

STORMWATER MANAGEMENT PLAN
for the
EARLY GRADING OF STERLING RANCH - PHASE I

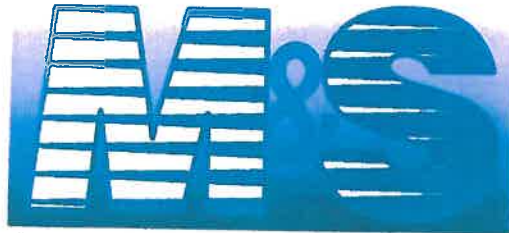
October 2015

Prepared for:
El Paso County Development Services
2800 International Circle, Suite 110

Colorado Springs, Colorado 80910

On behalf of:
SR Land, LLC
20 Boulder Crescent, Suite 200
Colorado Springs, CO 80903

Prepared by:



CIVIL CONSULTANTS, INC.

M&S CIVIL CONSULTANTS, INC.

20 Boulder Crescent, Ste 110
Colorado Springs, CO
80901 (719) 955-5485

Project #09-002

Stormwater Management Plan

for the:

Early Grading of Sterling Ranch - Phase I

Located near Vollmer Road & Marksheffel Road
El Paso County, Colorado

Applicant:

SR Land, LLC
20 Boulder Crescent, Suite 200
Colorado Springs, CO 80903
719-471-1742
jmorely3870@aol.com

Stormwater Manager and SWPPP Contact(s):

C&C Land, LLC
Chaz Collins
20 Boulder Crescent, Suite 200
Colorado Springs, CO 80903
719-471-1742
candclandllc@aol.com

SWPP Preparation

October 2015

M&S CIVIL CONSULTANTS, INC.

20 Boulder Crescent, Ste 110
Colorado Springs, CO 80901 (719) 955-5485

Estimated Project Dates:

Start of Construction: October 12, 2015

Completion of Construction: May 31, 2016

TABLE OF CONTENTS

TABLE OF CONTENTS	1
Site Description	2
Narrative Description of Site Activities	2
Phasing Plan	2
Proposed Sequence for Major Activities	3
Site Runoff Characteristics	3
Timing Schedule	3
Total Site Area	3
Estimated Area to Undergo Disturbance	3
Site Runoff Characteristics	3
Existing Soils and Vegetation	4
Potential Pollution Sources	4
Materials Handling and Spill Practices	4
Pollution Controls for Dedicated Batch Plants	4
Anticipated Non-Stormwater Discharges	4
Receiving Water Description	5
Structural Practices	5
Non-Structural Practices	5
Technical Drawing Details for BMP Installation and Maintenance	6
Permanent Stabilization	6
Contractor/SWMP Administrator Inspections and Maintenance of BMP's	6
Modification to the SWMP	6
Closing	7

APPENDICES:

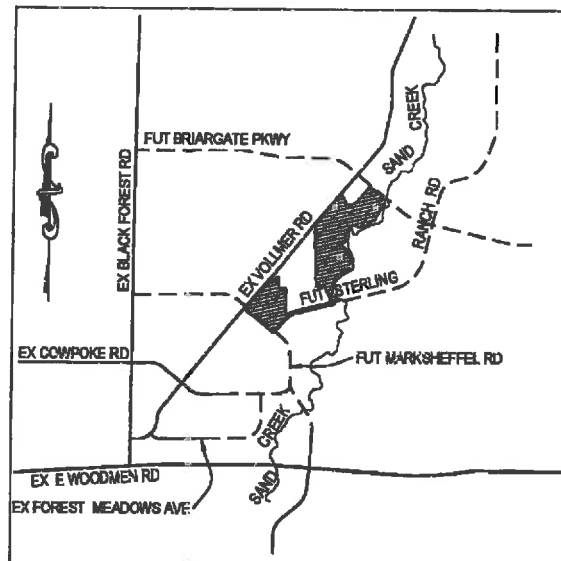
Copy of CDPHE Application
Vicinity Map
Maintenance Inspection Report
Spill Cleanup Instructions and Report Form
BMP Construction Details
Erosion Control Plans

STORMWATER MANAGEMENT PLAN

for the EARLY GRADING OF STERLING RANCH - PHASE I

Site Description:

Sterling Ranch-Phase 1 is a 182 acre parcel located in Sections 32, & 33 Township 12 South. and Section 4, Township 13 South, Range 65 West of the 6th P.M., in El Paso County, Colorado. The site, which is currently undeveloped, is located between Vollmer Road and the Sand Creek Channel. The southern boundary of the property is located approximately 1.2 miles to the northeast of the intersection of Black Forest Road and Woodmen Road.



Narrative Description of Site Activities:

The purpose of the Early Grading and Erosion Control Plan for Sterling Ranch - Phase I is to conduct bulk earthwork moving activities that will minimize the need for significant grading to occur with final site grading of the future residential lots. The Early Grading construction activities will bring onsite utilities corridors (future roadways) to grade to allow for the installation of onsite sanitary sewer and waterline mains that will function to serve the future lots. Specific construction activities will include clearing and grubbing, earth moving, temporary stabilization, roadway grading, and utility installation and permanent stabilization. Disturbance and grading of the site in the proposed manner shown within the plans will not adversely impact adjacent or downstream properties. Implementation of the BMP's proposed on the plan will serve to maintain or improve the water quality of the site runoff in a manner that is safe and satisfies the requirements set forth in the El Paso county Drainage Criteria Manual.

Phasing Plan:

Not Applicable.

Proposed Sequence for Major Activities:

Installations of BMPs are staged in order to minimize the potential for pollutants in the stormwater discharge. A preconstruction meeting is necessary prior to commencement of BMP installation. The following stages will be used: establishment of perimeter controls, installation of temporary BMPs during soil disturbance and then finally installation of permanent controls. Descriptions of some of the available BMPs are listed in below stages:

Only clearing necessary for the installation of perimeter controls should be employed in the first stage of temporary BMPs installation. Silt fence and vehicle tracking should be installed as shown on the Grading & Erosion Control Plan. At this time, the El Paso County inspector should be notified to schedule an initial inspection. Rough grading of the site will precede construction of proposed underground utilities.

Once utilities and temporary storm sewer infrastructure have been constructed, installation of temporary BMPs will commence. Temporary BMPs for this site consist of Inlet Protection, Check Dams, and Straw Bale Barriers. Locations for temporary earthwork stockpiles will also be established. Once these locations have been established, they should be added and denoted on the copy of the plan that will be kept with the site administrator.

The final stage is the installation of permanent BMPs where no further disturbance is anticipated. Upon completion of the permanent BMPs and all grading activities are completed, all disturbed areas not sodded or developed will be mulched and reseeded with native seed mix and may be watered until vegetative cover has been fully re-instated. At this point, the person responsible for inspection and maintenance can begin to address requirements for final stabilization. See construction details for installation and maintenance.

Timing Schedule:

Early Grading and Erosion Control for Sterling Ranch Phase I

Anticipated Starting and Completion Time Period of Grading Activities:

October 2015 - March 2016 (6 months)

Expected Date on Which The Final Stabilization Will Be Completed:

May 2016

Total Site Area: 182 acres

Estimated Area to Undergo Disturbance: 151.6 acres

Site Runoff Characteristics:

The site runoff coefficients are:	Minor Storm	Major Storm
- Historic existing conditions	0.12-0.25	0.20-0.35
- Roofs, sidewalks, paved areas	0.95	0.90
- Landscaped and undeveloped areas	0.25	0.35

The onsite grading activities are not anticipated to increase the percentage of imperviousness.

Existing Soils and Vegetation:

The site and surrounding areas consist of well to excessively drained soils that average an annual precipitation of 15 inches and the average frost-free period of about 135 days. The site contains four types of soils; Blake Loamy Sand, Blakeland Complex, Columbine Gravelly Sandy Loam and Pring Coarse Sandy Loam. Typically, the surface layer for these four soil series is a grayish brown sandy loam.

The majority of Sterling Ranch - Phase 1 is underlain by the Pring Coarse Sandy Loam soil series (71), Hydrologic Group B. The southern portion of the site is underlain with Blakeland Loamy Sand (8), Blakeland Complex (9) and Columbine Gravelly Sandy Loam (19) all in Hydrologic Group A. Soils in the study area are shown as mapped by S.C.S. in the "Soils Survey of El Paso County Area". The study area consists of undeveloped land with sparse, grassy vegetation, shrubs, and a few trees. Ground cover varies across the site ranging from an estimated 30 to 60%.

Potential Pollution Sources:

Construction activities that will take place at this site may have an impact on the stormwater quality. These include, but are not limited to, portable toilets, materials storage, vehicle fueling, maintenance and vehicle tracking, dust, waste piles and dumpsters. The location of any of these activities not included on the initial site map should be added along with a description of the measures used to prevent the discharge of these materials from the site. See construction details for installation and maintenance.

Materials Handling and Spill Practices:

Any substances with potential to contaminate either the ground or ground surface water shall be cleaned up immediately after discovery or contained until appropriate cleanup methods can be employed. Manufacturer's recommended methods for clean up shall be followed, along with proper disposal methods. Any discharge of hazardous materials must be handled in accordance with the Divisions Notification Requirement. All waste and debris created by construction activities at the site or removed from the site shall be disposed of in compliance with all laws, regulations and ordinances of the federal, state and local agencies. See construction details for Materials Handling and Spills.

Pollution controls for Dedicated Batch Plants

Not applicable

Anticipated Non-Stormwater Discharges:

Non-stormwater discharges are caused by activities other than direct runoff from precipitation events. These include, but are not limited to natural springs. Any non-stormwater discharges that are not included in the initial map should be added along with a description of measures used to handle it

Receiving Water Description:

Runoff produced within Sterling Ranch - Phase I is tributary to the Sand Creek Channel. The site was most recently studied in the "Drainage Report for Sterling Ranch Phase I" prepared by MS Civil Consultants. It should be noted that all storm sewer culverts shown on the plans are temporary and are intended to convey existing onsite runoff to the channel. No development is proposed to occur to increase onsite runoff above the historic condition. Refer to the grading and erosion control plan for temporary culvert locations and sizes. All temporary sediment basin should be sized in accordance with the El Paso County Drainage Criteria Manual Volume 2.

Any stockpile areas are to be contained with silt fence, or other acceptable measures to prevent erosion and sediment from leaving the area. All BMP's that may be in place need to be inspected and cleaned if sediment should leave the site and enter the streets.

Erosion control measures shall be implemented in a manner that will protect properties and public facilities from the adverse effect of erosion and sedimentation as a result of construction and earthwork activities. The following practices are to be implemented for this site:

Structural Practices:

In areas of sheet flow running off-site and at the top and bottom of steep slopes, silt fence will be used to trap sediment. Silt fence should be placed on the contour and in areas where the tributary area is less than one-quarter acre per 100' of silt fence. Straw bales will be used in swales to eliminate suspended particles and reduce sediment from leaving the site during construction. A vehicle traffic control pad will be installed at the entrance/exit of the site to reduce sediment tracking off-site. Practices may include, but are not limited to: straw bales, wattles/sediment control logs, silt fences, earth dikes, drainage swales, sediment traps, subsurface drains, pipe slope drains, inlet protection, outlet protection, gabions, and temporary or permanent sediment basins. All roads will be inspected to ensure that sediment from on-site construction activity is not being discharged with the stormwater. Sediment and debris that have been tracked off-site should be removed daily by shoveling or sweeping. See construction details for installation and maintenance.

Non-Structural Practices:

Surface roughening may be used to reduce the amount of runoff and wind erosion from any given areas. Once the existing vegetation is cleared, watering should occur to help control fugitive dust. Disturbed areas where work is temporarily halted shall be temporarily stabilized within 21 calendar days after activity has ceased unless work is to be resumed within 30 calendar days after the activity has ceased. Other Non-Structural Practices may include soils erosion control measures for all slopes, channels, ditches, or any disturbed land area shall be completed within 21 calendar days after final grade, or final earth disturbance, has been completed. Disturbed areas and stockpiles, which are not at final grade but will remain dormant for longer than 30 days, shall also be mulched within 21 days after interim grading. An area that is going to remain in an interim state for more than 60 days shall also be seeded. All temporary soil erosion control measures and BMPs shall be maintained until permanent soil erosion control measures are implemented. See construction details for installation and maintenance.

Technical Drawing Details for BMP Installation and Maintenance.

Refer to details contained within the Early Grading and Erosion Control plans for Sterling Ranch Phase I for BMP installation and maintenance guidelines. Refer to the El Paso County Drainage Criterial Manual Volume 2 for installation details or operations and maintenance procedures not clearly outlined within the plans.

Permanent Stabilization:

Final stabilization is reached when all soil-disturbing activities at the site have been completed, and uniform vegetative cover has been established by drill seeding and crimping with a density of at least 70% of pre-disturbance levels or equivalent permanent physical erosion reduction methods have been employed. The CDPHE Water Quality Division may, after consultation with the permittee and upon good cause, amend the final stabilization criteria for specific operations. At this time, the City of Colorado Springs inspector should be notified to schedule a final inspection. The conditions of the SWMP and General Permit for Stormwater Discharges associated with Construction Activity will remain in effect until Final Stabilization is achieved and a notice of inactivation is sent by the applicant to CDPHE Stormwater Quality Division. All pertinent records must be kept on file for at least 3 years from the date the site is finally stabilized.

Contractor/SWMP Administrator Inspections and Maintenance of BMP's

1. Make thorough inspection of the stormwater management system at least every 14 days.
2. Make thorough inspection of the stormwater management system after each precipitation event that causes runoff.
3. If any deficiencies are noted, they must be corrected immediately after being noted.
4. Records of the site inspections or modifications must be kept at the site unless alternate place is approved by the El Paso County inspector and must be made available upon request.
5. Inspections must take place where construction activity is complete, but lot is not sold.
6. Monthly inspections must take place on site where construction activity is complete, but vegetative cover is still being established.

Modification to the SWMP

It is the responsibility of the contractor or SWMP administrator to maintain a comprehensive up to date Stormwater management plan onsite at all times. Any changes or additions made prior to construction or implemented during the period of construction and stabilization should be added to the plan. Inspection checklists, observations of the evaluations will be documented on the BMP inspection forms included in the Appendix. Completed inspections forms and any reporting should be retained with the SWMP document. Implementation of required stormwater and erosion control identified during the inspection will be made as soon as possible.

Closing

The Stormwater Management Plan for Sterling Ranch - Phase I was developed using standard industry practice and the best available information. This SWMP may be modified in the future to better suit conditions encountered on-site that were not anticipated during the preparation of this document.

Respectfully Submitted,

M&S Civil Consultants

A handwritten signature in black ink, appearing to read 'D. Moffett', with a long horizontal flourish extending to the right.

Darin L. Moffett, P.E.
Project Engineer/Manager

APPENDICIES

COPY OF CDPHE APPLICATION

STATE OF COLORADO

COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT

Dedicated to protecting and improving the health and environment of the people of Colorado

Water Quality Control Division
300 Cherry Creek Drive South
WQCD-WQPS-B2
Denver, CO 80246-1530
(303) 692-3500 www.coloradowaterpermits.com



For Agency Use Only

Permit Number Assigned

COR03-_____

Date Received ____/____/____
MM DD YYYY

COLORADO DISCHARGE PERMIT SYSTEM (CDPS)

STORMWATER DISCHARGE ASSOCIATED WITH CONSTRUCTION ACTIVITIES APPLICATION

PHOTO COPIES, FAXED COPIES, PDF COPIES OR EMAILS WILL NOT BE ACCEPTED.

Please print or type. Original signatures are required.

All items must be completed accurately and in their entirety for the application to be deemed complete. Incomplete applications will not be processed until all information is received which will ultimately delay the issuance of a permit. If more space is required to answer any question, please attach additional sheets to the application form. Applications must be submitted by mail or hand delivered to:

Colorado Department of Public Health and Environment
Water Quality Control Division
4300 Cherry Creek Drive South
WQCD-WQPS-B2
Denver, CO 80246-1530

Any additional information that you would like the Division to consider in developing the permit should be provided with the application. Examples include effluent data and/or modeling and planned pollutant removal strategies.

HOW TO COMPLETE THIS APPLICATION

1. Online via web browser. You must use Internet Explorer (version 8 and above). All other browsers disable the electronic submission features.

OR

2. Download and save this form to your computer. Then open Adobe Reader (or Acrobat), select File, then Open and navigate to where the form is saved. This is the best option if using a Mac computer (Do not use the Mac Preview program).

PERMIT INFORMATION

Reason for Application: NEW CERT RENEW CERT EXISTING CERT# _____

Applicant is: Property Owner Contractor/Operator

A. CONTACT INFORMATION—NOT ALL CONTACTS MAY APPLY *indicates required

* PERMITTEE (if more than one please add additional pages)

* ORGANIZATION FORMAL NAME: C & C Land, LLC

1) * PERMITTEE CONTACT the person authorized to sign and certify the permit application.

This person receives all permit correspondences and is the person responsible for ensuring compliance with the permit.

Responsible Person (Title): Contractor

Currently Held By (Person): FirstName: Chaz LastName: Collins

Telephone: 719-471-1742 Email Address: candclandllc@aol.com

Organization: C & C Land, LLC

Mailing Address: 20 Boulder Crescent, Suite 200

City: Colorado Springs State: CO Zip Code: 80903

This form must be signed by the Permittee (listed in item 1) to be considered complete.

Per Regulation 61 In all cases, it shall be signed as follows:

In the case of corporations, by a responsible corporate officer. For the purposes of this section, the responsible corporate officer is responsible for the overall operation of the facility from which the discharge described in the application originates.

In the case of a partnership, by a general partner.

In the case of a sole proprietorship, by the proprietor.

In the case of a municipal, state, or other public facility, by either a principal executive officer or ranking elected official.

2) **DMR COGNIZANT OFFICIAL** (i.e. authorized agent) the person or position authorized to sign and certify reports required by the Division including Discharge Monitoring Reports *DMR's, Annual Reports, Compliance Schedule submittals, and other information requested by the Division. The Division will transmit pre-printed reports (ie. DMR's) to this person. If more than one, please add additional pages.

Same as 1) Permittee

Responsible Person (Title): Contractor
Currently Held By (Person): FirstName: Chaz LastName: Collins
Telephone: 719-471-1742 Email Address: candclandllc@aol.com
Organization: C & C Land, LLC
Mailing Address: 20 Boulder Crescent, Suite 200
City: Colorado Springs State: CO Zip Code: 80903

Per Regulation 61 : All reports required by permits, and other information requested by the Division shall be signed by the permittee or by a duly authorized representative of that person. A person is a duly authorized representative only if:

- i. The authorization is made in writing by the permittee.
- ii. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a **named individual** or any individual occupying a **named position**); and
- iii. The written authorization is submitted to the Division.

3) ***SITE CONTACT** local contact for questions relating to the facility & discharge authorized by this permit

Same as 1) Permittee

Responsible Person (Title): Contractor
Currently Held By (Person): FirstName: Chaz LastName: Collins
Telephone: 719-471-1742 Email Address: candclandllc@aol.com
Organization: C & C Land, LLC
Mailing Address: 20 Boulder Crescent, Suite 200
City: Colorado Springs State: CO Zip Code: 80903

4) ***BILLING CONTACT** if different than the permittee.

Same as 1) Permittee

Responsible Person (Title): Contractor
Currently Held By (Person): FirstName: Chaz LastName: Collins
Telephone: 719-471-1742 Email Address: candclandllc@aol.com
Organization: C & C Land, LLC
Mailing Address: 20 Boulder Crescent, Suite 200
City: Colorado Springs State: CO Zip Code: 80903

§) OTHER CONTACT TYPES (check below) Add pages if necessary:

Responsible Person (Title): _____

Currently Held By (Person): _____ LastName: _____

Telephone: _____ Email Address: _____

Organization: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

- | | | |
|--|--|---|
| <input type="checkbox"/> Pretreatment Coordinator | <input type="checkbox"/> Property Owner | <input type="checkbox"/> Compliance Contact |
| <input type="checkbox"/> Environmental Contact | <input type="checkbox"/> Inspection Facility Contact | <input type="checkbox"/> Stormwater MS4 Responsible Person |
| <input type="checkbox"/> Biosolids Responsible Party | <input type="checkbox"/> Consultant | <input type="checkbox"/> Stormwater Authorized Representative |
| <input type="checkbox"/> Other: _____ | | |

B) PERMITTED PROJECT/FACILITY INFORMATION

Project/Facility Name Sterling Ranch - Phase I (Onsite)

Street Address or Cross Streets North and East of the future intersection of Vollmer Road and Marksheffel Road

(e.g., "S. of Park St. between 5th Ave. and 10th Ave.", or "W. side of C.R. 21, 3.25 miles N. of Hwy 10"; A street name without an address, intersection, mile marker, or other identifying information describing the location of the project is not adequate. For linear projects, the route of the project should be described as best as possible with the location more accurately indicated by a map.)

City: _____ Zip Code: _____ County: _____

Facility Latitude/Longitude - (approximate center of site to nearest 15 seconds using one of the following formats)

- Decimal Degrees
- OR** 001A Latitude _____ Degrees (to 3 decimal places) 001A Longitude _____ Degrees (to 3 decimal places) (e.g., 39.703°, 104.933°)

- Degrees, Minutes, Seconds
- 001A Latitude 38 ° 57 ' 47 N - 001A Longitude 104 ° 40 ' 30 W e.g., 39°46'11"N, 104°53'11"W
- Degrees Minutes Seconds Degrees Minutes Seconds

For the approximate center point of the property, to the nearest 15 seconds. The latitude and longitude must be provided as either degrees, minutes, and seconds, or in decimal degrees with three decimal places. This information may be obtained from a variety of sources, including:

- Surveyors or engineers for the project should have, or be able to calculate, this information.
- EPA maintains a **web-based siting tool** as part of their Toxic Release Inventory program that uses interactive maps and aerial photography to help users get latitude and longitude. The siting tool can be accessed at www.epa.gov/tri/report/siting_tool/index.htm
- U.S. Geological Survey **topographical map(s)**, available at area map stores.
- Using a **Global Positioning System (GPS)** unit to obtain a direct reading.

Note: the latitude/longitude required above is not the directional degrees, minutes, and seconds provided on a site legal description to define property boundaries.

C) MAP (Attachment) If no map is submitted, the permit will not be issued Facility Information

Map: Attach a map that indicates the site location and that CLEARLY shows the boundaries of the area that will be disturbed. Maps must be no larger than 11x17 inches.

D) LEGAL DESCRIPTION

Legal description: If subdivided, provide the legal description below, or indicate that it is not applicable (do not supply Township/Range/Section or metes and bounds description of site)

Subdivision(s): _____ Lot(s): _____ Block(s) _____

- OR** Not applicable (site has not been subdivided)

E) AREA OF CONSTRUCTION SITE

Total area of project site (Acres) 182.0 Area of project site to undergo disturbance (Acres) 151.6

Note: aside from clearing, grading and excavation activities, disturbed areas also include areas receiving overburden (e.g., stockpiles), demolition areas, and areas with heavy equipment/vehicle traffic and storage that disturb existing vegetative cover

Total disturbed area of Larger Common Plan of Development or Sale. If applicable: not applicable

(i.e., total, including all phases, filings, lots, and infrastructure not covered by this application)

Provide both the total area of the construction site, and the area that will undergo disturbance, in acres. **Note:** aside from clearing, grading and excavation activities, disturbed areas also include areas receiving overburden (e.g., stockpiles), demolition areas, and areas with heavy equipment/vehicle traffic and storage that disturb existing vegetative cover (see construction activity description under the APPLICABILITY section on page 1). If the project is part of a larger common plan of development or sale (see the definition under the APPLICABILITY section on page 1), the disturbed area of the total plan must also be included.

F) NATURE OF CONSTRUCTION ACTIVITY

Check the appropriate box(s) or provide a brief description that indicates the general nature of the construction activities. (The full description of activities must be included in the Stormwater Management Plan.)

Single Family Residential Development

Multi-Family Residential Development

Commercial Development

Oil and Gas Production and/or Exploration (including pad sites and associated infrastructure)

Highway/Road Development (not including roadways associated with commercial or residential development)

Other—Description: Early Grading and Erosion Control Plan in preparation for Single Family Development

G) ANTICIPATED CONSTRUCTION SCHEDULE

Construction Start Date: November 2015 Final Stabilization Date: May 2020

- **Construction Start Date** - This is the day you expect to begin ground disturbing activities, including grubbing, stockpiling, excavating, demolition, and grading activities.
- **Final Stabilization Date** - in terms of permit coverage, this is when the site is finally stabilized. This means that all ground surface disturbing activities at the site have been completed, and all disturbed areas have been either built on, paved, or a uniform vegetative cover has been established with an individual plant density of at least 70 percent of pre-disturbance levels. **Permit coverage must be maintained until the site is finally stabilized. Even if you are only doing one part of the project, the estimated final stabilization date must be for the overall project.** If permit coverage is still required once your part is completed, the permit certification may be transferred or reassigned to a new responsible entity(s).

H) RECEIVING WATERS (If discharge is to a ditch or storm sewer, include the name of the ultimate receiving waters)

Immediate Receiving Water(s): Sand Creek

Ultimate Receiving Water(s): Sand Creek

Identify the receiving water of the stormwater from your site. Receiving waters are any waters of the State of Colorado. This includes all water courses, even if they are usually dry. If stormwater from the construction site enters a ditch or storm sewer system, identify that system and indicate the ultimate receiving water for the ditch or storm sewer. **Note:** a stormwater discharge permit does not allow a discharge into a ditch or storm sewer system without the approval of the owner/operator of that system.

I) SIGNATURE PAGE

1. You may print and sign this document and mail the hard copy to the State along with required documents.

OR

2. Electronic Submission Signature

You may choose to submit your application electronically, along with required attachments. To do so, click the SUBMIT button below which will direct you, via e-mail, to sign the document electronically using the DocuSign Electronic Signature process. Once complete, you will receive, again via e-mail, an electronically stamped Adobe pdf of this application. Print the signature page from the electronically stamped pdf, sign it and mail it to the WQCD Permits Section to complete the application process (address is on page 1 of the application).

- The Division encourages use of the electronic submission of the application and electronic signature. This method meets signature requirements as required by the State of Colorado.
- The ink signed copy of the electronically stamped pdf signature page is also required. This requirement meets Federal EPA Requirements. Processing of the application will begin with the receipt of the valid electronic signature.

STORMWATER MANAGEMENT PLAN CERTIFICATION

"I certify under penalty of law that a complete Stormwater Management Plan, as described in Appendix B of this application, has been prepared for my activity. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the Stormwater Management Plan is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for falsely certifying the completion of said SWMP, including the possibility of fine and imprisonment for knowing violations."

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

"I understand that submittal of this application is for coverage under the State of Colorado General Permit for Stormwater Discharges Associated with Construction Activity for the entirety of the construction site/project described and applied for, until such time as the application is amended or the certification is transferred, inactivated, or expired." [Reg 61.4(1)(h)]

For DocuSign Electronic Signature _____ Ink Signature  Date: 11-10-15

Signature of Legally Responsible Person or Authorized Agent (submission must include original signature)

Chaz Collins

Contractor

Name (printed)

Title

This form must be signed by the Permittee to be considered complete. Per Regulation 61, in all cases, it shall be signed as follows:

- a) In the case of corporations, by a responsible corporate officer. For the purposes of this section, the responsible corporate officer is responsible for the overall operation of the facility from which the discharge described in the application originates.
- b) In the case of a partnership, by a general partner.
- c) In the case of a sole proprietorship, by the proprietor.
- d) In the case of a municipal, state, or other public facility, by either a principal executive officer or ranking elected official

3rd Party Preparer: If this form was prepared by an authorized agent on behalf of the Permittee, please complete the fields below.

Darin L. Moffett

darin@mscivil.com

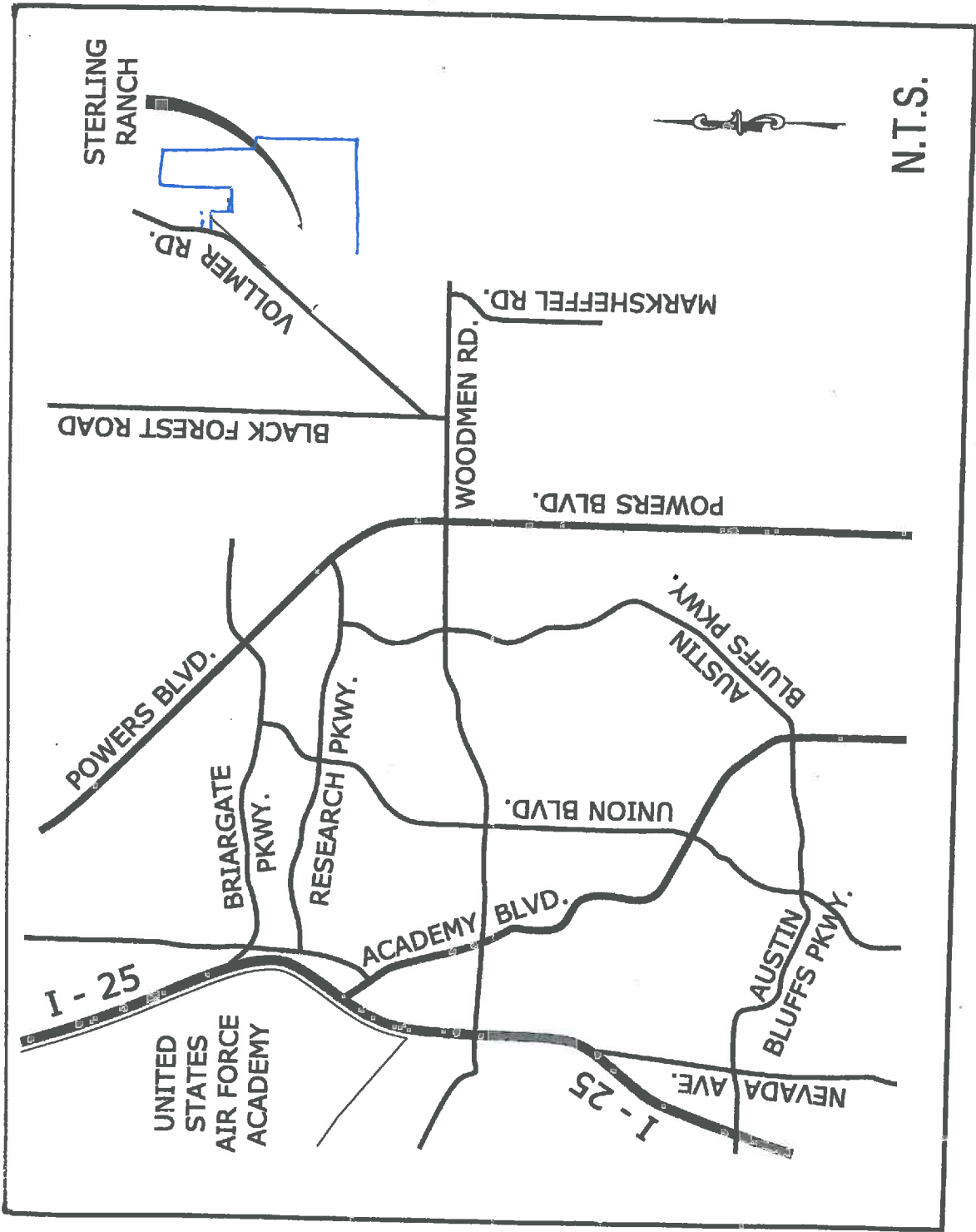
Preparer Name (printed)

Email Address

**DO NOT INCLUDE A COPY OF THE STORMWATER MANAGEMENT PLAN
DO NOT INCLUDE PAYMENT—AN INVOICE WILL BE SENT AFTER THE CERTIFICATION IS ISSUED.**

	Attach Map
	Attach File
	Attach File
	Attach File
	Attach File

VICINITY MAP



VICINITY MAP
N.T.S.

MAINTENANCE INSPECTION REPORTS

DATE/TIME:
INSPECTOR:
TYPE OF INSPECTION: Self-Monitoring _____ Initial _____ Compliance _____ Follow-Up _____ Reconnaissance _____ Complaint _____ Final _____

SITE:	DATE OF PERMIT:
ADDRESS:	
CONTRACTOR: CONTACT: PHONE:	OWNER/OWNER'S REPRESENTATIVE: CONTACT: PHONE:
STAGE OF CONSTRUCTION: Initial BMP Installation/Prior to Construction _____ Clearing & Grubbing _____ Rough Grading _____ Finish Grading _____ Utility Construction _____ Building Construction _____ Final Stabilization _____	

OVERALL SITE INSPECTION	YES/NO/N.A.	REMARKS/ACTIONS
Is there any evidence of sediment leaving the construction site? If so, note areas.		
Have any adverse impacts such as flooding, structural damage, erosion, spillage, or accumulation of sediment, debris or litter occurred on or within public or private property, wetlands or surface waters -to include intermittent drainageways and the City's stormwater system (storm sewers, gutters, ditches, etc.)?		
Are the BMPs properly installed and maintained?		
Have the BMPs been placed as shown on approved plans?		
Are the BMPs functioning as intended?		
Is work being done according to approved plans and any phased construction schedule?		
Is the construction schedule on track?		
Are drainage channels and outlets adequately stabilized?		
Is there any evidence of discharges or spills of fuels, lubricants, chemicals, etc.?		

BMP MAINTENANCE CHECKLIST	YES/NO/N.A.	REMARKS/ACTIONS NECESSARY
<p>CHECK DAM</p> <p>Has accumulated sediment and debris been removed per maintenance requirements?</p>		
<p>EROSION CONTROL BLANKET</p> <p>Is fabric damaged, loose or in need of repairs?</p>		
<p>INLET PROTECTION</p> <p>Is the inlet protection damaged, ineffective or in need of repairs?</p> <p>Has sediment been removed per maintenance requirements?</p>		
<p>MULCHING</p> <p>Distributed uniformly on all disturbed areas?</p> <p>Is the application rate adequate?</p> <p>Any evidence of mulch being blown or washed away?</p> <p>Has the mulched area been seeded, if necessary?</p>		
<p>SEDIMENT BASIN</p> <p>Is the sediment basin properly constructed and operational?</p> <p>Has sediment and debris been cleaned out of the basin?</p>		
<p>SILT FENCE</p> <p>Is the fence damaged, collapsed, unentrenched or ineffective?</p> <p>Has sediment been removed per maintenance requirements?</p> <p>Is the silt fence properly located?</p>		
<p>SLOPE DRAIN</p> <p>Is water bypassing or undercutting the inlet or pipe?</p> <p>Is erosion occurring at the outlet of the pipe?</p>		
<p>STRAW BALE BARRIER</p> <p>Are the straw bales damaged, ineffective or unentrenched?</p> <p>Has sediment been removed per maintenance requirements?</p> <p>Are the bales installed and positioned correctly?</p>		

BMP MAINTENANCE CHECKLIST	YES/NO/N.A.	REMARKS/ACTIONS NECESSARY
<p>SURFACE ROUGHENING</p> <p>Is the roughening consistent/uniform on slopes??</p> <p>Any evidence of erosion?</p>		
<p>TEMPORARY SEEDING</p> <p>Are the seedbeds protected by mulch?</p> <p>Has any erosion occurred in the seeded area?</p> <p>Any evidence of vehicle tracking on seeded areas?</p>		
<p>TEMPORARY SWALES</p> <p>Has any sediment or debris been deposited within the swales?</p> <p>Have the slopes of the swale eroded or has damage occurred to the lining?</p> <p>Are the swales properly located?</p>		
<p>VEHICLE TRACKING</p> <p>Is gravel surface clogged with mud or sediment?</p> <p>Is the gravel surface sinking into the ground?</p> <p>Has sediment been tracked onto any roads and has it been cleaned up?</p> <p>Is inlet protection placed around curb inlets near construction entrance?</p>		
<p>OTHER</p>		

FINAL INSPECTION CHECKLIST	YES/NO/N.A.	REMARKS/ACTIONS NECESSARY
Has all grading been completed in compliance with the approved Plan, and all stabilization completed, including vegetation, retaining walls or other approved measures?		
Has final stabilization been achieved - uniform vegetative cover with a density of at least 70 percent of pre-disturbance levels, and cover capable of adequately controlling soil erosion; or permanent, physical erosion methods?		
Have all temporary measures been removed?		
Have all stockpiles, construction materials and construction equipment been removed?		
Are all paved surfaces clean (on-site and off-site)?		
Has sediment and debris been removed from drainage facilities (on-site and off-site) and other off-site property, including proper restoration of any damaged property?		
Have all permanent stormwater quality BMPs been installed and completed?		

ADDITIONAL COMMENTS:

The items noted as needing action must be remedied no later than _____.
The contractor shall notify the inspector when all the items noted above have been addressed.

By signing this inspection form, the owner/owner's representative and the contractor acknowledge that they have received a copy of the inspection report and are aware it is their responsibility to take corrective actions by the date noted above. Failure to sign does not relieve the contractor and owner/owner's representative of their responsibility to take the necessary corrective action and of their liability for any damages that have occurred or may occur.

INSPECTOR'S SIGNATURE:	DATE:
OWNER/OWNER'S REPRESENTATIVE SIGNATURE:	DATE:
CONTRACTOR'S SIGNATURE:	DATE:

SPILL CLEANUP INSTRUCTION AND REPORT FORM

Spill Response Plan

Points of Contact in case of a reportable quantity release:

EPA National Response Center (800) 424-8802
 Colorado Department of Public Health and Environment (877) 518-5698
 OSEA REGIONAL OFFICES (303) 844-1600

Small spills (e.g. oil leaks, overfills, etc.) will be cleaned as soon as possible and reported, if required. Oil dry, plastic shovels, plastic bags and sealable container should be available on site. Contaminated material will be collected in the bags, bags dated, nature of material noted and stored in the container. Spill material will be properly disposed of off the site. In cases of a spill, personnel on the site will make decisions in response to the spill based on the following decision hierarchy:

1. Protect people
2. Protect property
3. Protect the environment

Material	Reportable Quantities Media Released To	Reportable Quantity
Engine oil, fuel, hydraulic & brake fluid	Land	25 gallons
Engine oil, fuel, hydraulic & brake fluid	Water	Visible Sheen
Antifreeze	Land	100 lbs (13 Gal.)
Battery Acid	Land, Water	100 lbs
Refrigerant	Air	1 lb
Gasoline	Air, Land, Water	100 lbs
Engine Degreasers	Air, Land, Water	100 lbs

Spill Report Form

Project Type and Location: _____

Spill Reported by: _____

Date/Time Spill: _____

Describe spill location and events leading to spill: _____

Material spilled: _____

Source of spill: _____

Amount spilled: _____ Amount spilled to waterway: _____

Containment or clean up action: _____

Approximate depth of soil excavation: _____

List injuries or Personal Contamination: _____

Action to be taken to prevent future spills: _____

Modifications to the SWPPP necessary due to this spill: _____

Agencies notified of the spill: _____

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Contractor Superintendent

Date

involving a radioactive or infectious material, or there is a release of a marine pollutant.

Spills and incidents that have or may result in a spill along a highway must be reported to the nearest law enforcement agency immediately. The Colorado State Patrol and CDPHE must also be notified as soon as possible. In the event of a spill of hazardous waste at a transfer facility, the transporter must notify CDPHE within 24 hours if the spill exceeds 55 gallons or if there is a fire or explosion.

The National Response Center should be notified as soon as possible after discovery of a release of a hazardous liquid or carbon dioxide from a pipeline system if a person is killed or injured, there is a fire or explosion, there is property damage of \$50,000 or more, or any nearby water body is contaminated.

The National Response Center and the Colorado Public Utilities Commission Gas Pipeline Safety Section must be notified as soon as possible, but not more than two hours after discovery of a release of gas from a natural gas pipeline or liquefied natural gas facility if a person is killed or injured, there is an emergency shutdown of the facility, or there is property damage of \$50,000 or more. The Colorado Public Utilities Commission should also be notified if there is a gas leak from a pipeline, liquefied natural gas system, master meter system or a propane system that results in the evacuation of 50 or more people from an occupied building or the closure of a roadway.

Oil and Gas Exploration

All Class I major events on federal lands, including releases of hazardous substances in excess of the CERCLA reportable quantity and spills of more than 100 barrels of fluid and/or 500 MCF of gas released, must be reported to the Bureau of Land Management (BLM) immediately. Spills of oil, gas, salt water, toxic liquids and waste materials must also be reported to the BLM and the surface management agency.

Spills of exploration and production (E&P) waste on state or private lands in excess of 20 barrels, and spills of any size that impact or threaten to impact waters of the state, an occupied structure, or public byway must be reported to the Colorado Oil and Gas Conservation Commission as soon as practicable, but not more than 24 hours after discovery. Spills of any

size that impact or threaten to impact waters of the state must be reported to CDPHE immediately. Spills that impact or threaten to impact a surface water intake must be reported to the emergency contact for that facility immediately after discovery. Spills of more than five (5) barrels of E&P waste must be reported in writing to the Oil and Gas Conservation Commission within 10 days of discovery.

REPORTING NUMBERS

National Response Center (24-hour)
1-800-424-8802

CDPHE Colorado Environmental Release and Incident Reporting Line (24-hour)
1-877-618-5608

Radiation Incident Reporting Line (24-hour)
303-877-9767

Colorado State Patrol (24-hour)
303-238-4501

Division of Oil and Public Safety
(business hours)
303-318-8547

Oil and Gas Conservation Commission
(business hours)
303-894-2100

Colorado Public Utilities Commission Gas Pipeline Safety Section (business hours)
303-894-2851

Local Emergency Planning Committees
(to obtain list, business hours)
720-852-6603



Colorado Department
of Public Health
and Environment

Environmental Spill Reporting

Colorado Department of Public
Health and Environment
4300 Cherry Creek Drive South
Denver, CO 80248-1530

<http://www.cdphe.state.co.us>

January 2009

When a release of a hazardous material or other substance occurs to the environment, there are a number of reporting and notification requirements that must be followed by the company or individual responsible for the release. Most spills are covered by more than one reporting requirement, and all requirements must be met. In addition to verbal notification, written reports are generally required. This brochure briefly explains the major requirements. A more detailed description is provided in the "Reporting Environmental Releases in Colorado" Guidance Document, available on the web.

Releases that must be reported to the Colorado Department of Public Health and Environment (CDPHE) may be reported to the Colorado Environmental Release and Incident Reporting Line.

ENVIRONMENTAL SPILL REPORTING

CERCLA, EPCRA and RCRA

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the Emergency Planning and Community Right-to-Know Act (EPCRA) require that a release of a reportable quantity or more of a hazardous substance to the environment be reported immediately to the appropriate authorities when the release is discovered.

Under CERCLA, reportable quantities were established for hazardous substances listed or designated under other environmental statutes. These include:

- all hazardous air pollutants (HAPs) listed under Section 112(b) of the Clean Air Act.
- all toxic pollutants designated under Section 307(a) or Section 311(b)(2)(A) of the Clean Water Act.
- all Resource Conservation and Recovery Act (RCRA) characteristic and listed hazardous wastes.
- any element, compound, or substance designated under Section 102 of CERCLA.

EPCRA established a list of extremely hazardous substances (EHS) that could cause serious irreversible health effects from accidental releases. Many substances appear on both the CERCLA and EPCRA lists. EPCRA extremely hazardous substances that are also CERCLA hazardous substances have the same reportable quantity (RQ) as under CERCLA. EPCRA extremely hazardous substances that are not listed under CERCLA have a reportable quantity that is equal to their threshold planning quantity (TPQ). A list of CERCLA reportable quantities is included in 40 CFR Section 302.4. A list of EPCRA threshold planning quantities is included in 40 CFR Part 355 Appendices A & B.

CERCLA-reportable releases must be reported immediately to the National Response Center (NRC), while EPCRA-reportable releases must be reported immediately to the National Response Center, the State Emergency Response Commission, the affected Local Emergency Planning Committee (LEPC). If the release is an EPCRA extremely

hazardous substance, but not a CERCLA hazardous substance, and there is absolutely no potential to affect off-site persons, then only the State Emergency Planning Commission (represented by GDPHE for reporting purposes) and the Local Emergency Planning Committee need to be notified.

In the case of a release of hazardous waste stored in tanks, RCRA-permitted facilities and large quantity generators must also notify GDPHE within 24 hours of any release to the environment that is greater than one (1) pound.

Radiation Control

Each licensee or registrant must report to the Radiation Incident Reporting Line in the event of lost, stolen or missing licensed or registered radioactive materials or radiation machines, releases of radioactive materials, contamination events, and fires or explosions involving radioactive materials. Releases of radionuclides are reportable under CERCLA.

Clean Water Act

The Clean Water Act requires the person in charge of a facility or vessel to immediately report to the National Response Center all discharges of oil or designated hazardous substances to water. Oil means oil of any kind or form. Designated hazardous substances are included in the CERCLA list.

The Clean Water Act also requires that facilities with a National Pollutant Discharge Elimination System (NPDES) permit report to the National Response Center within 24 hours of becoming aware of any unanticipated bypasses or upsets that cause an exceedance of the effluent limits in their permit and any violations of their maximum daily discharge limits for pollutants listed in their permit.

A release of any chemical, oil, petroleum product, sewage, etc., which may enter waters of the state of Colorado (which include surface water, ground water and city gutters and storm sewers leading to surface water) must be reported immediately to GDPHE. Any accidental discharge to the sanitary sewer system must be reported immediately to the local sewer authority and the affected wastewater treatment plant. For additional reporting releases to water, please see "Guidance for Reporting Spills under the Colorado

Water Quality Control Act and Colorado Discharge Permits" at <http://www.cdphs.state.co.us/op/wqcc/Resources/Guidance/epilguidance.pdf>.

Clean Air Act

Hazardous air pollutants (HAPs) are designated as hazardous substances under CERCLA. If a facility has an air permit but the permit does not allow for or does not specify the release of a substance, or if the facility does not have an air permit, then all releases in excess of the CERCLA / EPCRA reportable quantity for that substance must be reported to the National Response Center and GDPHE. If the facility releases more of a substance than is allowed under its air permit, the facility must also report the release. Discharges of a substance that are within the allowable limits specified in the facility's permit do not need to be reported.

Regulated Storage Tanks

Owners and operators of regulated storage tank systems must report a release or suspected release of regulated substances to the Division of Oil and Public Safety at the Colorado Department of Labor and Employment within 24 hours. Under this program, the reportable quantity for petroleum releases is 25 gallons or more, or any amount that causes a sheen on nearby surface water. Spills of less than 25 gallons of petroleum must be immediately contained and cleaned up. If cleanup cannot be accomplished within 24 hours, the Division of Oil and Public Safety must be notified immediately.

Spills of hazardous substances from tanks in excess of the CERCLA or EPCRA reportable quantity must be reported immediately to the National Response Center, GDPHE and the local fire authority, and to the Division of Oil and Public Safety within 24 hours.

Transportation and Pipelines

The person in physical possession of a hazardous material must notify the National Response Center as soon as practical, but not to exceed 12 hours after the incident, if as a direct result of the hazardous material, a person is killed or injured, there is an evacuation of the general public lasting more than an hour, a major transportation artery is shut down for an hour or more, the flight pattern of an aircraft is altered, there is fire, spillage or suspected contamination

**WATER QUALITY
CONTROL
DIVISION**

Policy No: WQE-10

Initiated By: ESG/AMK

Approved By: [Signature]

Effective Date: 3/1/88

Revision No.: _____

Revision Date: _____

**Guidance for Reporting Spills under the Colorado Water Quality
Control Act and Colorado Discharge Permits**

I. PURPOSE

To provide guidance to applicants Colorado reporting requirements pursuant to 25-COFR-10000. This guidance does not supersede any or all other regulatory requirements applicable to a spill. Facilities possessing a Colorado Discharge Permit System (CDPS) should refer applicable permit conditions regarding spill reporting and response. The guidance is not intended to supersede any other state or federal laws and regulations. This guidance does not limit the existing rights or responsibilities of persons with respect to spill reporting. For example, persons maintain their right and responsibility to immediately report spills to a national emergency spill response center (800-424-9313) or to the state police or state fire (303-439-3000).

II. STATUTORY REQUIREMENT ABSTRACT

Colorado Water Quality Control Act - Spill Reporting Requirements - 25-COFR-10000, C.F.R.

Any person engaged in any operation or activity which results in a spill or discharge of oil or other substance which may cause pollution of the waters of the state contrary to the provisions of the water control act shall immediately report such spill or discharge.

Spillwaters means any and all surface water which is water which are contained in or not in a reservoir, but which is not contained in the water storage system, which is contained in or not in a reservoir, but which is not contained in the water storage system, and all water withdrawn for use and not contained in a reservoir, but which is not contained in the water storage system.

Examples of spillwaters include, but are not limited to, petroleum, hazardous waste, or other pollutants and various gases, acids, caustics, inorganic salts or other, volatile, non-hazardous substances which are discharged to a water body and groundwater.

III. BACKGROUND

The Division encourages better reporting requirements for spills that occur and reported to facilities that are not in a discharge that is authorized under a CDPS permit and those that are not. For emergency releases, or in the case of an emergency where a permit does not address reporting of or response to a spill, the Division recommends that the responsible party(s) take the following actions:

1. Immediately report spills that may result in a non-permitted discharge of pollutants to state waters to the Environmental Release and Incident Reporting Line at 1-877-510-5829;
2. Immediately notify the Division, verbally, when notifying the Division of a spill:
 - a. The name of the responsible person and, if not known by that person, the name of the person reporting the spill and the name of the responsible person if known;
 - b. An estimate of the date and time that a spill began or the other date and time if known;

- e. The location of the spill, its source (e.g., manifold, tanker truck), and identification of the type of material spilled (e.g., untreated wastewater, biosolids, specific chemical);
- f. The estimated volume of the spill and, if known, the actual date and time the spill was fully controlled/stopped;
- g. Whether the spill is ongoing and, if it is, the rate of flow and an estimate of the time that the spill will be fully controlled, if known;
- h. Measures that are being or have been taken to contain, reduce, and/or clean up the spill;
- i. A list of any potentially affected areas and any known downstream water users (e.g., public water supplies, irrigation channels, public use areas such as parks or swim beaches) that will be or have been affected;
- j. A phone number and e-mail to contact a representative of the responsible person that is in charge of the response. When a non-responsible person is reporting the spill, this information is encouraged, but not required, to provide contact information.

Reporting and management of spills that occur with respect to activities resulting in a discharge regulated under a permit should be performed in accordance with the permit requirements of the permit. This permit does not provide specific reporting or management response requirements for a given spill that may occur. State water quality standards and the Division recommends that the responsible person report the spill in accordance with the procedures listed above.

This guidance only addresses reporting requirements under the Division's authority. The person or entity engaged in any operation or activity that results in a spill is responsible for any other applicable reporting requirements associated with this and other regulatory agencies.

Section 15-5-0102, C.R.S. only addresses reporting to the Division. Section 15-5-0102, C.R.S. provides certain water quality responsibilities to other state implementing agencies. The Division's position is that, when a spill is reported that may impact ground water only in Utah and which is reported to an implementing agency, the Division, after the spill, the intent of section 15-5-0102, C.R.S. has been fulfilled, and material has not been reported to the Division. The Division supports the the responsible person reporting to the implementing agency that a spill has occurred. The implementing agency of the area impacted is able to conduct possible legal liability should it all with the Division is involved.

15. Division Examples of Non-reportable Spills

The Division has identified the following categories of spills that are considered non-reportable under 15-5-0102, C.R.S. Documentation of such spills, including the time when the spill occurred, should be maintained by the responsible person for Division review for a period of three years:

- 1. A spill to a generally impervious surface or structure (e.g., paved street, parking lot, storm drain, wastewater tank, manifold, vault, concrete basement, or onto soil) that is fully contained and does not infiltrate or seep into the ground or into any surface water or into any water body. Such spills that are cleaned up within 24 hours will be considered by the Division to have no potential to reach State waters. However, even if such spills are not cleaned up within 24 hours, the responsible person may be able to fully contain or otherwise manage a spill such that it will not reach State waters. There must be a clear path, manner to a basement or vault or contained, the responsible person must establish that the spill did not discharge to State waters during the time between the start of the spill and the completion of clean-up in accordance with best management practices.
- 2. A spill or discharge that is managed consistent with best management practices that are established in accordance with a CERP discharge permit or any other quality based Commission adopted best management practice for spill management or reporting.
- 3. A spill of potable water from a public water system that does not reach surface waters.

BMP CONSTRUCTION DETAILS

RECOMMENDED ANNUAL GRASSES

SPECIES (COMMON NAME)	GROWTH SEASON	SEEDING DATE	POUNDS OF PURE LIVE SEED (PLS) (PLS/ACRE)	PLANTING DEPTH (INCHES)
1. OATS	COOL	MARCH 16 - APRIL 30	35-50	1-2
2. SPRING WHEAT	COOL	MARCH 16 - APRIL 30	25-35	1-2
3. SPRING BARLEY	COOL	MARCH 16 - APRIL 30	25-35	1-2
4. ANNUAL RYEGRASS	COOL	MARCH 16 - JUNE 30	10-15	1/2
5. MILLET	WARM	MAY 16 - JULY 15	3-15	1/2-3/4
6. SUDANGRASS	WARM	MAY 16 - JULY 15	5-10	1/2-3/4
7. SORGHUM	WARM	MAY 16 - JULY 15	5-10	1/2-3/4
8. WINTER WHEAT	COOL	SEPTEMBER 1 - 30	20-35	1-2
9. WINTER BARLEY	COOL	SEPTEMBER 1 - 30	20-35	1-2
10. WINTER RYE	COOL	SEPTEMBER 1 - 30	20-35	1-2
11. TRITICALE	COOL	SEPTEMBER 1 - 30	25-40	1-2

THIS TABLE WAS TAKEN FROM UDFCD FOR RECOMMENDED ANNUAL GRASSES FOR THE DENVER METROPOLITAN AREA. THIS TABLE MAY BE USED UNLESS A SITE-SPECIFIC SEED MIX IS REQUESTED AND APPROVED.

TABLE TS-1

TEMPORARY SEEDING NOTES

INSTALLATION REQUIREMENTS

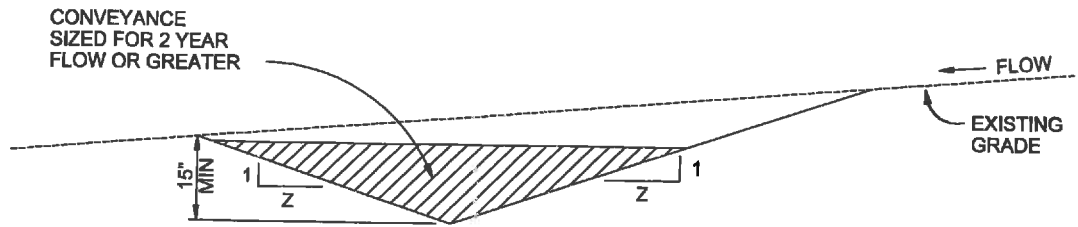
1. DISTURBED AREAS ARE TO BE SEEDED WITHIN 21 DAYS AFTER CONSTRUCTION ACTIVITY OR GRADING ENDS IF SEASON ALLOWS.
2. IF NECESSARY, SOIL IS TO BE CONDITIONED FOR PLANT GROWTH BY APPLYING TOPSOIL, FERTILIZER, OR LIME.
3. SOIL IS TO BE TILLED IMMEDIATELY PRIOR TO APPLYING SEEDS. COMPACT SOILS ESPECIALLY NEED TO BE LOOSENED.
4. SEEDBED DEPTH IS TO BE 4 INCHES FOR SLOPES FLATTER THAN 2:1, AND 1 INCH FOR SLOPES STEEPER THAN 2:1.
5. ANNUAL GRASSES LISTED IN TABLE TS-1 ARE TO BE USED FOR TEMPORARY SEEDING. SEED MIXES ARE NOT TO CONTAIN ANY NOXIOUS WEED SEEDS INCLUDING RUSSIAN OR CANADIAN THISTLE, KNAPWEED, PURPLE LOOSESTRIPE, EUROPEAN BINDWEED, JOHNSON GRASS, AND LEAFY SPURGE.
6. TABLE TS-1 ALSO PROVIDES REQUIREMENTS FOR SEEDING RATES, SEEDING DATES, AND PLANTING DEPTHS FOR THE APPROVED TYPES OF ANNUAL GRASSES.
7. SEEDING IS TO BE APPLIED USING MECHANICAL TYPE DRILLS EXCEPT WHERE SLOPES ARE STEEP OR ACCESS IS LIMITED THEN HYDRAULIC SEEDING MAY BE USED.
8. ALL SEEDED AREAS ARE TO BE MULCHED (SEE FACTSHEET ON MULCHING).
9. IF HYDRAULIC SEEDING IS USED THEN HYDRAULIC MULCHING SHALL BE DONE SEPARATELY TO AVOID SEEDS BECOMING ENCAPSULATED IN THE MULCH.

MAINTENANCE REQUIREMENTS

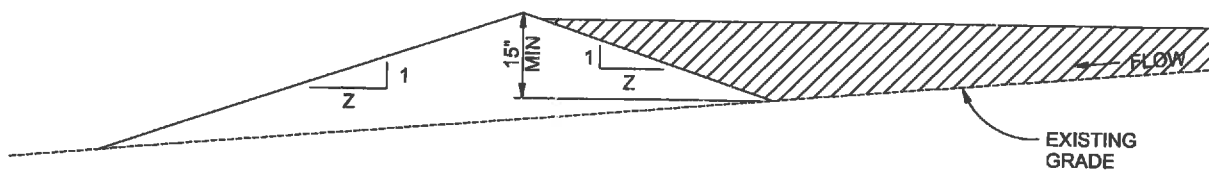
1. REGULAR INSPECTIONS ARE TO BE MADE OF ALL SEEDED AREAS TO ENSURE GROWTH.
2. AREAS WHERE GROWTH IS NOT OCCURRING QUICKLY OR THE MULCH HAS BEEN REMOVED SHALL BE RE-SEEDED AS SOON AS POSSIBLE AND RE-MULCHED IF NEEDED.
3. SEEDED AREAS ARE NOT TO BE DRIVEN OVER WITH CONSTRUCTION EQUIPMENT OR VEHICLES.

City of Colorado Springs
Stormwater Quality

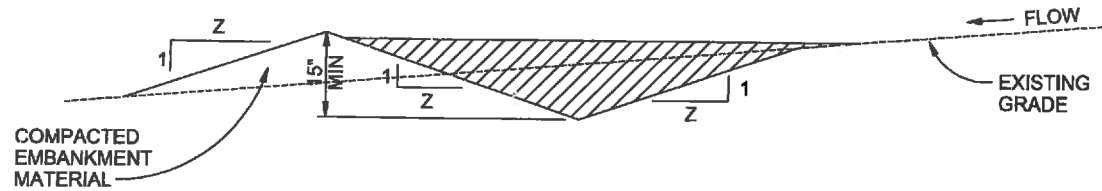
Figure TS-1
Temporary Seeding
Construction Detail and Maintenance
Requirements



A. EXCAVATED SWALE



B. SWALE FORMED BY BERM



C. SWALE FORMED BY CUT AND FILL

TEMPORARY SWALE

NTS

TEMPORARY SWALE NOTES

INSTALLATION REQUIREMENTS

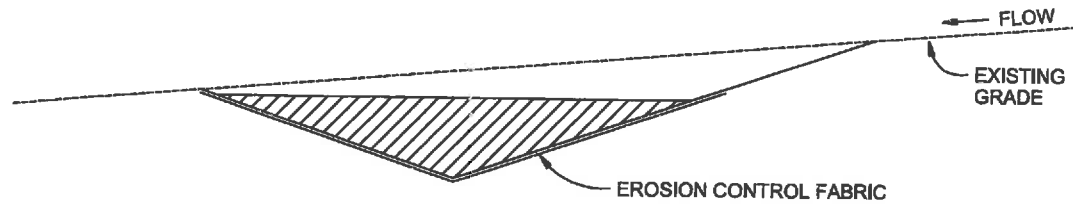
1. TEMPORARY SWALES SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.
2. THE AREA UNDER WHICH THE EMBANKMENT IS TO BE INSTALLED SHALL BE CLEARED, GRUBBED, AND STRIPPED OF ALL VEGETATION AND ROOT MAT.
3. EMBANKMENT MATERIAL SHALL CONSIST OF SOIL WITH A MINIMUM OF 15% PASSING A #200 SIEVE. EXCAVATED SOIL CAN BE USED IF IT MEETS THIS REQUIREMENT.
4. EMBANKMENT IS TO BE COMPACTED TO AT LEAST 90% OF MAXIMUM DENSITY AND WITHIN 2% OF OPTIMUM MOISTURE CONTENT ACCORDING TO ASTM D 698.
5. SWALES WITH SLOPE > 2% SHALL BE LINED, SEE FIGURE TSW-3.
6. SWALES ARE TO DRAIN INTO A SEDIMENT BASIN OR OTHER STABILIZED OUTLET.
7. Z SHALL BE 3 OR GREATER.

MAINTENANCE REQUIREMENTS

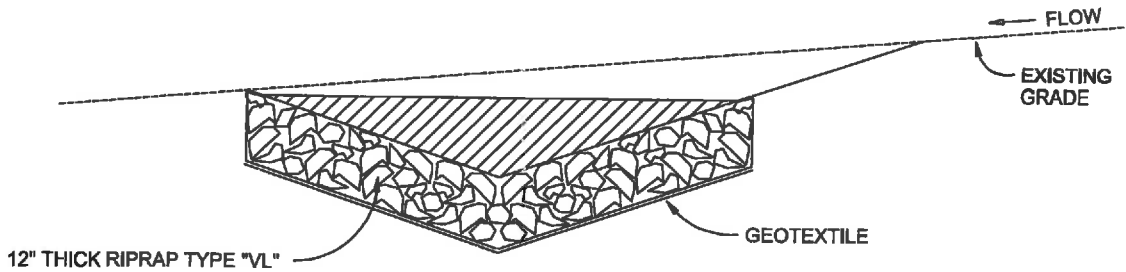
1. CONTRACTOR SHALL INSPECT SWALES AFTER EACH RAINFALL, AT LEAST DAILY DURING PROLONGED RAINFALL, AND WEEKLY DURING PERIODS OF NO RAINFALL.
2. SWALES SHALL BE ROUTINELY CLEARED OF ANY DEBRIS OR ACCUMULATION OF SEDIMENT.
3. ERODED SLOPES OR DAMAGED LININGS SHALL IMMEDIATELY BE REPAIRED.
4. TEMPORARY SWALES SHALL REMAIN OPERATIONAL AND PROPERLY MAINTAINED UNTIL THE SITE AREA IS PERMANENTLY STABILIZED WITH ADEQUATE VEGETATIVE COVER AND/OR OTHER PERMANENT STRUCTURE AS APPROVED BY THE CITY.

City of Colorado Springs
Stormwater Quality

Figure TSW-2
Temporary Swale
Construction Detail and Maintenance
Requirements



A. EROSION CONTROL FABRIC
 $2\% \leq \text{SLOPE} < 5\%$ AND VELOCITY ≤ 8 FPS



B. RIPRAP
 SLOPE $> 5\%$ OR VELOCITY > 8 FPS

SWALE LINING
 NTS

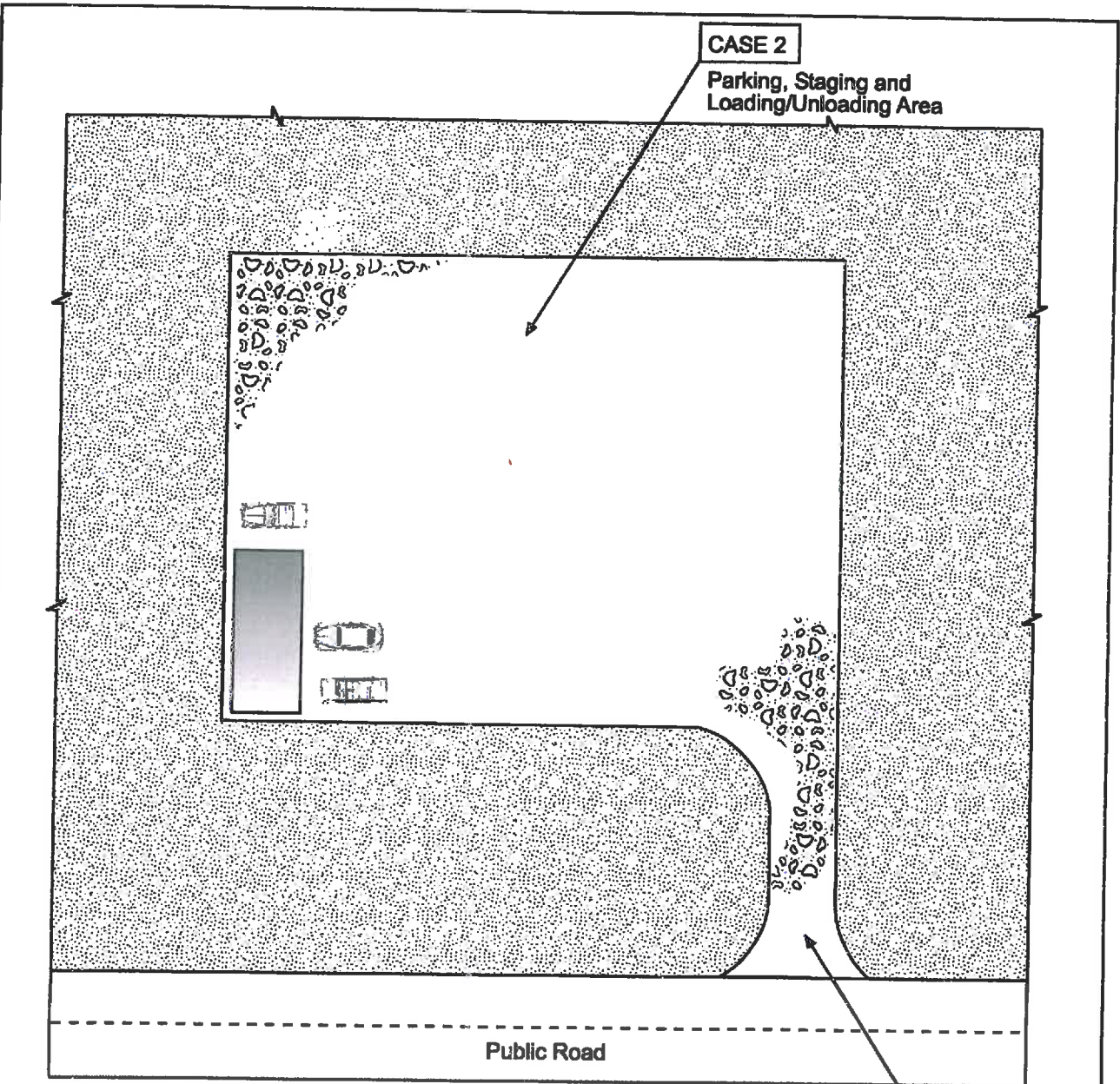
SWALE LINING NOTES

INSTALLATION REQUIREMENTS

1. REFER TO THE EROSION CONTROL BLANKETS FACTSHEET FOR PROPER INSTALLATION OF EROSION CONTROL FABRIC LINING.
2. SWALES WITH EASILY EROSIVE SOILS AND SLOPES LESS THAN 2%, SHALL BE LINED WITH EROSION CONTROL FABRIC.
3. VELOCITIES FOR EROSION CONTROL FABRICS SHALL NOT EXCEED 8 FPS. SWALES WITH VELOCITIES GREATER THAN 8 FPS SHALL BE LINED WITH RIP RAP.

MAINTENANCE REQUIREMENTS

1. CONTRACTOR SHALL INSPECT SWALE LININGS AFTER EACH RAINFALL, AT LEAST DAILY DURING PROLONGED RAINFALL AND WEEKLY DURING PERIODS OF NO RAINFALL.
2. DAMAGED LININGS SHALL IMMEDIATELY BE REPAIRED.
3. REFER TO THE EROSION CONTROL BLANKETS FACTSHEET FOR PROPER MAINTENANCE.
4. DISPLACED RIPRAP OR COARSE AGGREGATE IS TO BE REPLACED AS SOON AS POSSIBLE.
5. SWALE LININGS ARE TO REMAIN IN PLACE AND BE PROPERLY MAINTAINED UNTIL THE TEMPORARY SWALE IS REMOVED.



CASE 2

Parking, Staging and Loading/Unloading Area

Public Road

CASE 1

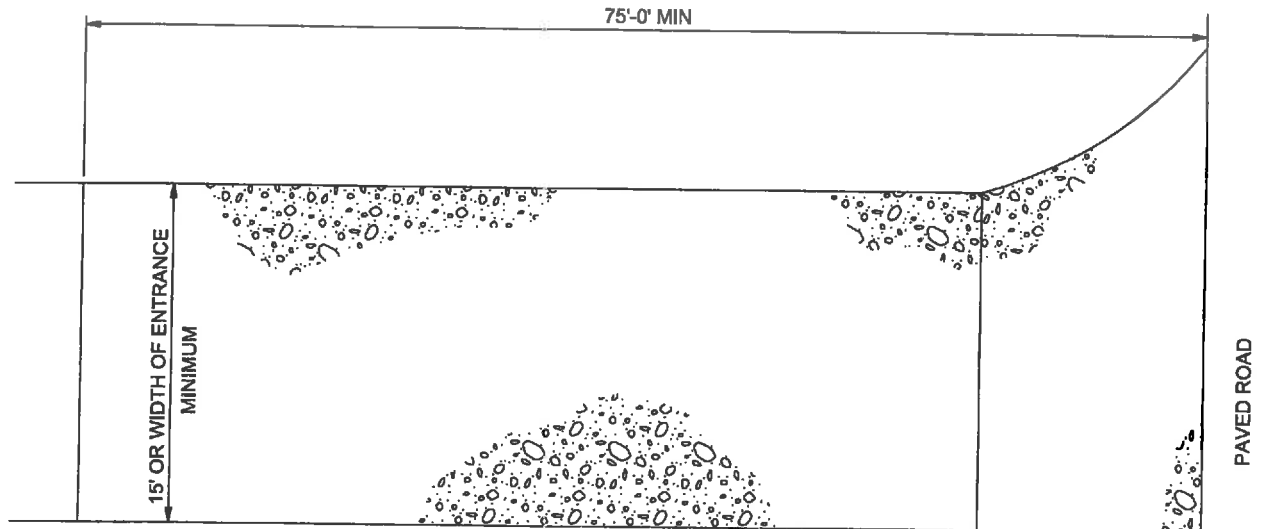
Construction Entrance

Table VT-1

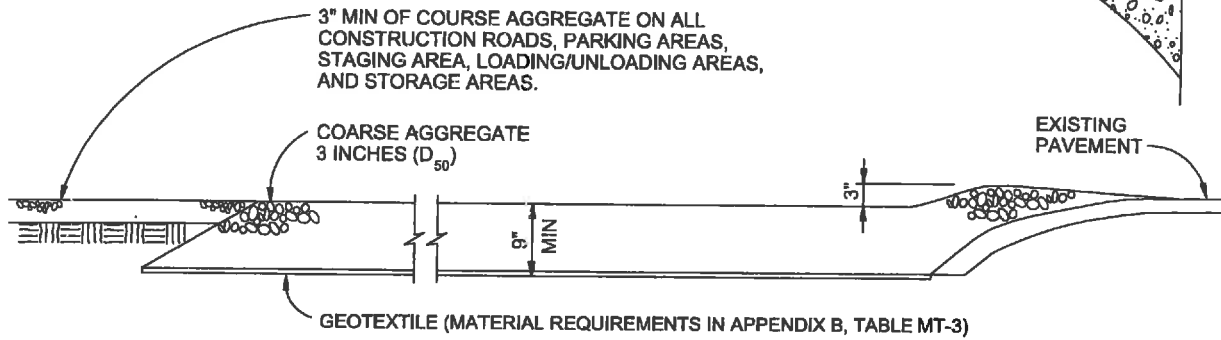
	Case 1	Case 2
Gravel Thickness	9"	3"
Filter Fabric	YES	NO

City of Colorado Springs
Storm Water Quality

Figure VT-1
Vehicle Tracking
Application Examples



PLAN



SECTION

VEHICLE TRACKING

NTS

VEHICLE TRACKING NOTES

INSTALLATION REQUIREMENTS

1. ALL ENTRANCES TO THE CONSTRUCTION SITE ARE TO BE STABILIZED PRIOR TO CONSTRUCTION BEGINNING.
2. CONSTRUCTION ENTRANCES ARE TO BE BUILT WITH AN APRON TO ALLOW FOR TURNING TRAFFIC, BUT SHOULD NOT BE BUILT OVER EXISTING PAVEMENT EXCEPT FOR A SLIGHT OVERLAP.
3. AREAS TO BE STABILIZED ARE TO BE PROPERLY GRADED AND COMPACTED PRIOR TO LAYING DOWN GEOTEXTILE AND STONE.
4. CONSTRUCTION ROADS, PARKING AREAS, LOADING/UNLOADING ZONES, STORAGE AREAS, AND STAGING AREAS ARE TO BE STABILIZED.
5. CONSTRUCTION ROADS ARE TO BE BUILT TO CONFORM TO SITE GRADES, BUT SHOULD NOT HAVE SIDE SLOPES OR ROAD GRADES THAT ARE EXCESSIVELY STEEP.

MAINTENANCE REQUIREMENTS

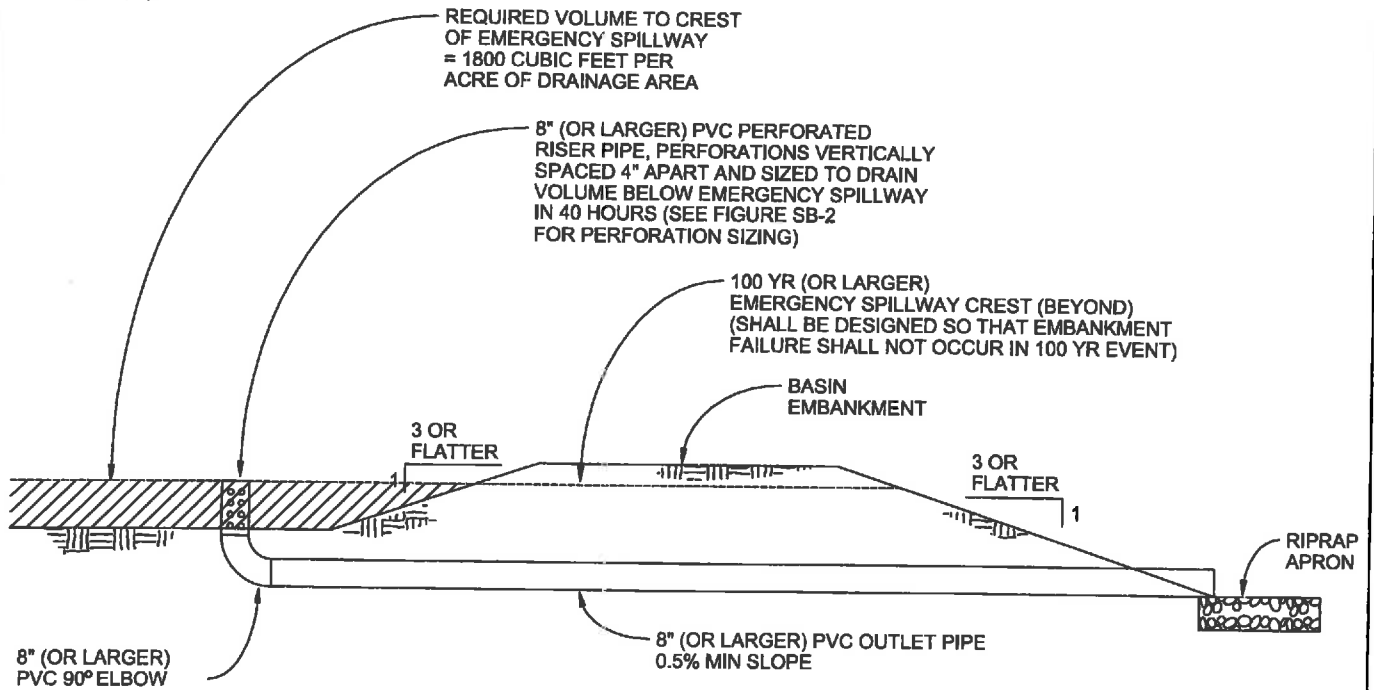
1. REGULAR INSPECTIONS ARE TO BE MADE OF ALL STABILIZED AREAS, ESPECIALLY AFTER STORM EVENTS.
2. STONES ARE TO BE REAPPLIED PERIODICALLY AND WHEN REPAIR IS NECESSARY.
3. SEDIMENT TRACKED ONTO PAVED ROADS IS TO BE REMOVED DAILY BY SHOVELING OR SWEEPING. SEDIMENT IS NOT TO BE WASHED DOWN STORM SEWER DRAINS.
4. STORM SEWER INLET PROTECTION IS TO BE IN PLACE, INSPECTED, AND CLEANED IF NECESSARY.
5. OTHER ASSOCIATED SEDIMENT CONTROL MEASURES ARE TO BE INSPECTED TO ENSURE GOOD WORKING CONDITION.

City of Colorado Springs
Stormwater Quality

Figure VT-2
Vehicle Tracking

Application Examples

BASIN GEOMETRY:
 $\frac{\text{LENGTH (L)}}{\text{WIDTH (W)}} \geq 2$



SEDIMENT BASIN
 NTS

SEDIMENT BASIN NOTES

INSTALLATION REQUIREMENTS

1. SEDIMENT BASINS SHALL BE INSTALLED BEFORE ANY CLEARING AND/OR GRADING IS UNDERTAKEN.
2. THE AREA UNDER WHICH THE EMBANKMENT IS TO BE INSTALLED SHALL BE CLEARED, GRUBBED, AND STRIPPED OF ALL VEGETATION AND ROOT MAT.
3. THE OUTLET OF THE BASIN SHALL BE DESIGNED TO DRAIN ITS VOLUME IN 40 HOURS.
4. THE OUTLET IS TO BE LOCATED AT THE FURTHEST DISTANCE FROM THE INLET OF THE BASIN. BAFFLES MAY BE NEEDED TO INCREASE THE FLOW LENGTH AND SETTLING TIME.
5. EMBANKMENT MATERIAL SHALL CONSIST OF SOIL WITH A MINIMUM OF 15% PASSING A #200 SIEVE. EXCAVATED SOIL CAN BE USED IF IT MEETS THIS REQUIREMENT.
6. EMBANKMENT IS TO BE COMPACTED TO AT LEAST 90% OF MAXIMUM DENSITY AND WITHIN 2% OF OPTIMUM MOISTURE CONTENT ACCORDING TO ASTM D 698.
7. WHEN A BASIN IS INSTALLED NEAR A RESIDENTIAL AREA, FOR SAFETY REASONS, A SIGN SHALL BE POSTED AND THE AREA SECURED WITH A FENCE.

MAINTENANCE REQUIREMENTS

1. CONTRACTOR SHALL INSPECT SEDIMENT BASINS AFTER EACH RAINFALL, AT LEAST DAILY DURING PROLONGED RAINFALL, AND WEEKLY DURING PERIODS NO RAINFALL.
2. SEDIMENT BASINS SHALL BE CLEANED OUT BEFORE SEDIMENT HAS FILLED HALF THE VOLUME OF THE BASIN.
3. SEDIMENT BASINS SHALL REMAIN OPERATIONAL AND PROPERLY MAINTAINED UNTIL THE SITE AREA IS PERMANENTLY STABILIZED WITH ADEQUATE VEGETATIVE COVER AND/OR OTHER PERMANENT STRUCTURE AS APPROVED BY THE CITY.

City of Colorado Springs
 Stormwater Quality

Figure SB-1
 Sediment Basin
 Construction Detail and Maintenance
 Requirements

Required Area per Row (in²)

		Depth at Outlet (ft)							
		1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5
Design Volume (acre-ft)	2	15.04	7.71	5.10	3.76	2.95	2.41	2.02	1.73
	1	7.52	3.86	2.55	1.88	1.48	1.21	1.01	0.87
	0.6	4.51	2.31	1.53	1.13	0.89	0.72	0.61	0.52
	0.4	3.01	1.54	1.02	0.75	0.59	0.48	0.40	0.35
	0.2	1.50	0.77	0.51	0.38	0.30	0.24	0.20	0.17
	0.1	0.75	0.39	0.26	0.19	0.15	0.12	0.10	0.09
	0.06	0.45	0.23	0.15	0.11	0.09	0.07	0.06	0.05
	0.04	0.30	0.15	0.10	0.08	0.06	0.05	0.04	0.03
	0.02	0.15	0.08	0.05	0.04	0.03	0.02	0.02	0.02
	0.01	0.08	0.04	0.03	0.02	0.01	0.01	0.01	0.01

TABLE SB-1

Circular Perforation Sizing

Hole Diameter (In)	Hole Diameter (In)	Area per Row (in ²)		
		n = 1	n = 2	n = 3
1/4	0.250	0.05	0.10	0.15
5/16	0.313	0.08	0.15	0.23
3/8	0.375	0.11	0.22	0.33
7/16	0.438	0.15	0.30	0.45
1/2	0.500	0.20	0.39	0.59
9/16	0.563	0.25	0.50	0.75
5/8	0.625	0.31	0.61	0.92
11/16	0.688	0.37	0.74	1.11
3/4	0.750	0.44	0.88	1.33
7/8	0.875	0.60	1.20	1.80
1	1.000	0.79	1.57	2.36
1 1/8	1.125	0.99	1.99	2.98
1 1/4	1.250	1.23	2.45	3.68
1 3/8	1.375	1.48	2.97	4.45
1 1/2	1.500	1.77	3.53	5.30
1 5/8	1.625	2.07	4.15	6.22
1 3/4	1.750	2.41	4.81	7.22
1 7/8	1.875	2.76	5.52	8.28
2	2.000	3.14	6.28	9.42
n = Number of columns of perforations				
Minimum steel plate thickness		1/4"	5/16"	3/8"

TABLE SB-2

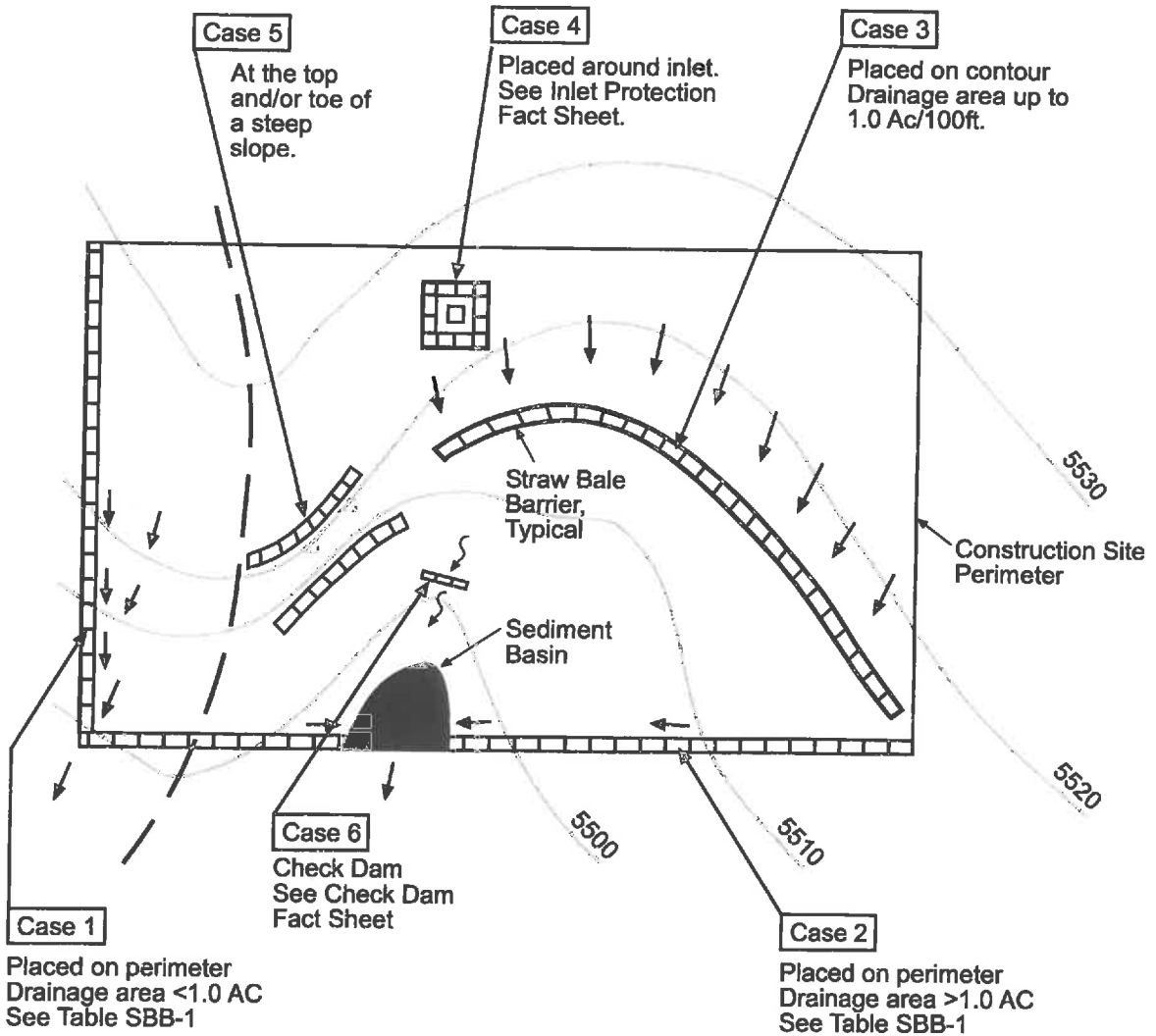
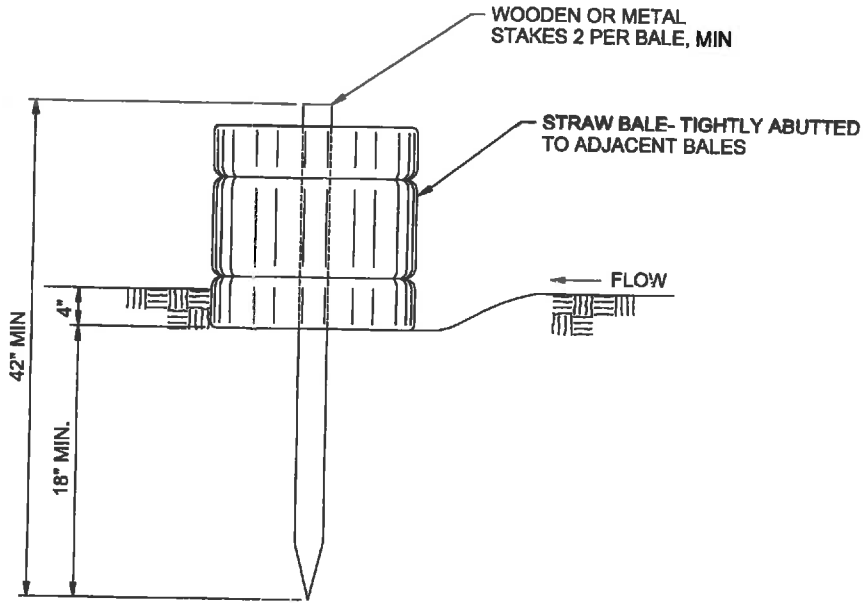


Table SBB-1

Straw Bale Barrier Used as Perimeter Control	Case 1 DA < 1.0 AC	Case 2 DA > 1.0 AC
Continuous Grade	OK ⁽¹⁾	OK ⁽¹⁾
Area of Concentrated Flow	OK ⁽²⁾	NO ⁽³⁾

- (1) Temporary Swale or Silt Fence may be used as alternative to a Straw Bale Barrier.
- (2) Straw Bale Check Dam may be used at low points.
- (3) Sediment Basin is required for concentrated flow from drainage areas > 1.0 AC.



STRAW BALE BARRIER

NTS

STRAW BALE BARRIER NOTES

INSTALLATION REQUIREMENTS

1. STRAW BALE BARRIERS SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.
2. BALES SHALL CONSIST OF APPROXIMATELY 5 CUBIC FEET OF CERTIFIED WEED FREE HAY OR STRAW AND WEIGH NOT LESS THAN 35 POUNDS.
3. BALES ARE TO BE PLACED IN A SINGLE ROW WITH THE END OF THE BALES TIGHTLY ABUTTING ONE ANOTHER.
4. EACH BALE IS TO BE SECURELY ANCHORED WITH AT LEAST TWO STAKES AND THE FIRST STAKE IS TO BE DRIVEN TOWARD THE PREVIOUSLY LAID BALE TO FORCE THE BALES TOGETHER.
5. STAKES ARE TO BE A MINIMUM OF 42 INCHES LONG. METAL STAKES SHALL BE STANDARD "T" OR "U" TYPE WITH MINIMUM WEIGHT OF 1.33 POUNDS PER LINEAR FOOT. WOOD STAKES SHALL HAVE A MINIMUM DIAMETER OR CROSS SECTION DIMENSION OF 2 INCHES.
6. BALES ARE TO BE BOUND WITH EITHER WIRE OR STRING AND ORIENTED SUCH THAT THE BINDINGS ARE AROUND THE SIDES AND NOT ALONG THE TOPS AND BOTTOMS OF THE BALE.
7. GAPS BETWEEN BALES ARE TO BE CHINKED (FILLED BY WEDGING) WITH STRAW OR THE SAME MATERIAL OF THE BALE.
8. END BALES ARE TO EXTEND UPSLOPE SO THE TRAPPED RUNOFF CANNOT FLOW AROUND THE ENDS OF THE BARRIER.

MAINTENANCE REQUIREMENTS

1. CONTRACTOR SHALL INSPECT STRAW BALE BARRIERS IMMEDIATELY AFTER EACH RAINFALL, AT LEAST DAILY DURING PROLONGED RAINFALL, AND WEEKLY DURING PERIODS NO RAINFALL.
2. DAMAGED OR INEFFECTIVE BARRIERS SHALL PROMPTLY BE REPAIRED, REPLACING BALES IF NECESSARY, AND UNENTRENCHED BALES NEED TO BE REPAIRED WITH COMPACTED BACKFILL MATERIAL.
3. SEDIMENT SHALL BE REMOVED FROM BEHIND STRAW BALE BARRIERS WHEN IT ACCUMULATES TO APPROXIMATELY 1/2 THE HEIGHT OF THE BARRIER.
4. STRAW BALE BARRIERS SHALL BE REMOVED WHEN ADEQUATE VEGETATIVE COVER IS ATTAINED AS APPROVED BY THE CITY.

City of Colorado Springs
Stormwater Quality

Figure SBB-2
Straw Bale Barrier
Construction Detail and Maintenance
Requirements

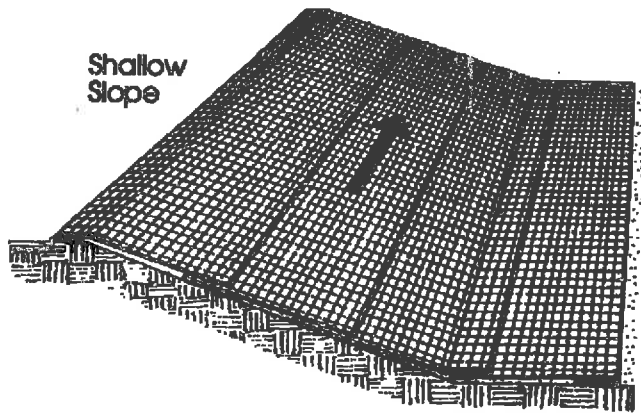
MULCHING NOTES

INSTALLATION REQUIREMENTS

1. ALL DISTURBED AREAS MUST BE MULCHED WITHIN 21 DAYS AFTER FINAL GRADE AND SEEDED AREAS ARE TO BE MULCHED WITHIN 24 HOURS AFTER SEEDING.
2. MATERIAL USED FOR MULCH CAN BE CERTIFIED CLEAN, WEED- AND SEED-FREE LONG STEMMED FIELD OR MARSH HAY, OR STRAW OF OATS, BARLEY, WHEAT, RYE, OR TRITICALE CERTIFIED BY THE COLORADO DEPARTMENT OF AGRICULTURE WEED FREE FORAGE CERTIFICATION PROGRAM.
3. HYDRAULIC MULCHING MATERIAL SHALL CONSIST OF VIRGIN WOOD FIBER MANUFACTURED FROM CLEAN WHOLE WOOD CHIPS. WOOD CHIPS CANNOT CONTAIN ANY GROWTH OR GERMINATION INHIBITORS OR BE PRODUCED FROM RECYCLED MATERIAL. GRAVEL CAN ALSO BE USED.
4. MULCH IS TO BE APPLIED EVENLY AT A RATE OF 2 TONS PER ACRE.
5. MULCH IS TO BE ANCHORED EITHER BY CRIMPING (TUCKING MULCH FIBERS 4 INCHES INTO THE SOIL), USING NETTING (USED ON SMALL AREAS WITH STEEP SLOPES), OR WITH A TACKIFIER.
6. HYDRAULIC MULCHING AND TACKIFIERS ARE NOT TO BE USED IN THE PRESENCE OF FREE SURFACE WATER.

MAINTENANCE REQUIREMENTS

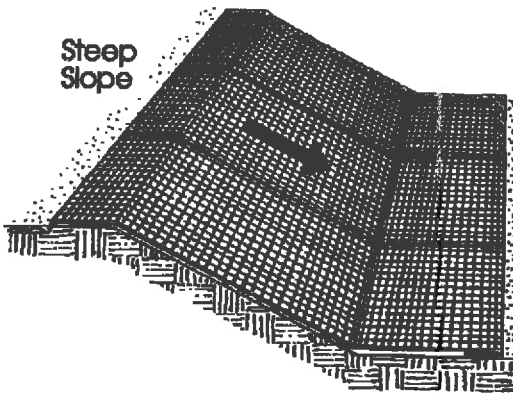
1. REGULAR INSPECTIONS ARE TO BE MADE OF ALL MULCHED AREAS.
2. MULCH IS TO BE REPLACED IMMEDIATELY IN THOSE AREAS IT HAS BEEN REMOVED, AND IF NECESSARY THE AREA SHOULD BE RESEEDED.



Shallow Slope

On shallow slopes, strips of netting may be applied across the slope.

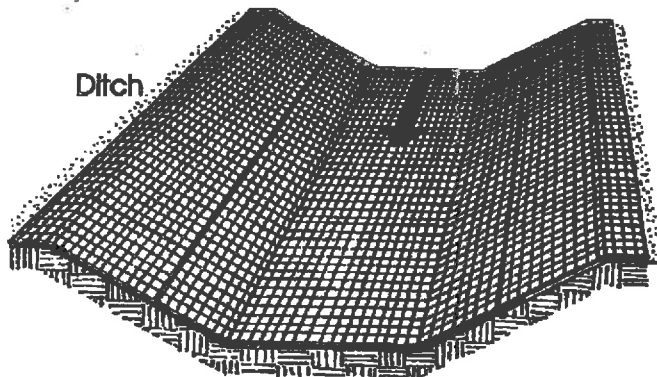
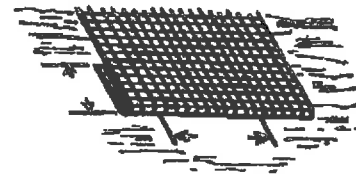
Where there is a berm at the top of the slope, bring the netting over the berm and anchor it behind the berm.



Steep Slope

On steep slopes, apply strips of netting parallel to the direction of flow and anchor securely.

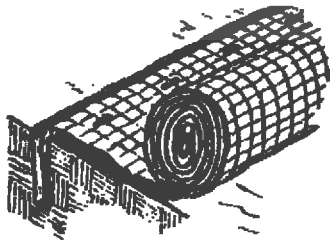
Bring netting down to a level area before terminating the installation. Turn the end under 6" and staple at 12" intervals.



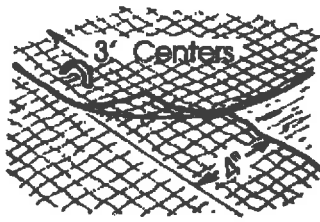
Ditch

In ditches, apply netting parallel to the direction of flow. Use check slots every 15 feet. Do not join strips in the center of the ditch.

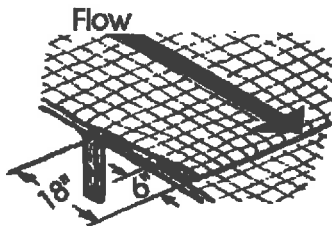
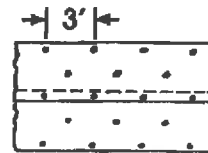
From: Virginia Soil and Water Conservation Commission, 1985



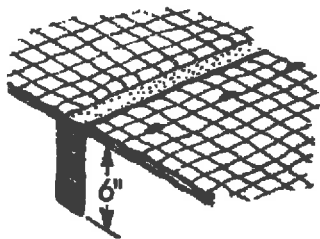
Anchor Slot: Bury the up-channel end of the net in a 6" deep trench. Tamp the soil firmly. Staple at 12" intervals across the net.



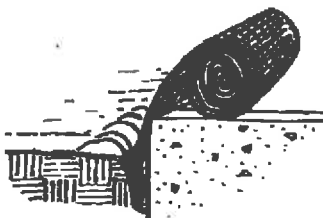
Overlap: Overlap edges of the strips at least 4". Staple every 3 feet down the center of the strip.



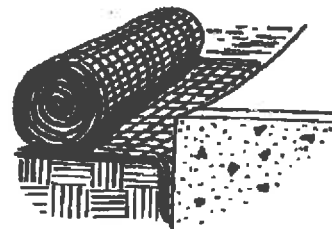
Joining Strips: Insert the new roll of net in a trench, as with the Anchor Slot. Overlap the up-channel end of the previous roll 18" and turn the end under 6". Staple the end of the previous roll just below the anchor slot and at the end at 12" intervals.



Check Slots: On erodible soils or steep slopes, check slots should be made every 15 feet. Insert a fold of the net into a 6" trench and tamp firmly. Staple at 12" intervals across the net. Lay the net smoothly on the surface of the soil - do not stretch the net, and do not allow wrinkles.



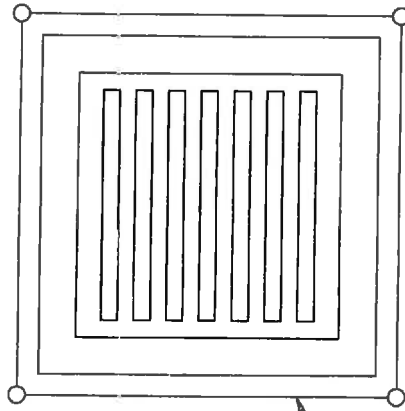
Anchoring Ends At Structures: Place the end of the net in a 6" slot on the up-channel side of the structure. Fill the trench and tamp firmly. Roll the net up the channel. Place staples at 12" intervals along the anchor end of the net.



From: Virginia Soil and Water Conservation Commission, 1985

City of Colorado Springs
Storm Water Quality

Figure ECB-2
Erosion Control Blanket
Installation Requirements



FILTER FABRIC
(SEE FIG. SF-2 FOR
INSTALLATION
REQUIREMENTS)

FILTER FABRIC INLET PROTECTION

NTS

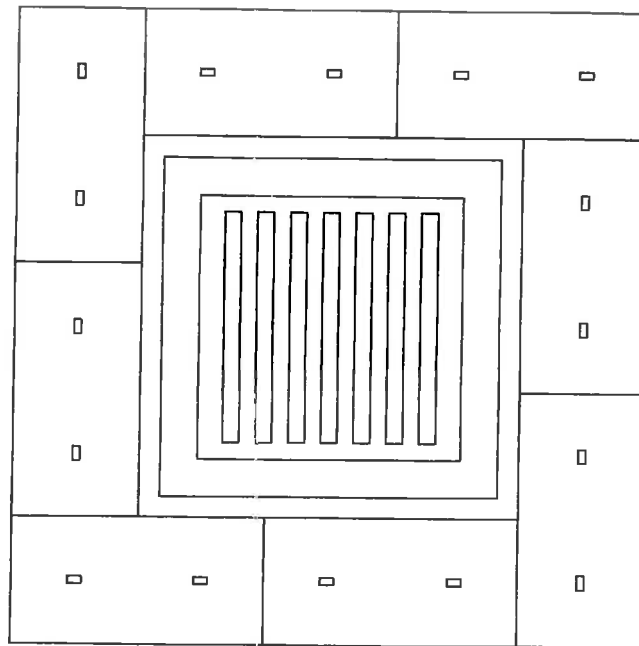
FILTER FABRIC INLET PROTECTION NOTES

INSTALLATION REQUIREMENTS

1. INLET PROTECTION SHALL BE INSTALLED IMMEDIATELY AFTER CONSTRUCTION OF INLET.
2. SEE SILT FENCE FIGURE SF-2 FOR INSTALLATION REQUIREMENTS.
3. POSTS ARE TO BE PLACED AT EACH CORNER OF THE INLET AND AROUND THE EDGES AT A MAXIMUM SPACING OF 3 FEET.

MAINTENANCE REQUIREMENTS

1. CONTRACTOR SHALL INSPECT INLET PROTECTION IMMEDIATELY AFTER EACH RAINFALL, AT LEAST DAILY DURING PROLONGED RAINFALL, AND WEEKLY DURING PERIODS NO RAINFALL.
2. DAMAGED, COLLAPSED, UNENTRENCHED OR INEFFECTIVE INLET PROTECTION SHALL BE PROMPTLY REPAIRED OR REPLACED.
3. SEDIMENT SHALL BE REMOVED FROM BEHIND FILTER FABRIC WHEN IT ACCUMULATES TO HALF THE EXPOSED GEOTEXTILE HEIGHT.
4. FILTER FABRIC PROTECTION SHALL BE REMOVED WHEN ADEQUATE VEGETATIVE COVER IS ATTAINED IN THE DRAINAGE AREA AS APPROVED BY THE CITY.



STRAW BALE
(SEE FIG. SBB-2
FOR INSTALLATION
REQUIREMENTS)

STRAW BALE INLET PROTECTION

NTS

STRAW BALE INLET PROTECTION NOTES

INSTALLATION REQUIREMENTS

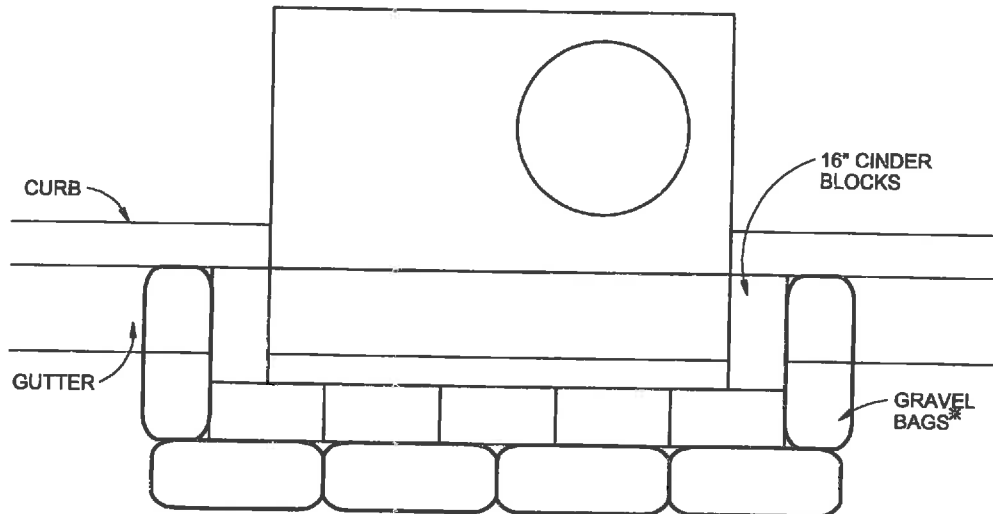
1. INLET PROTECTION SHALL BE INSTALLED IMMEDIATELY AFTER CONSTRUCTION OF INLET.
2. BALES ARE TO BE PLACED IN A SINGLE ROW AROUND THE INLET WITH THE END OF THE BALES TIGHTLY ABUTTING ONE ANOTHER.
3. SEE STRAW BALE BARRIER FIGURE SBB-2 FOR INSTALLATION REQUIREMENTS.

MAINTENANCE REQUIREMENTS

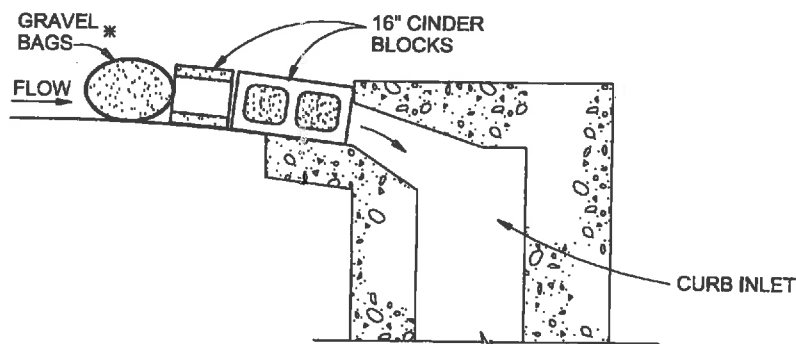
1. CONTRACTOR SHALL INSPECT STRAW BALE INLET PROTECTION IMMEDIATELY AFTER EACH RAINFALL, AT LEAST DAILY DURING PROLONGED RAINFALL, AND WEEKLY DURING PERIODS NO RAINFALL.
2. DAMAGED OR INEFFECTIVE INLET PROTECTION SHALL PROMPTLY BE REPAIRED, REPLACING BALES IF NECESSARY, AND UNENTRENCHED BALES NEED TO BE REPAIRED WITH COMPACTED BACKFILL MATERIAL.
3. SEDIMENT SHALL BE REMOVED FROM BEHIND STRAW BALES WHEN IT ACCUMULATES TO APPROXIMATELY 1/3 THE HEIGHT OF THE BARRIER.
4. INLET PROTECTION SHALL BE REMOVED WHEN ADEQUATE VEGETATIVE COVER IS ATTAINED WITHIN THE DRAINAGE AREA AS APPROVED BY THE CITY.

City of Colorado Springs
Stormwater Quality

Figure IP-2
Straw Bale Inlet Protection
Construction Detail and Maintenance
Requirements



PLAN



SECTION

BLOCK AND GRAVEL BAG*CURB INLET PROTECTION

NTS

BLOCK AND GRAVEL BAG*CURB INLET PROTECTION NOTES

INSTALLATION REQUIREMENTS

1. INLET PROTECTION SHALL BE INSTALLED IMMEDIATELY AFTER CONSTRUCTION OF INLET.
2. CONCRETE BLOCKS ARE TO BE LAID AROUND THE INLET IN A SINGLE ROW ON THEIR SIDES, ABUTTING ONE ANOTHER WITH THE OPEN ENDS OF THE BLOCK FACING OUTWARD.
3. GRAVEL BAGS ARE TO BE PLACED AROUND THE CONCRETE BLOCKS CLOSELY ABUTTING ONE ANOTHER SO THERE ARE NO GAPS.
4. GRAVEL BAGS ARE TO CONTAIN WASHED SAND OR GRAVEL APPROXIMATELY 3/4 INCH IN DIAMETER.
5. BAGS ARE TO BE MADE OF 1/4" INCH WIRE MESH (USED WITH GRAVEL ONLY) OR GEOTEXTILE.

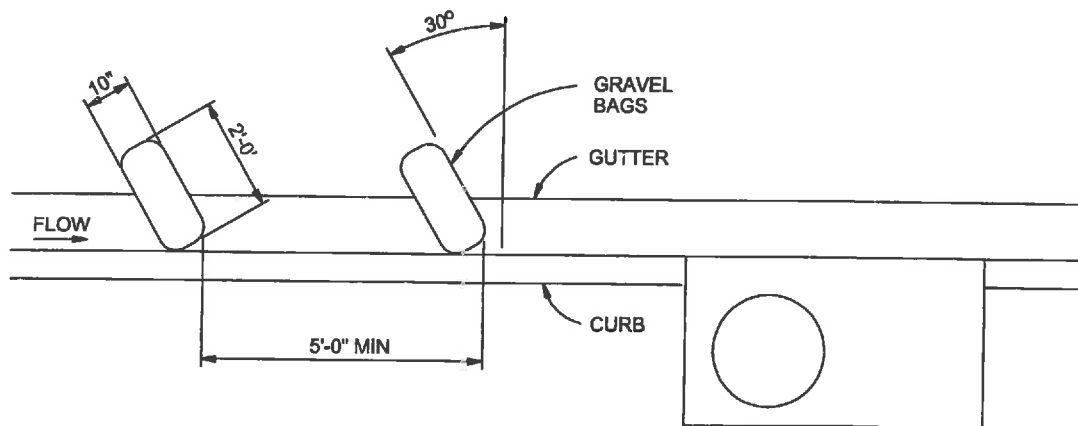
MAINTENANCE REQUIREMENTS

1. CONTRACTOR SHALL INSPECT INLET PROTECTION IMMEDIATELY AFTER EACH RAINFALL, AT LEAST DAILY DURING PROLONGED RAINFALL, AND WEEKLY DURING PERIODS NO RAINFALL.
2. DAMAGED OR INEFFECTIVE INLET PROTECTION SHALL PROMPTLY BE REPAIRED OR REPLACED.
3. SEDIMENT SHALL BE REMOVED WHEN SEDIMENT HAS ACCUMULATED TO APPROXIMATELY 1/2 THE DESIGN DEPTH OF THE TRAP.
4. INLET PROTECTION SHALL BE REMOVED WHEN ADEQUATE VEGETATIVE COVER IS ATTAINED WITHIN THE DRAINAGE AREA AS APPROVED BY THE CITY.

* AN ALTERNATE 3/4" TO 1" GRAVEL FILTER OVER A WIRE SCREEN MAY BE USED IN PLACE OF GRAVEL BAGS. THE WIRE MESH SHALL EXTEND ABOVE THE TOP OF THE CONCRETE BLOCKS AND THE GRAVEL PLACED OVER THE WIRE SCREEN TO THE TOP OF THE CONCRETE BLOCKS.

City of Colorado Springs
Stormwater Quality

Figure IP-3
Block & Gravel Bag Curb Inlet Protection
Construction Detail and Maintenance
Requirements



CURB SOCK INLET PROTECTION

NTS

CURB SOCK INLET PROTECTION NOTES

INSTALLATION REQUIREMENTS

1. INLET PROTECTION SHALL BE INSTALLED IMMEDIATELY AFTER CONSTRUCTION OF INLET.
2. SOCK IS TO BE MADE OF 1/4 INCH WIRE MESH (USED WITH GRAVEL ONLY) OR GEOTEXTILE.
3. WASHED SAND OR GRAVEL 3/4 INCH TO 4 INCHES IN DIAMETER IS PLACED INSIDE THE SOCK.
4. PLACEMENT OF THE SOCK IS TO BE 30 DEGREES FROM PERPENDICULAR IN THE OPPOSITE DIRECTION OF FLOW.
5. SOCKS ARE TO BE FLUSH WITH THE CURB AND SPACED AT A MINIMUM 5 FEET APART.
6. AT LEAST 2 CURB SOCKS IN SERIES IS REQUIRED.

MAINTENANCE REQUIREMENTS

1. CONTRACTOR SHALL INSPECT INLET PROTECTION IMMEDIATELY AFTER EACH RAINFALL, AT LEAST DAILY DURING PROLONGED RAINFALL AND WEEKLY DURING PERIODS NO RAINFALL.
2. DAMAGED OR INEFFECTIVE INLET PROTECTION SHALL PROMPTLY BE REPAIRED OR REPLACED.
3. SEDIMENT SHALL BE REMOVED FROM BEHIND THE SOCK WHEN GUTTER WIDTH IS FILLED.
4. INLET PROTECTION SHALL BE REMOVED WHEN ADEQUATE VEGETATIVE COVER IS ATTAINED WITHIN THE DRAINAGE AREA AS APPROVED BY THE CITY.

City of Colorado Springs
Stormwater Quality

Figure IP-4
Curb Sock Inlet Protection
Construction Detail and Maintenance
Requirements

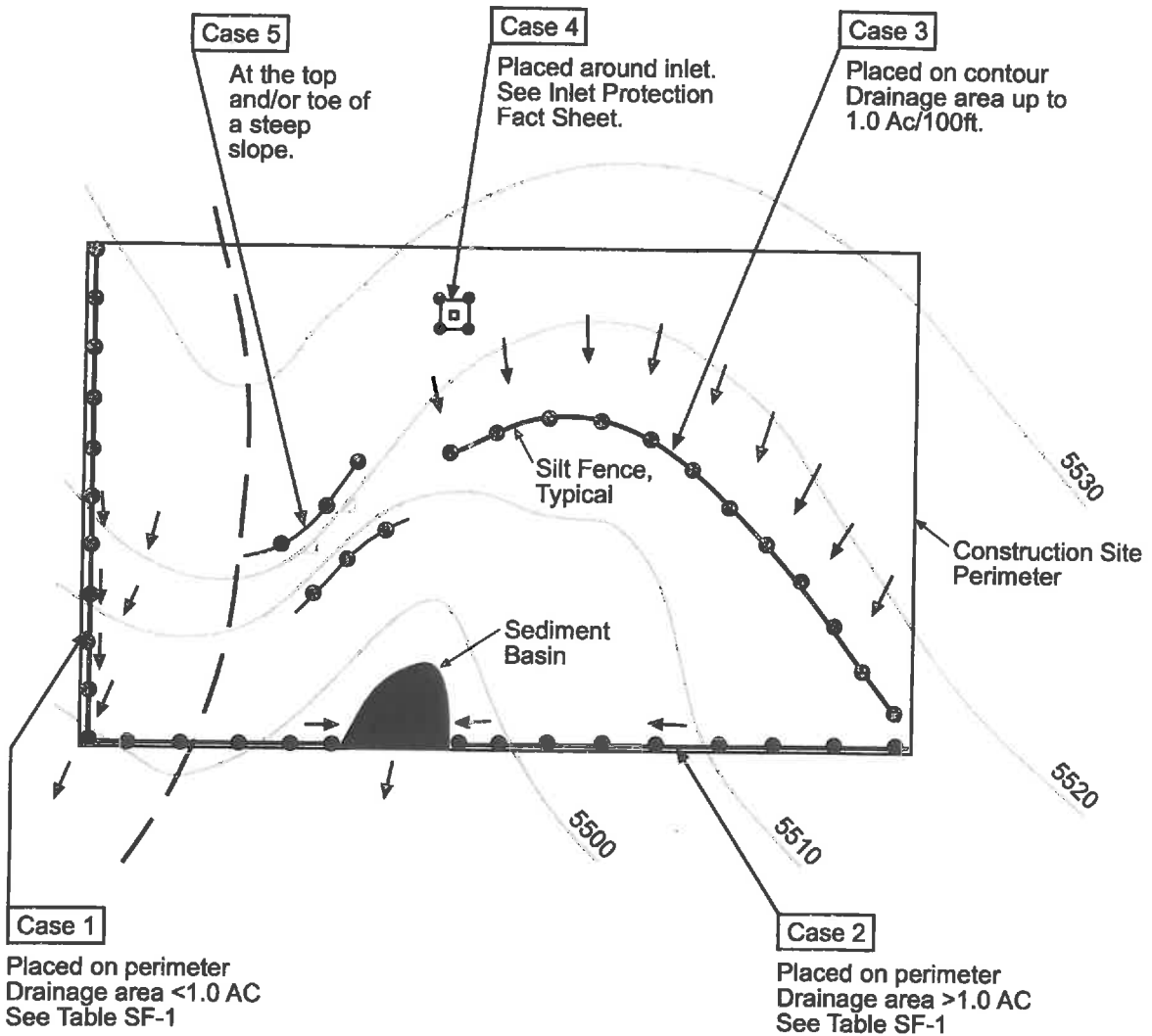


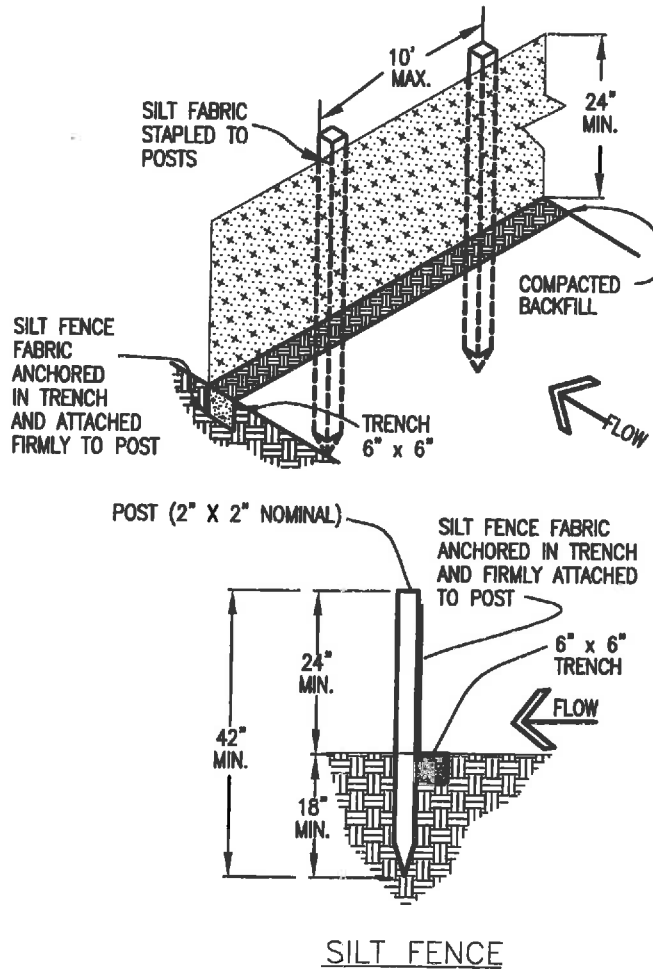
Table SF-1

Silt Fence Used as Perimeter Control	Case 1		Case 2 DA > 1.0 AC
	DA < 0.25 AC	0.25 < DA < 1 AC	
Continuous Grade	OK ⁽¹⁾	OK ⁽¹⁾	OK ⁽¹⁾
Area of Concentrated Flow	OK	NO ⁽²⁾	NO ⁽³⁾

(1) Temporary Swale or Straw Bale Barrier may be used as alternative to a Silt Fence.

(2) Check Dam may also be used as alternative to Silt Fence at low point.

(3) Sediment Basin is required for concentrated flow from drainage areas > 1.0 AC.



SILT FENCE

SILT FENCE NOTES

INSTALLATION REQUIREMENTS

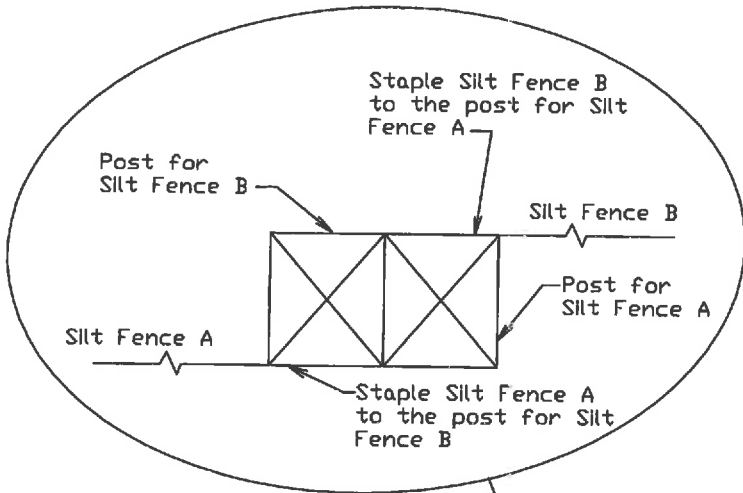
1. SILT FENCES SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.
2. WHEN JOINTS ARE NECESSARY, SILT FENCE GEOTEXTILE SHALL BE SPLICED TOGETHER ONLY AT SUPPORT POST AND SECURELY SEALED.
3. METAL POSTS SHALL BE "STUDDED TEE" OR "U" TYPE WITH MINIMUM WEIGHT OF 1.33 POUNDS PER LINEAR FOOT. WOOD POSTS SHALL HAVE A MINIMUM DIAMETER OR CROSS SECTION DIMENSION OF 2 INCHES.
4. THE FILTER MATERIAL SHALL BE FASTENED SECURELY TO METAL OR WOOD POSTS USING WIRE TIES, OR TO WOOD POSTS WITH 3/4" LONG #9 HEAVY-DUTY STAPLES. THE SILT FENCE GEOTEXTILE SHALL NOT BE STAPLED TO EXISTING TREES.
5. WHILE NOT REQUIRED, WIRE MESH FENCE MAY BE USED TO SUPPORT THE GEOTEXTILE. WIRE FENCE SHALL BE FASTENED SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING HEAVY-DUTY WIRE STAPLES AT LEAST 3/4" LONG, TIE WIRES OR HOG RINGS. THE WIRE SHALL EXTEND INTO THE TRENCH A MINIMUM OF 6" AND SHALL NOT EXTEND MORE THAN 3' ABOVE THE ORIGINAL GROUND SURFACE.

6. ALONG THE TOE OF FILLS, INSTALL THE SILT FENCE ALONG A LEVEL CONTOUR AND PROVIDE AN AREA BEHIND THE FENCE FOR RUNOFF TO POND AND SEDIMENT TO SETTLE. A MINIMUM DISTANCE OF 5 FEET FROM THE TOE OF THE FILL IS RECOMMENDED.
7. THE HEIGHT OF THE SILT FENCE FROM THE GROUND SURFACE SHALL BE MINIMUM OF 24 INCHES AND SHALL NOT EXCEED 36 INCHES; HIGHER FENCES MAY INPOUND VOLUMES OF WATER SUFFICIENT TO CAUSE FAILURE OF THE STRUCTURE.

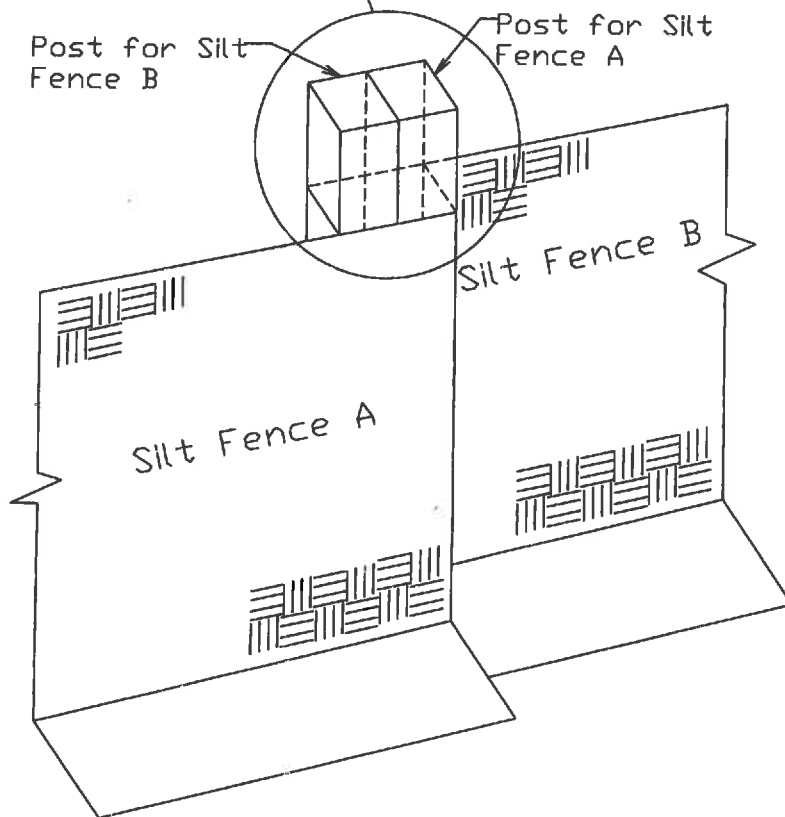
MAINTENANCE REQUIREMENTS

1. CONTRACTOR SHALL INSPECT SILT FENCES IMMEDIATELY AFTER EACH RAINFALL, AT LEAST DAILY DURING PROLONGED RAINFALL, AND WEEKLY DURING PERIODS OF NO RAINFALL. DAMAGED, COLLAPSED, UNENTRENCHED OR INEFFECTIVE SILT FENCES SHALL BE PROMPTLY REPAIRED OR REPLACED.
2. SEDIMENT SHALL BE REMOVED FROM BEHIND SILT FENCE WHEN IT ACCUMULATES TO HALF THE EXPOSED GEOTEXTILE HEIGHT.
3. SILT FENCES SHALL BE REMOVED WHEN ADEQUATE VEGETATIVE COVER IS ATTAINED AS APPROVED BY THE CITY.

Top View of Silt Fence Posts Detail



Refer to "Top View of Silt Fence Posts Detail"



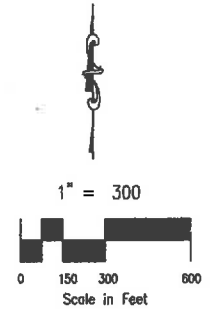
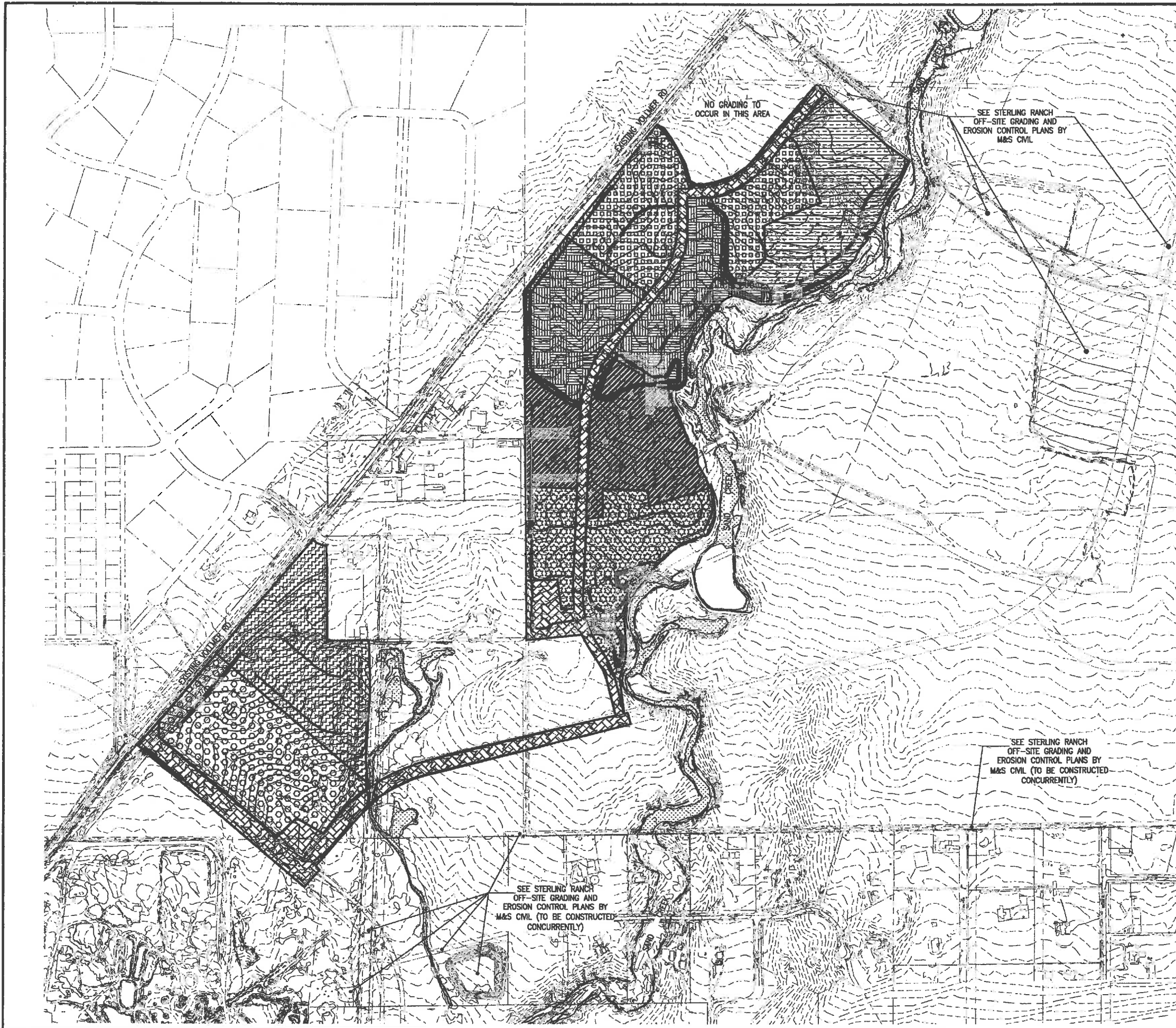
SURFACE ROUGHENING NOTES

APPLICATION TECHNIQUES

1. STAIR STEP GRADING – USED ON SLOPES WITH GRADIENTS BETWEEN 3:1 AND 2:1 AND FOR SOIL CONTAINING A LARGE AMOUNT OF SMALL ROCKS. STAIRS ARE TO BE WIDE ENOUGH TO WORK WITH STANDARD EARTH MOVING EQUIPMENT.
2. GROOVE CUTTING – USED ON SLOPES WITH GRADIENTS BETWEEN 3:1 AND 2:1. GROOVES ARE TO BE AT LEAST 3 INCHES DEEP AND NO MORE THAN 15 INCHES APART.
3. TRACKING – USED ON SOILS WITH HIGHER SAND CONTENT DUE TO COMPACTION BY HEAVY MACHINERY.

MAINTENANCE REQUIREMENTS

1. REGULAR INSPECTIONS ARE TO BE MADE OF ALL SURFACE ROUGHENED AREAS.
2. SURFACE ROUGHENING IS TO BE REPEATED AS OFTEN AS NECESSARY.
3. VEHICLES OR EQUIPMENT IS NOT TO BE DRIVEN OVER AREAS THAT HAVE BEEN ROUGHENED.
4. AS SURFACE ROUGHENING IS ONLY A TEMPORARY CONTROL, ADDITIONAL TREATMENTS MAY BE NECESSARY TO MAINTAIN THE SOIL SURFACE IN A ROUGHENED CONDITION.



AREA	SIZE OF DISTURBANCE
A	19.4 AC
B	18.3 AC
C	15.7 AC
D	16.4 AC
F	16.9 AC
G	23.1 AC
H	17.8 AC
I	15.1 AC

ADDITIONAL NOTES:
 STAGING AREA TO BE DETERMINED BY CONTRACTOR IN THE FIELD. THE LOCATIONS SHALL BE DELINEATED ON THIS PLAN BY THE CONTRACTOR.

THE EROSION CONTROL DELINEATED ON THIS PLAN SHALL BE REGULARLY UPDATED BY THE CONTRACTOR.

STERLING RANCH PHASE 1 ON-SITE GRADING TO OCCUR CONCURRENTLY WITH STERLING RANCH PHASE 1 OFF-SITE GRADING. REFER TO STERLING RANCH PHASE 1 OFF-SITE GRADING PLAN BY M&S CIVIL.

SEE PAGE GR03-GR05 FOR PROPERTY & PHASE 1 BOUNDARIES.

CONSTRUCTION NOTES:

CLEARED GROUND SHALL BE LIMITED TO A MAXIMUM OF TWENTY-FIVE (25) ACRES AT ANY ONE TIME WITHOUT TEMPORARY STABILIZATION VIA SEEDING, MULCHING AND SURFACE ROUGHENING. THIS ASSUMES THAT ALL REMAINING REQUIRED BEST MANAGEMENT PRACTICES (BMP'S) NEEDED TO CONTROL EROSION AND STORM WATER RUNOFF ARE IN PLACE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE CURRENT STORM WATER MANAGEMENT PLAN ON SITE AT ALL TIMES.

THE SHADED AREAS ON THIS PLAN HAVE BEEN PROVIDED TO ILLUSTRATE TO THE CONTRACTOR POTENTIAL DISTURBANCE AREAS THAT ARE LESS THAN TWENTY-FIVE (25) ACRES IN SIZE. THE CONTRACTOR IS NOT REQUIRED TO ADHERE TO THE PROVIDED PLAN WHEN ESTABLISHING AREAS TO BE CLEARED. IT IS HOWEVER, THE CONTRACTOR RESPONSIBILITY TO ADHERE TO THE REQUIREMENTS SET FORTH BY THE STATE REGARDING ACCEPTABLE AIR QUALITY EMISSIONS.

NO WETLANDS ARE TO BE PERMANENTLY DISTURBED PER THIS GRADING PLAN.

NO EARLY GRADING IS TO OCCUR WITHIN THE 100 YEAR FLOODPLAIN.

ALL TEMPORARY RIPRAP SHOWN ON THE PLANS SHALL BE TYPE "1". RIPRAP SHALL BE PLACED IN THE LOCATIONS INDICATED BY THE PLAN OR IN AREAS AS THE CONTRACTOR SEES FIT TO CONTROL EROSION. ALL RIPRAP SHALL BE PLACED AT A MINIMUM THICKNESS OF 1.5' DEEP.

ALL TEMPORARY STORM SEWER SHOWN ON PLANS SHALL BE 24" DIA. HP POLYPROPYLENE BY ADS OR APPROVED EQUAL. ALL PIPE SHALL BE LAID TO ACHIEVE A MIN. SLOPE OF 0.5%.

LEGEND

	EXISTING INDEX CONTOUR (10')
	EXISTING NOMINAL CONTOUR (2')
	PROPOSED PHASE 1 ON-SITE INDEX CONTOUR (10')
	PROPOSED PHASE 1 ON-SITE NOMINAL CONTOUR (2')
	PROPOSED PHASE 1 (OFF-SITE) INDEX CONTOUR (10')
	PROPOSED PHASE 1 (OFF-SITE) NOMINAL CONTOUR (2')
	DELINEATED WETLANDS NO DISTURBANCE
	100YR FLOODPLAIN

FOR LOCATING & MARKING OF GAS, ELECTRIC, WATER & TELEPHONE LINES
 FOR BURIED UTILITY INFORMATION
 48 HRS BEFORE YOU DIG
 CALL 1-800-922-1987

STERLING RANCH - PHASE 1 ON-SITE EARLY GRADING AND EROSION CONTROL PLAN

PROJECT NO. 08-002 FILE: \\m\comp\area\water\m\m\103.dwg DATE: 11/08/15

DESIGNED BY: DLM SCALE: N/A
 DRAWN BY: JWP HORIZ: 1"=300'
 CHECKED BY: WAS VERT: N/A

20 BOULDER CREEK, SUITE 110
 COLORADO SPRINGS, CO 80905
 PHONE: 719.585.5685

VIRGIL A. SANCHEZ, P.E. NO. 37180

FOR AND ON BEHALF OF M&S CIVIL CONSULTANTS, INC.

719.585.5685
 1775 AMARANTH

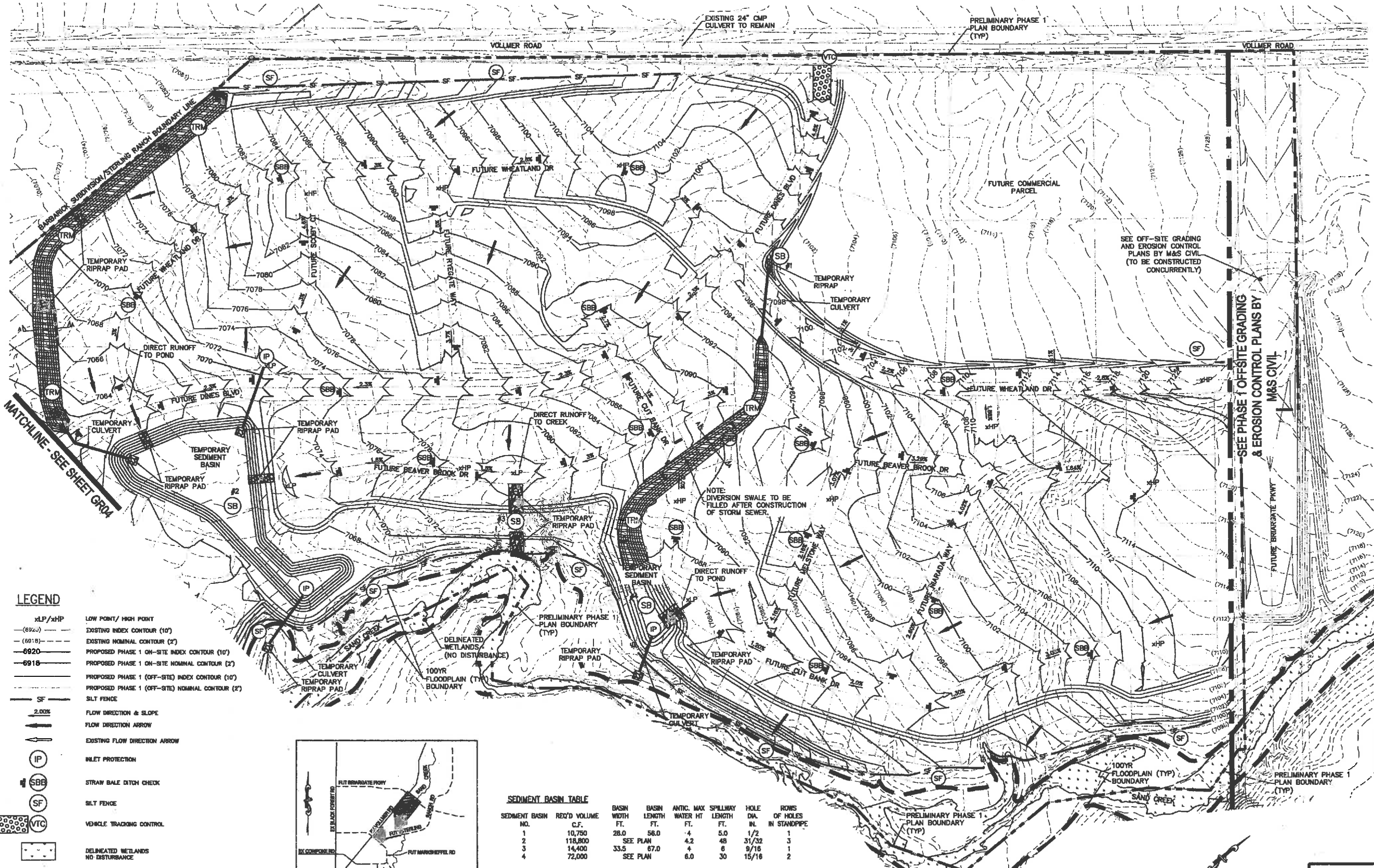
CIVIL CONSULTANTS, INC.

REVISIONS:

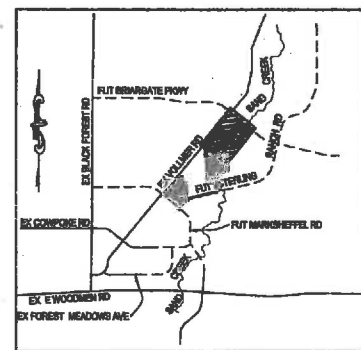
NO.	DATE	DESCRIPTION

THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE, OR LIABLE FOR, UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES TO THE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE PREPARED BY THESE PLANS.

CAUTION

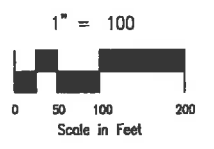
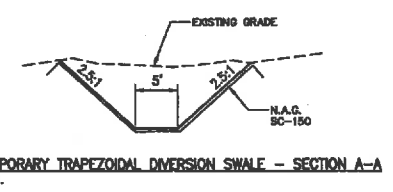


- LEGEND**
- xLP/xHP LOW POINT/ HIGH POINT
 - (692.0)--- EXISTING INDEX CONTOUR (10')
 - (681.8)--- EXISTING NOMINAL CONTOUR (2')
 - 6920--- PROPOSED PHASE 1 ON-SITE INDEX CONTOUR (10')
 - 6918--- PROPOSED PHASE 1 ON-SITE NOMINAL CONTOUR (2')
 - PROPOSED PHASE 1 (OFF-SITE) INDEX CONTOUR (10')
 - PROPOSED PHASE 1 (OFF-SITE) NOMINAL CONTOUR (2')
 - SF SILT FENCE
 - 2.00% FLOW DIRECTION & SLOPE
 - FLOW DIRECTION ARROW
 - EXISTING FLOW DIRECTION ARROW
 - IP INLET PROTECTION
 - SBB STRAW BALE DITCH CHECK
 - SF SILT FENCE
 - VTC VEHICLE TRACKING CONTROL
 - DELINEATED WETLANDS NO DISTURBANCE
 - PRELIMINARY PLAN BOUNDARY/LIMITS OF DISTURBANCE
 - 100YR FLOODPLAIN
 - TRM TEMPORARY RIPRAP
 - TRM TURF REINFORCEMENT MAT (NORTH AMERICAN GREEN S2-150 OR APPROVED EQUAL. SEE MANUFACTURE SPECIFICATIONS FOR INSTALLATION DETAILS)
 - SB TEMPORARY SEDIMENT BASIN
 - SB TEMPORARY DIVERSION SWALE



SEDIMENT BASIN TABLE

NO.	REQ'D VOLUME C.F.	BASIN WIDTH FT.	BASIN LENGTH FT.	ANTIC. MAX WATER HT. FT.	SPILLWAY LENGTH FT.	HOLE DIA. IN.	ROWS OF HOLES IN STANDPIPE
1	10,750	28.0	58.0	4	5.0	1/2	1
2	118,800	SEE PLAN	SEE PLAN	4.2	48	31/32	3
3	14,400	33.5	67.0	4	6	9/16	1
4	72,000	SEE PLAN	SEE PLAN	6.0	30	15/16	2



FOR LOCKING & MARKING GAS, ELECTRIC, WATER & TELEPHONE LINES
FOR BURIED UTILITY INFORMATION 48 HRS BEFORE YOU DIG
CALL 1-800-922-1987

STERLING RANCH - PHASE 1 ON-SITE
EARLY GRADING AND EROSION CONTROL PLAN
PROJECT NO. 09-002 FILE: V:\proj\09-002\Drawn: V:\proj\09-002.dwg
DESIGNED BY: DLM SCALE: N/A DATE: 11/09/15
DRAWN BY: JWP HORIZ: 1"=100' VERT: N/A
CHECKED BY: WAS SHEET 3 OF 6
GR03

21 BOULDER CIRCLE, SUITE 110
COLORADO SPRINGS, CO 80903
PHONE: 719.555.5485

M&S CIVIL CONSULTANTS, INC.

FOR AND ON BEHALF OF
M&S CIVIL CONSULTANTS, INC.

MRS. A. SANCHEZ, COLORADO, P.E. NO. 37160

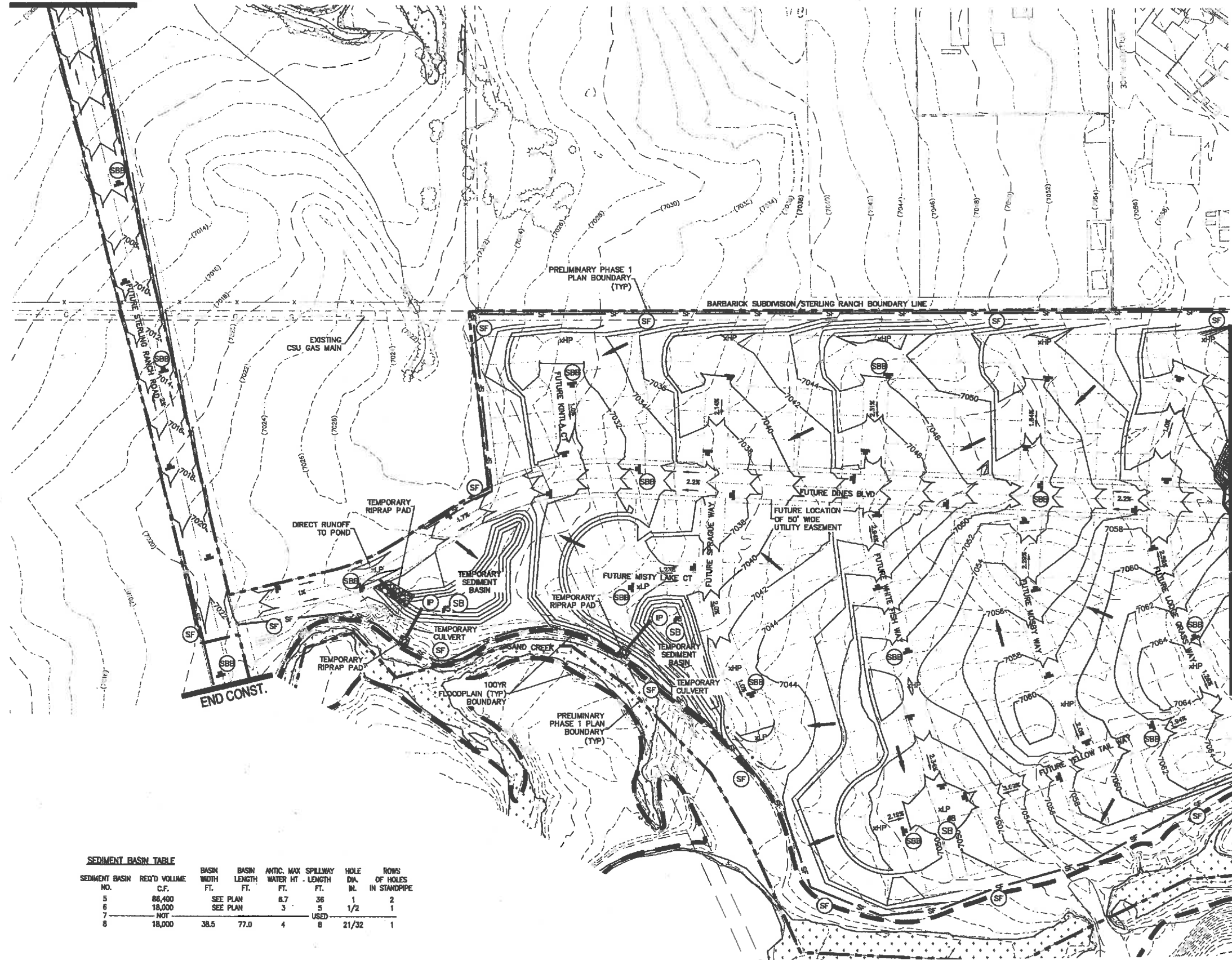
REVISIONS:

NO.	DATE	DESCRIPTION

THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE FOR UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES TO THE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE PREPARER OF THESE PLANS.

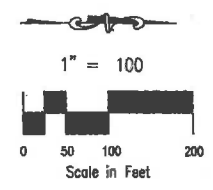
CAUTION

MATCHLINE - SEE SHEET GR05



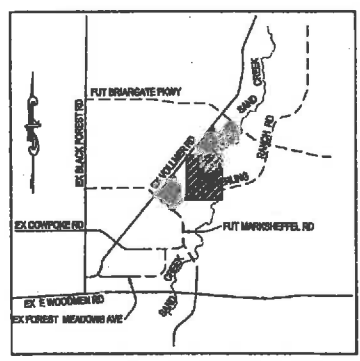
SEDIMENT BASIN TABLE

SEDIMENT BASIN NO.	REQ'D VOLUME C.F.	BASIN WIDTH FT.	BASIN LENGTH FT.	AVG. MAX WATER HT. FT.	SPLLOWAY LENGTH FT.	HOLE DIA. IN.	ROWS OF HOLES IN STANDPIPE
5	88,400	SEE PLAN	SEE PLAN	8.7	36	1	2
6	18,000	SEE PLAN	SEE PLAN	3	5	1/2	1
7	NOT USED						
8	18,000	38.5	77.0	4	8	21/32	1



- LEGEND**
- xLP/xHP LOW POINT/ HIGH POINT
 - (---) EXISTING INDEX CONTOUR (10')
 - (---) EXISTING NOMINAL CONTOUR (2')
 - 6920 PROPOSED PHASE 1 ON-SITE INDEX CONTOUR (10')
 - 6918 PROPOSED PHASE 1 ON-SITE NOMINAL CONTOUR (2')
 - 6920 PROPOSED PHASE 1 (OFF-SITE) INDEX CONTOUR (10')
 - 6918 PROPOSED PHASE 1 (OFF-SITE) NOMINAL CONTOUR (2')
 - SF SILT FENCE
 - 2.00% FLOW DIRECTION & SLOPE
 - Flow Direction Arrow FLOW DIRECTION ARROW
 - EXISTING FLOW DIRECTION ARROW
 - IP INLET PROTECTION
 - SBB STRAW BALE DITCH CHECK
 - SF SILT FENCE
 - VTC VEHICLE TRACKING CONTROL
 - DELIMITED WETLANDS NO DISTURBANCE
 - PRELIMINARY PLAN BOUNDARY/LIMITS OF DISTURBANCE
 - 100YR FLOODPLAIN
 - TEMPORARY RIPRAP
 - TRM TURF REINFORCEMENT MAT (NORTH AMERICAN GREEN SCS-250 OR APPROVED EQUAL. SEE MANUFACTURE SPECIFICATIONS FOR INSTALLATION DETAILS)
 - SB TEMPORARY SEDIMENT BASIN
 - TEMPORARY DIVERSION SWALE

MATCHLINE - SEE SHEET GR03



FOR LOCATING & MARKING GAS, ELECTRIC, WATER & TELEPHONE LINES
FOR BURIED UTILITY INFORMATION 48 HRS BEFORE YOU DIG
CALL 1-800-922-1987

STERLING RANCH - PHASE 1 ON-SITE
EARLY GRADING AND EROSION CONTROL PLAN
PROJECT NO. 09-002 FILE: \\proj\con\... \Sterling\W03.dwg
DESIGNED BY: DLH SCALE: 1"=100'
DRAWN BY: JWP HORIZ: 1"=100'
CHECKED BY: VAS VERT: N/A
DATE: 11/06/15
SHEET 4 OF 6
GR04

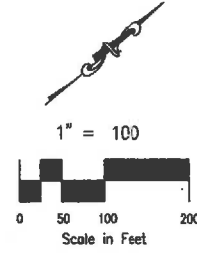
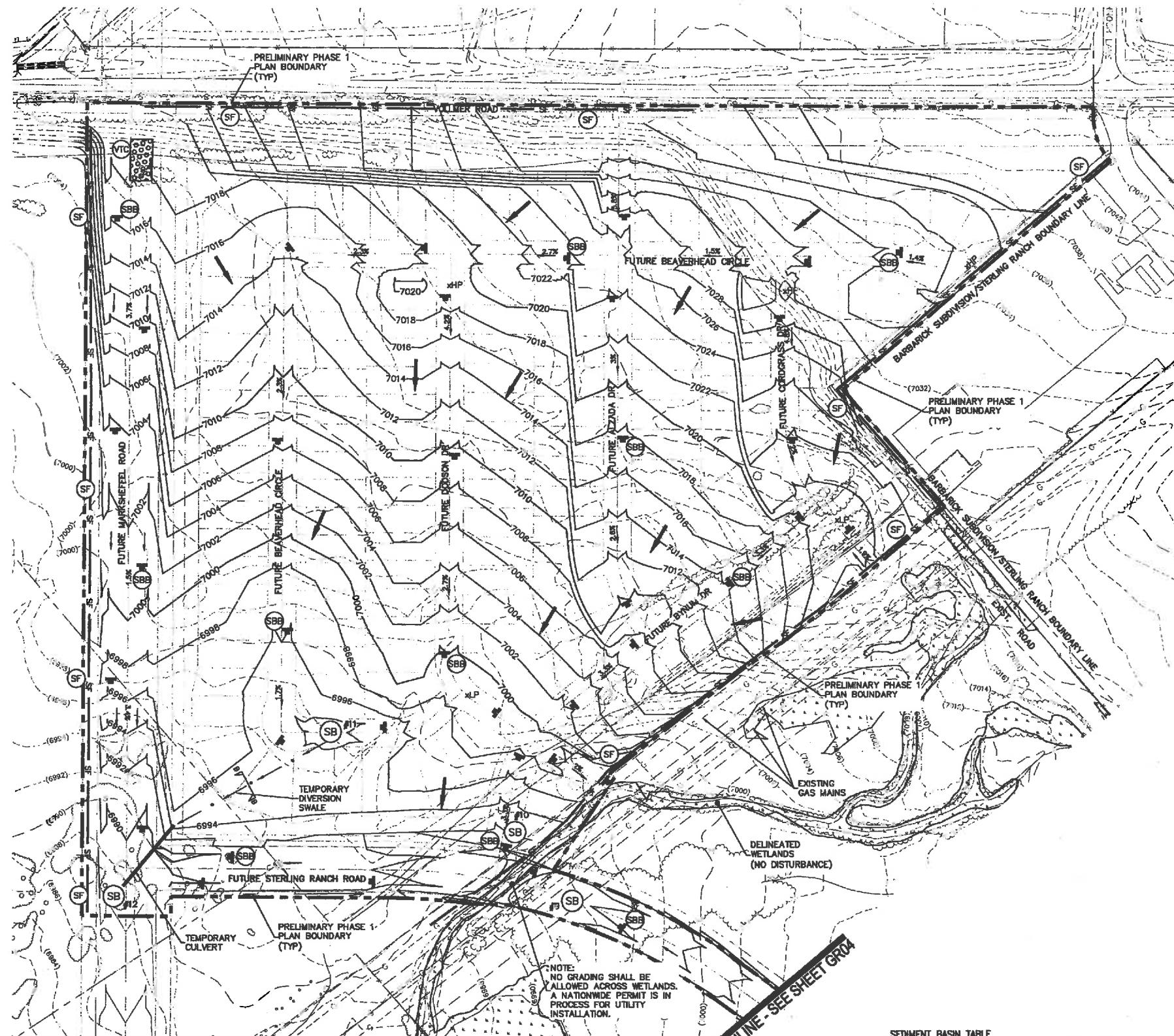


FOR AND ON BEHALF OF
MAG CIVIL CONSULTANTS, INC.
APRIL A. SANCHEZ, COLORADO P.E. NO. 37160

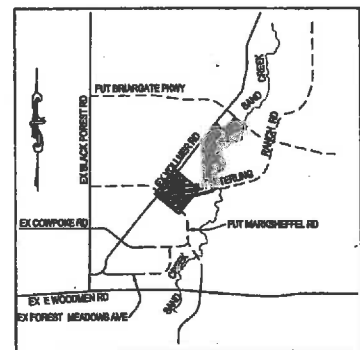
REVISIONS:	NO.	DATE:	DESCRIPTION:

THE ENGINEER PREPARING THESE PLANS SHALL NOT BE RESPONSIBLE, OR LIABLE FOR, UNAUTHORIZED CHANGES TO OR VIOLATIONS OF THESE PLANS. ALL CHANGES TO THE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE PREPARED BY THESE PLANS.

CAUTION



- LEGEND**
- xLP/xHP LOW POINT/ HIGH POINT
 - (E) (10') EXISTING INDEX CONTOUR (10')
 - (N) (2') EXISTING NOMINAL CONTOUR (2')
 - 6920 PROPOSED PHASE 1 ON-SITE INDEX CONTOUR (10')
 - 6918 PROPOSED PHASE 1 ON-SITE NOMINAL CONTOUR (2')
 - 6920 PROPOSED PHASE 1 (OFF-SITE) INDEX CONTOUR (10')
 - 6918 PROPOSED PHASE 1 (OFF-SITE) NOMINAL CONTOUR (2')
 - SF SILT FENCE
 - 2.00% FLOW DIRECTION & SLOPE
 - FLOW DIRECTION ARROW
 - EXISTING FLOW DIRECTION ARROW
 - IP INLET PROTECTION
 - SBB STRAW BALE DITCH CHECK
 - SF SILT FENCE
 - VTC VEHICLE TRACKING CONTROL
 - DELINEATED WETLANDS NO DISTURBANCE
 - PRELIMINARY PLAN BOUNDARY/LIMITS OF DISTURBANCE
 - 100YR FLOODPLAIN
 - TRM TEMPORARY RIPRAP PAD
 - TRM TURF REINFORCEMENT MAT (NORTH AMERICAN GREEN 30-250 OR APPROVED EQUAL. SEE MANUFACTURE SPECIFICATIONS FOR INSTALLATION DETAILS)
 - SB TEMPORARY SEDIMENT BASIN
 - TEMPORARY DIVERSION SWALE



SEDIMENT BASIN TABLE

SEDIMENT BASIN NO.	REQ'D VOLUME C.F.	Basin Width Ft.	Basin Length Ft.	Antic. Water Ft.	Max Water Ht Ft.	Spillway Length Ft.	Hole Dia. In.	Rows of Holes
9	10,800	28.0	59.0	4	5	1/2	1	
10	54,000	73.25	146.5	4	22	1 3/4	1	
11	57,600	75.0	150.0	4	23	1 1/4	1	
12	28,800	51.0	102.0	4	12	27/32	1	



MATCHLINE - SEE STERLING RANCH OFF-SITE GRADING PLANS BY M&S CIVIL

MATCHLINE - SEE SHEET GR04

STERLING RANCH - PHASE 1 ON-SITE EARLY GRADING AND EROSION CONTROL PLAN

PROJECT NO. 09-002 FILE: \\eng\con... Date: 11/06/15

DESIGNED BY: DLM SCALE: N/A

DRAWN BY: JWP HORIZ: 1"=100'

CHECKED BY: VAS VERT: N/A

DATE: 11/06/15

SHEET 5 OF 6

GR05

20 BOLDER CREEK SITE 110 COLORADO SPRINGS CO 80905 PHONE: 719.555.5480

Y 719.555.5480 I 719.440.077

CIVIL CONSULTANTS, INC.

FOR AND ON BEHALF OF M&S CIVIL CONSULTANTS, INC.

VIRGIL A. SANCHEZ, COLORADO P.E. NO. 37180

REVISIONS:

NO.	DATE	DESCRIPTION

FOR LOCATING & MARKING GAS, ELECTRIC, WATER & TELEPHONE LINES

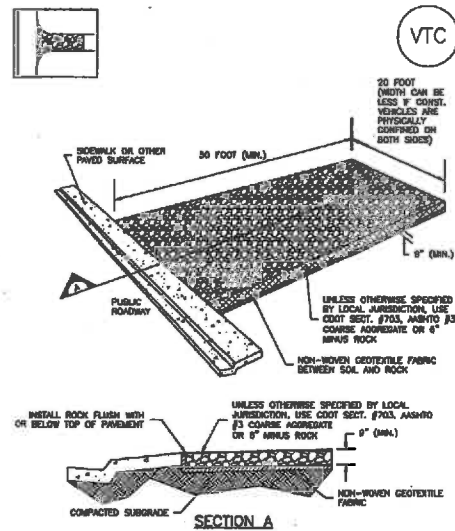
FOR BURIED UTILITY INFORMATION 48 HRS BEFORE YOU DIG CALL 1-800-922-1987

THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE, OR LIABLE FOR, UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES TO THE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE PREPARED OF THESE PLANS.

CAUTION

Vehicle Tracking Control (VTC)

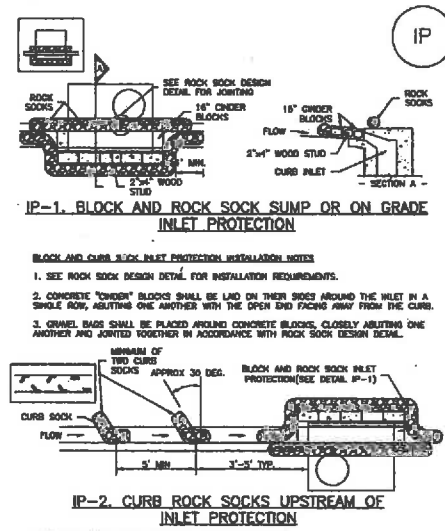
SM-4



VTC-1. AGGREGATE VEHICLE TRACKING CONTROL

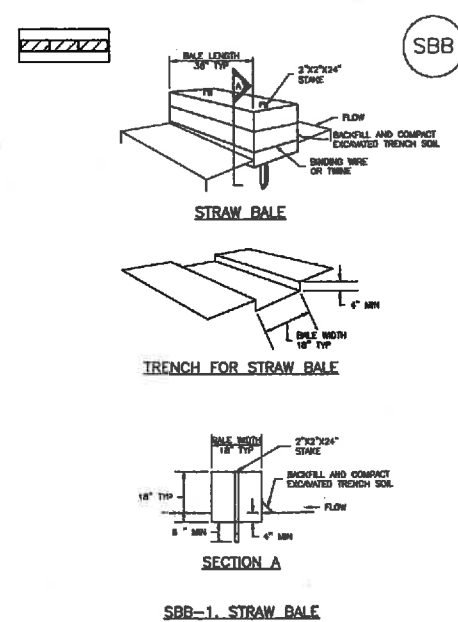
SC-6

Inlet Protection (IP)



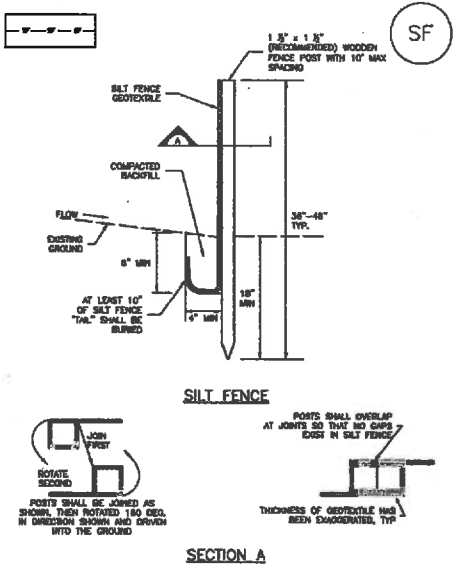
SC-3

Straw Bale Barrier (SBB)



Silt Fence (SF)

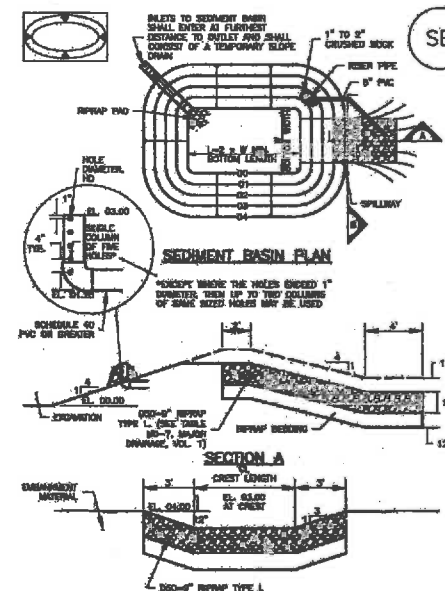
SC-1



SF-1. SILT FENCE

Sediment Basin (SB)

SC-7



SEEDING GUIDELINES:

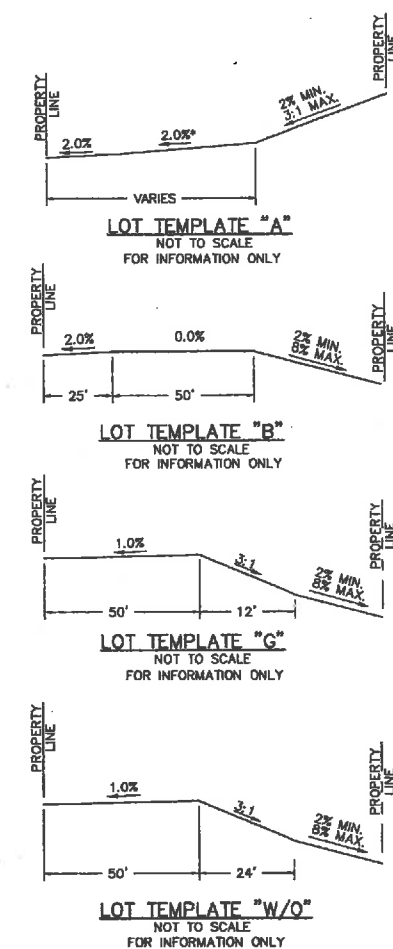
- SEED PREPARATION:** The seedbed should be well-settled and firm, but friable enough that the seed can be placed at the specified depths. Competitive stands of weeds that are present before seeding must be controlled by shallow tillage or by application of herbicides. Soils that have been over-compacted by traffic or equipment, especially when wet, should be tilled to break up rutting-restrictive layers, then harrowed, rolled, or packed to prepare the required firm seedbed.
- FERTILIZER:** Fertilizer should be applied at a rate of 80 pounds of available nitrogen per acre and 40 pounds of available phosphate per acre. The timing of application should be immediately prior to seeding, at the time of seeding, or immediately following seeding, depending on the kind of fertilizer and type of equipment used.
- SEEDING:** Seed should be planted with a grass drill on all slopes of 3:36 (3:1) or flatter. Seed may be broadcast by hand, by mechanical spreader, or by hydraulic equipment on areas that are small, too steep, or not accessible for seed drill operations. Seed planted with a drill should be covered with soil to a depth of 1/4 to 3/4 inch. Seed planted by the broadcast method shall be incorporated into the soil surface, not to exceed a depth of 3/4 inch, by raking, harrowing, or other proven method. The timing of seeding is from October 15th - May 31st. Seed planted in the late fall will remain dormant until spring, when it will germinate.
- MULCHING:** Seeded areas should be mulched to conserve moisture, prevent surface compaction or crusting, reduce runoff and erosion, control insects, and help establish plant cover. Native hay or straw should be applied at a rate of 4,000 pounds per acre and crimped into the ground. On slopes greater than 3:1, an agronomy blanket should be used.
- SUPPLEMENTAL WATER:** In low rainfall areas, where water is available and where rapid establishment is needed, irrigation of new seeding should be performed during the first growing season. Water should be applied at approximately one week intervals, at a rate of 3/4 to 1 inch per application, when rainfall is deficient for plant development.

EROSION CONTROL CRITERIA:

- Prior to start of grading operations, locate and set the silt fence and vehicle tracking control as shown on the erosion control plan.
- The silt fence shall be kept in place and maintained until erosion and sedimentation potential is mitigated. Removal of silt and sediment collected by the silt fences is required once it reaches half the height of the silt fences.
- Erosion control devices should be checked after every storm or not more than every 14 days. Repairs or replacement should be made as necessary to maintain proper protection.
- Soil erosion control measures for all slopes, channels, ditches, or any disturbed land area shall be completed within twenty-one (21) calendar days after final grading, or final earth disturbance has been completed. Disturbed areas and stockpiles which are not at the final grade but will remain dormant for longer than 30 days shall also be mulched within 21 days after interim grading. An area that is going to remain in an interim state for more than 90 days shall also be seeded. All temporary soil erosion control measures and BMP's shall be maintained until permanent soil erosion control measures are implemented.

SURFACE ROUGHENING INSTALLATION NOTES:

- Surface roughening shall be provided promptly after completion of finished grading (for areas not receiving topsoil) or prior to topsoil placement or any forecasted rain event.
- Disturbed surfaces shall be roughened using ripping or tilling equipment on the contour or tracking up and down a slope using equipment tread.
- Inspect BMP's each workday, and maintain them in effective operating condition. Maintenance of BMP's should be proactive, not reactive. Inspect BMP's as soon as possible (and always within 24 hours) following a storm that causes surface erosion, and perform necessary maintenance.
- Frequent observations and maintenance are necessary to maintain BMP's in effective operating condition. Inspections and corrective measures should be documented thoroughly.
- In non-turf grass finished areas, seeding and mulching shall take place directly over surface roughened areas without first smoothing out the surface.
- In areas not seeded and mulched after surface roughening, surfaces shall be re-roughened as necessary to maintain groove depth and smooth over rill erosion.



EROSION PROTECTION & REVEGETATION REQUIREMENTS
"PER U.S.D.A. SOIL CONSERVATION SERVICE GUIDELINES"

1. PRACTICE NO. & NAME: 342 - CRITICAL AREA TREATMENT RANGE SITE: SANDY FOOTHILLS

2. PLANNED: SEEDING OPERATION: A. METHOD: DRILL INTERSEED XX B. DATES: OCT 15 - MAY 31 BROADCAST C. CLEAN TILLED XX FIRM SEEDBED XX STUBBLE COVER INTERSEED OTHER

FERTILIZER: POUNDS ACTUAL PER ACRE N2 (AVAILABLE) P205

MULCH: KIND: LONG - STEM NATIVE HAY AMOUNT: 4,000 POUNDS/ACRE HOW APPLIED: N/A HOW ANCHORED: CRIMPED ANCHORAGE DEPTH: 4"

SEED: VARIETY SPECIES REQUIRED PLS RATES PER ACRES (100%)

GOSHEN	PRAIRIE SANDREED	6.5
WALSH	SIDEWATER GRAMAHA	6.0
LOWHORN	BLUE GRAMAHA	3.0
BLACKWELL	SWITCH GRASS	4.5
PASTURA	LITTLE BLUESTEM	7.0

(2) % OF SPECIES IN MIXTURE (4) PLANNED PLS SEEDING RATE PER SPECIES/ACRE (5) TOTAL PLS LBS/ (3) X (4)

15	0.98	151.8	148.8
25	2.25	151.8	341.1
15	0.45	151.8	63.22
20	0.80	151.8	136.4
25	1.75	151.8	265.3

NOTE
SEE URBAN DRAINAGE CRITERIA MANUAL (VOL. 3) FOR INSTALLATION AND MAINTENANCE (TYP)



STERLING RANCH - PHASE 1 ON-SITE
EARLY GRADING AND EROSION CONTROL PLAN
PROJECT NO. 08-002 FILE: Varg/Con.../Water Main/10/13/10.dwg DATE: 11/08/15
DESIGNED BY: DLI SCALE: N/A
DRAWN BY: JWP HORIZ: N/A
CHECKED BY: WS VERT: N/A
GRO6 SHEET 6 OF 6

7/17/2016
1/17/2017

7010 S. CRENSHAW BLVD. SUITE 110
COLORADO SPRINGS, CO 80906
PHONE 719-535-5486

CIVIL CONSULTANTS, INC.

FOR AND ON BEHALF OF M&S CIVIL CONSULTANTS, INC.

APPROVED BY: DATE: REVISIONS: NO. DATE: DESCRIPTION:

THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE, OR LIABLE FOR, UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES TO THE PLANS MUST BE APPROVED BY THE PREPARER OF THESE PLANS.

CAUTION