



low impact development technical workshop series

sediment and erosion control

Topics

Erosion, TESC and Construction sequencing

Procedures and timing

Remedies for failing sites

Factors Influencing Erosion



Factors Influencing Erosion

Soil particle size

- Erodibility increases as:
 - Percent of silt increases.
 - Percent of fine sand increases.
- Erodibility decreases as:
 - Percent of clay increases.
 - Percent of organic matter increases.

Factors Influencing Erosion

Slope Length and Gradient

- Double slope length:
 - increase erosion potential 4X
- Double slope gradient:
 - increase erosion potential 5X

Most sediment control BMPs function by shortening the slope



Best Management Practices

Toolbox for preventing stormwater impacts

- Physical BMPs:
 - Physical or structural practices/installations to prevent or reduce water pollution.
- Procedural BMPs:
 - Schedules of activities.
 - Prohibitions of activities.
 - Maintenance procedures.
 - Managerial practices.

Source control physical BMPs

- Fencing
- Stabilized construction entrance, wheel wash
- Nets and blankets, plastic
- Mulching
- Topsoiling
- Seeding
- Sodding





Mulches





Compost Berm Compost Sock



- Perimeter protection
- Slope interruption

Runoff conveyance and treatment BMPs

- Channel lining
- Dike and swale
- Pipe slope drains
- Check dams
- Outlet protection
- Silt Fence
- Straw wattles
- Storm drain inlet protection
- Stormwater chemical treatment



Best management practices not products!

Prioritize procedural
over
physical BMPs

Construction sequencing likely the most critical process for successful installation



Decision pathways

1. Site flat or sloping away from facility likely ok to:
 - Complete bioretention area with roads, utilities and storm infrastructure.
 - Install conventional TESC and barriers.

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Construction sequencing likely the most critical process for successful installation

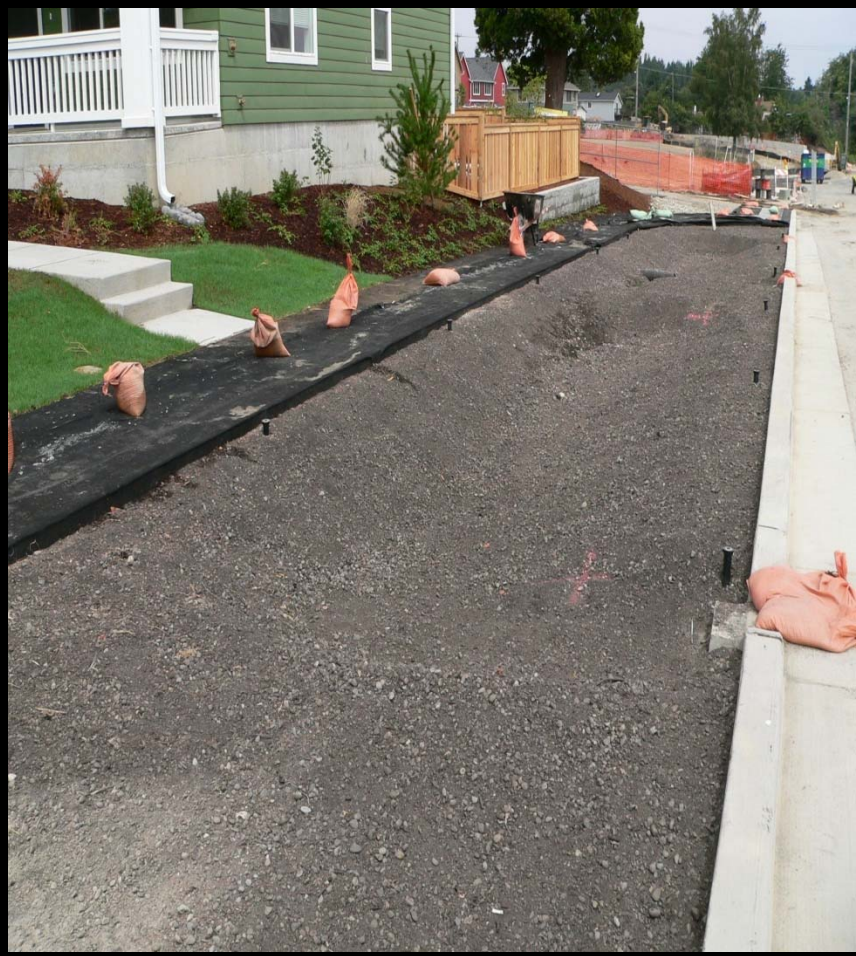


Construction activity sloping to bioretention facility

- Delineate or partially grade to define facility. Keep construction traffic off area.
- Install TESC and stabilize upslope construction area as best as possible.
- Divert flows around facilities.
- If flows allowed through facility, leave at least 6" above final grade. Line or mulch? Keep construction traffic off area.

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Construction sequencing likely the most critical process for successful installation



Construction activity sloping to bioretention facility

- Good construction and sediment and erosion practice.
- Upslope stabilized.
- Flow diverted around bioretention areas.

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Construction sequencing likely the most critical process for successful installation



Partial excavation and completion of facility after homes completed and landscaping stabilized requires clear agreement among developer, homebuilder and jurisdiction.

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Remedies for failing sites



Poor TESC and sediment to facility

- Excavate to depth that sediment deposits and potential clogging not present (usually 6").
- Replace BSM, mulch and plants.



Compaction of existing soils

- Important question is: does the facility still infiltrate at design rate. Perform infiltration test or verify pre-construction density.

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Permeable paving sediment and erosion control



Roads and sidewalks
(where roads are not used for
construction access)

- Extend filter fabric out of installation, wrap and secure.
- Cover with plastic.
- Close/protect area.
- Maintain good TESC until site is stabilized.



sediment and erosion control

Permeable paving sediment and erosion control



Roads (roads are used for construction access)

- Extend filter fabric out of installation, wrap and secure?
- Protect subgrade: install base, ATB, secure protective fabric, place protective aggregate and use for construction access.
- Complete construction, remove protective fabric and rock, clean where necessary, and complete wearing course over ATB.
- Maintain good TESC until site is stabilized.

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Permeable paving sediment and erosion control



Roads (roads are used for construction access)

- Extend filter fabric out of installation, wrap and secure?
- Protect subgrade: place clean pit-run, choker course, fabric and protective rock remove.
- Remove protective fabric and rock.
- Complete construction and paving.
- Maintain good TESC until site is stabilized.

Permeable paving sediment and erosion control



Roads (permeable pavers are used for construction access)

- Extend filter fabric out of installation, wrap and secure?
- Protect subgrade: complete permeable concrete paver installation, protect installation as best as possible.
- Excessive wear during construction?
- Complete construction, wet and vacuum surface, replace aggregate in voids.
- Maintain good TESC until site is stabilized.

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