Welcome

ESC Guidelines Rollout
Lunch and Learn

Agenda

- Introductions
- Approvals
- Amendments
- New Specifications
- Inspections

BREAK

- Winterization
- Learning Recap
- Questions
- Evaluation

Housekeeping items

Washrooms

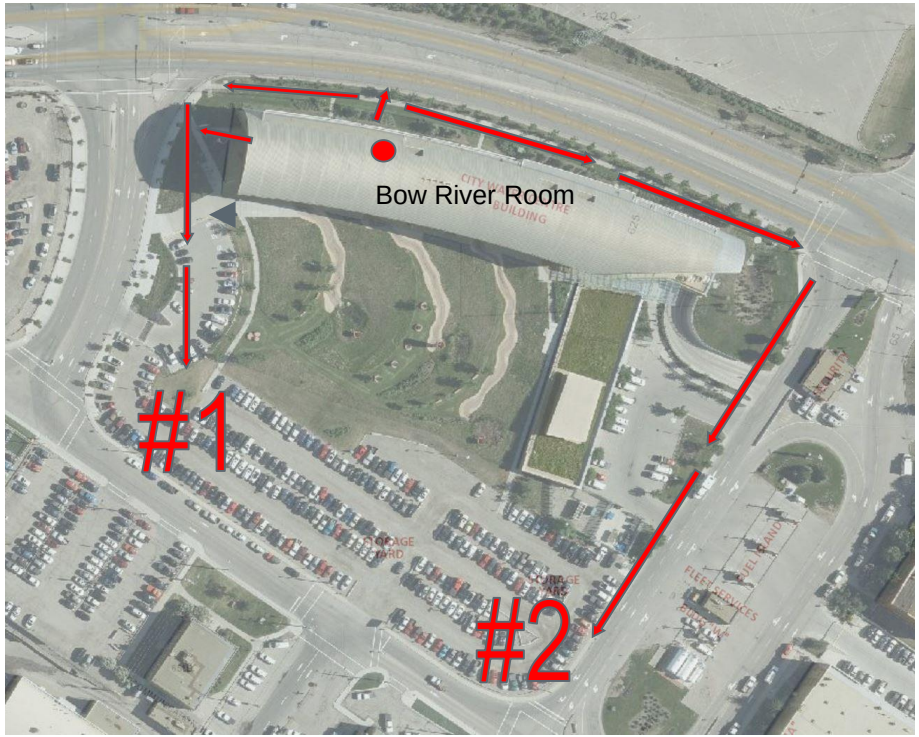
- the north side of reception

Fire exit

- exit out the north side of the building onto 25 Ave. and walk west around the Water Centre to the muster point (unless directed to do otherwise)

Muster points

- Primary (Muster Point #1): South West corner of “FC” parking lot (south parking lot)
- Secondary (Muster Point #2): South East corner of “FC” parking lot (south parking lot)



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Learning Preview

- What's new
- Where to find it
- Where to look
- What is required
- When

What's changed?

- Look for this icon throughout today's session to see elements that have been adjusted, refined or introduced in the updated documents.
- July 1st roll-out you could see both old and new processes on site
- New information can be found in a number of new documents including:
    - Field manual
    - Specifications
    - Application
    - Guidelines

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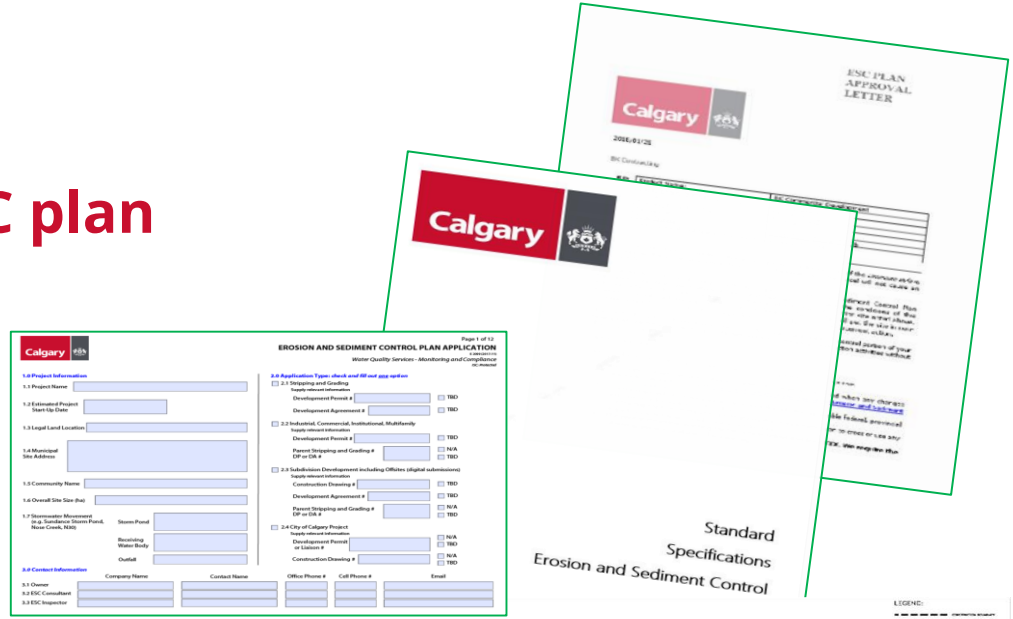
Approvals

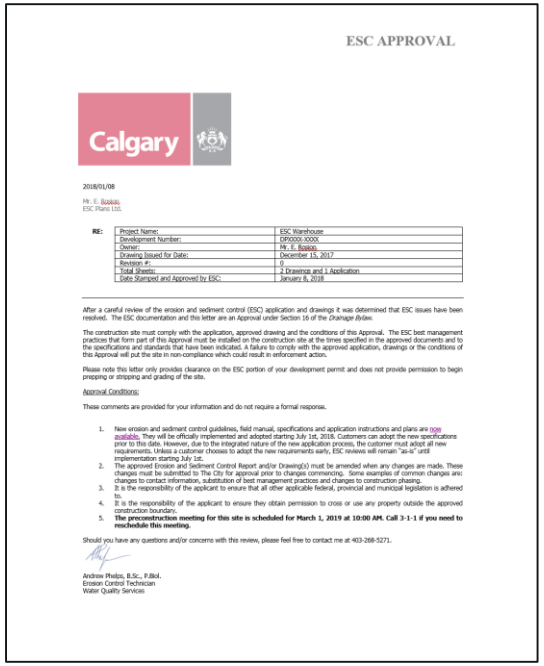
1. What is an ESC approval?
2. Why does it matter?

Elements of a complete ESC plan

- ESC Application
- ESC Drawings
- Specifications ⚠
- ESC Approval Letter
- Amendment documents



What is the ESC approval?



ESC APPROVAL

Calgary

2018/01/08

Mr. E. Bypass
ESC Plans Ltd.

RE:

Project Name:	ESC Warehouse
Development Number:	DP0XX-XXXX
Owner:	Mr. E. Bypass
Drawing Issued for Date:	December 15, 2017
Revision #:	0
Total Sheets:	2 Drawings and 1 Application
Date Stamped and Approved by ESC:	January 8, 2018

After a careful review of the erosion and sediment control (ESC) application and drawings it was determined that ESC issues have been resolved. The ESC documentation and this letter are an Approval under Section 16 of the *Drainage Bylaw*.

The construction site must comply with the application, approved drawing and the conditions of this Approval. The ESC best management practices that form part of this Approval must be installed on the construction site at the times specified in the approved documents and to the specifications and standards that have been indicated. A failure to comply with the approved application, drawings or the conditions of this Approval will put the site in non-compliance which could result in enforcement action.

Please note this letter only provides clearance on the ESC portion of your development permit and does not provide permission to begin prepping or stripping and grading of the site.

Approval Conditions:

These comments are provided for your information and do not require a formal response.

1. New erosion and sediment control guidelines, field manual, specifications and application instructions and plans are now available. They will be officially implemented and adopted starting July 1st, 2018. Customers can adopt the new specifications prior to this date. However, due to the integrated nature of the new application process, the customer must adopt all new requirements. Unless a customer chooses to adopt the new requirements early, ESC reviews will remain "as-is" until implementation starting July 1st.
2. The approved Erosion and Sediment Control Report and/or Drawing(s) must be amended when any changes are made. These changes must be submitted to The City for approval prior to changes commencing. Some examples of common changes are: changes to contact information, substitution of best management practices and changes to construction phasing.
3. It is the responsibility of the applicant to ensure that all other applicable federal, provincial and municipal legislation is adhered to.
4. It is the responsibility of the applicant to ensure they obtain permission to cross or use any property outside the approved construction boundary.
5. **The preconstruction meeting for this site is scheduled for March 1, 2019 at 10:00 AM. Call 3-1-1 if you need to reschedule this meeting.**

Should you have any questions and/or concerns with this review, please feel free to contact me at 403-268-5271.

Andrew Phelps, B.Sc., P.Biol.
Erosion Control Technician
Water Quality Services

- Written approval under Section 16 of the Drainage Bylaw.
  - Acknowledgement that ESC Plan adequately protects The City's storm infrastructure.
  - Tied to the land.
- Confirmation that "Prior to Release" conditions have been met.
- May contain conditions specific to site.
- Permission to install inlet protection.

Why does the ESC approval matter?

I. Legal

- Section 16 of Drainage Bylaw
- Due diligence – if provisions and conditions are followed, the approval can be a defense if a release happens.

APPROVALS AND REQUIREMENTS

16. (1) A Person to whom a written approval or requirement has been issued pursuant to this Bylaw shall ensure every provision and condition of that approval or requirement is complied with.

(2) Every Person who relies on a written approval issued pursuant to this Bylaw has the onus of proving that they were the holder of a valid and subsisting approval.

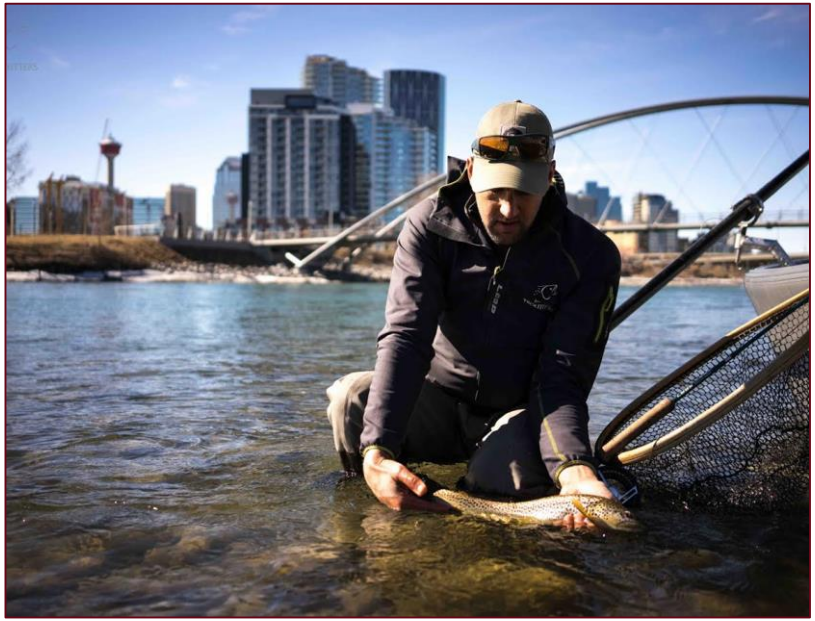
(3) A written approval given by the Director, Water Resources or the Director, Water Services pursuant to this Bylaw, or an agreement entered into by the Director, Water Resources or Director, Water Services pursuant to this Bylaw, must be available for inspection on the request of either of the Directors or on the request of an Officer.

(13M2012, 2012 March 12)

Why does the ESC approval matter?

II. Environmental

- Substantially lowers the risk of sediment being released from site and causing harmful effects to ecological systems (eg. riparian areas, environmental reserves, waterbodies).



Where to find more details?

- More information on approvals and legal requirements can be found online in the following documents:
  - Erosion and Sediment Control Guidelines, 2017
  - Erosion and Sediment Control Field Manual, 2017
  - City of Calgary Drainage Bylaw (37M2005)

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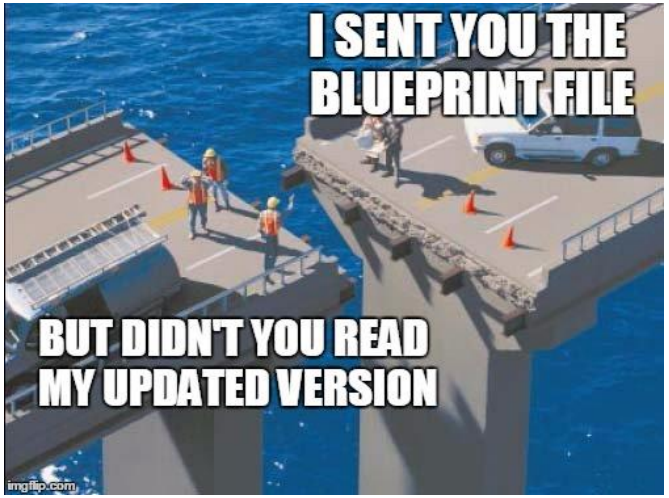
Amendments

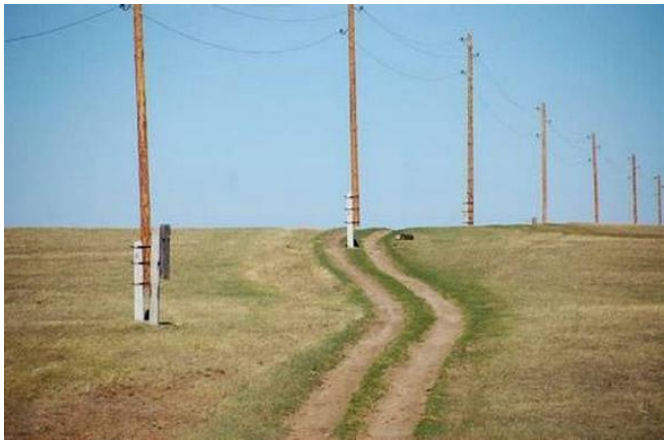
1. What to do if plans change
2. Types of amendments
   a. What a consultant needs to do
   b. What you can do
3. Examples
4. Where and how to submit an amendment

What if plans change?

Considerations:

- Your approval is your legal commitment.
- City inspectors can only inspect what has been approved.
- We need to know what has changed and that the site still meets City requirements.
- Some changes can be done on site, some must be done by the Owner or Owners' Representative





2 types of amendments

1. **Change affects the RUSLE calculation (Needs to be done by an ESC consultant)**
   - Add/remove cover such as mulch and tackifier
   - Add/remove protection such as straw wattles

2 types of amendments

2. Change does not affect RUSLE calculation (Done by you, get approval from your City ESC inspector)

- Moving gravel access to a new location
- Stockpile size/volume
- Removing perimeter controls that don't affect RUSLE

Get written approval first

For both types of amendment

- Before implementing your amendment, make sure you get written approval from your area inspector
- This will save you from removing or replacing products or controls that don't get approved.

Example: Removing cover + replacing with gravel

- The plan calls for mulch & tackifier in an area where trades are parking.
- You would prefer to use gravel which holds up better to vehicle traffic.

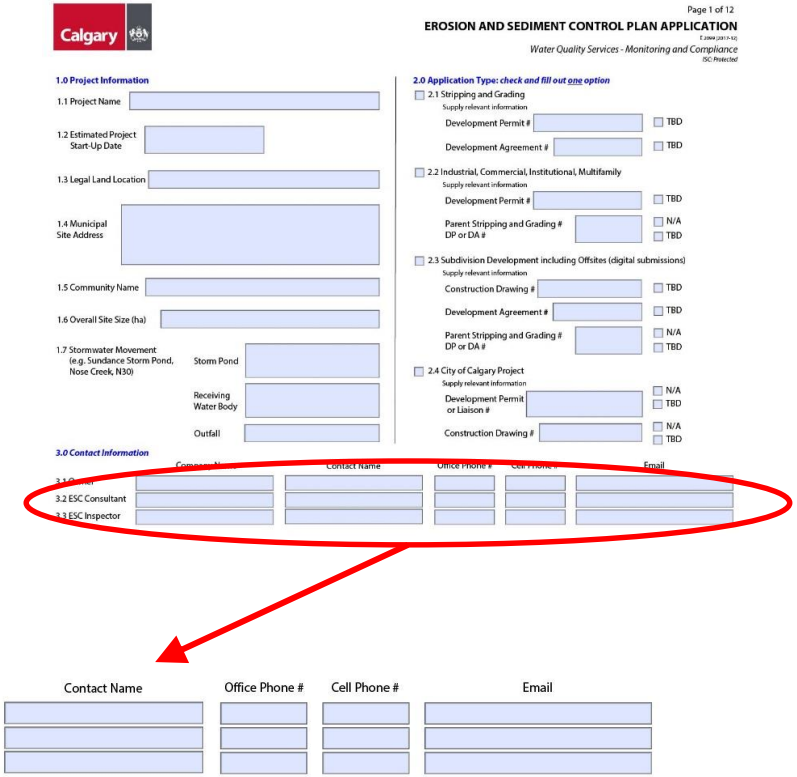
➔ Get in touch with the ESC consultant (contact section of the approval)

Example: Relocating a gravel access

- The plan calls for a gravel access on the north side of your site from a busy road.
- Due to traffic it's safer for people to access the site from a side street to the south
  - ➔ Contact your ESC inspector & provide a drawing showing the change.
  - ➔ If you are unsure, contact the Owner or Owner's Representative

Sending Amendment information: (ESC Consultant Required)

- Contact the person listed and arrange to have an amendment submitted.
- They will handle submissions and let you know when they are approved.
- Make sure to get an updated copy of the amended drawings for site.



Page 1 of 12

EROSION AND SEDIMENT CONTROL PLAN APPLICATION

Water Quality Services - Monitoring and Compliance

ISC: Protected

1.0 Project Information

1.1 Project Name

1.2 Estimated Project Start-Up Date

1.3 Legal Land Location

1.4 Municipal Site Address

1.5 Community Name

1.6 Overall Site Size (ha)

1.7 Stormwater Movement (e.g. Sundance Storm Pond, Nose Creek, N30)
Storm Pond
Receiving Water Body
Outfall

2.0 Application Type: *check and fill out one option*

2.1 Stripping and Grading
Supply relevant information
Development Permit # TBD
Development Agreement # TBD

2.2 Industrial, Commercial, Institutional, Multifamily
Supply relevant information
Development Permit # TBD
Parent Stripping and Grading # DP or DA # N/A TBD

2.3 Subdivision Development including Offsites (digital submissions)
Supply relevant information
Construction Drawing # TBD
Development Agreement # TBD
Parent Stripping and Grading # DP or DA # N/A TBD

2.4 City of Calgary Project
Supply relevant information
Development Permit or Liaison # N/A TBD
Construction Drawing # N/A TBD

3.0 Contact Information

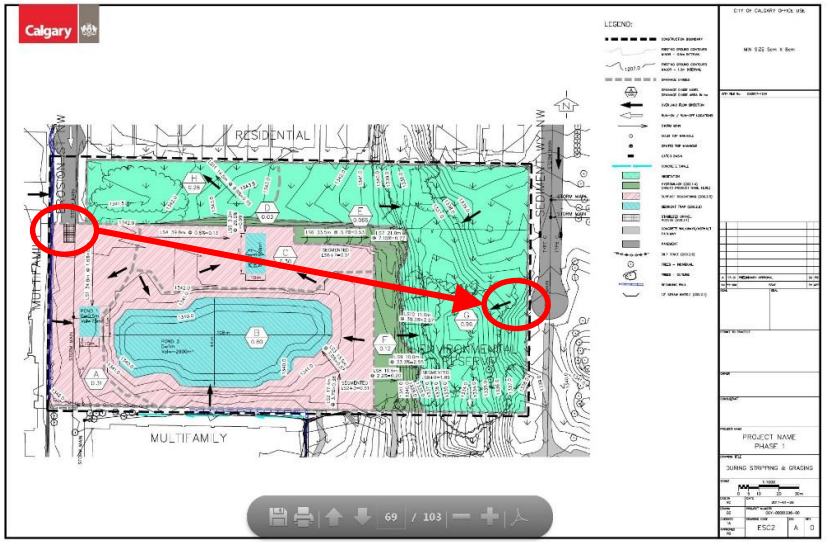
	Company Name	Contact Name	Office Phone #	Cell Phone #	Email
3.1 Owner					
3.2 ESC Consultant					
3.3 ESC Inspector					

3.0 Contact Information

	Company Name	Contact Name	Office Phone #	Cell Phone #	Email
3.1 Owner					
3.2 ESC Consultant					
3.3 ESC Inspector					

Sending Amendment information: ESC Consultant not required

- Contact the ESC inspector for your area (call 3-1-1)
- Email or mail a marked-up drawing to your inspector:
  - Ben Ethier (north) – ben.ethier@calgary.ca
  - Bobby Chong (south) - bobby.chong@calgary.ca
- Keep a copy of the approved amended drawings and written approval on site.

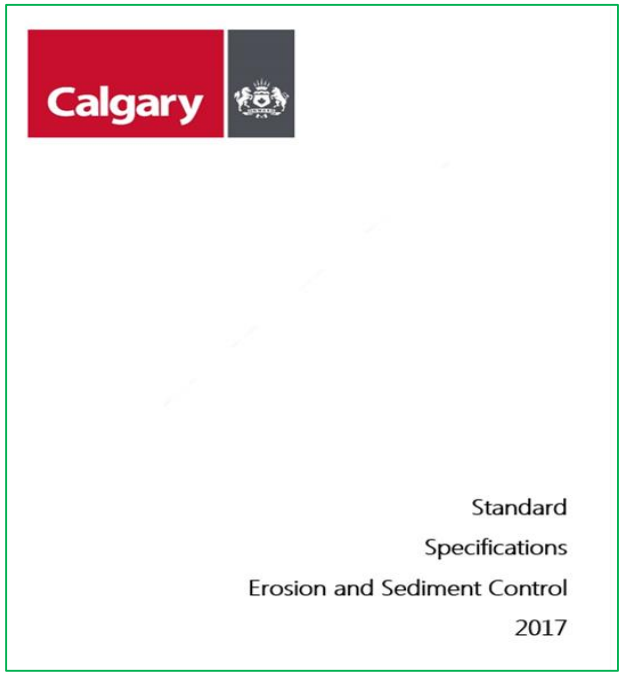


Specifications

1. Specification sections
2. Parts of a specification
3. Example (Silt Fence – 200.2.6)

Specifications: Sections

- 100. General Requirements
- 200. Specifications
  - 200.1 Erosion Controls
  - 200.2 Sediment Controls
  - 200.3 Supporting Practices
- 300. Drawings

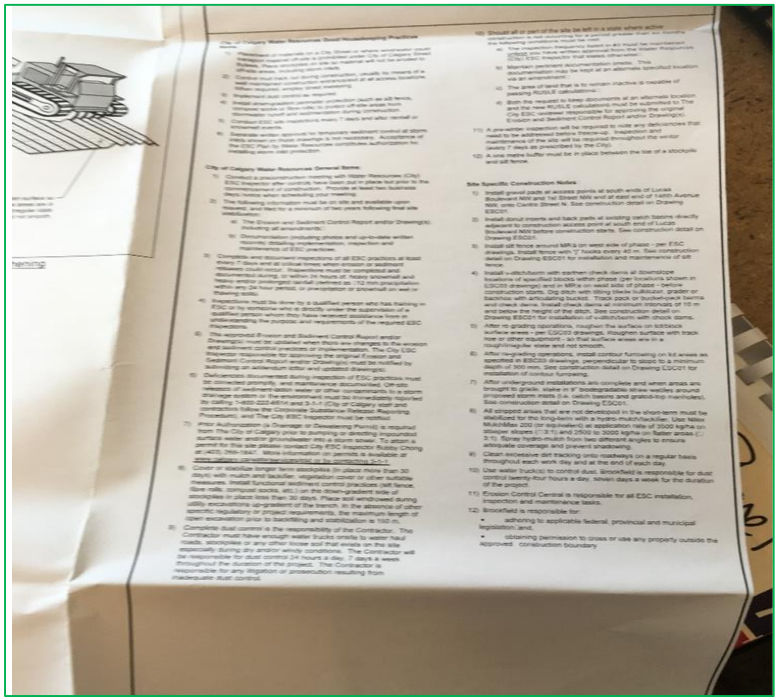


100. General Requirements

Specifications: pgs. 11-18

Requirements related to all construction sites:

- Qualified Inspector
- Release Reporting
- Stockpile Cover
- Mud tracking



100. General Requirements

Specifications: pg. 14

Winterization Plan

- 100.11 Winterization Plan
- November 15th – April 15th

200.1 – Erosion Control

Specifications: pgs. 19-30

I. Seeding/Sod

II. RECP's

III. Hydromulches and Tackifiers

IV. Compost Blankets

V. Aggregate Cover

200.2 – Sediment Control

Specifications: pgs. 32-44

I. Wattles/Logs/Barriers

II. Sediment Containment Systems

III. Diversion Channels

IV. Diversion Berms

V. Surface Texturing

VI. Silt Fence

200.3 – Support Practices

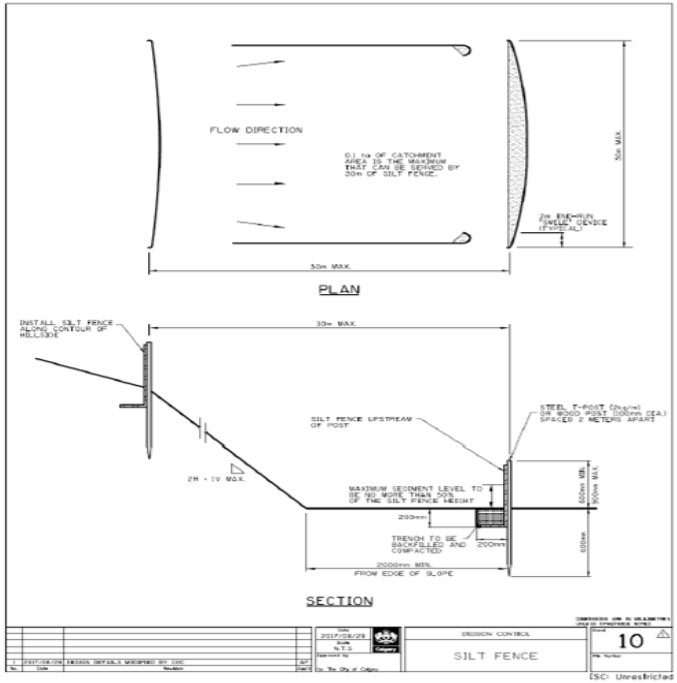
Specifications: pgs. 46-48

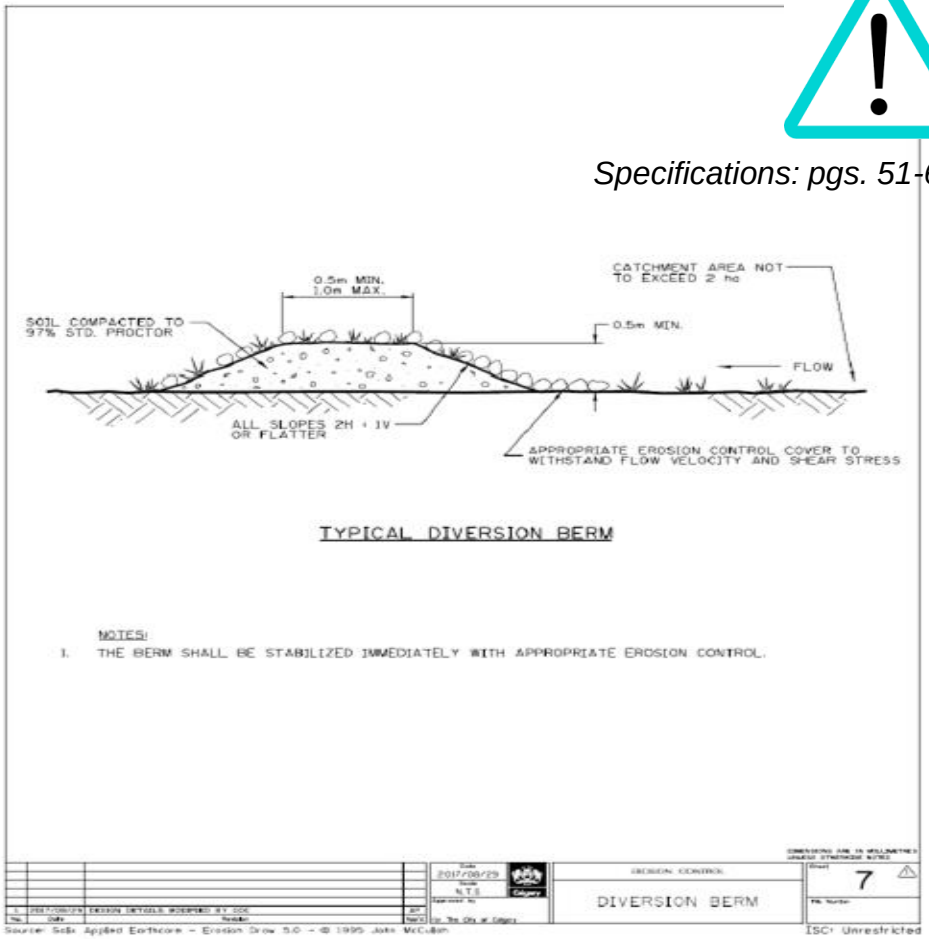
I. Stabilized Gravel Access

II. Storm Inlet Controls

300 Standard Drawings

Specifications: pgs. 51-68





Parts of a Specification

Specifications: pgs. 19-48

- Design Requirements
- Implementation
- Inspection
- Maintenance
- Removal

Specification Example: Silt fence

200.2.6.2 Design Requirements

Silt fence must not:

- Be constructed in areas where flow velocity is to exceed 0.03 m/s;
- Be installed around the perimeter of construction site in a long linear fashion;
- Be installed on existing fence, such as chain link or temporary construction fence;
- Be installed in locations where concentrated runoff occurs;
- Be used in drainage swales where there are grades that exceed 2% and/or the contributing area exceeds 0.8 ha;
- Be designed to impound sediment or water more than 0.45 m high; and
- Use wire backing for fence reinforcement, unless previously approved in the ESC Plan.

Implementation

200.2.6.3 Implementation

Silt fence must be trenched into the ground at a minimum of 0.2 m deep.

Silt fence must be installed at a minimum height of 0.6 m and a maximum height of 0.9 m (from grade to top of silt fence fabric).

Silt fence trench must be backfilled and compacted to grade so as to hold the base of the silt fence firmly in place.

Silt fence posts must be driven 600 mm into the ground, and spaced at a maximum distance of 2 m apart.

Silt fence must be secured on the upstream side by either:

Inspection

200.2.6.4 Inspection and Maintenance

Ponded water behind silt fence must be removed within 24 hours after each storm event.

Sediment must not be allowed to exceed 50% of the height of the silt fence.

Silt fence must be firmly entrenched and anchored in the soil.

Replace damaged fabric and address flow around and/or undermining problems immediately.

Maintenance

200.2.6.4 Inspection and Maintenance

Ponded water behind silt fence must be removed within 24 hours after each storm event.

Sediment must not be allowed to exceed 50% of the height of the silt fence.

Silt fence must be firmly entrenched and anchored in the soil.

Replace damaged fabric and address flow around and/or undermining problems immediately.

Removal

200.2.6.5 Removal

Silt fence fabric and posts must be removed both above grade and below once the upstream catchment area has been permanently stabilized.

Any excavations required to remove silt fence and post must be backfilled, compacted and covered with an appropriate erosion control and stabilized.

Non-Standard Specifications

Section 12.0 of application

Nonstandard Specification

Nonstandard Specification # 3

12.0 Nonstandard Erosion or Sediment Controls

Type/Name of Control			
C or P-Value	Drawings When Used	Description Where Used	Additional Information
Design Requirements			
Specification			
Installation Method			
Inspection Requirements			
Maintenance Requirements			
Removal Requirements			

☐ Attach manufacturer's information to support the C or P-value used and any sizing, depth, spacing etc. details

Inspections

1. Your role as an ESC inspector
2. What you need to have on site
3. How to prepare for an inspection
4. City processes
5. Inspection Activity

Your Role

I. Inspect
   - Conduct 7 day and rainfall inspections
   - Know what should be installed and what has been installed

II. Document
   - Any deficient, missing or unmaintained ESC measures

III. Communicate
   - What measures need to be installed, maintained or removed

What you need on-site

Documents

- **Approved ESC documents**
  - ESC approval letter
  - Application
  - Specifications ⚠
  - Drawings
  - Amendments
- **Completed Inspection records**
  - Maintenance records
  - Installation/application records
- **Drainage permit records**
  - Monitoring records
  - Applications or approval letters

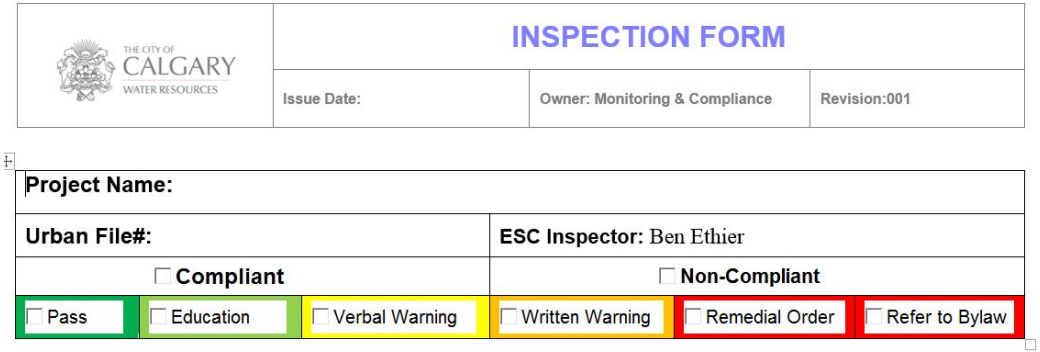
ESC Audit Binder: keep it all in one place

- Make City inspections easier by maintaining an audit binder for all your ESC Documents and information.

Our processes

We rank files based on a number of conditions that are found around site

- Low: may visit once during construction
- Moderate: will visit once per year
- High: will visit twice per year

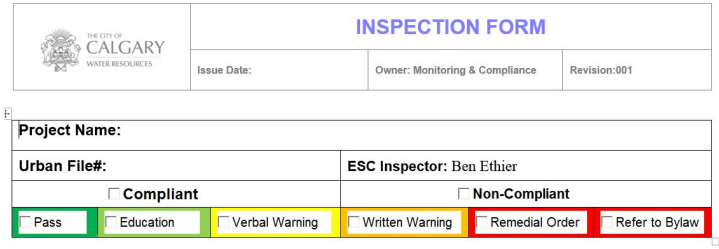


THE CITY OF CALGARY WATER RESOURCES	INSPECTION FORM		
	Issue Date:	Owner: Monitoring & Compliance	Revision:001

Project Name:					
Urban File#:			ESC Inspector: Ben Ethier		
☐ Compliant			☐ Non-Compliant		
☐ Pass	☐ Education	☐ Verbal Warning	☐ Written Warning	☐ Remedial Order	☐ Refer to Bylaw

Our processes

- When we visit the site we will determine:
  - If all required documents are on site
  - If inspections have been conducted
  - If ESC measures have been maintained and are effective
  - Whether the site matches the approved drawings
- Non-compliance will result in either a Written Warning, Remedial Order, a fine or The City taking Remedial action



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Project Name:					
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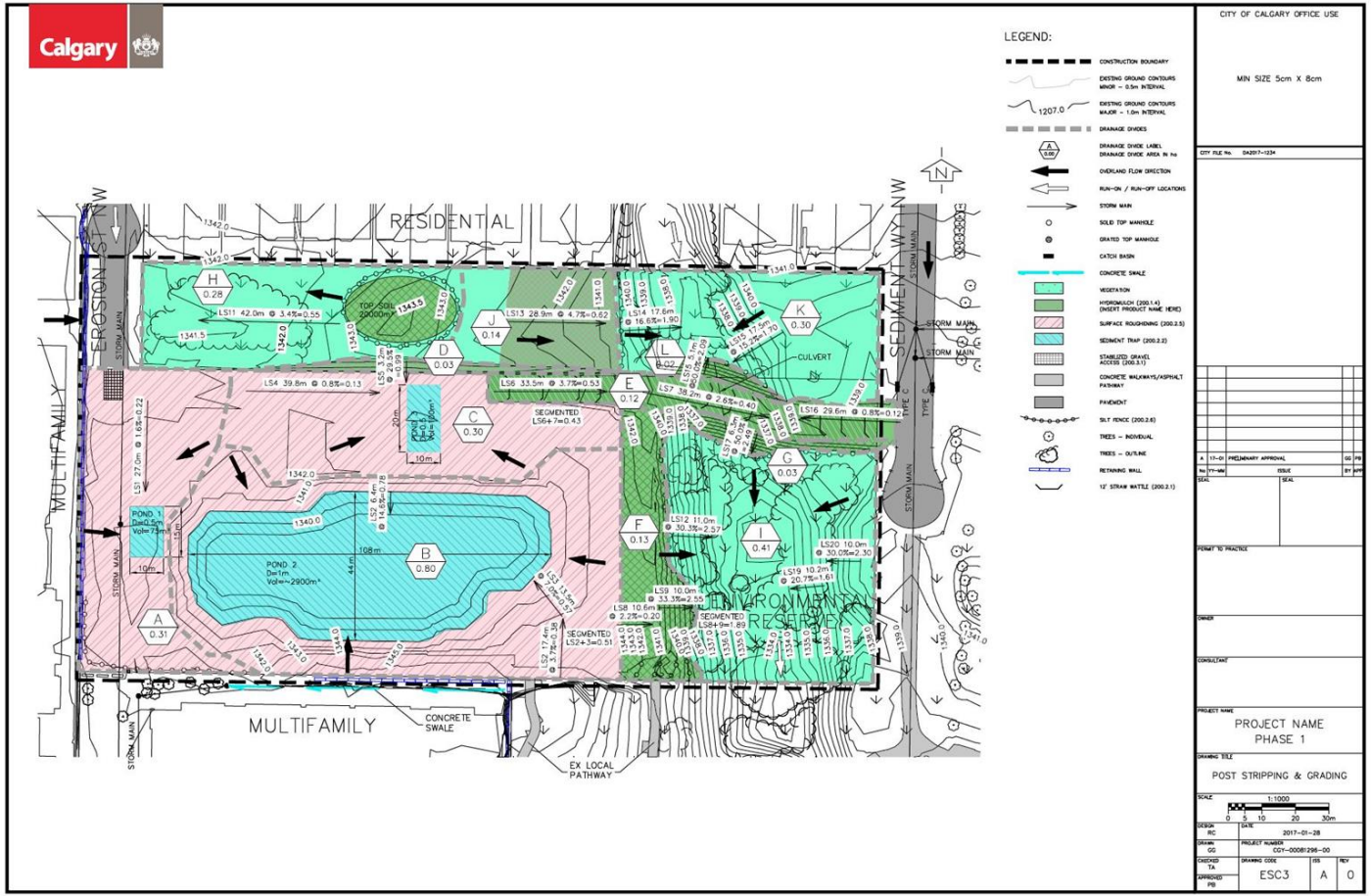
Compliant			Non-Compliant		
Pass	Education	Verbal Warning	Written Warning	Remedial Order	Refer to Bylaw

Inspection Activity

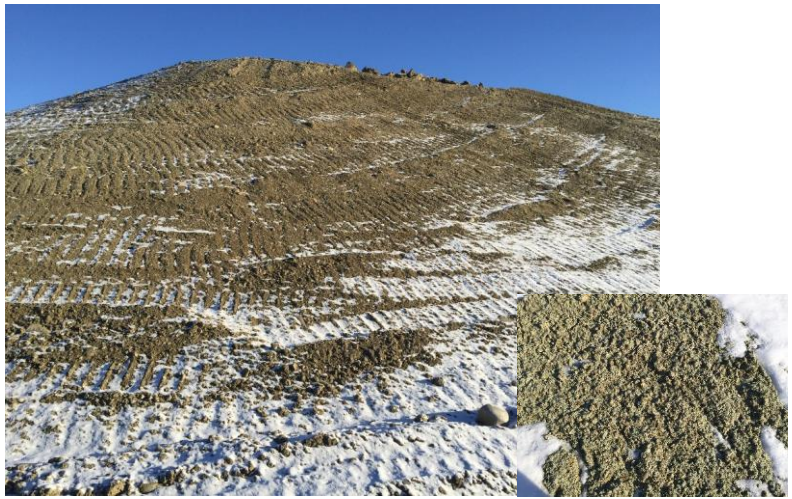
Your site:


RESIDENTIAL
MULTIFAMILY
MULTIFAMILY
ENVIRONMENTAL RESERVE
EROSION CONTROL
SEDIMENT CONTROL
CONCRETE SWALE
EX LOCAL PATHWAY
POND 1
POND 2
CULVERT
LEGEND:
CITY OF CALGARY OFFICE USE
PROJECT NAME
PHASE 1
POST STRIPPING & GRADING
ESC3

Fill out your inspection form as a group

Control	Drawing	Location	Observations (effectiveness of the measure used) Include Deficiencies or Noted Concerns. Optional Photo	Maintenance Requirements or Changes Required for the ESC Report and/or Drawings	Performed Actions When and What Repairs/Maintenance were done and by Whom	Performance (Concerns/ Meets/Exceeds)
Mulch/Tackifer	Post Stripping and Grading	3:1 Slopes located mid site				
Sediment Containment	Post Stripping and Grading	Toe of slope along natural contours				
Silt Fence	Post Stripping and Grading	SW corner of site				
Stabilized Gravel Access	Post Stripping and Grading	NW access				

What's wrong with these photos?

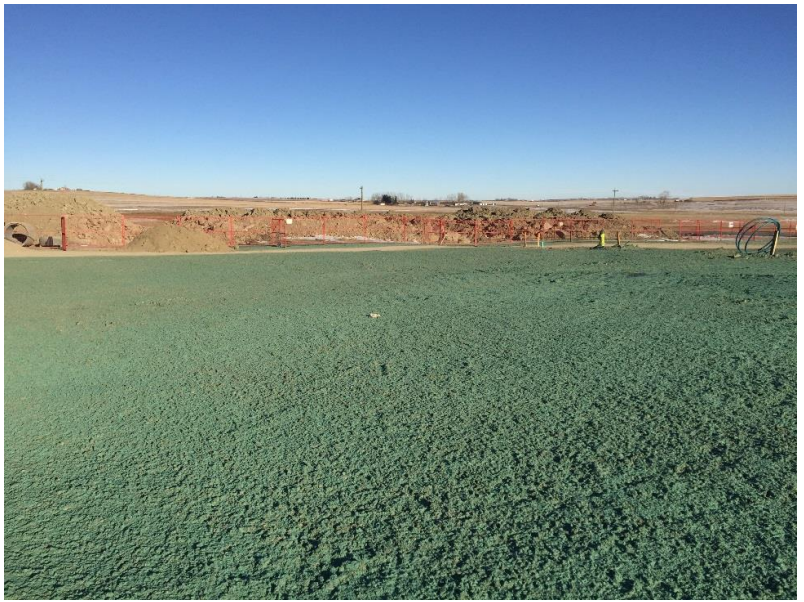


Hydromulch & Tackifier

200.1.4

What I saw

What it should look like:



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Mulch/Tackifer	Post Stripping and Grading	3:1 Slopes located mid site	• Application does not meet 80% cover • Mulch and tackifier has been damaged or removed • *BONUS* cat tracking wrong direction	• Reapply Mulch and tackifier at a minimum 80% cover • Re-establish cat tracking perpendicular to slope	• Deficiencies noted and referred to owner on 25-Jan-2018	Concerns
Sediment Containment	Post Stripping and Grading	Toe of slope along natural contours				
Silt Fence	Post Stripping and Grading	SW corner of site				
Stabilized Gravel Access	Post Stripping and Grading	NW access				

Calgary

What's wrong with this photo?

Sediment Containment Systems

200.2.2

What it should look like:

Fill out your inspection form as a group

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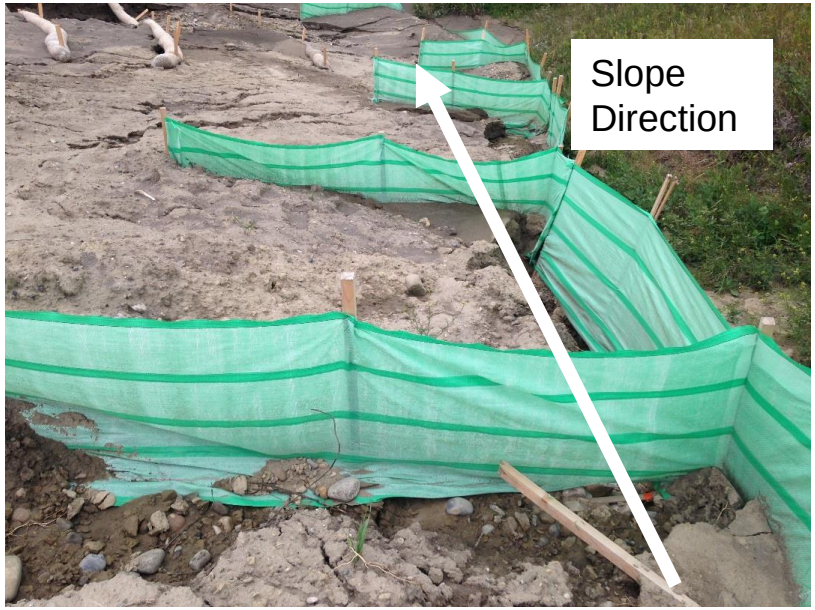
Mulch/Tackifer	Post Stripping and Grading	3:1 Slopes located mid site	• Application does not meet 80% cover • Mulch and tackifier has been damaged or removed • *BONUS* cat tracking wrong direction	• Reapply Mulch and tackifier at a minimum 80% cover • Re-establish cat tracking perpendicular to slope	• Deficiencies noted and referred to owner on 25-Jan-2018	Concerns
Sediment Containment	Post Stripping and Grading	Toe of slope along natural contours	• Full of water and possibly sediment • Rilling • No cat tracking or support practice present	• Remove accumulated water and sediment • Re-establish cat tracking	• Deficiencies noted and referred to owner on 25-Jan-2018	Concerns
Silt Fence	Post Stripping and Grading	SW corner of site				
Stabilized Gravel Access	Post Stripping and Grading	NW access				

What's wrong with these photos? Silt Fence 200.2.6




Slope
Direction

What it should look like:

Fill out your inspection form as a group

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Sediment Containment	Post Stripping and Grading	Toe of slope along natural contours	• Full of water and possibly sediment • Rilling • No cat tracking or support practice present	• Remove accumulated water and sediment • Re-establish cat tracking	• Deficiencies noted and referred to owner on 25-Jan-2018	Concerns
Silt Fence	Post Stripping and Grading	SW corner of site	• Not trenched/undermined • Sediment accumulated • J-hooks are not hooked	• Remove accumulated sediment • Re-establish and compact bottom of fence • Install up hill hooks	• Deficiencies noted and referred to owner on 25-Jan-2018	Concerns
Stabilized Gravel Access	Post Stripping and Grading	NW access				

What's wrong with these photos? 200.3.1

Stabilized Gravel Access

200.3.1

What it should look like:

Fill out your inspection form as a group

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Mulch/Tackifer	Post Stripping and Grading	3:1 Slopes located mid site	• Application does not meet 80% cover • Mulch and tackifier has been damaged or removed • *BONUS* cat tracking wrong direction	• Reapply Mulch and tackifier at a minimum 80% cover • Re-establish cat tracking perpendicular to slope	• Deficiencies noted and referred to owner on 25-Jan-2018	Concerns
Sediment Containment	Post Stripping and Grading	Toe of slope along natural contours	• Full of water and possibly sediment • Rilling • No cat tracking or support practice present	• Remove accumulated water and sediment • Re-establish cat tracking	• Deficiencies noted and referred to owner on 25-Jan-2018	Concerns
Silt Fence	Post Stripping and Grading	SW corner of site	• Not trenched/undermined • Sediment accumulated • J-hooks are not hooked	• Remove accumulated sediment • Re-establish and compact bottom of fence • Install up hill hooks	• Deficiencies noted and referred to owner on 25-Jan-2018	Concerns
Stabilized Gravel Access	Post Stripping and Grading	NW access	• Substantial mud tracking onto public roadways • Gravel is not clean washed • No Geotextile installed	• Remove accumulated sediment from road • Replace gravel with 50mm clean wash • Install Geotextile	• Deficiencies noted and referred to owner on 25-Jan-2018	Concerns

Break

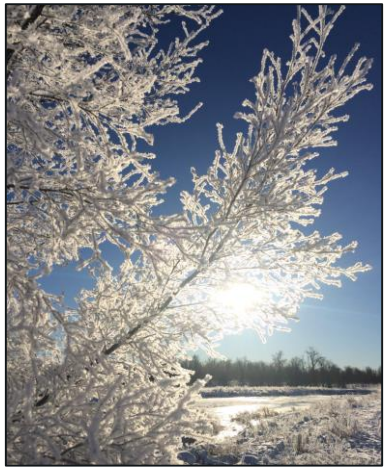
20 mins

Winterization

1. Defining winter
2. Why Winterize
3. Limitations of ESC
4. Plans
5. Cues and Considerations
6. Discussion

Specifications: 100.11 pg. 14

Defining Winter for ESC in Calgary



- **September 15th** – typical first frost
  - Start reviewing and envisioning implementation of your Winterization Plan

- **November 15th** – Average daily mean temperature below 0°C
  - Winterization Plan must be implemented.

- **April 15th** – Average daily mean temperature above 0°C
  - Winterization Plan must be retired and continue following appropriate ESC Drawing within Approved ESC Plan.

Why winterize your site?

- To prevent situations like this →
- Avoid unnecessary effort and costs
  - a lot less effort to ensure practices and controls are installed and maintained to prevent the risk of sediment release.
- Frost depth and snow/ice cover limit the type of controls that can be installed (hydromulch)

Why does this happen?

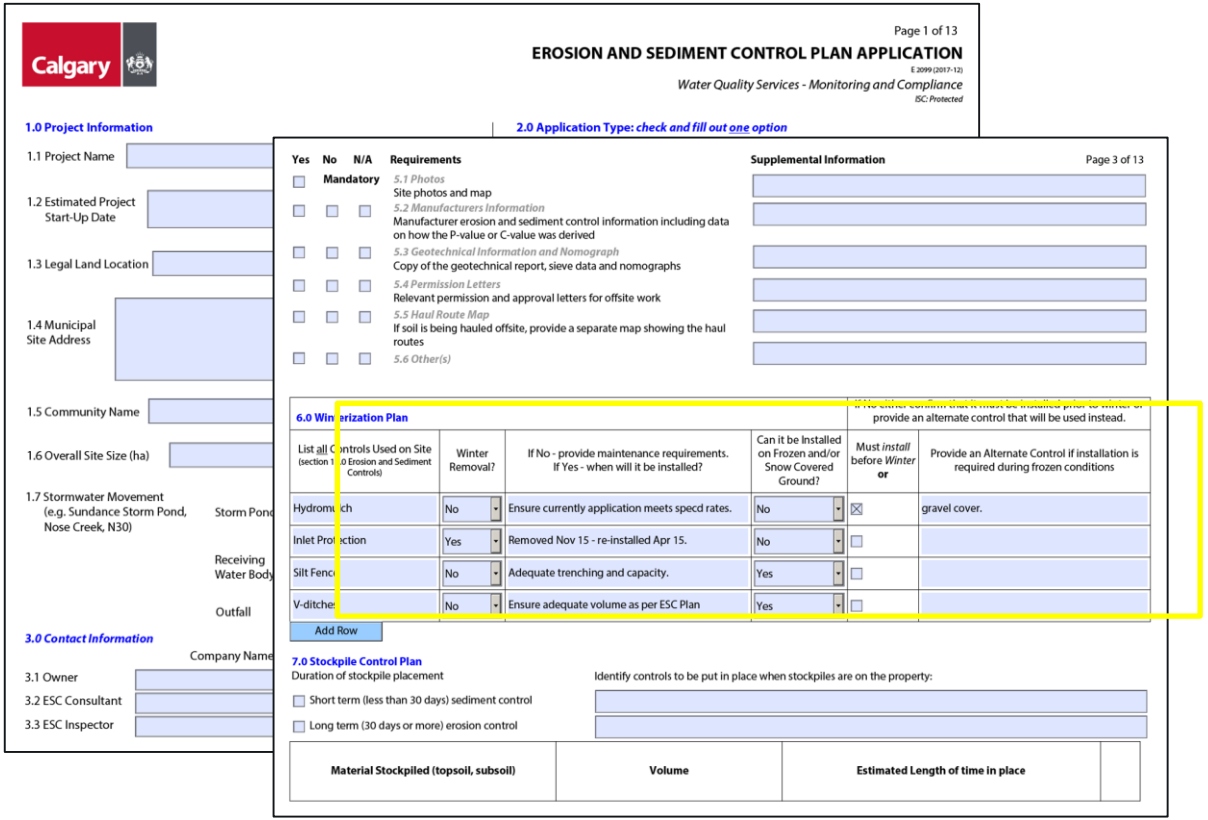
- 21 melt events in Calgary
  - ~ 1 melt event/week from Nov 15 – Apr 15.
- Rain + melt run-off on frozen ground
  - Increased runoff velocity -> increased erosion potential.

Winter ESC Installation: more effort and cost

- Implementing winterization plan past Nov. 15th means more effort and cost
- Trenching/excavating in frozen soil is rough on machinery
- Most hydromulch/tackifier products must be applied at temperatures above 0°C.
  - If you are unable to follow through with proposed cover type, you will need to submit amended plan with potentially more costly practices/controls (eg. gravel cover).
- Snow must be removed from site before any erosion control is applied. Snow removal is an added cost.

Where can you find the Winterization Plan?

- Section 6 of new Application



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EROSION AND SEDIMENT CONTROL PLAN APPLICATION

E 2099 (2017-12)

Water Quality Services - Monitoring and Compliance

ISC: Protected

1.0 Project Information

1.1 Project Name

1.2 Estimated Project Start-Up Date

1.3 Legal Land Location

1.4 Municipal Site Address

1.5 Community Name

1.6 Overall Site Size (ha)

1.7 Stormwater Movement (e.g. Sundance Storm Pond, Nose Creek, N30)

Storm Pond

Receiving Water Body

Outfall

3.0 Contact Information

Company Name

3.1 Owner

3.2 ESC Consultant

3.3 ESC Inspector

2.0 Application Type: ***check and fill out one option***

Page 3 of 13

Yes	No	N/A	Requirements	Supplemental Information
☐	Mandatory		*5.1 Photos* Site photos and map	
☐	☐	☐	*5.2 Manufacturers Information* Manufacturer erosion and sediment control information including data on how the P-value or C-value was derived	
☐	☐	☐	*5.3 Geotechnical Information and Nomograph* Copy of the geotechnical report, sieve data and nomographs	
☐	☐	☐	*5.4 Permission Letters* Relevant permission and approval letters for offsite work	
☐	☐	☐	*5.5 Haul Route Map* If soil is being hauled offsite, provide a separate map showing the haul routes	
☐	☐	☐	*5.6 Other(s)*	

6.0 Winterization Plan

provide an alternate control that will be used instead.

List all Controls Used on Site (section 10 Erosion and Sediment Controls)	Winter Removal?	If No - provide maintenance requirements. If Yes - when will it be installed?	Can it be Installed on Frozen and/or Snow Covered Ground?	Must *install* before *Winter* **or**	Provide an Alternate Control if installation is required during frozen conditions
Hydromulch	No	Ensure currently application meets specd rates.	No	☒	gravel cover.
Inlet Protection	Yes	Removed Nov 15 - re-installed Apr 15.	No	☐	
Silt Fence	No	Adequate trenching and capacity.	Yes	☐	
V-ditches	No	Ensure adequate volume as per ESC Plan	Yes	☐	

Add Row

7.0 Stockpile Control Plan

Duration of stockpile placement

☐ Short term (less than 30 days) sediment control

☐ Long term (30 days or more) erosion control

Identify controls to be put in place when stockpiles are on the property:

Material Stockpiled (topsoil, subsoil)	Volume	Estimated Length of time in place

What information is in it?

6.0 Winterization Plan				If No either confirm that it must be installed prior to winter or provide an alternate control that will be used instead.	
List all Controls Used on Site (section 11.0 Erosion and Sediment Controls)	Winter Removal?	If No - provide maintenance requirements. If Yes - when will it be installed?	Can it be Installed on Frozen and/or Snow Covered Ground?	Must *install* before *Winter* **or**	Provide an Alternate Control if installation is required during frozen conditions
Hydromulch	No	Ensure currently application meets specd rates.	No	☒	gravel cover.
Inlet Protection	Yes	Removed Nov 15 - re-installed Apr 15.	No	☐	
Silt Fence	No	Adequate trenching and capacity.	Yes	☐	
V-ditches	No	Ensure adequate volume as per ESC Plan	Yes	☐	

Add Row

Winterization Plan – Cues and Considerations

Reference to your copy of the *Winterization Plan – Implementation Cues and Considerations* worksheet.

Purpose: to assist field personnel in identifying site condition cues so that they can complete timely and appropriate:

1. Implementation of ESC winterization plans
2. Inspections
3. Maintenance

Winterization Plan – Cues and Considerations

Title: Winterization Plan – Implementation Cues and Considerations

Purpose: To assist field personnel in timely and appropriate implementation of ESC winterization plans.

Instructions: (1) Use the left most column to select field conditions on your site. (2) Follow that cell to the right along the same row for winterization considerations and tips.

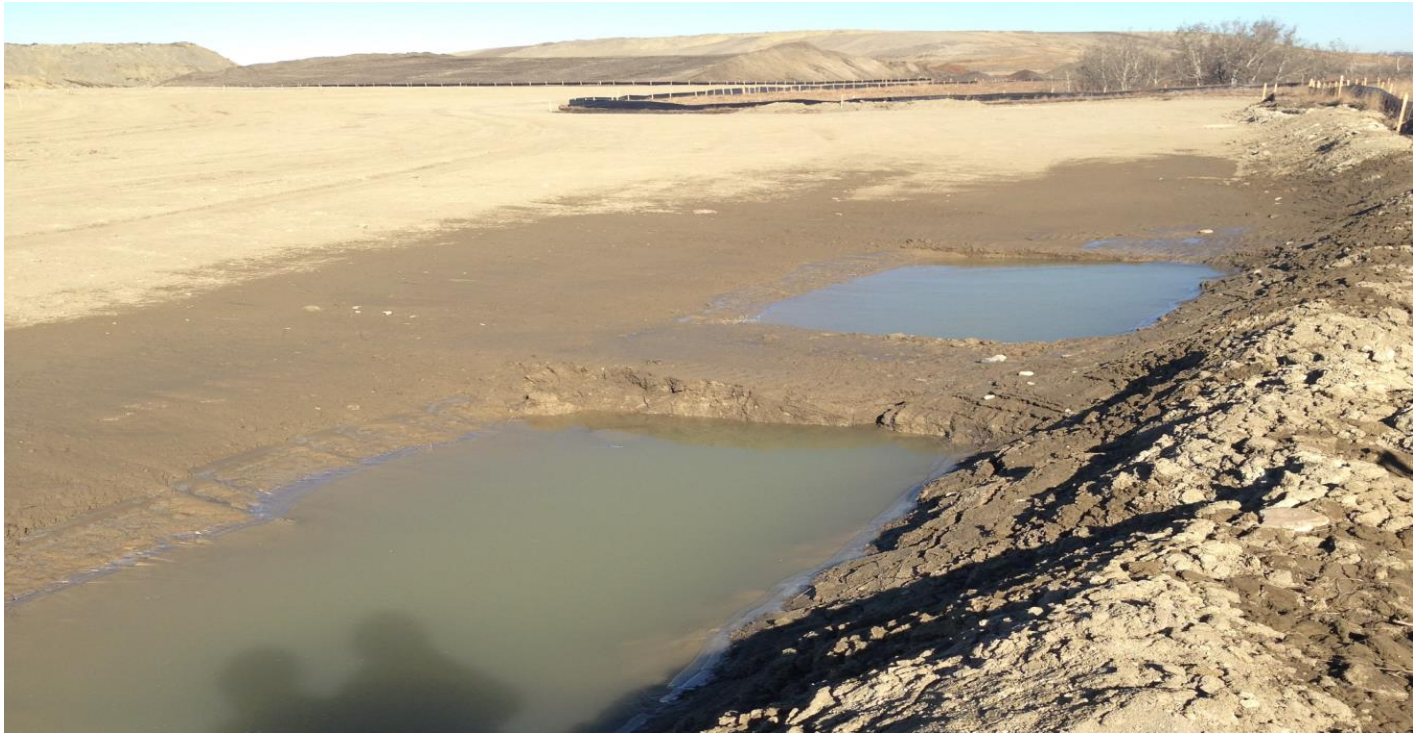
Site Condition	Typical Date Range	Considerations	Practices/Products Effected
First frost is observed on site.	September 15th – October 15th	• Initiate a site meeting to discuss the site's approved Winterization Plan.	N/A
Average daily temperatures are consistently between 5-10 °C.	October 1 – 31st	• Most hydromulch or tackifier type products must be applied at temperatures above 0 °C. If daily average temperatures are consistently in the 5-10 °C it is time to schedule in a date for hydromulch/tackifier application.	Hydromulch, Tackifier, Hydroseed
Shallow puddles/ponded water on site is beginning to freeze overnight, but thaws during the day.	September 15th – November 14th	• Ensure that any sediment containment systems are have adequate capacity to handle site melt water before existing ponded water freezes solid. • Phone 3-1-1 to apply for Drainage Permit.	Sediment containment systems, V-ditches
		• Begin to remove any approved inlet protection on and off site. Ensure all inlet protection is removed no later than November 14th.	Inlet Protection (including, block and gravel inlet sediment barriers, silt fence barrier, manufactured inlet protection)
Average daily temperatures are consistently around 0 °C.	November 1st – 15th	• During these conditions frost is actively forming in the soil, which can make excavating difficult on machinery. • This is effectively your last chance to install any ESC practices/products that require excavation.	V-ditches, sediment ponds, contour furrows, surface roughening, silt fence

Winterization Plan – Cues and Considerations

Average daily temperatures are consistently below 0 °C.	November 15th – April 15th	• During these conditions, all winterization works must be completed. • 7 day inspections must also be completed during these conditions unless otherwise approved by the City ESC Inspector.	All approved practices and practices on your site's approved ESC Plan.
Melt events (sporadic periods of temperatures above 0 °C causing snow/ice to melt on site)	November 15th – April 15th	• Check the local weather forecast during each 7 day inspection to see if temperatures are forecasted to be above 0 °C. • Site inspections must occur for all periods of temperature above 0 °C as they are considered melt events. • During melt events look for products/practices that require maintenance. • If products/practices are not working as they should or an event on site warrants a change to the approved ESC Plan, talk to your site contact and indicate that an amendment is required.	All approved practices and practices on your site's approved ESC Plan.

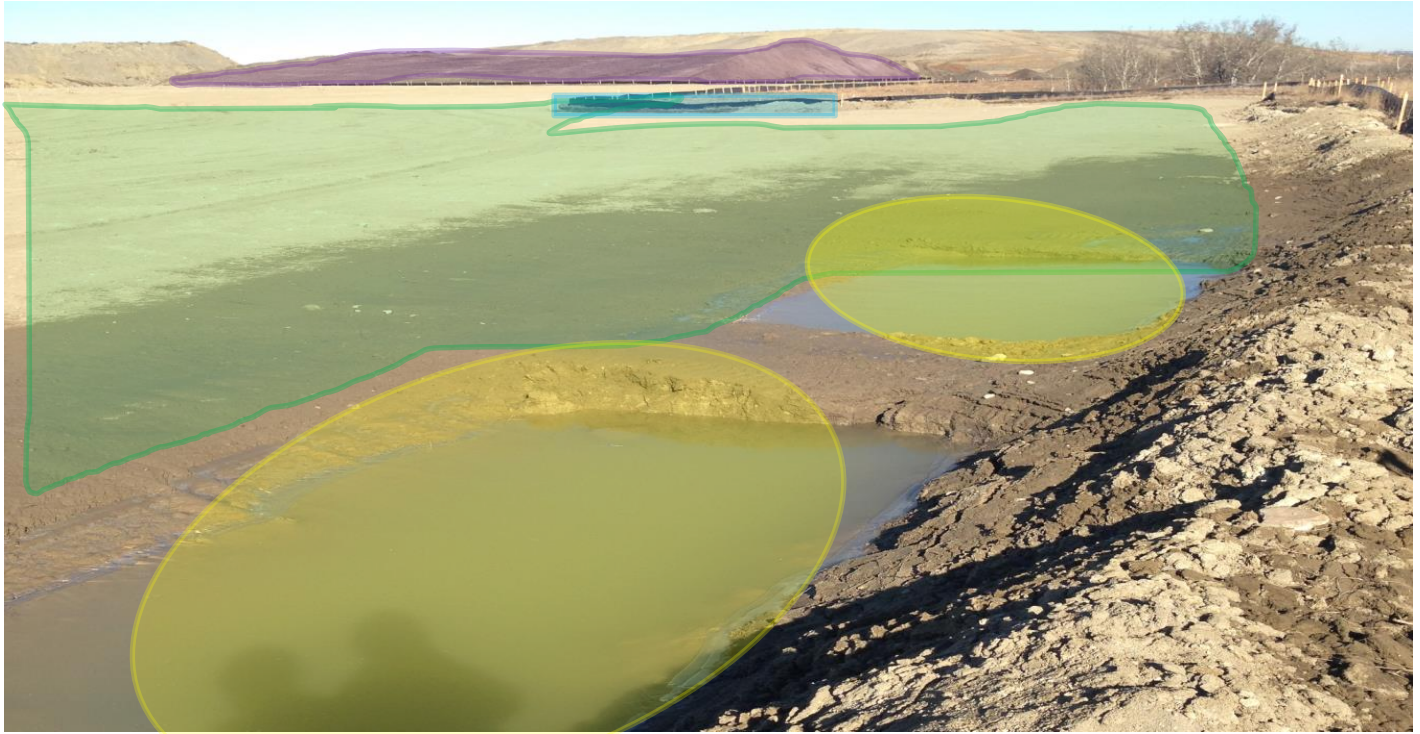
Winterization Discussion

Winterization Discussion: example 1
October 31st - Site is Inactive



Discussion: example 1
October 31st - Site is Inactive

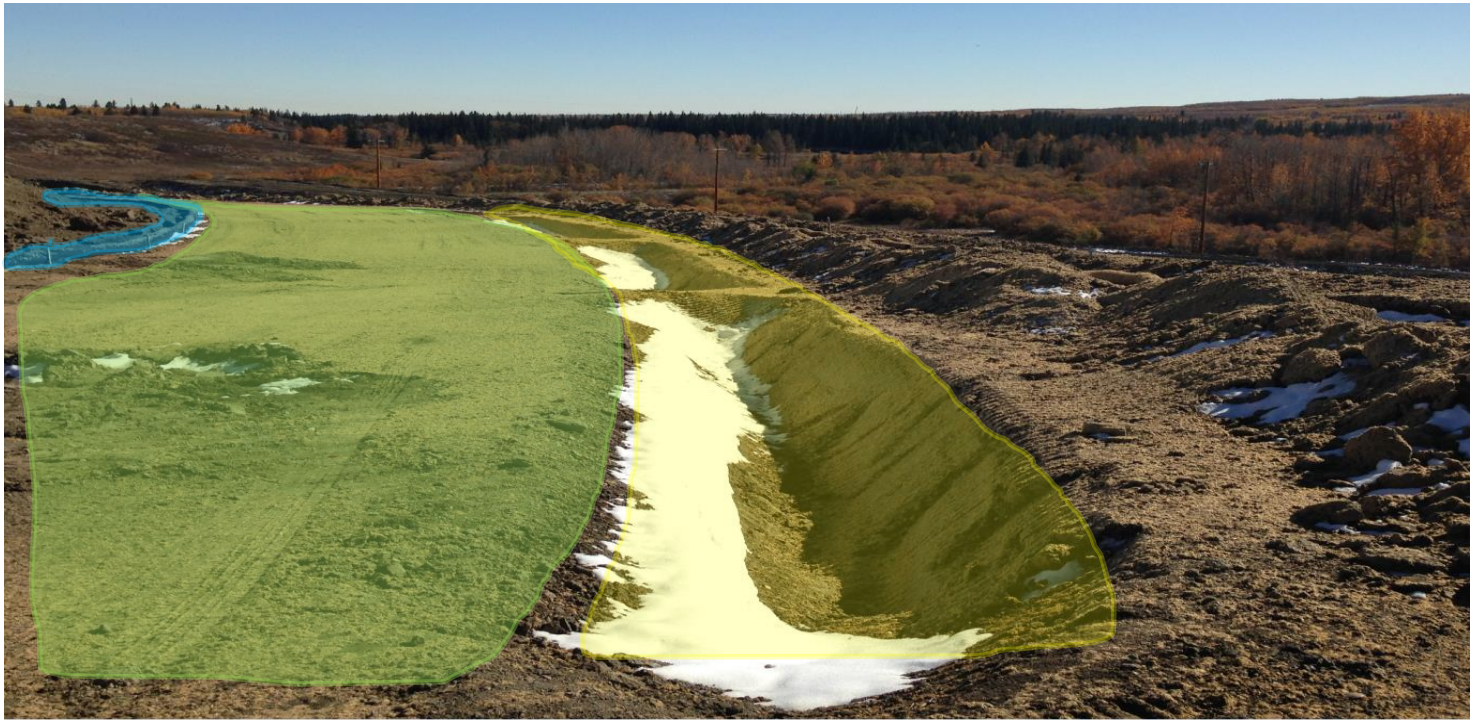
Winterization cues and considerations hand-out



Winterization Discussion: example 2

Discussion: example 2
Early March - Site is Inactive

Winterization cues and considerations hand-out

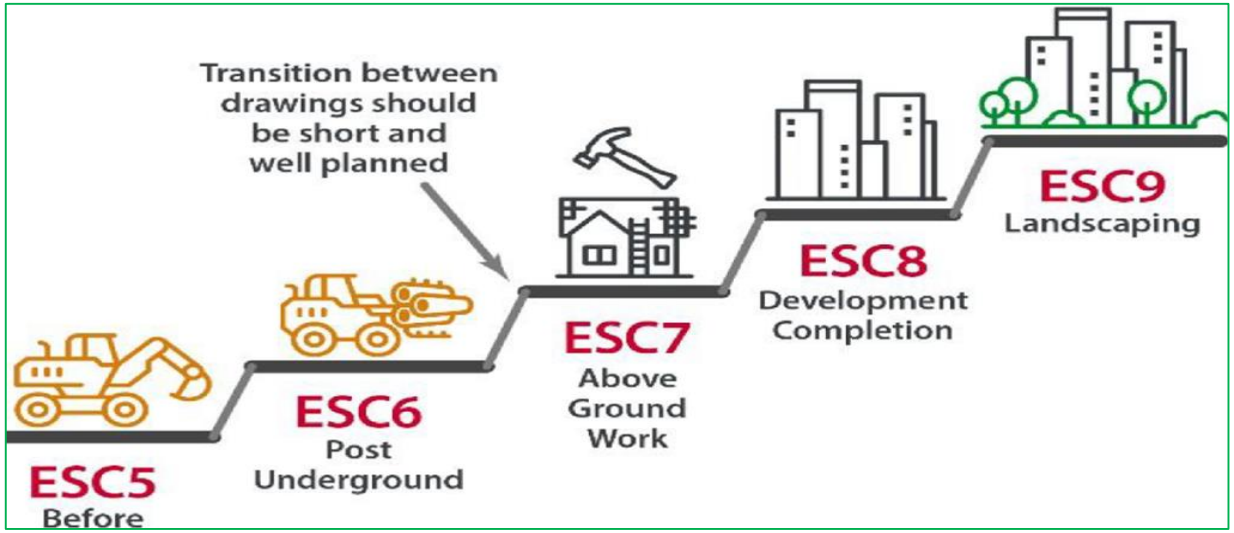


Transition planning

1. Benefits
2. Action
3. Contingency
4. Overlapping Drawings
5. Implementation
6. Planning reference
7. Duration
8. Considerations

What is a transition plan?

The plan that defines the transfer from one drawing to the next



Benefits of Transition Planning

10.0 Transition Planning

Start Drawing Code	ESC5	Next Drawing Code	ESC6	Duration of Transition	10 days

Order of Actions for Erosion and Sediment Controls	Action
1. Silt fence, gravel pad, surface tracking, wattles, aggregate cover	Keep
2. Sediment ponds, wattles	Remove
3. Mulch, seed and tackifier	Install
4. Silt Fence	Remove
5.	
6.	
7.	
8.	

Transition Details	Contingency Plan if transition can't be conducted in the duration specified
The mulch, seed, and tackifier can't be installed below freezing conditions. Dewater the sediment ponds prior to their removal and follow the Code of Practice for Drainage Activities. Commence dewtering five days prior to sediment pond removal to allow areas to dry.	Warm weather contingency plan - install mulch and tackifier X at 3,000kg/ha and seed B at 300kg/ha. Winter conditions - sediment ponds and wattles can't be removed during winter conditions unless arrangements can be made during warm weather to install mulch and tackifier first.

Add Table

Transition Planning: Action

Provides detailed instructions

Order of Actions for Erosion and Sediment Controls	Action
1. Silt fence, gravel pad, surface tracking, wattles, aggregate cover	Keep
2. Sediment ponds, wattles	Remove
3. Mulch, seed and tackifier	Install
4. Silt Fence	Remove
5.	
6.	
7.	
8.	

Transition Planning: Details

Implementation heads up

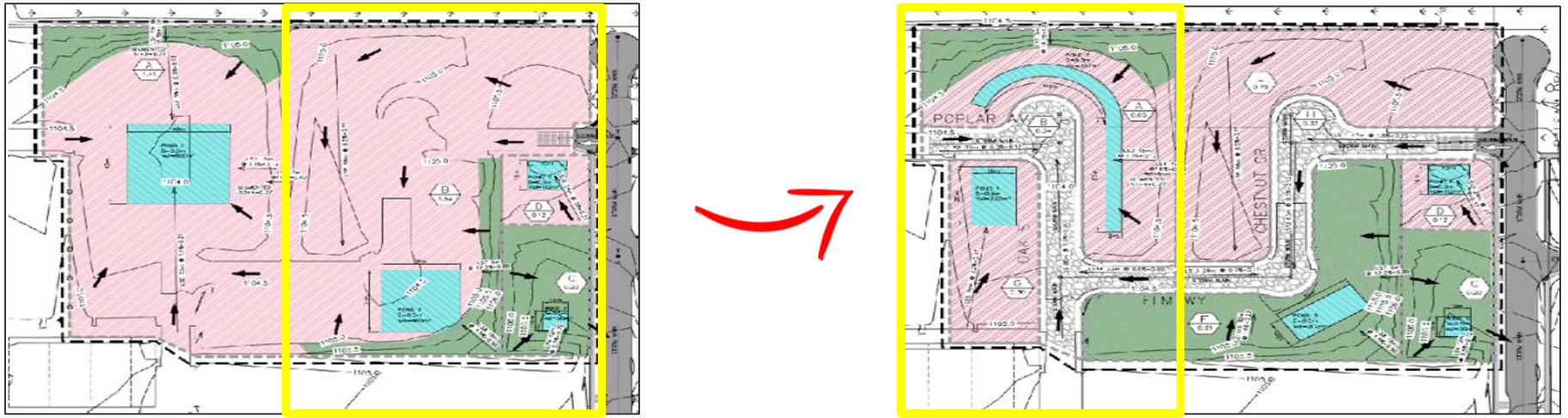
Transition Details
The mulch, seed, and tackifier can't be installed below freezing conditions. Dewater the sediment ponds prior to their removal and follow the Code of Practice for Drainage Activities. Commence dewtering five days prior to sediment pond removal to allow areas to dry.

Transition Planning: Contingency

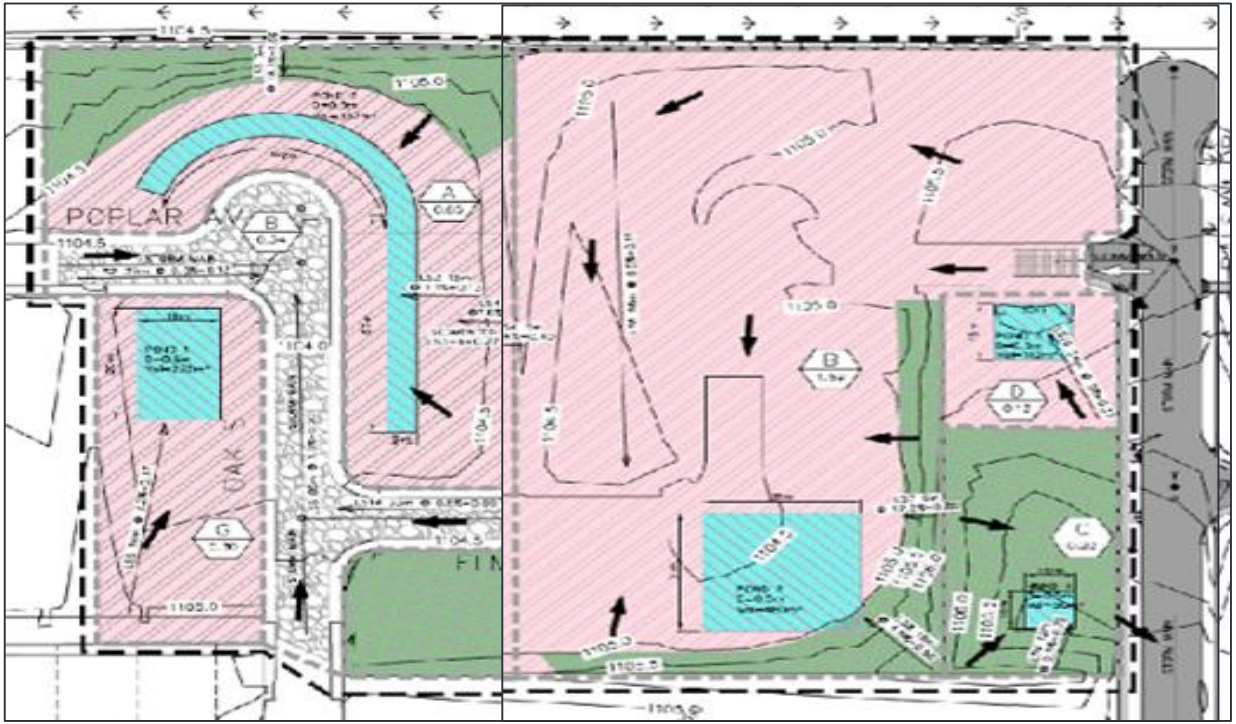
Contingency is approved

Contingency Plan if transition can't be conducted in the duration specified
Warm weather contingency plan - install mulch and tackifier X at 3,000kg/ha and seed B at 300kg/ha. Winter conditions - sediment ponds and wattles can't be removed during winter conditions unless arrangements can be made during warm weather to install mulch and tackifier first.

Overlapping Drawings



Two Drainage Divides, Two Drawings = One Approved Plan



Transition Planning - Duration

I. Confirm approved duration

10.0 Transition Planning

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Start Drawing Code	ESC5	Next Drawing Code	ESC6	Duration of Transition	10 days

Order of Actions for Erosion and Sediment Controls	Action
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Add Table

Transition Planning - Duration

II. Check 14 day weather forecast

	Fri Dec 15	Sat Dec 16	Sun Dec 17	Mon Dec 18	Tue Dec 19	Wed Dec 20	Thu Dec 21	Fri Dec 22	Sat Dec 23	Sun Dec 24	Mon Dec 25	Tue Dec 26	Wed Dec 27	Thu Dec 28
Day	6°C	6°C	6°C	7°C	7°C	5°C	3°C	3°C	3°C	3°C	3°C	3°C	3°C	3°C
Night	3°C	4°C	3°C	4°C	3°C	-1°C	-1°C	-1°C	-1°C	-1°C	-1°C	-1°C	0°C	0°C
POP	70%	40%	90%	30%	90%	30%	10%	10%	10%	10%	10%	10%	10%	10%
Rain	~1 mm	~10 mm	5-10 mm	5-10 mm	10-15 mm	-	-	-	-	-	-	-	-	-
Snow	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Transition Planning: Things to think about

- Do you have access to the product?
- Do you have the right equipment/manpower?
- Will the weather allow you to install?
- Can you meet the required timelines?
- **Do you need an amendment?**

Learning recap

What's New?

- Application documents are more detailed and include winterization plans and transition plans
- Specifications replace ESC01 (Details) and provide all details for common ESC practices

Where to find it?

- All new documents can be found online at Calgary.ca/ESC now
  - ESC guidelines
  - ESC Field Manual
  - ESC Specifications
  - Application

Where to look?

- Guidelines – details for ESC designers
- Field manual – details for ESC inspectors
- Specifications – details for designers and inspectors on specific ESC controls
- Application – site specific details for designers and inspectors

What is required?

- You MUST have the following on site
  - ESC approval letter
  - Application
  - Specifications
  - Drawings
  - Amendments
- We suggest keeping everything organized in an Audit Binder

When?

- Using the new documents is mandatory for all ESC plans submitted starting July 1st 2018
- Optional early adoption site by site prior to July 1st 2018
- Check your site specific ESC approval

Questions?

Evaluation

Thank you