

## **MAINTENANCE AND INSPECTION**

Erosion prevention and sediment control (EPSC) measures are required to be installed on all construction sites prior to any land disturbing activities being performed. Such activities have the potential to impact natural systems deemed worthy of protection. An EPSC plan is required to be submitted for all construction sites within the Albany city limits where land disturbing activity is performed that meets the requirements identified in Chapter 2. Inspection and Maintenance of EPSC measures throughout the life of the project are imperative to ensure their effective performance. Unless the measures are properly installed and maintained, there is a strong chance of failure during the construction period.

### **6.1 Erosion and Pollution Control Manager**

Larger, more complex construction sites such as subdivisions and commercial and street projects require ongoing, detailed inspection and maintenance for longer periods of time. These projects may also be subject to the Site Improvement permitting requirements identified in Title 15 of the Albany Municipal Code. Although the EPSC measures and processes required under Title 12 are equally applicable to these projects, permitting may be incorporated within the Site Improvement (SI) permitting process.

The owner of the site shall designate a competent person, known as the Erosion and Pollution Control Manager (EPCM), possessing knowledge and experience that, to the City's satisfaction, qualify him or her in erosion and sediment control techniques. At a minimum the EPCM should have a thorough knowledge of the content of this manual. It is also recommended the EPCM should have attended a class on erosion and sediment control materials and installation practices which are outlined in this manual. The EPCM shall be responsible for ensuring the implementation of the EPSC plan and have the authority to immediately mobilize necessary personnel and equipment to correct and modify erosion prevention and sediment controls when required.

Duties of the EPCM include:

- Manage and ensure proper implementation of the EPSC plan
- During periods of active construction, maintain the EPSC plan at the project site, available for review upon request
- Accompany the City in a field review of the EPSC plan prior to the beginning of work
- Inspect erosion and sediment controls on active construction sites weekly
- Inspect erosion and sediment controls on inactive sites at least biweekly
- Inspect erosion and sediment controls on both active and inactive sites at least daily during rainy periods where a minimum 0.5 inch of rain has fallen in a 24-hour period
- Mobilize crews to make immediate repairs to the controls or install controls during working and non-working hours
- Record measures taken to clean up significant amounts of sediment
- Complete erosion control monitoring forms after each inspection
- Maintain up to date EPSC plan throughout the life of the project
- Prepare a contingency plan in preparation for emergencies and the rainy season
- Accompany the City on inspections

#### **6.1.1 Ineffective Controls**

The EPCM shall record measures to clean up significant amounts of sediment. Should a control measure not function effectively, one or more of the following tasks should be performed.

- Immediately repair the control.
- Replace the control.
- Provide additional controls.

## **6.2 Pre-Construction Meeting**

The EPCM, contractor and inspector should carefully review the EPSC plan prior to the pre-construction meeting to understand what is required. Implementing the EPSC plan and assuring its performance may involve significant expense. The following pre-construction activities should be required:

- Prior to the pre-construction meeting, review and comment of the EPSC plan
- During the pre-construction meeting, review all comments and concerns
- Prohibit clearing and grading operations prior to EPSC plan approval and implementation
- Tentatively locate construction accesses
- Delineate clearing limits, drainage courses, easements, setbacks, wetlands, and other sensitive areas and their buffers

The pre-construction meeting provides an opportunity for the contractor to discuss the plan with the inspector and learn which elements of the EPSC plan deserve the most attention. Adjustments to improve performance or make installation easier and maintenance more reliable may also be discussed.

The pre-construction meeting is also an opportunity to discuss the inspection schedule and procedures. Key points to consider in the pre-construction meeting are:

- Pollution Control Plan for contractor operations
- Qualifications of individuals designated as competent person for EPSC plan
- Method to be used to document the up-to-date EPSC plan
- Adjacent areas that need special protection from sedimentation, particularly environmentally sensitive areas such as wetlands, stream crossings, channel, and water disposal outlets
- Location of erosion and sediment control practices and their implementation
- Sequence of installation with respect to the construction schedule
- Surface stabilization plans, temporary and permanent seeding
- Construction schedule and any anticipated shutdown periods
- Maintenance plans and the contractor's procedure for monitoring performance
- Location of all borrow and disposal areas
- Emergency or contingency plans
- Any special requirements identified in permits
- Monitoring form used and availability
- Biological Assessment – this report comes from the consultant and covers special needs and concerns for threatened and endangered species on the project. The contractor should be aware of its contents.

### **6.2.1 Modified EPSC Plan**

All projects will include an EPSC plan. This plan is a guide and ideally should have addressed all erosion problems for the project adequately. However, the EPSC plan should not be followed blindly. It is the owner's or EPCM's responsibility to propose modifications to the plan.

In addition, effective erosion control is closely tied to a contractor's staging, operation methods, and construction timing. When the EPSC plan is developed, the contractor's staging and operation methods are unknown. Therefore, it is expected changes to the EPSC plan will be updated throughout the life of the project. As modifications to the EPSC plan take place, it is extremely important to secure the interest of all

parties. Communications between the contractor, designated person, and the inspector is vital.

Depending upon the level of modification, the design engineer should be consulted and changes to the EPSC plan should be submitted to the City. Regardless of the magnitude, a contingency plan must be implemented immediately. Minor modifications to the EPSC plan such as installing small sections of sediment control barriers, can be field adjusted and hand written on the plans.

### **6.2.2 Construction Schedule Review**

The implementation of the construction schedule should include the following:

- Timing of activities to limit seasonal and weather impacts
- Timing of wet season work and temporary work shut down
- Time of activities to meet “in-water” work restrictions
- Erosion prevention and sediment controls shown on the plans should be installed before ground-disturbing activities begin
- Permanent facilities, such as sediment traps and basins, which will be used during construction as temporary measures should be installed
- Retention of temporary perimeter controls until all upstream areas are finally stabilized
- Timing of seeding operations

### **6.2.3 Monitoring Form**

On all development sites, inspections are to be recorded on the Erosion Control Monitoring Form (See Appendix). The effectiveness of each BMP at every location on site should be documented on the form and general observations on site conditions should also be recorded. Information provided on the form is useful for tracking repairs and demonstrating permit compliance. It is noteworthy that in the event of permit violations or subsequent enforcement actions, the information recorded on the form, along with photographs and videos, may be used to evaluate the responsibility of involved parties.

## **6.3 Materials**

The purpose of this manual is to provide cost effective, environmentally sensitive management of erosion. This manual illustrates materials that have been approved based on geographical controls such as climate and soil type. Materials not listed in this manual may be approved based on equal to or greater than criteria. Specific questions regarding approval of alternative materials and procedures can be answered by calling the City of Albany Public Works Department, (541) 917-7676.

## **6.4 Installation**

It must be understood that installation is equally important to the value and success of the materials. If installed incorrectly, even the best materials will fail causing more damage and additional expense to the project. For this reason alone, installation procedures should be followed very closely.

Installation of all base measures should be inspected and any deficiencies corrected prior to the start of land disturbing activities. Subsequent inspections of any additional installations should also be made throughout the life of the project as needed.

The inspector, contractor, and EPCM should be familiar with installations details for each BMP used on the project. Details for the installation of all specified BMPs should be provided in the EPSC plan. Installation details for BMPs are also provided in Chapter 4 of this manual.

## **6.5 Inspection Requirements**

The owner or designated person (EPCM) shall be required to provide ongoing inspection of erosion and sediment control measures throughout the life of the project. Inspections shall be recorded on an approved monitoring form.

Minimum inspection requirements shall be as follows.

- Once per week on active sites
- Once every two weeks on in-active sites
- Within 24 hours following a 0.5 inch rain event

### **6.5.1 Inspection of Work Restriction Areas**

All construction projects are required to restrict certain types of work, which may contribute to sediment-laden water leaving the project boundaries or entering waterways. The following work restrictions need to be inspected prior to the start of work and throughout the life of the project.

- Flag Clearing Limits: Construction site clearing limits will be clearly flagged in accordance with the approved plans. No ground disturbance is permitted beyond the flagged boundary. Flagging should be maintained for the duration of construction.
- Perimeter Controls before Grubbing: All appropriate perimeter controls should be installed prior to any major site grubbing operation. Perimeter controls include interceptor ditches, berms, infill areas, and sediment fences along the banks of existing streams and toes of slopes.
- Wet Season Plan and Schedule: Prior to wet season construction work and before temporary work suspension for winter, the contractor or designated person should meet with the City to review and update the EPSC plan and to develop a schedule to ensure appropriate controls are implemented and maintained during the wet season work and suspended periods.
- Limit Disturbed Areas: If soil erosion and sediment resulting from construction activities is not effectively controlled, the City will limit the amount of disturbed areas that can be effectively controlled.
- Install BMPs Early: Erosion and sediment control features should be incorporated into the projects as early as practical. All erosion and sediment control measures should be installed according to the approved implementation schedule and with these specifications.
- Remedies of the City: Failure to control erosion and or pollution shall be cause for the City to pursue all remedies authorized by Title 12 of the Albany Municipal Code. These include stopping all construction work, undertaking separate abatement activities at the permit holder's expense, and assessing fines each day until measures have been taken to bring all construction into compliance with these specifications.

## **6.6 Stabilization Requirements**

All soils exposed and disturbed by construction-related activities should be stabilized according to the following time frames.

- All seeding applications must be completed prior to September 1<sup>st</sup>
- Wet weather season – October 1<sup>st</sup> through April 30<sup>th</sup>
- Soils exposed during wet weather season as a result of construction must be covered at the end of each day

## 6.7 Erosion Control Contingency Items

It is a requirement that all construction sites have materials on hand as a contingency in the event of a failure or when required to shore up BMP's installed as part of the EPSC plan. The contingency items may also be used at the discretion of the project inspector to strengthen the erosion control measures as needed during construction. At a minimum, the following materials should be kept on the project site for use in emergencies.

For minor land disturbing activities as described in Chapter 2	For major land disturbing activities as described in Chapter 2
24 feet of sediment fence	100 feet of sediment fence
250 square feet or plastic sheeting	500 square feet or plastic sheeting
100 feet of rope	1,000 feet of rope
10 empty sand bags (to be filled as needed)	50 empty sand bags (to be filled as needed)
2 bales of straw (used for ground cover)	10 bales of straw (used for ground cover)
4 bio-filter bags with stakes	10 bio-filter bags with stakes

## 6.8 Maintenance

Erosion and sediment controls must be maintained in good working order at all times in order to function as intended. These controls must be maintained in place until the City issues notification of acceptance of permanent stabilization.

Typical maintenance activities, guidelines and failure modes for BMPs are discussed in Chapter 4 of this manual. The inspector should be familiar with maintenance requirements for each BMP used on the project. It is noteworthy that maintenance activities and frequencies vary among the different BMPs and will depend largely on weather and other site conditions. In general, the more effective erosion prevention measures are, the less maintenance will be required for sediment controls.

### 6.8.1 Sediment Removal

Sediment shall be removed and the controls upgraded or repaired as outlined in Chapter 4 BMP maintenance, or as directed. In the event of continuous rainfall over a 24-hour period, or other circumstances that preclude equipment operation in that area, additional sediment control shall be hand-carried and installed in accordance with best management practices and as approved by the City. Sediment shall be removed from controls such as sediment fences, sediment barriers, check dams, inlet protection, and sediment traps when the sediment buildup has reached  $\frac{1}{3}$  the exposed height of the control or storage depth. Rock filters and filter berm material shall be replaced with new rock material when sediment reduces the filtering capacity by 50 percent. Rock or other material specified shall be added or removed as needed to maintain proper function of the entrance areas. All paved areas shall be kept clean (by mechanical means) for the duration of the project.

### 6.8.2 Sediment Disposal

Removed sediment shall be placed in a non-erodible area within the construction site, or removed and disposed of offsite in accordance with all federal, state, and local laws and ordinances. Sediment-laden water shall not be flushed into the storm water system.

## **6.9 Inspector Checklist**

The Inspector Checklist included in Appendix D will be used by City representatives when inspecting erosion and sediment controls on a project site. The checklist is intended to summarize the key elements of a successful erosion and sediment control program. Topics on the checklist include:

- Schedule Review
- Erosion and Sediment Control Plan
- Erosion and Pollution Control Manager
- Sensitive Areas
- Contingency Plans
- Materials On-Hand
- Maintenance
- Monitoring Forms
- Slope Protection and Stabilization
- Plan Revisions and Modifications
- BMP Evaluation
- Additional Items

### **6.9.1 Winterization**

The wet weather period is October 1<sup>st</sup> through April 30<sup>th</sup>. Prior to wet weather period work and before temporary work suspension for winter, the contractor should meet with the City to review and update the EPSC plan and to develop a schedule to assure that appropriate controls are implemented and maintained during wet season and work suspension periods. Winter preparations should begin in August.

### **6.9.2 Designer/Inspector Tool Box**

Several worksheets are provided in Appendix D to aid designers and inspectors in determining and verifying the quality and quantity of various erosion control items. These are especially useful when verifying the application rates of various mulch and hydraulically applied products. Appendix D includes the following:

- Slope Inclination Conversions
- Metric Conversions Table
- Straw Mulch Application Worksheet
- Hydraulic Application Equations
- Wood Fiber Mulch Hydraulic Application Worksheet
- Seed/Fertilizer Hydraulic Application Worksheet
- Hydraulic Application Example Problems