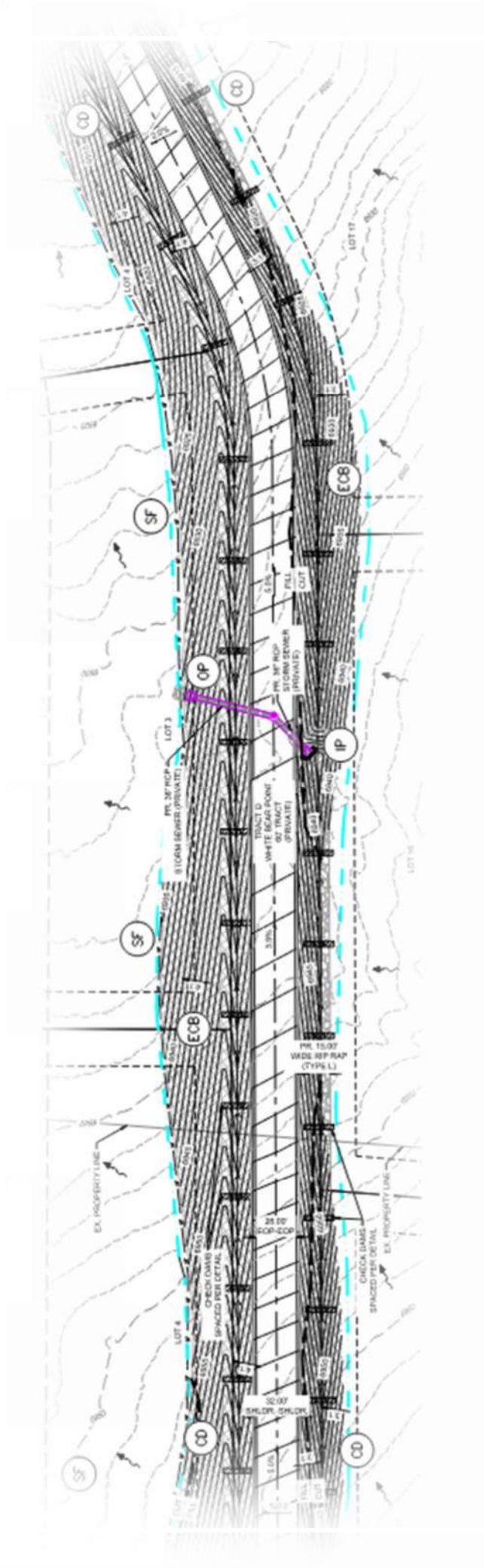


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Glenn Reese
EPC Department of Public Works

Accepted for File
By: Christina Prete, PE
Stormwater Manager
Date: 07/01/2024 1:29:17 PM
El Paso County Department of Public Works

STORMWATER MANAGEMENT PLAN (SWMP)

Hay Creek Valley
El Paso County, Colorado
PCD File No. SF-23-24

VIEW HOMES, INC.
555 Middle Creek Parkway, Suite 500
Colorado Springs, Colorado 80921
(719) 382-9433

January 2024

EDARP Filing No.: SF2324

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STORMWATER MANAGEMENT PLAN (SWMP)

Hay Creek Valley
El Paso County, Colorado

Applicant (Owner):

VIEW HOMES, INC.
555 Middle Creek Parkway, Suite 500
Colorado Springs, CO 80921

SWMP Prepared By:

Jeff Odor, PE
Project Manager
Matrix Design Group, Inc.
2435 Research Parkway, suite 300
Colorado Springs, Colorado 80920
(719) 575-0100

Qualified Stormwater Manager:

Contractor Information:

Matrix Design Group, Inc.
2435 Research Parkway, Suite 300
Colorado Springs, CO 80920
(719) 575-0100

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Attachments

- SWMP Drawings
- SWMP Inspection and Maintenance Log
- Soil Survey of El Paso County Area Soils Map
- FEMA FIRM Floodplain Maps
- CDPHE General Permit

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1. GENERAL INFORMATION

This Stormwater Management Plan (SWMP) is being submitted on behalf of View Homes, Inc. for a tract of land known as Hay Creek Valley in El Paso County, Colorado. The purpose of this SWMP is to identify potential source areas that may contribute pollutants to stormwater and to identify Best Management Practices (BMP)s that will reduce or eliminate adverse water quality impacts. Development, implementation, and maintenance of this SWMP will provide the general contractor with the framework for reducing soil erosion and minimizing pollutants in stormwater during construction of the project site.

This SWMP has been prepared in accordance with engineering, hydrologic and pollution control practices and will cover this facility only (the extents of the Project construction site) using BMPs to reduce the pollutants in stormwater discharges as described in Section 2 of this SWMP. The SWMP will be administrated by the Qualified Stormwater Manager identified in Section 1.3. The Qualified Stormwater Manager's duties include the following:

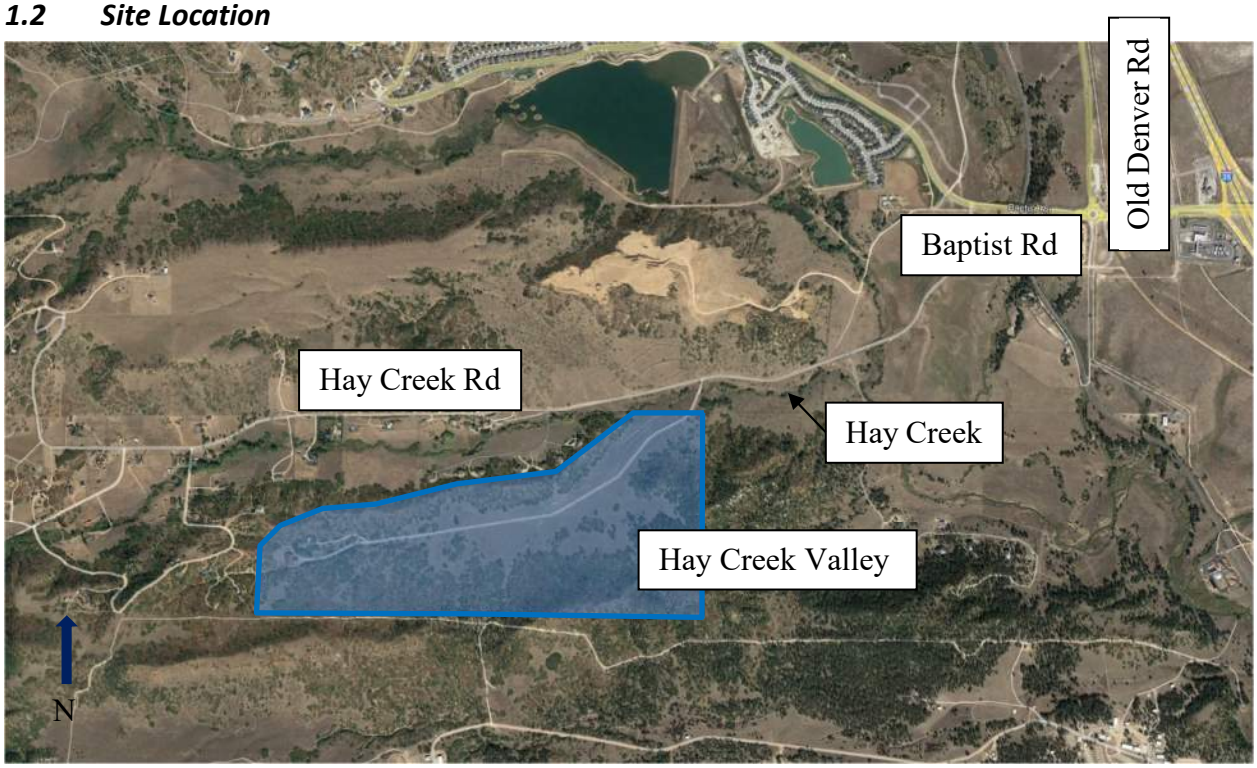
- Implement the SWMP
- Oversee installation and maintenance of BMPs as identified in the SWMP
- Implement and oversee employee training
- Conduct or provide for inspection and monitoring activities
- Identify potential pollutant sources and make sure they are included in the SWMP
- Identify any deficiencies in the SWMP and make sure they are corrected
- Ensure that any changes in construction plans, phasing, or use of BMP's are addressed in the SWMP

The provisions of this SWMP must be implemented as they are written and updated, from the initiation of construction until final stabilization is complete. The Water Quality Control Division reserves the right to review the SWMP, and to require the permittee to develop and implement additional measures to prevent and control pollution as is needed.

1.1 Site Description

Hay Creek Valley, located in Monument, Colorado, is a 214.6-acre site that is currently comprised of six (6) parcels which are to be subdivided into 20 lots and three (3) tracts. The site is located at Latitude: 39.049381 and Longitude: -104.877202 and is bounded to the north by existing residential property and Hay Creek Road. The site is bounded to the west by residential property. To the east and the south of the site is undeveloped land. The site is currently located on Smow Mountain Heights approximately 700 feet south of its intersection with Hay Creek Road. The existing access road will be replaced with a private road, to be named White Bear Point, having a 60-foot right of way that will terminate with a cul-de-sac in the southwestern section of the site.

1.2 Site Location



1.3 Project Contact Information

Contact Information/Responsible Parties			
Owner	View Homes, Inc. 555 Middle Creek Parkway Suite 500 Colorado Springs, CO 80921	719-382-9433	
Project Manager/Site Supervisor	Tim Buschar View Homes, Inc. 555 Middle Creek Parkway, Suite 500 Colorado Springs, CO 80921		tbuschar@aspenviewhomes.net
Qualified Stormwater Manager			
SWMP Preparer	Jeff Odor, PE Matrix Design Group 2435 Research Pkwy, Suite 300 Colorado Springs, CO 80920	719-575-0100	Jeff_Odor@matrixdesigngroup.com

1.4 Disturbance Area and Import/Export Volume

The following is the total site area and the expected area of disturbance. Any changes to the area of disturbance (current disturbance) must be updated as changes occur.

Total Site Area	**214.6 acres**	Date: 12/05/2023
Initial Estimate of Disturbance Area	**17.28 acres**	Date: 12/05/2023
Import/Export Volume Estimate	**26,274 CY**	☐ Import ☒ Export
Updated Disturbance Area		
Updated Disturbance Area		
Updated Disturbance Area		

1.5 Construction Activities

Initial stabilization methods (BMPs) will be installed prior to construction. Following initial BMPs, construction will consist initially of site clearing and grubbing, temporary stabilization BMPs, initial grading, storm drain installation, road paving, and final grading. Open spaces will be maintained with the vegetation placed prior to commencement of construction. There will be no concrete or asphalt batched onsite. All concrete and asphalt will be imported from off-site batch

plants. Final stabilization and removal of temporary control measures will be completed following placement of permanent landscaping and hardscaping.

1.6 Construction Sequencing and Phasing

Construction Schedule		Estimated Start Date	Estimated Completion Date
Anticipated Project Start Date		Jan 2024	Oct 2024
1. Install Initial BMPs		Jan 2024	Jan 2024
2. Clearing and Grubbing		Jan 2024	Jan 2024
3. Temporary Stabilization BMPs		Feb 2024	Feb 2024
4. Initial Road Grading		Mar 2024	Mar 2024
5. Storm Drain Installation		Mar 2024	May 2024
6. Street Paving		May 2024	Jun 2024
7. Final Stabilization		Jun 2024	Aug 2024
8. Removal of Temporary Control Measures			Oct 2024
Anticipated Project End Date			Oct 2024

Construction Phase	Description and Conservation Measures
Install Initial BMPs	Silt Fencing (perimeter BMP) will be installed at designated locations (see Plan) as outlined in Section 2. The VTC will be installed at the entrance/exit to any disturbed areas as work progresses as outlined in Section 2. All construction traffic must enter/exit the site at approved construction access points. Sediment basins shall be installed prior to any land-disturbing activities that will rely on the basin for stormwater control (Section 2).
Clearing and Grubbing	Clearing and Grubbing of the site will be the initial construction phase. BMPs outlined in Section 2 will be used to control erosion and sediment runoff.
Temporary Stabilization BMPs	Temporary stabilization measures to control erosion and sediment runoff will be implemented as outlined in Section 2.
Road Grading	Road grading will be completed using BMPs outlined in Section 2 to control erosion and sediment runoff.
Storm Drain Installation	Storm Drain Installation will happen concurrently with Road Grading using BMPs outlined in Section 2 to control erosion and sediment runoff.
Final Grading	Final grading will be completed following installation of curb and gutter at the site. BMPs outlined in Section 2 will be used to control erosion and sediment runoff.
Street Paving	Streets and roads will be paved following final site grading activities. BMPs outlined in Section 2 will be used to control erosion and sediment runoff.

Final Stabilization and Removal of Temporary BMPs	Once construction activity ceases, the area shall be stabilized with permanent landscaping and/or seed and mulch as outlined in Section 2. Final stabilization is complete when all ground disturbing activities are complete and all disturbed areas have either a uniform vegetative cover with an individual plant density of 70% of pre-disturbance levels, permanent hardscaping or paving is in place, or an equivalent permanent alternative stabilization method is implemented. Once stabilization is complete, all temporary sediment and erosion control measures shall be removed.

1.7 Soils

The United States Department of Agriculture, Natural Resources Conservation Service (NRCS); Web Soil Survey of El Paso County Area, Colorado, published by the United States Department of Agriculture, dated November 2023, was utilized to investigate the existing general soil types within and surrounding the Project area. A soil map for this area is provided in the Attachments. Per the information given within the Soil Conservation Survey, hydrologic soil group "B" characteristics are predominant across the study area (an estimated 100% coverage area) as described in the following table.

Soil ID Number	Soil Type	Soil Description	Estimated Coverage Area	Hydrologic Classification
38	Jarre-Tecolote Complex, 8% to 65% slopes	Surface runoff is medium to low, well drained soil, the hazard of erosion and soil blowing are moderate to high.	50.8%	B
71	Pring Coarse Sandy Loam, 3% to 8% slopes	Surface runoff is low, well drained soil, the hazard of erosion and soil blowing are low to moderate.	14.5%	B
93	Tomah-Crowfoot Complex, 8% to 15% slopes	Surface runoff is medium, well drained soil, the hazard of erosion and soil blowing are moderate.	34.7%	B

Runoff Coefficients for Rational Method from the Urban Drainage and Flood Control District (UDFCD 2001) are listed below:

Land Use or Surface Characteristics	Percent Impervious	Runoff Coefficients											
		2-year		5-year		10-year		25-year		50-year		100-year	
		HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D
Business													
Commercial Areas	95	0.79	0.80	0.81	0.82	0.83	0.84	0.85	0.87	0.87	0.88	0.88	0.89
Neighborhood Areas	70	0.45	0.49	0.49	0.53	0.53	0.57	0.58	0.62	0.60	0.65	0.62	0.68
Residential													
1/8 Acre or less	65	0.41	0.45	0.45	0.49	0.49	0.54	0.54	0.59	0.57	0.62	0.59	0.65
1/4 Acre	40	0.23	0.28	0.30	0.35	0.36	0.42	0.42	0.50	0.46	0.54	0.50	0.58
1/3 Acre	30	0.18	0.22	0.25	0.30	0.32	0.38	0.39	0.47	0.43	0.52	0.47	0.57
1/2 Acre	25	0.15	0.20	0.22	0.28	0.30	0.36	0.37	0.46	0.41	0.51	0.46	0.56
1 Acre	20	0.12	0.17	0.20	0.26	0.27	0.34	0.35	0.44	0.40	0.50	0.44	0.55
Industrial													
Light Areas	80	0.57	0.60	0.59	0.63	0.63	0.66	0.66	0.70	0.68	0.72	0.70	0.74
Heavy Areas	90	0.71	0.73	0.73	0.75	0.75	0.77	0.78	0.80	0.80	0.82	0.81	0.83
Parks and Cemeteries	7	0.05	0.09	0.12	0.19	0.20	0.29	0.30	0.40	0.34	0.46	0.39	0.52
Playgrounds	13	0.07	0.13	0.16	0.23	0.24	0.31	0.32	0.42	0.37	0.48	0.41	0.54
Railroad Yard Areas	40	0.23	0.28	0.30	0.35	0.36	0.42	0.42	0.50	0.46	0.54	0.50	0.58
Undeveloped Areas													
Historic Flow Analysis--Greenbelts, Agriculture	2	0.03	0.05	0.09	0.16	0.17	0.26	0.26	0.38	0.31	0.45	0.36	0.51
Pasture/Meadow	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50
Forest	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50
Exposed Rock	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Offsite Flow Analysis (when landuse is undefined)	45	0.26	0.31	0.32	0.37	0.38	0.44	0.44	0.51	0.48	0.55	0.51	0.59
Streets													
Paved	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Gravel	80	0.57	0.60	0.59	0.63	0.63	0.66	0.66	0.70	0.68	0.72	0.70	0.74
Drive and Walks	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Roofs	90	0.71	0.73	0.73	0.75	0.75	0.77	0.78	0.80	0.80	0.82	0.81	0.83
Lawns	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50

All exposed soil throughout the Project site will be landscaped and/or seeded with a locally approved seed mix as described in Section 2.2.

1.8 Vegetation

The existing vegetation consists of sparse, natural vegetative land cover in the form of grasses and shrubs with sparse trees throughout. Based on site visits and a review of aerial photography, the vegetative cover at Hay Creek Valley is approximately 85%.

1.9 Allowable Non-Stormwater Discharges

Uncontaminated groundwater may be discharged onsite, but may not leave the site in the form of surface runoff. Concrete washout areas will be used as described in Section 2.3.

1.10 Receiving Waters

Ultimate Receiving Water(s): Beaver Creek Drainage Basin and the Air Force Academy Major Drainage Basin.

Stormwater Outfalls/Storm Sewer System Discharge:

Detention Pond:

- Discharge: 18" Reinforced Concrete Pipe (RCP)
- Location of Discharge: Northeast corner of site
- Receiving Conveyance: Existing natural swale that drains into Hay Creek.

1.11 Stream Crossings within the Project Area

The proposed road will cross Hay Creek within the Project Area.

1.12 Pollution Sources

Pollutants that result from clearing, grading, maintenance, operations, and excavation have the potential to be present in stormwater runoff and are potential sources for stormwater contamination. The following is a description of potential source areas for pollutant that may be released during construction, maintenance, operation, and excavation activities:

Source Area:

1. Disturbed and stored soils, erosion.
2. Vehicle tracking of sediments.
3. Management of contaminated soils.
4. Loading and unloading operations.
5. Outdoor storage activities (erodible building materials, fertilizers, chemicals, etc.).
6. Vehicle and equipment maintenance, cleaning, and fueling operations.
7. Significant dust or particulate generation activities.
8. Routine maintenance activities involving fertilizers, pesticides, herbicides, detergents, fuels, solvents, etc.
9. Onsite waste management practices (waste piles, liquid wastes, dumpsters, chemical containers etc.).
10. Concrete truck/equipment washing
11. Non-industrial waste sources (trash, portable toilets)

The following pollutants may impact stormwater runoff for each of the source areas listed above.

Potential Pollutant	Chemical/Physical Description	Stormwater Impacts	Potential Source Area (listed above)
Pesticides (insecticides, fungicides, herbicides, rodenticides)	Various colored to colorless liquid, powder, pellets, or grains	Chlorinated hydrocarbons, organophosphates, carbamates, arsenic	3, 4, 5, 8, 9
Fertilizer	Liquid or solid grains	Nitrogen, phosphorous	3, 4, 5, 8, 9
Cleaning solvents	Colorless, blue, or yellow-green liquid	Perchloroethylene, methylene chloride, trichloroethylene, petroleum distillates	3, 4, 5, 6, 8, 9, 10, 11
Concrete	White solid	Limestone, sand	3, 5, 9, 10, 11
Paints	Various colored liquid	Metal oxides, stoddard solvent, talc, calcium carbonate, arsenic	3, 5, 6, 9
Wood preservatives	Clear amber or dark brown liquid	Stoddard solvent, petroleum distillates, arsenic, copper, chromium	3, 5, 8
Hydraulic oil/fluids	Brown oily petroleum hydrocarbon	Mineral oil	3, 4, 5, 6, 8, 9, 11
Gasoline	Colorless, pale brown or pink petroleum hydrocarbon	Benzene, ethyl benzene, toluene, xylene, MTBE	2, 3, 4, 5, 6, 8, 9, 10
Diesel Fuel	Clear, blue-green to yellow liquid	Petroleum distillate, oil & grease, naphthalene, xylenes	2, 3, 4, 5, 6, 8, 9, 10
Kerosene	Pale yellow liquid petroleum hydrocarbon	Coal oil, petroleum distillates	5, 6, 8, 9
Antifreeze/coolant	Clear green/yellow liquid	Ethylene glycol, propylene glycol, heavy metals (copper, lead, zinc)	2, 3, 4, 5, 6, 8, 9, 10
Particulates	Dust, airborne particulates	Sediment	1, 2, 4, 5, 6, 10, 11
Biological	Human/animal waste	Bacterial	11

The largest possible sources of non-stormwater pollution will be from trucks during equipment maintenance and refueling operations. The contractor shall be responsible for any spill cleanup during refueling operations in accordance with applicable city, county and state regulations. The contractor will also be responsible for cleanup of any off-site vehicle tracking on paved roads. Other sources of pollution such as vehicle washing, chemical storage or waste disposal are not anticipated. No recognized environmental conditions (REC) have been identified within Project site.

1.13 Spill Prevention and Response Plan

The Spill Prevention and Response Plan (SPRP) is designed to outline requirements for the handling and management of hazardous substances (pesticides, herbicides, fuels, cleaners, etc.) stored or used at the Project area.

Materials Management and Handling

- Chemicals that have the potential to be released in stormwater are to be used only where necessary and, in a manner, consistent with industry-standard uses and handling procedures.
- Ensure all hazardous materials are properly labeled.
- Store, dispense, and/or use hazardous substances in a way that prevents releases.
- Provide secondary containment when storing hazardous substances in bulk quantities (greater than 55-gallons).
- Maintain good housekeeping practices for chemicals stored onsite.
- Complete routine checks of hazardous substance storage areas.
- Provide monthly inspections of hazardous substance storage areas, secondary containment, and above ground and/or underground storage tanks.

Spill Containment and Reporting

A release of any chemical, oil, petroleum product, sewage, etc. that has the potential to enter surface water, groundwater, dry gullies, or storm sewers leading to surface water must be reported to the CDPHE immediately (25-8-601 CRS). When a spill is identified, the proper spill response should be implemented:

1. Assess the area for any immediate dangers or health and safety concerns. If any immediate dangers are present, call 911.
2. Contain any spilled materials. Assess the size of the leak and immediate threat of the spill reaching storm drains or permeable surfaces. If there is an immediate threat and no safety concerns, attempt to block the spill from reaching storm drains or other impermeable surfaces.
3. Stop the source of the spill if possible.
4. Cleanup spill in a timely manner. Use adsorbent materials (cat litter) and/or sock booms or rags to clean up the spill. Dispose of used materials appropriately.
5. Report and record spills to Qualified Stormwater Manager. Once the spill has been contained and any immediate threat to storm drains or permeable surfaces has been minimized, contact the Qualified Stormwater Manager. If necessary, a specialized cleanup contractor should be used to clean up the remaining contamination.
6. Follow applicable Colorado Discharge Permit System (CDPS) terms and conditions regarding spill reporting and response.
7. Report spills to the Colorado Department of Public Health and Environment (CDPHE). For non-permitted activities or in the case of an activity where a permit does not address reporting of or response to a spill which may cause pollution of surface or subsurface waters of the State, notify

the Environmental Release and Incident Reporting Line within 24 hours at (**877) 518-5608**. Reporting should include:

a. Name of responsible person or name of Qualified Stormwater Manager
b. An estimate of the date and time of the release
c. The location of the spill and its source (saddle tank, manhole, storage container, etc.),
d. The type of material spilled (untreated wastewater, petroleum products, etc.)
e. The estimated volume of the spill
f. The time and date the spill was controlled or stopped
g. If the spill is ongoing, the estimated rate of flow and when the spill is expected to be controlled/contained
h. Measures being taken to contain, reduce, and/or clean the spill
i. A list of potentially impacted areas and known downstream water uses that will be or have been notified
j. The phone number and email of the Qualified Stormwater Manager.

8. Any accidental discharge to the sanitary sewer system must be reported immediately to the local sewer authority and the affected wastewater treatment plant.
9. Written notification following a reportable spill shall be submitted to the CDPHE within five days (5 CCR 1002-31, Section 61.8(5)(d)).

2. BEST MANAGEMENT PRACTICES

Best Management Practices (BMP's) encompass a wide range of erosion and sediment control practices, both structural and non-structural in nature, that are intended to reduce or eliminate any possible water quality impacts from stormwater leaving a construction site. The individual BMP's appropriate for a particular construction site are largely dependent on the types of potential pollutant sources present, the nature of the construction activity, and specific-site conditions.

Most of the BMP's referenced herein are widely used in the construction industry. They generally involve a simple and low-cost approach and can be very effective *when properly installed and maintained.* To prevent soil from washing into the public right-of way or the undisturbed areas of the site, the following is a discussion of BMPs and an indication of which BMPs are expected to be implemented as part of this Project.

BMPs for all slopes, channels, ditches, or any disturbed land area shall be completed immediately after grading or earth disturbance has occurred. All temporary soil erosion control measures and BMP's shall be maintained until site reaches final stabilization and permanent soil erosion control measures are implemented.

The Stormwater Manager may modify the planned BMPs based on construction sequencing, site conditions, and/or other factors. The SWMP should be modified by field notes including dates of modifications and the purpose of the modification. The Grading and Erosion Control Plan should reflect what has been constructed or modified onsite. The Stormwater Manager will be responsible for documenting BMP's (including phasing of BMP implementation).

2.1 Structural BMPs

Structural BMPs are used to minimize erosion and sediment transport and include but are not limited to: silt fencing, erosion control blankets, turf reinforcement mat, wattles/sediment control logs, earth dikes, drainage swales, sediment traps, gravel inlet protection, inlet/outlet protection, straw bales, concrete washout areas, and temporary or permanent sediment basins. Structural BMPs shall be coordinated with construction activities so the BMP is in place before construction begins. The structural BMPs outlined below are general definitions and guidelines. Project-specific specifications for selected BMPs are detailed in the SWMP Drawings included in the Attachments.

- *Silt Fencing*: A silt fence is a structural sediment control device that typically consists of a geotextile fabric attached to wooden stakes inserted into a ground trench and rising to a vertical height of approximately 18-inches. The silt fence is generally used as perimeter sediment control and as a primary containment around storage areas, staging areas, stockpiles, etc.

  Used for this project? ☒ Yes ☐ No

Application notes: Temporary perimeter controls (e.g. silt fences) will be installed *before* any clearing and grading begins. The use of rebar, steel stakes, or steel fence posts to anchor silt fencing is prohibited. Once the site is cleaned and the surrounding disturbed areas are 70% established with vegetation, the silt fences around the Project site can be removed.

- *Erosion Control Blanket*: An erosion control blanket (ECB) is a rolled-fiber product typically made up of straw, coconut, or synthetic fibers that are used to prevent scour erosion, stabilize slopes, and to aid revegetation by providing a protective layer over seeded areas. Turf reinforcement mats are similar to ECBs and are made to withstand greater stress such as traffic, extended life, or continuous and frequent water flow. ECBs are available in both biodegradable and photodegradable varieties.

Used for this project? ☒ Yes ☐ No

Application Notes: Exposed slopes greater than 3:1 will be covered by an erosion control blanket. The use of rebar, steel stakes, or steel fence posts to anchor ECB is prohibited.

- *Inlet Protection (gravel)*: Storm sewer inlet protection is typically comprised of 1.5-inch angular rock (gravel) wrapped in a chicken wire mesh to form an approximate 6-inch diameter roll in varying lengths. The gravel roll should be firmly secured in front of the inlet opening with a spacing device to prevent the roll from entering the inlet. A sufficiently-sized overflow opening should be left to prevent flooding during high surface water flow volumes. The basic design applies to curb and drop-style inlets.

Used for this project? ☒ Yes ☐ No

Application Notes: Inlet protection measures for existing inlets shall be installed *before* clearing and grading is initiated.

- *Check Dams*: A check dam is a small, sometimes temporary, grade control mechanism constructed across a swale, drainage ditch, or waterway to counteract erosion by reducing water flow velocities.

Used for this project? ☒ Yes ☐ No

Application Notes: Rip-rap will line the designed drainage swales and will decrease water flow velocity in steep areas.

- *Inlet/Outlet Protection*: Inlet/outlet protection can be composed of 4- to 6-inch rock (rip-rap) underlain with geotextile fabric placed at the outlet or inlet of a drainage pipe, culvert, or other areas where high surface water flow may be encountered. Geotextile socks filled with gravel may also be used as a temporary BMP. This BMP is used to reduce erosion sediment transport by reducing flow velocity.

Used for this project? ☒ Yes ☐ No

Application Notes: Temporary rip rap outlet protection specified in the SWMP specification drawings is for outlets intended to be utilized less than 2 years. Rough cut street control measures (geotextile socks filled with gravel or compacted earthen berms) shall be installed after a road has been cut and will not be paved for more than 14 days, or for temporary construction roads that have not received road base.

- *Drainage Swales*: Swales can be permanent or temporary and are typically designed to control storm water runoff in a non-erosive manner to a destination such as a detention pond or other stormwater collection facility. Swales can also be designed with velocity control devices and can be made of concrete or lined with materials such as rock or grass.

Used for this project? ☒ Yes ☐ No

Application Notes:

- *Sediment/Detention Basins*: Sediment/Detention basins are designed according to project size and runoff volume and are used for flood control and to aid in temporary retention of runoff to aid in sediment deposition. A release point for runoff water is typically present and consists of an emergency overflow or regulating structure.

Used for this project? ☒ Yes ☐ No

Application Notes: Sediment basins will be installed prior to any other land disturbing activities that rely on basins for stormwater control. Embankment materials shall consist of soil free of debris. Organic material, and rocks or concrete greater than 3-inches diameter and shall have a minimimum of 15% by weight passing a No. 200 sieve. Embankment materials must be compacted to at least 95% of maximum density.

- *Stabilized Staging Area*: A staging area for equipment and material storage, parking, and loading/unloading operations should be sized appropriately for the needs of the site and should be constructed prior to the onset of construction activities. Site stabilization may include structural BMPs (e.g. perimeter fencing, gravel laydown, VTC) and housekeeping BMPs and should be maintained appropriately.

Used for this project? ☒ Yes ☐ No

Application Notes: A stabilized staging area will be constructed prior to other operations for parking, construction trailers, portable toilet facilities, storage, and construction equipment.

- *Vehicle Tracking Control*: VTC is used to limit off-site tracking of sediment from disturbed or unpaved areas to paved areas. VTC can include: TRM or mud mats installed at the point of access from unpaved areas (used when traffic is limited or light), a 1.5-inch diameter rock gravel access pad combined with pavement sweeping (used when traffic is limited or light), or a 3+-inch rock with

geotextile underlayment combined with street sweeping (used for heavy construction traffic or at the main access point to a development site).

Used for this project? ☒ Yes ☐ No

Application Notes: VTC Entrances to disturbed areas will be constructed *before* clearing and grading begins.

2.2 Non-Structural BMPs

Non-structural BMPs are implemented at the site to minimize erosion and sediment transport and may include temporary or permanent vegetation, mulching, landscaping, geotextiles, sod stabilization, surface roughening, vegetative buffer strips (VBS), and protection/preservation of trees and other mature vegetation. The non-structural BMPs outlined below are general definitions and guidelines. Project-specific specifications for selected BMPs are detailed in the SWMP Drawings included in the Attachments.

- *Temporary and permanent seeding*: Seeding of disturbed areas provides soil stabilization and helps prevent erosion and sediment transport. Seeding is usually performed by ripping the area, spreading the appropriate seed mix, and applying straw mulch at a rate of two tons per acre over the seeded area. In some cases, a tackifier may be used to anchor the straw mulch. Managing and applying the proper seed mix and following the specified maintenance procedures are very important in promoting timely growth of grasses while minimizing weed growth. This BMP is effective on slopes up to 3:1 and where soil conditions are adequate.

  Used for this project? ☒ Yes ☐ No

  Application Notes: A mixture developed for elevations 3,000 feet to 8,000 feet will provide natural cover under dryland conditions. Seed for this project will be broadcast spread at a rate of 20 to 25 pounds per acre or drilled at a rate of 15 to 20 pounds per acre. Overseeding will be broadcast spread at a rate of 10 to 15 pounds per acre or drilled at a rate of 5 to 10 pounds per acre. Seed mixture specifications are included in the attached SWMP Drawings. Seed will be mulched with weed-free straw mulch. Temporary seeding may be used on disturbed areas not planned for activity within 30 days. Top soil stock piles will be stabilized with temporary seed and mulch no later than fourteen days from the last construction activities in that area. Once construction activity ceases permanently in an area, the area will be stabilized with permanent seed and mulch. Permanent seeding will be used in designated Open Space areas. Soils that are stockpiled for more than 30 days shall be mulched and seeded with a temporary or permanent grass cover within 21 days of stockpile construction.

- *Mulching*: A layer of suitable mulch is typically applied at a rate of two tons per acre and can be tacked or fastened by an approved method suitable for the type of mulch used. Rough cut streets can be mulched in lieu of a layer of aggregate road base or asphalt paving. Seeding shall be placed in areas designated as being in an interim state.

Used for this project? ☒ Yes ☐ No

Application Notes: A layer of suitable mulch shall be applied at a rate of two tons per acre to all disturbed portions of the site within 21 days of the completion of grading. If the area is to remain in an interim sate for more than 60 days, seeding BMPs shall be used. Mulch can be used in areas of rough cut streets unless a layer of road base or asphalt paving is planned within 21 days.

2.3 Housekeeping BMPs

Housekeeping BMPs are maintenance practices implemented to keep the site clean, reduce potential chemical or biological exposures, and to minimize the tracking of soils to hard surfaces and airborne particles. Maintenance BMPs include street sweeping, dust suppression techniques, spill prevention and response (Section 1.13), waste management and disposal, and materials handling and management (Section 1.14). Project-specific specifications for selected BMPs are detailed in the SWMP Drawings included in the Attachments.

- *Street Sweeping*: Street sweeping is the practice of removing soil clumps, scraping packed dirt/mud, and sweeping loose soils tracked onto paved surfaces to prevent sediment transport in runoff water. Materials removed as part of this BMP should be deposited in an area contained by perimeter BMPs or disposed offsite.

Used for this project? ☒ Yes ☐ No

Application Notes: Street sweeping methods will be employed in areas of ingress/egress from paved areas to the construction site. Vehicle tracking of soils and construction debris off-site shall be minimized. Materials tracked offsite shall be cleaned up and properly disposed immediately. The owner, site developer, contractor, and their agents shall be responsible for the removal of dirt, rock, construction debris, trash, sediment, and sand that accumulates in public right of ways, storm sewers, or other drainage conveyance system and stormwater appurtenances.

- *Dust Suppression*: Dust suppression BMPs are typically used to minimize the transport of fine particles through the air. Dust suppression techniques may include keeping the site wet using water trucks or other wetting methods or covering of loose soils in disturbance areas. During periods of high wind, the following activities should be monitored: limited street sweeping, restriction of major grading activities, restriction of soil stockpiling, controlling vehicular speed.

Used for this project? ☒ Yes ☐ No

Application Notes: A water source shall be available onsite during earthwork operations and utilized as required to minimize dust from earth working operations and wind.

- *Load Covering*: Trucks or other vehicles carrying cut or fill materials to or from the site should be covered to prevent accidental loss of material during transport onto public right of ways

Used for this project? ☒ Yes ☐ No

Application Notes: Loads of cut and fill must be properly covered.

- *Site Waste Management and Disposal*: Construction waste disposal and trash generated by onsite personnel should be collected in dumpsters or similar trash containers and emptied on a regular basis. Construction waste and trash should be kept in a secure area and lidded if required to avoid accidental spreading of waste. Trash containers should be kept on permeable surfaces within perimeter BMPs. Loose trash should be collected daily and disposal services should be on a regular schedule to avoid overfilling of containers. Hazardous materials may not be disposed in trash containers and no waste materials should be buried onsite.

Used for this project? ☒ Yes ☐ No

Application Notes: Trash at the site will be cleared daily and kept in secured and/or covered receptacles. Waste disposal will be managed through a licensed contractor.

- *Portable Toilet Facilities*: A proper amount of portable toilets should be located at the Project Site and should be kept within the perimeter BMPs on permeable surfaces. Portable toilets should be anchored to prevent tipping and should be at least five feet behind curbs and at least 50 feet from any storm sewer inlets. Toilets should also be kept away from preferential flow pathways and from all water bodies. Regularly scheduled maintenance should be in place to empty and clean the receptacles to prevent overflow and waste collecting.

Used for this project? ☒ Yes ☐ No

Application Notes: Portable toilets will be provided and maintained through a private contractor.

- *Concrete Washout*: Concrete washout areas typically consist of an unlined pit in the ground with a vehicle tracking control (VTC) entrance and are designed to capture and contain concrete washout water. In areas with a high groundwater table, poly-lined pits or a portable waste bin may be used. Pits should be placed to minimize the potential for pollutant discharge. Washout basin deposits (hardened concrete waste) should be removed and properly disposed offsite as solid waste on a regular basis after liquids have evaporated.

Used for this project? ☒ Yes ☐ No

Application Notes: Concrete wash water shall be contained and disposed in accordance with the SWMP. No concrete wash water shall be discharged to or allowed to runoff to State waters. Concrete washout areas shall not be located in an area where shallow groundwater may be present or within 50 feet of a surface water body. Unless confined to a predefined, bermed containment area, the cleaning of concrete truck delivery chutes is prohibited at the Project area.

2.4 Stormwater Management Plan Non-Applicable Items

SWMP Checklist Number	Description	Comments
12	Spill prevention and pollution controls for dedicated batch plants	Asphalt/concrete batch plants not proposed
14	Location and description of any anticipated allowable non-stormwater discharge (ground water, springs, irrigation, discharge covered by CDPHE Low Risk Guidance, etc.)	Non-stormwater discharge not anticipated
17f	Location of any dedicated asphalt / concrete batch plants	Asphalt/concrete batch plants not proposed
26	Project relies on control measures owned or operated by another entity, a documented agreement must be included in the SWMP that identifies location, installation, and design specifications, and maintenance requirements and responsibility of the control measure(s).	Project does not rely on control measures owned or operated by another entity.

3. FINAL STABILIZATION AND LONG-TERM STORMWATER MANAGEMENT

Once construction activity ceases permanently in an area, the area shall be stabilized with permanent seeding and mulching as designated below. Final stabilization is complete when all ground disturbing activities are complete and all disturbed areas have either a uniform vegetative cover with an individual plant density of 70% of pre-disturbance levels, permanent hardscaping or paving is in place, or an equivalent permanent alternative stabilization method is implemented. Once stabilization is complete, all temporary sediment and erosion control measures shall be removed.

Final Stabilization for this site will consist of permanent seeding including the following:

- *Paving/Hardscaping*. Areas not planned for permanent seeding should be paved or hardscaped such as proposed roadways.
- *Temporary controls*. Temporary erosion and sediment control measures should be maintained on un-stabilized areas until landscaping or hardscaping activities are complete. Disturbed areas should be surface-roughened and slopes steeper than 3:1 should be covered with erosion control blankets. Temporary controls may be removed once stabilization is complete.
- *Permanent BMPs*. Permanent post-construction BMPs should remain onsite after construction activities have been completed and the site is stabilized. These BMPs may include detention facilities, storm drain systems, swales, and natural depressions.

3.1 Inspection and Maintenance

Visual inspections of all cleared and graded areas of the construction site will be performed on a minimum occurrence of once per week and/or within 24 hours of the end of any precipitation or snowmelt event that causes surface erosion. The inspection will be the responsibility of the Qualified Stormwater Manager. An inspection report form has been provided in the Attachments. The inspection will verify that the structural BMPs described in Section 2.1 of this SWMP are functioning properly, in good condition, up to date and continue to minimize erosion. The inspection will also verify that the procedures used to prevent stormwater contamination from construction materials and petroleum products are effective. The inspection logs will be signed by the Qualified Stormwater Manager. The following inspection and maintenance practices will be used to maintain erosion and sediment controls:

- Accumulated sediment and debris shall be removed from a BMP when the sediment/debris level reaches one half the height of the BMP or at any time that sediment or debris adversely impacts the functioning BMP.
- Built up sediment will be removed from silt fencing when it has reached one-third the height of the fence.
- Silt fences will be inspected for depth of sediment, for tears, to see if the fabric is securely attached to the fence posts, and to see that the fence posts are firmly in the ground.

- Sediment basins will be inspected for depth of sediment and built up sediment will be removed when it reaches 1 foot in depth.
- Temporary and permanent seeding will be inspected AND noted for bare spots, washouts, and healthy growth.
- The stabilized construction entrances will be inspected for sediment tracked on the road, for clean gravel, and to make sure that all traffic uses the stabilized entrance when leaving the site.
- The maintenance inspection report will be made after each inspection. A copy of the report form to be completed by the Qualified Stormwater Manager is provided in the Attachments. Completed forms will be maintained on-site during the entire construction project. Following construction and the expiration or inactivation of the permit, the completed forms will be retained at the general contractor's office, for a minimum of 3 years.
- If construction activities or design modifications are made to the site plan which could impact stormwater, this SWMP will be amended appropriately. The amended SWMP will have a description of the new activities that contribute to the increased pollutant loading and the planned source control activities.

3.2 Self Inspection

The purpose of these inspections is to ensure that all Control Measures are installed according to the approved plans, appropriate as to the intended use, operating effectively, and being properly maintained.

The GEC Administrator shall, at a minimum, make a thorough inspection at least once every 14 calendar days. Also, post-storm event inspections must be conducted within 24 hours following the end of any precipitation or snowmelt event that causes surface erosion. Provided the timing is appropriate, the post-storm inspections may be used to fulfill the 14-day routine inspection requirement. Alternatively, the GEC Administrator may choose to perform self-inspections every 7 calendar days and forego post-storm event inspections. The self inspection schedule must be identified in the GEC Administrator's most recent self-inspection. A more frequent inspection schedule than the minimum described may be necessary to ensure that Control Measures continue to operate as needed to comply with the GEC Plan. Site conditions such as steep grades and close proximity to a state water are reasons for increasing the frequency of self-inspections.

The GEC Administrator shall keep documentation of self-inspections available either physically or electronically at the construction site at all times throughout the duration of the project. GEC Inspectors will review self-inspections during City compliance inspections.

For sites or portions of sites where construction activities have been completed and final stabilization measures installed but final stabilization has not yet been achieved, the GEC Administrator shall make a thorough inspection of their Control Measures at least once every month. Post-storm event inspections must be conducted within 72 hours following the end of any precipitation or snowmelt event that causes surface erosion. The GEC Plan must be amended to indicate those areas where construction activities have been completed but final stabilization has not yet been achieved that will be inspected once a month. When site conditions make the schedule required in this section impractical, the permittee may petition

the City to grant an alternate inspection schedule. The alternative inspection schedule may not be implemented prior to written approval by the City and incorporation into the SWMP. The Permittee is responsible to confirm that the frequency of inspections is sufficient to ensure that Control Measures remain in good working condition at all times.

3.3 BMP Replacement and Failed BMPs

At a minimum, the contractor shall inspect and keep a log of all BMPs on a weekly basis and after a significant precipitation event. BMPs should be assessed by a qualified inspector to determine if new or replacement BMPs are necessary. Where BMPs have failed, the failure must be addressed as soon as possible to minimize discharge of additional pollutants. As new BMPs are installed and/or replaced, this SWMP should be updated to reflect the change(s).

3.4 Qualified Inspectors

The Qualified stormwater manager will be sufficiently qualified for the required duties per the ECM Appendix I.5.2.A. Qualified inspectors should be knowledgeable in the principals and practices of erosion and sediment control and should have a good working knowledge of the regulation and BMPs included in this SWMP. Inspectors should also be able to anticipate site conditions and assess BMP functionality that could impact stormwater runoff.

3.5 Additional SWMP and BMP Practices

An employee training program should be developed and implemented to educate employees about the requirements of the SWMP. This education program will include background on the components and goals of the SWMP and hands-on training in erosion controls, spill prevention and response, good housekeeping, proper material handling, disposal and control of waste, equipment fueling, and proper storage, washing, and inspection procedures.

The SWMP should be viewed as a “living document” that is continuously being reviewed and modified as a part of the overall process of evaluating and managing stormwater quality issues at the site. The qualified stormwater manager shall amend the SWMP when there is a change in design, construction, O&M of the site which would require the implementation of new or revised BMPs or if the SWMP proves to be ineffective in achieving the general objectives of controlling pollutants in stormwater discharges associated with construction activity or when BMPs are no longer necessary and are removed.

This plan was prepared in accordance with the CDPS General Permit. A copy of this permit is provided in the Attachments.

Attachments

SWMP Drawings

INDEX OF SHEETS		SHEET No.
TS01	TITLE SHEET	01
GN01	KEY MAP	02
GN02	GENERAL NOTES	03
GEC01-GEC06	GRADING & EROSION CONTROL PLAN	04-09
ECN01-ECN03	DETAILS	10-12

HAY CREEK VALLEY

EL PASO COUNTY, COLORADO

FINAL GRADING & EROSION CONTROL PLANS

MAY 2024

THE LOCATIONS OF EXISTING ABOVE GROUND AND UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL ABOVE GROUND AND UNDERGROUND UTILITIES.

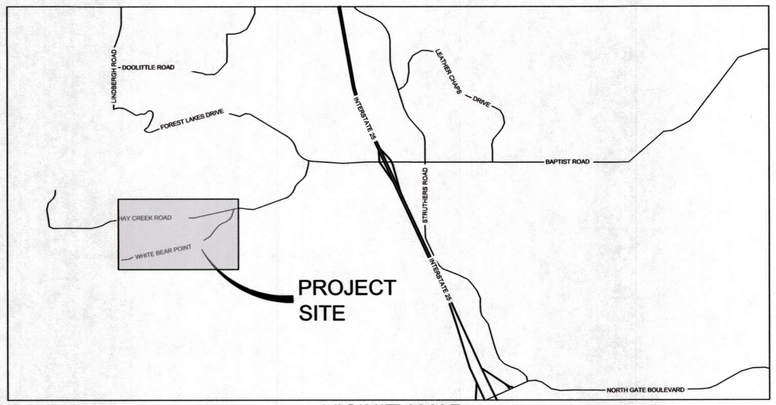
811 Know what's **below.** **Call** before you dig.

AGENCY CONTACT INFO

OWNER/DEVELOPER	VIEW HOMES, INC. 555 MIDDLE CREEK PARKWAY, SUITE 500 COLORADO SPRINGS, CO 80921 TIM BUSCHAR, (719)-382-9433
CIVIL ENGINEER	MATRIX DESIGN GROUP 2435 RESEARCH PARKWAY, SUITE 300 COLORADO SPRINGS, CO 80920 (719)-575-0100
ELECTRIC	MOUNTAIN VIEW ELECTRIC ASSOCIATION 15706 JACKSON CREEK PARKWAY, SUITE 100 MONUMENT, CO 80132 GINA PERRY, (719) 494-2636
GAS	BLACK HILLS ENERGY 105 S VICTORIA AVENUE PUEBLO, CO 81003 (800) 303-0752
ENGINEERING	EL PASO COUNTY PUBLIC WORKS DEPARTMENT 3275 AKERS DRIVE COLORADO SPRINGS, CO 80922 (719) 520-6460
TRAFFIC	EL PASO COUNTY PUBLIC WORKS DEPARTMENT 3275 AKERS DRIVE COLORADO SPRINGS, CO 80922 (719) 520-6460
DRAINAGE	EL PASO COUNTY PUBLIC WORKS DEPARTMENT 3275 AKERS DRIVE COLORADO SPRINGS, CO 80922 (719) 520-6460
FIRE DEPARTMENT	MONUMENT FIRE DISTRICT 16055 OLD FOREST POINT, SUITE 102 MONUMENT, CO 80132 (719)-484-0911



SITE MAP
1" = 500'



VICINITY MAP
N.T.S

OWNER/DEVELOPER'S STATEMENT:

I, THE OWNER/DEVELOPER HAVE READ AND WILL COMPLY WITH THE REQUIREMENTS OF THE GRADING AND EROSION CONTROL PLAN.

Tim Buschar — NAME — 5/10/24 — DATE

TIM BUSCHAR, (719)-382-9433
VIEW HOMES, INC.
555 MIDDLE CREEK PARKWAY, SUITE 500
COLORADO SPRINGS, CO 80921

DESIGN ENGINEER'S STATEMENT:

THIS GRADING AND EROSION CONTROL PLAN WAS PREPARED UNDER MY DIRECTION AND SUPERVISION AND IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. SAID PLAN HAS BEEN PREPARED ACCORDING TO THE CRITERIA ESTABLISHED BY THE COUNTY FOR GRADING AND EROSION CONTROL PLANS. I ACCEPT RESPONSIBILITY FOR ANY LIABILITY CAUSED BY ANY NEGLIGENT ACTS, ERRORS OR OMISSIONS ON MY PART IN PREPARING THIS PLAN.

BY: _____ DATE: 5/28/2024

JEFFREY A. ODOR , PE #39265
FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC.

EL PASO COUNTY:

COUNTY PLAN REVIEW IS PROVIDED ONLY FOR GENERAL CONFORMANCE WITH COUNTY DESIGN CRITERIA. THE COUNTY IS NOT RESPONSIBLE FOR THE ACCURACY AND ADEQUACY OF THE DESIGN, DIMENSIONS, AND/OR ELEVATIONS WHICH SHALL BE CONFIRMED AT THE JOB SITE. THE COUNTY THROUGH THE APPROVAL OF THIS DOCUMENT ASSUMES NO RESPONSIBILITY FOR COMPLETENESS AND/OR ACCURACY OF THIS DOCUMENT.

FILED IN ACCORDANCE WITH THE REQUIREMENTS OF THE EL PASO COUNTY LAND DEVELOPMENT CODE, DRAINAGE CRITERIA MANUAL VOLUMES 1 AND 2, AND ENGINEERING CRITERIA MANUAL, AS AMENDED.

IN ACCORDANCE WITH ECM SECTION 1.12, THESE CONSTRUCTION DOCUMENTS WILL BE VALID FOR CONSTRUCTION FOR A PERIOD OF 2 YEARS FROM THE DATE SIGNED BY THE EL PASO COUNTY ENGINEER. IF CONSTRUCTION HAS NOT STARTED WITHIN THOSE 2 YEARS, THE PLANS WILL NEED TO BE RESUBMITTED FOR APPROVAL, INCLUDING PAYMENT OF REVIEW FEES AT THE PLANNING AND COMMUNITY DEVELOPMENT DIRECTOR'S DISCRETION.

_____ JOSHUA PALMER, P.E.
COUNTY ENGINEER / ECM ADMINISTRATOR

_____ DATE

PCD FILE #: SF2324

REFERENCE DRAWINGS
X-TITLE-CD
X-886-PR-SITE
FEMA_XS
X-886.066-EX-MAP-1
164022-01 Hay Creek Road BNDY
X-886-ALTA-SURVEY
Hay Creek BFEs

No.	DATE	DESCRIPTION	BY

REVISIONS

COMPUTER FILE MANAGEMENT
FILE NAME: S:\22.886.076 Hay Creek-Forest Manor-O'Leary Properties\500 CADD\504 Plan Sets\Construction Plans\GEC Plan\TS01.dwg
CTB FILE: Matrix.ctb
PLOT DATE: 1/26/2024 3:01 PM
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.

SHEET KEY



BENCHMARK
PROJECT ELEVATIONS ARE NAVD 88 ELEVATIONS BASED ON AN OPUS DERIVED ELEVATION ON CONTROL POINT 10, A NO. 5 REBAR HAVING AN ELEVATION OF 5769.92.

BASIS OF BEARING
THE SOUTH LINE OF THE NORTHWEST QUARTER OF SECTION 22, TOWNSHIP 15 SOUTH, RANGE 65 WEST OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO, BEING MONUMENTED ON THE EASTERLY END BY A 2-12" ALUMINUM CAP STAMPED "NOLTE PLS25955 C1/4 S22 T15S, R65W 1999, "AND THE WESTERLY END BY A2-1/2" ALUMINUM CAP STAMPED "SSS PLS 16154 1/4 S21 S22 T15S, R65W 2000, "BEING ASSUMED TO BEAR S89°54'42"W, A DISTANCE OF 2,627.78 FEET.

PREPARED BY:
Matrix
Excellence by Design

SEAL
COLORADO LICENSED
JEFFREY A. ODOR
39265
05/28/2024
PROFESSIONAL ENGINEER

FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC.
PROJECT No. 22.886.076

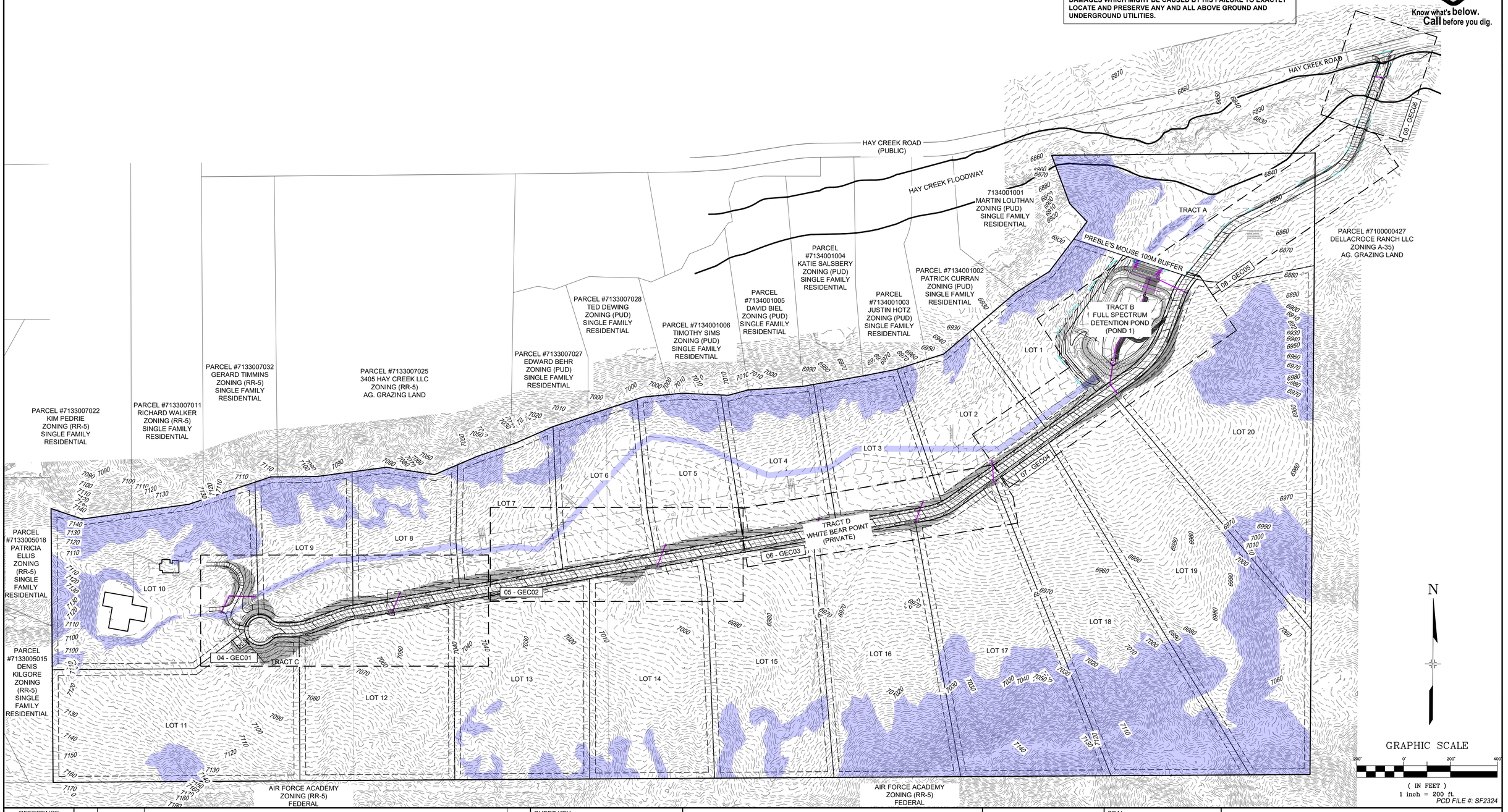
HAY CREEK VALLEY
EL PASO COUNTY, COLORADO
FINAL GRADING & EROSION CONTROL PLANS

TITLE SHEET

DESIGNED BY:	CVW	SCALE		DATE ISSUED:	MAY 2024
DRAWN BY:	CVW	HORIZ.	N/A	SHEET	01 OF 12
CHECKED BY:	JAO	VERT.	N/A	DRAWING No.	TS01

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811 Know what's **below.** **Call** before you dig.



N

GRAPHIC SCALE

200' 0' 200' 400'

(IN FEET)
1 inch = 200 ft.
PCD FILE #: SF2324

REFERENCE DRAWINGS
X-TITLE-CD
X-886-PR-SITE
FEMA_XS
X-886.006-EX-MAP-1
164022-01 Hay Creek Road BNDY
X-886-ALTA-SURVEY
Hay Creek BFEs

No.	DATE	DESCRIPTION	BY
		REVISIONS	

COMPUTER FILE MANAGEMENT

FILE NAME: S:\22.886.076 Hay Creek-Forest Manor-O'Leary Properties\500 CADD\504 Plan Sets\Construction Plans\GEC Plan\TS01.dwg
CTB FILE: Matrix.ctb
PLOT DATE: 5/29/2024 9:35 AM
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.

SHEET KEY



BENCHMARK

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BASIS OF BEARING

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PREPARED BY:
Matrix
Excellence by Design

SEAL

COLORADO LICENSED
JEFFREY A. OLSEN
PLS 25955
05/28/2024
PROFESSIONAL ENGINEER

FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC.
PROJECT No. 22.886.076

HAY CREEK VALLEY

EL PASO COUNTY, COLORADO
FINAL GRADING & EROSION CONTROL PLANS

KEY MAP

DESIGNED BY:	CVW	SCALE	
DRAWN BY:	CVW	HORIZ.	1"=200'
CHECKED BY:	JAO	VERT.	N/A
DATE ISSUED:	MAY 2024		
SHEET	02 OF 12		
DRAWING No.	GN01		

GENERAL CONSTRUCTION NOTES:

1. STORMWATER DISCHARGES FROM CONSTRUCTION SITES SHALL NOT CAUSE OR THREATEN TO CAUSE POLLUTION, CONTAMINATION, OR DEGRADATION OF STATE WATERS. ALL WORK AND EARTH DISTURBANCE SHALL BE DONE IN A MANNER THAT MINIMIZES POLLUTION OF ANY ON-SITE OR OFF-SITE WATERS, INCLUDING WETLANDS.

2. NOTWITHSTANDING ANYTHING DEPICTED IN THESE PLANS IN WORDS OR GRAPHIC REPRESENTATION, ALL DESIGN AND CONSTRUCTION RELATED TO ROADS, STORM DRAINAGE AND EROSION CONTROL SHALL CONFORM TO THE STANDARDS AND REQUIREMENTS OF THE MOST RECENT VERSION OF THE RELEVANT ADOPTED EL PASO COUNTY STANDARDS, INCLUDING THE LAND DEVELOPMENT CODE, THE ENGINEERING CRITERIA MANUAL, THE DRAINAGE CRITERIA MANUAL, AND THE DRAINAGE CRITERIA MANUAL VOLUME 2. ANY DEVIATIONS FROM REGULATIONS AND STANDARDS MUST BE REQUESTED, AND APPROVED, IN WRITING.

3. A SEPARATE STORMWATER MANAGEMENT PLAN (SMWP) FOR THIS PROJECT SHALL BE COMPLETED AND AN EROSION AND STORMWATER QUALITY CONTROL PERMIT (ESQCP) ISSUED PRIOR TO COMMENCING CONSTRUCTION. MANAGEMENT OF THE SWMP DURING CONSTRUCTION IS THE RESPONSIBILITY OF THE DESIGNATED QUALIFIED STORMWATER MANAGER OR CERTIFIED EROSION CONTROL INSPECTOR. THE SWMP SHALL BE LOCATED ON SITE AT ALL TIMES DURING CONSTRUCTION AND SHALL BE KEPT UP TO DATE WITH WORK PROGRESS AND CHANGES IN THE FIELD.

4. ONCE THE ESQCP IS APPROVED AND A "NOTICE TO PROCEED" HAS BEEN ISSUED, THE CONTRACTOR MAY INSTALL THE INITIAL STAGE EROSION AND SEDIMENT CONTROL MEASURES AS INDICATED ON THE APPROVED GEC. A PRECONSTRUCTION MEETING BETWEEN THE CONTRACTOR, ENGINEER, AND EL PASO COUNTY WILL BE HELD PRIOR TO ANY CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE APPLICANT TO COORDINATE THE MEETING TIME AND PLACE WITH COUNTY STAFF.

5. CONTROL MEASURES MUST BE INSTALLED PRIOR TO COMMENCEMENT OF ACTIVITIES THAT COULD CONTRIBUTE POLLUTANTS TO STORMWATER. CONTROL MEASURES FOR ALL SLOPES, CHANNELS, DITCHES, AND DISTURBED LAND AREAS SHALL BE INSTALLED IMMEDIATELY UPON COMPLETION OF THE DISTURBANCE.

6. ALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES SHALL BE MAINTAINED AND REMAIN IN EFFECTIVE OPERATING CONDITION UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED AND FINAL STABILIZATION IS ESTABLISHED. ALL PERSONS ENGAGED IN LAND DISTURBANCE ACTIVITIES SHALL ASSESS THE ADEQUACY OF CONTROL MEASURES AT THE SITE AND IDENTIFY IF CHANGES TO THOSE CONTROL MEASURES ARE NEEDED TO ENSURE THE CONTINUED EFFECTIVE PERFORMANCE OF THE CONTROL MEASURES. ALL CHANGES TO TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES MUST BE INCORPORATED INTO THE STORMWATER MANAGEMENT PLAN.

7. TEMPORARY STABILIZATION SHALL BE IMPLEMENTED ON DISTURBED AREAS AND STOCKPILES WHERE GROUND DISTURBING CONSTRUCTION ACTIVITY HAS PERMANENTLY CEASED OR TEMPORARILY CEASED FOR LONGER THAN 14 DAYS.

8. FINAL STABILIZATION MUST BE IMPLEMENTED AT ALL APPLICABLE CONSTRUCTION SITES. FINAL STABILIZATION IS ACHIEVED WHEN ALL GROUND DISTURBING ACTIVITIES ARE COMPLETE AND ALL DISTURBED AREAS EITHER HAVE A UNIFORM VEGETATIVE COVER WITH INDIVIDUAL PLANT DENSITY OF 70 PERCENT OF PRE-DISTURBANCE LEVELS ESTABLISHED OR EQUIVALENT PERMANENT ALTERNATIVE STABILIZATION METHOD IS IMPLEMENTED. ALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES SHALL BE REMOVED UPON FINAL STABILIZATION AND BEFORE PERMIT CLOSURE.

9. ALL PERMANENT STORMWATER MANAGEMENT FACILITIES SHALL BE INSTALLED AS DESIGNED IN THE APPROVED PLANS. ANY PROPOSED CHANGES THAT EFFECT THE DESIGN OR FUNCTION OF PERMANENT STORMWATER MANAGEMENT STRUCTURES MUST BE APPROVED BY THE ECM ADMINISTRATOR PRIOR TO IMPLEMENTATION.

10. EARTH DISTURBANCES SHALL BE CONDUCTED IN SUCH A MANNER SO AS TO EFFECTIVELY MINIMIZE ACCELERATED SOIL EROSION AND RESULTING SEDIMENTATION. ALL DISTURBANCES SHALL BE DESIGNED, CONSTRUCTED, AND COMPLETED SO THAT THE EXPOSED AREA OF ANY DISTURBED LAND SHALL BE LIMITED TO THE SHORTEST PRACTICAL PERIOD OF TIME. PRE-EXISTING VEGETATION SHALL BE PROTECTED AND MAINTAINED WITHIN 50 HORIZONTAL FEET OF A WATERS OF THE STATE UNLESS SHOWN TO BE INFEASIBLE AND SPECIFICALLY REQUESTED AND APPROVED.

11. COMPACTION OF SOIL MUST BE PREVENTED IN AREAS DESIGNATED FOR INFILTRATION CONTROL MEASURES OR WHERE FINAL STABILIZATION WILL BE ACHIEVED BY VEGETATIVE COVER. AREAS DESIGNATED FOR INFILTRATION CONTROL MEASURES SHALL ALSO BE PROTECTED FROM SEDIMENTATION DURING CONSTRUCTION UNTIL FINAL STABILIZATION IS ACHIEVED. IF COMPACTION PREVENTION IS NOT FEASIBLE DUE TO SITE CONSTRAINTS, ALL AREAS DESIGNATED FOR INFILTRATION AND VEGETATION CONTROL MEASURES MUST BE LOOSENED PRIOR TO INSTALLATION OF THE CONTROL MEASURE(S).

12. ANY TEMPORARY OR PERMANENT FACILITY DESIGNED AND CONSTRUCTED FOR THE CONVEYANCE OF STORMWATER AROUND, THROUGH, OR FROM THE EARTH DISTURBANCE AREA SHALL BE A STABILIZED CONVEYANCE DESIGNED TO MINIMIZE EROSION AND THE DISCHARGE OF SEDIMENT OFF SITE.

13. CONCRETE WASH WATER SHALL BE CONTAINED AND DISPOSED OF IN ACCORDANCE WITH THE SWMP. NO WASH WATER SHALL BE DISCHARGED TO OR ALLOWED TO ENTER STATE WATERS, INCLUDING ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR FACILITIES. CONCRETE WASHOUTS SHALL NOT BE LOCATED IN AN AREA WHERE SHALLOW GROUNDWATER MAY BE PRESENT, OR WITHIN 50 FEET OF A SURFACE WATER BODY, CREEK OR STREAM.

14. DURING DEWATERING OPERATIONS OF UNCONTAMINATED GROUND WATER MAY BE DISCHARGED ON SITE, BUT SHALL NOT LEAVE THE SITE IN THE FORM OF SURFACE RUNOFF UNLESS AN APPROVED STATE DEWATERING PERMIT IS IN PLACE.

15. EROSION CONTROL BLANKETING OR OTHER PROTECTIVE COVERING SHALL BE USED ON SLOPES STEEPER THAN 3:1.

16. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL WASTES FROM THE CONSTRUCTION SITE FOR DISPOSAL IN ACCORDANCE WITH LOCAL AND STATE REGULATORY REQUIREMENTS. NO CONSTRUCTION DEBRIS, TREE SLASH, BUILDING MATERIAL WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURIED, DUMPED, OR DISCHARGED AT THE SITE.

17. WASTE MATERIALS SHALL NOT BE TEMPORARILY PLACED OR STORED IN THE STREET, ALLEY, OR OTHER PUBLIC WAY, UNLESS IN ACCORDANCE WITH AN APPROVED TRAFFIC CONTROL PLAN. CONTROL MEASURES MAY BE REQUIRED BY EL PASO COUNTY ENGINEERING IF DEEMED NECESSARY, BASED ON SPECIFIC CONDITIONS AND CIRCUMSTANCES.

18. TRACKING OF SOILS AND CONSTRUCTION DEBRIS OFF-SITE SHALL BE MINIMIZED. MATERIALS TRACKED OFF-SITE SHALL BE CLEANED UP AND PROPERLY DISPOSED OF IMMEDIATELY.

19. THE OWNER/DEVELOPER SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL CONSTRUCTION DEBRIS, DIRT, TRASH, ROCK, SEDIMENT, SOIL, AND SAND THAT MAY ACCUMULATE IN ROADS, STORM DRAINS AND OTHER DRAINAGE CONVEYANCE SYSTEMS AND STORMWATER APPURTENANCES AS A RESULT OF SITE DEVELOPMENT.

20. THE QUANTITY OF MATERIALS STORED ON THE PROJECT SITE SHALL BE LIMITED, AS MUCH AS PRACTICAL, TO THAT QUANTITY REQUIRED TO PERFORM THE WORK IN AN ORDERLY SEQUENCE. ALL MATERIALS STORED ON-SITE SHALL BE STORED IN A NEAT, ORDERLY MANNER, IN THEIR ORIGINAL CONTAINERS, WITH ORIGINAL MANUFACTURER'S LABELS.

21. NO CHEMICAL(S) HAVING THE POTENTIAL TO BE RELEASED IN STORMWATER ARE TO BE STORED OR USED ONSITE UNLESS PERMISSION FOR THE USE OF SUCH CHEMICAL(S) IS GRANTED IN WRITING BY THE ECM ADMINISTRATOR. IN GRANTING APPROVAL FOR THE USE OF SUCH CHEMICAL(S), SPECIAL CONDITIONS AND MONITORING MAY BE REQUIRED.

22. BULK STORAGE OF ALLOWED PETROLEUM PRODUCTS OR OTHER ALLOWED LIQUID CHEMICALS IN EXCESS OF 55 GALLONS SHALL REQUIRE ADEQUATE SECONDARY CONTAINMENT PROTECTION TO CONTAIN ALL SPILLS ONSITE AND TO PREVENT ANY SPILLED MATERIALS FROM ENTERING STATE WATERS, ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR OTHER FACILITIES.

23. NO PERSON SHALL CAUSE THE IMPEDIMENT OF STORMWATER FLOW IN THE CURB AND GUTTER OR DITCH EXCEPT WITH APPROVED SEDIMENT CONTROL MEASURES.

24. OWNER/DEVELOPER AND THEIR AGENTS SHALL COMPLY WITH THE "COLORADO WATER QUALITY CONTROL ACT" (TITLE 25, ARTICLE 8, CRS), AND THE "CLEAN WATER ACT" (33 USC 1344), IN ADDITION TO THE REQUIREMENTS OF THE LAND DEVELOPMENT CODE, DCM VOLUME II AND THE ECM APPENDIX I. ALL APPROPRIATE PERMITS MUST BE OBTAINED BY THE CONTRACTOR PRIOR TO CONSTRUCTION (1041, NPDES, FLOODPLAIN, 404, FUGITIVE DUST, ETC.). IN THE EVENT OF CONFLICTS BETWEEN THESE REQUIREMENTS AND OTHER LAWS, RULES, OR REGULATIONS OF OTHER FEDERAL, STATE, LOCAL, OR COUNTY AGENCIES, THE MOST RESTRICTIVE LAWS, RULES, OR REGULATIONS SHALL APPLY.

25. ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THE SITE ONLY AT APPROVED CONSTRUCTION ACCESS POINTS.

26. PRIOR TO CONSTRUCTION THE PERMITTEE SHALL VERIFY THE LOCATION OF EXISTING UTILITIES.

27. A WATER SOURCE SHALL BE AVAILABLE ON SITE DURING EARTHWORK OPERATIONS AND SHALL BE UTILIZED AS REQUIRED TO MINIMIZE DUST FROM EARTHWORK EQUIPMENT AND WIND.

28. THE SOILS REPORT FOR THIS SITE HAS BEEN PREPARED BY CTL THOMPSON, DATED SEPTEMBER 19, 2023, AND SHALL BE CONSIDERED A PART OF THESE PLANS.

29. AT LEAST TEN (10) DAYS PRIOR TO THE ANTICIPATED START OF CONSTRUCTION, FOR PROJECTS THAT WILL DISTURB ONE (1) ACRE OR MORE, THE OWNER OR OPERATOR OF CONSTRUCTION ACTIVITY SHALL SUBMIT A PERMIT APPLICATION FOR STORMWATER DISCHARGE TO THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, WATER QUALITY DIVISION. THE APPLICATION CONTAINS CERTIFICATION OF COMPLETION OF A STORMWATER MANAGEMENT PLAN (SWMP), OF WHICH THIS GRADING AND EROSION CONTROL PLAN MAY BE A PART. FOR INFORMATION OR APPLICATION MATERIALS CONTACT:

COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT
WATER QUALITY CONTROL DIVISION
WQCD - PERMITS
4300 CHERRY CREEK DRIVE SOUTH
DENVER, CO 80246-1530
ATTN: PERMITS UNIT

NRCS SOIL SURVEY FOR EL PASO COUNTY

SOIL ID NO.	SOIL TYPE	HYDROLOGIC CLASSIFICATION
38	JARRE-TECOLOTE COMPLEX (8%-65% SLOPES)	B
71	PRING COARSE SANDY LOAM (3%-8% SLOPES)	B
93	TOMAH-CROWFOOT COMPLEX (8%-15% SLOPES)	B

TIMING

ANTICIPATED STARTING AND COMPLETION TIME PERIOD OF SITE GRADING:
WINTER 2024 THRU FALL 2024

EXPECTED DATE ON WHICH THE FINAL STABILIZATION WILL BE COMPLETED:
FALL 2024

AREAS

TOTAL DISTURBED AREA: 17.28 ACRES

RECEIVING WATERS

NAME OF RECEIVING WATERS
HAY CREEK (ULTIMATE)

ENGINEER'S NOTES:

THE EXISTING VEGETATION CONSISTS OF MODERATELY DENSE NATIVE GRASSES AND SHRUBS. BASED ON SITE VISITS AND A REVIEW OF AERIAL PHOTOGRAPHY, THE VEGETATIVE COVER AT HAY CREEK VALLEY IS APPROXIMATELY 80%.

ABBREVIATIONS

BOW	BOTTOM OF WALL	PL	PROPERTY LINE
EL.	ELEVATION	PSI	POUNDS PER SQUARE INCH
EX	EXISTING	RCP	REINFORCED CONCRETE PIPE
HORIZ	HORIZONTAL	SHLDR	SHOULDER
INV	INVERT	TOW	TOP OF WALL
MIN	MINIMUM	TYP	TYPICAL
N,S,E,W	NORTH,SOUTH,EAST,WEST		

NPDES NOTES:

1. THE CONTRACTOR SHALL REMOVE ALL SEDIMENT, MUD, AND CONSTRUCTION DEBRIS THAT MAY ACCUMULATE IN THE FLOWLINES AND PUBLIC RIGHTS OF WAYS AS A RESULT OF THIS CONSTRUCTION PROJECT. SAID REMOVAL SHALL BE CONDUCTED IN A TIMELY MANNER, OR AS DIRECTED BY THE ENGINEER.

2. THIS CONSTRUCTION ACTIVITIES STORMWATER MANAGEMENT PLAN (SWMP) HAS BEEN SUBMITTED AS PART OF AN APPLICATION FOR AN EROSION AND SEDIMENT CONTROL PERMIT FILED WITH EL PASO COUNTY AND AS INCLUSION BY REFERENCE TO THE CDPHE CONSTRUCTION ACTIVITY PERMIT. THE SWMP IS A LIVING DOCUMENT AND ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES MAY BE REQUIRED OF THE CONTRACTOR DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE SUBMITTED PLAN DOES NOT FUNCTION AS INTENDED. THE REQUIREMENTS OF THIS PLAN SHALL BE THE OBLIGATION OF THE LAND OWNER AND/OR HIS SUCCESSORS OR HEIRS; UNTIL SUCH TIME AS THE PLAN IS PROPERLY COMPLETED, MODIFIED, OR VOIDED.

3. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR REMEDIATION OF ANY ADVERSE IMPACTS TO ADJACENT WATERWAYS, WETLANDS, ETC., RESULTING FROM WORK DONE AS PART OF THIS PROJECT.

4. THE CONTRACTOR SHALL PREVENT SEDIMENT, DEBRIS AND ALL OTHER POLLUTANTS FROM ENTERING THE STORM SEWER SYSTEM DURING ALL DEMOLITION, EXCAVATION, TRENCHING, BORING, GRADING OR OTHER CONSTRUCTION OPERATIONS THAT ARE PART OF THIS PROJECT.

5. A LAYER OF SUITABLE MULCH SHALL BE APPLIED TO ALL DISTURBED PORTIONS OF THE SITE WITHIN 21 DAYS OF THE COMPLETION OF GRADING. SAID MULCH SHALL BE APPLIED AT A RATE OF 2 TONS PER ACRE AND SHALL BE TACKED OR FASTENED BY AN APPROVED METHOD SUITABLE FOR THE TYPE OF MULCH USED. ROUGH-CUT STREETS SHALL BE MULCHED UNLESS A LAYER OF AGGREGATE ROAD BASE OR ASPHALT PAVING IS TO BE APPLIED TO SAID ROUGH-CUT STREETS WITHIN THE 21 DAY PERIOD AFTER COMPLETION OF OVERLOT GRADING. AN AREA THAT IS GOING TO REMAIN IN AN INTERIM STATE FOR MORE THEN SIXTY (60) 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.

6. THE CONTRACTOR SHALL LOCATE, INSTALL, AND MAINTAIN ALL EROSION CONTROL AND WATER QUALITY "BEST MANAGEMENT PRACTICES" AS INDICATED IN THE APPROVED CONSTRUCTION ACTIVITIES STORMWATER MANAGEMENT PLAN. BMP'S SHALL BE MAINTAINED AND KEPT IN GOOD REPAIR FOR THE DURATION OF THIS PROJECT.

7. AT A MINIMUM, THE CONTRACTOR SHALL INSPECT, AND KEEP A LOG OF, ALL BMP'S WEEKLY AND AFTER SIGNIFICANT PRECIPITATION EVENTS. ALL NECESSARY MAINTENANCE AND REPAIR SHALL BE COMPLETED IN A TIMELY MANNER. ACCUMULATED SEDIMENT AND DEBRIS SHALL BE REMOVED FROM A BMP WHEN THE SEDIMENT LEVEL REACHES ONE-HALF THE HEIGHT OF THE BMP, OR, AT ANY TIME THAT SEDIMENT OR DEBRIS ADVERSELY IMPACTS THE FUNCTIONING OF THE BMP.

8. THE CONTRACTOR SHALL PROPERLY COVER ALL LOADS OF CUT AND FILL MATERIAL IMPORTED TO OR EXPORTED FROM THIS SITE TO PREVENT LOSS OF THE MATERIAL DURING TRANSPORT WITHIN PUBLIC RIGHTS OF WAY.

9. THE USE OF REBAR, STEEL STAKES, OR STEEL FENCE POSTS TO STAKE DOWN STRAW OR HAY BALES; OR TO SUPPORT SILT FENCING USED AS AN EROSION CONTROL MEASURE; IS PROHIBITED. THE USE OF OSHA APPROVED COLORED WARNING CAPS ON REBAR OR FENCE POSTS USED WITH EROSION CONTROL MEASURES IS NOT ACCEPTABLE.

10. SOILS THAT WILL BE STOCKPILED FOR MORE THAN 30 DAYS SHALL BE MULCHED AND SEEDED WITH A TEMPORARY OR PERMANENT GRASS COVER WITHIN 21 DAYS OF STOCKPILE CONSTRUCTION. IF STOCKPILES ARE LOCATED WITHIN 100 FEET OF A DRAINAGEWAY, ADDITIONAL SEDIMENT CONTROLS SUCH AS TEMPORARY DIKES OR SILT FENCE SHALL BE REQUIRED.

11. MODIFICATION OF AN ACTIVE EROSION AND SEDIMENT CONTROL PERMIT BY THE CONTRACTOR SHALL REQUIRE TIMELY NOTIFICATION OF AND APPROVAL BY EL PASO COUNTY. TERMINATION OF AN ACTIVE EROSION AND SEDIMENT CONTROL PERMIT UPON COMPLETION OF THE PROJECT REQUIRES NOTIFICATION OF AND APPROVAL BY EL PASO COUNTY.

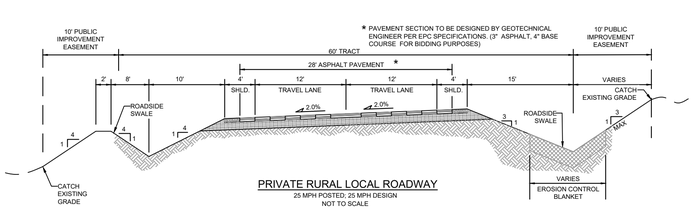
12. UNLESS CONFINED IN A PREDEFINED, BERMED CONTAINMENT AREA, THE CLEANING OF CONCRETE TRUCK DELIVERY CHUTES IS PROHIBITED AT THE JOB SITE. THE DISCHARGE OF WATER CONTAINING WASTE CEMENT TO THE STORM SEWER SYSTEM IS PROHIBITED.

13. THE CONTRACTOR SHALL PROTECT ALL STORM SEWER FACILITIES ADJACENT TO ANY LOCATION WHERE PAVEMENT CUTTING OPERATIONS INVOLVING WHEEL CUTTING, SAW CUTTING OR ABRASIVE WATER JET CUTTING ARE TO TAKE PLACE. THE DISCHARGE OF ANY WATER CONTAMINATED BY WASTE PRODUCTS FROM CUTTING OPERATIONS TO THE STORM SEWER SYSTEM IS PROHIBITED. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL WASTE PRODUCTS GENERATED BY SAID CUTTING OPERATIONS ON A DAILY BASIS.

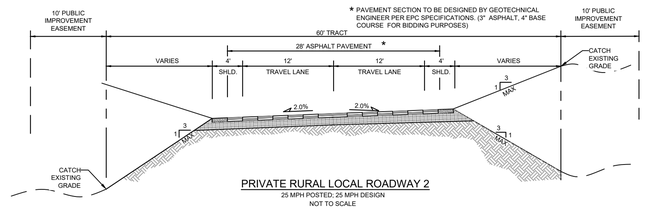
14. LOCATION OF STAGING, STORAGE, EQUIPMENT MAINTENANCE, TEMPORARY DISPOSAL, VEHICLE TRACKING CONTROL AND CONCRETE TRUCK WASHOUT AREAS WILL BE DETERMINED IN THE FIELD AT THE START OF CONSTRUCTION ACTIVITY AND DELINEATED ON THIS PLAN.

Know what's below. Call before you dig.

TYPICAL ROADWAY CROSS SECTIONS



PRIVATE RURAL LOCAL ROADWAY
25 MPH POSTED; 25 MPH DESIGN
NOT TO SCALE



PRIVATE RURAL LOCAL ROADWAY 2
25 MPH POSTED; 25 MPH DESIGN
NOT TO SCALE

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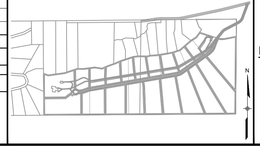
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X-886-PR-SITE
FEMA_XS
X-886.066-EX-MAP-1
164022-01 Hay Creek Road BNDY
X-886-ALTA-SURVEY
Hay Creek BFEs

No.	DATE	DESCRIPTION	BY

REVISIONS

COMPUTER FILE MANAGEMENT
FILE NAME: S:\22.886.076 Hay Creek-Forest Manor-O'Leary Properties\500 CADD\504 Plan Sets\Construction Plans\GEC Plan\TS01.dwg
CTB FILE: Matrix.ctb
PLOT DATE: 5/29/2024 9:35 AM
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.

SHEET KEY



BENCHMARK

PROJECT ELEVATIONS ARE NAVD 88 ELEVATIONS BASED ON AN OPUS DERIVED ELEVATION ON CONTROL POINT 10, A NO. 5 REBAR HAVING AN ELEVATION OF 5769.92.

BASIS OF BEARING

THE SOUTH LINE OF THE NORTHWEST QUARTER OF SECTION 22, TOWNSHIP 15 SOUTH, RANGE 65 WEST OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO, BEING MONUMENTED ON THE EASTERLY END BY A 2-12" ALUMINUM CAP STAMPED "NOLTE PLS25955 C1/4 S22 T15S, R65W 1999, "AND THE WESTERLY END BY A2-1/2" ALUMINUM CAP STAMPED "SSS PLS 16154 1/4 S21 S22 T15S, R65W 2000, "BEING ASSUMED TO BEAR S89°54'42"W, A DISTANCE OF 2,627.78 FEET.

PREPARED BY:
Matrix
Excellence by Design

SEAL



FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC.
PROJECT No. 22.886.076

HAY CREEK VALLEY

EL PASO COUNTY, COLORADO
FINAL GRADING & EROSION CONTROL PLANS

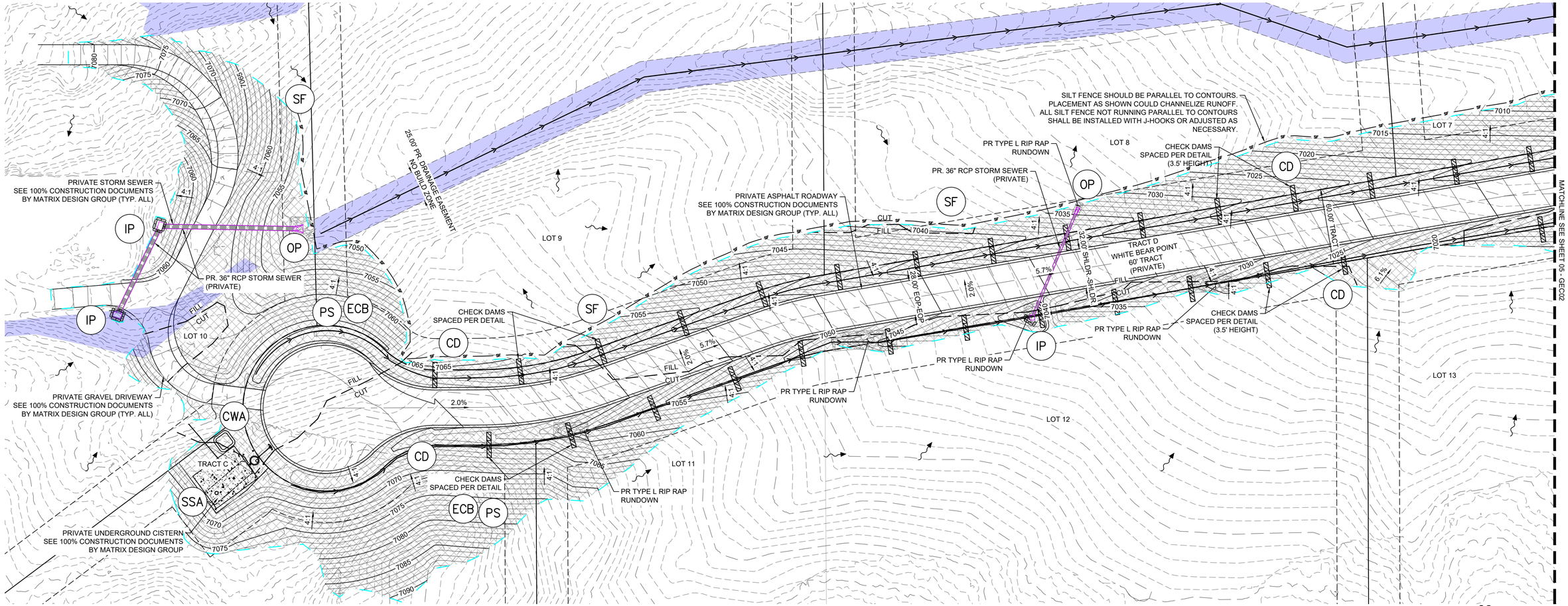
GENERAL NOTES

DESIGNED BY:	CVW	SCALE		DATE ISSUED:	MAY 2024
DRAWN BY:	CVW	HORIZ.	N/A	SHEET	03 OF 12
CHECKED BY:	JAO	VERT.	N/A		

DRAWING No. GN02

THE LOCATIONS OF EXISTING ABOVE GROUND AND UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL ABOVE GROUND AND UNDERGROUND UTILITIES.

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BMP SEQUENCING	
INITIAL	SILT FENCE, VEHICLE TRACKING, TEMP SEDIMENT BASINS
INTERIM	CHECK DAMS, CONCRETE WASHOUT, INLET/OUTLET PROTECTION, STOCKPILES, STAGING, ROUGH CUT STREET CONTROL
FINAL	EROSION CONTROL BLANKETS, SEEDING & MULCHING, PERMANENT CONTROL MEASURE(S)

NOTES:
1. SEE CHECK DAM (CD) DETAIL EC-12 ON SHEET ECN01 FOR SPACING.
2. ALL EROSION CONTROL BLANKET SHALL BE INSPECTED 24-MONTHS AFTER INSTALLATION. EROSION CONTROL BLANKET MAY BE REQUIRED TO BE RE-INSTALLED PER MANUFACTURER SPECIFICATIONS.

EROSION CONTROL LEGEND

- PS — PERMANENT SEEDING
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- EXISTING FENCE
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- EASEMENT
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N

GRAPHIC SCALE
40' 0' 40' 80'
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1 inch = 40 ft.

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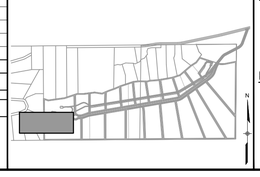
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X-886-ALTA-SURVEY
Hay Creek BFEs
2023-02-28 TOPO 164022-01
164022-01 Hay Creek Road BNDY

No.	DATE	DESCRIPTION	BY

REVISIONS

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PREPARED BY:
Matrix
Excellence by Design

SEAL
COLORADO LICENSED
JEFFREY
O'LEARY
36265
05/28/2024
PROFESSIONAL ENGINEER

FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC.
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EL PASO COUNTY, COLORADO
FINAL GRADING & EROSION CONTROL PLANS

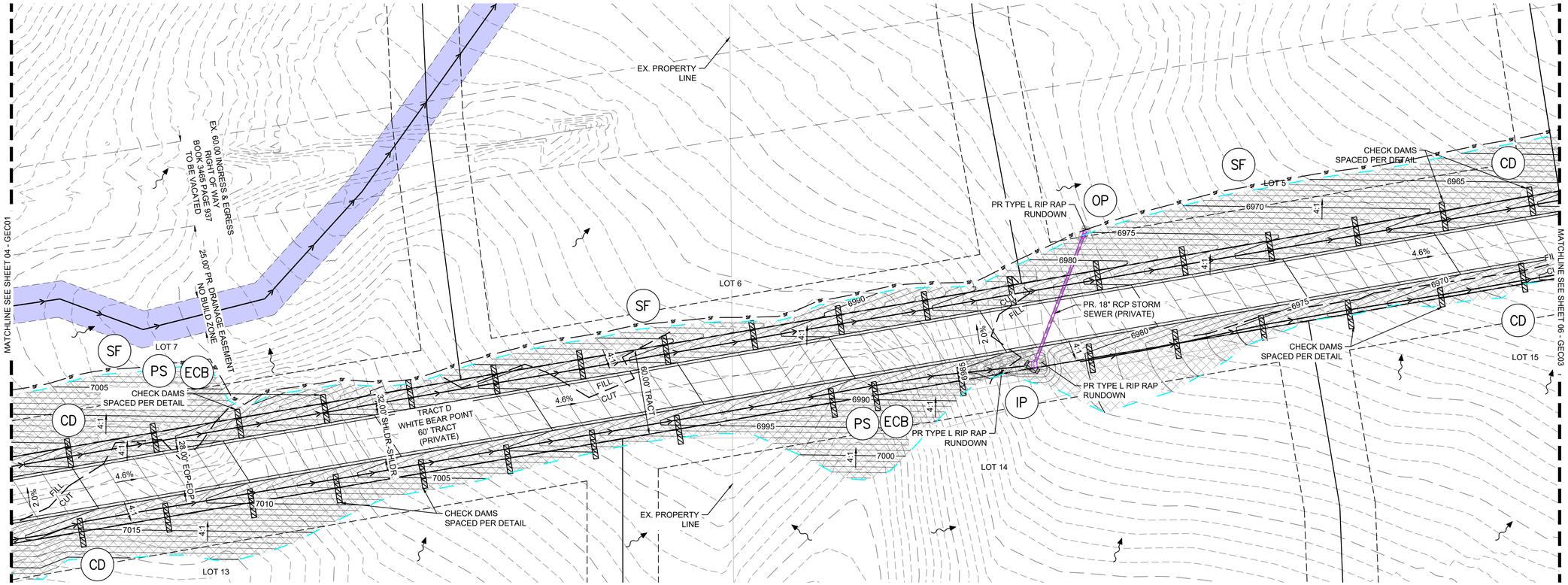
GRADING & EROSION CONTROL PLAN

DESIGNED BY:	CVW	SCALE	
DRAWN BY:	CVW	HORIZ.	1" = 40
CHECKED BY:	JAO	VERT.	N/A

DATE ISSUED: MAY 2024
SHEET 04 OF 12
DRAWING No. GEC01

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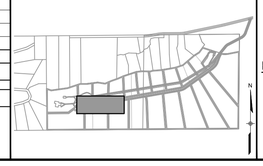
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PLOT DATE: 5/29/2024 9:35 AM
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SHEET KEY



BENCHMARK
PROJECT ELEVATIONS ARE NAVD 88 ELEVATIONS BASED ON AN OPUS DERIVED ELEVATION ON CONTROL POINT 10, A NO. 5 REBAR HAVING AN ELEVATION OF 5769.92.

BASIS OF BEARING
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PREPARED BY:
Matrix
Excellence by Design

SEAL
COLORADO LICENSED JEFFREY O'LEARY 39265 05/28/2024 PROFESSIONAL ENGINEER

FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC.
PROJECT No. 22.886.076

HAY CREEK VALLEY

EL PASO COUNTY, COLORADO
FINAL GRADING & EROSION CONTROL PLANS

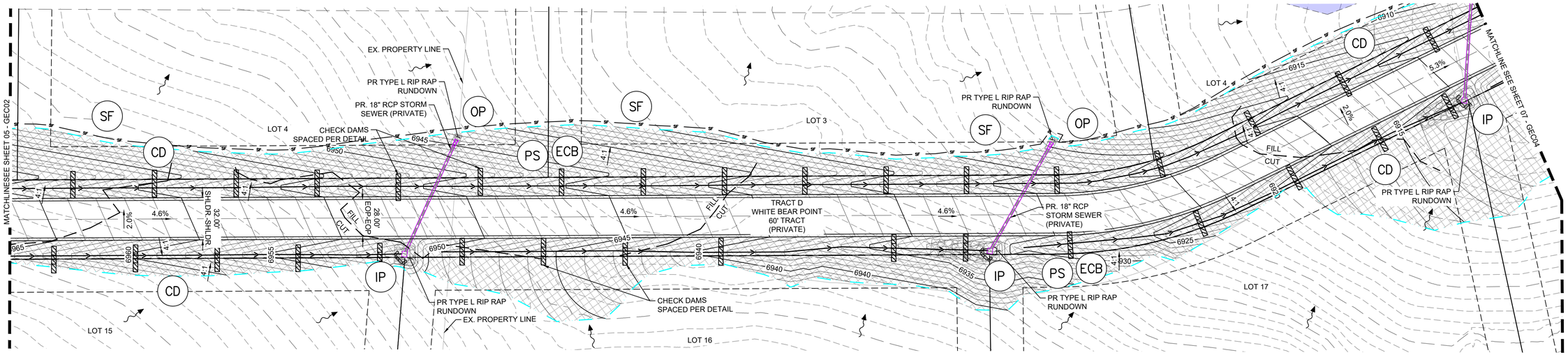
GRADING & EROSION CONTROL PLAN

DESIGNED BY:	CVW	SCALE		DATE ISSUED:	MAY 2024
DRAWN BY:	CVW	HORIZ.	1" = 40'		
CHECKED BY:	JAO	VERT.	N/A	SHEET	05 OF 12

DRAWING No. GEC02

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BMP SEQUENCING	
INITIAL	SILT FENCE, VEHICLE TRACKING, TEMP SEDIMENT BASINS
INTERIM	CHECK DAMS, CONCRETE WASHOUT, INLET/OUTLET PROTECTION, STOCKPILES, STAGING, ROUGH CUT STREET CONTROL
FINAL	EROSION CONTROL BLANKETS, SEEDING & MULCHING, PERMANENT CONTROL MEASURE(S)

NOTES:
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- HP / LP — HIGH POINT / LOW POINT
- 7050 — PROPOSED CONTOURS
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- 100 YEAR FLOODPLAIN BOUNDARY
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N

GRAPHIC SCALE
40' 0' 40' 80'
(IN FEET)
1 inch = 40 ft.

PCD FILE #: SF2324

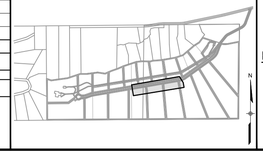
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X-886.066-EX-MAP-1
X-886-ALTA-SURVEY
Hay Creek BFEs
2023-02-28 TOPO 164022-01
164022-01 Hay Creek Road BNDY

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HAY CREEK VALLEY

EL PASO COUNTY, COLORADO
FINAL GRADING & EROSION CONTROL PLANS

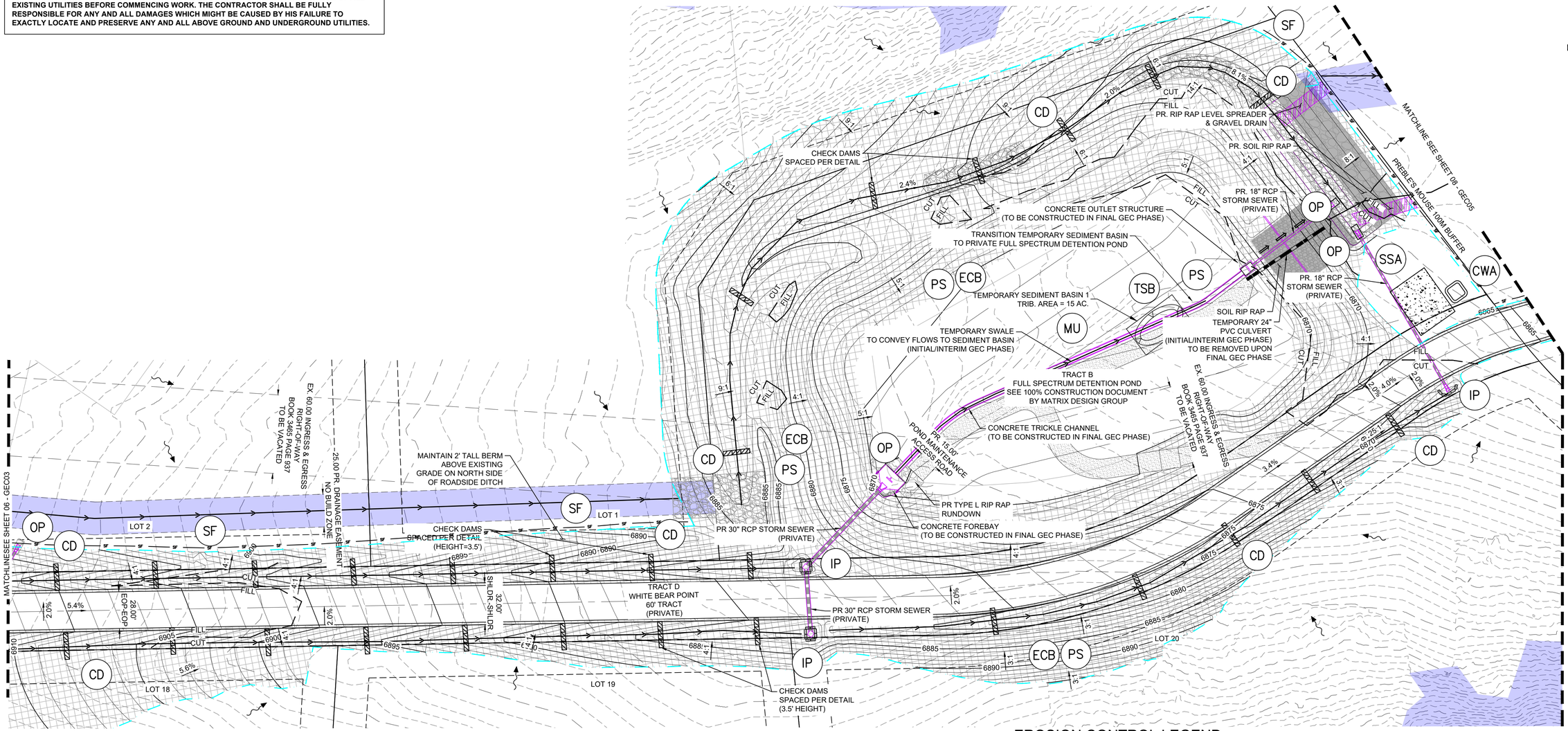
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DESIGNED BY:	CVW	SCALE		DATE ISSUED:	MAY 2024
DRAWN BY:	CVW	HORIZ.	1" = 40'		
CHECKED BY:	JAO	VERT.	N/A	SHEET	06 OF 12

DRAWING No. GEC03

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TEMPORARY SEDIMENT BASIN SUMMARY					
ID	BASIN BOTTOM WIDTH (FT)	SPILLWAY CREST LENGTH (FT)	HOLE DIAMETER (IN)	# ROWS OF HOLES	REQUIRED VOLUME (CF)
1	73.25	22	1 3/16	5	41,070

BMP SEQUENCING	
INITIAL	SILT FENCE, VEHICLE TRACKING, TEMP SEDIMENT BASINS
INTERIM	CHECK DAMS, CONCRETE WASHOUT, INLET/OUTLET PROTECTION, STOCKPILES, STAGING, ROUGH CUT STREET CONTROL
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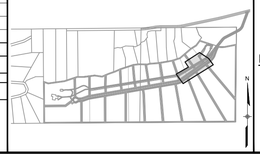
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PREPARED BY:
Matrix Excellence by Design

SEAL

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PROJECT No. 22.886.076

HAY CREEK VALLEY

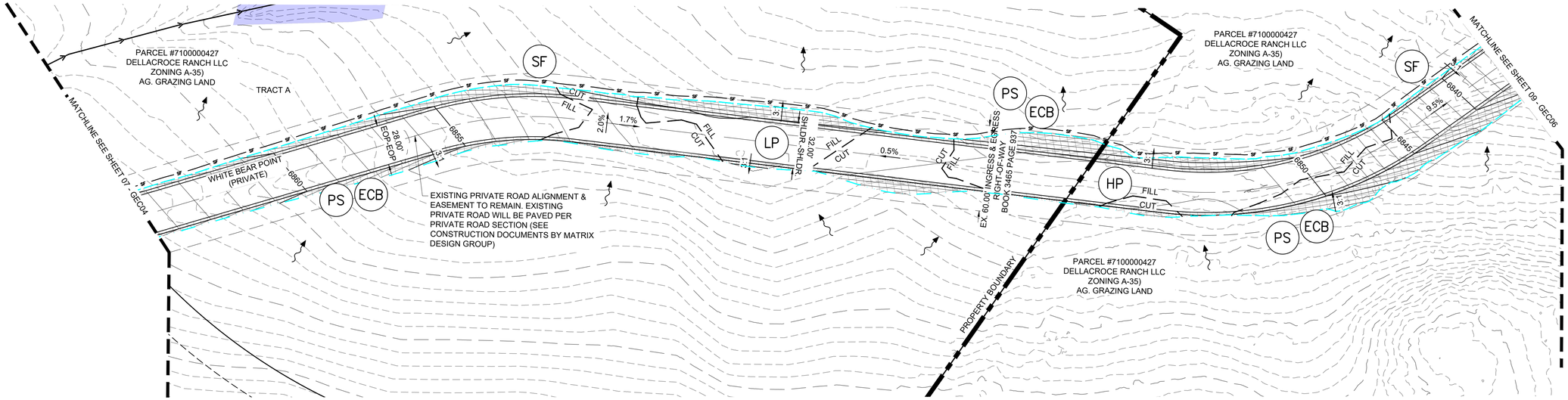
EL PASO COUNTY, COLORADO
FINAL GRADING & EROSION CONTROL PLANS

GRADING & EROSION CONTROL PLAN

DESIGNED BY:	CVW	SCALE		DATE ISSUED:	MAY 2024
DRAWN BY:	CVW	HORIZ.	1" = 40'	DRAWING No.	GEC04
CHECKED BY:	JAO	VERT.	N/A	SHEET	07 OF 12

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GRAPHIC SCALE
40' 0' 40' 80'
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PCD FILE #: SF2324

REFERENCE DRAWINGS

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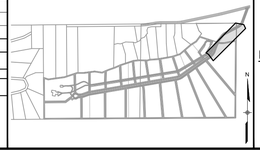
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PREPARED BY:
Matrix
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SEAL

COLORADO LICENSED
JEFFREY A. OLEARY
38265
PROFESSIONAL ENGINEER
05/28/2024

FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC.
PROJECT No. 22.886.076

HAY CREEK VALLEY

EL PASO COUNTY, COLORADO
FINAL GRADING & EROSION CONTROL PLANS

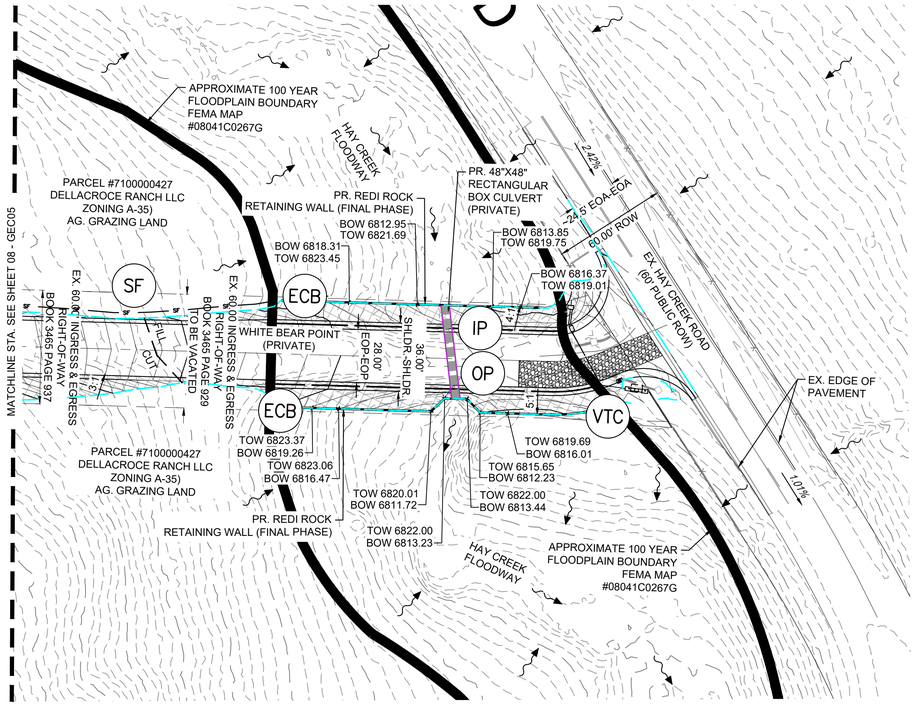
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CHECKED BY:	JAO	VERT.	N/A		

DRAWING No. GEC05

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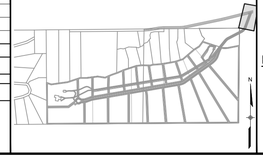
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EL PASO COUNTY, COLORADO
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GRADING & EROSION CONTROL PLAN

DESIGNED BY: CVW	SCALE	DATE ISSUED:	MAY 2024
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CHECKED BY: JAO	VERT. N/A	SHEET	09 OF 12
		DRAWING No.	GEC06

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Rolled Erosion Control Products (RECP) EC-6

Staking patterns are also provided in the design details according to these factors:

- ECB type
- Slope or channel type

For other types of RECPs including TRMs, these design details are intended to serve as general guidelines for design and installation; however, engineers should adhere to manufacturer's installation recommendations.

Maintenance and Removal

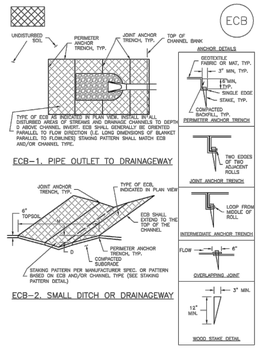
Inspection of erosion control blankets and other RECPs includes:

- Check for general signs of erosion, including voids beneath the mat. If voids are apparent, fill the void with suitable soil and replace the erosion control blanket, following the appropriate staking pattern.
- Check for damaged or loose stakes and secure loose portions of the blanket.

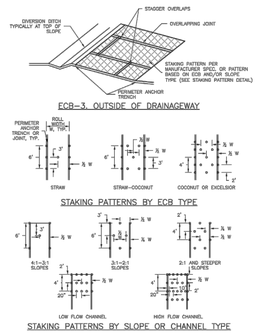
Erosion control blankets and other RECPs that are biodegradable typically do not need to be removed after construction. If they must be removed, then an alternate soil stabilization method should be installed promptly following removal.

Turf reinforcement mats, although generally resistant to biodegradation, are typically left in place as a dense vegetated cover grows in through the mat matrix. The turf reinforcement mat provides long-term stability once/helps the established vegetation resist erosive forces.

EC-6 Rolled Erosion Control Products (RECP)



Rolled Erosion Control Products (RECP) EC-6



EC-6 Rolled Erosion Control Products (RECP)

EROSION CONTROL BLANKET INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION OF ECB (STRAW, STRAW–COCONUT, COCONUT, OR EXCELSIOR).
   –AREA, S, IN SQUARE YARDS OF EACH TYPE OF ECB.

2. 100% NATURAL AND BIODEGRADABLE MATERIALS ARE PREFERRED FOR RECPs, ALTHOUGH SOME JURISDICTIONS MAY ALLOW OTHER MATERIALS IN SOME APPLICATIONS.

3. IN AREAS WHERE ECBs ARE SHOWN ON THE PLANS, THE PERMITTEE SHALL PLACE TOPSOIL AND PREPARE FINAL GRADING, SEEDING, AND MULCHING IMMEDIATELY BEFORE INSTALLING ECBs. THE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS, OR GRASS THAT WILL PREVENT THE BLANKET FROM BEING IN FULL CONTACT WITH SUBSURFACE. NO GAPS OR VOIDS SHALL EXIST UNDER THE BLANKET.

4. PERIMETER ANCHOR TRENCH SHALL BE USED ALONG THE OUTSIDE PERIMETER OF ALL BLANKET AREAS.

5. JOINT ANCHOR TRENCH SHALL BE USED TO JOIN ROLLS OF ECBs TOGETHER (LONGITUDINALLY AND TRANSVERSELY) FOR ALL ECBs EXCEPT STRAW WHICH MAY USE AN OVERLAPPING JOINT.

6. INTERMEDIATE ANCHOR TRENCH SHALL BE USED AT SPACING OF ONE–HALF ROLL LENGTH FOR COCONUT AND EXCELSIOR ECBs.

7. OVERLAPPING JOINT DETAIL SHALL BE USED TO JOIN ROLLS OF ECBs TOGETHER FOR ECBs ON SLOPES.

8. MATERIAL SPECIFICATIONS OF ECBs SHALL CONFORM TO TABLE ECB–1.

9. ANY AREAS OF SEEDING AND MULCHING DISTURBED IN THIS PROCESS OF INSTALLING ECBS SHALL BE RESEEDED AND MULCHED.

10. DETAILS ON DESIGN PLANS FOR MAJOR DRAINAGEWAY STABILIZATION WILL GOVERN IF DIFFERENT FROM THOSE SHOWN HERE.

TABLE ECB–1, ECB MATERIAL SPECIFICATIONS

TYPE	COCONUT CONTENT	STRAW CONTENT	EXCELSIOR CONTENT	RECOMMENDED NETTING**
STRAW*	–	100%	–	DOUBLE/ NATURAL
STRAW–COCONUT	30% MIN	70% MAX	–	DOUBLE/ NATURAL
COCONUT	100%	–	–	DOUBLE/ NATURAL
EXCELSIOR	–	–	100%	DOUBLE/ NATURAL

*STRAW ECB MAY ONLY BE USED TO CONTROL OF EROSION FOR ORGANIC CHANNEL ALIGNMENT. NETTING MAY BE ELIMINATED IN SOME APPLICATIONS.

Rolled Erosion Control Products (RECP) EC-6

EROSION CONTROL BLANKET MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. ECBs SHALL BE LEFT IN PLACE TO EVENTUALLY BIODEGRADE, UNLESS REQUESTED TO BE REMOVED BY THE LOCAL JURISDICTION.

5. ANY ECB PULLED OUT, TORN, OR OTHERWISE DAMAGED SHALL BE REPAIRED OR REPLACED. ANY ECB EXPERIENCING RILLING OR GULLYING UNDERNEATH THAT HAVE ENDED TO CREATED A VOID UNDER THE BLANKET OR THAT REMAIN BARE OR GRASS SHALL BE REPAIRED, RESEEDED AND MULCHED AND THE ECB REINSTALLED.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

[DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO AND TOWN OF PARKER COLORADO, NOT AVAILABLE IN AUTOCAD]

EC-8 Temporary Outlet Protection (TOP)

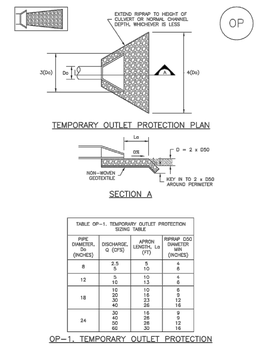


TABLE OP–1, TEMPORARY OUTLET PROTECTION SIZING TABLE

PIPE DIAMETER, Ds (INCHES)	DISCHARGE, Q (CFS)	APRON LENGTH, La (FT)	RIPRAP D50 MINIMUM WIDTH (INCHES)
8	2.5	5	4
	5	10	6
12	5	10	4
	10	13	6
18	10	10	6
	30	18	12
24	20	10	6
	40	28	12
	30	18	9
	40	28	12
	50	28	12
	60	30	12

OP–1, TEMPORARY OUTLET PROTECTION

Temporary Outlet Protection (TOP) EC-8

TEMPORARY OUTLET PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION OF OUTLET PROTECTION.
   –DIMENSIONS OF OUTLET PROTECTION.

2. DETAIL IS INTENDED FOR PIPES WITH SLOPE ≤ 10%. ADDITIONAL EVALUATION OF RIPRAP SIZING AND OUTLET PROTECTION DIMENSIONS REQUIRED FOR STEEPER SLOPES.

3. TEMPORARY OUTLET PROTECTION INFORMATION IS FOR OUTLETS INTENDED TO BE UTILIZED LESS THAN 2 YEARS.

TEMPORARY OUTLET PROTECTION INSPECTION AND MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

[DETAILS ADAPTED FROM AURORA, COLORADO AND PREVIOUS VERSION OF VOLUME 3, NOT AVAILABLE IN AUTOCAD]

EC-9 Rough Cut Street Control (RCS)

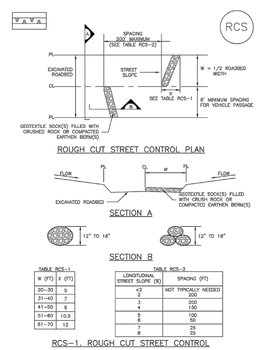


TABLE RCS–1

W (FT)	X (FT)
20–30	3
31–40	7
41–50	9
51–60	10.5
61–70	12

TABLE RCS–2

LONGITUDINAL STREET SLOPE (%)	SPACING (FT)
<2	NOT TYPICALLY NEEDED
2	300
3	200
4	150
5	100
6	75
7	50
8	25

RCS–1, ROUGH CUT STREET CONTROL

Rough Cut Street Control (RCS) EC-9

ROUGH CUT STREET CONTROL INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   –LOCATION OF ROUGH CUT STREET CONTROL MEASURES.

2. ROUGH CUT STREET CONTROL SHALL BE INSTALLED AFTER A ROAD HAS BEEN CUT IN, AND WILL NOT BE PAVED FOR MORE THAN 14 DAYS OR FOR TEMPORARY CONSTRUCTION ROADS THAT HAVE NOT RECEIVED ROAD BASE.

ROUGH CUT STREET CONTROL INSPECTION AND MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

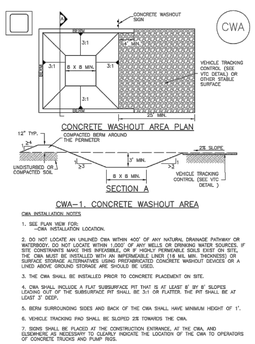
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

[DETAILS ADAPTED FROM AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD]

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

Concrete Washout Area (CWA) MM-1



CWA–1. CONCRETE WASHOUT AREA

CWA INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –CWA INSTALLATION LOCATION.

2. DO NOT LOCATE AN UNLINED CWA WITHIN 400' OF ANY NATURAL DRAINAGE PATHWAY OR WATERBODY. DO NOT LOCATE WITHIN 1,000' OF ANY WELLS OR DRINKING WATER SOURCES. IF SITE CONSTRAINTS MAKE THIS INFEASIBLE, OR IF HIGHLY PERMEABLE SOILS EXIST ON SITE, THE CWA MUST BE INSTALLED WITH AN IMPERMEABLE LINER (16 MIL MIN. THICKNESS) OR SURFACE STORAGE ALTERNATIVES USING PREFABRICATED CONCRETE WASHOUT DEVICES OR A LINED ABOVE GROUND STORAGE ARE SHOULD BE USED.

3. THE CWA SHALL BE INSTALLED PRIOR TO CONCRETE PLACEMENT ON SITE.

4. CWA SHALL INCLUDE A FLAT SUBSURFACE PIT THAT IS AT LEAST 8' BY 8' SLOPES LEADING OUT OF THE SUBSURFACE BY SHALL BE 3:1 OR FLATTER. THE PIT SHALL BE AT LEAST 3' DEEP.

5. BERM SURROUNDING SIDES AND BACK OF THE CWA SHALL HAVE MINIMUM HEIGHT OF 1'.

6. VEHICLE TRACKING PAD SHALL BE SLOPED 2% TOWARDS THE CWA.

7. TIRES SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE CWA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CWA TO OPERATORS OF CONCRETE TRUCKS AND PUMP TRUCKS.

8. USE EXCAVATED MATERIAL FOR PERIMETER BERM CONSTRUCTION.

MM-1 Concrete Washout Area (CWA)

CWA MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. THE CWA SHALL BE REPAIRED, CLEANED, OR ENLARGED AS NECESSARY TO MAINTAIN CAPACITY FOR CONCRETE WASTE. CONCRETE MATERIALS ACCUMULATED IN PIT, SHALL BE REMOVED ONCE THE MATERIALS HAVE REACHED A DEPTH OF 2'.

5. CONCRETE WASHOUT WATER, WASTED PIECES OF CONCRETE AND ALL OTHER DEBRIS IN THE SUBSURFACE PIT SHALL BE TRANSPORTED FROM THE JOB SITE IN A WATER–TIGHT CONTAINER AND DISPOSED OF PROPERLY.

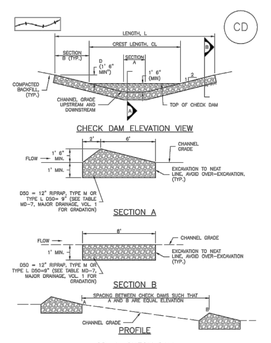
6. THE CWA SHALL REMAIN IN PLACE UNTIL ALL CONCRETE FOR THE PROJECT IS PLACED.

7. WHEN THE CWA IS REMOVED, COVER THE DISTURBED AREA WITH TOP SOIL, SEED AND MULCH OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

[DETAIL ADAPTED FROM DOUGLAS COUNTY, COLORADO AND THE CITY OF PARKER, COLORADO, NOT AVAILABLE IN AUTOCAD]

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

Check Dams (CD) EC-12



EC-12 Check Dams (CD)

CHECK DAM INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION OF CHECK DAMS.
   –CHECK DAM TYPE (CHECK DAM OR REINFORCED CHECK DAM).
   –LENGTH (L), CREST LENGTH (CL), AND DEPTH (D).

2. CHECK DAMS INDICATED ON INITIAL SWMP SHALL BE INSTALLED AFTER CONSTRUCTION FENCE, BUT PRIOR TO ANY UPSTREAM LAND DISTURBING ACTIVITIES.

3. RIPRAP UTILIZED FOR CHECK DAMS SHOULD BE OF APPROPRIATE SIZE FOR THE APPLICATION. TYPICAL TYPES OF RIPRAP USED FOR CHECK DAMS ARE TYPE M (D50 12") OR TYPE L (D50 9").

4. RIPRAP PAD SHALL BE TRENCHED INTO THE GROUND A MINIMUM OF 1'.

5. THE ENDS OF THE CHECK DAM SHALL BE A MINIMUM OF 1' 6" HIGHER THAN THE CENTER OF THE CHECK DAM.

CHECK DAM MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SEDIMENT ACCUMULATED UPSTREAM OF THE CHECK DAMS SHALL BE REMOVED WHEN THE SEDIMENT DEPTH IS WITHIN ½ OF THE HEIGHT OF THE CREST.

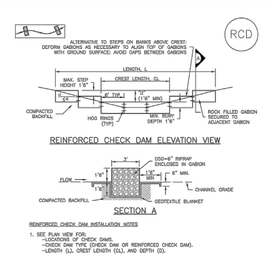
5. CHECK DAMS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.

6. WHEN CHECK DAMS ARE REMOVED, EXCAVATIONS SHALL BE FILLED WITH SUITABLE COMPACTED BACKFILL. DISTURBED AREA SHALL BE SEEDED AND MULCHED AND COVERED WITH GEOTEXTILE OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

[DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO, NOT AVAILABLE IN AUTOCAD]

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

Check Dams (CD) EC-12



REINFORCED CHECK DAM INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATIONS OF CHECK DAMS.
   –CHECK DAM TYPE (CHECK DAM OR REINFORCED CHECK DAM).
   –LENGTH (L), CREST LENGTH (CL), AND DEPTH (D).

2. CHECK DAMS INDICATED ON THE SWMP SHALL BE INSTALLED PRIOR TO AN UPSTREAM LAND–DISTURBING ACTIVITIES.

3. REINFORCED CHECK DAMS, GABIONS SHALL HAVE GALVANIZED TWISTED WIRE NETTING WITH A MAXIMUM OPENING DIMENSION OF 4.5" AND A MINIMUM WIRE THICKNESS OF 0.1/2". WIRE "HOG RINGS" AT 4" SPACING OR OTHER APPROVED MEANS SHALL BE USED AT ALL GABION SEAMS AND TO SECURE THE GABION TO THE ADJACENT SECTION.

4. THE CHECK DAM SHALL BE TRENCHED INTO THE GROUND A MINIMUM OF 1' 6".

5. GEOTEXTILE BLANKET SHALL BE PLACED IN THE REINFORCED CHECK DAM TRENCH EXTENDING A MINIMUM OF 1' 6" ON BOTH THE UPSTREAM AND DOWNSTREAM SIDES OF THE REINFORCED CHECK DAM.

CD–2, REINFORCED CHECK DAM

EC-12 Check Dams (CD)

REINFORCED CHECK DAM MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SEDIMENT ACCUMULATED UPSTREAM OF REINFORCED CHECK DAMS SHALL BE REMOVED AS NEEDED TO MAINTAIN THE EFFECTIVENESS OF BMP, TYPICALLY WHEN THE UPSTREAM SEDIMENT DEPTH IS WITHIN ½ THE HEIGHT OF THE CREST.

5. REPAIR OR REPLACE REINFORCED CHECK DAMS WHEN THERE ARE SIGNS OF DAMAGE SUCH AS HOLES IN THE GABION OR UNDERCUTTING.

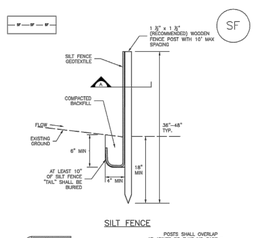
6. REINFORCED CHECK DAMS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.

7. WHEN REINFORCED CHECK DAMS ARE REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED, AND COVERED WITH A GEOTEXTILE BLANKET, OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

[DETAIL ADAPTED FROM DOUGLAS COUNTY, COLORADO AND CITY OF AURORA, NOT AVAILABLE IN AUTOCAD]

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

Silt Fence (SF) SC-1



SF–1. SILT FENCE

SC-1 Silt Fence (SF)

SILT FENCE INSTALLATION NOTES

1. SILT FENCE MUST BE PLACED AWAY FROM THE TOE OF THE SLOPE TO ALLOW FOR WATER PONDING. SILT FENCE AT THE TOE OF A SLOPE SHOULD BE INSTALLED IN A FLAT LOCATION AT LEAST SEVERAL FEET (2–5 FT) FROM THE TOE OF THE SLOPE TO ALLOW ROOM FOR PONDING AND DEPOSITION.

2. A UNIFORM 8" X 4" ANCHOR TRENCH SHALL BE EXCAVATED USING TRENCHER OR SILT FENCE INSTALLATION DEVICE. NO ROAD GRADERS, BACKHOES, OR SIMILAR EQUIPMENT SHALL BE USED.

3. COMPACT ANCHOR TRENCH BY HAND WITH A "JUMPING JACK" OR BY WHEEL ROLLING. COMPACTION SHALL BE SUCH THAT SILT FENCE REMAINS BEING PULLED OUT OF ANCHOR TRENCH BY HAND.

4. SILT FENCE SHALL BE PULLED TIGHT AS IT IS ANCHORED TO THE STAKES. THERE SHOULD BE NO NOTICEABLE SAG BETWEEN STAKES AFTER IT HAS BEEN ANCHORED TO THE STAKES.

5. SILT FENCE FABRIC SHALL BE ANCHORED TO THE STAKES USING 1" HEAVY DUTY STAPLES OR NAILS WITH 1" HEADS. STAPLES AND NAILS SHOULD BE PLACED 3" ALONG THE FABRIC DOWN THE STAKE.

6. AT THE END OF A RUN OF SILT FENCE ALONG A CONTOUR, THE SILT FENCE SHOULD BE TURNED PERPENDICULAR TO THE CONTOUR TO CREATE A "J–HOOK." THE "J–HOOK" CONFIGURATION SHOULD BE INSTALLED AT THE END OF ALL SILT FENCE CONTOURS TO KEEP RUNOFF FROM FLOWING AROUND THE END OF THE SILT FENCE (TYPICALLY 1/2' – 3/2').

7. SILT FENCE SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

SILT FENCE MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SEDIMENT ACCUMULATED UPSTREAM OF THE SILT FEN

811 Know what's below. Call before you dig.

IP-3. Rock Sock Inlet Protection for Sump/Area Inlet

IP-4. Silt Fence Inlet Protection for Sump/Area Inlet

IP-5. Over-excavation Inlet Protection

IP-6. Straw Bale Inlet Protection for Sump/Area Inlet

CIP-1. Culvert Inlet Protection

Propriety inlet protection devices should be installed in accordance with manufacturer specifications.

More information is provided below on selecting inlet protection for sump and on-grade locations.

Inlets Located in a Sump

When applying inlet protection in sump conditions, it is important that the inlet continue to function during larger runoff events. For curb inlets, the maximum height of the protective barrier should be lower than the top of the curb opening to allow overflow into the inlet during larger storms without excessive localized flooding. If the inlet protection height is greater than the curb elevation, particularly if the filter becomes clogged with sediment, runoff will not enter the inlet and may bypass it, possibly causing localized flooding, public safety issues, and downstream erosion and damage from bypassed flows.

Area inlets located in a sump setting can be protected through the use of silt fence, concrete block and rock socks (see parts and surfaces), sediment control logs/straw wattles embedded in the adjacent soil and stacked around the area inlet (on pervious surfaces), over-excavation around the inlet, and proprietary products providing equivalent functions.

Inlets Located on a Slope

For curb and gutter inlets on paved sloping streets, block and rock sock inlet protection is recommended in conjunction with curb socks in the gutter leading to the inlet. For inlets located along unpaved roads, also see the Check Dam Fact Sheet.

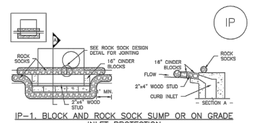
Maintenance and Removal

Inspect inlet protection frequently. Inspection and maintenance guidance includes:

- Inspect for tears that can result in sediment directly entering the inlet, as well as result in the contents of the BMP (e.g., gravel) washing into the inlet.
- Check for improper installation resulting in untreated flows bypassing the BMP and directly entering the inlet or bypassing to an unprotected downstream inlet. For example, silt fence that has not been properly trenched around the inlet can result in flows under the silt fence and directly into the inlet.
- Look for displaced BMPs that are no longer protecting the inlet. Displacement may occur following larger storm events that wash away or reposition the inlet protection. Traffic or equipment may also crush or displace the BMP.
- Monitor sediment accumulation upgradient of the inlet protection.

- Remove sediment accumulation from the area upstream of the inlet protection, as needed to maintain BMP effectiveness, typically when it reaches no more than half the storage capacity of the inlet protection. For silt fence, remove sediment when it accumulates to a depth of no more than 6 inches. Remove sediment accumulation from the area upstream of the inlet protection as needed to maintain the functionality of the BMP.
- Propriety inlet protection devices should be inspected and maintained in accordance with manufacturer specifications. If proprietary inlet insert devices are used, sediment should be removed in a timely manner to prevent devices from breaking and spilling sediment into the storm drain.

Inlet protection must be removed and properly disposed of when the drainage area for the inlet has reached final stabilization.



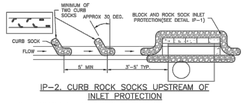
IP–1. BLOCK AND ROCK SOCK SUMP OR ON GRADE INLET PROTECTION

BLOCK AND CURB SOCK INLET PROTECTION INSTALLATION NOTES

1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. CONCRETE "CINDER" BLOCKS SHALL BE LAID ON THEIR SIDES AROUND THE INLET IN A SINGLE ROW, ABUTTING ONE ANOTHER WITH THE OPEN END FACING AWAY FROM THE CURB.

3. GRAVEL BAGS SHALL BE PLACED AROUND CONCRETE BLOCKS, CLOSELY ABUTTING ONE ANOTHER AND JOINTED TOGETHER IN ACCORDANCE WITH ROCK SOCK DESIGN DETAIL.



IP–2. CURB ROCK SOCKS UPSTREAM OF INLET PROTECTION

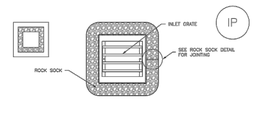
CURB ROCK SOCK INLET PROTECTION INSTALLATION NOTES

1. SEE ROCK SOCK DESIGN DETAIL INSTALLATION REQUIREMENTS.

2. PLACEMENT OF THE SOCK SHALL BE APPROXIMATELY 30 DEGREES FROM PERPENDICULAR IN THE OPPOSITE DIRECTION OF FLOW.

3. SOCKS ARE TO BE FLUSH WITH THE CURB AND SPACED A MINIMUM OF 5 FEET APART.

4. AT LEAST TWO CURB SOCKS IN SERIES ARE REQUIRED UPSTREAM OF ON–GRADE INLETS.

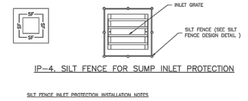


IP–3. ROCK SOCK SUMP/AREA INLET PROTECTION

ROCK SOCK SUMP/AREA INLET PROTECTION INSTALLATION NOTES

1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF ROCK SOCKS FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.



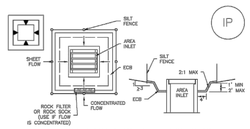
IP–4. SILT FENCE FOR SUMP INLET PROTECTION

SILT FENCE INLET PROTECTION INSTALLATION NOTES

1. SEE SILT FENCE DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. POSTS SHALL BE PLACED AT EACH CORNER OF THE INLET AND AROUND THE EDGES AT A MAXIMUM SPACING OF 3 FEET.

3. STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF SILT FENCE FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.



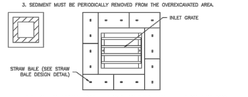
IP–5. OVEREXCAVATION INLET PROTECTION

OVEREXCAVATION INLET PROTECTION INSTALLATION NOTES

1. THIS FORM OF INLET PROTECTION IS PRIMARILY APPLICABLE FOR SITES THAT HAVE NOT YET REACHED FINAL GRADE AND SHOULD BE USED ONLY FOR INLETS WITH A RELATIVELY SMALL CONTRIBUTING DRAINAGE AREA.

2. WHEN USING FOR CONCENTRATED FLOWS, SHAPE BASIN IN 3:1 RATIO WITH LENGTH ORIENTED TOWARDS DIRECTION OF FLOW.

3. SEDIMENT MUST BE PERIODICALLY REMOVED FROM THE OVEREXCAVATED AREA.

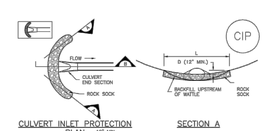


IP–6. STRAW BALE FOR SUMP INLET PROTECTION

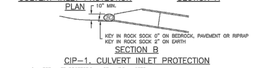
STRAW BALE BARRIER INLET PROTECTION INSTALLATION NOTES

1. SEE STRAW BALE DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. BALES SHALL BE PLACED IN A SINGLE ROW AROUND THE INLET WITH ENDS OF BALES TIGHTLY ABUTTING ONE ANOTHER.



CULVERT INLET PROTECTION SECTION A



SECTION B

CIP–1. CULVERT INLET PROTECTION

CULVERT INLET PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR
–LOCATION OF CULVERT INLET PROTECTION.

2. SEE ROCK SOCK DESIGN DETAIL FOR ROCK GRADATION REQUIREMENTS AND JOINTING DETAIL.

CULVERT INLET PROTECTION MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SEDIMENT ACCUMULATED UPSTREAM OF THE CULVERT SHALL BE REMOVED WHEN THE SEDIMENT DEPTH IS 1/2 THE HEIGHT OF THE ROCK SOCK.

5. CULVERT INLET PROTECTION SHALL REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS PERMANENTLY STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.

(DETAILS ADAPTED FROM AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

GENERAL INLET PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
–LOCATION OF INLET PROTECTION.
–TYPE OF INLET PROTECTION (IP-1, IP-2, IP-3, IP-4, IP-5, IP-6)

2. INLET PROTECTION SHALL BE INSTALLED PROMPTLY AFTER INLET CONSTRUCTION OR PAVING IS COMPLETE (TYPICALLY WITHIN 48 HOURS). IF A RAINFALL/RUNOFF EVENT IS FORECAST, INSTALL INLET PROTECTION PRIOR TO ONSET OF EVENT.

3. MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

INLET PROTECTION MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SEDIMENT ACCUMULATED UPSTREAM OF INLET PROTECTION SHALL BE REMOVED AS NECESSARY TO MAINTAIN BMP EFFECTIVENESS. TYPICALLY, WHEN STORAGE VOLUME REACHES 50% OF CAPACITY, A DEPTH OF 6" WHEN SILT FENCE IS USED, OR 1/2 OF THE HEIGHT FOR STRAW BALES.

5. INLET PROTECTION IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS PERMANENTLY STABILIZED AND APPROVED BY THE LOCAL JURISDICTION. APPROVE EARLIER REMOVAL OF INLET PROTECTION IN SUMPS.

6. WHEN INLET PROTECTION AT AREA INLETS IS REMOVED, THE DISTURBED AREA SHALL BE COVERED WITH TOP SOIL, SEEDED AND MULCHED, OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

NOTE: THE DETAILS INCLUDED WITH THIS FACT SHEET SHOW COMMONLY USED, CONVENTIONAL METHODS OF INLET PROTECTION IN THE DENVER METROPOLITAN AREA. THERE ARE MANY PROPRIETARY INLET PROTECTION METHODS ON THE MARKET. UDFCD NEITHER ENDORSES NOR DISCOURAGES THE USE OF PROPRIETARY METHODS. WHEN PROPRIETARY METHODS ARE USED, THE APPROPRIATE DETAIL FROM THE MANUFACTURER MUST BE INCLUDED IN THE SWMP AND THE BMP MUST BE INSTALLED AND MAINTAINED AS SHOWN IN THE MANUFACTURER'S DETAILS.

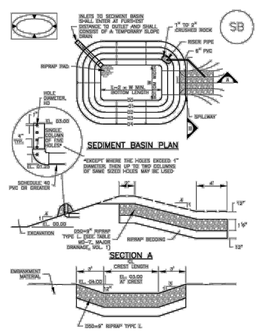
NOTE: SOME MUNICIPALITIES DISCOURAGE OR PROHIBIT THE USE OF STRAW BALES FOR INLET PROTECTION. CHECK WITH LOCAL JURISDICTION TO DETERMINE IF STRAW BALE INLET PROTECTION IS ACCEPTABLE.

Maintenance and Removal

Maintenance activities include the following:

- Dredge sediment from the basin, as needed to maintain BMP effectiveness, typically when the design storage volume is no more than one-third filled with sediment.
- Inspect the sediment basin embankments for stability and seepage.
- Inspect the inlet and outlet of the basin, repair damage, and remove debris. Remove, clean and replace the gravel around the outlet on a regular basis to remove the accumulated sediment within it and keep the outlet functioning.
- Be aware that removal of a sediment basin may require dewatering and associated permit requirements.
- Do not remove a sediment basin until the upstream area has been stabilized with vegetation.

Final disposition of the sediment basin depends on whether the basin will be converted to a permanent post-construction stormwater basin or whether the basin area will be returned to grade. For basins being converted to permanent detention basins, remove accumulated sediment and reconfigure the basin and outlet to meet the requirements of the final design for the detention facility. If the sediment basin is not to be used as a permanent detention facility, fill the excavated area with soil and stabilize with vegetation.


INLETS TO SEDIMENT BASIN SHALL ENDED AT FOREBAY
DIRECTION TO OUTLET AND SHALL CONSIST OF A TEMPORARY SLOPE
SB
1" TOP 6" CIRCULAR ORIFICE
RISER PIPE
6" PVC
RIPRAP END
HOLE DIAMETER, TO
SEDIMENT BASIN PLAN
"EXCEPT WHERE THE HOLES EXCEED 1" DIAMETER THEN UP TO TWO COLUMNS OF SAME SIZED HOLES MAY BE USED"
SPILLWAY
REINFORCE TO PVC OR GREATER
d1
d2
1'
1/2d
1/2d
1/2d
1/2d
SECTION A
CREST
EMBANKMENT MATERIAL
d1
d2
1'
1/2d
1/2d
1/2d
1/2d

Description

Temporary seeding can be used to stabilize disturbed areas that will be inactive for an extended period. Permanent seeding should be used to stabilize areas at final grade that will not be otherwise stabilized. Effective seeding includes preparing a seedbed, selecting an appropriate seed mixture, using proper planting techniques, and protecting the seeded area with mulch, geotextiles, or other appropriate measures.



Photograph TS/PS -1. Equipment used to drill seed. Photo courtesy of Douglas County.

Appropriate Uses

When the soil surface is disturbed and will remain inactive for an extended period (typically determined by local government requirements), proactive stabilization measures, including planting a temporary seed mix, should be implemented. If the inactive period is short-lived (on the order of two weeks), techniques such as surface roughening may be appropriate. For longer periods of inactivity of up to one year, temporary seeding and mulching can provide effective erosion control. Permanent seeding should be used on finished areas that have not been otherwise stabilized.

The USDCM Volume 2 *Revegetation* Chapter contains suggested annual grains and native seed mixes to use for temporary seeding. Alternatively, local governments may have their own seed mixes and timelines for seeding. Check jurisdictional requirements for seeding and temporary stabilization.

Design and Installation

Effective seeding requires proper seedbed preparation, selecting an appropriate seed mixture, using appropriate seeding equipment to ensure proper coverage and density, and protecting seeded areas with mulch or fabric until plants are established.

The USDCM Volume 2 *Revegetation* Chapter contains detailed seed mixes, soil preparation practices, and seeding and mulching recommendations that should be referenced to supplement this Fact Sheet.

Drill seeding is the preferred seeding method. Hydroseeding is not recommended except in areas where steep slopes prevent use of drill seeding equipment, and even in these instances it is preferable to hand seed and mulch. Some jurisdictions do not allow hydroseeding or hydromulching.

Seedbed Preparation

Prior to seeding, ensure that areas to be revegetated have soil conditions capable of supporting vegetation. Overlot grading can result in loss of topsoil and compaction, resulting in poor quality subsoils at the ground surface that have low nutrient value, little organic matter content, few soil microorganisms, rooting restrictions, and conditions less conducive to infiltration of precipitation. As a result, it is typically necessary to provide stockpiled topsoil, compost, or other soil amendments and retestfil them into the soil to a depth of 6 inches or more.

Temporary and Permanent Seeding	
Functions	
Erosion Control	Yes
Sediment Control	No
Site/Material Management	No

Topsoil should be salvaged during grading operations for use and spread on areas to be revegetated later. Topsoil should be viewed as an important resource to be utilized for vegetation establishment, due to its water-holding capacity, structure, texture, organic matter content, biological activity, and nutrient content. The rooting depth of most native grasses in the semi-arid Denver metropolitan area is 6 to 18 inches. If present, at a minimum of the upper 6 inches of topsoil should be stripped, stockpiled, and ultimately respread across areas that will be revegetated.

Where topsoil is not available, subsoils should be amended to provide an appropriate plant-growth medium. Organic matter, such as well digested compost, can be added to improve soil characteristics conducive to plant growth. Other treatments can be used to adjust soil pH conditions when needed. Soil testing, which is typically inexpensive, should be completed to determine and optimize the types and amounts of amendments that are required.

If the disturbed ground surface is compacted, rip or rototill the upper 12 inches of the surface prior to placing topsoil. If adding compost to the existing soil surface, rototilling is necessary. Surface roughening will assist in placing a stable topsoil layer on steeper slopes, and allow infiltration and root penetration to greater depth. Topsoil should not be placed when either the salvaged topsoil or receiving ground are frozen or snow covered.

Prior to seeding, the soil surface should be rough and the seedbed should be firm, but neither too loose nor compacted. The upper layer of soil should be in a condition suitable for seeding at the proper depth and conducive to plant growth. Seed-to-soil contact is the key to good germination.

Refer to MHFD's Topsoil Management Guidance for detailed information on topsoil assessment, design, and construction.

Temporary Vegetation

To provide temporary vegetative cover on disturbed areas which will not be paved, built upon, or fully landscaped or worked for an extended period (typically 30 days or more), plant an annual grass appropriate for the time of planting and mulch the planted areas. Temporary grain seed mixes suitable for the Denver metropolitan area are listed in Table TS/PS-1. Native temporary seed mixes are provided in USDCM Volume 2, Chapter 13, Appendix A. These are to be considered only as general recommendations when specific design guidance for a particular site is not available. Local governments typically specify seed mixes appropriate for their jurisdiction.

Permanent Revegetation

To provide vegetative cover on disturbed areas that have reached final grade, a perennial grass mix should be established. Permanent seeding should be performed promptly (typically within 14 days) after reaching final grade. Each site will have different characteristics and a landscape professional or the local jurisdiction should be contacted to determine the most suitable seed mix for a specific site. In lieu of a specific recommendation, one of the perennial grass mixes appropriate for site conditions and growth season listed in seed mix tables in the USDCM Volume 2 *Revegetation* Chapter can be used. The pure live seed (PLS) rates of application recommended in these tables are considered to be absolute minimum rates for seed applied using proper drill-seeding equipment. These are to be considered only as general

recommendations when specific design guidance for a particular site is not available. Local governments typically specify seed mixes appropriate for their jurisdiction.

If desired for wildlife habitat or landscape diversity, shrubs such as rubber rabbitbrush (*Chrysothamnus nauseosus*), fourwing saltbush (*Atriplex canescens*) and skunkbrush sumac (*Rhus trilobata*) could be added to the upland seed mixes at 0.25, 0.5 and 1 pound PLS/acre, respectively. In riparian zones, planting root stock of such species as American plum (*Prunus americana*), woods rose (*Rosa woodsii*), plains cottonwood (*Populus sargentii*), and willow (*Salix* spp.) may be considered. On non-topsoiled upland sites, a legume such as Ladak alfalfa at 1 pound PLS/acre can be included as a source of nitrogen for perennial grasses.

Timing of seeding is an important aspect of the revegetation process. For upland and riparian areas on the Colorado Front Range, the suitable timing for seeding is from October through May. The most favorable time to plant non-irrigated areas is during the fall, so that seed can take advantage of winter and spring moisture. Seed should not be planted if the soil is frozen, snow covered, or wet.

Seeding dates for the highest success probability of perrmnial species along the Front Range are generally in the spring from April through early May and in the fall after the first of September until the ground freezes. If the area is irrigated, seeding may occur in summer months, as well. See Table TS/PS-2 for appropriate seeding dates.

Table TS/PS-1. Minimum Drill Seeding Rates for Various Temporary Annual Grasses

Species[a] (Common name)	Growth Season[b]	Pounds of Pure Live Seed (PLS)/acre[c]	Planting Depth (inches)
1. Oats	Cool	35 - 50	1 - 2
2. Spring wheat	Cool	25 - 35	1 - 2
3. Spring barley	Cool	25 - 35	1 - 2
4. Annual ryegrass	Cool	10 - 15	½
5. Millet	Warm	3 - 15	½ - ¾
6. Winter wheat	Cool	20 -35	1 - 2
7. Winter barley	Cool	20 -35	1 - 2
8. Winter rye	Cool	20 -35	1 - 2
9. Triticale	Cool	25 -40	1 - 2

[a] Successful seeding of annual grass resulting in adequate plant growth will usually produce enough dead-plant residue to provide protection from wind and water erosion for an additional year. This assumes that the cover is not disturbed or mowed closer than 6 inches.

Hydraulic seeding may be substituted for drilling only where slopes are steeper than 3:1 or where access limitations exist. When hydraulic seeding is used, hydraulic mulching should be applied as a separate operation, when practical, to prevent the seeds from being encapsulated in the mulch.

[b] See Table TS/PS-2 for seeding dates. Irrigation, if consistently applied, may extend the use of cool season species during the summer months.

[c] Seeding rates should be doubled if seed is broadcast, or increased by 50 percent if done using a Brillion Drill or by hydraulic seeding.

Table TS/PS-2. Seeding Dates for Annual and Perennial Grasses

	Annual Grasses (Numbers in table reference species in Table TS/PS-1)		Perennial Grasses	
Seeding Dates	**Warm**	**Cool**	**Warm**	**Cool**
January 1- March 15			✓	✓
March 16- April 30		1,2,3	✓	✓
May 1- May 15			✓	
May 16- June 30	5			
July 1- July 15	5			
July 16- August 31				
September 1- September 30		6, 7, 8, 9		
October 1- December 31			✓	✓

Mulch

Cover seeded areas with mulch or an appropriate rolled erosion control product to promote establishment of vegetation. Anchor mulch by crimping, netting or use of a non-toxic tackifier. See the USDCM Volume 2 *Revegetation* Chapter and Volume 3 Mulching BMP Fact Sheet (EC-04) for additional guidance.

Maintenance and Removal

Monitor and observe seeded areas to identify areas of poor growth or areas that fail to germinate. Reseed and mulch these areas, as needed.

If a temporary annual seed was planted, the area should be reseeded with the desired perennial mix when there will be no further work in the area. To minimize competition between annual and perennial species, the annual mix needs time to mature and die before seeding the perennial mix. To increase success of the perennial mix, it should be seeded during the appropriate seeding dates the second year after the temporary annual mix was seeded. Alternatively, if this timeline is not feasible, the annual mix seed heads should be removed and then the area seeded with the perennial mix.

An area that has been permanently seeded should have a good stand of vegetation within one growing season if irrigated and within three growing seasons without irrigation in Colorado. Reseed portions of the site that fail to germinate or remain bare after the first growing season.

Seeded areas may require irrigation, particularly during extended dry periods. Targeted weed control may also be necessary.

Protect seeded areas from construction equipment and vehicle access.

Description

Mulching consists of evenly applying straw, hay, shredded wood mulch, rock, bark or compost to disturbed soils and securing the mulch by crimping, tackifiers, netting or other measures. Mulching helps reduce erosion by protecting bare soil from rainfall impact, increasing infiltration, and reducing runoff. Although often applied in conjunction with temporary or permanent seeding, it can also be used for temporary stabilization of areas that cannot be reseeded due to seasonal constraints.



Photograph MU-1. An area that was recently seeded, mulched, and crimped.

Mulch can be applied either using standard mechanical dry application methods or using hydromulching equipment that hydraulically applies a slurry of water, wood fiber mulch, and often a tackifier.

Appropriate Uses

Use mulch in conjunction with seeding to help protect the seedbed and stabilize the soil. Mulch can also be used as a temporary cover on low to mild slopes to help temporarily stabilize disturbed areas where growing season constraints prevent effective reseeding. Disturbed areas should be properly mulched and tacked, or seeded, mulched and tacked promptly after final grade is reached (typically within no longer than 14 days) on portions of the site not otherwise permanently stabilized.

Standard dry mulching is encouraged in most jurisdictions; however, hydromulching may not be allowed in certain jurisdictions or may not be allowed near waterways.

Do not apply mulch during windy conditions.

Design and Installation

Prior to mulching, surface-roughen areas by rolling with a crimping or punching type roller or by track walking. Track walking should only be used where other methods are impractical because track walking with heavy equipment typically compacts the soil.

A variety of mulches can be used effectively at construction sites. Consider the following:

Mulch	
Functions	
Erosion Control	Yes
Sediment Control	Moderate
Site/Material Management	No

- Clean, weed-free and seed-free cereal grain straw should be applied evenly at a rate of 2 tons per acre and must be tacked or fastened by a method suitable for the condition of the site. Straw mulch must be anchored (and not merrily placed) on the surface. This can be accomplished mechanically by crimping or with the aid of tackifiers or nets. Anchoring with a crimping implement is preferred, and is the recommended method for areas flatter than 3:1. Mechanical crimpers must be capable of tucking the long mulch fibers into the soil to a depth of 3 inches without cutting them. An agricultural disk, while not an ideal substitute, may work if the disk blades are dull or blunted and set vertically; however, the frame may have to be weighted to afford proper soil penetration.
- Grass hay may be used in place of straw; however, because hay is comprised of the entire plant including seed, mulching with hay may seed the site with non-native grass species which might in turn out-compete the native seed. Alternatively, native species of grass hay may be purchased, but can be difficult to find and are more expensive than straw. Purchasing and utilizing a certified weed-free straw is an easier and less costly mulching method. When using grass hay, follow the same guidelines as for straw (provided above).
- On small areas sheltered from the wind and heavy runoff, spraying a tackifier on the mulch is satisfactory for holding it in place. For steep slopes and special situations where greater control is needed, erosion control blankets anchored with stakes should be used instead of mulch.
- Hydraulic mulching consists of wood cellulose fibers mixed with water and a tackifying agent and should be applied at a rate of no less than 1,500 pounds per acre (1,425 lbs of fibers mixed with at least 75 lbs of tackifier) with a hydraulic mulcher. For steeper slopes, up to 2000 pounds per acre may be required for effective hydroseeding. Hydromulch typically requires up to 24 hours to dry; therefore, it should not be applied immediately prior to inclement weather. Application to roads, waterways and existing vegetation should be avoided.
- Erosion control mats, blankets, or nets are recommended to help stabilize steep slopes (generally 3:1 and steeper) and waterways. Depending on the product, these may be used alone or in conjunction with grass or straw mulch. Normally, use of these products will be restricted to relatively small areas. Biodegradable mats made of straw and jute, straw-coconut, coconut fiber, or excelsior can be used instead of mulch. (See the ECM/TRM BMP for more information.)
- Some tackifiers or binders may be used to anchor mulch. Check with the local jurisdiction for allowed tackifiers. Manufacturer's recommendations should be followed at all times. (See the Soil Binder BMP for more information on general types of tackifiers.)
- Rock can also be used as mulch. It provides protection of exposed soils to wind and water erosion and allows infiltration of precipitation. An aggregate base course can be spread on disturbed areas for temporary or permanent stabilization. The rock mulch layer should be thick enough to provide full coverage of exposed soil on the area it is applied.

Maintenance and Removal

After mulching, the bare ground surface should not be more than 10 percent exposed. Reapply mulch, as needed, to cover bare areas.

Know what's below. Call before you dig.

PCD FILE #: SF2324

REFERENCE DRAWINGS

X-TITLE-CD
X-886-PR-SITE
FEMA_XS
X-886.066-EX-MAP-1
164022-01 Hay Creek Road BNDY
X-886-ALTA-SURVEY
Hay Creek BFEs

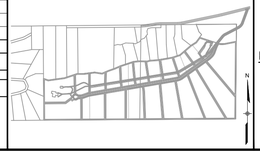
No.	DATE	DESCRIPTION	BY

REVISIONS

COMPUTER FILE MANAGEMENT

FILE NAME: S:\22.886.076 Hay Creek-Forest Manor-O'Leary Properties\500 CADD\504 Plan Sets\Construction Plans\GEC Plan\ECN01.dwg
CTB FILE: Matrix.ctb
PLOT DATE: 5/29/2024 9:36 AM
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.

SHEET KEY



BENCHMARK

PROJECT ELEVATIONS ARE NAVD 88 ELEVATIONS BASED ON AN OPUS DERIVED ELEVATION ON CONTROL POINT 10, A NO. 5 REBAR HAVING AN ELEVATION OF 5769.92.

BASIS OF BEARING

THE SOUTH LINE OF THE NORTHWEST QUARTER OF SECTION 22, TOWNSHIP 15 SOUTH, RANGE 65 WEST OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO, BEING MONUMENTED ON THE EASTERLY END BY A 2-1/2" ALUMINUM CAP STAMPED "NOLTE PLS25955 C1/4 S22 T15S, R65W 1999, "AND THE WESTERLY END BY A2-1/2" ALUMINUM CAP STAMPED "SSS PLS 16154 1/4 S21 S22 T15S, R65W 2000, "BEING ASSUMED TO BEAR S89°54'42"W, A DISTANCE OF 2,627.78 FEET.

PREPARED BY:
Matrix
Excellence by Design

SEAL

COLORADO LICENSED JEFFREY A. OLEARY 30265 05/28/2024 PROFESSIONAL ENGINEER

FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC.
PROJECT No. 22.886.076

HAY CREEK VALLEY

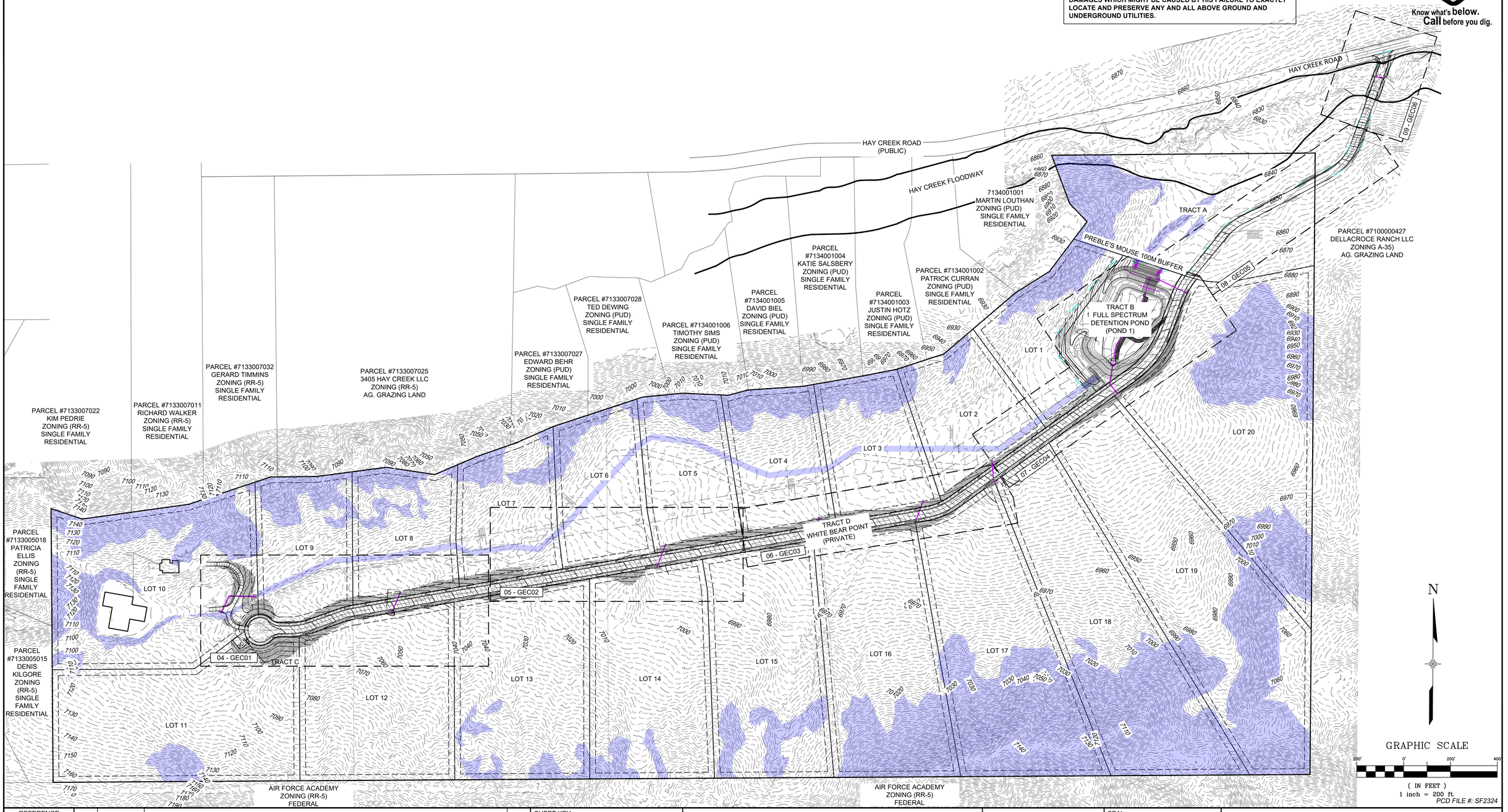
EL PASO COUNTY, COLORADO
FINAL GRADING & EROSION CONTROL PLANS

DETAILS

DESIGNED BY: CVW
DRAWN BY: CVW
CHECKED BY: JAO
SCALE HORIZ. N/A VERT. N/A
DATE ISSUED: MAY 2024
SHEET 12 OF 12
DRAWING No. ECN03

THE LOCATIONS OF EXISTING ABOVE GROUND AND UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL ABOVE GROUND AND UNDERGROUND UTILITIES.

811 Know what's **below.** **Call** before you dig.



N

GRAPHIC SCALE

200' 0' 200' 400'

(IN FEET)
1 inch = 200 ft.
PCD FILE #: SF2324

REFERENCE DRAWINGS
X-TITLE-CD
X-886-PR-SITE
FEMA_XS
X-886.006-EX-MAP-1
164022-01 Hay Creek Road BNDY
X-886-ALTA-SURVEY
Hay Creek BFEs

No.	DATE	DESCRIPTION	BY
		REVISIONS	

COMPUTER FILE MANAGEMENT

FILE NAME: S:\22.886.076 Hay Creek-Forest Manor-O'Leary Properties\500 CADD\504 Plan Sets\Construction Plans\GEC Plan\TS01.dwg
CTB FILE: Matrix.ctb
PLOT DATE: 5/29/2024 9:35 AM
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.

SHEET KEY



BENCHMARK

PROJECT ELEVATIONS ARE NAVD 88 ELEVATIONS BASED ON AN OPUS DERIVED ELEVATION ON CONTROL POINT 10, A NO. 5 REBAR HAVING AN ELEVATION OF 5769.92.

BASIS OF BEARING

THE SOUTH LINE OF THE NORTHWEST QUARTER OF SECTION 22, TOWNSHIP 15 SOUTH, RANGE 65 WEST OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO, BEING MONUMENTED ON THE EASTERLY END BY A 2-12" ALUMINUM CAP STAMPED "NOLTE PLS25955 C1/4 S22 T15S, R65W 1999, "AND THE WESTERLY END BY A2-1/2" ALUMINUM CAP STAMPED "SSS PLS 16154 1/4 S21 S22 T15S, R65W 2000, "BEING ASSUMED TO BEAR S89°54'42"W, A DISTANCE OF 2,627.78 FEET.

PREPARED BY:
Matrix
Excellence by Design

SEAL

COLORADO LICENSED
JEFFREY A. OLSEN
PLS 25955
05/28/2024
PROFESSIONAL ENGINEER

FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC.
PROJECT No. 22.886.076

HAY CREEK VALLEY

EL PASO COUNTY, COLORADO
FINAL GRADING & EROSION CONTROL PLANS

KEY MAP

DESIGNED BY:	CVW	SCALE	
DRAWN BY:	CVW	HORIZ.	1"=200'
CHECKED BY:	JAO	VERT.	N/A
DATE ISSUED:	MAY 2024		
SHEET	02 OF 12		
DRAWING No.	GN01		

GENERAL CONSTRUCTION NOTES:

1. STORMWATER DISCHARGES FROM CONSTRUCTION SITES SHALL NOT CAUSE OR THREATEN TO CAUSE POLLUTION, CONTAMINATION, OR DEGRADATION OF STATE WATERS. ALL WORK AND EARTH DISTURBANCE SHALL BE DONE IN A MANNER THAT MINIMIZES POLLUTION OF ANY ON-SITE OR OFF-SITE WATERS, INCLUDING WETLANDS.

2. NOTWITHSTANDING ANYTHING DEPICTED IN THESE PLANS IN WORDS OR GRAPHIC REPRESENTATION, ALL DESIGN AND CONSTRUCTION RELATED TO ROADS, STORM DRAINAGE AND EROSION CONTROL SHALL CONFORM TO THE STANDARDS AND REQUIREMENTS OF THE MOST RECENT VERSION OF THE RELEVANT ADOPTED EL PASO COUNTY STANDARDS, INCLUDING THE LAND DEVELOPMENT CODE, THE ENGINEERING CRITERIA MANUAL, THE DRAINAGE CRITERIA MANUAL, AND THE DRAINAGE CRITERIA MANUAL VOLUME 2. ANY DEVIATIONS FROM REGULATIONS AND STANDARDS MUST BE REQUESTED, AND APPROVED, IN WRITING.

3. A SEPARATE STORMWATER MANAGEMENT PLAN (SMWP) FOR THIS PROJECT SHALL BE COMPLETED AND AN EROSION AND STORMWATER QUALITY CONTROL PERMIT (ESQCP) ISSUED PRIOR TO COMMENCING CONSTRUCTION. MANAGEMENT OF THE SWMP DURING CONSTRUCTION IS THE RESPONSIBILITY OF THE DESIGNATED QUALIFIED STORMWATER MANAGER OR CERTIFIED EROSION CONTROL INSPECTOR. THE SWMP SHALL BE LOCATED ON SITE AT ALL TIMES DURING CONSTRUCTION AND SHALL BE KEPT UP TO DATE WITH WORK PROGRESS AND CHANGES IN THE FIELD.

4. ONCE THE ESQCP IS APPROVED AND A "NOTICE TO PROCEED" HAS BEEN ISSUED, THE CONTRACTOR MAY INSTALL THE INITIAL STAGE EROSION AND SEDIMENT CONTROL MEASURES AS INDICATED ON THE APPROVED GEC. A PRECONSTRUCTION MEETING BETWEEN THE CONTRACTOR, ENGINEER, AND EL PASO COUNTY WILL BE HELD PRIOR TO ANY CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE APPLICANT TO COORDINATE THE MEETING TIME AND PLACE WITH COUNTY STAFF.

5. CONTROL MEASURES MUST BE INSTALLED PRIOR TO COMMENCEMENT OF ACTIVITIES THAT COULD CONTRIBUTE POLLUTANTS TO STORMWATER. CONTROL MEASURES FOR ALL SLOPES, CHANNELS, DITCHES, AND DISTURBED LAND AREAS SHALL BE INSTALLED IMMEDIATELY UPON COMPLETION OF THE DISTURBANCE.

6. ALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES SHALL BE MAINTAINED AND REMAIN IN EFFECTIVE OPERATING CONDITION UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED AND FINAL STABILIZATION IS ESTABLISHED. ALL PERSONS ENGAGED IN LAND DISTURBANCE ACTIVITIES SHALL ASSESS THE ADEQUACY OF CONTROL MEASURES AT THE SITE AND IDENTIFY IF CHANGES TO THOSE CONTROL MEASURES ARE NEEDED TO ENSURE THE CONTINUED EFFECTIVE PERFORMANCE OF THE CONTROL MEASURES. ALL CHANGES TO TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES MUST BE INCORPORATED INTO THE STORMWATER MANAGEMENT PLAN.

7. TEMPORARY STABILIZATION SHALL BE IMPLEMENTED ON DISTURBED AREAS AND STOCKPILES WHERE GROUND DISTURBING CONSTRUCTION ACTIVITY HAS PERMANENTLY CEASED OR TEMPORARILY CEASED FOR LONGER THAN 14 DAYS.

8. FINAL STABILIZATION MUST BE IMPLEMENTED AT ALL APPLICABLE CONSTRUCTION SITES. FINAL STABILIZATION IS ACHIEVED WHEN ALL GROUND DISTURBING ACTIVITIES ARE COMPLETE AND ALL DISTURBED AREAS EITHER HAVE A UNIFORM VEGETATIVE COVER WITH INDIVIDUAL PLANT DENSITY OF 70 PERCENT OF PRE-DISTURBANCE LEVELS ESTABLISHED OR EQUIVALENT PERMANENT ALTERNATIVE STABILIZATION METHOD IS IMPLEMENTED. ALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES SHALL BE REMOVED UPON FINAL STABILIZATION AND BEFORE PERMIT CLOSURE.

9. ALL PERMANENT STORMWATER MANAGEMENT FACILITIES SHALL BE INSTALLED AS DESIGNED IN THE APPROVED PLANS. ANY PROPOSED CHANGES THAT EFFECT THE DESIGN OR FUNCTION OF PERMANENT STORMWATER MANAGEMENT STRUCTURES MUST BE APPROVED BY THE ECM ADMINISTRATOR PRIOR TO IMPLEMENTATION.

10. EARTH DISTURBANCES SHALL BE CONDUCTED IN SUCH A MANNER SO AS TO EFFECTIVELY MINIMIZE ACCELERATED SOIL EROSION AND RESULTING SEDIMENTATION. ALL DISTURBANCES SHALL BE DESIGNED, CONSTRUCTED, AND COMPLETED SO THAT THE EXPOSED AREA OF ANY DISTURBED LAND SHALL BE LIMITED TO THE SHORTEST PRACTICAL PERIOD OF TIME. PRE-EXISTING VEGETATION SHALL BE PROTECTED AND MAINTAINED WITHIN 50 HORIZONTAL FEET OF A WATERS OF THE STATE UNLESS SHOWN TO BE INFEASIBLE AND SPECIFICALLY REQUESTED AND APPROVED.

11. COMPACTION OF SOIL MUST BE PREVENTED IN AREAS DESIGNATED FOR INFILTRATION CONTROL MEASURES OR WHERE FINAL STABILIZATION WILL BE ACHIEVED BY VEGETATIVE COVER. AREAS DESIGNATED FOR INFILTRATION CONTROL MEASURES SHALL ALSO BE PROTECTED FROM SEDIMENTATION DURING CONSTRUCTION UNTIL FINAL STABILIZATION IS ACHIEVED. IF COMPACTION PREVENTION IS NOT FEASIBLE DUE TO SITE CONSTRAINTS, ALL AREAS DESIGNATED FOR INFILTRATION AND VEGETATION CONTROL MEASURES MUST BE LOOSENED PRIOR TO INSTALLATION OF THE CONTROL MEASURE(S).

12. ANY TEMPORARY OR PERMANENT FACILITY DESIGNED AND CONSTRUCTED FOR THE CONVEYANCE OF STORMWATER AROUND, THROUGH, OR FROM THE EARTH DISTURBANCE AREA SHALL BE A STABILIZED CONVEYANCE DESIGNED TO MINIMIZE EROSION AND THE DISCHARGE OF SEDIMENT OFF SITE.

13. CONCRETE WASH WATER SHALL BE CONTAINED AND DISPOSED OF IN ACCORDANCE WITH THE SWMP. NO WASH WATER SHALL BE DISCHARGED TO OR ALLOWED TO ENTER STATE WATERS, INCLUDING ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR FACILITIES. CONCRETE WASHOUTS SHALL NOT BE LOCATED IN AN AREA WHERE SHALLOW GROUNDWATER MAY BE PRESENT, OR WITHIN 50 FEET OF A SURFACE WATER BODY, CREEK OR STREAM.

14. DURING DEWATERING OPERATIONS OF UNCONTAMINATED GROUND WATER MAY BE DISCHARGED ON SITE, BUT SHALL NOT LEAVE THE SITE IN THE FORM OF SURFACE RUNOFF UNLESS AN APPROVED STATE DEWATERING PERMIT IS IN PLACE.

15. EROSION CONTROL BLANKETING OR OTHER PROTECTIVE COVERING SHALL BE USED ON SLOPES STEEPER THAN 3:1.

16. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL WASTES FROM THE CONSTRUCTION SITE FOR DISPOSAL IN ACCORDANCE WITH LOCAL AND STATE REGULATORY REQUIREMENTS. NO CONSTRUCTION DEBRIS, TREE SLASH, BUILDING MATERIAL WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURIED, DUMPED, OR DISCHARGED AT THE SITE.

17. WASTE MATERIALS SHALL NOT BE TEMPORARILY PLACED OR STORED IN THE STREET, ALLEY, OR OTHER PUBLIC WAY, UNLESS IN ACCORDANCE WITH AN APPROVED TRAFFIC CONTROL PLAN. CONTROL MEASURES MAY BE REQUIRED BY EL PASO COUNTY ENGINEERING IF DEEMED NECESSARY, BASED ON SPECIFIC CONDITIONS AND CIRCUMSTANCES.

18. TRACKING OF SOILS AND CONSTRUCTION DEBRIS OFF-SITE SHALL BE MINIMIZED. MATERIALS TRACKED OFF-SITE SHALL BE CLEANED UP AND PROPERLY DISPOSED OF IMMEDIATELY.

19. THE OWNER/DEVELOPER SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL CONSTRUCTION DEBRIS, DIRT, TRASH, ROCK, SEDIMENT, SOIL, AND SAND THAT MAY ACCUMULATE IN ROADS, STORM DRAINS AND OTHER DRAINAGE CONVEYANCE SYSTEMS AND STORMWATER APPURTENANCES AS A RESULT OF SITE DEVELOPMENT.

20. THE QUANTITY OF MATERIALS STORED ON THE PROJECT SITE SHALL BE LIMITED, AS MUCH AS PRACTICAL, TO THAT QUANTITY REQUIRED TO PERFORM THE WORK IN AN ORDERLY SEQUENCE. ALL MATERIALS STORED ON-SITE SHALL BE STORED IN A NEAT, ORDERLY MANNER, IN THEIR ORIGINAL CONTAINERS, WITH ORIGINAL MANUFACTURER'S LABELS.

21. NO CHEMICAL(S) HAVING THE POTENTIAL TO BE RELEASED IN STORMWATER ARE TO BE STORED OR USED ONSITE UNLESS PERMISSION FOR THE USE OF SUCH CHEMICAL(S) IS GRANTED IN WRITING BY THE ECM ADMINISTRATOR. IN GRANTING APPROVAL FOR THE USE OF SUCH CHEMICAL(S), SPECIAL CONDITIONS AND MONITORING MAY BE REQUIRED.

22. BULK STORAGE OF ALLOWED PETROLEUM PRODUCTS OR OTHER ALLOWED LIQUID CHEMICALS IN EXCESS OF 55 GALLONS SHALL REQUIRE ADEQUATE SECONDARY CONTAINMENT PROTECTION TO CONTAIN ALL SPILLS ONSITE AND TO PREVENT ANY SPILLED MATERIALS FROM ENTERING STATE WATERS, ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR OTHER FACILITIES.

23. NO PERSON SHALL CAUSE THE IMPEDIMENT OF STORMWATER FLOW IN THE CURB AND GUTTER OR DITCH EXCEPT WITH APPROVED SEDIMENT CONTROL MEASURES.

24. OWNER/DEVELOPER AND THEIR AGENTS SHALL COMPLY WITH THE "COLORADO WATER QUALITY CONTROL ACT" (TITLE 25, ARTICLE 8, CRS), AND THE "CLEAN WATER ACT" (33 USC 1344), IN ADDITION TO THE REQUIREMENTS OF THE LAND DEVELOPMENT CODE, DCM VOLUME II AND THE ECM APPENDIX I. ALL APPROPRIATE PERMITS MUST BE OBTAINED BY THE CONTRACTOR PRIOR TO CONSTRUCTION (1041, NPDES, FLOODPLAIN, 404, FUGITIVE DUST, ETC.). IN THE EVENT OF CONFLICTS BETWEEN THESE REQUIREMENTS AND OTHER LAWS, RULES, OR REGULATIONS OF OTHER FEDERAL, STATE, LOCAL, OR COUNTY AGENCIES, THE MOST RESTRICTIVE LAWS, RULES, OR REGULATIONS SHALL APPLY.

25. ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THE SITE ONLY AT APPROVED CONSTRUCTION ACCESS POINTS.

26. PRIOR TO CONSTRUCTION THE PERMITTEE SHALL VERIFY THE LOCATION OF EXISTING UTILITIES.

27. A WATER SOURCE SHALL BE AVAILABLE ON SITE DURING EARTHWORK OPERATIONS AND SHALL BE UTILIZED AS REQUIRED TO MINIMIZE DUST FROM EARTHWORK EQUIPMENT AND WIND.

28. THE SOILS REPORT FOR THIS SITE HAS BEEN PREPARED BY CTL THOMPSON, DATED SEPTEMBER 19, 2023, AND SHALL BE CONSIDERED A PART OF THESE PLANS.

29. AT LEAST TEN (10) DAYS PRIOR TO THE ANTICIPATED START OF CONSTRUCTION, FOR PROJECTS THAT WILL DISTURB ONE (1) ACRE OR MORE, THE OWNER OR OPERATOR OF CONSTRUCTION ACTIVITY SHALL SUBMIT A PERMIT APPLICATION FOR STORMWATER DISCHARGE TO THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, WATER QUALITY DIVISION. THE APPLICATION CONTAINS CERTIFICATION OF COMPLETION OF A STORMWATER MANAGEMENT PLAN (SWMP), OF WHICH THIS GRADING AND EROSION CONTROL PLAN MAY BE A PART. FOR INFORMATION OR APPLICATION MATERIALS CONTACT:

COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT
WATER QUALITY CONTROL DIVISION
WQCD - PERMITS
4300 CHERRY CREEK DRIVE SOUTH
DENVER, CO 80246-1530
ATTN: PERMITS UNIT

NRCS SOIL SURVEY FOR EL PASO COUNTY

SOIL ID NO.	SOIL TYPE	HYDROLOGIC CLASSIFICATION
38	JARRE-TECOLOTE COMPLEX (8%-65% SLOPES)	B
71	PRING COARSE SANDY LOAM (3%-8% SLOPES)	B
93	TOMAH-CROWFOOT COMPLEX (8%-15% SLOPES)	B

TIMING

ANTICIPATED STARTING AND COMPLETION TIME PERIOD OF SITE GRADING:
WINTER 2024 THRU FALL 2024

EXPECTED DATE ON WHICH THE FINAL STABILIZATION WILL BE COMPLETED:
FALL 2024

AREAS

TOTAL DISTURBED AREA: 17.28 ACRES

RECEIVING WATERS

NAME OF RECEIVING WATERS
HAY CREEK (ULTIMATE)

ENGINEER'S NOTES:

THE EXISTING VEGETATION CONSISTS OF MODERATELY DENSE NATIVE GRASSES AND SHRUBS. BASED ON SITE VISITS AND A REVIEW OF AERIAL PHOTOGRAPHY, THE VEGETATIVE COVER AT HAY CREEK VALLEY IS APPROXIMATELY 80%.

ABBREVIATIONS

BOW	BOTTOM OF WALL	PL	PROPERTY LINE
EL.	ELEVATION	PSI	POUNDS PER SQUARE INCH
EX	EXISTING	RCP	REINFORCED CONCRETE PIPE
HORIZ	HORIZONTAL	SHLDR	SHOULDER
INV	INVERT	TOW	TOP OF WALL
MIN	MINIMUM	TYP	TYPICAL
N,S,E,W	NORTH,SOUTH,EAST,WEST		

NPDES NOTES:

1. THE CONTRACTOR SHALL REMOVE ALL SEDIMENT, MUD, AND CONSTRUCTION DEBRIS THAT MAY ACCUMULATE IN THE FLOWLINES AND PUBLIC RIGHTS OF WAYS AS A RESULT OF THIS CONSTRUCTION PROJECT. SAID REMOVAL SHALL BE CONDUCTED IN A TIMELY MANNER, OR AS DIRECTED BY THE ENGINEER.

2. THIS CONSTRUCTION ACTIVITIES STORMWATER MANAGEMENT PLAN (SWMP) HAS BEEN SUBMITTED AS PART OF AN APPLICATION FOR AN EROSION AND SEDIMENT CONTROL PERMIT FILED WITH EL PASO COUNTY AND AS INCLUSION BY REFERENCE TO THE CDPHE CONSTRUCTION ACTIVITY PERMIT. THE SWMP IS A LIVING DOCUMENT AND ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES MAY BE REQUIRED OF THE CONTRACTOR DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE SUBMITTED PLAN DOES NOT FUNCTION AS INTENDED. THE REQUIREMENTS OF THIS PLAN SHALL BE THE OBLIGATION OF THE LAND OWNER AND/OR HIS SUCCESSORS OR HEIRS; UNTIL SUCH TIME AS THE PLAN IS PROPERLY COMPLETED, MODIFIED, OR VOIDED.

3. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR REMEDIATION OF ANY ADVERSE IMPACTS TO ADJACENT WATERWAYS, WETLANDS, ETC., RESULTING FROM WORK DONE AS PART OF THIS PROJECT.

4. THE CONTRACTOR SHALL PREVENT SEDIMENT, DEBRIS AND ALL OTHER POLLUTANTS FROM ENTERING THE STORM SEWER SYSTEM DURING ALL DEMOLITION, EXCAVATION, TRENCHING, BORING, GRADING OR OTHER CONSTRUCTION OPERATIONS THAT ARE PART OF THIS PROJECT.

5. A LAYER OF SUITABLE MULCH SHALL BE APPLIED TO ALL DISTURBED PORTIONS OF THE SITE WITHIN 21 DAYS OF THE COMPLETION OF GRADING. SAID MULCH SHALL BE APPLIED AT A RATE OF 2 TONS PER ACRE AND SHALL BE TACKED OR FASTENED BY AN APPROVED METHOD SUITABLE FOR THE TYPE OF MULCH USED. ROUGH-CUT STREETS SHALL BE MULCHED UNLESS A LAYER OF AGGREGATE ROAD BASE OR ASPHALT PAVING IS TO BE APPLIED TO SAID ROUGH-CUT STREETS WITHIN THE 21 DAY PERIOD AFTER COMPLETION OF OVERLOT GRADING. AN AREA THAT IS GOING TO REMAIN IN AN INTERIM STATE FOR MORE THEN SIXTY (60) 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.

6. THE CONTRACTOR SHALL LOCATE, INSTALL, AND MAINTAIN ALL EROSION CONTROL AND WATER QUALITY "BEST MANAGEMENT PRACTICES" AS INDICATED IN THE APPROVED CONSTRUCTION ACTIVITIES STORMWATER MANAGEMENT PLAN. BMP'S SHALL BE MAINTAINED AND KEPT IN GOOD REPAIR FOR THE DURATION OF THIS PROJECT.

7. AT A MINIMUM, THE CONTRACTOR SHALL INSPECT, AND KEEP A LOG OF, ALL BMP'S WEEKLY AND AFTER SIGNIFICANT PRECIPITATION EVENTS. ALL NECESSARY MAINTENANCE AND REPAIR SHALL BE COMPLETED IN A TIMELY MANNER. ACCUMULATED SEDIMENT AND DEBRIS SHALL BE REMOVED FROM A BMP WHEN THE SEDIMENT LEVEL REACHES ONE-HALF THE HEIGHT OF THE BMP, OR, AT ANY TIME THAT SEDIMENT OR DEBRIS ADVERSELY IMPACTS THE FUNCTIONING OF THE BMP.

8. THE CONTRACTOR SHALL PROPERLY COVER ALL LOADS OF CUT AND FILL MATERIAL IMPORTED TO OR EXPORTED FROM THIS SITE TO PREVENT LOSS OF THE MATERIAL DURING TRANSPORT WITHIN PUBLIC RIGHTS OF WAY.

9. THE USE OF REBAR, STEEL STAKES, OR STEEL FENCE POSTS TO STAKE DOWN STRAW OR HAY BALES; OR TO SUPPORT SILT FENCING USED AS AN EROSION CONTROL MEASURE; IS PROHIBITED. THE USE OF OSHA APPROVED COLORED WARNING CAPS ON REBAR OR FENCE POSTS USED WITH EROSION CONTROL MEASURES IS NOT ACCEPTABLE.

10. SOILS THAT WILL BE STOCKPILED FOR MORE THAN 30 DAYS SHALL BE MULCHED AND SEEDED WITH A TEMPORARY OR PERMANENT GRASS COVER WITHIN 21 DAYS OF STOCKPILE CONSTRUCTION. IF STOCKPILES ARE LOCATED WITHIN 100 FEET OF A DRAINAGEWAY, ADDITIONAL SEDIMENT CONTROLS SUCH AS TEMPORARY DIKES OR SILT FENCE SHALL BE REQUIRED.

11. MODIFICATION OF AN ACTIVE EROSION AND SEDIMENT CONTROL PERMIT BY THE CONTRACTOR SHALL REQUIRE TIMELY NOTIFICATION OF AND APPROVAL BY EL PASO COUNTY. TERMINATION OF AN ACTIVE EROSION AND SEDIMENT CONTROL PERMIT UPON COMPLETION OF THE PROJECT REQUIRES NOTIFICATION OF AND APPROVAL BY EL PASO COUNTY.

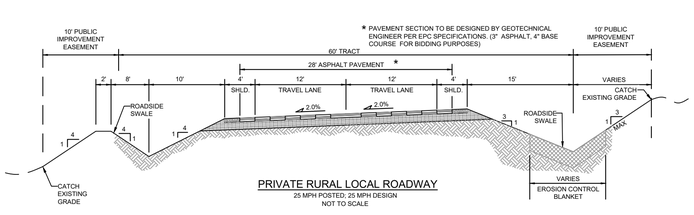
12. UNLESS CONFINED IN A PREDEFINED, BERMED CONTAINMENT AREA, THE CLEANING OF CONCRETE TRUCK DELIVERY CHUTES IS PROHIBITED AT THE JOB SITE. THE DISCHARGE OF WATER CONTAINING WASTE CEMENT TO THE STORM SEWER SYSTEM IS PROHIBITED.

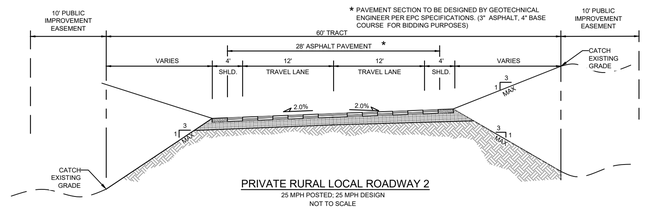
13. THE CONTRACTOR SHALL PROTECT ALL STORM SEWER FACILITIES ADJACENT TO ANY LOCATION WHERE PAVEMENT CUTTING OPERATIONS INVOLVING WHEEL CUTTING, SAW CUTTING OR ABRASIVE WATER JET CUTTING ARE TO TAKE PLACE. THE DISCHARGE OF ANY WATER CONTAMINATED BY WASTE PRODUCTS FROM CUTTING OPERATIONS TO THE STORM SEWER SYSTEM IS PROHIBITED. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL WASTE PRODUCTS GENERATED BY SAID CUTTING OPERATIONS ON A DAILY BASIS.

14. LOCATION OF STAGING, STORAGE, EQUIPMENT MAINTENANCE, TEMPORARY DISPOSAL, VEHICLE TRACKING CONTROL AND CONCRETE TRUCK WASHOUT AREAS WILL BE DETERMINED IN THE FIELD AT THE START OF CONSTRUCTION ACTIVITY AND DELINEATED ON THIS PLAN.

Know what's below. Call before you dig.

TYPICAL ROADWAY CROSS SECTIONS





PCD FILE #: SF2324

REFERENCE DRAWINGS

X-TITLE-CD
X-886-PR-SITE
FEMA_XS
X-886.066-EX-MAP-1
164022-01 Hay Creek Road BNDY
X-886-ALTA-SURVEY
Hay Creek BFEs

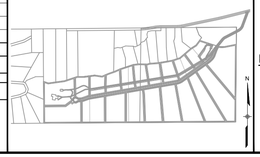
No.	DATE	DESCRIPTION	BY

REVISIONS

COMPUTER FILE MANAGEMENT

FILE NAME: S:\22.886.076 Hay Creek-Forest Manor-O'Leary Properties\500 CADD\504 Plan Sets\Construction Plans\GEC Plan\TS01.dwg
CTB FILE: Matrix.ctb
PLOT DATE: 5/29/2024 9:35 AM
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PREPARED BY:
Matrix
Excellence by Design

SEAL



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PROJECT No. 22.886.076

HAY CREEK VALLEY

EL PASO COUNTY, COLORADO
FINAL GRADING & EROSION CONTROL PLANS

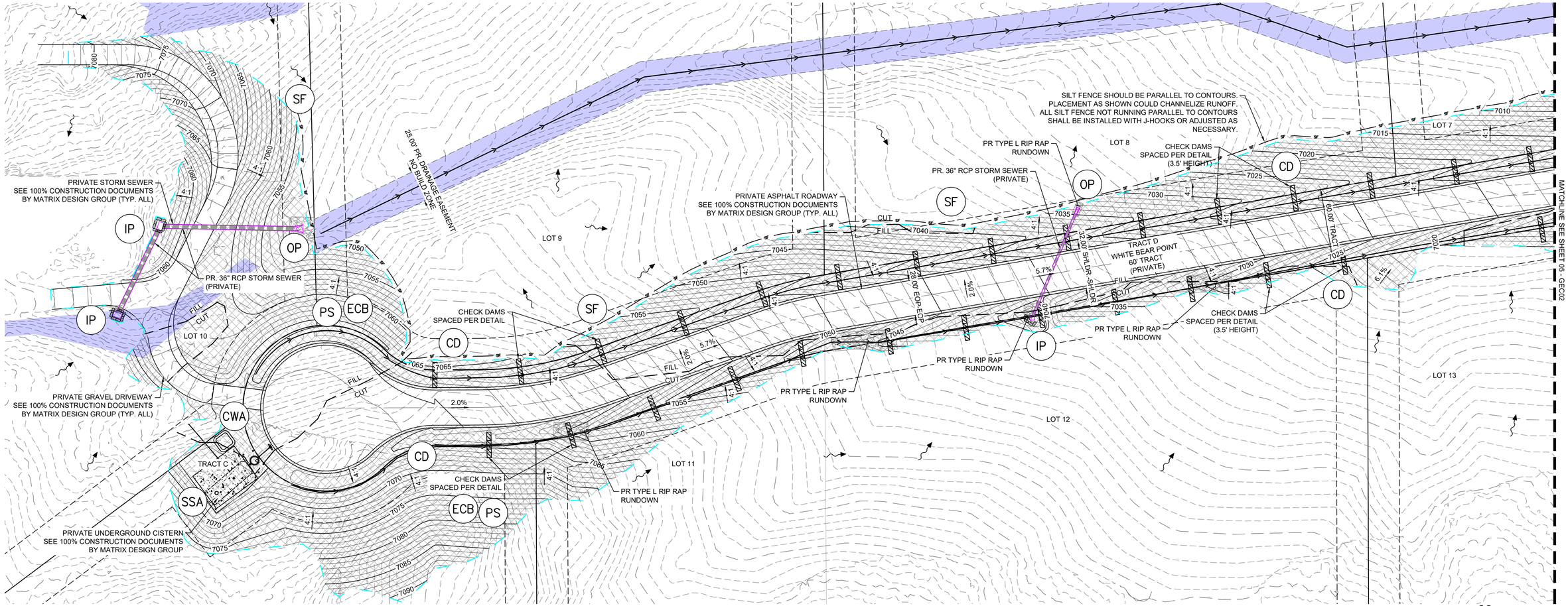
GENERAL NOTES

DESIGNED BY:	CVW	SCALE		DATE ISSUED:	MAY 2024
DRAWN BY:	CVW	HORIZ.	N/A	SHEET	03 OF 12
CHECKED BY:	JAO	VERT.	N/A		

DRAWING No. GN02

THE LOCATIONS OF EXISTING ABOVE GROUND AND UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL ABOVE GROUND AND UNDERGROUND UTILITIES.

811 Know what's **below.** **Call** before you dig.



BMP SEQUENCING	
INITIAL	SILT FENCE, VEHICLE TRACKING, TEMP SEDIMENT BASINS
INTERIM	CHECK DAMS, CONCRETE WASHOUT, INLET/OUTLET PROTECTION, STOCKPILES, STAGING, ROUGH CUT STREET CONTROL
FINAL	EROSION CONTROL BLANKETS, SEEDING & MULCHING, PERMANENT CONTROL MEASURE(S)

NOTES:
1. SEE CHECK DAM (CD) DETAIL EC-12 ON SHEET ECN01 FOR SPACING.
2. ALL EROSION CONTROL BLANKET SHALL BE INSPECTED 24-MONTHS AFTER INSTALLATION. EROSION CONTROL BLANKET MAY BE REQUIRED TO BE RE-INSTALLED PER MANUFACTURER SPECIFICATIONS.

EROSION CONTROL LEGEND

- PS — PERMANENT SEEDING
- SF — SILT FENCE
- ECB — EROSION CONTROL BLANKET
- OP — OUTLET PROTECTION
- IP — INLET PROTECTION
- VTC — VEHICLE TRACKING CONTROL
- PROPOSED RIP RAP
- CD — CHECK DAM
- MU — MULCHING
- TSB — TEMPORARY SEDIMENT BASIN
- CWA — CONCRETE WASHOUT
- SSA — STOCKPILE MANAGEMENT / STABILIZED STAGING AREA
- HP / LP — HIGH POINT / LOW POINT
- 7050 — PROPOSED CONTOURS
- EXISTING FENCE
- EXISTING STORM DRAIN
- PROPOSED STORM DRAIN
- NO BUILD ZONE (SLOPE GREATER THAN 29.99 %)
- 5975 — EXISTING CONTOURS
- DRAINAGE SWALE
- 4:1 — SLOPE LABEL
- OVERLAND FLOW
- LIMITS OF DISTURBANCE/ CONSTRUCTION SITE BOUNDARY
- PROJECT BOUNDARY LINE
- OVERFLOW ROUTE
- CUT/FILL LINE
- 100 YEAR FLOODPLAIN BOUNDARY
- MATCHLINE
- PROPOSED LOT/TRACT LINE
- EASEMENT
- PROPOSED BUILDING SETBACK

N

GRAPHIC SCALE
40' 0' 40' 80'
(IN FEET)
1 inch = 40 ft.

PCD FILE #: SF2324

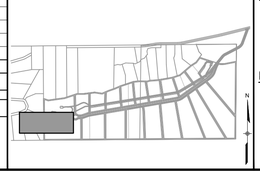
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FEMA_XS
X-886.066-EX-MAP-1
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2023-02-28 TOPO 164022-01
164022-01 Hay Creek Road BNDY

No.	DATE	DESCRIPTION	BY

REVISIONS

COMPUTER FILE MANAGEMENT
FILE NAME: S:\22.886.076 Hay Creek-Forest Manor-O'Leary Properties\500 CADD\504 Plan Sets\Construction Plans\GEC Plan\GEC01.dwg
CTB FILE: Matrix.ctb
PLOT DATE: 5/29/2024 9:35 AM
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SHEET KEY



BENCHMARK
PROJECT ELEVATIONS ARE NAVD 88 ELEVATIONS BASED ON AN OPUS DERIVED ELEVATION ON CONTROL POINT 10, A NO. 5 REBAR HAVING AN ELEVATION OF 5769.92.

BASIS OF BEARING
THE SOUTH LINE OF THE NORTHWEST QUARTER OF SECTION 22, TOWNSHIP 15 SOUTH, RANGE 65 WEST OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO, BEING MONUMENTED ON THE EASTERLY END BY A 2-12" ALUMINUM CAP STAMPED "NOLTE PLS25955 C1/4 S22 T15S, R65W 1999, "AND THE WESTERLY END BY A2-1/2" ALUMINUM CAP STAMPED "SSS PLS 16154 1/4 S21 S22 T15S, R65W 2000, "BEING ASSUMED TO BEAR S89°54'42"W, A DISTANCE OF 2,627.78 FEET.

PREPARED BY:
Matrix
Excellence by Design

SEAL
COLORADO LICENSED
JEFFREY
O'LEARY
36265
05/28/2024
PROFESSIONAL ENGINEER

FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC.
PROJECT No. 22.886.076

HAY CREEK VALLEY

EL PASO COUNTY, COLORADO
FINAL GRADING & EROSION CONTROL PLANS

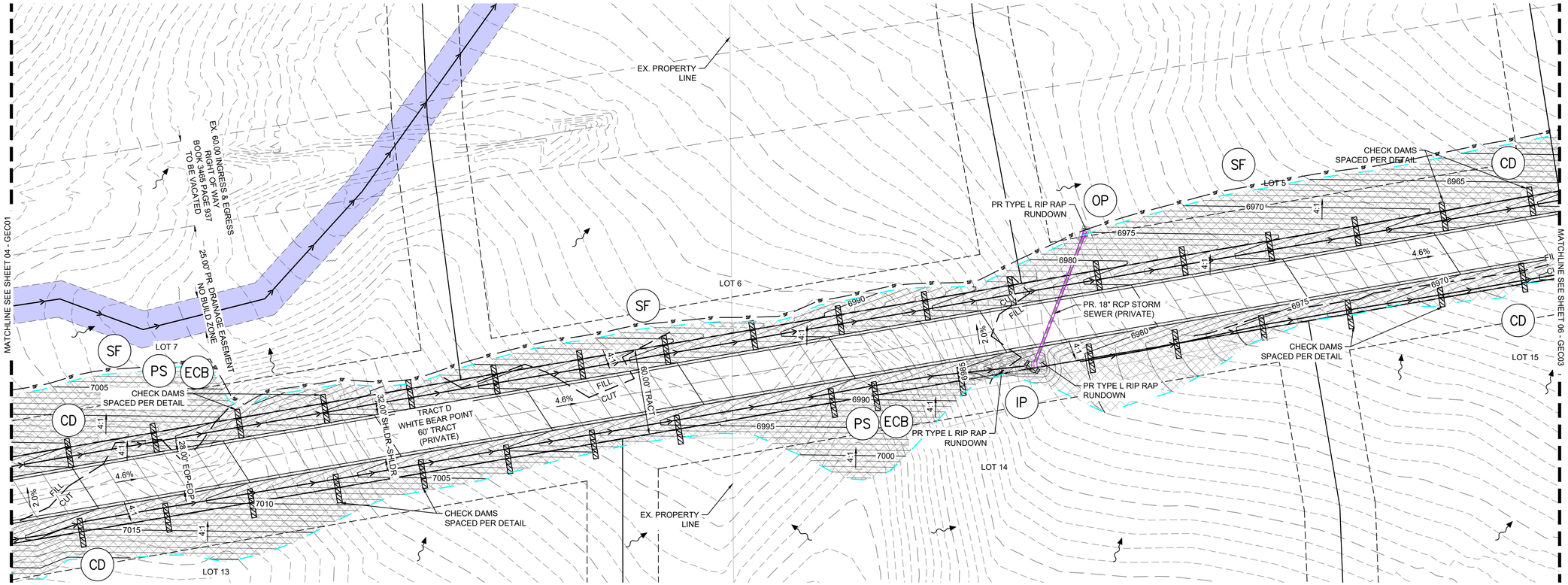
GRADING & EROSION CONTROL PLAN

DESIGNED BY:	CVW	SCALE	
DRAWN BY:	CVW	HORIZ.	1" = 40
CHECKED BY:	JAO	VERT.	N/A

DATE ISSUED: MAY 2024
SHEET 04 OF 12
DRAWING No. GEC01

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BMP SEQUENCING	
INITIAL	SILT FENCE, VEHICLE TRACKING, TEMP SEDIMENT BASINS
INTERIM	CHECK DAMS, CONCRETE WASHOUT, INLET/OUTLET PROTECTION, STOCKPILES, STAGING, ROUGH CUT STREET CONTROL
FINAL	EROSION CONTROL BLANKETS, SEEDING & MULCHING, PERMANENT CONTROL MEASURE(S)

NOTES:
1. SEE CHECK DAM (CD) DETAIL EC-12 ON SHEET ECN01 FOR SPACING.
2. ALL EROSION CONTROL BLANKET SHALL BE INSPECTED 24-MONTHS AFTER INSTALLATION. EROSION CONTROL BLANKET MAY BE REQUIRED TO BE RE-INSTALLED PER MANUFACTURER SPECIFICATIONS.

EROSION CONTROL LEGEND

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- HP / LP — HIGH POINT / LOW POINT
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- 4:1 — SLOPE LABEL
- OVERLAND FLOW
- LIMITS OF DISTURBANCE/ CONSTRUCTION SITE BOUNDARY
- PROJECT BOUNDARY LINE
- OVERFLOW ROUTE
- CUT/FILL LINE
- 100 YEAR FLOODPLAIN BOUNDARY
- MATCHLINE
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- PROPOSED BUILDING SETBACK

N

GRAPHIC SCALE
40' 0' 40' 80'
(IN FEET)
1 inch = 40 ft.

PCD FILE #: SF2324

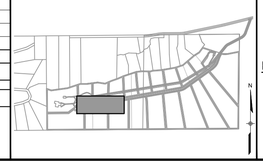
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X-886-PR-SITE
FEMA_XS
X-886.066-EX-MAP-1
X-886-ALTA-SURVEY
Hay Creek BFEs
2023-02-28 TOPO 164022-01
164022-01 Hay Creek Road BNDY

No.	DATE	DESCRIPTION	BY

REVISIONS

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PROJECT No. 22.886.076

HAY CREEK VALLEY

EL PASO COUNTY, COLORADO
FINAL GRADING & EROSION CONTROL PLANS

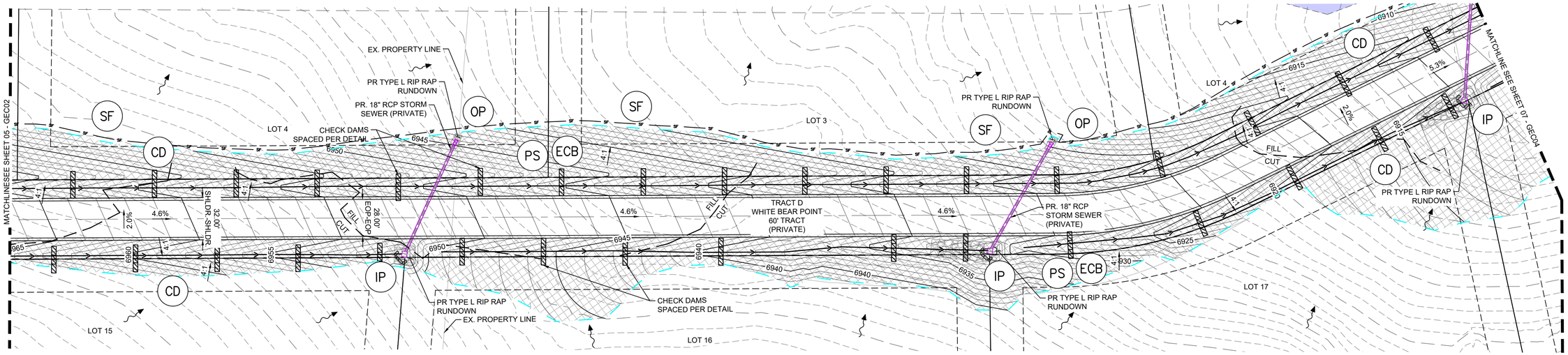
GRADING & EROSION CONTROL PLAN

DESIGNED BY:	CVW	SCALE		DATE ISSUED:	MAY 2024
DRAWN BY:	CVW	HORIZ.	1" = 40'		
CHECKED BY:	JAO	VERT.	N/A	SHEET	05 OF 12

DRAWING No. GEC02

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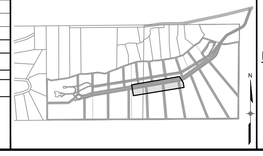
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No.	DATE	DESCRIPTION	BY

REVISIONS

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PROJECT No. 22.886.076

HAY CREEK VALLEY

EL PASO COUNTY, COLORADO
FINAL GRADING & EROSION CONTROL PLANS

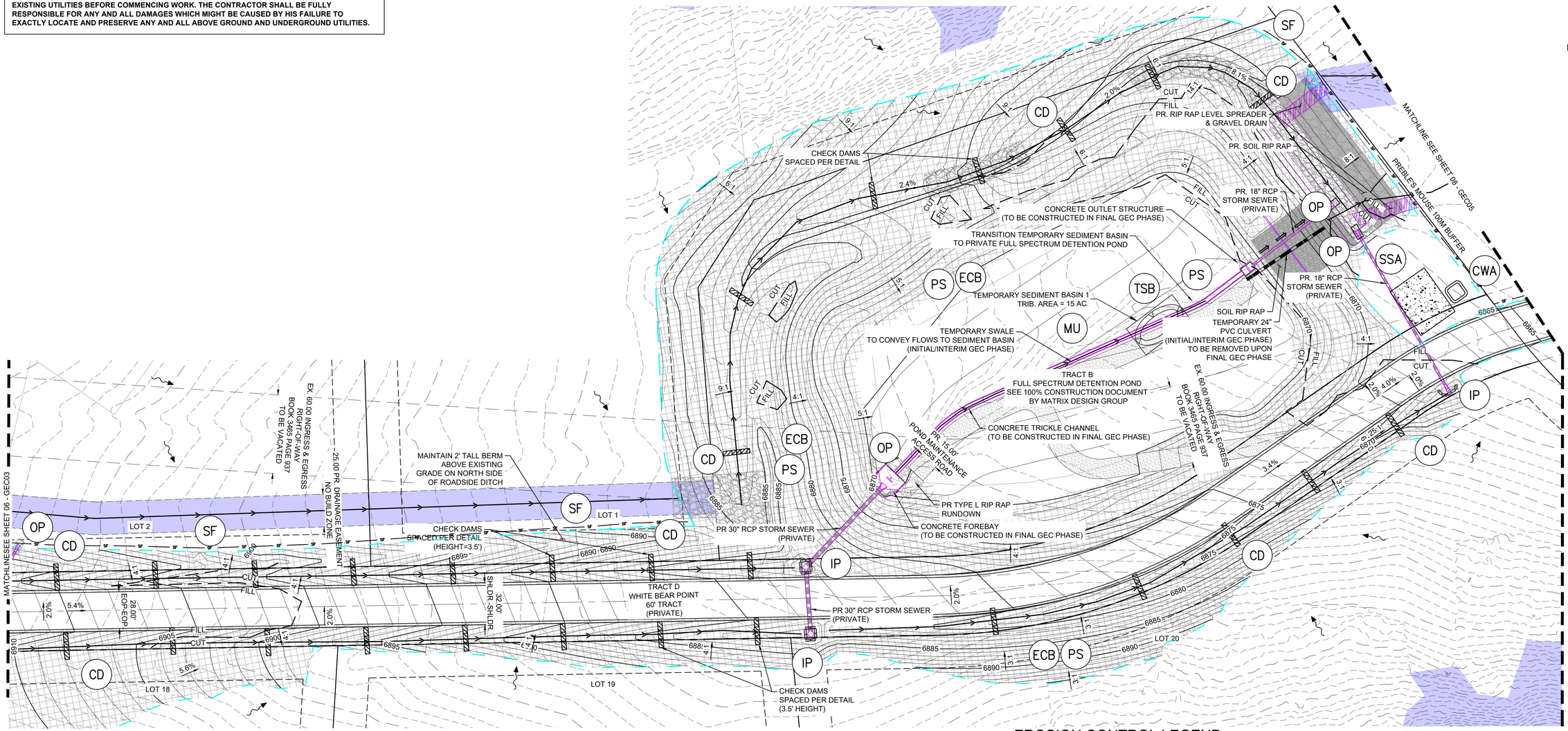
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DESIGNED BY:	CVW	SCALE		DATE ISSUED:	MAY 2024
DRAWN BY:	CVW	HORIZ.	1" = 40'		
CHECKED BY:	JAO	VERT.	N/A	SHEET	06 OF 12

DRAWING No. GEC03

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TEMPORARY SEDIMENT BASIN SUMMARY					
ID	BASIN BOTTOM WIDTH (FT)	SPILLWAY CREST LENGTH (FT)	HOLE DIAMETER (IN)	# ROWS OF HOLES	REQUIRED VOLUME (CF)
1	73.25	22	1 3/16	5	41,070

BMP SEQUENCING	
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INTERIM	CHECK DAMS, CONCRETE WASHOUT, INLET/OUTLET PROTECTION, STOCKPILES, STAGING, ROUGH CUT STREET CONTROL
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40' 0' 40' 80'
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1 inch = 40 ft.

PCD FILE #: SF2324

REFERENCE DRAWINGS

X-TITLE-CD
X-886-PR-SITE
FEMA_XS
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Hay Creek BFEs
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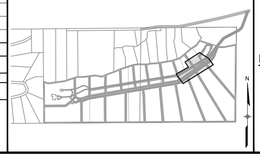
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PREPARED BY:
Matrix Excellence by Design

SEAL

COLORADO LICENSED JEFFREY S. O'LEARY 39265 05/28/2024 PROFESSIONAL ENGINEER

FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC.
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HAY CREEK VALLEY

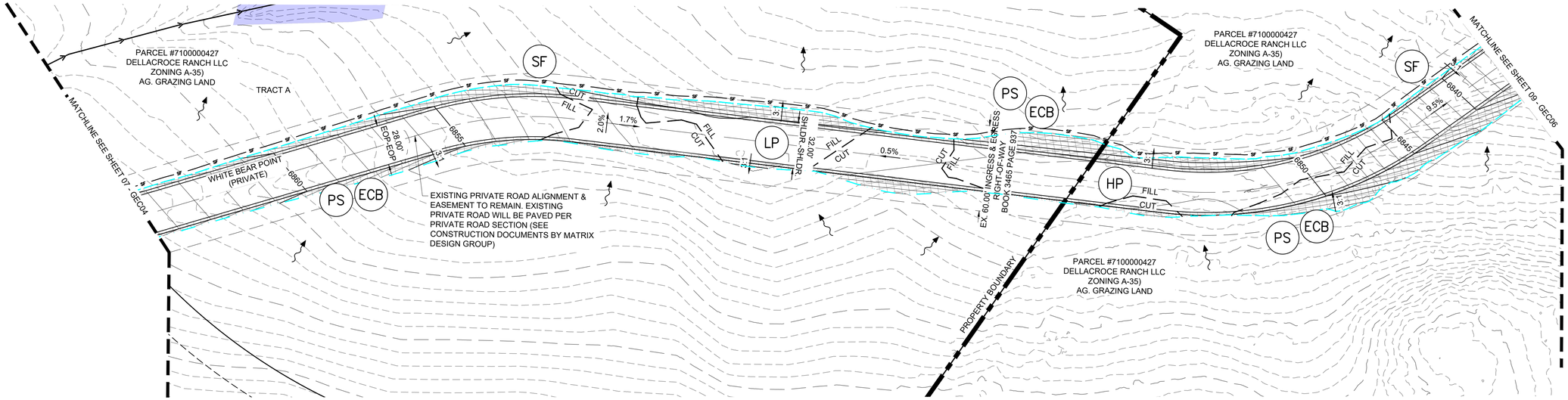
EL PASO COUNTY, COLORADO
FINAL GRADING & EROSION CONTROL PLANS

GRADING & EROSION CONTROL PLAN

DESIGNED BY:	CVW	SCALE		DATE ISSUED:	MAY 2024
DRAWN BY:	CVW	HORIZ.	1" = 40'	DRAWING No.	GEC04
CHECKED BY:	JAO	VERT.	N/A	SHEET	07 OF 12

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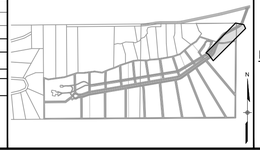
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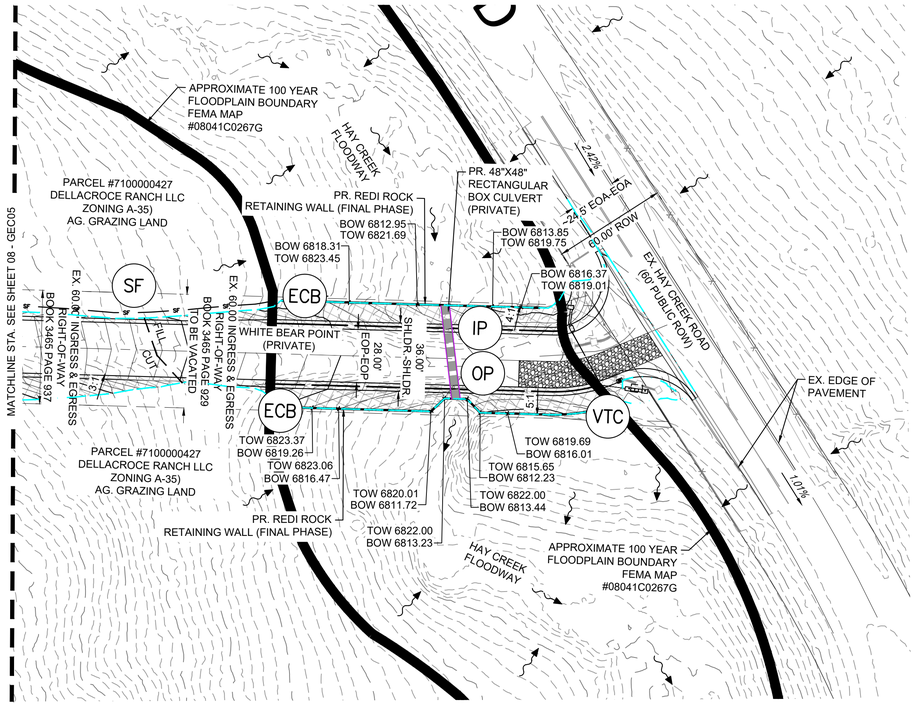
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CHECKED BY:	JAO	VERT.	N/A		

DRAWING No. GEC05

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- NO BUILD ZONE (SLOPE GREATER THAN 29.99 %)
- 5975 — EXISTING CONTOURS
- DRAINAGE SWALE
- 4:1 — SLOPE LABEL
- OVERLAND FLOW
- LIMITS OF DISTURBANCE/ CONSTRUCTION SITE BOUNDARY
- PROJECT BOUNDARY LINE
- OVERFLOW ROUTE
- CUT/FILL LINE
- 100 YEAR FLOODPLAIN BOUNDARY
- MATCHLINE
- PROPOSED LOT/TRACT LINE
- EASEMENT
- PROPOSED BUILDING SETBACK

GRAPHIC SCALE
10' 0' 10' 20'
(IN FEET)
1 inch = 10 ft.

PCD FILE #: SF2324

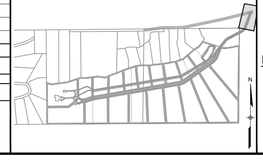
REFERENCE DRAWINGS
X-TITLE-CD
X-886-PR-SITE
FEMA_XS
X-886.066-EX-MAP-1
X-886-ALTA-SURVEY
Hay Creek BFEs
2023-02-28 TOPO 164022-01
164022-01 Hay Creek Road BNDY

No.	DATE	DESCRIPTION	BY

REVISIONS

COMPUTER FILE MANAGEMENT
FILE NAME: S:\22.886.076 Hay Creek-Forest Manor-O'Leary Properties\500 CADD\504 Plan Sets\Construction Plans\GEC Plan\GEC01.dwg
CTB FILE: Matrix.ctb
PLOT DATE: 5/29/2024 9:35 AM
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.

SHEET KEY



BENCHMARK
PROJECT ELEVATIONS ARE NAVD 88 ELEVATIONS BASED ON AN OPUS DERIVED ELEVATION ON CONTROL POINT 10, A NO. 5 REBAR HAVING AN ELEVATION OF 5769.92.

BASIS OF BEARING
THE SOUTH LINE OF THE NORTHWEST QUARTER OF SECTION 22, TOWNSHIP 15 SOUTH, RANGE 65 WEST OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO, BEING MONUMENTED ON THE EASTERLY END BY A 2-12" ALUMINUM CAP STAMPED "NOLTE PLS25955 C1/4 S22 T15S, R65W 1999, "AND THE WESTERLY END BY A2-1/2" ALUMINUM CAP STAMPED "SSS PLS 16154 1/4 S21 S22 T15S, R65W 2000, "BEING ASSUMED TO BEAR S89°54'42"W, A DISTANCE OF 2,627.78 FEET.

PREPARED BY:
Matrix
Excellence by Design

SEAL
COLORADO LICENSED JEFFREY O'LEARY 39265 05/28/2024 PROFESSIONAL ENGINEER

FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC.
PROJECT No. 22.886.076

HAY CREEK VALLEY

EL PASO COUNTY, COLORADO
FINAL GRADING & EROSION CONTROL PLANS

GRADING & EROSION CONTROL PLAN

DESIGNED BY: CVW	SCALE	DATE ISSUED:	MAY 2024
DRAWN BY: CVW	HORIZ. 1" = 40'		
CHECKED BY: JAO	VERT. N/A	SHEET	09 OF 12
		DRAWING No.	GEC06

811 Know what's below. Call before you dig.

Rolled Erosion Control Products (RECP) EC-6

Staking patterns are also provided in the design details according to these factors:

- ECB type
- Slope or channel type

For other types of RECPs including TRMs, these design details are intended to serve as general guidelines for design and installation; however, engineers should adhere to manufacturer's installation recommendations.

Maintenance and Removal

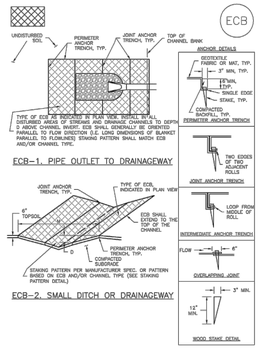
Inspection of erosion control blankets and other RECPs includes:

- Check for general signs of erosion, including voids beneath the mat. If voids are apparent, fill the void with suitable soil and replace the erosion control blanket, following the appropriate staking pattern.
- Check for damaged or loose stakes and secure loose portions of the blanket.

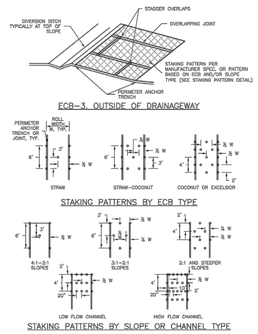
Erosion control blankets and other RECPs that are biodegradable typically do not need to be removed after construction. If they must be removed, then an alternate soil stabilization method should be installed promptly following removal.

Turf reinforcement mats, although generally resistant to biodegradation, are typically left in place as a dense vegetated cover grows in through the mat matrix. The turf reinforcement mat provides long-term stability once/helps the established vegetation resist erosive forces.

EC-6 Rolled Erosion Control Products (RECP)



Rolled Erosion Control Products (RECP) EC-6



EC-6 Rolled Erosion Control Products (RECP)

EROSION CONTROL BLANKET INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION OF ECB (STRAW, STRAW–COCONUT, COCONUT, OR EXCELSIOR).
   –AREA, S, IN SQUARE YARDS OF EACH TYPE OF ECB.

2. 100% NATURAL AND BIODEGRADABLE MATERIALS ARE PREFERRED FOR RECPs, ALTHOUGH SOME JURISDICTIONS MAY ALLOW OTHER MATERIALS IN SOME APPLICATIONS.

3. IN AREAS WHERE ECBs ARE SHOWN ON THE PLANS, THE PERMITTEE SHALL PLACE TOPSOIL AND PREPARE FINAL GRADING, SEEDING, AND MULCHING IMMEDIATELY BEFORE INSTALLING ECBs. THE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS, OR GRASS THAT WILL PREVENT THE BLANKET FROM BEING IN FULL CONTACT WITH SUBSURFACE. NO GAPS OR VOIDS SHALL EXIST UNDER THE BLANKET.

4. PERIMETER ANCHOR TRENCH SHALL BE USED ALONG THE OUTSIDE PERIMETER OF ALL BLANKET AREAS.

5. JOINT ANCHOR TRENCH SHALL BE USED TO JOIN ROLLS OF ECBs TOGETHER (LONGITUDINALLY AND TRANSVERSELY) FOR ALL ECBs EXCEPT STRAW WHICH MAY USE AN OVERLAPPING JOINT.

6. INTERMEDIATE ANCHOR TRENCH SHALL BE USED AT SPACING OF ONE–HALF ROLL LENGTH FOR COCONUT AND EXCELSIOR ECBs.

7. OVERLAPPING JOINT DETAIL SHALL BE USED TO JOIN ROLLS OF ECBs TOGETHER FOR ECBs ON SLOPES.

8. MATERIAL SPECIFICATIONS OF ECBs SHALL CONFORM TO TABLE ECB–1.

9. ANY AREAS OF SEEDING AND MULCHING DISTURBED IN THIS PROCESS OF INSTALLING ECBS SHALL BE RESEEDED AND MULCHED.

10. DETAILS ON DESIGN PLANS FOR MAJOR DRAINAGEWAY STABILIZATION WILL GOVERN IF DIFFERENT FROM THOSE SHOWN HERE.

TABLE ECB–1, ECB MATERIAL SPECIFICATIONS

TYPE	COCONUT CONTENT	STRAW CONTENT	EXCELSIOR CONTENT	RECOMMENDED NETTING**
STRAW*	–	100%	–	DOUBLE/ NATURAL
STRAW–COCONUT	30% MIN	70% MAX	–	DOUBLE/ NATURAL
COCONUT	100%	–	–	DOUBLE/ NATURAL
EXCELSIOR	–	–	100%	DOUBLE/ NATURAL

*STRAW ECB MAY ONLY BE USED TO CONTROL OF EROSION FOR ORGANIC CHANNEL ALIGNMENT. NETTING MAY BE ELIMINATED IN SOME APPLICATIONS.

Rolled Erosion Control Products (RECP) EC-6

EROSION CONTROL BLANKET MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. ECBs SHALL BE LEFT IN PLACE TO EVENTUALLY BIODEGRADE, UNLESS REQUESTED TO BE REMOVED BY THE LOCAL JURISDICTION.

5. ANY ECB PULLED OUT, TORN, OR OTHERWISE DAMAGED SHALL BE REPAIRED OR REPLACED. ANY ECB EXPERIENCING RILLING OR GULLYING UNDERNEATH THAT HAVE ENDED TO CREATED A VOID UNDER THE BLANKET OR THAT REMAIN BARE OR GRASS SHALL BE REPAIRED, RESEEDED AND MULCHED AND THE ECB REINSTALLED.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

[DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO AND TOWN OF PARKER COLORADO, NOT AVAILABLE IN AUTOCAD]

EC-8 Temporary Outlet Protection (TOP)

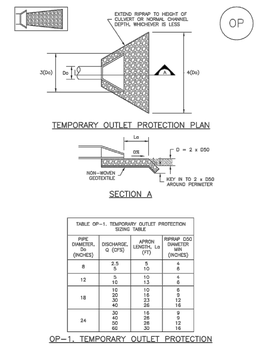


TABLE OP–1, TEMPORARY OUTLET PROTECTION SIZING TABLE

PIPE DIAMETER, Ds (INCHES)	DISCHARGE, Q (CFS)	APRON LENGTH, La (FT)	RIPRAP D50 MINIMUM WIDTH (INCHES)
8	2.5	5	4
	5	10	6
12	5	10	4
	10	13	6
18	10	10	6
	30	18	12
24	20	10	6
	40	28	12
	30	18	9
	40	28	12
	50	28	12
	60	30	12

OP–1, TEMPORARY OUTLET PROTECTION

Temporary Outlet Protection (TOP) EC-8

TEMPORARY OUTLET PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION OF OUTLET PROTECTION.
   –DIMENSIONS OF OUTLET PROTECTION.

2. DETAIL IS INTENDED FOR PIPES WITH SLOPE ≤ 10%. ADDITIONAL EVALUATION OF RIPRAP SIZING AND OUTLET PROTECTION DIMENSIONS REQUIRED FOR STEEPER SLOPES.

3. TEMPORARY OUTLET PROTECTION INFORMATION IS FOR OUTLETS INTENDED TO BE UTILIZED LESS THAN 2 YEARS.

TEMPORARY OUTLET PROTECTION INSPECTION AND MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

[DETAILS ADAPTED FROM AURORA, COLORADO AND PREVIOUS VERSION OF VOLUME 3, NOT AVAILABLE IN AUTOCAD]

EC-9 Rough Cut Street Control (RCS)

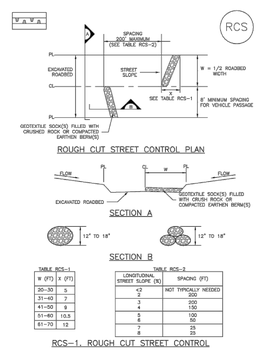


TABLE RCS–1

W (FT)	X (FT)
20–30	3
31–40	7
41–50	9
51–60	10.5
61–70	12

TABLE RCS–2

LONGITUDINAL STREET SLOPE (%)	SPACING (FT)
<2	NOT TYPICALLY NEEDED
2	300
3	200
4	150
5	100
6	75
7	50
8	25

RCS–1, ROUGH CUT STREET CONTROL

Rough Cut Street Control (RCS) EC-9

ROUGH CUT STREET CONTROL INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   –LOCATION OF ROUGH CUT STREET CONTROL MEASURES.

2. ROUGH CUT STREET CONTROL SHALL BE INSTALLED AFTER A ROAD HAS BEEN CUT IN, AND WILL NOT BE PAVED FOR MORE THAN 14 DAYS OR FOR TEMPORARY CONSTRUCTION ROADS THAT HAVE NOT RECEIVED ROAD BASE.

ROUGH CUT STREET CONTROL INSPECTION AND MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

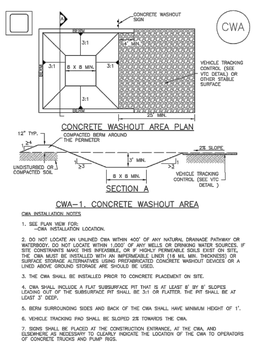
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

[DETAILS ADAPTED FROM AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD]

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

Concrete Washout Area (CWA) MM-1



CWA–1. CONCRETE WASHOUT AREA

CWA INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –CWA INSTALLATION LOCATION.

2. DO NOT LOCATE AN UNLINED CWA WITHIN 400' OF ANY NATURAL DRAINAGE PATHWAY OR WATERBODY. DO NOT LOCATE WITHIN 1,000' OF ANY WELLS OR DRINKING WATER SOURCES. IF SITE CONSTRAINTS MAKE THIS INFEASIBLE, OR IF HIGHLY PERMEABLE SOILS EXIST ON SITE, THE CWA MUST BE INSTALLED WITH AN IMPERMEABLE LINER (16 MIL MIN. THICKNESS) OR SURFACE STORAGE ALTERNATIVES USING PREFABRICATED CONCRETE WASHOUT DEVICES OR A LINED ABOVE GROUND STORAGE ARE SHOULD BE USED.

3. THE CWA SHALL BE INSTALLED PRIOR TO CONCRETE PLACEMENT ON SITE.

4. CWA SHALL INCLUDE A FLAT SUBSURFACE PIT THAT IS AT LEAST 8' BY 8' SLOPES LEADING OUT OF THE SUBSURFACE BY SHALL BE 3:1 OR FLATTER. THE PIT SHALL BE AT LEAST 3' DEEP.

5. BERM SURROUNDING SIDES AND BACK OF THE CWA SHALL HAVE MINIMUM HEIGHT OF 1'.

6. VEHICLE TRACKING PAD SHALL BE SLOPED 2% TOWARDS THE CWA.

7. TIRES SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE CWA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CWA TO OPERATORS OF CONCRETE TRUCKS AND PUMP TRUCKS.

8. USE EXCAVATED MATERIAL FOR PERIMETER BERM CONSTRUCTION.

MM-1 Concrete Washout Area (CWA)

CWA MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. THE CWA SHALL BE REPAIRED, CLEANED, OR ENLARGED AS NECESSARY TO MAINTAIN CAPACITY FOR CONCRETE WASTE. CONCRETE MATERIALS ACCUMULATED IN PIT, SHALL BE REMOVED ONCE THE MATERIALS HAVE REACHED A DEPTH OF 2'.

5. CONCRETE WASHOUT WATER, WASTED PIECES OF CONCRETE AND ALL OTHER DEBRIS IN THE SUBSURFACE PIT SHALL BE TRANSPORTED FROM THE JOB SITE IN A WATER–TIGHT CONTAINER AND DISPOSED OF PROPERLY.

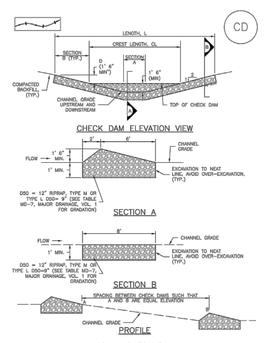
6. THE CWA SHALL REMAIN IN PLACE UNTIL ALL CONCRETE FOR THE PROJECT IS PLACED.

7. WHEN THE CWA IS REMOVED, COVER THE DISTURBED AREA WITH TOP SOIL, SEED AND MULCH OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

[DETAIL ADAPTED FROM DOUGLAS COUNTY, COLORADO AND THE CITY OF PARKER, COLORADO, NOT AVAILABLE IN AUTOCAD]

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

Check Dams (CD) EC-12



EC-12 Check Dams (CD)

CHECK DAM INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION OF CHECK DAMS.
   –CHECK DAM TYPE (CHECK DAM OR REINFORCED CHECK DAM).
   –LENGTH (L), CREST LENGTH (CL), AND DEPTH (D).

2. CHECK DAMS INDICATED ON INITIAL SWMP SHALL BE INSTALLED AFTER CONSTRUCTION FENCE, BUT PRIOR TO ANY UPSTREAM LAND DISTURBING ACTIVITIES.

3. RIPRAP UTILIZED FOR CHECK DAMS SHOULD BE OF APPROPRIATE SIZE FOR THE APPLICATION. TYPICAL TYPES OF RIPRAP USED FOR CHECK DAMS ARE TYPE M (D50 12") OR TYPE L (D50 9").

4. RIPRAP PAD SHALL BE TRENCHED INTO THE GROUND A MINIMUM OF 1'.

5. THE ENDS OF THE CHECK DAM SHALL BE A MINIMUM OF 1' 6" HIGHER THAN THE CENTER OF THE CHECK DAM.

CHECK DAM MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SEDIMENT ACCUMULATED UPSTREAM OF THE CHECK DAMS SHALL BE REMOVED WHEN THE SEDIMENT DEPTH IS WITHIN ½ OF THE HEIGHT OF THE CREST.

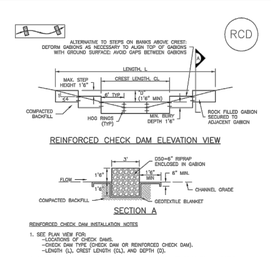
5. CHECK DAMS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.

6. WHEN CHECK DAMS ARE REMOVED, EXCAVATIONS SHALL BE FILLED WITH SUITABLE COMPACTED BACKFILL. DISTURBED AREA SHALL BE SEEDED AND MULCHED AND COVERED WITH GEOTEXTILE OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

[DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO, NOT AVAILABLE IN AUTOCAD]

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

Check Dams (CD) EC-12



REINFORCED CHECK DAM INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATIONS OF CHECK DAMS.
   –CHECK DAM TYPE (CHECK DAM OR REINFORCED CHECK DAM).
   –LENGTH (L), CREST LENGTH (CL), AND DEPTH (D).

2. CHECK DAMS INDICATED ON THE SWMP SHALL BE INSTALLED PRIOR TO AN UPSTREAM LAND–DISTURBING ACTIVITIES.

3. REINFORCED CHECK DAMS, GABIONS SHALL HAVE GALVANIZED TWISTED WIRE NETTING WITH A MAXIMUM OPENING DIMENSION OF 4.5" AND A MINIMUM WIRE THICKNESS OF 0.1/2". WIRE "HOG RINGS" AT 4" SPACING OR OTHER APPROVED MEANS SHALL BE USED AT ALL GABION SEAMS AND TO SECURE THE GABION TO THE ADJACENT SECTION.

4. THE CHECK DAM SHALL BE TRENCHED INTO THE GROUND A MINIMUM OF 1' 6".

5. GEOTEXTILE BLANKET SHALL BE PLACED IN THE REINFORCED CHECK DAM TRENCH EXTENDING A MINIMUM OF 1' 6" ON BOTH THE UPSTREAM AND DOWNSTREAM SIDES OF THE REINFORCED CHECK DAM.

CD–2, REINFORCED CHECK DAM

EC-12 Check Dams (CD)

REINFORCED CHECK DAM MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SEDIMENT ACCUMULATED UPSTREAM OF REINFORCED CHECK DAMS SHALL BE REMOVED AS NEEDED TO MAINTAIN THE EFFECTIVENESS OF BMP, TYPICALLY WHEN THE UPSTREAM SEDIMENT DEPTH IS WITHIN ½ THE HEIGHT OF THE CREST.

5. REPAIR OR REPLACE REINFORCED CHECK DAMS WHEN THERE ARE SIGNS OF DAMAGE SUCH AS HOLES IN THE GABION OR UNDERCUTTING.

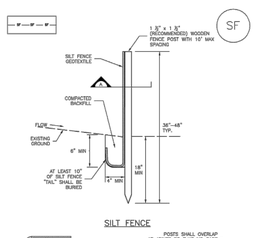
6. REINFORCED CHECK DAMS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.

7. WHEN REINFORCED CHECK DAMS ARE REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED, AND COVERED WITH A GEOTEXTILE BLANKET, OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

[DETAIL ADAPTED FROM DOUGLAS COUNTY, COLORADO AND CITY OF AURORA, NOT AVAILABLE IN AUTOCAD]

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

Silt Fence (SF) SC-1



SF–1. SILT FENCE

SC-1 Silt Fence (SF)

SILT FENCE INSTALLATION NOTES

1. SILT FENCE MUST BE PLACED AWAY FROM THE TOE OF THE SLOPE TO ALLOW FOR WATER PONDING. SILT FENCE AT THE TOE OF A SLOPE SHOULD BE INSTALLED IN A FLAT LOCATION AT LEAST SEVERAL FEET (2–5 FT) FROM THE TOE OF THE SLOPE TO ALLOW ROOM FOR PONDING AND DEPOSITION.

2. A UNIFORM 8" X 4" ANCHOR TRENCH SHALL BE EXCAVATED USING TRENCHER OR SILT FENCE INSTALLATION DEVICE. NO ROAD GRADERS, BACKHOES, OR SIMILAR EQUIPMENT SHALL BE USED.

3. COMPACT ANCHOR TRENCH BY HAND WITH A "JUMPING JACK" OR BY WHEEL ROLLING. COMPACTION SHALL BE SUCH THAT SILT FENCE REMAINS BEING PULLED OUT OF ANCHOR TRENCH BY HAND.

4. SILT FENCE SHALL BE PULLED TIGHT AS IT IS ANCHORED TO THE STAKES. THERE SHOULD BE NO NOTICEABLE SAG BETWEEN STAKES AFTER IT HAS BEEN ANCHORED TO THE STAKES.

5. SILT FENCE FABRIC SHALL BE ANCHORED TO THE STAKES USING 1" HEAVY DUTY STAPLES OR NAILS WITH 1" HEADS. STAPLES AND NAILS SHOULD BE PLACED 3" ALONG THE FABRIC DOWN THE STAKE.

6. AT THE END OF A RUN OF SILT FENCE ALONG A CONTOUR, THE SILT FENCE SHOULD BE TURNED PERPENDICULAR TO THE CONTOUR TO CREATE A "J–HOOK." THE "J–HOOK" CONFIGURATION SHOULD BE INSTALLED AT THE END OF ALL SILT FENCE CONTOURS TO KEEP RUNOFF FROM FLOWING AROUND THE END OF THE SILT FENCE (TYPICALLY 1/2' – 3/2').

7. SILT FENCE SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

SILT FENCE MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SEDIMENT ACCUMULATED UPSTREAM OF THE SILT FEN

811 Know what's below. Call before you dig.

IP-3. Rock Sock Inlet Protection for Sump/Area Inlet

IP-4. Silt Fence Inlet Protection for Sump/Area Inlet

IP-5. Over-excavation Inlet Protection

IP-6. Straw Bale Inlet Protection for Sump/Area Inlet

CIP-1. Culvert Inlet Protection

Propriety inlet protection devices should be installed in accordance with manufacturer specifications.

More information is provided below on selecting inlet protection for sump and on-grade locations.

Inlets Located in a Sump

When applying inlet protection in sump conditions, it is important that the inlet continue to function during larger runoff events. For curb inlets, the maximum height of the protective barrier should be lower than the top of the curb opening to allow overflow into the inlet during larger storms without excessive localized flooding. If the inlet protection height is greater than the curb elevation, particularly if the filter becomes clogged with sediment, runoff will not enter the inlet and may bypass it, possibly causing localized flooding, public safety issues, and downstream erosion and damage from bypassed flows.

Area inlets located in a sump setting can be protected through the use of silt fence, concrete block and rock socks (see parts and surfaces), sediment control logs/straw wattles embedded in the adjacent soil and stacked around the area inlet (on pervious surfaces), over-excavation around the inlet, and proprietary products providing equivalent functions.

Inlets Located on a Slope

For curb and gutter inlets on paved sloping streets, block and rock sock inlet protection is recommended in conjunction with curb socks in the gutter leading to the inlet. For inlets located along unpaved roads, also see the Check Dam Fact Sheet.

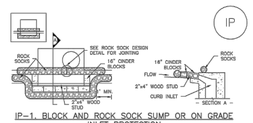
Maintenance and Removal

Inspect inlet protection frequently. Inspection and maintenance guidance includes:

- Inspect for tears that can result in sediment directly entering the inlet, as well as result in the contents of the BMP (e.g., gravel) washing into the inlet.
- Check for improper installation resulting in untreated flows bypassing the BMP and directly entering the inlet or bypassing to an unprotected downstream inlet. For example, silt fence that has not been properly trenched around the inlet can result in flows under the silt fence and directly into the inlet.
- Look for displaced BMPs that are no longer protecting the inlet. Displacement may occur following larger storm events that wash away or reposition the inlet protection. Traffic or equipment may also crush or displace the BMP.
- Monitor sediment accumulation upgradient of the inlet protection.

- Remove sediment accumulation from the area upstream of the inlet protection, as needed to maintain BMP effectiveness, typically when it reaches no more than half the storage capacity of the inlet protection. For silt fence, remove sediment when it accumulates to a depth of no more than 6 inches. Remove sediment accumulation from the area upstream of the inlet protection as needed to maintain the functionality of the BMP.
- Propriety inlet protection devices should be inspected and maintained in accordance with manufacturer specifications. If proprietary inlet insert devices are used, sediment should be removed in a timely manner to prevent devices from breaking and spilling sediment into the storm drain.

Inlet protection must be removed and properly disposed of when the drainage area for the inlet has reached final stabilization.



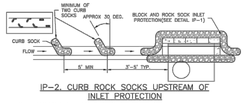
IP–1. BLOCK AND ROCK SOCK SUMP OR ON GRADE INLET PROTECTION

BLOCK AND CURB SOCK INLET PROTECTION INSTALLATION NOTES

1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. CONCRETE "CINDER" BLOCKS SHALL BE LAID ON THEIR SIDES AROUND THE INLET IN A SINGLE ROW, ABUTTING ONE ANOTHER WITH THE OPEN END FACING AWAY FROM THE CURB.

3. GRAVEL BAGS SHALL BE PLACED AROUND CONCRETE BLOCKS, CLOSELY ABUTTING ONE ANOTHER AND JOINTED TOGETHER IN ACCORDANCE WITH ROCK SOCK DESIGN DETAIL.



IP–2. CURB ROCK SOCKS UPSTREAM OF INLET PROTECTION

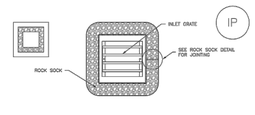
CURB ROCK SOCK INLET PROTECTION INSTALLATION NOTES

1. SEE ROCK SOCK DESIGN DETAIL INSTALLATION REQUIREMENTS.

2. PLACEMENT OF THE SOCK SHALL BE APPROXIMATELY 30 DEGREES FROM PERPENDICULAR IN THE OPPOSITE DIRECTION OF FLOW.

3. SOCKS ARE TO BE FLUSH WITH THE CURB AND SPACED A MINIMUM OF 5 FEET APART.

4. AT LEAST TWO CURB SOCKS IN SERIES ARE REQUIRED UPSTREAM OF ON–GRADE INLETS.

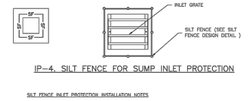


IP–3. ROCK SOCK SUMP/AREA INLET PROTECTION

ROCK SOCK SUMP/AREA INLET PROTECTION INSTALLATION NOTES

1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF ROCK SOCKS FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.



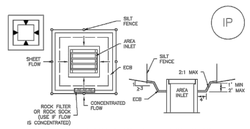
IP–4. SILT FENCE FOR SUMP INLET PROTECTION

SILT FENCE INLET PROTECTION INSTALLATION NOTES

1. SEE SILT FENCE DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. POSTS SHALL BE PLACED AT EACH CORNER OF THE INLET AND AROUND THE EDGES AT A MAXIMUM SPACING OF 3 FEET.

3. STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF SILT FENCE FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.



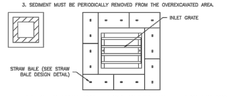
IP–5. OVEREXCAVATION INLET PROTECTION

OVEREXCAVATION INLET PROTECTION INSTALLATION NOTES

1. THIS FORM OF INLET PROTECTION IS PRIMARILY APPLICABLE FOR SITES THAT HAVE NOT YET REACHED FINAL GRADE AND SHOULD BE USED ONLY FOR INLETS WITH A RELATIVELY SMALL CONTRIBUTING DRAINAGE AREA.

2. WHEN USING FOR CONCENTRATED FLOWS, SHAPE BASIN IN 3:1 RATIO WITH LENGTH ORIENTED TOWARDS DIRECTION OF FLOW.

3. SEDIMENT MUST BE PERIODICALLY REMOVED FROM THE OVEREXCAVATED AREA.

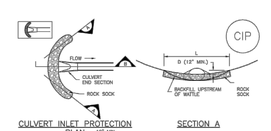


IP–6. STRAW BALE FOR SUMP INLET PROTECTION

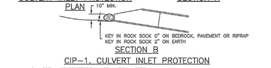
STRAW BALE BARRIER INLET PROTECTION INSTALLATION NOTES

1. SEE STRAW BALE DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. BALES SHALL BE PLACED IN A SINGLE ROW AROUND THE INLET WITH ENDS OF BALES TIGHTLY ABUTTING ONE ANOTHER.



CULVERT INLET PROTECTION SECTION A



SECTION B

CIP–1. CULVERT INLET PROTECTION

CULVERT INLET PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR
–LOCATION OF CULVERT INLET PROTECTION.

2. SEE ROCK SOCK DESIGN DETAIL FOR ROCK GRADATION REQUIREMENTS AND JOINTING DETAIL.

CULVERT INLET PROTECTION MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SEDIMENT ACCUMULATED UPSTREAM OF THE CULVERT SHALL BE REMOVED WHEN THE SEDIMENT DEPTH IS 1/2 THE HEIGHT OF THE ROCK SOCK.

5. CULVERT INLET PROTECTION SHALL REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS PERMANENTLY STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.

(DETAILS ADAPTED FROM AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

GENERAL INLET PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
–LOCATION OF INLET PROTECTION.
–TYPE OF INLET PROTECTION (IP-1, IP-2, IP-3, IP-4, IP-5, IP-6)

2. INLET PROTECTION SHALL BE INSTALLED PROMPTLY AFTER INLET CONSTRUCTION OR PAVING IS COMPLETE (TYPICALLY WITHIN 48 HOURS). IF A RAINFALL/RUNOFF EVENT IS FORECAST, INSTALL INLET PROTECTION PRIOR TO ONSET OF EVENT.

3. MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

INLET PROTECTION MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SEDIMENT ACCUMULATED UPSTREAM OF INLET PROTECTION SHALL BE REMOVED AS NECESSARY TO MAINTAIN BMP EFFECTIVENESS. TYPICALLY, WHEN STORAGE VOLUME REACHES 50% OF CAPACITY, A DEPTH OF 6" WHEN SILT FENCE IS USED, OR 1/2 OF THE HEIGHT FOR STRAW BALES.

5. INLET PROTECTION IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS PERMANENTLY STABILIZED AND APPROVED BY THE LOCAL JURISDICTION. APPROVE EARLIER REMOVAL OF INLET PROTECTION IN SUMPS.

6. WHEN INLET PROTECTION AT AREA INLETS IS REMOVED, THE DISTURBED AREA SHALL BE COVERED WITH TOP SOIL, SEEDED AND MULCHED, OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

NOTE: THE DETAILS INCLUDED WITH THIS FACT SHEET SHOW COMMONLY USED, CONVENTIONAL METHODS OF INLET PROTECTION IN THE DENVER METROPOLITAN AREA. THERE ARE MANY PROPRIETARY INLET PROTECTION METHODS ON THE MARKET. UDFCD NEITHER ENDORSES NOR DISCOURAGES THE USE OF PROPRIETARY METHODS. WHEN PROPRIETARY METHODS ARE USED, THE APPROPRIATE DETAIL FROM THE MANUFACTURER MUST BE INCLUDED IN THE SWMP AND THE BMP MUST BE INSTALLED AND MAINTAINED AS SHOWN IN THE MANUFACTURER'S DETAILS.

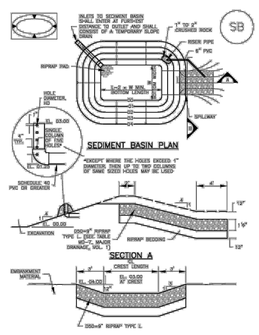
NOTE: SOME MUNICIPALITIES DISCOURAGE OR PROHIBIT THE USE OF STRAW BALES FOR INLET PROTECTION. CHECK WITH LOCAL JURISDICTION TO DETERMINE IF STRAW BALE INLET PROTECTION IS ACCEPTABLE.

Maintenance and Removal

Maintenance activities include the following:

- Dredge sediment from the basin, as needed to maintain BMP effectiveness, typically when the design storage volume is no more than one-third filled with sediment.
- Inspect the sediment basin embankments for stability and seepage.
- Inspect the inlet and outlet of the basin, repair damage, and remove debris. Remove, clean and replace the gravel around the outlet on a regular basis to remove the accumulated sediment within it and keep the outlet functioning.
- Be aware that removal of a sediment basin may require dewatering and associated permit requirements.
- Do not remove a sediment basin until the upstream area has been stabilized with vegetation.

Final disposition of the sediment basin depends on whether the basin will be converted to a permanent post-construction stormwater basin or whether the basin area will be returned to grade. For basins being converted to permanent detention basins, remove accumulated sediment and reconfigure the basin and outlet to meet the requirements of the final design for the detention facility. If the sediment basin is not to be used as a permanent detention facility, fill the excavated area with soil and stabilize with vegetation.


INLETS TO SEDIMENT BASIN SHALL ENDED AT FOREBAY
DIRECTION TO OUTLET AND SHALL CONSIST OF A TEMPORARY SLOPE
SB
1" TOP 6" CIRCULAR ORIFICE
RISER PIPE
6" PVC
RIPRAP END
HOLE DIAMETER, TO
SEDIMENT BASIN PLAN
"EXCEPT WHERE THE HOLES EXCEED 1" DIAMETER THEN UP TO TWO COLUMNS OF SAME SIZED HOLES MAY BE USED"
SPILLWAY
REINFORCE TO PVC OR GREATER
d1
d2
1'
1/2d
1/2d
1/2d
1/2d
SECTION A
CREST
EMBANKMENT MATERIAL
d1
d2
1'
1/2d
1/2d
1/2d
1/2d

Description

Temporary seeding can be used to stabilize disturbed areas that will be inactive for an extended period. Permanent seeding should be used to stabilize areas at final grade that will not be otherwise stabilized. Effective seeding includes preparing a seedbed, selecting an appropriate seed mixture, using proper planting techniques, and protecting the seeded area with mulch, geotextiles, or other appropriate measures.



Photograph TS/PS -1. Equipment used to drill seed. Photo courtesy of Douglas County.

Appropriate Uses

When the soil surface is disturbed and will remain inactive for an extended period (typically determined by local government requirements), proactive stabilization measures, including planting a temporary seed mix, should be implemented. If the inactive period is short-lived (on the order of two weeks), techniques such as surface roughening may be appropriate. For longer periods of inactivity of up to one year, temporary seeding and mulching can provide effective erosion control. Permanent seeding should be used on finished areas that have not been otherwise stabilized.

The USDCM Volume 2 *Revegetation* Chapter contains suggested annual grains and native seed mixes to use for temporary seeding. Alternatively, local governments may have their own seed mixes and timelines for seeding. Check jurisdictional requirements for seeding and temporary stabilization.

Design and Installation

Effective seeding requires proper seedbed preparation, selecting an appropriate seed mixture, using appropriate seeding equipment to ensure proper coverage and density, and protecting seeded areas with mulch or fabric until plants are established.

The USDCM Volume 2 *Revegetation* Chapter contains detailed seed mixes, soil preparation practices, and seeding and mulching recommendations that should be referenced to supplement this Fact Sheet.

Drill seeding is the preferred seeding method. Hydroseeding is not recommended except in areas where steep slopes prevent use of drill seeding equipment, and even in these instances it is preferable to hand seed and mulch. Some jurisdictions do not allow hydroseeding or hydromulching.

Seedbed Preparation

Prior to seeding, ensure that areas to be revegetated have soil conditions capable of supporting vegetation. Overlot grading can result in loss of topsoil and compaction, resulting in poor quality subsoils at the ground surface that have low nutrient value, little organic matter content, few soil microorganisms, rooting restrictions, and conditions less conducive to infiltration of precipitation. As a result, it is typically necessary to provide stockpiled topsoil, compost, or other soil amendments and retestfil them into the soil to a depth of 6 inches or more.

Temporary and Permanent Seeding	
Functions	
Erosion Control	Yes
Sediment Control	No
Site/Material Management	No

Topsoil should be salvaged during grading operations for use and spread on areas to be revegetated later. Topsoil should be viewed as an important resource to be utilized for vegetation establishment, due to its water-holding capacity, structure, texture, organic matter content, biological activity, and nutrient content. The rooting depth of most native grasses in the semi-arid Denver metropolitan area is 6 to 18 inches. If present, at a minimum of the upper 6 inches of topsoil should be stripped, stockpiled, and ultimately respread across areas that will be revegetated.

Where topsoil is not available, subsoils should be amended to provide an appropriate plant-growth medium. Organic matter, such as well digested compost, can be added to improve soil characteristics conducive to plant growth. Other treatments can be used to adjust soil pH conditions when needed. Soil testing, which is typically inexpensive, should be completed to determine and optimize the types and amounts of amendments that are required.

If the disturbed ground surface is compacted, rip or rototill the upper 12 inches of the surface prior to placing topsoil. If adding compost to the existing soil surface, rototilling is necessary. Surface roughening will assist in placing a stable topsoil layer on steeper slopes, and allow infiltration and root penetration to greater depth. Topsoil should not be placed when either the salvaged topsoil or receiving ground are frozen or snow covered.

Prior to seeding, the soil surface should be rough and the seedbed should be firm, but neither too loose nor compacted. The upper layer of soil should be in a condition suitable for seeding at the proper depth and conducive to plant growth. Seed-to-soil contact is the key to good germination.

Refer to MHFD's Topsoil Management Guidance for detailed information on topsoil assessment, design, and construction.

Temporary Vegetation

To provide temporary vegetative cover on disturbed areas which will not be paved, built upon, or fully landscaped or worked for an extended period (typically 30 days or more), plant an annual grass appropriate for the time of planting and mulch the planted areas. Temporary grain seed mixes suitable for the Denver metropolitan area are listed in Table TS/PS-1. Native temporary seed mixes are provided in USDCM Volume 2, Chapter 13, Appendix A. These are to be considered only as general recommendations when specific design guidance for a particular site is not available. Local governments typically specify seed mixes appropriate for their jurisdiction.

Permanent Revegetation

To provide vegetative cover on disturbed areas that have reached final grade, a perennial grass mix should be established. Permanent seeding should be performed promptly (typically within 14 days) after reaching final grade. Each site will have different characteristics and a landscape professional or the local jurisdiction should be contacted to determine the most suitable seed mix for a specific site. In lieu of a specific recommendation, one of the perennial grass mixes appropriate for site conditions and growth season listed in seed mix tables in the USDCM Volume 2 *Revegetation* Chapter can be used. The pure live seed (PLS) rates of application recommended in these tables are considered to be absolute minimum rates for seed applied using proper drill-seeding equipment. These are to be considered only as general

recommendations when specific design guidance for a particular site is not available. Local governments typically specify seed mixes appropriate for their jurisdiction.

If desired for wildlife habitat or landscape diversity, shrubs such as rubber rabbitbrush (*Chrysothamnus nauseosus*), fourwing saltbush (*Atriplex canescens*) and skunkbrush sumac (*Rhus trilobata*) could be added to the upland seed mixes at 0.25, 0.5 and 1 pound PLS/acre, respectively. In riparian zones, planting root stock of such species as American plum (*Prunus americana*), woods rose (*Rosa woodsii*), plains cottonwood (*Populus sargentii*), and willow (*Salix* spp.) may be considered. On non-topsoiled upland sites, a legume such as Ladak alfalfa at 1 pound PLS/acre can be included as a source of nitrogen for perennial grasses.

Timing of seeding is an important aspect of the revegetation process. For upland and riparian areas on the Colorado Front Range, the suitable timing for seeding is from October through May. The most favorable time to plant non-irrigated areas is during the fall, so that seed can take advantage of winter and spring moisture. Seed should not be planted if the soil is frozen, snow covered, or wet.

Seeding dates for the highest success probability of perrmnial species along the Front Range are generally in the spring from April through early May and in the fall after the first of September until the ground freezes. If the area is irrigated, seeding may occur in summer months, as well. See Table TS/PS-2 for appropriate seeding dates.

Table TS/PS-1. Minimum Drill Seeding Rates for Various Temporary Annual Grasses

Species[a] (Common name)	Growth Season[b]	Pounds of Pure Live Seed (PLS)/acre[c]	Planting Depth (inches)
1. Oats	Cool	35 - 50	1 - 2
2. Spring wheat	Cool	25 - 35	1 - 2
3. Spring barley	Cool	25 - 35	1 - 2
4. Annual ryegrass	Cool	10 - 15	½
5. Millet	Warm	3 - 15	½ - ¾
6. Winter wheat	Cool	20 -35	1 - 2
7. Winter barley	Cool	20 -35	1 - 2
8. Winter rye	Cool	20 -35	1 - 2
9. Triticale	Cool	25 -40	1 - 2

[a] Successful seeding of annual grass resulting in adequate plant growth will usually produce enough dead-plant residue to provide protection from wind and water erosion for an additional year. This assumes that the cover is not disturbed or mowed closer than 6 inches.

Hydraulic seeding may be substituted for drilling only where slopes are steeper than 3:1 or where access limitations exist. When hydraulic seeding is used, hydraulic mulching should be applied as a separate operation, when practical, to prevent the seeds from being encapsulated in the mulch.

[b] See Table TS/PS-2 for seeding dates. Irrigation, if consistently applied, may extend the use of cool season species during the summer months.

[c] Seeding rates should be doubled if seed is broadcast, or increased by 50 percent if done using a Brillion Drill or by hydraulic seeding.

Table TS/PS-2. Seeding Dates for Annual and Perennial Grasses

	Annual Grasses (Numbers in table reference species in Table TS/PS-1)		Perennial Grasses	
Seeding Dates	**Warm**	**Cool**	**Warm**	**Cool**
January 1- March 15			✓	✓
March 16- April 30		1,2,3	✓	✓
May 1- May 15			✓	
May 16- June 30	5			
July 1- July 15	5			
July 16- August 31				
September 1- September 30		6, 7, 8, 9		
October 1- December 31			✓	✓

Mulch

Cover seeded areas with mulch or an appropriate rolled erosion control product to promote establishment of vegetation. Anchor mulch by crimping, netting or use of a non-toxic tackifier. See the USDCM Volume 2 *Revegetation* Chapter and Volume 3 Mulching BMP Fact Sheet (EC-04) for additional guidance.

Maintenance and Removal

Monitor and observe seeded areas to identify areas of poor growth or areas that fail to germinate. Reseed and mulch these areas, as needed.

If a temporary annual seed was planted, the area should be reseeded with the desired perennial mix when there will be no further work in the area. To minimize competition between annual and perennial species, the annual mix needs time to mature and die before seeding the perennial mix. To increase success of the perennial mix, it should be seeded during the appropriate seeding dates the second year after the temporary annual mix was seeded. Alternatively, if this timeline is not feasible, the annual mix seed heads should be removed and then the area seeded with the perennial mix.

An area that has been permanently seeded should have a good stand of vegetation within one growing season if irrigated and within three growing seasons without irrigation in Colorado. Reseed portions of the site that fail to germinate or remain bare after the first growing season.

Seeded areas may require irrigation, particularly during extended dry periods. Targeted weed control may also be necessary.

Protect seeded areas from construction equipment and vehicle access.

Description

Mulching consists of evenly applying straw, hay, shredded wood mulch, rock, bark or compost to disturbed soils and securing the mulch by crimping, tackifiers, netting or other measures. Mulching helps reduce erosion by protecting bare soil from rainfall impact, increasing infiltration, and reducing runoff. Although often applied in conjunction with temporary or permanent seeding, it can also be used for temporary stabilization of areas that cannot be reseeded due to seasonal constraints.



Photograph MU-1. An area that was recently seeded, mulched, and crimped.

Mulch can be applied either using standard mechanical dry application methods or using hydromulching equipment that hydraulically applies a slurry of water, wood fiber mulch, and often a tackifier.

Appropriate Uses

Use mulch in conjunction with seeding to help protect the seedbed and stabilize the soil. Mulch can also be used as a temporary cover on low to mild slopes to help temporarily stabilize disturbed areas where growing season constraints prevent effective reseeding. Disturbed areas should be properly mulched and tacked, or seeded, mulched and tacked promptly after final grade is reached (typically within no longer than 14 days) on portions of the site not otherwise permanently stabilized.

Standard dry mulching is encouraged in most jurisdictions; however, hydromulching may not be allowed in certain jurisdictions or may not be allowed near waterways.

Do not apply mulch during windy conditions.

Design and Installation

Prior to mulching, surface-roughen areas by rolling with a crimping or punching type roller or by track walking. Track walking should only be used where other methods are impractical because track walking with heavy equipment typically compacts the soil.

A variety of mulches can be used effectively at construction sites. Consider the following:

Mulch	
Functions	
Erosion Control	Yes
Sediment Control	Moderate
Site/Material Management	No

- Clean, weed-free and seed-free cereal grain straw should be applied evenly at a rate of 2 tons per acre and must be tacked or fastened by a method suitable for the condition of the site. Straw mulch must be anchored (and not merrily placed) on the surface. This can be accomplished mechanically by crimping or with the aid of tackifiers or nets. Anchoring with a crimping implement is preferred, and is the recommended method for areas flatter than 3:1. Mechanical crimpers must be capable of tucking the long mulch fibers into the soil to a depth of 3 inches without cutting them. An agricultural disk, while not an ideal substitute, may work if the disk blades are dull or blunted and set vertically; however, the frame may have to be weighted to afford proper soil penetration.
- Grass hay may be used in place of straw; however, because hay is comprised of the entire plant including seed, mulching with hay may seed the site with non-native grass species which might in turn out-compete the native seed. Alternatively, native species of grass hay may be purchased, but can be difficult to find and are more expensive than straw. Purchasing and utilizing a certified weed-free straw is an easier and less costly mulching method. When using grass hay, follow the same guidelines as for straw (provided above).
- On small areas sheltered from the wind and heavy runoff, spraying a tackifier on the mulch is satisfactory for holding it in place. For steep slopes and special situations where greater control is needed, erosion control blankets anchored with stakes should be used instead of mulch.
- Hydraulic mulching consists of wood cellulose fibers mixed with water and a tackifying agent and should be applied at a rate of no less than 1,500 pounds per acre (1,425 lbs of fibers mixed with at least 75 lbs of tackifier) with a hydraulic mulcher. For steeper slopes, up to 2000 pounds per acre may be required for effective hydroseeding. Hydromulch typically requires up to 24 hours to dry; therefore, it should not be applied immediately prior to inclement weather. Application to roads, waterways and existing vegetation should be avoided.
- Erosion control mats, blankets, or nets are recommended to help stabilize steep slopes (generally 3:1 and steeper) and waterways. Depending on the product, these may be used alone or in conjunction with grass or straw mulch. Normally, use of these products will be restricted to relatively small areas. Biodegradable mats made of straw and jute, straw-coconut, coconut fiber, or excelsior can be used instead of mulch. (See the ECM/TRM BMP for more information.)
- Some tackifiers or binders may be used to anchor mulch. Check with the local jurisdiction for allowed tackifiers. Manufacturer's recommendations should be followed at all times. (See the Soil Binder BMP for more information on general types of tackifiers.)
- Rock can also be used as mulch. It provides protection of exposed soils to wind and water erosion and allows infiltration of precipitation. An aggregate base course can be spread on disturbed areas for temporary or permanent stabilization. The rock mulch layer should be thick enough to provide full coverage of exposed soil on the area it is applied.

Maintenance and Removal

After mulching, the bare ground surface should not be more than 10 percent exposed. Reapply mulch, as needed, to cover bare areas.

Know what's below. Call before you dig.

PCD FILE #: SF2324

REFERENCE DRAWINGS

X-TITLE-CD
X-886-PR-SITE
FEMA_XS
X-886.066-EX-MAP-1
164022-01 Hay Creek Road BNDY
X-886-ALTA-SURVEY
Hay Creek BFEs

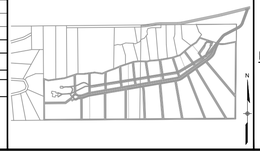
No.	DATE	DESCRIPTION	BY

REVISIONS

COMPUTER FILE MANAGEMENT

FILE NAME: S:\22.886.076 Hay Creek-Forest Manor-O'Leary Properties\500 CADD\504 Plan Sets\Construction Plans\GEC Plan\ECN01.dwg
CTB FILE: Matrix.ctb
PLOT DATE: 5/29/2024 9:36 AM
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.

SHEET KEY



BENCHMARK

PROJECT ELEVATIONS ARE NAVD 88 ELEVATIONS BASED ON AN OPUS DERIVED ELEVATION ON CONTROL POINT 10, A NO. 5 REBAR HAVING AN ELEVATION OF 5769.92.

BASIS OF BEARING

THE SOUTH LINE OF THE NORTHWEST QUARTER OF SECTION 22, TOWNSHIP 15 SOUTH, RANGE 65 WEST OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO, BEING MONUMENTED ON THE EASTERLY END BY A 2-1/2" ALUMINUM CAP STAMPED "NOLTE PLS25955 C1/4 S22 T15S, R65W 1999, "AND THE WESTERLY END BY A2-1/2" ALUMINUM CAP STAMPED "SSS PLS 16154 1/4 S21 S22 T15S, R65W 2000, "BEING ASSUMED TO BEAR S89°54'42"W, A DISTANCE OF 2,627.78 FEET.

PREPARED BY:
Matrix
Excellence by Design

SEAL

COLORADO LICENSED JEFFREY A. OLEARY 30265 05/28/2024 PROFESSIONAL ENGINEER

FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC.
PROJECT No. 22.886.076

HAY CREEK VALLEY

EL PASO COUNTY, COLORADO
FINAL GRADING & EROSION CONTROL PLANS

DETAILS

DESIGNED BY: CVW
DRAWN BY: CVW
CHECKED BY: JAO
SCALE HORIZ. N/A VERT. N/A
DATE ISSUED: MAY 2024
SHEET 12 OF 12
DRAWING No. ECN03

SWMP Inspection & Maintenance Log

Stormwater Management Plan Inspection and Maintenance Log

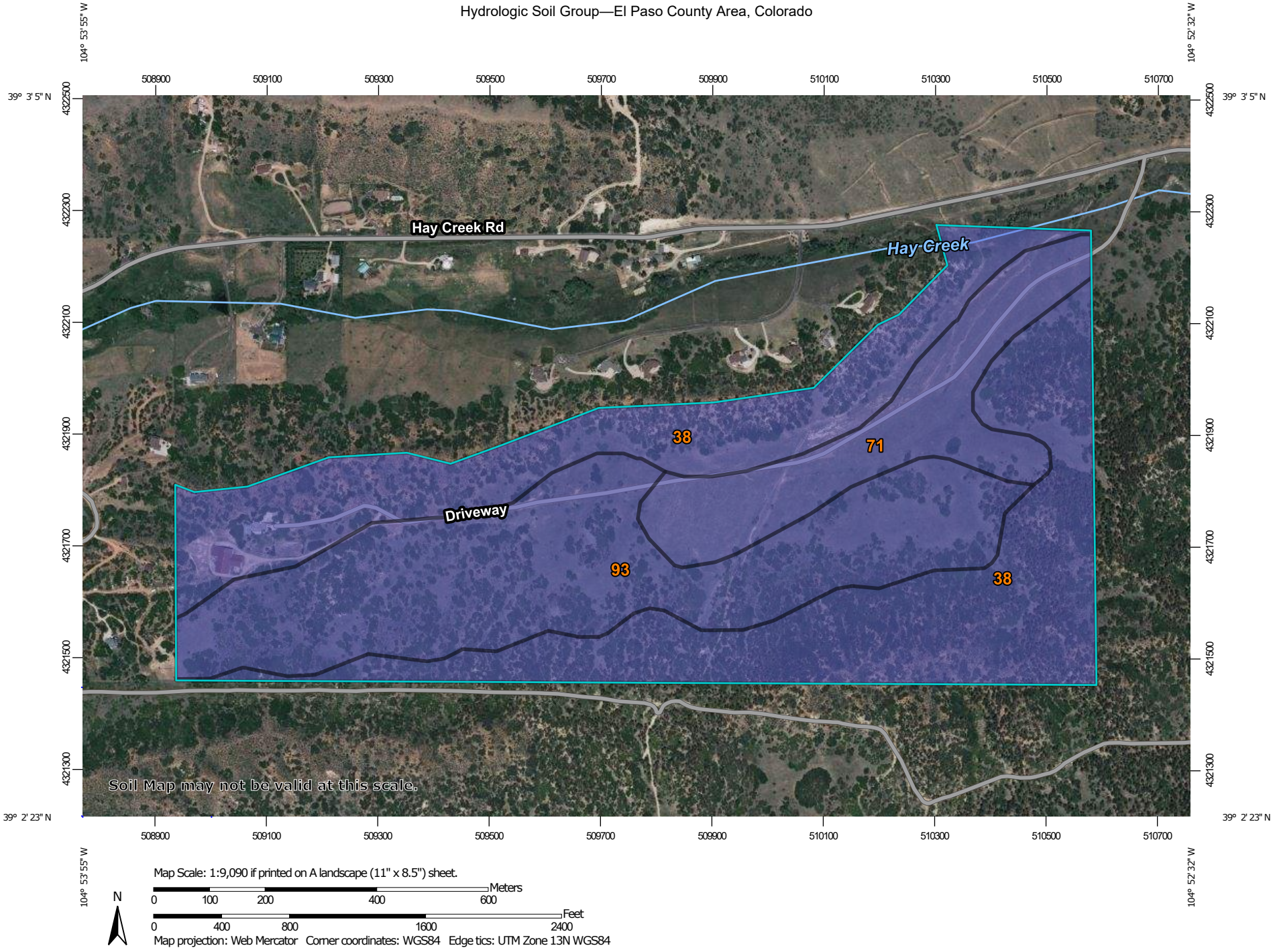
Hay Creek Valley

Monument, CO

(Record inspections, items found maintenance and corrective actions taken. Also, record any training received by Contractor personnel with regard to erosion control, materials handling and any inspections by outside agencies)

DATE	ITEM	SIGNATURE OF PERSON MAKING ENTRY

Soil Survey of El Paso County Area Soils Map


104° 53' 55" W
104° 52' 32" W
39° 3' 5" N
39° 2' 23" N
508900
509100
509300
509500
509700
509900
510100
510300
510500
510700
4322500
4322300
4322100
4321900
4321700
4321500
4321300
Hay Creek Rd
Hay Creek
Driveway
38
71
93
38
Soil Map may not be valid at this scale.
Map Scale: 1:9,090 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0 100 200 400 600
Feet
0 400 800 1600 2400
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 20, Sep 2, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 9, 2021—Jun 12, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
38	Jarre-Tecolote complex, 8 to 65 percent slopes	B	109.5	50.8%
71	Pring coarse sandy loam, 3 to 8 percent slopes	B	31.1	14.5%
93	Tomah-Crowfoot complex, 8 to 15 percent slopes	B	74.8	34.7%
Totals for Area of Interest			**215.4**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

FEMA FIRM Floodplain Maps

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 13. The **horizontal datum** was NAD83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the **North American Vertical Datum of 1988 (NAVD88)**. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242 or visit its website at http://www.ngs.noaa.gov/.

Base Map information shown on this FIRM was provided in digital format by El Paso County, Colorado Springs Utilities, City of Fountain, Bureau of Land Management, National Oceanic and Atmospheric Administration, United States Geological Survey, and Anderson Consulting Engineers, Inc. These data are current as of 2006.

This map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map. The profile baselines depicted on this map represent the hydraulic modeling baselines that match the flood profiles and Floodway Data Tables if applicable, in the FIS report. As a result, the profile baselines may deviate significantly from the new base map channel representation and may appear outside of the floodplain.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact **FEMA Map Service Center** (MSC) via the FEMA Map Information eXchange (FMIX) 1-877-336-2627 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. The MSC may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov/.

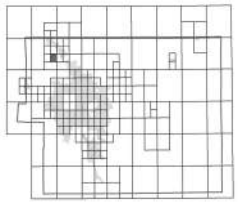
If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.

El Paso County Vertical Datum Offset Table

Flooding Source	Vertical Datum Offset (ft)

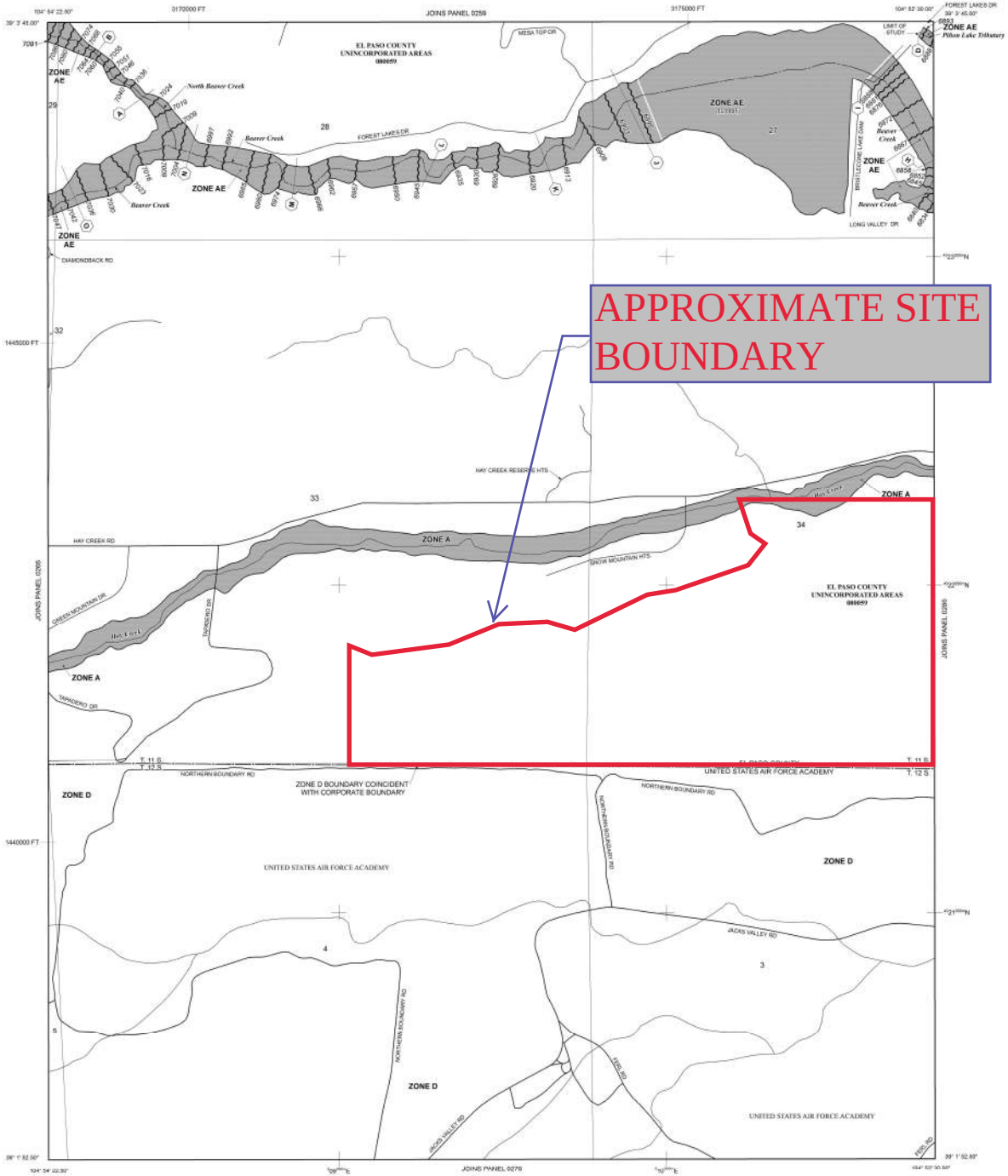
REFER TO SECTION 3.3 OF THE EL PASO COUNTY FLOOD INSURANCE STUDY FOR STREAM BY STREAM VERTICAL DATUM CONVERSION INFORMATION

Panel Location Map



This Digital Flood Insurance Rate Map (DFIRM) was produced through a Cooperating Technical Partner (CTP) agreement between the State of Colorado Water Conservation Board (CWCB) and the Federal Emergency Management Agency (FEMA).

Additional Flood Hazard information and resources are available from local communities and the Colorado Water Conservation Board.



NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 11 SOUTH, RANGE 67 WEST, AND TOWNSHIP 12 SOUTH, RANGE 67 WEST.

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A — No Base Flood Elevations determined.
ZONE AE — Base Flood Elevations determined.
ZONE AH — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR — Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99 — Area to be protected from 1% annual chance flood by a federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

Floodplain boundary
Floodway boundary
Zone D Boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513 — Base Flood Elevation line and value; elevation in feet*
(EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

A — A — Cross section line
23 — 23 — Transect line
97° 07' 30.00" / 32° 22' 30.00" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4000000 FT — 1000-meter Universal Transverse Mercator grid ticks, zone 13
6000000 FT — 5000-foot grid ticks: Colorado State Plane coordinate system, central zone (FIPSZONE 0502), Lambert Conformal Conic Projection
DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
MARCH 17, 1997

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
DECEMBER 7, 2018 - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas, to update map format, to add roads and road names, and to incorporate previously issued Letters of Map Revision.

For community map revision history prior to countywide mapping, refer to the Community Map History Table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP — NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0267G

FIRM
FLOOD INSURANCE RATE MAP
EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 267 OF 1300

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
EL PASO COUNTY	080059	0267	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER 08041C0267G

MAP REVISED DECEMBER 7, 2018

Federal Emergency Management Agency

CDPHE General Permit

COLORADO
Department of Public Health & Environment

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

ASSIGNED PERMIT NUMBER

Date Received _____

MM DD YYYY HH:MM:SS

Revised: 3-2016

STORMWATER DISCHARGE ASSOCIATED WITH CONSTRUCTION ACTIVITIES APPLICATION
COLORADO DISCHARGE PERMIT SYSTEM (CDPS)

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

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.

Beginning July 1, 2016, invoices will be based on acres disturbed.
DO NOT PAY THE FEES NOW – Invoices will be sent after the receipt of the application.

Disturbed Acreage for this application (see page 4)

- ☐ Less than 1 acre ($83 initial fee, $165 annual fee)
- ☐ 1-30 acres ($175 initial fee, $350 annual fee)
- ☐ Greater than 30 acres ($270 initial fee, $540 annual fee)

A. PERMIT INFORMATION

Reason for Application

- ☐ **NEW CERT**
- ☐ **RENEW CERT**
- ☐ **MODIFICATION**
- ☐ **TRANSFER**
- ☐ **CHANGE OF CONTACT**
- ☐ **TERMINATION**

Existing Cert # _____

B. PERMITTED PROJECT/FACILITY INFORMATION

Facility Name: _____ Original ID: _____

Property Address 1: _____ Property Address 2: _____ County: _____

City: _____ State: _____ Zip Code: _____

Latitude : _____ Longitude : _____

SIC Code	Description

Receiving Water Name	Receiving Water Type

C. CONTACT INFORMATION

1) *OPERATOR – RESPONSIBLE OFFICIAL - the party that has operation control over day to day activities – may be the same as the Owner

Responsible Person (Title): _____ First Name: _____ Last Name: _____

Telephone No: _____ Email Address: _____ Organization: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

2) *PROPERTY OWNER (CO-PERMITTEE) RESPONSIBLE OFFICIAL

Responsible Person (Title): _____ First Name: _____ Last Name: _____

Telephone No: _____ Email Address: _____ Organization: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

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

Responsible Person (Title): _____ First Name: _____ Last Name: _____

Telephone No: _____ Email Address: _____ Organization: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

4) *BILLING CONTACT

Responsible Person (Title): _____ First Name: _____ Last Name: _____

Telephone No: _____ Email Address: _____ Organization: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

5) OTHER CONTACT TYPES

Title	First Name	Last Name	Phone	Email	Address	City	State	Zip	Contact Type	Other

6) Former Permittee (transfer)

Responsible Person (Title): _____ First Name: _____ Last Name: _____

Email Address: _____ Company: _____

D. LEGAL DESCRIPTION

Legal description: if subdivided, provide the legal description below, or indicate that it is not applicatable. Do not supply Township/Range/Section or metes and bounds description of the site.

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

OR

☐ Not applicable (site has not been subdivided)

☐ Facility additional description info

E. AREA OF CONSTRUCTION SITE

Total area of construction site _____ acres

Total area of project disturbance _____ acres

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.)

☐ Commercial Development ☐ Residential Development ☐ Highway and Transportation Development

☐ Pipeline and Utilities (including natural gas, electricity, water, and communications)

☐ Oil and Gas Exploration and Well Pad Development

☐ Non-structural and other development (i.e. parks, trails, stream realignment, bank stabilization, demolition, etc.)

☐ Other _____

G. ANTICIPATED CONSTRUCTION SCHEDULE

Construction Start Date: _____ Final Stabilization Date: _____

• 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 he site is finally stabilized. This means that all ground surface disturbing activities at the site have been completed and all disturbed areas have either been 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 to a new responsible operator.

SIGNATURE REQUIREMENTS:

TERMINATION CERTIFICATION

☐ By checking this box I understand that by submitting this notice of termination, I am no longer authorized to discharge stormwater associated with construction activity by the general permit. I understand that discharging pollutants in stormwater associated with construction activities to the waters of the State of Colorado, where such discharges are not authorized by a CDPS permit, is unlawful under the Colorado Water Quality Control Act and the Clean Water Act.

☐ **STORMWATER MANAGEMENT PLAN CERTIFICATION (on new and renewals)**
By checking this box "I certify under penalty of law that a complete Stormwater Management Plan, has been/or will be completed, prior to the commencement of any construction 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/or will be, 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."

THIS PORTION OF THE SIGNATURE LANGUAGE IS REQUIRED ON ALL SUBMITTALS
"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."

_____ _____
Signature of Operator Date Signed

_____ _____
Name (printed) Title

_____ _____
Signature of Owner Date Signed

_____ _____
Name (printed) Title

Signature: The applicant must be either the owner and operator of the construction site. Refer to Part B of the instructions for additional information. The application must be signed by the applicant to be considered complete. In all cases, it shall be signed as follows:
(Regulation 61.4 (1ei)
a) In the case of corporations, by the responsible corporate officer is responsible for the overall operation of the facility from which the discharge described in the form 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, ranking elected official, (a principal executive officer has responsibility for the overall operation of the facility from which the discharge originates).

FORMER PERMITTEE used for transfers

Signature (Legally Responsible Party) _____ Date _____

Name (printed) _____ Title _____