



FACT SHEET

Office of Water Resources / Fall 2007

WETLANDS # 4

SOIL EROSION BEST MANAGEMENT PRACTICES

WHAT ARE BEST MANAGEMENT PRACTICES (BMPs)?

When planning construction, it is necessary to consider whether your project may affect wetlands, because wetlands are very sensitive to human disturbance. It is important to avoid and minimize direct alterations of wetlands and to keep in mind that even though construction may not be proposed directly in wetlands, it could still affect wetlands nearby. Best Management Practices (BMPs) are techniques and methods that are utilized to prevent and minimize impacts to these sensitive resources. The *Rules and Regulations Governing the Administration and Enforcement of the Freshwater Wetlands Act* include a full definition of BMPs (see Rule 4.00).

The most common construction-related impacts to wetlands result from soil erosion and sedimentation. Soil erosion is caused when water flows over bare soil, picking up and carrying soil particles and associated pollutants to another location. Rainfall, snowmelt or temporary flooding can cause water to flow overland and to erode soil particles from construction sites. This sediment-laden water can travel down slope toward nearby wetlands. Along the way the sediment can enter and clog storm drains and roadside ditches. In wetlands the sediment can smother vegetation, destroy aquatic habitat, kill fish and other aquatic organisms, and degrade water quality.

BMPs include management or planning techniques designed to prevent or minimize soil erosion. For example, proper timing can be a best management practice; that is, by scheduling work during the dry season, or by phasing construction so that not all soil is exposed at one time, soil erosion can be prevented. BMPs can also be the installation of temporary or permanent structures designed to physically prevent soil erosion and sedimentation. Hay bales, silt fences, and riprap are common examples of BMPs.

BMPs FOR PREVENTION OF SOIL EROSION

The following BMPs are recommended to prevent soil erosion and sedimentation, and they may be requirements of a DEM wetlands permit:

- Meet with the contractor to discuss how wetlands will be protected before the project begins;
- Time your work in wetlands and watercourses to occur during low flow season (July-October) when wetlands are the driest;
- Limit clearing and disturbance to the approved work area only;
- Wait until just before beginning construction to clear vegetation and to disturb the soil;
- Minimize the area of bare soil within the approved work zone as much as possible;
- Maintain a buffer of natural vegetation around wetlands to slow runoff and trap sediments; and
- Consider phasing construction to minimize the extent of disturbed soils.

SEDIMENTATION CONTROLS

Temporary BMPs used to filter sediments from water, thereby preventing sedimentation, should be installed before any construction begins and should subsequently be removed when the project is completed. A common method is to install **hay bales** at the limits of work between the construction project and the wetlands. Hay bales serve as filters by

trapping sediment on construction sites and keeping it from migrating down slope towards wetlands. Proper installation of hay bales is critical to their effectiveness. Hay bales should be set in a clean squared trench, butted firmly together, and securely seated on the ground. The hay bales should be solidly staked to the ground (with 1" by 1" wooden stakes) and backfilled on both sides of the bale immediately after installation. Overlapping hay bales on a slope may provide more filtration.

Another type of temporary sediment barrier or filter is the **silt fence**. Silt fences are made of woven plastic material manufactured specifically for this purpose. Proper installation of silt fences is critical to their effectiveness as well. The bottom edge of the silt fence is installed in a clean, squared (6" by 6") trench so that sediment cannot go beneath it. The posts that the silt fence is attached to should be driven into the ground until secure (at least 6" below the ground surface). The trench should be backfilled thereby burying the bottom of the silt fence. For maximum sediment control, hay bales can be used in conjunction with silt fences.

Hay bales and silt fences should be inspected and maintained routinely and accumulated sediment should be removed and disposed of in a proper upland location. The hay bales and silt fence should be replaced as needed. When construction is completed and the soil is stabilized, they should be removed entirely. It is especially important to remove silt fences, as they do not readily decompose and can represent a barrier for reptiles, amphibians, and other small animals.

STABILIZING EXPOSED SOIL

Temporary and permanent stabilization of exposed soils is a very good way to prevent soil erosion at construction sites. Disturbed soils can be mulched or covered with a loose mat of straw or hay. **Temporary seeding** of exposed areas, when they are not actively being worked on, can also stabilize soil. Temporary seeding of exposed soils should be:

- Applied as soon as possible after construction work stops in an area;
- Applied anytime during the year except when the ground is frozen;
- Spread only within disturbed areas; and
- Watered during the summer months as needed.

Soil or loam that is stored or stockpiled during construction should also be mulched or covered with a mat of loose hay and can be seeded with a temporary seed mix. Stockpiles should also be covered and enclosed with hay bales or a silt fence to prevent any erosion and sedimentation. Covering entrances of construction sites with gravel can help prevent trucks from tracking sediment from the construction site onto roads. This sediment would eventually end up clogging roadway drainage systems or settling into wetlands.

HELPFUL REFERENCES

The following information is available at the DEM's Office of Customer and Technical Assistance, 235 Promenade Street, Providence, RI 02908 (401-222-6822).

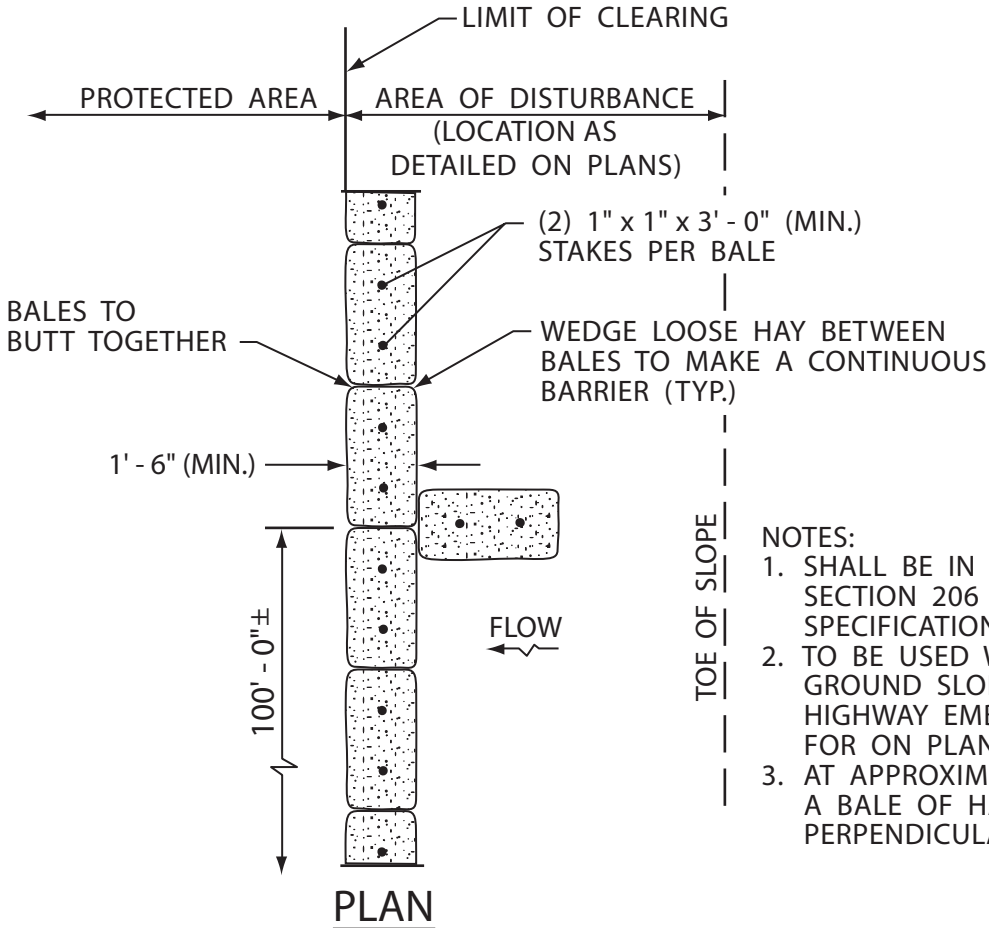
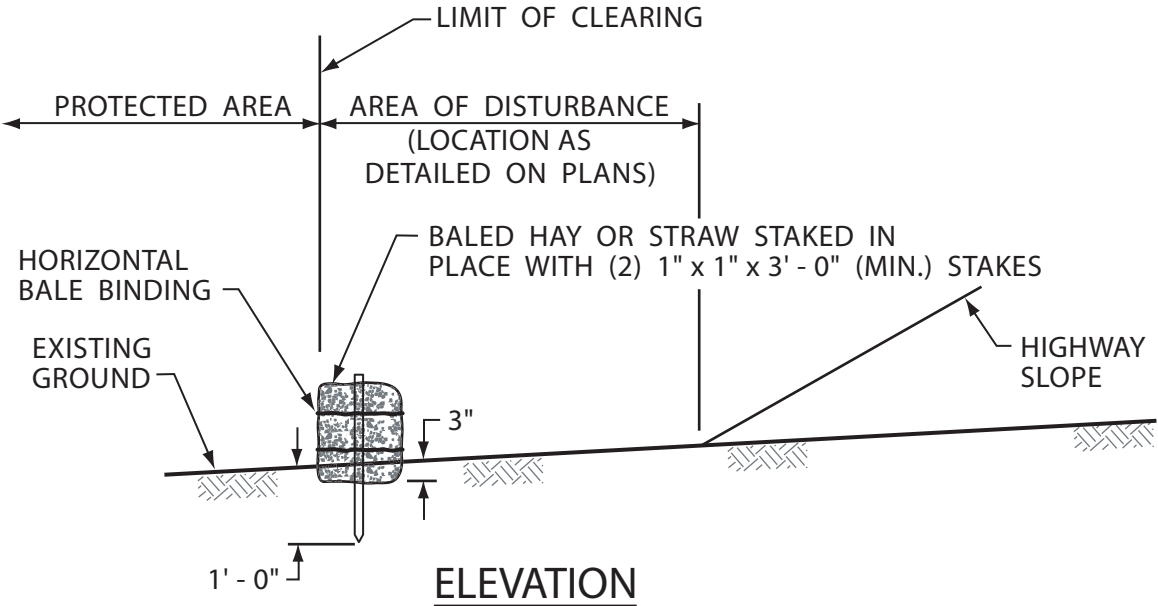
- Rhode Island Soil Erosion and Sediment Control Handbook
- Rhode Island Stormwater Design and Installation Standards Manual
- *Rules and Regulations Governing the Administration and Enforcement of the Freshwater Wetlands Act*
- Wetlands Fact Sheet 1 (Wetlands in Rhode Island)
- Wetlands Fact Sheet 2 (Exempt Activities for Homeowners)
- Wetlands Fact Sheet 3 (Exempt Activities for Municipalities and Utility Companies)

HOW CAN I OBTAIN A COPY OF DEM'S WETLAND REGULATIONS?

A complete copy of DEM's *Rules and Regulations Governing the Administration and Enforcement of the Freshwater Wetlands Act* can be obtained from DEM's Office of Technical and Customer Assistance located at the Foundry Office Complex at 235 Promenade Street, Providence (401 222-6822). You may also find this information on the DEM website at <http://www.dem.ri.gov>.

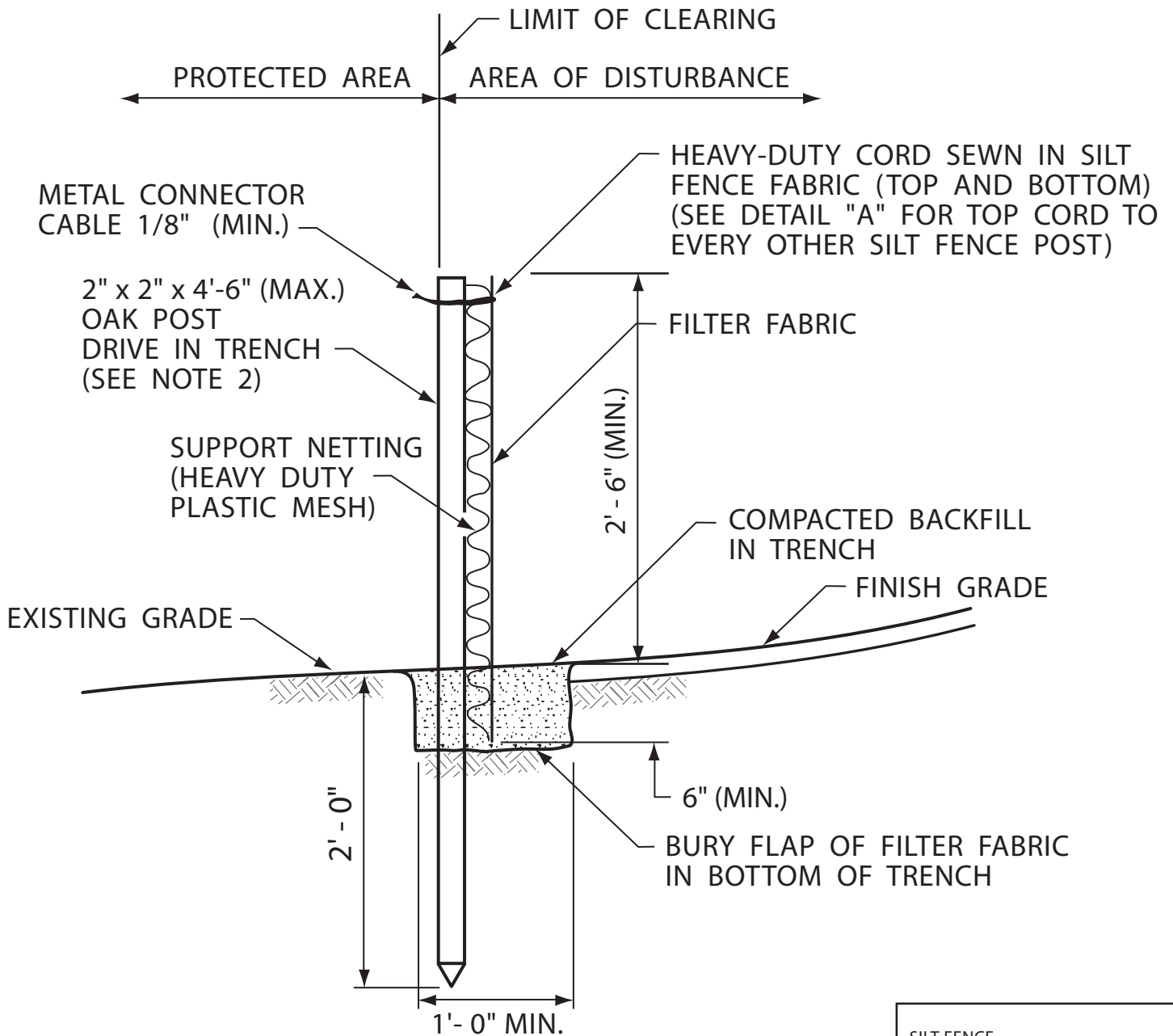
Disclaimer: This Fact Sheet is for general information purposes only and is not meant to be used as a substitute for the Freshwater Wetlands Act or the *Rules and Regulations Governing the Administration and Enforcement of the Freshwater Wetlands Act*.

Installation of Hay Bales



- NOTES:**
1. SHALL BE IN ACCORDANCE WITH SECTION 206 OF THE R.I. STANDARD SPECIFICATIONS.
 2. TO BE USED WHERE THE EXISTING GROUND SLOPES AWAY FROM THE HIGHWAY EMBANKMENT AS CALLED FOR ON PLANS.
 3. AT APPROXIMATE 100'-0" INTERVALS A BALE OF HAY IS TO BUTT PERPENDICULARLY.

Installation of Silt Fence



NOTES:

1. SHALL BE IN ACCORDANCE WITH SECTION 206 OF THE R.I. STANDARD SPECIFICATIONS.
2. 2" x 2" x 4'-6" (MAX.) OAK POSTS FOR SILT FENCE SHALL BE LOCATED 8' - 0" (MAX.) O.C. IN WETLAND AREAS AND 4' - 0" (MAX.) O.C. IN WETLAND RAVINE, GULLY OR DROP-OFF AREAS AS SHOWN ON PLANS.
3. 1" x 1" x 4'-6" (MIN.) POSTS PERMITTED FOR PRE-FABRICATED SILT FENCE.
4. SILT FENCE SHALL BE INSTALLED BEFORE ANY GRUBBING OR EARTH EXCAVATION TAKES PLACE.

