

## SECTION 01 57 13

### TEMPORARY EROSION AND SEDIMENT CONTROL

#### PART 1 GENERAL

##### 1.01 SUMMARY

###### A. Section Includes:

1. Furnishing of all labor, materials, tools, equipment and performances of all work and services necessary for the prevention of water pollution as indicated on the plans or as specified herein or as directed by the Engineer.

##### 1.02 PRICE AND PAYMENT PROCEDURES

###### A. Measurement and Payment

1. Bid Items for temporary measures to control soil erosion and sedimentation paid at the Bid Unit Price will be considered compensation in full for all Work necessary to complete the Bid Item in full, including installation, maintenance, sediment removal, repairs, and removals.
2. Silt Fence: Payment will be by type. Measurement will be along the base of the fence, from outside to outside of the end posts for each section of fence.
3. Floatation Silt Fence, Still Water: Measurement will be by linear foot installed.
4. Storm Drain Inlet Protection: Measurement will be by each.
5. Storm Drain Inlet Protection, Non-Street: Measurement will be by each.
6. Erosion Control Blanket: Payment will be by type installed. Measurement will be by square yard.
7. Mulch: Measurement will be by the ton of material installed in place as specified based on tickets delivered to the Engineer.
8. Hydraulic Soil Stabilizer: Measurement will be based upon units of pounds for each type of stabilizer applied in place as specified based on tickets delivered to the Engineer.
9. Ditch Check: Payment will be by type. Measurement will be by the linear foot.
10. Filter Logs: Payment will be by type. Measurement will be by the linear foot.
11. Bale Barrier: Measurement will be by the linear foot.
12. Rock Construction Entrance: Construction, maintenance, and materials required for the rock entrances will be considered incidental to the contract.
13. Rapid Stabilization Methods
  - a. Method 1 and 2: Measurement will be by the acre.
  - b. Method 3: Measurement will be by the 1,000 gals.
  - c. Method 4 and 5: Measurement will be by the sq. yd.
14. Dust Control will be considered incidental to the Project.
15. Street Sweeping: Payment will be per hour the street sweeper is onsite. Contractor shall submit invoices for street sweeping with their monthly request for payment.
16. Water used for the construction of the streets will be considered incidental to the Project.
17. Measurement will be based upon the units as listed below for Bid Items installed as specified. The actual quantity installed multiplied by the appropriate Bid Unit Price will be compensation in full for all Work and costs of the following Bid Items. 80-percent partial payment will be made upon installation and 20-percent payment will be made upon removal and restoration.

- ###### B. The furnishing and installing specific items and/or the performance of work under certain circumstances shall not be individually paid. The costs shall be included in the unit price bid for the associated erosion and control and excavation items. Such items or work include but are not limited to:

1. Complying with the Minnesota Pollution Control Agency (MPCA) – General Storm Water Permit for Construction Activity (MN R100001) – Reference Section 5.1 – Storm Water Pollution Prevention Plan (SWPPP).
2. Maintaining clean exit areas or roads from the site.
3. Sweeping on-site and adjacent impervious surfaces clean of sediment.
4. Cleaning storm sewers, drain tiles and culverts that have been partially or completely obstructed by sediment that originated from the site.
5. Geotextile fabric for rock installation.
6. Geotextile fabric to wrap prefabricated inlet protection devices.
7. Aggregate to anchor and act as a filter for prefabricated inlet protection devices.
8. Aggregate associated with the construction of temporary sediment traps.
9. Emergency erosion control mobilization.

C. Related Sections

1. Section 31 23 00 – Excavation and Fill.
2. Section 32 92 00 – Turf and Grasses.

1.03 REFERENCES

- A. MnDOT Specification Section 1717 shall apply to the prevention of air, land, and water pollution.
- B. MnDOT Specification Section 2573 shall apply to storm water management.
- C. MnDOT Specification Section 2573 shall apply to ditch checks.
- D. Mn/DOT Technical Memorandum No. 02-15-ENV-04 shall apply. In the event of a difference between Specification 2573 and the Technical Memorandum, the Technical Memorandum shall apply.
- E. MPCA’s NPDES General Stormwater Permit for Construction Activity.

1.04 SUBMITTALS

- A. Completed application form for the MPCA’s NPDES General Stormwater Permit for Construction Activity (MN R100001) and completed form for MPCA’s Notice of Termination conforming to Section 01 33 00.
- B. Certification and Sampling
  1. Furnish a manufacturer’s certification stating that the material supplied conforms to the requirements of this Section. The certification shall include or have attached typical results of tests for the specified properties, representative of the materials supplied.

1.05 QUALITY ASSURANCE

- A. Erosion Control Supervisor: Provide an Erosion Control Supervisor to direct the erosion control operations and insure compliance with Federal, State, and Local ordinances and regulations.

1.06 PROCESS SUMMARY:

- A. Owner issues Notice of Award to Contractor
- B. Contractor acknowledges the Notice of Award

- C. Within 7 days of acknowledgement, the Contractor submits Application For Permit Transfer/Modification to the MPCA to accept the responsibilities defined in sections 3, 4, 6-22, 24 and applicable requirements for construction activity in Section 23 of the NPDES Permit. Copies of the application shall be sent to the Owner and the Engineer.
- D. The Contractor may then review the SWPPP and propose changes or a new SWPPP to the Engineer for review and comment; and the Owner for approval.
  - 1. During the review and modification period, all work performed on the project shall be in compliance with the original SWPPP, including having copies available on the project site.
  - 2. Once a SWPPP is modified/amended, the Contractor shall distribute new copies to the Owner, the Engineer, the on-site project supervisor and the construction observer.

#### 1.07 ELEMENTS OF TEMPORARY/ PERMANENT EROSION AND SEDIMENT CONTROL

- A. Three distinct elements of temporary/permanent erosion and sediment controls are the responsibility of the Contractor:
  - 1. Erosion Prevention - This requirements purpose is to employ measures to prevent erosion such as soil stabilization practices, permanent cover or construction phasing.
  - 2. Rapid Stabilization – This stabilization process is directed at areas of a critical or unique characteristic to prevent the separation of soil particles from the soil surface. This work may be required at any time during the contract on small areas that may or may not be accessible with normal equipment.
  - 3. Sediment Control –Methods employed to prevent suspended sediment in stormwater from leaving the site (e.g. silt fences, compost logs and storm drain inlet protection)
  - 4. Sediment controls must be installed on the down gradient slope of exposed soils, the up gradient slope of any buffer zones, and all storm water discharge points.

#### 1.08 MINNESOTA POLLUTION CONTROL AGENCY (MPCA) – GENERAL STORM WATER PERMIT FOR CONSTRUCTION ACTIVITY (MN R100001)

- A. The **Owner** has developed a **Storm Water Pollution Prevention Plan (SWPPP)** in accordance with sections 5, 6, and 14-21 (Storm Water Discharge Design Requirements) of the National Pollutant Discharge Elimination System (NPDES)/State Disposal System Permit that is included following this technical specification.
- B. As a condition of the Award, the Contractor shall assume the role of “**Operator**” under the NPDES Permit by submitting an *Application For Permit Transfer/Modification* within 7 days of acknowledging the Notice of Award. Late submittals will not be rejected; however, the MPCA reserves the right to take enforcement for any unpermitted discharges or permit noncompliance for the new registered party that has assumed control of the site.
- C. For **storm water** discharges from construction activities where the **Owner** or **Operator (Contractor)** changes, the new **Owner** or **Operator** can implement the original **SWPPP** created for the project or develop and implement their own **SWPPP**.
- D. **Permittee(s)** shall ensure either directly or through coordination with other **Permittee(s)** that their **SWPPP** meets all terms and conditions of this permit and that their activities do not render ineffective another party’s **erosion prevention and sediment control Best Management Practices (BMP’s)**.
- E. The Contractor shall maintain copies of the SWPPP on the project site at all times and comply with all provisions contained therein.

## **PART 2 PRODUCTS**

### 2.01 TEMPORARY CONSTRUCTION ENTRANCE

- A. Rock Construction Entrance: Conform to the Drawings
  1. Underlying Geotextile: Conform to MnDOT Spec. 3733, Type 4.
  2. Minimum Thickness of Rock Placed: 6 inches

### 2.02 EROSION CONTROL

- A. No exception to the referenced specification

### 2.03 RAPID STABILIZATION

- A. Method 1 – Type 1 mulch @ 2 tons/acre and disc anchoring.
- B. Method 2 – Applying type 3 mulch at a rate of 1.5 ton per acre. 3884, Stabilized Fiber Matrix, placed at a rate of 750 lb per acre.
- C. Method 3 – “Seed mixture 22-111 placed at a rate of 10 lbs/1000 gal. of Slurry Mix 3384, Stabilized Fiber Matrix, Placed at 330 lbs/1000 gal. of slurry mix.
  1. Type 3 slow release fertilizer 10-10-10 placed at a rate of 50 lbs per 1000 gal. of slurry mix.
  2. Water placed at a rate of 875 gal per 1000 gal of slurry mix.
  3. Apply mixture at a rate of 6000 gal per acre.
- D. Method 4 – Category 3 erosion control blanket. (natural net required in plan for permanent blanket)
  1. Seed mixture 22-111 placed at a rate of 2 lbs/100 square yards.
  2. Type 3 Slow Release Fertilizer 10-10-10 placed at a rate of 8 lbs/100 square yards.
- E. Method 5 – Rip Rap Class II.
  1. Geotextile Type III.

### 2.04 SEDIMENT CONTROL DEVICES

- A. “Bale Check” as specified in the referenced specification.
- B. “Silt Fence”:
  1. Heavy Duty, as specified in the referenced specification.
  2. Preassembled, as specified in the referenced specification.
  3. Machine sliced, as specified in the referenced specification.
- C. InfraSafe prefabricated sediment control barriers as manufactured by Royal Environmental Systems, or approved equal. Unless otherwise shown on the plans, barrier devices shall be wrapped in geotextile fabric or surrounded with aggregate to filter the water during periods of limited flow.
- D. Ditch Checks
  1. Type 3 – Bioroll Blanket System
  2. Type 5 – Rock Check

### 2.05 DUST CONTROL

- A. Water clear and free from suspended fine sediment.

## 2.06 TEMPORARY SEED

- A. Conform to Section 32 92 00.
- B. General – Sizing, configuration, capacity, and selection of dewatering sediment capture techniques shall be based on Site and flow conditions. The Contractor shall submit the means and methods for review by the Engineer. Sizing of the sediment capture systems will have to be adjusted such that the ultimate discharge water is not visibly different from the receiving water.

## **PART 3 EXECUTION**

### 3.01 GENERAL

- A. Prior to construction, the Owner, Engineer and Contractor shall observe the existing storm water outfall system and discharge area and shall document the existing conditions.
- B. Upon completion of surface restoration (i.e., paving and turf establishment), the storm water outfall system and discharge area shall be observed, and all increased sediment deposits shall be removed and disposed of by the Contractor.
  - 1. All increases in sediment deposits shall be considered to have originated from the project site.
- C. Prior to construction, the Owner, Engineer and Contractor shall review the project to identify critical areas that could require rapid stabilization during the construction process, and develop a plan to either mitigate disturbance to those areas or identify the methods of rapid stabilization most appropriate.
- D. Exit areas or roads shall be kept clean of excess sediment by routine sweeping.
- E. The Contractor shall salvage, transport and place cohesive materials excavated from the work for use in constructing the berm for temporary sediment traps.
- F. The Contractor shall provide all equipment and materials necessary for the control of dust arising during the performance of the work.
  - 1. Dust shall be controlled so as to not be a nuisance to adjacent property owners or occupants. At times requested by the Engineer or Owner, or at other times as necessary, the Contractor shall take measures to reduce the transport of dust and sediment off-site.
- G. All requirements of MPCA Construction Stormwater Permit shall be followed

### 3.02 CONSTRUCTION REQUIREMENTS

- A. A goal of the project during construction is to get the cleanest water possible into the storm drainage systems as quickly as possible and protect critical and unique areas. Every effort shall be required by the Contractor to achieve these goals.
- B. The Contractor shall control drainage and erosion on the project including haul roads, temporary construction, waste disposal sites, plant and storage locations, and borrow pits, other than commercially operated sources.
  - 1. The Contractor shall clean up the area, shape the area to allow storm runoff with a minimum of erosion and/or siltation, replace topsoil, and establish vegetative cover to the satisfaction of

the Engineer on areas where the potential for pollution has been increased due to the Contractor's operations.

- C. If Contractor fails to install and/or perform the appropriate erosion, rapid stabilization and sediment control practices, as determined by the Engineer, the Engineer may issue a written order to the Contractor.
- D. The Contractor shall respond within 24 hours with sufficient personnel, equipment and/or materials and conduct the required work or be subject to a \$500 per calendar day deduction for non-completion.
- E. When the Engineer determines that the erosion, rapid stabilization and/or sediment control practices installed by the Contractor have failed, the Contractor shall correct the cause and alleviate all sediment deposition, to the fullest extent possible.
  - 1. If the corrective action is not taken in a timely manner, the Engineer may issue a written order to the Contractor.
  - 2. The Contractor shall respond within 24 hours with sufficient personnel, equipment and/or materials and conduct the required work or be subject to a \$500 per calendar day deduction for non-completion.
- F. Unless the project has received approval or certification for depositing fill into surface waters, the Contractor shall remove all deltas and sediment deposited in drainage ways or catch basins and re-stabilize the areas where sediment removal results in exposed soil.
  - 1. The removal and stabilization shall take place within 7 calendar days of discovery unless precluded by legal, regulatory, or physical access restraints.
  - 2. Removal and stabilization must take place within 7 calendar days of obtaining access.
  - 3. The Contractor is responsible for contacting all local, regional, State, and Federal authorities before working in surface waters and obtaining applicable permits.
- G. Where applicable, the Contractor will be required to co-sign for a "General Storm Water Permit" for construction activity with the Minnesota Pollution Control Agency (MPCA).
  - 1. The application form and information is included in the appendix of these specifications. The Owner will initiate the Permit process and pay the required "Application Fee."
  - 2. The Contractor will be required to comply with all of the terms and conditions of the Permit that also includes performing the required inspections of the erosion control devices and maintaining an Inspector's Log for the MPCA Storm Water Permit.
  - 3. A copy of the proposed log form is available from the Engineer.

### 3.03 EROSION CONTROL

- A. Unless precluded by snow cover, all exposed soil areas, including topsoil stockpiles, shall have temporary erosion control or permanent cover for the exposed soil areas within the following time frames (For the purpose of this provision, exposed soil areas do not include surcharge areas or stockpiles of sand, gravel, aggregate, concrete, or bituminous.):

<b>Type of Slope</b>	<b>Temporary Protection or Permanent Cover Where the Area Has Not Been, or Will Not Be, Worked by the Contractor for:</b>
Within 1 mile of special or impaired waters	7 Days
Not within 1 mile of special or impaired waters	14 Days

### 3.04 RAPID STABILIZATION

- A. All exposed soil areas, including topsoil stockpiles, with a continuous positive slope within 100 feet of surface waters, or from a curb, gutter, storm sewer inlet, temporary or permanent drainage ditch, or other storm water conveyance system, shall have rapid stabilization or permanent cover for the exposed soil areas within the following time frames (For the purpose of this provision, exposed soil areas do not include surcharge areas or stockpiles of sand, gravel, aggregate, concrete or bituminous.)
  - 1. Temporary Protection or Permanent Cover Where the Area Has Not Been, or Will Not Be, Worked by the Contractor for 24 hours.
- B. The Engineer may order the work at any time during the contract and will be for small critical areas, which may or may not be accessible with normal equipment. These methods should be used for areas within 200 feet of Waters of the State and to stabilize the critical areas within the timeframe designated in the NPDES permit.
- C. The approximate number of locations requiring rapid stabilization will be indicated in the Plans. The Engineer may adjust the number of location and sequence of the work based on project conditions. Mobilization to each location or groups of locations shall be incidental. The approximate quantities of work per mobilization to the areas requiring rapid stabilization is dependent on method as follows:
- D. Minimum Areas / Quantities for application (approximate)
  - 1. Method 1 – 1-2 acres.
  - 2. Method 2 – 1-2 acres.
  - 3. Method 3 – 4,000 gallons.
  - 4. Method 4 – 200-400 square yards.
  - 5. Method 5 – 10-20 tons.
- E. Placement
  - 1. Shaping of areas that shall be observed by the Engineer prior to placement of any of the rapid stabilization materials.
  - 2. Method 1, Apply type 1 mulch and anchor with disc anchoring. – Prior to placement the soil surface shall be in a loose condition so that the mulch can be anchored. The mulch shall be placed in the areas directed by the Engineer and to obtain approximately 90% ground coverage. Wherever possible the mulch shall be placed by blower equipment and in inaccessible areas may have to be placed by hand. Immediately after placement, the mulch shall be anchored with a disc-anchoring tool per MnDOT specification 2575.C1.
  - 3. Method 2, Apply type 3 mulch and tack it with type 1 hydraulic soil stabilizer. – The same placement procedure applies, as in Method 1 except the mulch shall be sprayed with type 3 hydraulic soil stabilizer at a rate per specification 2575.C. No disc anchoring.
  - 4. Method 3, Hydro spread of seed, fertilizer and hydraulic soil stabilizer. – Rate of slurry application shall be variable depending on surface roughness, slope configuration and degree of undulation. Amount of material applied shall be such to obtain 100% soil surface coverage. To obtain the coverage, two (2) passes may be necessary. In inaccessible areas, the mix may be pumped through a hose.
  - 5. Method 4, Hand install seed, fertilizer and erosion control blanket. – The fertilizer seed and erosion control blanket shall be placed in 2575.3 the upgrade end of each blanket strip shall be buried at least 150mm (6 inches) in a vertical check slot. Staples shall be placed at seams, and throughout the blanket at a maximum spacing of 2 feet.
  - 6. Method 5, Place geotextile and rock in various configurations. – Rock and geotextile shall be placed in the areas and to the configurations directed by the Engineer.

### 3.05 SEDIMENT CONTROL DEVICES

- A. The Contractor shall install Sediment Control Devices where control is required and/or where directed by the Engineer. The control measures as shown on the plans shall be considered the minimum requirements with additional measures required dependent on construction sequencing and scheduling.
- B. Inlet Protection shall be used around catch basins and/or other surface water accesses to any existing or proposed storm water conveyance system.
- C. The Contractor shall take all steps necessary to prevent excess soil erosion of the project. Temporary erosion control devices shall be constructed, maintained and left in place to such time as permanent erosion control measures are in place or instructed to remove them by the Engineer.
- D. The Contractor shall construct temporary sediment traps with stabilized outlets within the disturbed roadway area and shall stockpile a sufficient quantity of suitable fill material to regrade sedimentation ponds and temporary ditches to match the subgrade elevation.
- E. Dust Control
  - 1. Measures may include but not limited to:
    - a. application of a calcium chloride solution in accordance with Mn/DOT Specification 2131 (liquid form only),
    - b. Pick up sweepers (no open brush sweepers),
    - c. Watering source areas of dust,
    - d. Temporary surfacing such as paving, mulching, or sodding source areas
    - e. Use of contractor-installed gravel driveways at accesses to public roadways,
    - f. Washing streets.
  - 2. The Contractor shall provide water tank trucks equipped with water cannon capable of delivering water through either front or rear-mounted nozzles. Tank trucks shall be of sufficient size and mobility and carry a sufficient quantity of water to control dust generated by Contractor's activities.
- F. Rock Construction Entrances
  - 1. Required on all sections of the project where the construction area meets a hard surface street or as directed by the Engineer.
    - a. Contractor will be responsible to maintain rock entrances for the duration of the project or until a gravel driving surface is in place
    - b. Entrances are required be constructed as soon as the street surface has been milled and salvaged
    - c. Entrances to be rebuilt after each phase of utility installation
  - 2. Rock construction entrances shall be installed in areas that allow all residents access to their homes
    - a. Some streets may be blocked off during construction to limit the number of rock entrances required
  - 3. Rock entrances shall be constructed according to the typical sections shown on the plans.

### 3.06 INSPECTION AND MAINTENANCE

- A. The Contractor shall routinely inspect the construction site once every seven (7) days during active construction and within 24 hours of a rainfall event greater than 0.5 inches in a 24 hour period.
- B. All inspections performed during construction must be recorded and records retained with the SWPPP in accordance with the Storm Water Pollution Permit.



- C. Silt fence, erosion control, and other BMP's must be replaced, repaired, or supplemented when they reach 50% design load.
- D. Control dust blowing and movement on Site and roads as directed by Engineer to prevent exposure of soil surfaces, to reduce on and off Site damage, to prevent health hazards, and to improve traffic safety.

### 3.07 FINAL STABILIZATION

- A. The Contractor shall ensure final stabilization of the site. The Contractor shall submit a Notice Of Termination within 30 days after final stabilization is complete.
- B. The Contractor must complete all construction activity and must install permanent cover over all areas prior to submitting the NOT. Vegetative cover must consist of a uniform perennial vegetation with a density of 70 percent of its expected final growth. Vegetation is not required where the function of a specific area dictates no vegetation, such as impervious surfaces or the base of a sand filter.
- C. The contractor must clean the permanent stormwater treatment system of any accumulated sediment and must ensure the system meets all applicable requirements in Section 15 through 19 of the NPDES Permit and is operating as designed.
- D. The Contractor must remove all sediment from conveyance systems prior to submitting the NOT.
- E. The Contractor must remove all temporary synthetic erosion prevention and sediment control BMPs prior to submitting the NOT. The Contractor may leave BMPs designed to decompose on-site in place.

### **END OF SECTION**