

Routt County  
City of Steamboat Springs

June 8, 2022

Project: Steamboat On Mountain Improvements Project

**REVIEWED  
FOR  
CODE  
COMPLIANCE**

**06/16/2022**

**CSMP OVERVIEW - CPX MODIFICATIONS**

This CSMP is specific to the **Steamboat CPX Modifications. Permit Submission by ESA**

Page 2, 3      **CSMP Checklist**

Page 4      **Access Point #2 @ Thunderhead Lot**

This is the main point of access for CPX Grading activities. FOD pad track out, dumpsters, staging, and washout is located in this area.

Page 5      **CSMP Construction Overview**

This CSMP sheet represents the Fencing limits of the project, existing inlet and Swale locations, and the sequencing direction that is being planned as the work progresses.

Page 6      **CSMP Erosion Control Plan**

Represents the initial erosion control plan to be installed as work progresses into each area. This document will be used in S2M for weekly inspections.

Page 7,8,9      Overall Sediment Trap and Basin Delineator Plan, examples of Phasing, and Sediment Trap details.

These plans highlight the approach that is planned to be implemented to manage erosion and sedimentation for the limits of disturbance in the CPX permit package.

- All sediment traps feed into the primary swale.
- Modifications have been made to the primary swale to introduce more curvature which will help slowdown the flow.
- The primary swale will contain a number of check dams. The size and quantity of check dams will field fit based on construction progress and field conditions.
- Grading phasing intention is to complete the sediment trap per designated grading zone as construction work progresses. This assures that the area of disturbance is protected and manageable prior to opening up a large portion of grading and limits exposure to a large rain event.



**Josh Boh**

Project Manager, Saunders Construction

[j.boh@saundersinc.com](mailto:j.boh@saundersinc.com)

At Saunders,  
our reputation  
and relationships  
are based on:

Care  
Collaboration  
Commitment  
Community

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## Construction Site Management Plan Checklist

Prior to the approval of a building/ROW permit, any commercial, multi-family, or applicable single family/duplex project must complete an approved Construction Site Management Plan (CSMP). Below are the required items to be included in the CSMP. Please check "yes" if the item is included, "no" if it is not, and "N/A" if not-applicable. Please provide an explanation for any "No" answers at the bottom of the checklist.

**Project Name:** *Christy Peak Express*

**Date:** *6/8/2022*

**Estimated Construction Start Date:** *6/10/2022*

**End Date:** *12/15/2022*

**Individual responsible for CSMP monitoring and compliance**

**Name:** *Reno Romagnoli*

**Phone # (local):** *845-420-8910*

	Yes	No	N/A
<b>1. General</b>			
a. CSMP is shown on the proposed site plan	X		
b. Schedule Pre-Construction Meeting ( <i>required only for commercial, industrial, and multifamily projects</i> )			X
c. Right of Way permit (i.e. work or obstruction within ROW). <i>If required, describe below and include estimated start and stop dates.</i>			X
<b>2. Erosion and Sedimentation Control Plan showing</b>			
a. Topographic Information – including sufficient detail to characterize the site	X		
b. Areas and extent of soil disturbance (show any phasing)	X		
c. Location of all on site and adjacent water bodies, wetlands, drainages, and storm water systems	X		
d. Vehicle tracking control measures (vehicle track pad, vehicle wash station, etc.)	X		
e. Inlet protection	X		
f. Perimeter control measures (BMPs)	X		
g. Standard details for all proposed control measures	X		
<b>3. Site Construction Facilities (Identify the following):</b>			
a. Staging areas	X		
b. Stockpile areas	X		
c. Dumpsters and trash receptacles	X		
d. Material recycling (wood, metal, plastics, etc.)	X		
e. Sanitary facilities	X		
f. Loading/Unloading areas	X		
g. Trailers and field offices (show access) <i>Field Office Located at Sheraton Ballroom</i>		X	
<b>4. Parking:</b>			
a. Location and number of onsite and any offsite stabilized parking areas	X		
b. Is project located downtown or at ski resort base area? <i>If so, describe below where contractor parking will occur:</i>			

*Contractor Parking for Lower Mountain Construction will be at Meadows Lot.  
Contractor Parking for Mid Station Terminal Shown at Green Horn Ranch.*

<b>5. External Traffic Control Plan showing:</b>			
a. Show/label all traffic control devices (MUTCD compliant)			X
b. Site access points; show existing adjacent streets and driveways; identify any changes and associated signage	X		
c. Sidewalks and trails; identify any changes and associated signage		X	
d. Use of the public Right of Way (ROW) - generally not permitted (for constrained sites show any proposed use of ROW)		X	
e. Crane use details, including but not limited to, ROW encroachment, swing radius, loading locations (Crane will require ROW permit from the City)			X
<b>6. Internal Access Control showing</b>			
a. Emergency access- 24' wide all weather surface for emergency access thru site (to be maintained at all times)	X		
<b>7. CSMP Standard Notes:</b>			
a. Standard CSMP notes included on the site plan or Civil Plan Sheets	X		
<b>8. Dust Control</b>			
Provide narrative describing efforts to reduce fugitive dust from construction activities:  <i>Utilize Mt Werner Water Hydrant for dust suppression if necessary.</i> <i>Chemical Dust Suppression on Dirt Haul Roads - Mag Chloride</i>			
Provide explanation for any "No" or "N/A" answers: <i>Steamboat Resort will take lead in creating adequate sign-age for public transit and trail routing</i>			

- \*\* Plans shall be phased and updated as the project evolves and site conditions change.**
- \*\* Please notify adjacent property owners prior to mobilization.**
- \*\* Refer to chapter 36 of the Community Development Code for more information.**



**PROJECT ACCESS POINT #2**  
**Thunderhead Lot**

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**Hard Surface Staging/Storage**

**Street Sweeping as necessary**

**To CPX Haul Rd. and Shortcut Haul Rd.**

**Stormwater Retention  
 Basin Pending Design**

**Aggregate Base Staging/Storage**

**Wash Out**

**Dumpsters and Recycle**



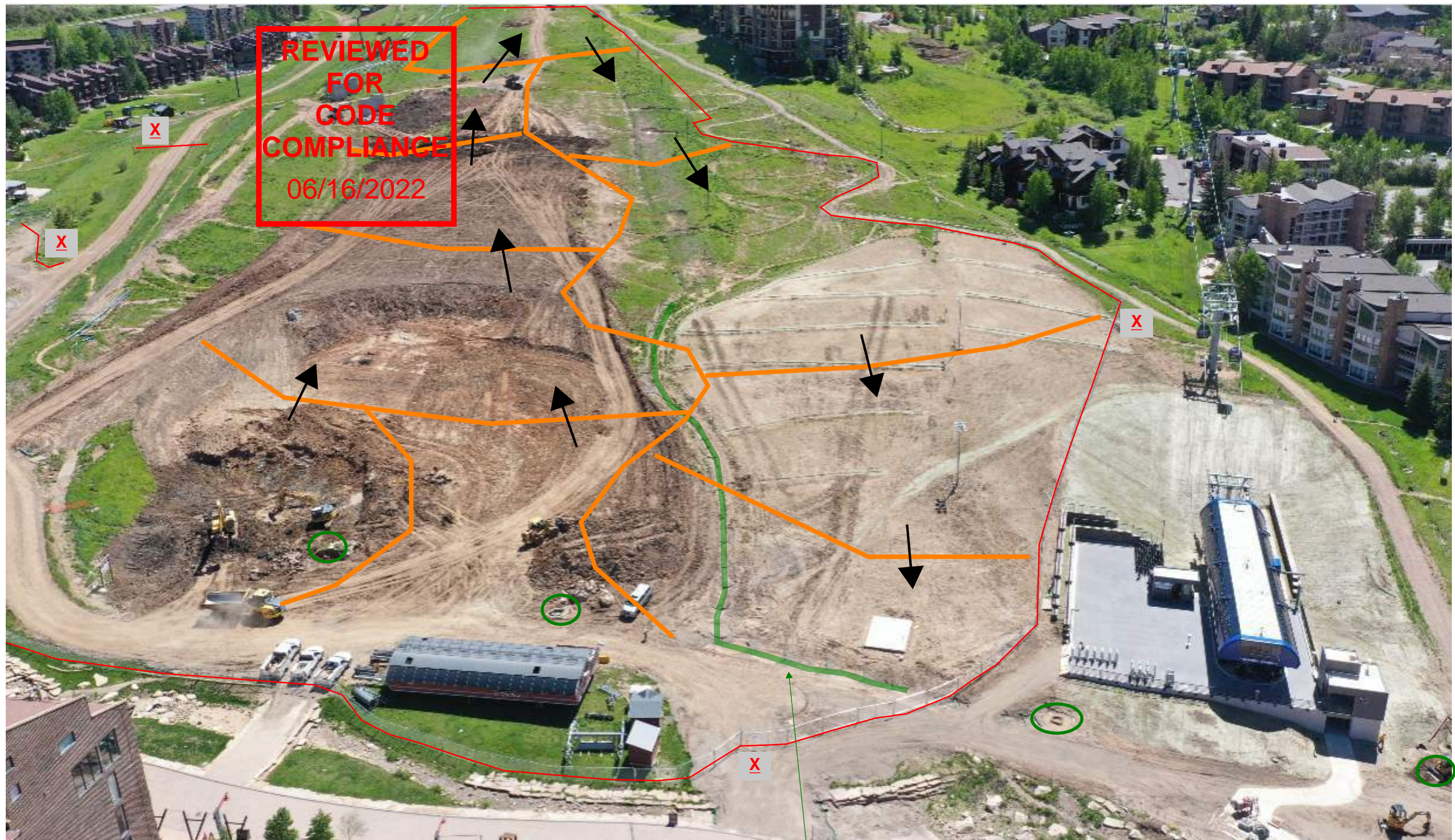
**2022 Phase 2 CSMP**  
**Access Point #2**  
**Thunderhead Lot**

**Legend:**

Fencing/Gate	
Haul Route	
Metal Corrals	
Orange Barricades / Top Fence	
Burgess Creek	
Public Access	
Ambassador	
FD Access	
Flagger	
Hydrant	

**X = Wayfinding Signage / No Entrance**  
**Saunders construction signage on fencing. SSRC provides way finding signage for pedestrian egress**





2022 Phase 2 CSMP  
CPX

Legend:	
Fencing/Gate	—
Haul Route	
Metal Corrals	—
Orange Barricades / Top Fence	—
Burgess Creek	—
Public Access	—
Ambassador	—
FD Access	—
Flagger	—
Hydrant	—

Inlet Protection Locations  
Existing Swale and Check Dams



**X = Wayfinding Signage / No Entrance**  
**Saunders construction signage on fencing. SSRC provides way finding signage for pedestrian egress**



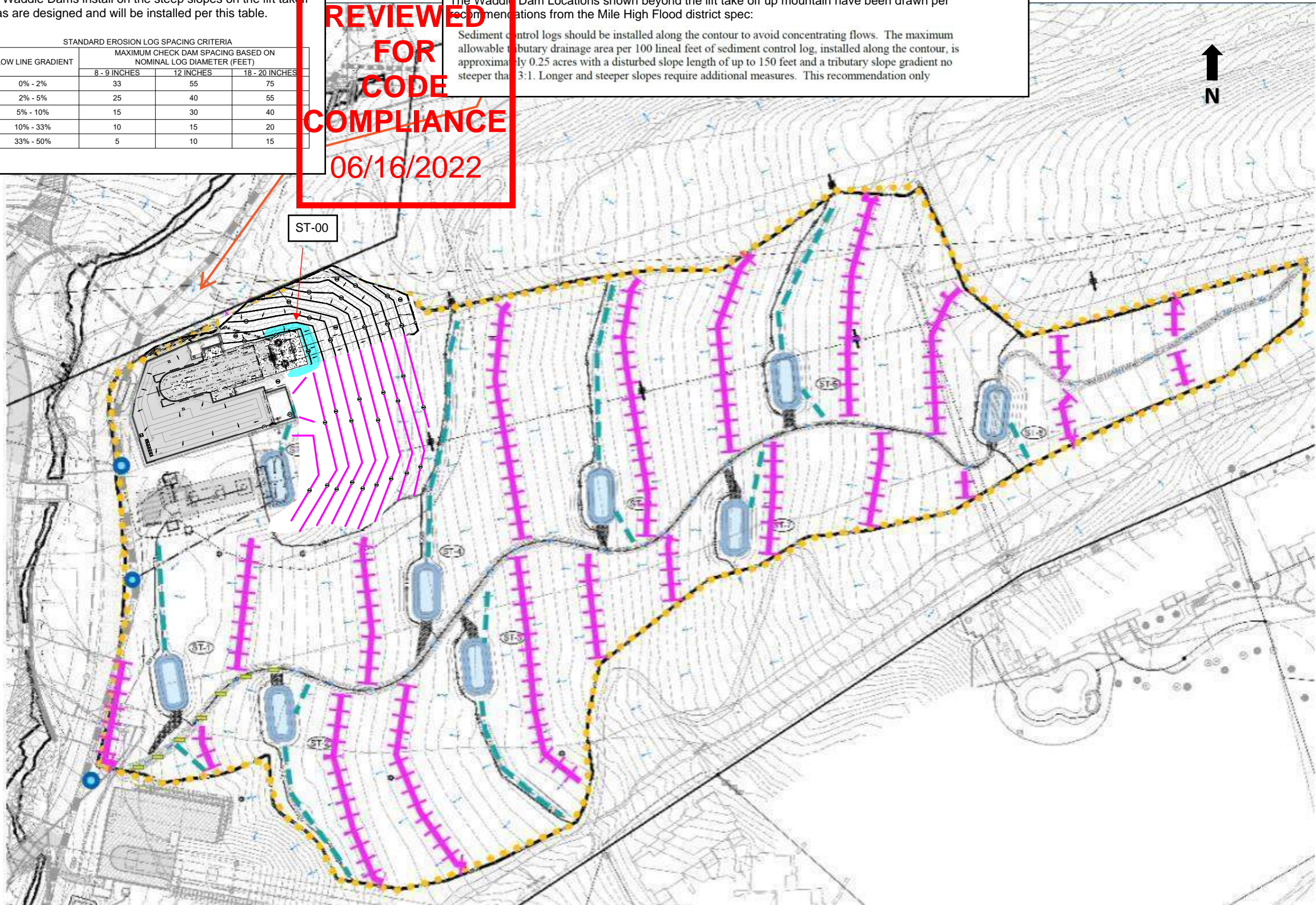
The Wattle Dams install on the steep slopes on the lift take off areas are designed and will be installed per this table.

FLOW LINE GRADIENT	STANDARD EROSION LOG SPACING CRITERIA		
	MAXIMUM CHECK DAM SPACING BASED ON NOMINAL LOG DIAMETER (FEET)		
	8 - 9 INCHES	12 INCHES	18 - 20 INCHES
0% - 2%	33	55	75
2% - 5%	25	40	55
5% - 10%	15	30	40
10% - 33%	10	15	20
33% - 50%	5	10	15

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The Wattle Dam Locations shown beyond the lift take off up mountain have been drawn per recommendations from the Mile High Flood district spec:

Sediment control logs should be installed along the contour to avoid concentrating flows. The maximum allowable tributary drainage area per 100 lineal feet of sediment control log, installed along the contour, is approximately 0.25 acres with a disturbed slope length of up to 150 feet and a tributary slope gradient no steeper than 3:1. Longer and steeper slopes require additional measures. This recommendation only



Name	Map Symbol
Access Road	
Check Dam (CD)	
Est. Limit of Dist. (LOD)	
IP	
Temp Diversion	
Vehicle Tracking (VTC)	
Wattle (SCL)	

STANDARD CHECK DAM SPACING CRITERIA					
FLOW LINE GRADIENT	2%	3%	4%	5%	6%
SPACING (FEET)	100	67	50	40	33

- NOTES:
- CONTROL MEASURES WILL BE IMPLEMENTED IN THE FIELD AS DIRECTED BY THE ENGINEER AND/OR SWMP MANAGER
  - BMPs TO BE SELECTED AND INSTALLED PER MHFD VOLUME 3
  - CHECK DAMS SHOWN ARE TYPICAL AND WILL BE FIELD FIT BASED ON CONSTRUCTION PROGRESS AND ACTUAL FIELD CONDITIONS
  - WATTLE SHOWN ARE PART OF TEMPORARY STABILIZATION AND MAY BE ALTERED DURING INSTALLATION OF FINAL STABILIZATION
  - SEDIMENT BAGS MAY BE UTILIZED DURING HIGH RUNOFF EVENTS AS DIRECTED BY THE ENGINEER AND/OR SWMP MANAGER
  - BASE MAP SOURCE: LANDMARK CONSULTANTS, INC. DATED 06/08/2022

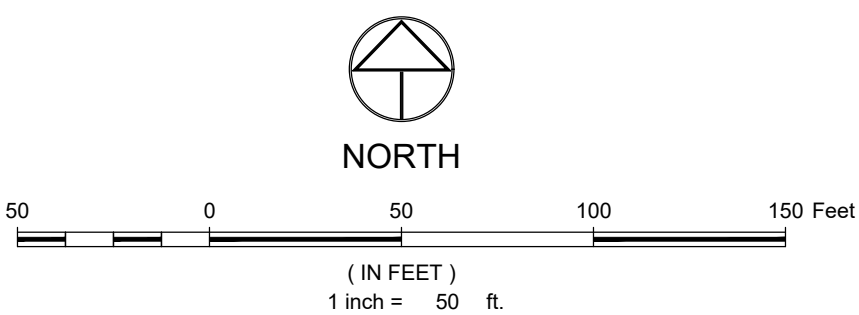
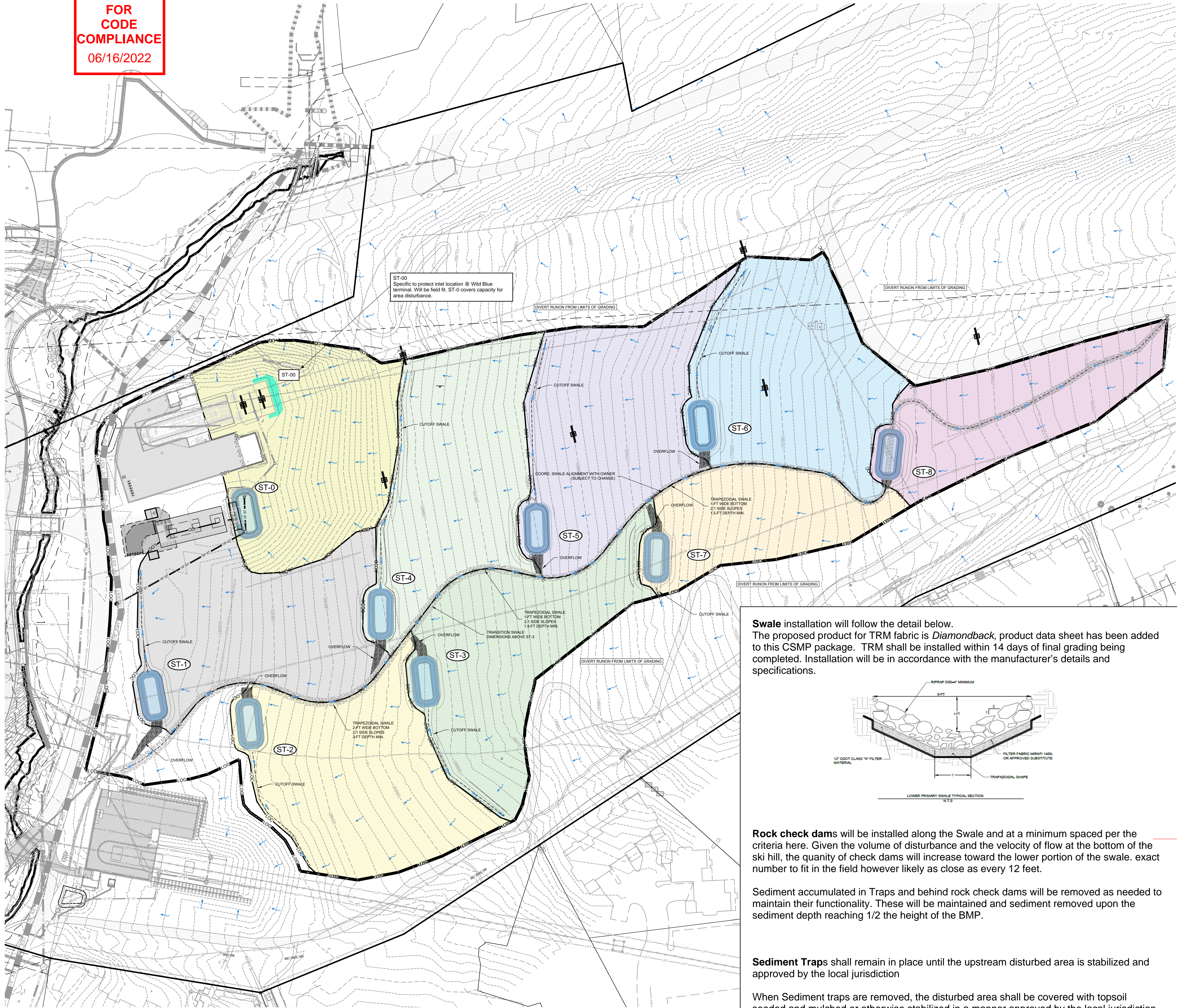
Christie Peak Express - Permitting

Figure 1  
Erosion Control Measures

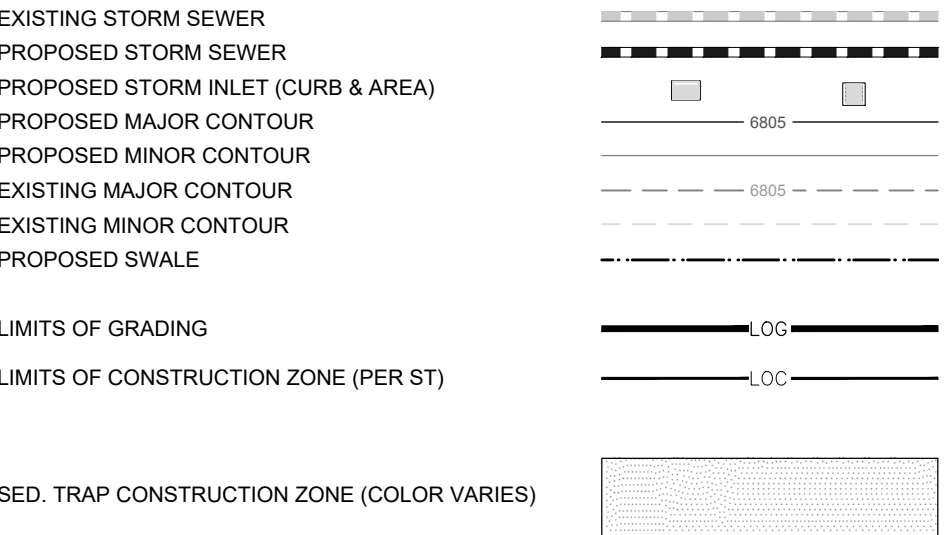
**Jardon**  
Engineering & Inspections LLC



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LEGEND:



TEMPORARY BMP'S



NOTES:

- DISCLAIMER: THIS PLAN IS SPECIFIC TO THE SEDIMENT TRAPS AND CUTOFF SWALES INDICATED HEREON AND LANDMARK CONSULTANTS, INC. IS NOT RESPONSIBLE FOR ANY AND ALL OTHER EROSION AND SEDIMENT CONTROL PLANS OR DIRECTED. THE DESIGN INTENT IS TO IMPLEMENT THE SEDIMENT TRAP CONSTRUCTION BMP AS DESCRIBED IN CRITERIA MANUAL VOLUME 3 BY THE MILE HIGH FLOOD DISTRICT (SEE INCLUDED FACT SHEET SC-8).
- AS A PROVIDER OF PROFESSIONAL SERVICES, LANDMARK CANNOT MAKE ANY REPRESENTATIONS OR GUARANTEES THAT THE IMPROVEMENTS SHOWN HEREON SHALL SATISFY ALL ASPECTS OF THE PERMIT REQUIREMENTS FOR EROSION AND SEDIMENT CONTROL.
- THE LOCATION AND DIMENSIONS OF THE SEDIMENT TRAPS AND CUTOFF SWALES ARE SUBJECT TO CHANGE BASED ON ACTUAL CONDITIONS.
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- CONDITIONS IN THE FIELD MAY WARRANT EROSION CONTROL MEASURES IN ADDITION TO WHAT IS SHOWN ON THESE PLANS. IMPLEMENT WHATEVER MEASURES ARE DETERMINED NECESSARY PER THE PROJECT STORMWATER MANAGEMENT PLAN.

SEDIMENT TRAP INFORMATION

SED. TRAP IDENTIFIER	CONTRIBUTING CONSTRUCTION ZONE AREA (AC.)	MIN. SEDIMENT TRAP VOLUME <sup>1</sup> (CF)	BOTTOM ELEVATION <sup>2</sup>
ST-0	0.96	3,830	6908.9
ST-1	0.99	3,830	6906.2
ST-2	0.98	3,830	6924.0
ST-3	0.91	3,830	6951.5
ST-4	0.97	3,830	6945.0
ST-5	0.99	3,830	6977.0
ST-6	0.99	3,830	7009.0
ST-7	0.57	3,830	7000.8
ST-8	0.71	3,830	7038.6

VOLUME REQUIREMENTS BASED ON MULTIPLE SOURCES AND ARE DERIVED FROM 3,600 CUBIC FEET OF LIVE STORAGE PER ACRE OF THE BASIN'S DRAINAGE AREA (MAX. 1-AC).  
INDICATED TRAP VOLUME IS BASED ON THE TYPICAL DETAIL PROVIDED AND DOES NOT ACCOUNT FOR PRE-EXISTING VOLUME THAT MAY BACK-UP INTO THE CUTOFF SWALE. THE TABLE BELOW REFLECTS THE TYPICAL SEDIMENT TRAP VOLUME CALCULATION.

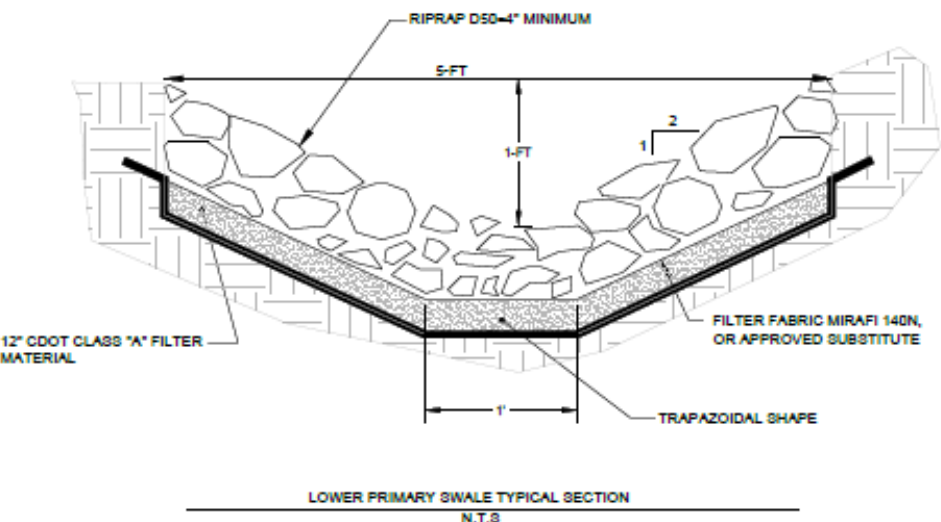
SEDIMENT TRAP VOLUME PROVIDED					
$V = D \cdot (A_1 + A_2 + \sqrt{A_1 \cdot A_2})$					
D = Depth between contours (ft.) A <sub>1</sub> = Surface Area lower contour (ft <sup>2</sup> ) A <sub>2</sub> = Surface Area upper contour (ft <sup>2</sup> )					
Elevation (ft)	Surface Area (ft <sup>2</sup> )	Incremental Depth (ft)	Incremental Vol. (ft <sup>3</sup> )	Total Vol. (ft <sup>3</sup> )	Stage
0.00	492	0.00	0	0.0	Bottom of Pond
1.00	704	1.00	995	994.8	0.01
2.00	941	1.00	820	1814.8	0.03
3.00	1204	1.00	1070	2884.8	0.05
4.00	1492	1.00	1345	3829.7	0.09
4.50	1545	0.50	784	4613.7	0.11 5" Freeboard

2) BOTTOM OF SEDIMENT TRAP ELEVATION IS SUBJECT TO CHANGE BASED ON ACTUAL LOCATION AND FIELD CONDITIONS. ELEVATION INDICATED SIMPLY REFLECTS LOCATION SHOWN ON THE PLAN BY LANDMARK AS A REFERENCE.

STANDARD CHECK DAM SPACING CRITERIA

FLOW LINE GRADIENT	2%	3%	4%	5%	6%
SPACING (FEET)	100	67	50	40	33

Swale installation will follow the detail below. The proposed product for TRM fabric is *Diamondback*, product data sheet has been added to this CSMP package. TRM shall be installed within 14 days of final grading being completed. Installation will be in accordance with the manufacturer's details and specifications.



Rock check dams will be installed along the Swale and at a minimum spaced per the criteria here. Given the volume of disturbance and the velocity of flow at the bottom of the ski hill, the quantity of check dams will increase toward the lower portion of the swale. exact number to fit in the field however likely as close as every 12 feet.

Sediment accumulated in Traps and behind rock check dams will be removed as needed to maintain their functionality. These will be maintained and sediment removed upon the sediment depth reaching 1/2 the height of the BMP.

Sediment Traps shall remain in place until the upstream disturbed area is stabilized and approved by the local jurisdiction

When Sediment traps are removed, the disturbed area shall be covered with topsoil seeded and mulched or otherwise stabilized in a manner approved by the local jurisdiction.

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PROJECT:	DATE:	BY:	DESCRIPTION:
1012-052	6/8/22		
CONTACT:	Erik Griepentrog		
EMAIL:	erikg@landmark-co.com		

Christie Peak Express Relocation  
Overall Sediment Traps  
and Basin Delineator

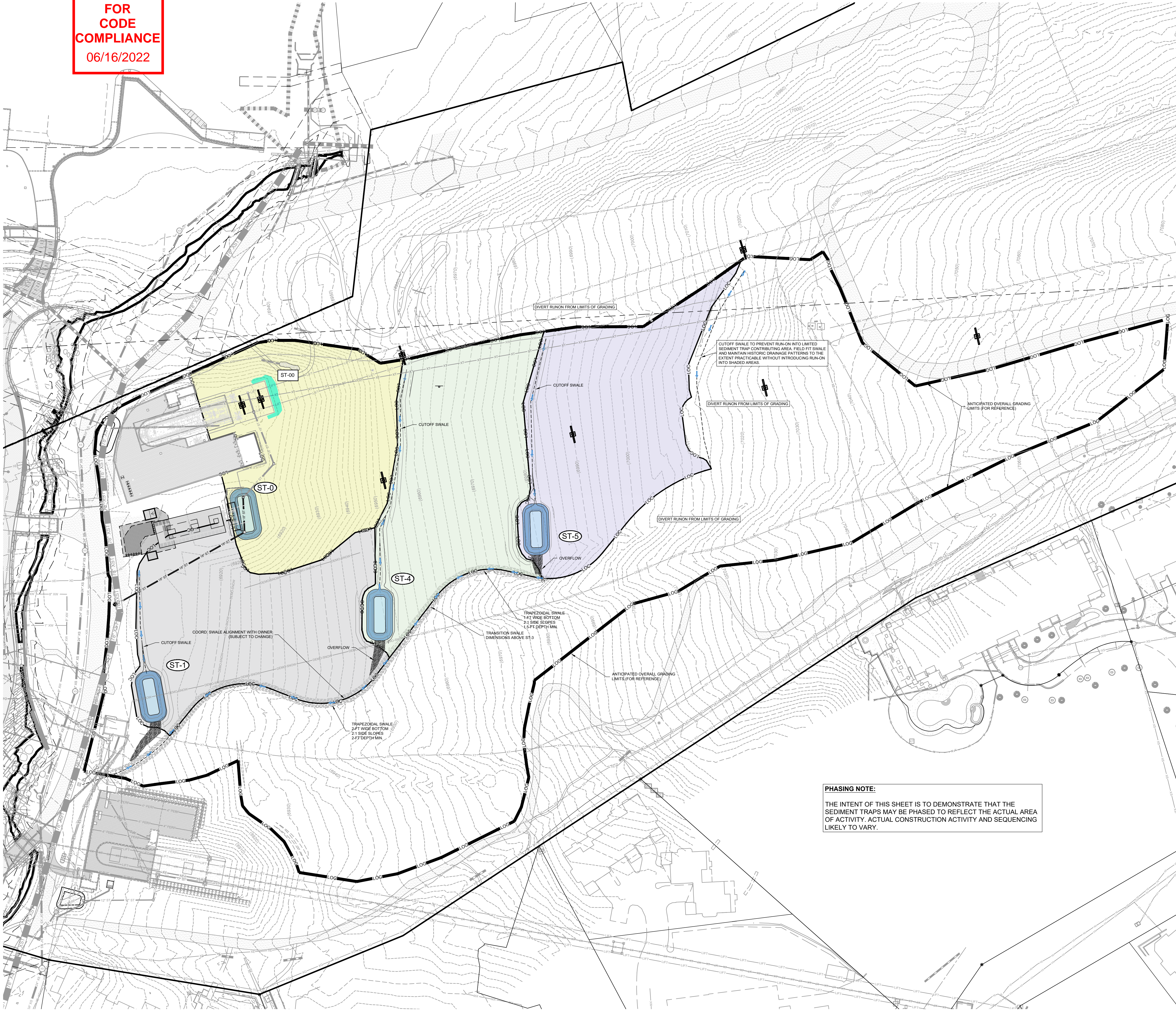
SHEET

C.800

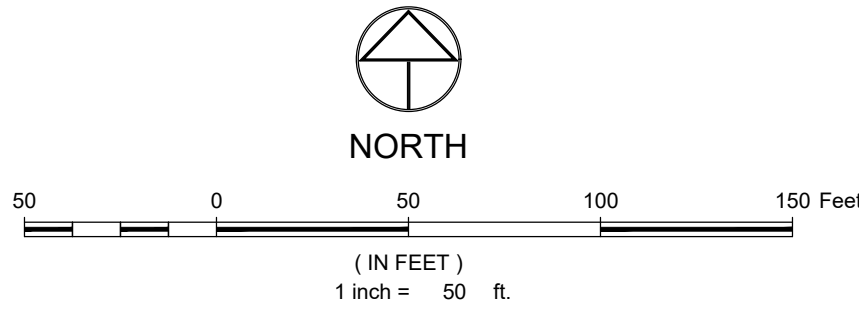


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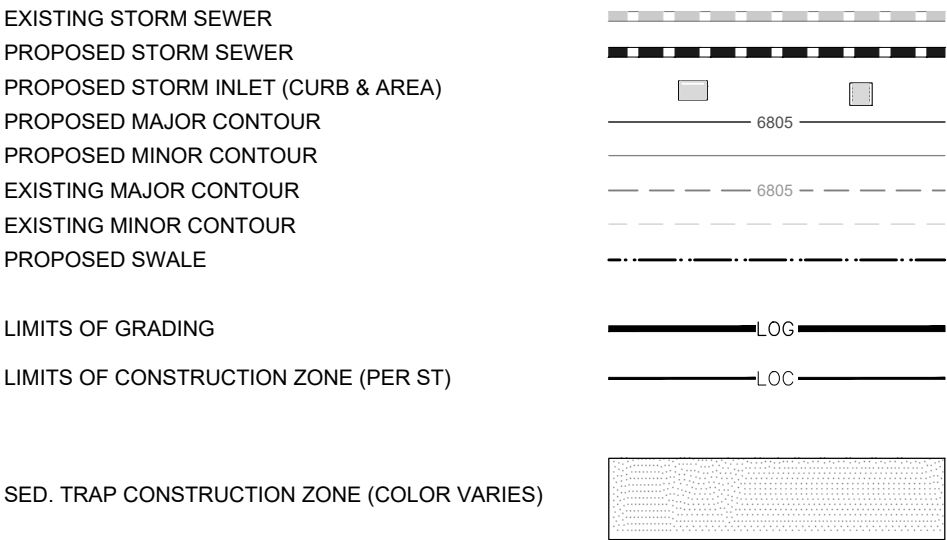
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**PHASING NOTE:**  
THE INTENT OF THIS SHEET IS TO DEMONSTRATE THAT THE SEDIMENT TRAPS MAY BE PHASED TO REFLECT THE ACTUAL AREA OF ACTIVITY. ACTUAL CONSTRUCTION ACTIVITY AND SEQUENCING LIKELY TO VARY.



**LEGEND:**



**TEMPORARY BMP'S**



**DRAINAGE**



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**SEDIMENT TRAP VOLUME PROVIDED**

$V = D \cdot (A_1 + A_2 + \sqrt{A_1 \cdot A_2}) \cdot \frac{1}{3}$					
$D$ = Depth between contours (ft.) $A_1$ = Surface Area lower contour (ft <sup>2</sup> ) $A_2$ = Surface Area upper contour (ft <sup>2</sup> )					
Elevation (ft)	Surface Area (ft <sup>2</sup> )	Incremental Depth (ft)	Incremental Vol. (ft <sup>3</sup> )	Total Vol. (ft <sup>3</sup> )	Stage
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4.50	1545	0.50	784	5013.7	0.11 5" Freesboard

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PROJECT:	DESCRIPTION:
1012-052	
DATE:	6/8/22
CONTACT:	Erik Griepentag
EMAIL:	erikg@landmark-co.com

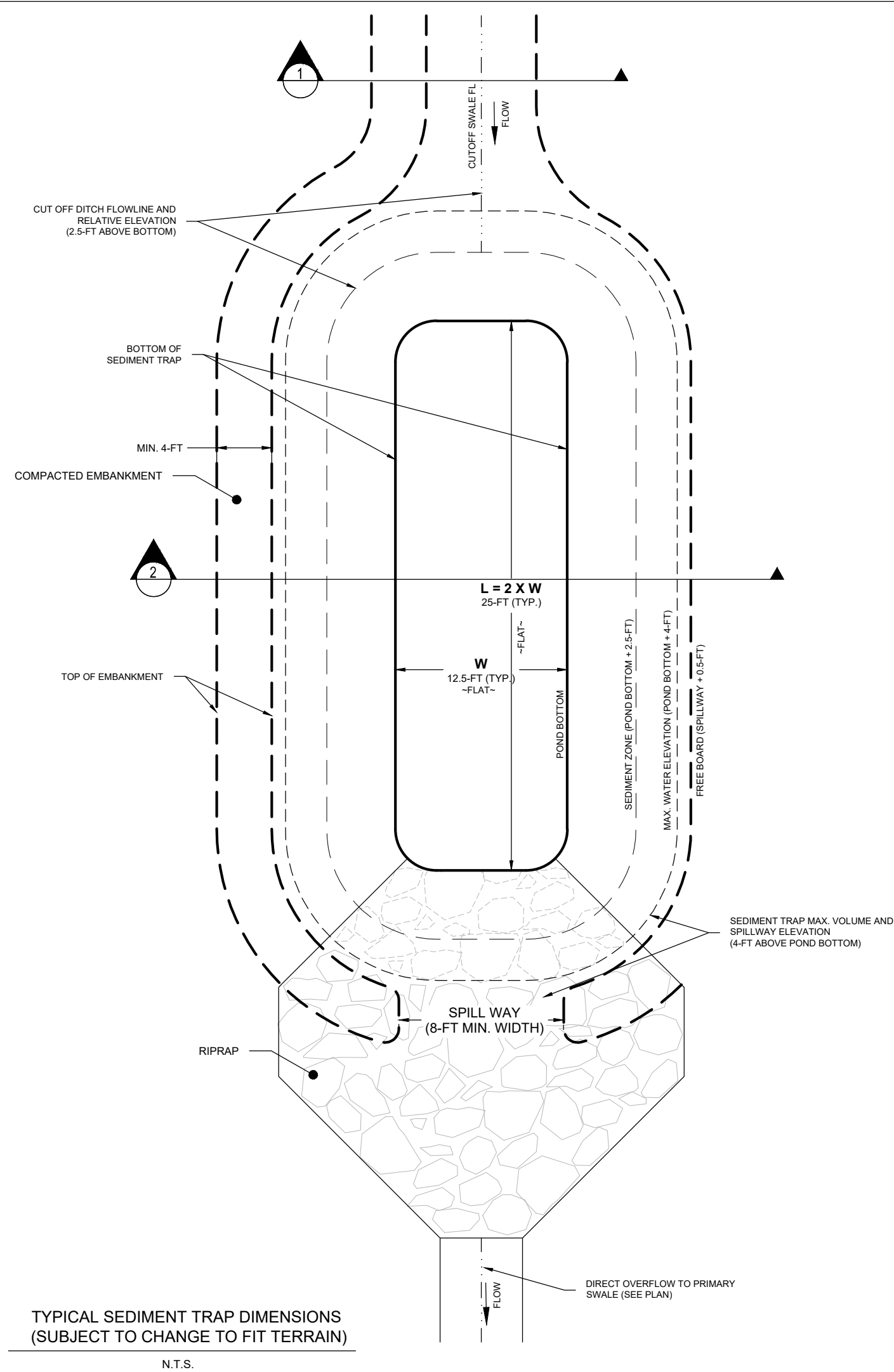
Christie Peak Express Relocation  
Example of Sediment Trap Phasing  
(Subject to Change)

SHEET

C.810



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**Sediment Trap (ST)** **SC-8**

- SEDIMENT TRAP MAINTENANCE NOTES

- (DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO, NOT AVAILABLE IN AUTOCAD)

MHFD (URBAN DRAINAGE AND FLOOD CONTROL DISTRICT) FACT SHEETS.


THESE DOCUMENTS ARE PROVIDED FOR CONVENIENCE ONLY AND TO SUPPLEMENT THE INFORMATION OTHERWISE PROVIDED AND INDICATED ON THESE DRAWINGS WITH THE EXCEPTION OF THE 'SEDIMENT TRAP MAINTENANCE NOTES' WHICH ARE STRICTLY ADOPTED.

## Christie Peak Express Relocation Sediment Trap Details

SHEET

C.820

CIVIL ENGINEERS | SURVEYORS  
141 9th Street ~ P.O. Box 774943  
Steamboat Springs, Colorado 80477  
(970) 871-9494  
[www.LANDMARK-CO.com](http://www.LANDMARK-CO.com)



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CONSULTANTS, INC.

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[illegible]

PROJECT:	1012-052
DATE:	6/8/22
CONTACT:	Erik Griepentrog
EMAIL:	erikg@landmark.co.com

CALL UTILITY NOTIFICATION CENTER OF  
COLORADO



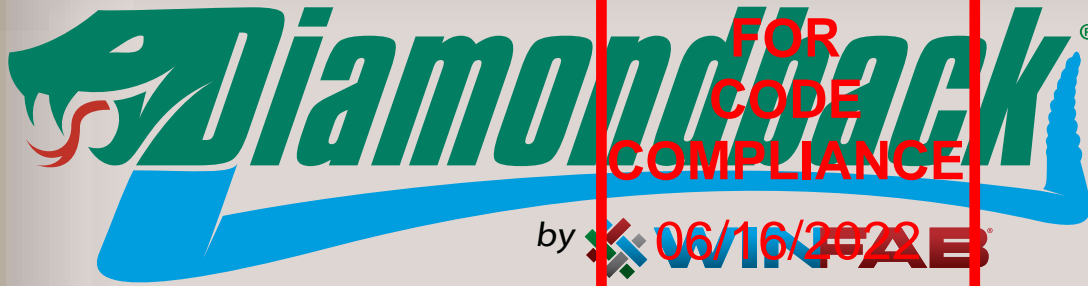
Know what's below.  
Call before you dig.

CALL 2 BUSINESS DAYS IN ADVANCE BEFORE YOU  
DIG, GRADE, OR EXCAVATE FOR THE MARKING OF  
UNDERGROUND MEMBER UTILITIES.



REVIEWED  
FOR  
CODE  
COMPLIANCE

06/16/2022



**WINFAB Diamondback 2018** is a three dimensional turf reinforcement mat (TRM).

**WINFAB Diamondback 2018** is manufactured using a special heat stabilization process to drastically increase the effectiveness of the pyramidal weave when incorporated in steep slope, channelized flows, and vegetated applications where reinforcement is required for turf and erosion control.

**WINFAB Diamondback 2018** is constructed using UV stabilized high tenacity monofilament yarns in a very consistent configuration which resists ultraviolet deterioration, rotting, biological degradation, and is inert to commonly encountered soil chemicals.

PROPERTY	TEST METHOD	ENGLISH	METRIC
Tensile Strength*	ASTM D6818	2,500 x 2,000 lb/ft	36.48 kN/m x 29.18 kN/m
Elongation	ASTM D6818	20 x 20%	20 x 20%
Thickness*	ASTM D6525	.25 in	6.4 mm
Resiliency	ASTM D6524	70%	70%
Light Penetration	ASTM D6567	30%	30%
Porosity	ECTC TASC 00197	96%	96%
UV Resistance (3,000 hrs)	ASTM D4355	90%	90%
Color	-	Green	Green
Design Permissible Shear Partially Vegetated <sup>2</sup>	Design Value	7.0 lb/ft <sup>2</sup>	336 PA
Design Permissible Shear Fully Vegetated <sup>2</sup>	Design Value	12.0 lb/ft <sup>2</sup>	576 PA
Design Velocity Vegetated <sup>2</sup>	Design Value	20 ft/sec	6.1 m/sec
Mannings n <sup>3</sup>	Design Value	0.026 - 0.036	0.026 - 0.036
Roll Dimensions	-	8.5 x 90 ft	2.6 x 27.4 m
Roll Area	-	765 ft <sup>2</sup>	72.07 m <sup>2</sup>

\*Minimum Average Roll Value (MARV)

<sup>2</sup>Maximum permissible velocity and shear stress have been obtained utilizing a rigorous vegetated testing program with specific soil types, vegetation retardance classes, flow conditions, and failure criteria. These conditions may not be relevant to every project or other site conditions.

<sup>3</sup>Manning's n will vary depending on flow depth.

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Ph: (912) 534-5757 • Fax: (912) 534-5533





## Standard Notes for Construction Site Management Plans:

1. This plan shall be kept on site at all times and updated to reflect any changes.
2. Clearing or grading shall not begin until all control measures have been installed.
3. Contractor is responsible for installing and maintaining temporary erosion and sediment control measures during construction and establishing any required permanent control measures to prevent release of pollutants from the project site.
4. Control measures shall be used, modified, and maintained whenever necessary to reflect current conditions. Control measures shall be inspected weekly and after every precipitation event. Accumulated sediment shall be removed from control measures when the sediment level reaches  $\frac{1}{2}$  the height of the control measure.
5. The contractor shall promptly remove all sediment, mud, and construction debris that may accumulate in the right of way, private property, or water ways as a result of the construction activities.
6. All ingress and egress access points on to the disturbed site must be stabilized with a vehicle tracking control pad. Access shall only be via approved locations as shown on approved CSMP.
7. Temporary soil stabilization measures shall be implemented where ground disturbances have temporarily or permanently ceased for 14 days or for areas of land disturbance within one growing season.
8. Concrete waste and washout water from mixing trucks shall be contained on site, removed from the site, and properly disposed. Materials shall not be allowed to enter state waters.
9. Contractor is responsible for complying with all local, state, and federal laws. In addition contractor must obtain required permits.
10. Emergency access must be kept obstacle free and passable at all times.
11. For any work to be done in the Right of Way, coordinate with the City ROW Manager regarding special permitting. No work shall be conducted in the ROW between November 1 and May 1 without prior approval from the director of Public Works.
12. Where required as part of the ROW permit or where site work affects the pedestrian or vehicle travel way, traffic control shall be installed. All traffic control shall be in accordance with the Manual on Uniform Traffic Control Devices, latest edition.
13. Sidewalks adjacent to construction sites shall be maintained, for public use, by the contractor. In areas where construction is taking place next to the sidewalk and overhead hazards are possible, site is responsible for installing and maintaining sidewalk protection.