

SECTION 37
CONSTRUCTION EROSION
CONTROL

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STANDARD CONSTRUCTION SPECIFICATIONS

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37.00 SCOPE OF WORK

Furnish all labor, materials, and equipment required for erecting, maintaining and removing temporary and permanent erosion and sedimentation controls as shown on the drawings and as specified herein.

Permanent erosion and sediment controls include, but are not limited to, sodding, seeding, mulching, watering, and reseeding of all disturbed surfaces, including waste, stockpile, borrow, staging, and storage area surfaces. Work shall be scheduled to minimize erosion. Interceptors shall be provided at locations that will ensure that erosion during construction will be either eliminated or maintained within acceptable limits.

Temporary sedimentation controls include, but are not limited to; silt dams, traps, barriers, diversion structures and appurtenances at the foot of sloped surfaces which will ensure that sedimentation pollution will be either eliminated or maintained within acceptable limits.

The CONTRACTOR is responsible for providing and maintaining effective temporary erosion and sediment control measures during construction or until final controls become effective. The CITY ENGINEER or authorized representative will determine whether the controls are properly utilized.

The CONTRACTOR shall be responsible for placement and maintenance of erosion and sedimentation controls. During construction, the CONTRACTOR shall place controls in locations required by the Erosion and Sediment Control Plans and SWPPP or other sections of the construction documents. If during the course of construction the CITY ENGINEER or authorized representative determines additional controls are required, the CONTRACTOR shall furnish, install and maintain additional controls to control erosion and sedimentation to the satisfaction of the CITY ENGINEER or authorized representative. Additional erosion control measures not included in the construction documents shall be paid for at unit bid prices. If specific unit bid price is not identified in the bid or specification the items will be paid for at negotiated prices.

All procedures and requirements contained in the SWPPP documents apply to all general and subcontractors onsite. It is the responsibility of the General contractor to implement, inform, require, and enforce all aspects and procedures of the SWPPP be followed.

The CONTRACTOR shall implement erosion control measures as may be required by local, state and federal agencies, whether included in the construction documents or not. Additional erosion control measures not included in the construction documents shall be paid for at unit bid prices. If specific unit bid price is not identified in the bid or specification the items will be paid for at negotiated prices.

37.10 GENERAL

Temporary measures shall be applied throughout the construction period to control and to minimize sediment discharge to adjacent properties and waterways. Such measures shall include, but not be limited to, the use of berms, gravel or crushed

stone, mulch, slope drains, check dams, water bars, silt fence and other methods. These temporary measures shall be applied to erodible material exposed by any activity associated with the construction of the project and shall be implemented according to the Storm Water Pollution Prevention Plan (SWPPP). The appropriate combination of Best Management Practices (BMPs) will be used at all development areas until construction is complete and all bare soil is stabilized with perennial vegetation or impervious cover. Some of the common BMPs may not be appropriate for all areas of construction.

Erosion control systems shall be located as required by the SWPPP, erosion control plan, and specifications, and/or as designated by the ENGINEER or authorized representative. All items included within this section will be considered incidental to the project unless otherwise noted.

37.20 MATERIALS

Erosion and Sediment control products shall be in compliance with the current NDOR Approved Products List developed by the Roadside Stabilization Unit or otherwise approved by the CITY ENGINEER or authorized representative.

The City of Kearney recognizes that new products can become available throughout the year. Any new or proposed products shall be reviewed and approved by the City Engineer prior to their use.

37.30 CONSTRUCTION METHODS

All erosion and sediment control or related products should be installed in accordance with the manufactures requirements and the City of Kearney specifications.

37.31 STORM WATER POLLUTION PREVENTION PLAN (SWPPP) and NDEQ PERMITTING:

A. Storm Water Pollution Prevention Plan (SWPPP) - The NDEQ General Permit requires all dischargers where construction activity disturbs one acre or more, to develop and implement a Storm Water Pollution Prevention Plan (SWPPP) which specifies Best Management Practices (BMPs) that will reduce all construction pollutants from contacting stormwater and with the intent of keeping all products of erosion from moving off site into receiving waters. It should be understood that the intent of the SWPPP is to address as many known issues, and anticipated control needs as possible. However, the SWPPP shall be considered a working document and one that will be changing and updated as site conditions warrant.

B. Responsibilities and Duties - The developer/owner will be required to follow NDEQ regulations to obtain all required permitting. It will also be the responsibility of the Owner to develop a SWPPP, implement a SWPPP, maintain the SWPPP, and close out all state permits. The requirements outlined by the NDEQ under the NPDES programs will be the responsibility of the developer/owner. Contractors and subcontractors working on state permitted construction projects will be responsible for following all requirements of the Storm Water Pollution Prevention Plan (SWPPP) and all requirements of the NDEQ General NPDES Permit Number NER110000 for Storm Water Discharges from

Construction Sites to Waters of the State of Nebraska. A copy of the CSW-NOI must be submitted to the City of Kearney, Public Works Department.

The Owner of any construction project must identify a SWPPP Coordinator that will be responsible for all reporting, maintenance, inspection, and modifications to the SWPPP. This individual will help ensure compliance with state permitting requirements. This will also be the individual that will be contacted to view the SWPPP and with any stormwater concerns.

General Contractors will be required to sign the SWPPP documents in conjunction with the contract documents to ensure all parties are aware of the shared responsibilities of the SWPPP.

All developments one acre and larger, or less than one acre but part of a large common plan of development are responsible for obtaining and complying with all State of Nebraska stormwater related permits. For application requirements see NDEQ permit NER110000.

37.32 LOCATION OF STORM WATER POLLUTION PREVENTION PLAN (SWPPP) - The CONTRACTOR will be responsible for providing a secure, watertight location to be used as the central storage area for all documentation related to the SWPPP. The contractor will be responsible for posting required signage and information in accordance with the Construction Storm Water General Permit NER110000 Part III, Section K, Paragraph 2a-2b.

A copy of the SWPPP (including a copy of the permit), CSW-NOI, and the letter from NDEQ notifying you of the receipt of the complete and accurate CSW-NOI must be retained at the construction site or other location easily accessible during normal business hours.

37.33 STABILIZATION PRACTICES FOR DISTURBED LAND - Stabilization Practices for Disturbed Land - Preserve existing vegetation where possible and revegetate disturbed areas as soon as practical after grading.

1. Except as provided below, stabilization measures must be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased.
 - i. Where stabilization by the 14th day is precluded by snow cover or frozen ground conditions, stabilization measures must be initiated as soon as practicable.
 - ii. Where construction activity on a portion of the site is temporarily ceased, and earth disturbing activities will be resumed within 14 days, temporary seeding stabilization measures do not have to be initiated on that portion of the site.
 - iii. In areas where restrictions are placed on planting times due to the drought season and initiating perennial vegetative stabilization measures are not currently allowed per these specifications within 14 days after construction activity has temporarily or permanently ceased, temporary stabilization methods shall be used and final vegetative stabilization measures must be initiated as soon as practicable.

2. Stabilize all inactive disturbed land in riparian areas within seventy- two (72) hours.
3. Stabilize areas within 14 days after final grading on any portion of the site.
4. Stabilize areas in accordance with the erosion and sediment control documents and these specifications.

37.34 STOCKPILES, SIDE CASTING, AND STORAGE OF CONSTRUCTION

MATERIALS - Whenever possible, store construction and side-cast material away from and outside riparian areas. Locate temporary stockpile area where exposed soils and runoff will have minimal or no impact on surface water(s). All stockpile/storage areas shall be properly selected and protected with a secure silt fence properly installed and maintained to minimize impact to the surface water(s) or by measures describe in the SWPPP documents.

Structural practices shall be used to control erosion and trap sediment from all stockpile areas remaining disturbed for more than 14 days. Structural practices shall be functional throughout earth disturbing activity until area is restabilized. Structural practices shall be implemented as the first step of grading and within 7 days from the start of construction. Acceptable structural practices will be found on the erosion and sediment control plans and within the SWPPP documents.

1. Use sediment barriers to protect adjacent properties and water resources from sediment transported by sheet flow (i.e. properly designed, placed and maintain erosion and sediment control BMPs).
2. Prevent sediment from entering storm drain systems.
3. Divert runoff from disturbed areas and steep slopes.
4. Stabilize channels and outfalls from erosive flows according to the erosion and sediment control plans.
5. All stockpile areas remaining disturbed for more than 14 days must follow temporary seeding requirements, unless otherwise protected by approved methods.

37.35 STABILIZATION PRACTICES - Disturbed portions of the site where construction activity permanently ceases shall be final graded and stabilized with permanent vegetation, no more than 14 days after the construction activity has ceased. Permanent stabilization shall be done as the project progresses in a phased manner and in accordance with SWPPP documents.

37.36 SEEDING AND SODDING: - Seeding and sodding for erosion control shall be in accordance with the materials and requirement of Chapter 33 and this chapter.

37.37 STRUCTURAL PRACTICES

A. Silt Fence - Silt fence should only be installed on the contour, never down slope. Silt fence should be installed in accordance with the City of Kearney standard details. Where two sections of silt fence meet, overlap the two sections and roll splice them together. Erosion control products should always be installed in accordance with the manufacturer's instructions and specifications, and properly inspected and maintained. Silt fence should be installed where sheet flow runoff can be stored behind the barrier without damaging the barrier or the submerged area behind the barrier. Silt fence should not be installed across streams, waterways, or other

concentrated flow areas. All silt fence must be installed in accordance with the City of Kearney standard detail.

B. Construction Specifications - Silt fence should be placed on the contour. On slopes with grades greater than 7%, the silt fence should be located at least 5 to 7 feet beyond the base. Turn the ends of the silt fence upslope in a “J” hook pattern so that a certain depth of stormwater may be retained in front of the silt fence. The impounded depth should be at least 12 inches, but no more than the height of the silt fence. The bottom edge of silt fence must be entrenched and backfilled to be effective.

The silt fence should be purchased in a continuous roll cut to the length of the barrier to avoid the use of joints. When joints are unavoidable, filter cloth should be spliced together only at a supporting post, with a minimum 18-inch overlap, and securely sealed.

C. Silt Fence Maintenance - Sediment should be removed once it has accumulated to one-half the original height of the barrier. Filter fabric should be replaced whenever it has deteriorated to such an extent that the effectiveness of the fabric is reduced. Silt fence should remain in place until disturbed areas have been permanently stabilized. All sediment accumulated at the fence should be removed and properly disposed of before the fence is removed.

D. Removal of Silt Fence - Some silt fencing may be considered temporary which will allow it to be removed before the contractor leaves the project. During final site inspection the contractor will be informed of what fencing needs to be left in-place and what fencing may be removed.

E. Temporary Sediment Trap - Sediment should be periodically removed from the trap to maintain the required volume. Sediment from sediment traps or sedimentation ponds must be removed when design capacity has been reduced by 50 percent. Sediment traps must be removed after the contributing drainage area is stabilized. Inspection of temporary sediment traps should be performed according to the Storm Water Pollution Prevention Plan.

F. Rolled Erosion Control Products (RECP) s - RECPs will be installed as indicated on the construction plans. RECPs will be firmly anchored by means of trenching, anchor slots, stakes and/or staples. RECPs should always be installed and anchored according to the manufacturer’s instructions and detailed specifications.

G. Storm Drain Inlet Protection – Placing barriers in front of an inlet should only occur when “sump” conditions exist. Blocking an inlet located on a continuous grade may divert runoff around an inlet and cause downstream flooding. Curb and gutter containment may be used when inlet is located on a grade. A gap must exist between the barriers and curb in front of the opening. Be aware of runoff entering an inlet from behind the structure. Inlet protection may be constructed on natural ground surface, on an excavated surface, or on machine compacted fill. The appropriate type of inlet protection will be chosen by the engineer and called out on the erosion and sediment control plan. Inspections of erosion control measures should be made before anticipated storm events and within 24 hours after storm events.

H. Off- Site Vehicle Tracking - Stabilized construction entrances will be provided to help reduce offsite vehicle tracking of sediments. Construction entrances

should be made of non-erodible material, typically rock of 2" diameter (do not use river rock or other smooth rock). The paved street adjacent to the site entrances will be swept regularly to remove any access mud, dirt or rock tracked from the site. The exit should be located wherever traffic will be leaving a construction site directly onto a public roadway. Dump trucks that haul material from the construction site will be covered by a tarpaulin. Exit shall be installed in accordance with the City of Kearney standard details.

I. Washing - If the action of the vehicle traveling over the gravel pad does not sufficiently remove the material, the tires should be washed prior to exit onto public roadways. When washing is required, the wash rack should be designed for the anticipated traffic loads and placed on level ground, on a pad of coarse aggregate. The wash rack design may consist of other materials suitable for truck traffic that remove mud and dirt. The wash rack should have provisions that intercept the sediment-laden runoff and direct it into a sediment trap or sediment basin.

J. Entrance/Exit Maintenance - The exit should be maintained in a condition that will prevent tracking or flow of material onto public rights-of-way. This may require periodic top dressing with fresh stone, as conditions demand, and repair and/or cleanout of any structures to trap sediment. All materials spilled, dropped, washed, or tracked from vehicles or site onto roadways or into storm drains must be removed immediately.

K. Concrete Washout - Concrete washout areas must be designated on the construction drawings. The Contractor will be responsible for designating the concrete washout areas. The contractor will also be responsible for constructing the containment area for the washout, and the removal of all wash materials at the completion of the project. All concrete wash material must be contained and disposed of properly.

L. Erosion Control Maintenance - The contractor shall perform inspection of the BMP application. The appointed SWPPP Coordinator will perform regularly scheduled erosion and sediment control inspections as stated in the SWPPP. Any areas that have washed out due to high stormwater flows should be reconsidered for different BMP use, or at least retreated. Areas that have been disturbed by blowing wind should be retreated. Maintenance needs identified in inspections or by other means shall be accomplished before the next storm event if possible, but in no case more than seven days after the need is identified. All control measures must be properly selected, installed, and maintained in accordance with any relevant manufacturer specifications and good engineering practices. If periodic inspections or other information indicates a control has been used inappropriately, or incorrectly, the Engineer or representative must modify the control for site situations as soon as practicable.

M. General BMP Maintenance - Maintenance needs identified in inspections or by other means should be accomplished before the next storm event if possible, but in no case more than 48 hours after the need is identified. Sediment must be removed from all BMPs after every rain storm, but no later than once ½ the capacity of the BMP is reached. All BMP maintenance shall be done in accordance with the SWPPP documents and all manufactures recommendations.

37.40 OTHER CONTROLS

A. Waste Disposal - No solid or liquid waste shall be disposed of on-site or discharged in storm water runoff. The contractor will be required to provide the proper disposal containment unit to the project. The containment unit (i.e. covered dumpster, dump truck with tarp) must be maintained by the contractor in order to prevent waste from leaving the project site.

B. Portable Sanitary Facilities - All sanitary facilities must be secured in place by means of tie downs, or adequate weight to hold them in a fixed upright position as to prevent the discharge sanitary waste onto the ground. All portable sanitary facility practices must comply with applicable state and local waste disposal, sanitary sewer or septic system regulation. Locate all portable sanitary facilities as far from watercourses and drainage structures as possible, but at no time shall they be placed within 10' of the curb and gutter.

37.41 TIMING OF CONTROLS/MEASURES

Construction entrances will be constructed and stabilized prior to clearing or grading of any other portion of the site, when called for in the erosion control plans or the SWPPP. Temporary structural controls will also be installed throughout the project prior to the commencement of site disturbance for construction. Areas where construction activity temporarily ceases for more than 14 days will be stabilized with temporary controls, as approved by the CITY ENGINEER. Once construction activity ceases permanently in an area, that area shall be stabilized with permanent seeding and erosion control blankets as directed in the plans. After the entire site is stabilized, any sediment that has accumulated will be removed and embankments re-seeded as necessary. After all permanent stabilization measures have been completed, temporary structural measures will be removed and any disturbed areas will be repaired.

37.42 MAINTENANCE AND INSPECTION PROCEDURES

A. Erosion and Sediment Control Inspection and Maintenance Practices - SWPPP site inspections will include all areas of the site disturbed by construction activity and areas used for storage of materials that are exposed to precipitation. Inspectors will look for evidence of, or the potential for, pollutants entering the storm water conveyance system. Erosion and sediment control measures identified in the SWPPP must be observed to ensure proper operation. Discharge locations must be inspected to ascertain whether control measures are effective in preventing significant impacts to waters of the state, where accessible. Where discharge locations are inaccessible, nearby downstream locations must be inspected to the extent that such inspections are practicable. Locations where vehicles enter or exit the site must be inspected for evidence of off-site sediment tracking.

1. All control measures will be inspected at least once every 14 days or following a rain event of 0.5" and greater as detailed in the SWPPP.
2. All measures will be maintained in good working order; if a repair is necessary, it shall be initiated within 48 hours of the report.
3. Maintenance to all structural erosion and sediment control BMP's will be done in accordance with Section 37.37, manufacture requirements and all Detailed Specifications.

4. Temporary and permanent landscaping, sodding and /or seeding and mulching will be inspected for bare spots, washouts and healthy growth.
5. Inspect riprap outlet structures after rainfall exceeding 0.5 inches to see if any erosion around or below the riprap has taken place or if stones have been dislodged. Immediately make all needed repairs to prevent further damage.
6. The owner shall designate personnel know as the SWPPP Coordinator who will be responsible for inspections, maintenance and repair activities, and for filling out the inspection and maintenance report. These personnel shall be qualified in all inspection and maintenance practices necessary for keeping the erosion and sediment controls used onsite in good working order. Responsibility for all areas of erosion and sediment control will be located in the SWPPP.

B. Allowable Non- Storm Water Discharges –You are authorized for the following non-storm water discharges.

1. Discharges from fire-fighting activities;
2. Fire hydrant flushing;
3. Water used to wash vehicles where detergents are not used;
4. Water used to control dust;
5. Potable water including uncontaminated water line flushing;
6. Routine external building wash down that does not use detergents;
7. Pavement wash waters where spills or leaks of toxic or hazardous material have not occurred (unless all spilled material has been removed) and where detergents are not used;
8. Uncontaminated air conditioning or compressor condensate;
9. Uncontaminated ground water or spring water;
10. Foundation or footing drains where flows are not contaminated with process materials such as solvents; and
11. Landscape irrigation.

37.43 TIMELY REPAIRS BY CONTRACTOR - The general contractor will have forty-eight (48) hours to complete repairs and/or additions to any stormwater BMP. Preceding inspections done by the Stormwater Program Manager or appointed representative the contractor will be informed of any maintenance or additional sediment controls that may require repair or installation. Any delay in the replacement or maintenance of nonfunctional BMPs beyond seven (7) calendar days shall be documented in the SWPPP with sufficient detail as to explain the reason for the delay.

37.44 SPILL PREVENTION

A. Material Management Practices - The following material management practices will be used to reduce the risk of spills or other accidental exposure of materials and substance to storm water runoff.

1. Only enough products required for the job will be stored onsite.
2. All materials stored onsite will be in a neat and orderly manner in their appropriate containers and, if possible, under a roof or other enclosure.
3. Products will be kept in their original containers with original manufacturer's label.
4. Substances will not be mixed with one another unless recommended by the manufacturer.
5. All of a product will be used up before disposing of container whenever possible.
6. Manufacturer's recommendations for proper use and disposal will be followed.

7. The site superintendent will be responsible for assuring the proper use, storage and disposal practices are followed.
8. All fuels, oils, and liquid chemicals will be stored in a designated area. This area will be located in an area least likely to allow release of stored chemicals. All materials stored onsite will be surrounded with proper double containment systems.

B. Inventory for Pollution Prevention Plan - The materials or substances expected to be present onsite during construction will be listed in the SWPPP, along with Best Management Practices to address them. The general contractor must provide this list to be added to the SWPPP.

C. Spill Prevention Control Practices

1. Manufacturer's recommended methods for spill cleanup will be clearly posted by the contractor using materials and site personnel will be made aware of the procedures and the location of the information and cleanup supplies.
2. Materials and equipment necessary for spill cleanup will be kept onsite.
3. All spills will be cleaned up immediately after discovery.
4. The spill area will be kept ventilated & personnel will wear appropriate protective clothing.
5. The contractor, who is responsible for the day- to- day onsite construction operations, will be responsible for spill prevention and cleanup and will assign other personnel as needed. It will be the contractor's responsibility to implement the proper spill prevention plan and keep up to date with all training, reporting, and associated practices. All significant spills must be reported to the Stormwater Pollution Prevention Manager.
6. The contractor must submit a spill prevention plan for all materials to be used during construction to the City of Kearney. The plan must include procedures to be used in the event of a spill. All employees must be made aware of spill prevention procedures. All parts of the spill prevention implementation, training, and reporting will be the responsibility of the contractor and considered incidental to the project. The spill prevention plan will be submitted prior to the issuance of the Notice To Proceed.
7. The Spill Prevention Plan will be adjusted to include measures to prevent a particular type of spill from re-occurring. A description of each spill, what caused it, and the cleanup measures will be included.

37.90 MEASUREMENT AND PAYMENT

A. Measurement and payment - The following methods of measurement and payment to the Contractor will be used on all projects Owned and let by the City of Kearney unless otherwise specified in the Detailed Specifications. Items not specifically listed in the Bid or defined by this specification shall be considered subsidiary to construction and direct payment will not be made for these items.

B Silt fence, sediment logs, temporary berms, temporary diversions, and temporary culvert pipe - Measurement and payment for silt fence, sediment logs, temporary berms, temporary diversions, and temporary culvert pipe will be measured by length in lineal feet constructed and accepted. Payment will include full compensation for furnishing materials, installation, maintenance, removal and disposal.

C. Erosion control bales, silt checks and inlet protection structures -

Measurement for payment of erosion control bales, silt check dams and inlet protection structures will be by the unit constructed and accepted. The unit cost will include installation, maintenance and removal of the BMP.

D. Sediment traps and sediment basins -

Sediment traps and sediment basins will not be measured for payment but will be paid for on a lump sum basis. Payment will include all work associated with excavation and embankment required to construct sediment traps and sediment basins. Payment will include full compensation for furnishing materials, installation, maintenance, removal and disposal.

E. Rolled Erosion Control Products -

Measurement for payment of Rolled Erosion Control Products will be by the square yard. The quantity of RECP will be determined by the square yard from actual slope measurement of the area covered by the erosion control blanket. Payment will include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing RECP blankets, complete in place, including furnishing and applying pure live seed, commercial fertilizer, and the materials for the erosion control blanket, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

F. Time of Payment for Erosion Control Items -

Progress payment for erosion control measures will be as follows: (1) 75 percent of the unit price for each item will be paid upon installation and approval; and (2) 25 percent of the unit price for each item will be paid when the temporary erosion control measures are removed from the project.

G. Failure to perform -

In the case of repeated failures on the part of the Contractor in controlling erosion, sedimentation, maintenance to BMP's or water pollution, the City Engineer reserves the right to employ outside assistance or to use City forces to provide the necessary corrective measures. Such incurred direct costs, plus project engineering costs, will be charged to the Contractor, and appropriate deduction will be made from the Contractor's monthly progress estimate.