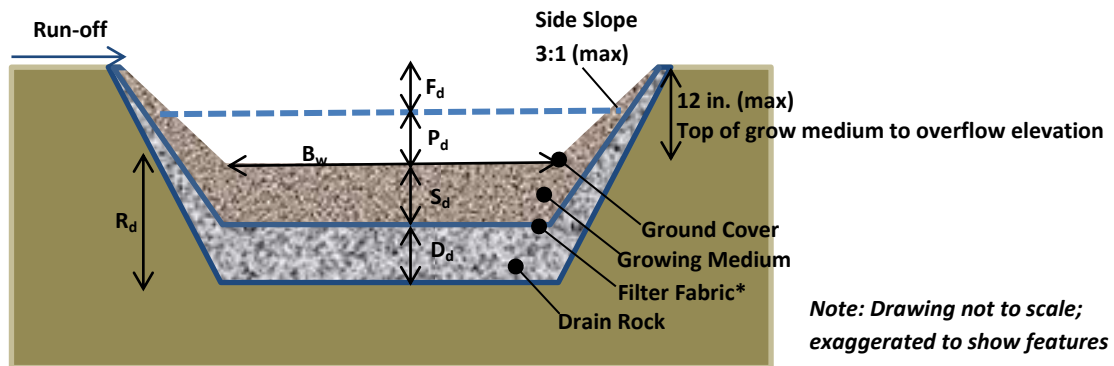


EDWARD K THOMAS BUILDING

RAIN GARDEN CONCEPTUAL DESIGN

Cross-Section



Measurements per CBJ Stormwater BMP Manual:

- F_d = Minimum freeboard of 2 in.
- Ground cover = 2 – 3 in. thick
- S_d = Growing medium (soil) minimum of 6 – 8 in. deep
- B_w = Minimum bottom width of 2 ft.

Measurements per MOA Low Impact Development Design Manual:

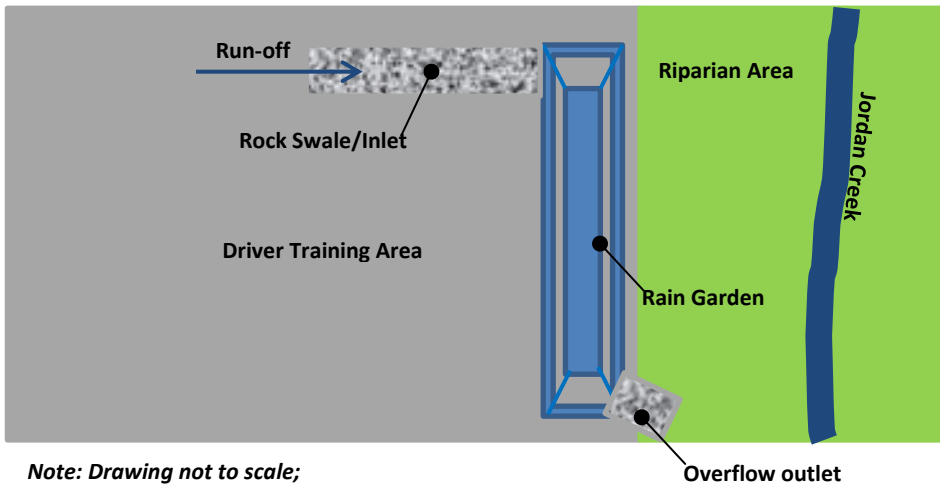
- P_d = Maximum ponding depth of 8 in.
- R_d = Minimum depth of Retention and Filtration Zone (Soil and Drain Rock) of 2.5 ft.

Material Specifications per CBJ Stormwater BMP Manual:

- Ground cover – Fine to medium hemlock bark or organic compost
- Growing medium (soil) – sandy loam mixed with compost or a sand/soil/compost blend (1/3 compost by volume)
- Drain rock – 1 ½ in. – 1 ¾ in. washed drain rock (infiltration), ¾ in. washed drain rock (retention/flow-through)
- *Filter fabric – can be replaced with a 2 – 3 in. layer of ¾ - ¼ in. washed, crushed rock

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RAIN GARDEN CONCEPTUAL DESIGN

Plan View



*Note: Drawing not to scale;
 exaggerated to show features*

Water Quality Volume Determination per CBJ Stormwater BMP Manual:

$$WQ_v = (WQ_d)(R_v)(A)/12 = (1.51)(0.743)(0.826)/12 = 0.0773 \text{ acre - feet or } 3,368 \text{ ft}^3$$

where WQ_d = Water Quality Rainfall Depth = 1.51 in.

$$R_v = \text{Site Run-off Coefficient, defined as } R_v = 0.05 + 0.009(I) = 0.05 + 0.009(77) = 0.743$$

I = Site Impervious Cover (%) = 77%

A = Total Site Area (acres) = 0.826 acres

Preliminary Rain Garden Dimensions:

Length = 80 ft.

Width = 20 ft.

Depth = 3.6 ft.

Cost Estimate:

Cost estimate per Fairbanks Green Infrastructure Group,

$$\sim \$20/\text{ft}^2 = \$20 * 1600 \text{ ft}^2 = \$32,000 \text{ (high end, self-installed)}$$

$$\sim \$25/\text{ft}^2 = \$25 * 1600 \text{ ft}^2 = \$40,000 \text{ (high end, professionally installed)}$$

Cost estimate per Municipality of Anchorage,

$$\sim \$5/\text{ft}^2 = \$5 * 1600 \text{ ft}^2 = \$8,000 \text{ (high end, self-installed)}$$

$$\sim \$12/\text{ft}^2 = \$12 * 1600 \text{ ft}^2 = \$19,200 \text{ (high end, professionally installed)}$$



EDWARD K THOMAS BUILDING

RAIN GARDEN CONCEPTUAL DESIGN

Recommended Native Plants

Shrubs

Red-twig Dogwood (*Cornus sericea*)
Highbrush Cranberry (*Viburnum edule*)
Lingonberry (*Vaccinium alaskaense*)
Soapberry (*Shepherdia Canadensis*)
Prickly Rose (*Rosa acicularis*)
Silverberry (*Eleagnus commutata*)

Perennials

Goat's Beard (*Aruncus delphinifolium*)
Wild Geranium (*Geranium erianthum*)
Devil's Club (*Oplopanax horridus*)
Lady Fern (*Athyrium felix-femina*)
Chocolate Lily (*Frittilaria camschatcensis*)
Wood Fern (*Dryopteris dilatata*)
Alaska Wild Iris (*Iris setosa*)
Cranesbill Geranium (*Geranium erianthum*)
Ostrich Fern (*Matteuccia struthiopteris*)
Bluebells (*Mertensia*)
Forget-Me-Not (*Myosotis alpestris*)
Dwarf Fireweed (*Chamerion latifolium*)

Grasses and Sedges

Native Sedge (*Carex gmelini*)
Tuft Hair Grass (*Deschampsia cespitosa*)

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