



# **Erosion and Sediment Control Drawings and Report Guidelines**

# Table of Contents

<b>1.0 EROSION AND SEDIMENT CONTROL DRAWINGS -----</b>	<b>4</b>
1.1 DRAWING ESC 1 – ESC INSTALLATION DETAILS AND INSPECTION MAINTENANCE RECORDS -----	4
1.2 DRAWING ESC 2 – PRESENT CONDITIONS / PRE-GRADING-----	5
1.3 DRAWING ESC 3 – INTERMEDIATE / FINAL CONDITIONS POST-GRADING -----	6
1.4 DRAWING ESC 4 – CUT AND FILL DRAWING-----	7
1.5 DRAWING ESC 5 – LANDSCAPING/PERMANENT STABILIZATION DRAWING-----	7
<b>2.0 EROSION AND SEDIMENT CONTROL REPORT -----</b>	<b>8</b>
2.1 GENERAL INFORMATION -----	8
2.2 CONTACT INFORMATION-----	8
2.3 PROJECT OVERVIEW-----	8
2.4 EXISTING SITE CONDITIONS-----	9
2.5 EROSION PREDICTION -----	9
2.6 SOIL TYPES -----	9
2.7 CRITICAL AREAS -----	9
2.8 LIMITATIONS OF FIELD INVESTIGATION-----	10
2.9 FIELD INSPECTION/MAINTENANCE RECORD SHEET -----	10
2.10 TEMPORARY ESC PRACTICES-----	10
2.11 TEMPORARY ESC PRACTICES-----	11
2.12 REMOVAL OF TEMPORARY PRACTICES-----	11
2.13 STOCKPILE CONTROL -----	11
2.14 CONSTRUCTION SCHEDULE AND PHASING-----	12
2.15 PERMANENT ESC PRACTICES -----	12
2.16 SAFETY -----	12
<b>Appendix A -----</b>	<b>13</b>
<b>Appendix B -----</b>	<b>16</b>
<b>Appendix C-----</b>	<b>17</b>

# **Erosion and Sediment Control Drawings and Report Guidelines**

**These guidelines are designed as a template for developers and consultants preparing erosion and sediment control (ESC) reports and/or drawings for development/ construction projects within the Town of Cochrane. Failure to follow these guidelines when submitting your ESC documents will result in a return of submission prior to the review process.**

# **1.0 EROSION AND SEDIMENT CONTROL DRAWINGS**

Drawings should be attached to the reports mentioned in Section 2.0. For sites less than 2.0 ha, a report is not required and a set of drawings may be submitted for approval.

The following information must be located on the Erosion and Sediment Control drawings in the format outlined below. Failure to follow this format may result in the return of your documents and delay the review process.

As drawings are utilized more often in the field than the report, it is important that they are easily understood by the contractor. ESC practices must be identified on the drawing legend and clearly marked on the drawings. Guidance on installation, inspection and maintenance must be included on the drawings and easy to understand. The Town of Cochrane reserves the right to reject any drawings that contain too much extraneous information or are difficult to read.

**\* Include a legend and scale for all drawings**

## **1.1 DRAWING ESC 1 – ESC INSTALLATION DETAILS AND INSPECTION MAINTENANCE RECORDS**

**The following NOTES are mandatory and should be cut and pasted directly onto drawings:**

1. Prior to construction start-up, it is mandatory for the project proponent or prime contractor to schedule a pre-construction meeting to discuss scheduling, roles and responsibilities, gravel bed for entrances, temporary storage facilities, pollution and all existing and future ESC practices to be implemented.
2. The following information must be on site (and available upon request), and filed for a minimum of two years following the site stabilization:
  - The Erosion and Sediment Control Report and/or Drawings, including any amendments;
  - Documentation (including photos and up to date inspection records) detailing implementation and maintenance of ESC practices.
3. Inspections of all ESC practices must be completed and documented at least every 7 days and at critical times when erosion or sediment releases could occur. (Inspections must be completed and documented during, or within 24 hours of, significant snowmelt and heavy and/or prolonged rainfall event).
4. Inspection must be done by a qualified person who has training in ESC or by someone who is directly under the supervision of a qualified person whom they have received assistance from in understanding the purpose and requirements of the required ESC inspections.

5. The approved Erosion and Sediment Control Report and/or Drawing(s) must be updated due to changes to the erosion and sediment control practices or implementation. The Town of Cochrane ESC inspector for the Erosion and Sediment Control Report and/or Drawing(s) must be notified by submitting an addendum letter and updated drawing(s).
6. Deficiencies documented during the inspection of ESC practices must be corrected promptly, and maintenance documented. Any off-site releases of sediment-laden water or other contaminants to a storm sewer or the environment must be immediately reported to the Town of Cochrane ESC contact. Actions to remedy the incident must take place immediately and a detailed report should be submitted within 24 hours.
7. Prior authorization is required by the Town of Cochrane for pumping or directing impounded surface water and/or groundwater into a storm sewer. Please contact the Town of Cochrane Engineering department for information regarding dewatering.
8. For the site < 2.0 ha Field Inspection / Maintenance record sheet can be obtained from the Town of Cochrane.

**General Information:**

- Project name
- Legal description and land location (i.e. NW-27-25-02-W5) or plan #, block#, and lot #s
- Site municipal address
- Estimated project start-up date
- Development permit or Subdivision number.
- Total site size (ha)

**Contact Information:**

Provide company & contact names, office telephone number, cellular telephone number and email addresses for the following categories:

- Owner/Developer/Project Manager
- Engineering Consultant
- ESC Consultant
- Site Superintendent \*
- ESC Implementation, Inspection & Maintenance Contact \*
- Town of Cochrane Contact (ESC Review and Inspection)

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\* can be provided at the time of construction if not available earlier

**1.2 DRAWING ESC 2 – PRESENT CONDITIONS / PRE-GRADING**

**Details**

1. Construction details (installation, inspection and maintenance guidance notes and schematics) for each erosion and sediment control measure that is anticipated to be installed during the project. Town of Cochrane standard detail format is to be utilized

**(Appendix C).** Other details apart from the Town of Cochrane format shall be subject to approval.

2. Adjacent properties (streams, lakes, ponds, residential and commercial areas, reserves, parks, and named roadways).
3. If applicable, the location of any trees, shrubs, grass and unique vegetation both on and adjacent to the construction site.
4. Contours of existing areas (contours of 0.5 meters or less), where available.
5. Slopes with slope lengths for LS values shall be clearly marked on drawing only for sites  $\geq 2.0$  ha (e.g. 25m @ 6%). LS values are part of the RUSLEFAC equation explained in Appendix B.
6. Drainage direction for overland drainage (including all run-on and run-off locations).
7. The location and dimensions of existing storm infrastructure onsite and for the surrounding area (i.e. catch basins, storm pipes, drainage swales, trap lows, stormwater ponds).
8. The location of critical areas within and near the development. Adjacent critical areas may include, but are not limited to, areas that are environmentally sensitive (e.g. environmental reserves, waterbodies, and natural areas), established residential areas, and/or recreational areas. On site critical areas may include, but are not limited to, areas where drainage could enter the site, areas with erodible soils, steep slopes and any type of stock piles.
9. The location of gravel bed for the construction access to the site.

### **1.3 DRAWING ESC 3 – INTERMEDIATE / FINAL CONDITIONS POST-GRADING**

**Notes:** For additional phases (e.g. underground, surface improvements) where there are changes to controls that cannot be indicated on a single drawing, provide additional ESC drawings with phases clearly marked.

**Details:**

- a) Contours and/or final grades (contours of 0.5 meters or less)
- b) Slopes with slope lengths for LS values shall be clearly marked on drawing only for sites  $\geq 2.0$  ha (e.g. 25m @ 6%).
- c) Intermediate and/or final flow directions (including all run-on and run-off locations)
- d) For each phase of construction indicate on your drawing which controls will be in place and when they will be removed.

- e) Sedimentation Control Storage (ponds) shall be designed for a 150-250m<sup>3</sup>/ha and should have a safe-emergency overflow or discharge downstream.
- f) The location and dimensions of existing and proposed storm drain inlets, pipes, outlets and other drainage facilities onsite and all offsite facilities subject to construction activities should be taken into account.
- g) Show the extent of the construction project (construction boundary)
- h) The locations, types and sizes/dimensions off all Erosion and Sediment Controls should be included for all phases of construction.
- i) For each phase of construction illustrate final drainage divides/catchment areas
- j) Long term stockpiles shall be clearly marked on the drawings indicating the volume, dimensions, and durations. Protection measures for stockpiles shall be provided depending on locations and proximity of sediment transport to surrounding area.

#### **1.4 DRAWING ESC 4 – CUT AND FILL DRAWING**

Include a cut and fill drawing where there are areas in the project with cut and/or fill of more than two meters depth. Note that the Town of Cochrane requires a Deep Fills Report for areas with fills more than two (2) meters depth.

#### **1.5 DRAWING ESC 5 – LANDSCAPING/PERMANENT STABILIZATION DRAWING**

Submit a drawing providing details for implementation of landscaping and other practices if required, for permanent site stabilization. (e.g. erosion control blankets, turf reinforcement mats, seeding, sodding, retaining walls, riprap, and paving). The landscaping/permanent site stabilization drawing should also identify any temporary measures required to be installed, inspected, and maintained in the period between project completion and final stabilization (identify the company/person responsible for inspection and maintenance during this period, as well as who is responsible for removal of any other control measures).

## 2.0 EROSION AND SEDIMENT CONTROL REPORT

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**For site areas greater than 2 ha an Erosion and Sediment Control report is mandatory. The following are the requirements for a report. All reports must be signed and sealed by a qualified Erosion and Sediment specialist or professional Engineer.**

### 2.1 GENERAL INFORMATION

- Project name
- Legal description and land location (i.e. NW-27-25-02-W5) or plan #, block#, and lot #
- Site municipal address
- Estimated project start-up date
- Development permit, agreement or approval documentation
- Total site size (ha)

### 2.2 CONTACT INFORMATION

Provide company & contact names, office telephone #, cellular telephone number, and email addresses for the following categories:

- Owner/Developer/Project Manager
- Engineering Consultant
- ESC Consultant
- Site Superintendent \*
- ESC Implementation, Inspection & Maintenance Contact \*
- Town of Cochrane Contact (ESC Review and Inspection)

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\* can be provided at the time of construction if not available earlier

### 2.3 PROJECT OVERVIEW

Provide a brief description of the nature and extent of the construction project.

Examples include:

- How phasing will be implemented throughout the entire construction period
- Estimated completion dates (specific to phases if applicable)
- Describe stripping and grading timelines for future phases of the development; or if future phases have been stripped, explain ESC measure to be implemented
- Avoid stripping and grading areas which will not be subject to immediate construction
- Describe critical areas within and around the construction boundary  
Examples: environmental reserve, water bodies, steep slopes, existing developments, protected areas, etc.



## 2.4 EXISTING SITE CONDITIONS

Provide a description of which areas are vegetated and which areas are currently stripped. If applicable, provide information on the type(s) and density of vegetation present. Include any information on existing stock piles, berms, steep slopes, water bodies, overland drainage paths, ponds, natural springs, etc. Also provide information on existing ESC practices.

## 2.5 EROSION PREDICTION

In order to justify that the selected erosion and sediment controls are adequate to stabilize the site and protect downstream resources, an appropriate calculation to show predicted soil loss is required. (i.e. Revised Universal Soil Loss Equation for Application in Canada, RUSLE-FAC). For more detailed information please refer to **Appendix B**.

As construction sites are very dynamic, and not all erosion and sediment control practices are in place for the entire duration of the project, more than one erosion prediction calculation is often required. Provide the appropriate number of erosion prediction calculations for the site that take into account construction phase changes. Examples of construction changes that could trigger the need for a separate RUSLE calculation are:

- Site stripping and grading exposes soil and/or causes changes to percent slope and/or length
- Inability to continue to use a certain erosion or sediment control (i.e. loss of sediment basin or trap due to continued construction)
- Change of soil type (i.e. placement of fill materials)

## 2.6 SOIL TYPES

Soil erodibility (known as the K value in the Revised Universal Soil Loss Equation) is a major factor in soil erosion prediction

Provide data on soil structure and texture for soils that will be disturbed during construction, including existing soils on site, and texture data for soil being imported as fill. Prediction of soil erodibility requires soil survey and geotechnical information, with analysis of soil texture (% sand, silt, clay, etc) and organic matter. If organic matter information is not available, 0% should be used when determining K-value.

*Attach:* Copies of Geotechnical report with borehole logs and sieve analysis if conducted are to be submitted.

## 2.7 CRITICAL AREAS

Discuss critical areas (e.g. steep slopes, highly erodible soils, water bodies, infrastructure, and stockpiles) located within and adjacent to the proposed development site that could be negatively impacted by erosion, sediment-laden runoff or sedimentation.

## 2.8 LIMITATIONS OF FIELD INVESTIGATION

State any limitations of the field investigation (e.g. snow cover, restricted access, and on-going construction)

## 2.9 FIELD INSPECTION/MAINTENANCE RECORD SHEET (Appendix A)

All erosion and sediment controls must be inspected every seven days and following significant rainfall or snowmelt events. The developer/owner, his designate, must maintain an inspection record of any maintenance or deficiencies of erosion and sediment control measures.

## EROSION AND SEDIMENT CONTROL PRACTICES

Provide a description of all **temporary** and **permanent** Erosion and Sediment Control practices that will be used on site.

### 2.10 TEMPORARY ESC PRACTICES

Temporary ESC practices will be required during construction to minimize soil loss from the site. The ESC report should include the following information for each proposed ESC practice.

1. Run-on & Run-off Control Practices	Indicate all potential sources of run-on and runoff, and outline practices intended to divert/convey drainage and treat sediment-laden runoff. Relatively clean water from stabilized and up-gradient areas of the site should be diverted around disturbed areas of the site. This will reduce the amount of sediment-laden water shall be managed on site. Runoff from disturbed areas on site shall be subject to erosion and sediment control measures, and if necessary be conveyed in stabilized channels to on-site storage/treatment (e.g. sediment retention ponds).
2. Erosion Control Practices	Describe practices and measures that will be used to control erosion. Examples of erosion control measures include, but are not limited to: Protective cover such as topsoiling, seeding, mulching, tackifiers and rolled erosion control products.
3. Sediment Control	Outline practices that will be used to control sediment transport and contamination. Examples of sediment control measures include, but are not limited to: sediment ponds and traps, berms, silt fence, ditches, gravel beds, drain inlet protectors, silt logs/socks, and other products which have been

approved by the Town of Cochrane.

## 2.11 WINTER ESC PRACTICES

A pre-winter inspection will be required to locate any concerns, and should be addressed in a winterization plan. The winterization plan should address the conditions of the site and ESC practices prior to the onset of winter. The need for additional ESC practices to ensure protection of the site and downstream areas over winter and during spring thawing/runoff should be identified in this plan. In Calgary, ESC practices must be designed and implemented to handle multiple freeze-thaw events that typically occur during winter and spring.

Items that should be addressed in a winterization plan may include, but are not limited to:

- Removal of storm inlet sediment controls at locations that may cause safety concerns (due to ponded water and ice).
- Long-term stabilization of exposed slopes or stockpiles by methods appropriate for the slope steepness and length (e.g. soil cover, cat-tracking, tackifiers, rolled erosion control products, seeding, sod).
- Pre-winter inspection and maintenance of all ESC practices. Examples include, but are not limited to:
  - Ensuring sediment basins/traps have adequate storage capacity
  - Removal of sediment and repair of structures and controls designed to capture sediment
  - Checking for adequate stabilization of all exposed areas and inspecting erosion controls to ensure secure installation and condition
- A review of potential run-on areas should be conducted to see if additional measures will be required.

If construction is continuing during winter, include any special considerations for **how** each control/practice will be maintained.

## 2.12 REMOVAL OF WINTER ESC PRACTICES

Indicate **when** and how temporary ESC practices are to be removed.

## 2.13 STOCKPILE CONTROL

Stockpiles shall be protected regardless of them being temporary or permanent

- Indicate the location, dimension and volume of stockpile.
- Indicate the material being stockpiled (e.g. topsoil, till overburden, sandy silt subsoil) and the estimated length of time stockpiles will be in place.
- Indicate control/practices that will be used to stabilize temporary and long-term stockpiles. Include practices such as placement of stockpiles away from catch basins and areas of storm water drainage.
- Long term stockpiles (in place more than 30 days) must be covered or stabilized with soil cover e.g. mulch, tackifier, vegetation cover, or other suitable measures.

## **2.14 CONSTRUCTION SCHEDULE AND PHASING**

ESC measures to be implemented during construction should be clearly mentioned in the report to facilitate scheduling and construction startup.

Provide a construction schedule for each phase of the proposed development. The schedule may include the following phases: pre-constructions, stripping, and grading, underground installations, above ground (e.g. paving, build-out, etc) and post construction (e.g. landscaping, etc.) If dates are not available simply provide the type of controls that will be present with a note that dates will be provided when construction commences.

## **2.15 PERMANENT ESC PRACTICES**

Permanent ESC practices may include, but are not limited to: permanent vegetation, grass, or riprap-lined channels and paving.

Provide details on how disturbed areas will be permanently stabilized. This information can also be provided on a landscaping drawing.

## **2.16 SAFETY**

Protecting the health and safety of site personnel and the public is critical.

Outline any information that pertains to how erosion and sediment control practices will be managed on site to protect workers and the public.

This information may include, but is not limited to:

- Health and safety measures where ponded water is stored
- Applicable information on how ESC controls will be managed during winter so they do not create safety hazards (i.e. ice around catch basin protection)
- Dust control
- Garbage control
- Flooding

## **Appendix A**

### **EROSION AND SEDIMENT CONTROL FIELD INSPECTION/MAINTENANCE RECORD SHEET**

Use the following as a template when recording field inspection or maintenance data

<b>Project Name:</b>	
<b>Inspected by (name, title, company):</b>	
<b>Inspection date:</b>	<b>Time:</b>
<b>Previous Inspection Date:</b>	
<b>Weather:</b>	
<b>Estimated amount of precipitation in past week:</b>	
<b>General Site Information (ex; stage of construction, contractors on site, major concerns):</b>	

**Title:** (Location – Type of ESC Measure)

- **ESC description** (include brief explanation of the ESC measures purposed and overall condition, if necessary describe how the ESC measure has been compromised)
- **Recommended Action** (describe what recommended action must take place to remedy the situation)
- **Level of Importance** (while all compromised ESC measures must be repaired, mention if immediate action is required i.e. if critical area is in immediate danger. Also state whether this specific issue was reported in the previous ESC inspection)

<p><b>INSERT PICTURE HERE</b></p> <p>(Insert picture that clearly illustrates both the ESC contravention which has occurred and any associated problems with that particular measure (if needed provide multiple pictures)</p>
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(Examples provided on the next page)

**Example:**

**Erosion and Sediment Control issues for July 29, 2009:**

### West Fence, Phase 2 - Concrete Swale, Berms:

- Erosion is beginning to undermine the concrete drainage swale bordering Phase 2
- Berms and a series of check dams must be reestablished to direct flow away from concrete swale
- Immediate action required to prevent further damage to concrete swale



### N.E. Corner of Phase 3 – Riprap

- Riprap located at the end of concrete drainage swale is full of sediment and is preventing proper drainage from occurring. Drainage has diverted down pathway causing damage to the pathway
- Riprap must be cleaned out and restored to original condition. Backyards need to be sodded to prevent problem from reoccurring
- Immediate action is required to prevent further damage to pathway



### 4<sup>th</sup> Street S.W. – Drain Inlet Protection

- Drain inlet protection is full of sediments allowing debris to enter the storm sewer system
- Inlet protection must be cleaned or replaced
- Immediate action is required to prevent further sediments from entering the storm sewer system. This problem was first documented on the July 22<sup>nd</sup> inspection report



## **Appendix B**

### **SOIL LOSS ESTIMATION USING REVISED UNIVERSAL SOIL LOSS EQUATION FOR APPLICATION IN CANADA (RUSLEFAC)**



**To obtain values for RUSLEFAC equation please refer “RUSLEFAC” A Handbook for Estimating Soil Loss from Water Erosion in Canada.**

Prepared by G.J. Wall, D.R. Coote, E.A. Pringle and I.J. Shelton,  
Research Branch Agriculture and Agri-Food Canada Ottawa, Ontario

$$\text{RUSLEFAC EQUATION: } A = R * K * LS * C * P$$

To obtain values for RUSLE equation please refer City of Calgary RUSLEFAC book by Dave Travis or City of Calgary RUSLEFAC book by Geri DeLaMare March 2004.

**A-Value**

The A-Value is estimated annual soil loss in tones/hectare. The annual acceptable soil loss tolerance levels for construction sites are:

A = 2 tones/hectare/year for sites where there **is** on-site adjacent storm infrastructure.

A = 4 tones/hectare/year for sites where there is **no** on-site or adjacent storm infrastructure.

Indicate the estimated annual soil loss in tones/hectare, and provide the data used in the soil loss calculation.

**R-Value**

Provide an annual R-Value or a value specific to the length of soil disturbance. The R-value is a numerical representation of rainfall erosivity. Local R-values are generally available as monthly and annual values. The R-value is derived from historical data of rainfall intensity and duration records for individual storms. R-values are affected by storm energy and intensity, the amount of rainfall, snowfall and runoff that occurs during different seasons of the year. For Cochrane/Calgary area R = 320

**K-Value**

Provide the index for soil erodibility based on a specific soil’s susceptibility to erosion. The K-value represents the susceptibility of the soil to erosion from raindrop impact and overland flow and accounts for various soil characteristics. K-values shall be justified with copies of the applicable information from the site geotechnical and soils report (such as description of the soil types onsite, grain size analysis, soil structure, permeability and test hole logs with the corresponding location plan). Explain what method was used to obtain the k-value and attach copies of the Geotechnical Report.

**LS-Value**

The LS-value is a numerical representation of the length, gradient and shape of a slope. Erosion potential increases with increasing slope length and gradient. On construction sites, support practices such as cat-tracking, furrowing, terracing, and installation of compost socks or fiber rolls/wattles along slope contours, reduce effective slope length. RUSLE provides LS-values for highly disturbed construction site slopes, based on input slope lengths and gradients. As construction sites can typically be split into areas of

different topography, it is usually necessary to use some separate RUSLE calculations for each area: This will help to determine the level of ESC practices required for each area.

**C-Factor**

The C-value represents erosion control practices that provide temporary or permanent cover of exposed soils, thereby controlling erosion at the source (e.g. temporary and permanent vegetation, mulching, hydroseeding, and rolled erosion control products). Provide details on what cover and management factors will be used and where the C-factor being used was referenced from.

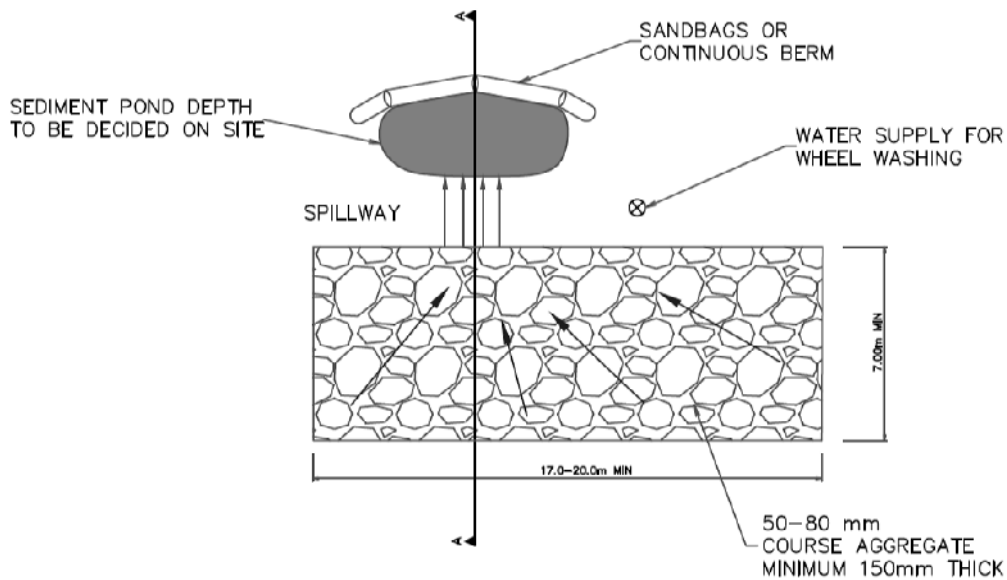
**P-Factor**

The P-value represents ‘support practices’ and provides credit for practices that are used to control construction site run-on and run-off or capture, settle and/or filter sediments and other contaminants from storm water (e.g. sediment traps/basins, silt fence, terracing, cat-tracking, check dams, contour furrows). Provide details on what support practice factors will be used and where the P-factor being used was referenced from.

## **Appendix C**

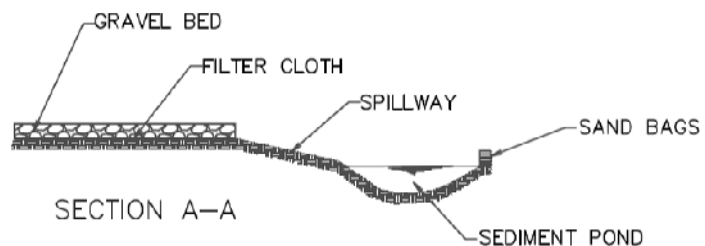
### **DETAILS**

## GRAVEL BED



GRAVEL BED (TYPICAL)

N.T.S.



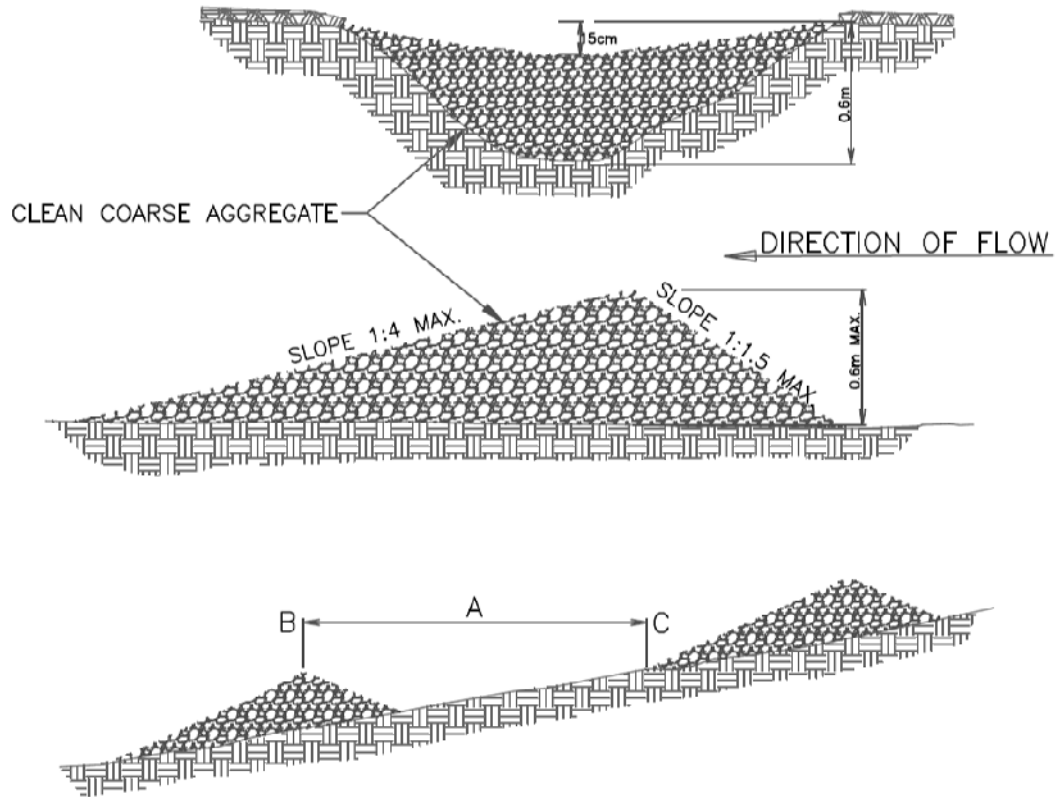
### NOTES:

1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAYS.
3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.
4. USE SANDBAGS, OR OTHER APPROVED METHODS TO CHANNELIZE RUNOFF TO BASIN AS REQUIRED.

# ROCK CHECK DAM

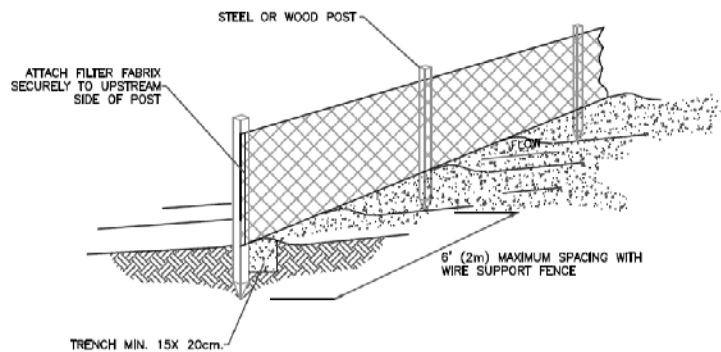
## STONE/ROCK CHECK DAM

N.T.S.



THE DISTANCE "A" SHALL BE SUCH THAT POINTS  
"B" & "C" ARE OF EQUAL ELEVATION

# SILT FENCE



SILT FENCE DETAIL (TYPICAL)  
N.T.S.

NOTE: SILT FENCE SHALL BE PLACED ON SLOPE CONTOURS TO MAXIMIZE PONDING EFFICIENCY.

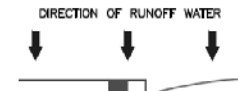
INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY. 9" (225mm) MAXIMUM RECOMMENDED STORAGE HEIGHT.



PLACE THE END POST OF THE SECOND FENCE INSIDE THE END POST OF THE FIRST POST



ROTATE BOTH POSTS AT LEAST 100 DEGREES IN A CLOCKWISE DIRECTION TO CREATE A TIGHT SEAL WITH THE FABRIC MATERIAL

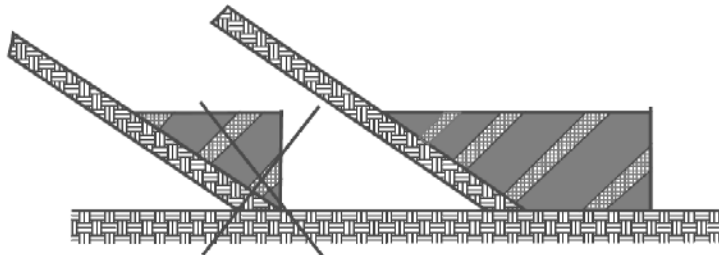


DRIVE BOTH POSTS ABOUT 25cm (10in) INTO THE GROUND AND BURY FLAP

ATTACHING TWO SILT FENCES (TYPICAL)  
N.T.S.

## SILT FENCE NOTES:

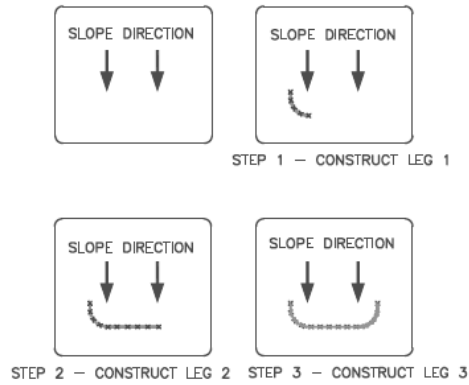
TO CONTROL SEDIMENT FROM STEP SLOPES, SILT FENCE SHOULD BE PLACED AWAY FROM THE TOE OF SLOPE FOR INCREASED HOLDING CAPACITY. SEE SKETCH BELOW.



## INSTRUCTIONS FOR INSTALING

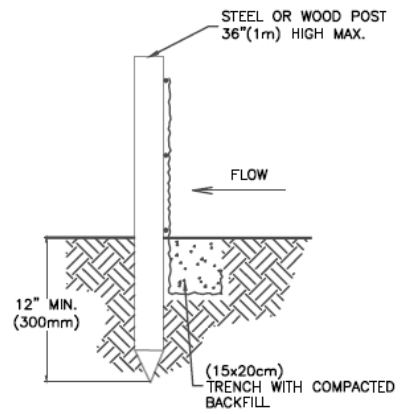
- STEP 1: DIG A 15cm WIDE X 20cm DEEP TRENCH
  - STEP 2: ROLL OUT FABRIC MATERIAL ALONG THE FRONT OF THE TRENCH SO THE STAKES SHALL BE ON THE DOWNSTREAM SIDE WITH THE BOTTOM FLAP LAYING IN THE TRENCH.
  - STEP 3: STARTING AT ONE END, DRIVE THE FIRST STAKE FAR ENOUGH INTO THE GROUND SO THAT ABOUT 20cm OF FLAP MATERIAL LIES IN TRENCH
  - STEP 4: AT THE NEXT STAKE, PULL THE MATERIAL TAUNT BEFORE DRIVING IT INTO THE GROUND
  - STEP 5: REPEAT STEP 4 UNTIL THE SILT FENCE IS INSTALLED.
  - STEP 6: WHEN ATTACHING TWO FENCES, USE THE ROTATION METHOD ILLUSTRATED IN THE DRAWING.
  - STEP 7: BACKFILL THE TRENCH AND COMPACT THE SOIL.
- ADDITIONAL FABRIC MATERIAL STABILITY CAN BE REALIZED BY ATTACHING AN ANCHOR AS ILLUSTRATED IN THE DRAWING.

**SILT FENCE continued**

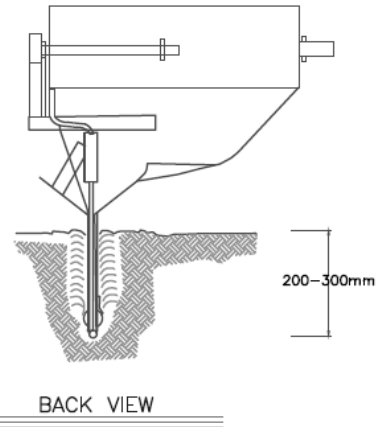
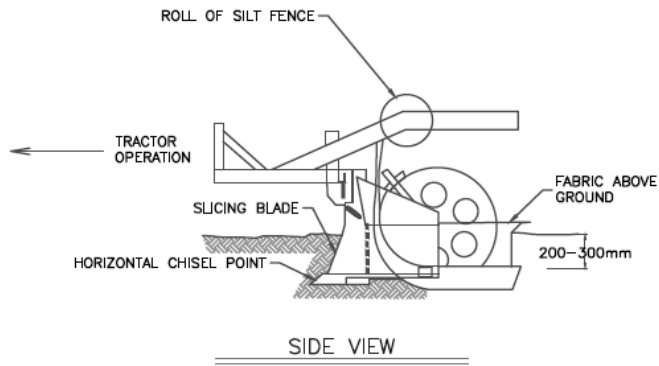


SILT FENCE  
TYPICAL PLACEMENT—ONE SLOPE  
N.T.S.

NOTE: INSTALLATION WITH J-HOOKS OR 'SMILES'  
INCREASE SILT FENCE EFFICIENCY.

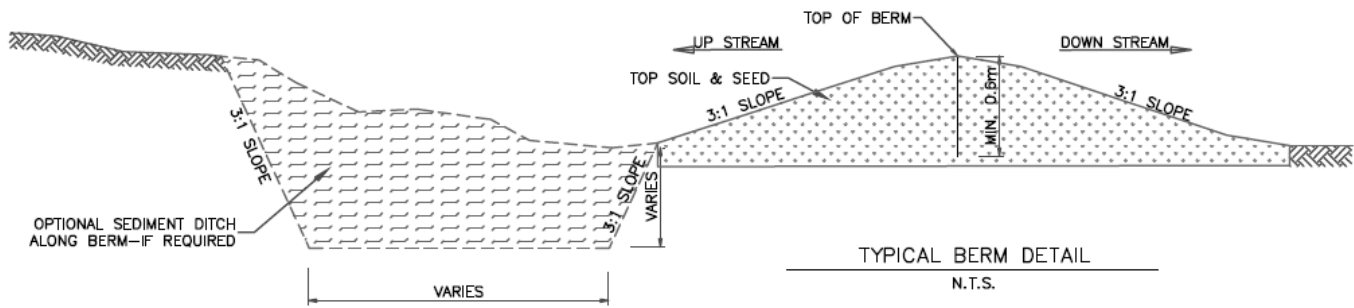


INSTALLATION OF SILT FENCE  
TRENCHING METHOD(TYPICAL)  
N.T.S.



INSTALLATION OF SILT FENCE  
FENCE SLICING METHOD(TYPICAL)  
N.T.S.

## SEDIMENT BERM

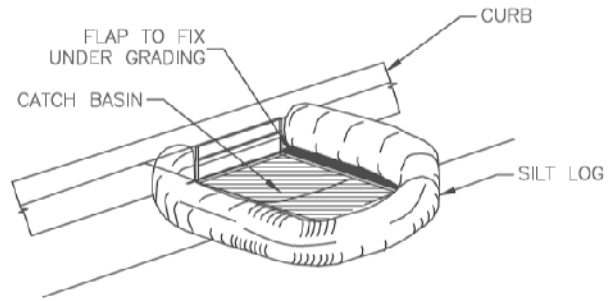


NOTE:

1. Berm to be properly compacted(98.00%) compaction required in 300mm layers.
2. Seeding for the berm is to be a REGREEN Mix or equivalent. Seeding to comply with specifications and directions of the manufacturers and suppliers.
3. Berm and ditch to be phased out at the discretion of site construction activities.

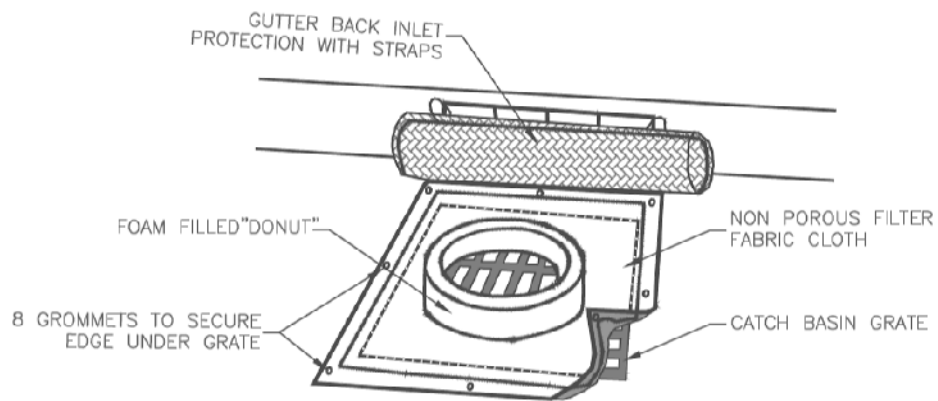


## INLET PROTECTION



CATCH BASIN PROTECTOR WITH SIDE INLET (TYPICAL)

N.T.S.

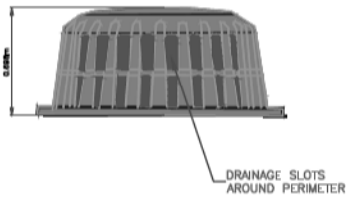
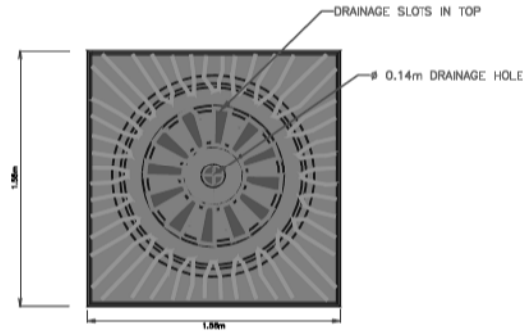


CATCH BASIN PROTECTOR DONUT TYPE (TYPICAL)

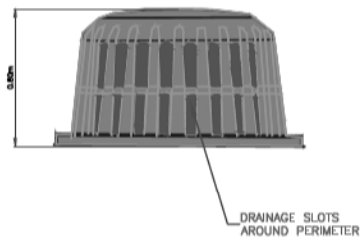
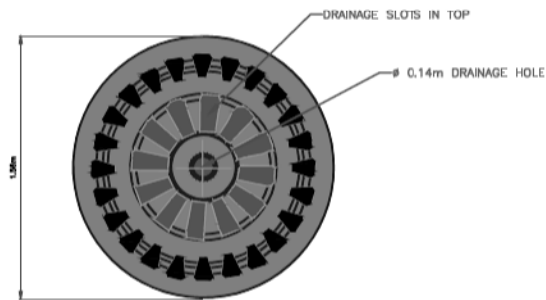
N.T.S.

NOTE: CATCH BASIN PROTECTOR (DONUT TYPE) CAN BE USED WITHOUT GUTTER BACK INLET PROTECTION WHERE IT APPLIES

# SILT SAVERS



TYPICAL SILT SAVER DETAIL  
N.T.S.



TYPICAL SILT SAVER DETAIL  
N.T.S.

## **IMPLEMENTATION**

### **GRAVEL BED**

Gravel bed shall be located at the designated site entrance prior to start construction and maintained during construction. The gravel bed size depends on the extent of the construction site, and should not be less than 17-25m in length and 7-15m wide. The bed shall have 50-80mm coarse aggregate (sharp edges) of minimum 150mm thick. Sediment pond must be constructed along with gravel bed to contain sediments from gravel bed after washing wheels.

### **ROCK CHECK DAM**

Rock check-dams should be constructed of rock with average size of 50-100mm. The center of the rock check dam must be at least 150mm lower than the outer edges. The maximum spacing between dams should be such that the toe of the upstream dam is at the same elevation as the top of the downstream dam. A slope of 4:1 should be maintained in the downstream side of the dam. This shall help in stabilizing the downstream slope. The height of rock check dam should be  $\leq 0.6$  m to avoid excessive ponding.

### **SILT FENCE**

Silt fences placed at the toe of a slope shall be set at least 2.0m from the toe in order to better sediment containment. The fence line shall follow the contour as closely as possible. The ends of the fence should be turned uphill. The distance between support posts shall not exceed 2.0m. Supporting posts should be driven into compacted soil.

### **SEDIMENT BERM**

The berm should be constructed with 3:1 slope. The berm material is to be placed in layers of 300mm and compacted up to 98.00% as each layer is added. The berm should be seeded immediately after the construction.

### **CATCH-BASIN PROTECTORS**

Two type of catch basin protector are commonly used, namely catch basin protector with side inlet and catch basin protector donut type. Appropriate type should be chosen for catch basin protection and manufacturer's guidelines should be followed in installing. As construction progress and the roads and paving areas are paved the catch basins within the area shall be protected.

### **SILT SAVERS**

Silt savers can be provided for drain inlets, such as catch basins and manholes. Any drain inlets requiring protection can be covered by silt savers depending on construction activities and decisions taken on site. A combination of silt saver and

catch basin protectors can be utilized for inlet protection as directed by Town of Cochrane. Manufacture's guideline should be followed in installation process.

### **SEDIMENT CONTAINMENT TRAPS**

Sediment containment traps should be constructed within the site near sediment control at an average depth of 1m. Depth should not be exceeding than 1.5m. Interior facing side slopes should not exceed 3:1. Only area exposed to erosion should drain into the trap. Storage volume rate of 150-250 m<sup>3</sup>/ha should be observed.

## **MAINTENANCE**

**NOTE: Site inspections shall be carried out after seven days and after each rainfall or snowmelt event. In addition regular site inspection of control measures should also be carried to check for damage due to construction activities. Maintenance should be follow after inspection.**

**The following information pertaining to maintenance is to be noted on the Erosion and Sediment Control Drawings**

### **GRAVEL BED**

- Destabilization of aggregate in the bed due to heavy trucks require repair as necessary. Periodic improvements with new aggregate, usually a top dressing may be required.
- Cleaning is required for accumulation of mud and clay within the bed.
- Damaged filter fabric should be replaced as necessary.
- Washing equipment should be checked for maintenance and ensure for proper working efficiency
- Sediment bed should be cleaned regularly.

### **ROCK CHECK DAM**

- Sediments must be removed when it reaches one half of the height of the dam.
- The center of rock check dam must be 150mm lower than the edges.
- Erosion caused by high flows around the edges of the dam should be corrected immediately.

### **SILT FENCE**

- Sediment should be removed when it reaches 1/3 the height of the fabric on the upstream side of runoff direction.
- Repairs to the fence/fabric must be completed immediately after damages.
- Support posts should be checked and secured or replaced as necessary.

- Check for support wire and fastening ties if damage repair or replace as necessary.
- If runoff water is running around, below or between the fabric-repair fence or replace fabric.
- Silt fence shall be removed when they have served their useful purpose, but not before the upslope area has been permanently stabilized and any sediment stored behind the silt fence has been removed.

### **SEDIMENT BERM**

- Regular checks (seven days) should be made for cracks in the berm, settlement of the berm or deterioration of the slopes and repair as necessary.
- Repair any berm washouts immediately. Compaction of 98.0% is required in 300mm layers. Reseed and fertilize as necessary.
- Drain and clear sediments if accumulation is over 150mm of depth.

### **CATCH-BASIN PROTECTORS**

- Rectify if foam ring and inlet sock have moved from their positions.
- Any holes and tears in the fabric covering grate must be repaired or replaced.
- Sediment accumulation of 50 to 75mm around the foam ring and sock should be removed and cleaned.
- If catch basin protector is damaged due to traffic, it should be replaced immediately.

### **SILT SAVERS**

- Damaged frame should be repaired or replaced as necessary.
- Fabric coming off and for any tears or holes should be repaired or replaced as necessary.
- Sediment accumulation should be removed every seven days after inspection.
- Silt savers can be surrounded with wash gravel for addition, as directed by Town of Cochrane.

### **SEDIMENT CONTAINMENT TRAP**

- Accumulated material is to be removed once sediment accumulates within 1/3 of the depth of trap.
- Any damage to embankments or side slopes should be rectified immediately.
- Riprap can be used to protect areas in the trap subject to increased erosion potential.