TECHNICAL SPECIFICATIONS
FOR
TEMPORARY WATER POLLUTION CONTROL

1. Description

This work shall consist of temporary control measures as shown on the plans or as ordered by the Engineer during the life of the Contract to control soil erosion and water pollution. Such measures shall include, but are not limited to, the use of silt barriers, fiber mats, netting, mulches, grasses, slope drains, and other control devices. Erosion and siltation control measures as described herein shall be applied to any erodible material exposed by any activity within the project limits.

2. Materials

(a) Seeding – Seed, mulches, fertilizer, agricultural limestone and other materials for seeding shall conform to the Standard Specifications for Seeding.

(b) Sodding – Sod, fertilizer, agricultural limestone and other materials for sodding shall conform to the Standard Specifications for Sodding.

(c) Temporary Slope Drains – Slope drains may be constructed of pipe, fiber mats, rubble, Portland cement concrete, bituminous concrete, sod or other materials acceptable to the Engineer that will adequately deter erosion.

(d) Silt Barriers

1) Silt barriers may be brush barriers, baled straw barriers, or silt fences.

2) Brush barriers shall consist of brush, trees and trimmings, shrubs, plants and other approved refuse from the clearing and grubbing operation.

3) Baled straw barriers shall consist of tightly baled straw, plastic or wire binding preferred to twine, firmly anchored to the ground with steel drift pins or wooden stakes.

4) Silt fences shall consist of an approved fabric filter, Mirafi 140 or equivalent, suitable supported by a woven wire fence.

3. Construction Methods

(a) General

1) Prior to or simultaneously with the clearing and grubbing operations, the Contractor shall install siltation control devices in accordance with the approved erosion control plan. Such work may involve the construction of temporary berms, dikes, dams, silt fences, sediment basins, lined channels, permanent cut-off ditches, slope drains or other control devices as necessary to control erosion and siltation. Water from cofferdams is not to be pumped directly into streams, but is to be pumped into sediment ponds or traps. No grading shall be performed until the siltation control devices are in place to the satisfaction of the Engineer. Areas to be graded shall not be cleared and grubbed more than 20 calendar days prior to beginning grading operations in such areas. Stockpiled topsoil or fill material is to be treated so the sediment runoff will not contaminate surrounding areas or enter nearby streams. In order to reduce sediment in runoff, erosion control structures shall be installed promptly during all construction phases.

The Contractor's operations shall be staged so that graded or otherwise disturbed erodible surfaces are protected as the work progresses. Once the Contractor begins grading for a roadway cut or embankment, he shall maintain a continuous, viable operation to complete the cut or embankment to subgrade elevation, unless otherwise approved in writing by the Engineer. Exposed erodible cut or embankment slopes shall be final dressed, topsoiled and protected with permanent seeding or sodding in vertical increments not exceeding 25 feet as the work progresses; and no portion of these slopes shall remain unprotected for more than 20 calendar days unless the Engineer determines that weather conditions or other special circumstances preclude current placement of permanent control measures. Temporary erosion control measures shall be implemented as directed by the Engineer.

Seeding or sodding operations shall be initiated within 48 hours after any one of the following conditions occurs:

a. Each 25 foot vertical increment is graded, or

b. Upon suspension or completion of grading operations is a specific area.

The above requirements for progressive siltation control also apply to graded areas off the rights-of-way such as waste area, borrow areas and haul roads.

The Contractor shall incorporate all permanent erosion and siltation control features into the project at the earliest practicable time. Temporary siltation control features shall be used to control erosive conditions that warrant protection prior to installation of permanent control features or that are needed to temporarily control erosion or siltation that develops during

construction but which is not associated with permanent control features on the Project.

2) In the event of conflict between these requirements and siltation control laws, rules, or regulations of other Federal or Sate or local agencies, the more restrictive laws, rules or regulations shall apply.

3) The temporary erosion control features installed by the Contractor shall be acceptable maintained by the Contractor until the completion of the Project, and he shall remove such installation if ordered by the Engineer. Any materials removed shall become the property of the Contractor.

4) In case of repeated failure on the part of the Contractor to control erosion, pollution and siltation, the Engineer reserves the right to employ outside assistance or to use his own forces to provide the necessary corrective measures. Such incurred direct costs plus project engineering costs will be charged to the Contractor and appropriated deductions made from the Contractor's monthly progress estimate.

(b) Seeding – Temporary seeding shall conform to the standard Specifications for Seeding except agricultural limestone need not be applied.

(c) Sodding – Sodding shall conform to the Standard Specifications for Sodding. Care must be taken to properly anchor the sod to prevent any washouts.

(d) Temporary Slope Drains

Temporary slope drains shall consist of metal pipe, plastic pipe, flexible rubber pipe, or other materials which can be used as temporary measures to carry water accumulating in the cuts and on the fills down the slopes prior to installation of permanent facilities or growth of adequate ground cover on the slopes.

All temporary slope drains shall be adequately anchored to the slope to prevent disruption by the force of the water flowing in the drains. The base for temporary slope drain shall be compacted and concavely formed to channel the water or hold the slope drain in place. The inlet end shall be properly constructed to channel water into the temporary slope drain. Energy dissipaters, sediment basins or other approved devices shall be constructed at the outlet end of the slope drains to reduce erosion downstream. An ideal dissipater would be dumped rock or a small sediment basin which would slow the water as well as pick up some sediment. All temporary slope drains shall be removed when no longer necessary and the site restored to match the surroundings.

(e) Silt Barriers – Silt barriers shall be constructed by one of the methods listed below. It shall be the Contractor's choice of which barrier to use unless the silt barrier type is specified in the plans.

1) Brush barriers shall consist of brush, trees and trimmings, shrubs, plants and other approved refuse from the clearing and grubbing operations. The brush barriers shall be constructed approximately parallel to original ground contour, placed at the bottom of fill slopes to trap and retain sediment. The top of the brush barrier shall be at least five (5) feet below finished roadway grade. The brush barrier shall be compressed to an approximate height of three (3) to five (5) feet and an approximate width of five (5) to ten (10) feet. The embankment shall not be supported by the construction of brush barriers.

2) Baled Hay or Straw Erosion Checks – Hay or straw erosion checks shall be embedded in the ground a minimum of 4 inches to prevent water flowing under them. The bales shall also be anchored securely to the ground by wooden stakes driven through the bales into the ground. Bales can remain in place until they rot, or be removed after they have served their purpose, as determined by the Engineer. The Contractor shall keep the checks in good condition by replacing broken or damage bales immediately after damage occurs. Normal debris clean-out will be considered routine maintenance.

3) Silt fences shall consist of an approved fabric filter, Mirafi 140 or equivalent, suitable supported by a woven wire fence, and are located at the bottom of fill slopes to trap and retain sediment. Fence posts may be wood or metal securely anchored to the ground on centers not to exceed twelve (12) feet. The woven wire fence shall be from two (2) to four (4) feet in height as required, and the mesh openings shall be 4" x 4".

The Contractor shall be required to maintain the silt fence and filter barriers in a satisfactory condition for the duration of the Project or until its removal is requested by the Engineer. The silt accumulation at the fence may be left in place and seeded, removed, etc. as directed by the Engineer. Unless otherwise directed by the Engineer, all silt fence or filter barrier shall be removed prior to completion of the Project and shall become the property of the Contractor.

The Contractor shall install and maintain all temporary erosion and siltation control features until no longer needed or permanent control measures are installed. Any materials removed shall become the property of the Contractor. In order to insure erosion and siltation control structures work properly, it is imperative the sediment be removed; therefore, inspection and maintenance of structures is to be performed on a regular basis. During sediment removal, the Contractor shall take care to insure that structural components of erosion and siltation control structures are not damaged and thus made ineffective. If damage does occur, the Contractor shall repair the structures at his own expense. Upon complete removal of sediment traps, special ditches, etc., the area where they were constructed is to be topsoiled, seeded and mulched.

In the event that temporary erosion and siltation control measures are required due to the Contractor's negligence, carelessness, or failure to install

permanent controls as a part of work as scheduled, and are ordered by the Engineer, such work shall be performed by the Contractor at his own expense.

(f) Sediment Structures

1) Sediment structures can be utilized in many locations to control sediment; at the foot of embankments where slope drains outlet; at the bottom as well as in the ditch lines atop waste sites; in the ditch lines on borrow pits. Sediment

structures may be used in most drainage situations to prevent excessive siltation of pipe structures. All sediment structures should be at least twice as long as they are wide.

2) When use of temporary sediment structures is to be discontinued, all sediment accumulation shall be removed, all excavation backfilled and properly compacted and the existing ground restored to its natural or intended conditions.

4. Method of Measurement

(a) In the event that temporary erosion and pollution control measures are required due to the Contractor's negligence, carelessness or failure to install permanent controls as a part of work as scheduled and are ordered by the Engineer, such work shall be performed by the Contractor at his own expense. Temporary erosion and pollution control work required, which is not attributed to the Contractor's negligence, carelessness or failure to install permanent controls, will be measured and paid for as specified for all acceptable work.

(b) Seeding will be measured by the square yard seeded in accordance with the Specifications for Seeding.

(c) Sodding – Sod will be measured by the square yard sodded in accordance with the Specifications for Sodding.

(d) The quantity of temporary slope drains to be paid for shall be determined by the linear foot constructed and measured. All cost of material, installation, and removal involved with temporary slope drains shall be considered the unit price for slope drains.

(e) Silt barriers shall be measured and paid for by the linear foot constructed and accepted.

(f) Excavation for sediment structures shall be measured by the cubic yard on the basis of cross-sectioned measure, or the most feasible method. The unit price for sediment structures shall include excavation, disposal of excavated material, and removal and restoration when no longer required. If not otherwise noted on plans, excavation of the sediment structures shall be paid for under Common Excavation.

(g) All temporary berms shall be considered as a necessary part of the unit price for road and drainage excavation and shall not be paid for separately.

5. Basis of Payment

(a) The accepted quantities of the items listed below will be paid for at the Contract price per unit of measurement for each of the pay items that is listed in the Bid Schedule.

(b) Payment will be made under:

1) Seeding as specified under Specifications for Seeding.

2) Sodding as specified under Specifications for Sodding.

3) Temporary Slope Drains per lineal foot.

4) Silt Barriers per lineal foot.

5) Sediment Removal per cubic yard.

(c) The above unit prices will be full compensation for completing the work as outlined in the Plans and Specifications including all materials, labor, and incidentals.