

**PC-33 TOPSOIL MANAGEMENT**

Refer to: ITD Standard Specifications, Sections 213 and 711.09.

**BMP Objectives**

- Perimeter Control
- Slope Protection
- Borrow and Stockpiles
- Drainage Areas
- Sediment Trapping
- Stream Protection
- Temporary Stabilizing
- Permanent Stabilizing

**Definition and Purpose**

Topsoil is that uppermost layer of soil capable of growing and supporting vegetation. Topsoil contains the essential microorganisms, nutrients, organic matter, and physical characteristics necessary to grow and sustain permanent vegetation. Stripping, stockpiling, and reusing topsoil on construction projects is essential for proper reclamation of disturbed areas.

**Appropriate Applications**

Topsoil is recommended on all disturbed sites and slopes 2H:1V or flatter, or as a planting medium for plantings or nursery stock. Topsoil may be added to a rock mulch to enhance slope protection and provide soil medium for seed germination and plant growth. Topsoil can be mixed with organic material such as compost or manufactured soil amendments to improve the growing capability of seeded and planted vegetation.

**Limitations**

- Topsoil normally should not be used on slopes steeper than 2H:1V or on sandy or silty slopes steeper than 3H:1V. Topsoil should not be placed on frozen, extremely wet, or smooth slopes.
- Stockpiling topsoil will result in the disruption and loss of beneficial soil microorganisms, and if stockpiled over a length of time (+/-6 months), may result in total or partial loss of soil microorganisms.
  - If topsoil is stockpiled prior to placement, the top 1 foot of the stockpile material should be mixed with the remainder of the stockpile to ensure that living organisms are distributed throughout the topsoil material at the time of final placement.

- The use of microorganism inoculates may be necessary to reestablish microorganisms in topsoil material that has been stockpiled for more than 9 months.

### **Design Parameters**

- Additional design information is provided in the ITD Roadside Revegetation Guidebook.
- To the extent practicable, aboveground vegetation, including litter, should be mixed or otherwise incorporated into the topsoil prior to excavation. Topsoil should be excavated from the existing roadway shoulder to a depth of 6 inches. For new alignments, topsoil should be excavated to the depth it exists and stockpiled.
- The topsoil shall be placed into stockpiles at locations designated on the plans. Stockpiles should be treated with temporary soil stabilization and erosion control measures as per SWPPP. Topsoil stockpile height should not exceed 10 feet.
- Topsoil should be used on all disturbed sites (2H:1V or flatter) that will be permanently seeded.
- After final slope grading and prior to placement, cut slopes should be cross-rippled horizontal to the slope to assist in anchoring the topsoil. The spacing of the ripping shanks should be 3 feet, and penetration should not exceed 12 inches in depth. Where embankments are constructed, offsetting lifts of material to create an uneven surface prior to topsoil placement should be considered. Smooth slopes are not acceptable.
- Following construction, stockpiled topsoil should be uniformly redistributed (placement) to a depth of 6 inches. Placed topsoil should be cat-tracked vertically to the slope to compact the topsoil and to create horizontal pockets (safe sites) to hold seed and water.
- Where quantities of topsoil are limited, it is recommended to cover the more critically disturbed areas to the proper depth, rather than cover all areas. If necessary, the more favorable sites may be left without topsoil.
- Approved compost and/or manufactured organic soil amendments can be added to the topsoil to increase the organic content of the soil and assist in rebuilding soil microorganism populations. Topsoil can be added to rock mulch for added slope protection, to reduce the potential of erosion and to enhance vegetative growth.
- Organic material such as wood bark or fiber, grass hay, or grain straw shall not be mixed in topsoil unless nitrogen fertilizer is included. (Organic material uses nitrogen to break down and decompose the fibers.)
- Compost derived from livestock or green urban waste (trees, leaves, lawn clippings) is far superior to non-composted manure or wood fiber.
- Topsoil can be placed on benched slopes to assist in vegetation establishment. The topsoil is especially valuable on rocky benches or benches with south- or west-facing exposure (aspect). Placement of too much topsoil on the benches may destroy the benching value.

### **Construction Guidelines**

- The Design Parameters provide procedures for stripping, stockpiling, and placing topsoil.

- If topsoil is stockpiled prior to placement, the top 1 foot of the stockpile material should be mixed with the remainder of the stockpile to ensure that living organisms are distributed throughout the topsoil material at the time of final placement.
- A temporary soil stabilization and erosion control treatment shall be applied to the exposed topsoiled areas to protect the topsoil prior to permanent seeding.
- The topsoil surface shall be left in a roughened condition to reduce erosion and facilitate establishment of permanent vegetation. The roughening establishes safe sites for seed to germinate and grow.
- **Smooth slopes or surfaces are not acceptable.**

### **Maintenance and Inspection**

- Conduct inspections as required by the NPDES permit or contract specifications during construction.
- Periodic inspection and maintenance will be required based on post-construction site conditions.
- Make any repairs necessary to ensure the measure is operating properly.
- Repair and reseed if necessary to control erosion and loss of topsoil. This periodic maintenance procedure applies to either temporary soil stabilization or permanent seeding application.