

902 –TEMPORARY EROSION AND SEDIMENT CONTROL

SECTION 902

TEMPORARY EROSION AND SEDIMENT CONTROL

902.1 DESCRIPTION

Install, maintain and remove temporary erosion and pollution control devices as required during the construction of the project.

BID ITEMS

Temporary Berm (Set Price)
Temporary Slope Drain
Silt Fence
Biodegradable Log (***)
Synthetic Sediment Barrier
Filter Sock (***)
Temporary Ditch Check (Rock)
Temporary Inlet Sediment Barrier
Temporary Sediment Basin
Temporary Stream Crossing
Sediment Removal (Set Price)
Temporary Fertilizer (**)
Temporary Seed (**)
Soil Erosion Mix
Temporary Seeding
Erosion Control (*)(**)
Mulching (Temporary)
Water (Erosion Control) (Set Price)
Geotextile (Erosion Control)

UNITS

Linear Foot
Linear Foot
Linear Foot
Linear Foot
Linear Foot
Linear Foot
Cubic Yard
Each
Cubic Yard
Each
Cubic Yard
Pound
Pound
Pound
Lump Sum
Square Yard
Ton
M Gallon
Square Yard

* Class

** Type

*** Size

902.2 MATERIALS

Provide erosion control devices, sediment barriers, fertilizers, seeds, soil erosion mix, erosion control materials and mulch that comply with **DIVISION 2100**.

Provide aggregate that complies with aggregate ditch lining, $D_{50} = 6$ inches, **DIVISION 1100**. Existing aggregate from the project may be used under this specification, provided all applicable physical requirements are met.

Provide water for erosion control that complies with **DIVISION 2400**.

Provide geotextile (erosion control) that complies with **DIVISION 1700** for separation geotextile.

Provide metal pipe, plastic pipe or flexible rubber pipe for temporary slope drains. The Engineer will accept the material for temporary slope drain based on the condition of the pipe and visual inspection of the installed drain.

902.3 CONSTRUCTION REQUIREMENTS

a. General. If the contract does not include temporary erosion and sediment control bid items, and such work is required, items will be added as provided for in **SECTION 104**.

Use [KDOT's Temporary Erosion Control Manual](#) and standard plan sheets or approved alternate reference documents as a guide for the design, installation and maintenance of temporary erosion and sediment control best management practices (BMPs.).

Alternate BMP references include:

- EPA – Stormwater Menu of BMP:
(<http://water.epa.gov/polwaste/npdes/swbmp/Construction-Site-Stormwater-Run-Off-Control.cfm>)
- Mn/DOT – Erosion and Sediment Control Pocketbook Guide:

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(<http://www.dot.state.mn.us/environment/erosion/pdf/2006mndotecfieldhandbook.pdf>)

- NDOR – Construction Stormwater Pocket Guide:
(<http://www.transportation.nebraska.gov/environment/guides/Const-Strmwtr-Pocket%20Guide.pdf>)
- Additional reference material available on KDOT’s internet website:
(<http://www.ksdot.org/bureaus/burconsmain/Connections/swppp.asp>).

b. Temporary Berms. Use temporary berms to divert storm runoff to stabilized slopes or temporary slope drains. Construct temporary berms as shown in the Contract Documents. Compact the berms until no further consolidation is observed, using a dozer track, grader wheel or other equipment.

c. Temporary Slope Drains. Use temporary slope drains to carry storm runoff down fill slopes and cut backslopes. Construct the temporary slope drains as shown in the Contract Documents.

d. Silt Fence. Install silt fence for slope barriers or ditch checks as shown in the SWPPP. When conditions warrant, supplement the temporary silt fence with a support fence. Reduce the post spacing and drive the posts further in the ground in low and soft, swampy areas. Remove and dispose of sediment deposits when the deposit approaches $\frac{1}{3}$ the height of the silt fence.

Dispose of sediment on the project at locations approved by the Engineer. When necessary, stabilize the material as directed by the Engineer.

e. Biodegradable Logs. Install biodegradable logs for slope barriers or ditch checks as shown in the SWPPP. Remove and dispose of sediment deposits when the deposit approaches $\frac{1}{2}$ the height of the biodegradable log.

Do not use straw logs for ditch checks or inlet sediment barriers.

Dispose of sediment on the project at locations approved by the Engineer. When necessary, stabilize the material as directed by the Engineer.

f. Synthetic Sediment Barriers. Install synthetic sediment barriers for slope barriers or ditch checks as shown in the SWPPP. Remove and dispose of sediment deposits when the deposit approaches $\frac{1}{2}$ the height of the barrier.

Dispose of sediment on the project at locations approved by the Engineer. When necessary, stabilize the material as directed by the Engineer.

g. Filter Sock. Install filter socks with approved filler as shown in the SWPPP. Use coarse aggregate filler for protection of curb and gutter inlets.

h. Temporary Ditch Check (Rock). Use rock to construct temporary rock ditch checks as shown in the SWPPP or the Contract Documents. When deposits reach approximately $\frac{1}{2}$ the height of the temporary rock ditch check, remove and dispose of the accumulated sediment.

Dispose of sediment on the project at locations approved by the Engineer. When necessary, stabilize the material as directed by the Engineer.

i. Temporary Inlet Sediment Barrier. Use any of the materials listed in the Contract Documents or the SWPPP to construct temporary inlet sediment barriers. Prefabricated protection devices or alternative systems may be used with the Engineer’s approval. Provide the Engineer with a complete description, literature, test reports, etc. on the proposed system. Submit this information with the SWPPP documents for approval under **subsection 901.3.c.**

When temporary silt fence is used, reduce post spacing and drive the posts further into the ground in low and soft, swampy areas. Remove and dispose of the sediment when deposits reach approximately $\frac{1}{3}$ the height of the silt fence.

When synthetic sediment barriers are used, remove and dispose of the sediment when deposits reach approximately $\frac{1}{2}$ the height of the barrier.

Dispose of sediment on the project at locations approved by the Engineer. When necessary, stabilize the material as directed by the Engineer.

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j. Temporary Sediment Basins. Before constructing a temporary sediment basin, clear the area of all vegetation. Construct the temporary sediment basin with a wide cross-section and a minimum grade, as shown in the Contract Documents. Dispose of excess excavated material.

Remove and dispose of the accumulated sediment when deposits reach approximately 20% of the basin capacity.

Dispose of sediment on the project at locations approved by the Engineer. When necessary, stabilize the material as directed by the Engineer.

k. Temporary Stream Crossing.

(1) General. When the Contractor's operations require a temporary stream crossing, and one is not shown in the Contract Documents, the Contractor may install the crossing at no cost to KDOT. Comply with all applicable rules and regulations, obtain all required permits and provide copies of all permits to the Field Engineer. An unanticipated stream crossing may require a permit from the Corps of Engineers if work is performed within Waters of the U.S. and/or a stream obstruction permit from the Kansas Department of Agriculture if the crossing is in a designated stream.

Before beginning work in the streambed, record existing stream channel elevations.

Construct temporary stream crossings as shown in the Contract Documents or the SWPPP.

Place 1 pipe buried 6 inches into the stream bottom, in the lowest point of the channel to allow the passage of aquatic organisms, with additional pipes placed along the remainder of the stream channel bottom such that ordinary high water (OHW) flows designated in the Contract Documents shall flow through the pipes without overtopping the crossing. If the OHW is not designated in the Contract Documents, the Engineer will determine the OHW. The OHW means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Submit to the Engineer for review and approval, the design flow calculations to determine the number and diameter of pipes required. A minimum 12 inch diameter pipe is required.

Place pipes parallel to flow.

Cover pipes with a minimum of 12 inches of clean aggregate fill.

Dispose of sediment on the project at locations approved by the Engineer. When necessary, stabilize the material as directed by the Engineer.

(2) Maintenance. At a minimum, perform weekly inspections to verify that drift and debris are not blocking the flow of water through the pipes. Perform additional inspections, as needed. Remove drift and debris when blockage occurs. Repair eroded areas, if necessary, to prevent washout and allow passage of flows.

(3) Removal. Remove the temporary crossing and all materials as soon as no longer needed. Restore the disturbed bed and bank area of the stream channel to its pre-existing elevations.

l. Temporary Fertilizer, Seed and Mulch. Repair any rills, gullies or other erosion damage prior to seeding. Prepare the seedbed, fertilize, seed and mulch according to **DIVISION 900**. Apply the temporary fertilizer, seed and mulch at the rates shown in the Contract Documents. Apply water to seeded and mulched areas when approved by the Stormwater Compliance Engineer or Local Public Authority to promote the establishment of vegetation in critical areas.

m. Soil Erosion Mix. Prepare the seedbed, fertilize and seed according to **DIVISION 900**. Lightly hand rake broadcasted seed before placement of the erosion control.

Only use the soil erosion mix under Erosion Control (Class 1) or Erosion Control (Class 2).

There are no seasonal placement limitations for the soil erosion mix.

n. Temporary Seeding. "Temporary Seeding" is to be used only if the project has less than 1 acre of erodible surface. If this item is used: fertilize, seed, and mulch all exposed erodible earth.

Prepare the seedbed, fertilize, seed and mulch according to **DIVISION 900**. Apply the temporary fertilizer, seed and mulch at the rates shown in the Contract Documents.

o. Erosion Control. After seeding according to **DIVISION 900**, install erosion control according to the manufacturer's requirements for edge and junction overlaps, staple size and staple pattern. Installation areas shall be free of erosion rills, rocks, clods or other debris that may cause "tenting" or otherwise inhibit uniform contact.

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When shown in the plans, install erosion control materials within the time allowed for temporary stabilization under **subsection 901.3b**.

Use Erosion Control materials for the stabilization of all steep slopes (2 ½:1 or steeper) where construction activities have permanently or temporarily ceased and will not resume for a period exceeding 7 calendar days

(1) Areas with Erosion Control (Class 1). Place the Erosion Control (Class 1) on slopes according to the SWPPP. Do not mulch over the Erosion Control (Class 1).

(2) Areas with Erosion Control (Class 2). Place the Erosion Control (Class 2) in channels, ditches or areas of concentrated flow according to the SWPPP.

Do not cover erosion control materials with soil or mulch unless recommended by the manufacturer and approved by the Engineer.

Apply water to completed erosion control installations when approved by the Stormwater Compliance Engineer or Local Public Authority to promote the establishment of vegetation in critical areas.

p. Geotextile (Erosion Control). Install geotextile (erosion control) as a temporary measure to protect steep slopes and other areas where timely installation of the permanent (aggregate or concrete) slope protection is impractical. The installation area should be free of rills, rocks, clods or other debris. Secure geotextile to the ground with staples or other similarly effective methods to achieve uniform contact with minimal "tenting."

Remove geotextile prior to placement of the permanent slope protection.

Install geotextile (erosion control) as a temporary measure to protect temporary slopes, soil stockpiles and other areas where mulching or other means of stabilization is impractical. Preparation of the slopes and the method of securing the fabric shall be as approved by the Engineer.

q. Maintenance and Removal of Temporary Erosion and Pollution Control Devices. Maintain the effectiveness of the temporary erosion and pollution control devices as long as required to contain sediment runoff. Monitor temporary erosion and pollution control devices daily.

Remove the temporary devices according to the SWPPP or when directed by the Engineer. After removing the temporary erosion and pollution control devices, remove and dispose of the silt accumulation. Grade, fertilize, seed and mulch any bare areas.

When temporary erosion and pollution control devices are installed according to the Contract Documents, SWPPP, or as approved by the Engineer and such devices are no longer effective because of deterioration or functional incapacity, payment will be made for replacement of these devices, as directed by the Engineer. No payment will be made for replacing temporary erosion control devices that become ineffective because of improper installation, lack of maintenance or the Contractor's failure to pursue timely installation of permanent erosion control devices according to the Contract Documents.

902.4 MEASUREMENT AND PAYMENT

The Engineer will measure temporary berms, temporary slope drains, silt fence, biodegradable logs, synthetic sediment barriers, and filter sock by the linear foot. The Engineer will measure the top of the device from point to point or each bend/turn in the device, add them together from beginning to end to come up with the total liner feet per device. The length installed up side slopes beyond a point level from the top of the device in the ditch bottom will not be measured for payment.

The Engineer will measure temporary rock ditch checks by the cubic yard.

The Engineer will measure each temporary inlet sediment barrier.

The Engineer will measure each temporary stream crossing when shown as a bid item in the contract.

The Engineer will measure temporary sediment basins by the cubic yard excavated to construct the basin.

The Engineer will measure sediment removal by the cubic yard of sediment removed. If the quantity of sediment removal is approximately 50 cubic yards or greater in one location, the Engineer may pay for sediment removal by force account (**SECTION 109**) rather than paying the contract set price for the bid item "Sediment Removal". Whether paid as a set price or by force account, the Engineer will not pay for a quantity or cost that is incurred because of the Contractor's failure to install seed timely or failure to remove sediment timely as **SECTION 901** requires.

The Engineer will measure temporary fertilizer, temporary seed and soil erosion mix by the pound.

The Engineer will measure "Temporary Seeding" as a lump sum; no measurement of area is made.

The Engineer will measure erosion control by the square yard.

The Engineer will measure temporary mulching by the ton.

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The Engineer will measure water used for establishment of vegetation by the M Gallon using calibrated tanks or meters.

The Engineer will measure geotextile (erosion control) by the square yard.

Payment for the various items of temporary erosion and pollution control is full compensation for the specified work. Contract unit prices will govern regardless of overruns or underruns of the estimated quantity unless specifically stated otherwise.

Payment for "Sediment Removal (Set Price)" at the contract set unit prices is full compensation for the specified work.

The Engineer will not measure for separate payment any erosion control devices or seeding installed in Contractor-Furnished borrows and waste locations or plant site locations outside the project limits.