SECTION - 800

EROSION CONTROL

And

SEDIMENT PREVENTION

800 – EROSION CONTROL and SEDIMENT PREVENTION

810.00.00 – General

810.01.01 – Description

All construction sites of any size, included but not limited to, commercial or residential developments, lot(s), utilities, streets, or other types of construction related activities that may produce any soil erosion, sediments or other undesirable substances shall implement and maintain erosion and sedimentation prevention best management practices for preventing and minimizing such erosion, or sedimentation that may adversely affect storm water quality and adjacent property.

This work consists of installation, maintenance and removal of erosion and sediment prevention measures such as berms, dikes, swales, weirs, dams, sediment traps, sediment basins, erosion matting, temporary and permanent seeding, sodding, temporary and permanent mulching, slope drains, sediment fences and other sediment barriers, gravel construction accesses used to prevent erosion and off-site sedimentation.

No construction work may proceed until the Public Works Department has issued an "Erosion Prevention Permit" in combination with a "Public Works Construction Permit".

810.10.01 – References

Oregon Administrative Rules (OAR) and Oregon Revised Statutes (ORS) current standards and revisions as may apply to Erosion and Sediment Control.

Oregon Department of Fish and Wildlife (ODFW) current standards and revisions as may apply to Erosion and Sediment Control.

Oregon Department of State Lands (ODL) current standards and revisions as may apply to Erosion and Sediment Control.

Oregon Standard Specifications for Construction and Standard Drawings, latest edition, as they may apply to Erosion and Sediment Control.

Oregon Department of Environmental Quality current standards and revisions as may apply to Erosion and Sediment Control.

American Society for Testing and Materials (ASTM) as they may apply to Erosion and Sediment Control materials.

American Public Works Association (APWA), latest edition, "Standard Specifications for Public Works Construction" as may apply to Erosion and Sediment Control.

City of Cave Junction Municipal Code (CJMC) as may apply to Erosion and Sediment Control Public Storm Water Systems.

DEQ Standards and Specifications also may apply to Erosion and Sediment Control and Storm Water systems.

City of Cave Junction, Department of Public Works, Standards and Specifications as may apply to Erosion and Sediment Control and Storm Water systems.

Illicit Discharge Detection and Elimination Manual, Oct. 2004

820.00.00 – CONSTRUCTION SITE MANAGEMENT PLAN (CSMP)

820.10.01 – Submittals

The Construction Site Management Plan (CSMP) shall be prepared for all projects.

The Applicant shall submit a CSMP for approval to the Public Works Department in conjunction with any commercial or private development plans prior to issuance of a Public Works Department Construction Permit.

Contractors shall submit a CSMP developed in coordination with the project work schedule not less than 10 working days prior to the start of construction for all other work not included in the development process noted above. This would normally include but not be limited to utility work projects, publicly funded construction or re-construction projects and maintenance projects.

The Construction Site Management Plan shall contain sufficient information to describe the site development and the system(s) intended to control erosion and prevent off-site damage from erosion and sedimentation. The CSMP shall include, but not be limited to, the following:

1. A site location and vicinity map.
2. A site development drawing at a standardized engineering scale, such as 1"-40', containing the following site conditions:
   a) Soil type
   b) On-site elevations and/or topographic information adequate to determine drainage patterns and slopes.
   c) Hydrology, including surface drainage and wetlands.
   d) Existing vegetation.
   e) Natural resource sites and designated buffer areas.

3. Plans that show site control measures for preventing erosion and sedimentation into the City's storm water sewer systems and related resources, including supporting calculations, such as hydraulics and soil loss equation, and assumptions for a 5-year or 10-year storm event as required by City design policy.
4. Off-site and on-site access routes for construction and maintenance vehicles.

5. Borrow and waste disposal areas.
6. Debris and garbage disposal areas.
7. Vegetation specifications for temporary and permanent stabilization.
8. Construction schedule, including the implementation of construction site management practices and expected time period of land disturbance activities.
9. Manners of storage and disposal of materials (e.g., sand, lumber, insulation, paints, thinners, fertilizers, fuels).
10. Temporary and permanent storm drainage facilities.
11. Measures to be undertaken to minimize the extent of exposed soils.
12. Areas where construction vehicles' wheels will be washed.
13. Methods and places for concrete-wash disposal.
14. Disturbed areas and other areas that are physically protected from potential disturbance, such as fencing.

The PWD will provide a written evaluation of the submitted CSMP to the applicant indicating any required modifications within 15 business days of receipt. During the life of the contract, the Applicant or Contractor shall submit any proposed changes to the approved CSMP to the PWD for approval before implementing the changes.

PWD approval of the CSMP does not necessarily reflect concurrence by the City of Cave Junction that the proposed measures will work. The Engineer or Contractor shall inspect, maintain, and adjust the erosion and sedimentation control measures in place to prevent and minimize negative impacts to storm water quality. Inspecting, maintaining, and adjusting the erosion control measures in place, is considered incidental work and no separate payment will be made.

The Contractor shall install additional measures to the CSMP as directed by the Engineer to improve the functionality of the CSMP.

820.20.00 – Site Monitoring

820.20.01 – Erosion and Sedimentation Control Manager (ESCM)

The contractor shall designate one employee, thoroughly experienced in all aspects of construction, as Erosion and Sedimentation Control Manager (ESCM). Any change in the appointment of this individual during the term of the contract requires written submission and approval by the Engineer. The ESCM duties include:

1. Inspect erosion controls on active construction sites daily.
2. Inspect erosion controls on inactive sites at least monthly.
3. Inspect erosion controls during rainy periods on both inactive and active sites at least daily.
4. Immediately correct and modify erosion and sedimentation controls, maintaining compliance with the approved CSMP at all times.
5. Update the CSMP on a weekly basis to reflect necessary changes made.
6. Accompany the Engineer and/or the PWD on inspections and, if requested, on inspections made by other regulating agency representatives.
7. Mobilize crews to make immediate repairs to the controls or install controls during

working and nonworking hours.

No work shall start until the CSMP and ESCM have been approved by the PWD and a Public Works Construction Permit has been issued.

820.30.00 – Erosion Prevention Permits – 1200C Permit maybe required to be issued by DEQ in addition to the City's Erosion Prevention Permit.

820.30.01 – Requirements

Erosion Prevention Permits in combination with Public Works Construction Permits are required for all construction related activity that will:

1. Disturb any area of land being developed or constructed upon, which has the potential for erosion, production of sediment or production of other undesirable materials that may adversely affect storm water. Or:
2. is located in a sensitive area.

Criteria for a Sensitive Area:

a. The slope of the parcel in the area of disturbance is greater than 10%
b. The site contains highly erodible soils or soils that produce sediment; or
c. The parcel or tax lot of record has the potential to directly drain into a water or wetland feature, or its designated buffer area.
d. Is located in such a manner as to adversely affect the City storm water sewer system.
e. Is located in such a manner as to erode soil material from or deposit sediment on adjacent property.

The Contractor shall have a certified professional prepare the permit application and the CSMP. The Contractor shall be responsible for performing all construction activities in accordance with the approved Erosion Prevention Permit and the CSMP.

Non Compliance

The Contractor's operation will be suspended whenever construction related activities are being done contrary to and in violation of applicable requirements of Cave Junction Municipal Code (CJMC), these specifications or the Erosion Prevention Permit.

Upon determination that the Contractor is violating (CJMC), these specifications, or the Erosion Prevention Permit, the City may issue a citation and/or penalty. Where such citation is issued, the Contractor shall pay to the City or property owner(s), or both if deemed by the court of jurisdiction, the penalties for each and every such day in violation. The Contractor shall also be required to promptly repair and remedy any damages to property at his own expense.

830.00.00 – MATERIALS

830.10.01 – Plastic Sheeting

Plastic sheeting shall be Polyethylene plastic with a minimum thickness of 6 mils.

830.20.00 – Erosion Control Matting

830.20.01 – Jute Matting

The yarn shall be loosely twisted construction and shall not vary in thickness by more than one half of its normal diameter. The weave shall provide openings of about 1 square inch.

Furnish the matting in widths of 45" or more, continuous lengths of not less than 150 feet, and weigh not less than 0.9 pounds per square yard.

Use 12 gauge staples or heavier steel wire that is bent to a U-shape 2" wide. Staples shall not be less than 10" long unless the Engineer allows a shorter length for hardpan soil conditions.

830.20.02 – Excelsior Matting

Excelsior matting shall consist of a machine-produced blanket of curled-wood fibers, of which 80% are 6" or longer. Furnish a blanket of uniform thickness, with the fiber evenly distributed over the entire area of the mat.

Cover the topside of the matting with a maximum 3" x 3" size mesh of high wet-strength, twisted Kraft paper, or a maximum 2" x 2" biodegradable, extended plastic mesh. Make the matting smolder-resistant without the use of chemical additives.

Excelsior matting shall have a minimum dry weight of 0.8 pounds per square yard (± 10%). Furnish in minimum 36" wide rolls.

Wire staples for excelsior matting shall be the same as specified for jute matting.

830.20.03 – Alternate Matting Material

Submit any proposed alternate material with specifications, costs, and manufacturer's literature to the Engineer for consideration. Alternate material may be used only if approved by the Engineer.

830.30.00 – Silt Fences

The Geo-textile Fabric shall conform to Section 940, Geo-Textile Construction Fabric and the following:

	Test Methods	Units	Requirements		
			Supported Silt Fence	Unsupported Silt Fence	
				Geotextile Elongation >50%(l)	Geotextile Elongation <5O%(l)
Grab Strength MD CD	ASTM D 4632	Lbs force	90 90	124 100	124 100
Permeability (1)	ASTM D 4491	Sec	0.05	0.05	0.05
Apparent Opening Size	ASTM D 4751	In.	0.20 max. Avg. roll value	0.20 max. Avg. roll value	0.20 max. Avg. roll value
Ultraviolet Stability (Retained Strength)	ASTM D 4355	%	70% after 500 hrs of exposure		70% after 500 hrs of exposure

830.30.01 – Field Fabricated Silt Fence

As a basis of acceptance, furnish either a manufacturer's brochure or a manufacturer's certification. The silt fence system shall be able to withstand sediment, water, and wind loads associated with the intended use.

830.30.02 – Manufactured Silt Fence

Submit catalog descriptions of the silt fence system to the Engineer for approval prior to installation. As a minimum the silt fence system shall have post pockets and be able to withstand sediment, water, and wind loads associated with the intended use.

830.40.00 – Other Silt Barrier Materials

830.40.01 – Straw Bales

Standard 40 to 60 pound rectangular bales of cereal grain straw or grass seed straw which are wire-bound or string-tied.

830.40.02 – Bio-bags

18" x 8" x 30" bags made of ½" plastic mesh, weighing approx. 45 pounds, and filled with clean, 100 percent recycled wood product waste.

830.40.03 – Sandbags

24" X 12" X 6" tightly woven sacks of durable weather-resistant material filled with sand filler material.

830.50.00 – Seed

830.50.01 – Seed Certification

All rates are for pure live seed. Submit bag tags for verification.

Deliver all grass seed in standard, sealed containers. Label each container with the following:

a) The kind and variety of the seed.
b) The kind and variety of each seed in a mixture, of 3 % or more.
c) Percent of germination (each kind).
d) Percent of pure seed (each kind).
e) Percent and kind of other crop.
f) Percent of inert (not to exceed *1.5%).*
g) Percent of weed seed.
h) Percent of noxious weed seed.
i) Date of test.

In addition, tag all grass seed "Oregon Certified Seed" or the equivalent tag from another state, and be from the most recent crop available. Test and label each kind according to the Oregon Seed Law and Federal Seed Act. Test the seed within 9 months of the delivery date and shall not be sprouted, moldy, or show evidence of having been wet or otherwise damaged.

The minimum requirements of Oregon certified seed are as published in the current year's Oregon Certified Seed Handbook available from County Extension Offices or Oregon State University.

Each lot of seed shall be subject to inspection, sampling, and testing upon delivery to the project. Reject seed that is not labeled or that does not conform to specifications replace at the providers expense.

830.50.02 – Seed Type

Erosion control seed will be mixed and applied in accordance to the following:

Temporary application: Annual rye grass or perennial rye grass at 200 pounds per acre.
Permanent application: Perennial rye grass at 200 pounds per acre.

830.60.00 – Mulching

830.60.01 – Hydro Mulch

A cellulose fiber produced from virgin wood, grass straw, or a paper fiber product. Product shall be approved by City PWD.

830.60.02 – Grass Straw Mulch

Straw mulch for non-hydro seeding applications shall be grass straw from bent grass, bluegrass, fescue or ryegrass, singly or in combination. The straw shall not be moldy, caked, decayed or of otherwise low quality. Use a straw binder or tackifier.

1. Tracer - Approved Hydro mulch fibers.
2. Tackifier(s) - Approved commercial tackifier per Oregon Standard Specifications for Construction, latest edition, Section 00280.44(d).

830.70.00 – Fertilizer

830.70.01 – Requirements

General Use - 22-16-8 inorganic fertilizer shall be analyzed to contain 22% nitrogen, 16% available phosphoric acid, 8% soluble potash, and include a minimum of 2% sulfur. The fertilizer shall contain not less than 30% available water-insoluble nitrogen derived by incorporating one of the following:

1. A minimum 800 lbs. of urea formaldehyde per ton of fertilizer that has a minimum Activity Index (AI) of 40. The AI will be determined by the Association of Official Agricultural Chemists method.
2. A minimum of 500 lbs. of Isobutylidene Diurea (IBDU) per ton offertilizer.
3. Non-phosphorous - Polymer coated-sulfur coated urea, PCSCU, (39-0-0)

830.80.00 – Protection Fence

The Fence shall be a minimum of 4' high of poly construction or snow fencing capable of protecting the area from foot traffic. Other suitable barriers or warning devices shall be installed where required to warn or prevent vehicular traffic from entering the area.

840.00.00 – Construction and Workmanship

840.10.01 – General

Install the erosion and sedimentation control measures prior to all clearing, grading, and other land alteration activities, ensuring that erosion and sediment-laden water does not enter the drainage system or waterways or violate applicable water standards. Disturbed areas will be limited to the amount that the Contractor can effectively control. Incorporate all permanent erosion and sedimentation control features into the project prior to construction. During construction activities, all erosion and sedimentation control measures shown on the plans shall be maintained to prevent and minimize negative impacts to water quality and related natural resources. Correct operational procedures and repair equipment that cause erosion, sedimentation, and/or contamination such as fueling operations and leaking equipment. Remove and dispose of contaminated soils. No construction activities shall be performed which result in:

1. The deposit or discharge of sediment from a site onto adjacent properties or into water features and related natural resources.
2. Degradation of water features due to removal of stream bank vegetation from construction sites.
3. The deposition of mud, dirt, sediment, concrete washout, trash, or other similar construction related material exceeding one-half cubic foot in volume for every 1,000 square feet of disturbed area onto public rights of way and private streets, and into the City's storm water system and related natural resources, either by direct deposit, dropping, discharge, erosion, or tracking by construction vehicles. Any such discharge shall be cleaned-up at the end of the current work shift in which the deposit occurred, or at the end of the current workday, whichever comes first.
4. Exposure of soils and stockpile areas to storm water runoff without secondary containment and treatment measures.
5. Earth slides, mudflows, earth sloughing, or other earth movement that may leave the project limits.
6. The discharge of runoff containing construction related contaminants into the City's storm water system or related natural resources.
7. Release onto the site of hazardous substances, such as paints, thinners, fuels, and other chemical due to improper handling or storage.

Design and implement management measures to meet the above outcomes with the seasonal variation of rainfall, temperature, and other climatic factors relative to the timing of land disturbance activities.

Adjust management measures to meet increased storm water runoff flows and velocities between November 1 and April 30.

No permit or other approval issued by the City shall be deemed to authorize any violation of the above prohibitions or State and federal requirements.

840.10.02 – Construction Site Practices

The Contractor shall establish and implement construction site management practices that will prevent toxic materials and other debris from entering the City's storm drainage and waterway systems. The Contractor shall:

1. Properly store chemicals (pesticides, fertilizers, fuels, paints, thinners, etc.) at the construction site;
2. Properly dispose of construction waste materials, garbage, rubbish, and sanitary waste
3. Immediately clean up spills of toxic materials
4. Wash excess concrete material in an approved disposal site;
6. Cover stockpiles;
7. Clean construction vehicles before entering streets or public rights of way.
8. Clean up "Track-out" mud and debris resulting from construction vehicles at each end of shift daily.

840.10.04 – Wet Season (November to May) and Temporary Work Suspension

Prior to the wet season (November 1 through April 30) and temporary work suspension the Contractor shall meet with the Engineer to review and update the CSMP to assure that appropriate controls are in place and maintained during the wet season work and temporary work suspension periods.

840.10.05 – Disturbance Limits

Construction site clearing limits will be clearly flagged by the Engineer and/or Contractor. No ground disturbance shall be permitted beyond the flagged boundary. The contractor shall maintain the flagging for the duration of the construction.

840.10.06 – Perimeter Controls

Install all appropriate perimeter controls prior to any site grubbing operation. Perimeter controls include side ditches or berms in fill areas, silt fence along the banks of existing streams, streets, toes of slopes and construction accesses.

840.10.07 – Soil and slope Protection and Stabilization

The Contractor shall temporarily or permanently protect and stabilize all soils that are exposed and disturbed during construction.

Protection and stabilization shall consist of any method or combination of methods that will produce the desired end result.

840.10.08 – Temporary Protection and Stabilization

The Contractor shall immediately protect and stabilize all exposed or disturbed soils which will not be disturbed by grading or other earthwork activities for 14 calendar days or longer. Exemptions to temporary protection and stabilization include areas of embankment sub-grade

or excavation where pavement will be placed.

From September 1 to May 1, there are no exemptions to temporary protection and stabilization requirements.

840.10.09 – Permanent Protection and Stabilization

The Contractor shall complete permanent protection and stabilization within 7 calendar days following the completed construction of finished grades.

Permanent protection and stabilization methods include permanent seeding and mulching, riprap protection, engineered slope protection and stabilization as shown on the plans or as directed by the Engineer.

Permanent seeding work done in conjunction with permanent mulching outside the spring and fall seeding dates shall be considered temporary until 3 weeks into the next permanent seeding season. A suitable stand of grass consists of a uniform stand having a 3" minimum height with bare spots not larger than 6" square will be allowed to a maximum of 3 percent of the seeded area. If a suitable stand of grass has not been achieved by the seeding dates, fertilize and reseed.

Seeding dates are as follows:

a.) February 1 to April 30 (spring seeding)
b.) September 1 to October 15 (fall seeding).

During the seeding dates, use Hydro mulch or straw mulch. For all other seeding, use straw mulch.

840.20.00 – Seeding

840.20.01 – Requirements

These specifications apply to all temporary and permanent protection and stabilization. Uniformly apply seed and fertilizer at the rates indicated and by one of the following kinds of equipment as the Contractor elects.

Thoroughly mix seeds when more than one kind of seed is to be used. Seed and fertilizer may be combined in water for application by hydraulic means. When fertilizer and seed are to be applied in dry condition, apply them separately. Applied form separate compartments, the application may be done in one operation.

Place the seed and fertilizer before placing the mulch, except the fertilizer and seed may be applied after mulching under the following conditions:

1. If the mulch is punched into the soil by mechanized means.
2. If it is necessary to hold down the mulch with netting or like material.
3. On 1-½:1 or steeper slopes where a slurry mixture would tend to run down the slope
4. Double the rate of application and add a green dye to visibly aid in uniform application.

Prevent the seed and fertilizer from falling or drifting onto areas occupied by rock base, rock shoulders, plant beds or other areas where grass is detrimental or undesirable.

840.20.02 – Application Methods

For both temporary and permanent protection and stabilization seeding work, apply seed and fertilizer using one of the following kinds of equipment.

1. Grass seed drills or seeders that work fertilizer into the soil and place the seed under about a ¼" soil cover.
2. Hydraulic equipment that continuously mixes and agitates the slurry and applies the mixture uniformly through a pressure-spray system providing a continuous, non-fluctuating delivery. Apply the materials using a sweeping, horizontal motion of the nozzle.

   Add a nontoxic tracer to the seed and fertilizer mixture to visibly aid uniform application. Do not exceed 250 pounds per acre when wood cellulose fiber is used as a tracer.

3. Blower equipment using air pressure and an adjustable spout that uniformly applies dry fertilizer and dry seed in separate and successive applications at constant measured rates. Apply the materials using a sweeping, horizontal motion of the spout.

4. Hand-operated mechanical spreaders that uniformly apply dry fertilizer and dry seed separately and successively in prescribed quantities.

Regardless of equipment methods used, prevent drift and displacement of seed and fertilizer. If equipment and methods of application results in wasting material, make corrections as directed.

Do not disturb areas previously completed. If areas are disturbed, re-treat as directed at the Contractor's expense.

Area Preparation:

1. On cut slopes 1-1/2:1 or flatter, roughen the surface parallel with slope contours and loosen soil to a depth of 3" to 5".

2. On cut slopes steeper than 1-1/2:1, when seedbed preparation is difficult, cut furrows along the contours or stair-step during construction. On fill slopes 3:1 or steeper, make dozer tracks so that the ridges run parallel to slope contours.

3. Remove rocks, weeds, debris and other matter detrimental or toxic to the growth of grass from areas to be seeded. On slopes 3:1 or less, remove all loose stones larger than 2" in areas that will be maintained by mowing equipment.

5. When topsoil is specified, loosen existing ground surface to a depth of 4" to 6" before placing topsoil.

Application rate

Uniformly apply at the rate of 200 pounds of seed per acre.

Fertilizer

Apply as specified. The contractor shall notify the Engineer at least 2 calendar days in advance of starting operations, and keep the Engineer advised of the operations.

1. General-Use - Apply general use fertilizer at distances greater than 50' from permanent bodies of water, creek channels, or other running streams including irrigation channels at a rate of 400 pounds per acre.

2. Non-phosphorous - Apply non-phosphorous fertilizers within 50' of permanent bodies of water, creek channels, or other running streams including irrigation channels at a rate of 200 pounds per acre.

840.30.00 – Mulching

840.30.01 – Requirements

These specifications apply to all temporary and permanent stabilization. Evenly apply mulch material according to these provisions and the special provisions within 48 hours after seeding and fertilizing.

Place mulch after seeding and fertilizing, except for those conditions such as hydro seeding allowing the seed and mulch to be applied together.

Replace material that becomes displaced before acceptance of the work.

Mulch areas not accessible to heavy equipment by approved methods.

Prevent damage to prepared areas and to fertilizer, seed and mulch in place.

Prevent mulch material from plants, roadways, gravel shoulders, structures, areas where mulching is not specified, or which collects at the ends of culverts or accumulates to excessive depths, as directed.

If tacking agents are used with mulch, use protective covering on structures and objects where coverage and stains would be objectionable. Protect vehicles and persons from drifting spray.

Apply one of the following mulches at the rate indicated:

1. Place grass straw mulch to a reasonably uniform thickness of 1-½" to 2-½", and average approximately 2" in loose condition. This rate requires between 2 and 3 tons of dry mulch per acre. The grass straw mulch shall be loose enough for sunlight to penetrate and air to circulate; but dense enough to shade the ground, reduce water evaporation, and

materially reduce soil erosion. Retain grass straw mulch in place, with the addition of one of the following tackifiers.

- J-TAC, 40 pounds per acre on slopes of 2:1 or less and 80 pounds per acre on slopes greater than 2:1. Green-colored wood cellulose fiber may be added after the tackifier has been mixed.
- Wood or grass straw cellulose fiber, *750* pounds per acre.

2. Place waterborne mulch as specified in Oregon Standard Specifications for Construction, latest edition, Section 280.44(d), where fibers are uniformly suspended in water, to the seeded areas using hydraulic pressure equipment. Unless otherwise specified apply at least 2,000 pounds per acre, based on dry fiber weight. On slopes steeper than 1-1/2:1, use Hydro mulch, at 1-½ times the specified rate with tackifier at 80 pounds per acre. If wood or grass cellulose fiber is used as a tracer for seed application, this weight may be included as part of the required 2,000 pounds per acre minimum.

840.40.00 – Plastic Sheet Covering

840.40.01 – Requirements

Cover and secure tightly in place. Overlap seams 12". For seams parallel to the slope contour, lap the uphill sheet over the downhill sheet. Control drainage from areas covered by plastic sheeting so that no discharge occurs directly onto uncontrolled disturbed areas of the construction site. Direct water away from areas above the plastic to prevent erosion and undermining beneath the plastic sheeting.

840.50.00 – Erosion Control Matting

840.50.01 – Requirements

Prepare soil for seeding. Apply matting so it is in complete contact with the soil to prevent erosion occurring beneath it. Place and securely anchor erosion matting to the slope per manufacturer's recommendations.

840.60.00 – Silt Fence

840.60.01 – Requirements

Supported (mesh) and unsupported are as follows:

1. Field-Fabricated Silt Fence
   Install supported fence by fastening mesh and geo-textile securely to the up-slope side of the posts. Use stitched loops over posts for unsupported silt fence. Eliminate the mesh for unsupported fence. Only manufacturer's factory seams are acceptable; field-sewn seams are not. When using geo-textile and wire fabric, use a continuous roll of geo-textile cut to the length of the barrier to avoid joints. When joints are necessary,

splice geo-textile only at a support post and use a minimum 6' overlap. Securely fasten each end of the fence to the end post. Bury the silt fence a minimum on 6".

2. Manufactured Silt Fence System
   Install in accordance with plans, special provisions, and manufacturer's recommendations.

	Requirements		
	Supported Silt Fence	Unsupported Silt Fence	
		Geo-textile Elongation> 50% (1)	Geo-textile Elongation <50% (1)
Maximum Post Spacing	4 ft	4 ft	6.5 ft

(1) As measured in accordance with ASTM D4632

850.00.00 – Construction Access and Control

850.10.01 – Requirements

Place and arrange controls as shown in the CSMP or as directed by the Engineer. Install temporary gravel construction entrance/exit structures for construction traffic moving directly onto a public road or rights of way.

Track-out of mud, dirt, debris or other undesirable materials onto streets or sidewalks is not allowed and will not be permitted. Prompt cleanup of such materials is required.

850.10.02 – Straw Bales, Bio-bags, and Sand bags

Place and arrange controls as shown in the CSMP or as directed by the Engineer.

850.10.03 – Storm Water System Inlet Protection

Construct controls as required for directing the flow of water through the filters to the inlet in such a manner as to prevent inlet bypass or blockage.

850.10.04 – Protection Fencing

Construct protection fencing as shown in the CSMP or as directed by the Engineer. The fence supports shall have a maximum spacing of ten feet.

860.00.00 – Maintenance and Removal

860.10.01 – Requirements

The Contractor shall maintain installed erosion and sedimentation controls in good working order at all times and retain the controls until the project is completed, stabilized, and final acceptance is issued. Should a control measure not function effectively, the Contractor shall perform one of the following:

1. Immediately repair the control.
2. Remove and restore the control.
3. Provide additional controls.

Remove and re-grade sediment into slopes or remove and dispose of sediment off site. Do not flush sediment-laden water into the downstream system.

860.10.02 – Maintenance

1. *Catch Basins* - Maintain catch basins (inlets with sumps or inverted siphons) so that no more than one-half foot sediment depth accumulates within traps or sumps.

2. *Sediment Controls* - Remove sediment from controls such as silt fences, straw bale barriers, check dams and sediment ponds once it has reached 1/3 of the exposed height of the control.

3. *Paved Areas* - Keep all paved areas and gutters clean until the notice of completion is issued.

4. *Construction Access Points* - Add and remove gravel, aggregate or other material specified as needed to maintain proper function of the access pad.

5. Permanent Vegetative Stabilization - At the Contractors expense, reestablish permanent stabilized areas disturbed by Contractor's operations or other activities within 7 calendar days from the time of disturbance. At the Contractor's expense, repair anchored straw displaced by wind, water, or Contractors operations within 2 days of displacement.

860.10.03 – Removal

The contractor shall remove all temporary protection measures and any sediment at the completion of the work. Immediately shape and permanently protect and stabilize the areas affected by the removal process.

All materials associated with temporary erosion and sedimentation control that are not incorporated into the permanent work become the property of the Contractor.

Remove the materials from the area and dispose of materials in accordance with local, State, and Federal laws and to a suitable offsite location.