plus vegetative cover) has been achieved in the bed.
- Check for dead or diseased vegetation, and replace this vegetation as needed.
- Check for and remove weeds and invasive plant species.
- Check the bioretention bed for evidence of mulch flotation, excessive ponding, or concentrated flows, and take appropriate remedial action.
- Check for clogged or slow-draining soil media, a crust formed on the top layer, inappropriate soil media, or other causes of insufficient filtering time, and restore proper filtration characteristics.
- Optionally add mulch between plant groupings.