

1. GENERAL

1.1 SCOPE

- .1 This section contains Erosion and Sedimentation Control (ESC) Best Management Practices (BMPs) that prevent or reduce the release of sediment and pollutants into receiving water bodies or streams or other environmentally sensitive areas. This section should be considered as a minimum requirement of the Contractor while on site where the release of sediment and pollutants into receiving bodies or streams or other environmentally sensitive areas is possible.
- .2 If required by legislation, permits, or other regulatory requirements Erosion and Sedimentation Control (ESC) plans shall be created in accordance with the applicable legislation, permits, or other regulatory requirements. The more stringent requirement between this document and legislations, permits, or other regulatory requirement shall take precedent.

1.2 REGULATORY REQUIREMENTS

- .1 Federal
 - .1 The Navigable Waters Protection Act
 - .2 Fisheries Act
 - .3 Migratory Bird Convention Act
 - .4 Canadian Environmental Protection Act
 - .5 Canadian Environmental Assessment Act
- .2 Provincial
 - .1 Alberta
 - .1 Environmental Protection and Enhancement Act (EPEA)
 - .2 Wastewater and Storm Drainage Regulations
 - .3 Water Act
 - .4 Public Lands Act
 - .5 Soil Conservation Act
 - .2 Saskatchewan
 - .1 The Environmental Management Protection Act
 - .2 The Water Security Agency Act and Regulations

1.3 EROSION POTENTIAL

- .1 Site erosion potential is a measure of the erosion potential of exposed soils, where consideration is given to:
 - .1 Slope gradients
 - .2 Length of exposed slopes
 - .3 Soil erodibility
- .2 Slope Gradients
 - .1 Soil gradients are measured perpendicular to the contours and computed as a percentage of vertical distance divided by horizontal distance.
 - .2 Slope gradients are gentle, moderate or steep as per the following table:

Slope (%)	Description
0 - 10	Gentle
10 - 15	Moderate
Over 15	Steep

.3 Slope lengths are moderate or long as per the following table:

Length	Description
Under 70 m	Moderate
Over 70 m	Long

.4 Soil erodibility rating is as follows:

- .1 Low: heavy clay, clay, sandy clay, loamy sand, sand and topsoil.
- .2 Medium: silty clay, silty clay loam, clay loam, sandy clay loam and sandy loam.
- .3 High: silty loam, loam and silt.

.5 The following table can be used as a guide for evaluating erosion potential:

Topographic Classes		Soil Erodibility			Erosion Potential
Gradient	Length	Low	Medium	High	
Gentle	Moderate	Low	Low	Moderate	
	Long	Low	Moderate	High	
Moderate	Moderate	Low	Moderate	High	
	Long	Moderate	High	High	
Steep	Moderate	Moderate	High	High	
	Long	Moderate	High	High	

.6 Risk Assessment

- .1 If an ESC plan is not required by legislation, permits or other regulatory requirements and has not been prepared, the Contractor shall be responsible for determining the risk of any impact on downstream receivers. The following table can then be used to determine the ESC requirements for the Site. If requested by the Engineer the proposed ESC plan, outlining the ESC measures to be employed, must be reviewed and approved by the Engineer. The cost of determining ESC requirements and implementing Best Management Practices (BMPs) on Site shall be deemed incidental to the Work and as such will be considered the sole responsibility of the Contractor.

Erosion Potential	Impacts on Downstream Receivers	Minimum Degree of ESC Required
Low	Negligible	Good housekeeping measures required
	Yes	ESC measures required
Moderate to High	Negligible	ESC measures required
	Yes	More Extensive ESC measures required

2. PRODUCTS (Not Applicable)

3. EXECUTION

3.1 Housekeeping Measures

- .1 Place stockpiles away from watercourses, sensitive areas, drainage courses and adjacent developments. Stabilize stockpiles to limit erosion.
- .2 Limit access to vehicles leaving the Site; gravel or pave access roads to minimize tracking mud off the Site.
- .3 Protect catch basins and manholes from sediment.
- .4 Implement dust control measures such as vegetation, water, windbreaks, screening and limiting vehicle speeds.
- .5 Remove accumulated sediment and debris.

3.2 Erosion control BMPs are utilized to minimize soil detachment from taking place. The following are examples of erosion control BMPs:

- .1 Prior to construction, mark and protect any existing vegetation to be preserved. Phase construction to use existing vegetation as an ESC measure.
- .2 Only perform clearing, grubbing, stripping and grading on areas needed for immediate construction.
- .3 Protect exposed surfaces from erosion. This can be accomplished by means of surface treatments such as surface roughening, stair step grading, furrowing, tracking or seeding; or by erosion control blankets.

3.3 Transport control BMPs deal with the velocity of and flow of stormwater on the Site to minimize erosion and sedimentation. The following are examples of transport control BMPs:

- .1 Buffer strips around the Site, above steep slopes and around critical areas.
- .2 Silt fences to control sedimentation on relatively short slopes where flows do not exceed $0.03\text{m}^3/\text{s}$. Silt fences are not an erosion control device.
- .3 Check dams or dykes to divert runoff to a desired location.
- .4 Riprap can protect and stabilize areas prone to erosion.
- .5 Energy dissipaters as an erosion/velocity control measure, to prevent scouring.

3.4 Sedimentation control BMPs capture soil that has eroded, generally by filtration and impounding sediment from water flows. The following are examples of sedimentation control BMPs:

- .1 Sediment traps to detain sediment-laden runoff.
- .2 Inlet protection measures consist of a permeable barrier installed around an inlet to reduce sediment content. The two primary types are drop inlet sediment barriers and catch basin inlet barriers.
- .3 Protect the entrance to the Site to reduce tracking of mud and dirt onto public roads and streets. Typically, a gravel area will be constructed but may include rumble racks, tire washes and sediment traps.

3.5 The Contractor is responsible for maintaining the BMPs in place, for the duration of the Work, as well as during the maintenance period, if directed by the Engineer. The Contractor is responsible to regularly review the performance of BMPs with the Engineer's Representative, particularly after significant rain events, and following spring thaw. Should the BMPs be

found to be inadequate, new or improved BMPs must be installed at the Contractors sole expense.

- 3.6 If an ESC plan is required by legislation, permits, or other regulatory requirements the Contractor will be notified by the Engineer of the same and the items to be included in the ESC plan. The costs of creating, implementing, and maintaining the ESC plan will be borne by the Contractor and shall be deemed incidental to the Work being performed and shall be included in the cost provided within the Bid Forms.

END OF SECTION