TOPIC	NUMBER	SUPERSEDES OR RESCINDS
Sediment Fences and Straw Bales for Sediment Control	*GE09-03(A)*	
Original Signed by: *Original signed by:* *Susan Haupt* *Geo-Environmental Section Manager*	**EFFECTIVE DATE** *09/17/2009*	**VALIDATION DATE** *07/15/2014*

Topic

Limiting the use of Silt Fences and Straw Bales as Sediment Barriers

Silt fence typically is nothing more than a filter cloth that is held up by wooden or metal stakes. The cloth captures sediment by backing up sediment-laden water, allowing the soil particles to settle out. Any water that makes it through the fence is relatively clear. Silt fence is most often used as a perimeter shield, sort of a last line of defense if you will. However, in most cases, silt fence is almost never properly installed and no other erosion control measures have been put in place, rendering the silt fence ineffective. Most people try to use silt fence as a diversion and this is simply an ineffective use of the measure.

Straw bales are loose strands of straw bound together tightly by a twine. Straw bales when butted together tightly serve as physical barriers and cause water to pond. As a result of ponding, the velocity of moving water is minimized allowing the sediment particles to settle out.

Silt fences and straw bales serve a useful purpose as sediment barriers but their use should be limited and only be used in conjunction with other preventive Best Management Practices (BMPs). Although silt fences and straw bales capture/deposit silt material, the problems they pose during maintenance in the winter months far outweigh their benefits if not used correctly.

The goal of an effective Erosion and Sediment Control Plan (ESCP) should always be to minimize erosion to the Maximum Extent Practicable (MEP) by phasing the project, minimizing vegetation removal, leaving vegetative buffers, etc. Sediment control BMPs should be planned and used as a secondary line of defense or when erosion prevention is not possible due to timing and topography of the site location.

It is important to recognize that an ESCP for any project that spans more than a season is dynamic and must be modified and updated as per the changing climatic/weather conditions. For example, a summer project with excessive dry/hot conditions than normal for the region needs to incorporate additional dust control measures than originally proposed; or incorporate temporary irrigation for vegetation establishment.

A silt fence should never be used for the sole purpose of establishing property boundaries, delineating wetlands and establishing restricted work areas. Regulators will interpret a silt fence on a construction site as a BMP for sediment control and will expect correct installation, inspection, replacement, and maintenance as required for all other erosion control BMPs on the construction site.

Orange colored silt fence that meets the silt fence material specifications can serve the dual purpose as a property delineator and as an erosion control BMP when installed, monitored and maintained correctly for erosion. When erosion is not an issue, construction fence (orange fence with 2"X2" openings) is the preferred product for property boundaries, wetland delineation, and restricted work areas.

Use of straw bales should be limited to temporary ponds or as a sediment barrier in combination with gravel to settle out solids during an unexpected storm event. They may also be broken apart and used as straw mulch to temporarily blanket exposed areas.

Advisory Information

This advisory is a result of observations and evaluation of the performance of silt fence and straw bales as sediment barriers. The purpose of this advisory is to limit the use of these measures as sediment barriers at all future ODOT Construction projects.

Common problems with Silt Fences:

- Installation is difficult especially in areas under bridges and near water ways where the soils tend to be rocky or highly compacted;
- Installation of silt fences at the top of cut slopes with no diversion/collection trenches lead to enhanced erosion on the slopes;
- Installing intermediate silt fences on slopes to reduce slope length can contribute to erosion problems if not installed correctly and may result in large slope failures;
- Trenching (6-9 inches) required to secure the bottom portion of the silt fence in place is a labor intensive practice that is difficult to achieve manually. Trenching

machines are the preferred method for installation;
- Confusion and misuse of these measures for delineation of no-work zones;
- Silt fence left in place on flood prone areas can become inundated with water or can trap fish and lead to threatened or endangered fish kill; and
- Maintenance actions requiring replacement of failed silt fences or addition of new silt fences during the winter months tends to cause more problems leading to violations.

Common problems with Straw bales:

- Straw bales become heavy when soaked with water making it difficult to move/remove;
- Twine binding can disintegrate under natural conditions causing loose straw to enter storm drains and waterways;
- Water does not flow through the bales causing flooding and safety issues in certain areas;
- When used properly in ditches without a gravel spillway, water ponds upstream of the bale and short circuits causing bank erosion; and
- Straw bales may include noxious weed seed when obtained from an uncertified source.

Compliance/Regulatory Issues:

- Although ODOT has an extensive educational programs to train ODOT staff and its contractors, due to lack of supervision by trained staff at the time of installation, silt fences are often installed incorrectly. Failures lead to release of turbid discharges;
- Poor silt fence and straw bale installation attracts the attention of regulatory inspectors when installed incorrectly, which is the case more often than not ; and
- Improper installation may result in warning letters and civil penalties.

Other Products/Measures:

Alternate measures that perform equally well as sediment barriers can be used in place of silt fences and straw bales and are less problematic for maintenance. These measures are readily available and are not cost-prohibitive. A well planned construction project can be staged to minimize the use of sediment control barriers. Addressing exposed areas in a timely manner with permanent long term BMPs such as hydroseeding, landscaping, etc. to reduce the need/use of sediment barriers as well.

The following BMP's and/or products can be used to complement/replace/minimize silt fence and straw bales use on ODOT projects:

Alternate BMPs:

- Minimize soil exposure by phasing the project, or disturbing small areas and stabilizing areas early in the project;
- Route off-site drainage away from disturbed areas;
- Collect run-off in temporary/permanent detention ponds; and
- Leave vegetated buffers when possible.

Alternate Products:

- Straw Wattles, Straw Rolls, Bio-bags, Brush Barriers, Compost Berms, Terra Tubes, Silt Dikes, Compost Filter Socks, etc., can be used as sediment barriers in place of or in conjunction with silt fences and straw bales;
- Temporary Mulch cover options such as compost blankets, bark, straw, etc.; and
- Permanent soil cover options with grass seed mix such as hydro mulch, Bonded Fiber Matrix, Compost Blankets, etc.

Target Audience

ODOT-NRU Team
Regional Tech Centers
Regional Environmental Units
Environmental Leadership Team
Project Delivery Leadership Team
Maintenance Leadership Team
Technical Leadership Team
Geo-Environmental Section, Technical Services
Oregon Bridge Delivery Partners

Contact Information

CONTACT: Erosion Control Program Coordinator
PHONE: (503)986-3551
E-MAIL: raghu.namburi@odot.state.or.us