



# STORMWATER MANAGEMENT PLAN

**FALCON MEADOWS AT BENT GRASS  
FILING NO. 3  
PCD FILING NO.: SF-22-016**

**STORMWATER PERMIT # COR\_\_\_\_\_**  
**CERTIFICATION # \_\_\_\_\_**

***Owner/Developer:***

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Colorado Springs, CO 80920

***SWMP Preparer:***

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***Contractor:***

To be Determined

***SWMP Administrator / Qualified  
Stormwater Manager:***

To be Determined

***Date:***

Prepared: January 27, 2022  
Revised: June 24, 2022

***SWMP Location:***

On-Site (Copy) and Challenger Homes  
(Original)



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## SWMP REPORT REVISION LOG

REVISION #	DATE	BY	COMMENTS
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## **I. PROJECT DESCRIPTION**

### **LOCATION**

The Falcon Meadows at Bent Grass Filing No. 3 is located along the northern boundary line of the overall Bent Grass development and west of the existing West Tributary of the Falcon Drainage Basin. The project is a single-family residential development consisting of 49 lots, located in the Falcon area of El Paso County, Colorado. The site is located in the Northwest  $\frac{1}{4}$  and Southwest  $\frac{1}{4}$  of Section 1, Township 13S, Range 65W, of the Sixth Principal Meridian, County of El Paso, State of Colorado. The subject property is located to the south of The Meadows Filing No. 3; west of Bent Grass Residential Filing No. 2 and north of Falcon Meadows at Bent Grass Filing No. 2; and east of The Meadows Filing No. 2. A Vicinity Map is included in Appendix A.

### **LEGAL DESCRIPTION**

The legal description of Falcon Meadows at Bent Grass Filing No. 3 is:

A PORTION OF TRACT A AND A PORTION OF TRACT F, FALCON MEADOWS AT BENT GRASS FILING NO. 2, SITUATED IN THE NORTHWEST QUARTER OF SECTION 1, TOWNSHIP 13 SOUTH, RANGE 65 WEST OF THE SIXTH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BASIS OF BEARINGS: ALL BEARINGS ARE GRID BEARINGS OF THE COLORADO STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE, NORTH AMERICAN DATUM 1983. THE WEST LINE OF THE SOUTHWEST QUARTER OF THE NORTHWEST QUARTER OF SECTION 1, TOWNSHIP 13 SOUTH, RANGE 65 WEST OF THE SIXTH PRINCIPAL MERIDIAN BEARS N00°14'14"W, MONUMENTED BY THE WEST QUARTER CORNER OF SAID SECTION 1, BEING A #5 REBAR WITH 2" ALUMINUM CAP STAMPED "PLS 28651", AND MONUMENTED BY THE NORTH SIXTEENTH CORNER COMMON TO SECTIONS 1 AND 2, BEING A 1-1/2" ALUMINUM CAP STAMPED "PLS 11624", WITH ALL BEARINGS HEREIN RELATIVE THERETO;

COMMENCING AT THE NORTHWEST CORNER OF THE SOUTHWEST QUARTER OF THE NORTHWEST QUARTER OF SAID SECTION 1;

THENCE WITH THE WEST LINE OF THE SOUTHWEST QUARTER OF THE NORTHWEST QUARTER OF SAID SECTION 1, S00°14'14"E, A DISTANCE OF 50.00 FEET TO THE NORTHWEST CORNER OF SAID TRACT A, BEING THE POINT OF BEGINNING;

THENCE WITH THE NORTH LINES OF SAID TRACT A AND SAID TRACT F, N89°36'34"E, A DISTANCE OF 187.29 FEET;

THENCE WITH THE NORTH LINES OF SAID TRACT F THE FOLLOWING 2 COURSES:

- 1) S67°07'56"E, A DISTANCE OF 151.95 FEET;
- 2) N89°36'34"E, A DISTANCE OF 878.89 FEET TO THE NORTHEAST CORNER OF SAID TRACT F;

THENCE WITH THE EAST LINES OF SAID TRACT F THE FOLLOWING 3 COURSES:

- 1) S00°30'26"E, A DISTANCE OF 25.41 FEET TO THE BEGINNING OF A NON-TANGENT CURVE TO THE RIGHT;
- 2) WITH SAID NON-TANGENT CURVE TO THE RIGHT THROUGH A CENTRAL ANGLE OF 134°24'55", HAVING A RADIUS OF 55.00 FEET, AN ARC LENGTH OF 129.03 FEET, AND A CHORD BEARING S23°17'58"E, A CHORD DISTANCE OF 101.41 FEET TO THE BEGINNING OF A REVERSE CURVE TO THE LEFT;
- 3) WITH SAID CURVE TO THE LEFT THROUGH A CENTRAL ANGLE OF 44°24'56", HAVING A RADIUS OF 50.00 FEET, AN ARC LENGTH OF 38.76 FEET, AND A CHORD BEARING S21°42'02"W, A CHORD DISTANCE OF 37.80 FEET;

THENCE WITH THE EXTENDED EAST LINE OF SAID TRACT F, S00°30'26"E, A DISTANCE OF 322.90 FEET TO THE BEGINNING OF A CURVE TO THE RIGHT;

THENCE WITH SAID CURVE TO THE RIGHT THROUGH A CENTRAL ANGLE OF 3°11'52", HAVING A RADIUS OF 525.00 FEET, AN ARC LENGTH OF 29.30 FEET, AND A CHORD BEARING S1°05'30"W, A CHORD DISTANCE OF 29.30 FEET;

THENCE S02°41'28"W, A DISTANCE OF 36.77 FEET TO A POINT ON THE EAST RIGHT OF WAY LINE OF HENZLEE PLACE;

THENCE DEPARTING SAID EAST RIGHT OF WAY LINE OF HENZLEE PLACE, N87°18'34"W, A DISTANCE OF 50.00 FEET TO A POINT ON THE WEST RIGHT OF WAY LINE OF HENZLEE PLACE;

THENCE WITH SAID WEST RIGHT OF WAY LINE OF HENZLEE PLACE, S02°41'26"W, A DISTANCE OF 8.92 FEET TO THE NORTHEAST CORNER OF LOT 95, FALCON MEADOWS AT BENT GRASS FILING NO. 2;

THENCE WITH THE NORTH LINES OF LOTS 95 THROUGH 108, FALCON MEADOWS AT BENT GRASS FILING NO. 2, THE FOLLOWING 7 COURSES:

- 1) S89°30'12"W, A DISTANCE OF 208.15 FEET;
- 2) N85°31'25"W, A DISTANCE OF 19.94 FEET;
- 3) N73°39'22"W, A DISTANCE OF 27.61 FEET;
- 4) N58°39'57"W, A DISTANCE OF 32.39 FEET;
- 5) N42°28'25"W, A DISTANCE OF 32.39 FEET;
- 6) N27°18'17"W, A DISTANCE OF 29.93 FEET;
- 7) N22°53'39"W, A DISTANCE OF 155.00 FEET;

THENCE WITH SAID SOUTH RIGHT OF WAY LINE OF DAELYN DRIVE, N67°06'21"E, A DISTANCE OF 8.15 FEET;

THENCE DEPARTING SAID SOUTH RIGHT OF WAY LINE OF DAELYN DRIVE, N22°53'39"W, A DISTANCE OF 50.00 FEET TO A POINT ON THE NORTH RIGHT OF WAY LINE OF DAELYN DRIVE;

THENCE WITH SAID NORTH RIGHT OF WAY LINE OF DAELYN DRIVE, S67°06'21"W, A DISTANCE OF 106.15 FEET TO THE BEGINNING OF A CURVE TO THE RIGHT;

THENCE WITH SAID CURVE TO THE RIGHT THROUGH A CENTRAL ANGLE OF 90°00'00", HAVING A RADIUS OF 12.00 FEET, AN ARC LENGTH OF 18.85 FEET, AND A CHORD BEARING N67°53'39"W, A CHORD DISTANCE OF 16.97 FEET TO A POINT ON THE EAST RIGHT OF WAY LINE OF KITTRICK PLACE;

THENCE WITH SAID EAST RIGHT OF WAY LINE OF KITTRICK PLACE, N22°53'39"W, A DISTANCE OF 23.89 FEET;

THENCE DEPARTING SAID EAST RIGHT OF WAY LINE OF KITTRICK PLACE, S67°06'21"W, A DISTANCE OF 50.00 FEET TO A POINT ON THE WEST RIGHT OF WAY LINE OF KITTRICK PLACE;

THENCE WITH SAID WEST RIGHT OF WAY LINE OF KITTRICK PLACE, S22°53'39"E, A DISTANCE OF 23.89 FEET TO THE BEGINNING OF A CURVE TO THE RIGHT;  
THENCE WITH SAID CURVE TO THE RIGHT THROUGH A CENTRAL ANGLE OF 90°00'00", HAVING A RADIUS OF 12.00 FEET, AN ARC LENGTH OF 18.85 FEET, AND A CHORD BEARING S22°06'21"W, A CHORD DISTANCE OF 16.97 FEET TO A POINT ON THE NORTH RIGHT OF WAY LINE OF DAELYN DRIVE;

THENCE WITH SAID NORTH RIGHT OF WAY LINE OF DAELYN DRIVE, S67°06'21"W, A DISTANCE OF 249.12 FEET TO THE BEGINNING OF A CURVE TO THE RIGHT;  
THENCE WITH SAID CURVE TO THE RIGHT THROUGH A CENTRAL ANGLE OF 90°00'00", HAVING A RADIUS OF 12.00 FEET, AN ARC LENGTH OF 18.85 FEET, AND A CHORD BEARING N67°53'39"W, A CHORD DISTANCE OF 16.97 FEET TO A POINT ON THE EAST RIGHT OF WAY LINE OF ISABEL PLACE;

THENCE WITH SAID EAST RIGHT OF WAY LINE OF ISABEL PLACE, N22°53'39"W, A DISTANCE OF 23.89 FEET;

THENCE DEPARTING SAID EAST RIGHT OF WAY LINE OF ISABEL PLACE, S67°06'21"W, A DISTANCE OF 50.00 FEET TO A POINT ON THE WEST RIGHT OF WAY LINE OF ISABEL PLACE;

THENCE WITH SAID WEST RIGHT OF WAY LINE OF ISABEL PLACE, S22°53'39"E, A DISTANCE OF 23.89 FEET TO THE BEGINNING OF A CURVE TO THE RIGHT;

THENCE WITH SAID CURVE TO THE RIGHT THROUGH A CENTRAL ANGLE OF 90°00'00", HAVING A RADIUS OF 12.00 FEET, AN ARC LENGTH OF 18.85 FEET, AND A CHORD BEARING S22°06'22"W, A CHORD DISTANCE OF 16.97 FEET TO A POINT ON THE NORTH RIGHT OF WAY LINE OF DAELYN DRIVE;

THENCE WITH SAID NORTH RIGHT OF WAY LINE OF DAELYN DRIVE, S67°06'21"W, A DISTANCE OF 68.83 FEET TO THE BEGINNING OF A CURVE TO THE LEFT;

THENCE WITH SAID CURVE TO THE LEFT THROUGH A CENTRAL ANGLE OF 12°24'01", HAVING A RADIUS OF 225.00 FEET, AN ARC LENGTH OF 48.97 FEET, AND A CHORD BEARING S60°54'21"W, A CHORD DISTANCE OF 48.60 FEET TO THE SOUTHEAST CORNER OF LOT 22, FALCON MEADOWS AT BENT GRASS FILING NO. 2;

THENCE WITH THE EAST LINE OF SAID LOT 22, N35°19'45"W, A DISTANCE OF 230.66 FEET, TO THE NORTHEAST CORNER OF SAID LOT 22;

THENCE WITH THE NORTH LINE OF SAID LOT 22, S67°06'21"W, A DISTANCE OF 57.64 FEET TO THE NORTHWEST CORNER OF SAID LOT 22, SAID POINT BEING ON THE EAST LINE OF SAID TRACT A, FALCON MEADOWS AT BENT GRASS FILING NO. 2;

THENCE S89°45'46"W, A DISTANCE OF 35.00 FEET TO A POINT ON THE WEST LINE OF SAID TRACT A, SAID POINT ALSO BEING ON THE WEST LINE OF THE SOUTHWEST QUARTER OF THE NORTHWEST QUARTER OF SAID SECTION 1;

THENCE WITH SAID WEST LINE OF SAID TRACT A AND THE WEST LINE OF THE SOUTHWEST QUARTER OF THE NORTHWEST QUARTER OF SAID SECTION 1, N00°14'14"W, A DISTANCE OF 414.63 FEET TO THE POINT OF BEGINNING.

CONTAINING 12.74 ACRES (554,878 SQUARE FEET), MORE OR LESS.

#### **DESCRIPTION OF PROPERTY**

The project site contains approximately 12.74 acres and is comprised of undeveloped land covered sparsely by native grasses and weeds. This site is a portion of the larger 180-acre Bent Grass Development. Falcon Meadows at Bent Grass Filing No. 3 will create 49 residential lots including open spaces, along with street rights of way. The site is located north of existing Bent Grass Meadows Drive.

#### **CONSTRUCTION ACTIVITY**

Construction activities include but are not limited to infrastructure to support the proposed residential lots includes grading, street pavement, stormwater conveyance (pipes, inlets, junction boxes, channels, etc.), potable water mains, sanitary sewer mains and stormwater quality ponds. Construction will commence with preliminary over lot grading followed by utility installation. Construction will be completed with final stabilization including asphalt pavement, seeding (or sod) and sidewalks.

Temporary stabilization measures (silt fence) will be installed prior to beginning construction. During construction, temporary stabilization measures, including inlet protection, will be utilized to control stormwater runoff. Once final stabilization is achieved, temporary erosion control measures will be removed.

## **II. PHASING AND PROPOSED CONSTRUCTION SEQUENCE**

#### **PHASING**

Construction activities will be completed in three phases, Initial, interim and final. Initial phase includes the installation of silt fence around the entire project's Limit of Disturbance area, inlet protection around existing inlets, and curb socks along Bent Grass Meadows Drive, Daelyn Drive, Kittrick Place and Henzlee Place. Interim phase includes the installation of temporary sediment controls as construction progresses. Refer to the provided phasing table on the Grading and Erosion Control Plans. The final phase will be completed once the site is stabilized and all temporary measures are removed. The Early Grading and Erosion Control plans will include the initial and interim erosion control measures. Final erosion control measures will be included on the Final Grading and Erosion Control Plans.

### **CONSTRUCTION DOCUMENTATION**

Construction drawings are provided with this document showing each of these phases and are intended to be a “living” document used by the SWMP Manager to document construction activities. See section IX “Inspection and Record Keeping” for additional information.

### **PROPOSED SEQUENCE FOR MAJOR CONSTRUCTION ACTIVITIES**

Construction for the development of this project is currently projected to begin in August of 2023. It is estimated that construction activities will be completed by August 2024. Final stabilization is expected in Fall 2024. The anticipated sequence of construction is as follows:

#### **Initial:**

1. Installation of perimeter silt fence and sediment control log as shown on the grading and erosion control plans.
2. Placement of inlet protection erosion control measures along existing roadways.
3. Placement of curb socks along existing roadways.

#### **Interim:**

4. Site Clearing/Grubbing and topsoil stockpiling.
5. Construct Stabilized Staging Area as shown on the grading and erosion control plans.
6. Install Vehicle Tracking Control at entrances as shown on the grading and erosion control plans.
7. Rough grading of the site.
8. Placement of straw bale barriers along internal roadways.
9. Placement of check dams along drainage swales
10. Construct underground water/sewer/storm.
11. Remove Temporary Sediment Basins and Traps before beginning construction on curb/gutter and pavement.

#### **Final:**

12. Construct curb/gutter and pavement.
13. Final stabilize areas outside of ROW.
14. Construct gas/electric/cable/phone in the ROW areas.
15. Final stabilize ROW.
16. Final erosion control measures as areas are completed. (Final BMP's)
17. Remove construction BMP's

See Section VI “Areas and Volumes” for information on anticipated disturbed area and grading volumes.

## **III. FINAL STABILIZATION**

Final site stabilization will be achieved when all final landscaping and paving is complete and when vegetation density is greater than 70 percent of pre-disturbance density over the entire area. The remainder of the site will consist of hardscape (drives and walks) or be a part of the building footprint. All final stabilization on the site will be of a permanent nature. All temporary

BMPs will be removed upon completion of construction. It is the responsibility of the contractor to remove all dirt and garbage from the site.

Permanent BMP's such as water quality ponds will be owned and maintained by Bent Grass Metropolitan District. Two existing permanent BMP extended detention basins will be utilized for treating run-off from this project. The existing ponds were built with "Falcon Meadows at Bent Grass Filing No. 2" and "Falcon Meadows at Bent Grass Filing No. 1". These ponds were designed with sufficient capacity to treat this project.

The existing Pond (North) that was constructed with "Falcon Meadows at Bent Grass Filing No. 2" and existing Pond (South) that was constructed with "Falcon Meadows at Bent Grass Filing No. 1" shall be regularly cleaned of sediment and debris during the construction of this project. The contractor will be responsible for any re-excavation of sediment and debris that collects in the basin depression required to ensure that the basin meets the design grades following construction. The storm lines shall also be cleaned and free of sediment once the site becomes stabilized.

## **IV. PRE-DEVELOPMENT CONDITIONS & SOILS**

### **FLOODWAY**

According to the current FEMA Flood Insurance Rate Map (FIRM) Panel No. 08041C0553 G, dated December 7, 2018 (See Appendix for the FEMA FIRM Exhibit) this site is designated as Zone X (outside 0.2% chance of flood). The proposed residential lots are completely outside of the "regulatory floodway".

### **EXISTING VEGETATION**

Existing vegetation and soils were determined from in-person field site visits and existing aerial inspection from Google Earth and the United States Department of Agriculture Natural Resources Conservation Service (NRCS) Web Soil Survey. The site is currently undeveloped and has been used as a pasture for many years. Vegetation consists of native grasses/weeds that have been heavily grazed for years. There is no brush or trees within the area to be graded. Ground cover is estimated at 70% density.

### **EXISTING DRAINAGE PATTERNS**

The site is fully contained within the West Falcon Tributary drainage basin. Drainage through the site is generally north to south. Drainage is collected in a wet weather conveyance known as "Unnamed Tributary to Black Squirrel Creek No. 2". This wet weather conveyance flows north to south along the western border of Bent Grass Residential Filing No. 2.

### **EXISTING SLOPES**

Existing slopes are around 1-10% that direct runoff to the Unnamed Tributary to Black Squirrel Creek No. 2. Construction of this development includes grading improvements and stabilization in the tributary south of Bent Grass Meadows Drive.

## EXISTING SOIL TYPES

Soil data for Falcon Meadows at Bent Grass Residential Filing No. 3 was obtained from the United States Department of Agriculture Natural Resources Conservation Service (NRCS) Web Soil Survey.

The following table summarizes the characteristics of the soil type:

Soil	Hydro Group	Shrink/Swell Potential	Permeability		Surface Runoff Potential	Erosion Hazard
19-Columbine gravelly sandy loam, 0 to 3 percent slopes	A	Low	High		Very Low	Slight

The existing soil types have a slight potential for erosion which can be mitigated by employing appropriate downstream construction BMP's before/during/after construction to limit potential impacts to stormwater discharges. The potential impacts are sediment discharge into the existing wet weather conveyance and proposed storm sewer system. Sediment should not be allowed to enter these existing and proposed facilities and can be mitigated by constructing small temporary sediment basins at low points prior to discharge into the systems. Potential impacts from runoff flowing to the existing wet weather conveyance will be mitigated by constructing a temporary sediment basin in the new pond location and by grading the site to reduce drainage area. Based upon the location of the different soil types and type of construction, the contractor shall employ the most appropriate method of erosion control measures based on the El Paso County/City of Colorado Springs Drainage Criteria Manual, Vol. 2 or as directed by the SWMP administrator or his representative.

More detailed soils information can be found in the SCS soils survey for El Paso County.

## V. DESCRIPTION OF POTENTIAL POLLUTANTS

Potential sources of sediment to stormwater runoff include earth moving and concrete activities associated with grading and landscaping.

Potential pollutants and sources, other than sediment, to stormwater runoff include Trash, debris, line transfer, Dewatering, fueling and equipment failure.

A dewatering permit is not required

Construction activities produce many different kinds of pollutants which may cause storm water contamination problems. Grading activities remove rocks, vegetation and other erosion controlling surfaces, resulting in the exposure of underlying soil to the elements. Because the soil surface is

unprotected, soil and sand particles are easily picked up by wind and/or washed away by rain or other water sources.

The following sections highlight the potential sources of pollution at the Project Site and list the “Best Management” strategies that will be used to prevent migration of pollution offsite. This Project Site does not rely on control measures owned or operated by another entity. Chemical materials stored indoors or that have no reasonable chance of impacting storm water quality will not be discussed in this plan.

Materials of significance stored on the project site include:

- Sediment
- Concrete Washout
- Cement
- Trash & Debris
- Sanitary Wastes
- Fuels & Oils

#### **WIND EROSION & DUST CONTROL**

Pollutant: Sediment Best Management Strategies:

- Daily inspections will occur for areas experiencing excessive winds, vehicle traffic, or precipitation events.
- Water trucks will spray down dust on the project Site as needed to not impact adjacent properties.
- Attention will be given to prevent the over-use of water in dust control operations to minimize any muddying of the surface and possible sediment transportation.

#### **VEHICULAR TRANSPORT**

Pollutant: Sediment Tracking Best Management Strategies:

- Construct a stabilized construction entrance to provide ingress and egress of the site.
- Restrict access to the stabilized construction entrance.
- Fencing will be erected if problems with access control are evident.
- Maintain track out pads by fluffing up the rock material or by adding additional rock as needed.
- Inspect, sweep and clean adjacent streets where track out is evident.

#### **STOCKPILES**

Pollutant: Sediment Best Management Strategies:

- Locate stockpiles clear of any water flow paths.
- Locate stockpiles within the property boundary.
- Stockpiles will have erosion control devices as needed installed around the base to prevent the migration of soil.

- Topsoil stock-piles and disturbed portions of the site where construction activity temporarily ceases for at least 14 days will be stabilized with temporary seed and mulch no later than 14 days from the last construction activity in the area.

#### **GRADING, TRENCHING, EXPORT/IMPORT**

Pollutant: Sediment Best management Strategies:

- Earth moving will be minimized by the engineering balancing of the site.
- Disturbed portions of the site where construction activity temporarily ceases for at least 14 days will be stabilized with temporary seed and mulch no later than 14 days from the last construction activity in the area.
- Seed bed preparation is not required if soil is in loose condition.
- Prior to seeding, fertilizer shall be applied to each acre to be stabilized in accordance with the manufacturer's specifications.
- If required seeding areas shall be mulched with straw to a uniformed cover. The straw mulch is to be tacked into place by a disk with blades set nearly straight.
- A site specific erosion control drawing has been developed showing the location of Best Management practices to be used during site construction.
- Where indicated on the erosion control plan, Best Management Practices will be installed.
- Material shall be in accordance with the plans and specifications and all construction shall be provided in accordance with the manufacturer's specifications.
- All BMP's will be inspected bi-weekly and cleaned/maintained as required.

#### **WASTE, RESIDUAL CONCRETE**

Pollutant: Concrete, paint, and Phosphoric Acid Best Management Strategies:

- A cleanup and washout area will be designated and posted.
- Subcontractors will be instructed on the locations and importance of the washout and cleanup areas. No on-site disposal is allowed.
- Instruct subcontractors to remove waste for which proper onsite disposal facilities are not provided back to their own facilities for ultimate transport, storage & disposal.
- Subcontractors and subcontractor employees are held responsible for improper washout.

#### **SANITARY FACILITIES, TRASH CONTAINERS & LITTERING**

Pollutant: Bacteria, Ammonia, Trash Best Management Strategies:

- Portable facilities will be regularly serviced to prevent excessive waste containment and overflow.
- Portable facilities will be located a minimum of 50 feet from state waters. They shall be adequately staked and cleaned on a weekly basis. They will be inspected daily for spills.
- All waste materials will be collected and stored in a container which will meet all local and any state solid waste management regulations.
- Trash dumpsters will be emptied prior to becoming 90% full or when debris control becomes an issue.

- Employees will be instructed on the importance of recycling and waste management and will be held responsible for improper waste management.

#### **FUELING, HAZARDOUS MATERIALS, EQUIPMENT LEAKAGE, FERTILIZER**

Pollutant: Petroleum Hydrocarbons, Ethylene Glycol, Sediment Best Management Strategies:

- MSDS sheets will be maintained in the project trailer for all onsite materials
- All dry materials such as cement will be covered and protected from rain.
- Secondary containment will be provided for stored fuel, oil, paint and any material classified as hazardous.
- Subcontractors are responsible for hazardous waste removal back to their own facilities for ultimate transportation, storage and disposal.
- Supplies will be kept onsite as necessary to control any potential spill.
- Employees will be held responsible for any illegal dumping.
- Seals will be checked by a qualified professional on all equipment and containers containing significant materials that could contribute potential pollutants and will be replaced as necessary.
- Equipment will be inspected by a qualified professional.
- Drip pans will be available for minor leaks and during fueling operations.
- Fueling nozzles, gauges, hoses, seals, and emergency shutoff valves will be inspected for leaks prior to use.
- Under no circumstances during fueling will the fueling hose/nozzle be left unattended.
- Fertilizers used will be applied only in the minimum amounts recommended by soil tests.
- Once applied, fertilizers will be worked into the soil to limit exposure to storm water.
- Stored fertilizer will be protected from exposure to precipitation and storm water runoff.

#### **DEWATERING** – not needed.

This shown for information only Pollutant: Sediment, Oil and/or Grease and Phosphoric Acid Best Management Strategies:

All dewatering will be filtered through rock and/or woven geo mesh fabric.

All dewatering will be tested for Pollutants per state guidelines weekly.

#### **CONCRETE AND ASPHALT BATCH PLANT** – not needed.

This shown for information only There are no existing batch plants located on this project site and there are no proposed batch plants in the future.

#### **DRILLING SLURRY FOR DRILLING PIERS.** – not needed.

This is shown for information only. No drilling slurry is allowed to be deposited onto the job site. All drilling slurry shall be collected and pumped into an on-site frac tank and shall be disposed of off-site.

There are no major potential pollutants anticipated to be used on the site.

**ADDITIONAL (NONSTRUCTURAL) BEST MANAGEMENT PRACTICES FOR SEDIMENT:**

1. Earth moving will be minimized by the engineering balancing of the site.
2. Disturbed portions of the site where construction activity temporarily ceases for at least 14 days will be stabilized with temporary seed and mulch no later than 14 days from the last construction activity in the area.
3. Seed bed preparation is not required if soil is in loose condition.
4. Prior to seeding, fertilizer shall be applied to each acre to be stabilized in accordance with the manufacturer's specifications.
5. If required seeding areas shall be mulched with straw to a uniformed cover. The straw mulch is to be tacked into place by a disk with blades set nearly straight.
6. A site-specific erosion control drawing has been developed showing the location of Best Management practices to be used during site construction.
7. Where indicated on the erosion control plan, Best Management Practices will be installed.
8. Material shall be in accordance with the plans and specifications and all construction shall be provided in accordance with the manufacturer's specifications.
9. All BMP's will be inspected bi-weekly and cleaned/maintained as required.

## **VI. AREAS AND VOLUMES**

The site consists of 12.74 acres. 14.21 acres is expected to be disturbed for the proposed Grading and Erosion Control Plan.

The unadjusted cut and fill quantities as of the writing of this report are listed below:

Cut Volume = 11,981 Cubic Yards

Fill Volume = 13,327 Cubic Yards

Net Volume = 1,345 Cubic Yards (Fill)

Note: The Total disturbed area shall be updated on the SWMP as changes occur.

## **VII. APPROPRIATE CONTROLS AND MEASURES**

Also refer to attached Erosion and Sediment Control notes and plans included in the site plans.

**MINIMIZE DISTURBED AREA AND PROTECT NATURAL FEATURES AND SOIL**

All work will occur inside the limits of construction per the erosion Control Site Plan.

**PHASE CONSTRUCTION ACTIVITY** The sequence for the installation and removal of erosion and sediment control measures is as follows: Perimeter control measures (silt barriers and fencing) installed at designated areas as noted on the site plans (Exhibit 1), cleaning of street surfaces during construction if applicable, site grading, installation of utilities, paving final and grading, installation of sod or other vegetation, removal of temporary practices and perimeter controls, and site cleanup.

**CONTROL STORMWATER FLOWING ONTO AND THROUGH THE PROJECT**

Offsite stormwater flows on to this project site from two Unnamed Tributaries of the Falcon Basin West Tributary. The western reach was “relocated” under a separate permit. The two channel reaches combine on-site. On-site stormwater will be directed to temporary sediment basins and traps. Once the storm drain system is installed and the curb and gutter is poured, existing extended detention basin will provide water quality treatment.

#### **STABILIZE SOILS**

No disturbed area, which are not actively being worked, shall remain denuded for more than 14 calendar days, unless otherwise authorized by the director. Temporary cover by seeding or mulching should be provided on areas which will be exposed for a period greater than 14 days before permanent stabilization can be achieved. Permanent cover should be provided on all areas as soon as possible, by means of seeding and mulching, straw or hay mulch is required. All soil stockpiles and borrow areas must protected with silt fence within 14 days after grading. All slopes within the project limits that are found to be eroding excessively within two years of permanent stabilization shall be provided additional slope stabilization methods such as seeding and mulching. Water is to be used for dust control. The Contractor will prevent the escape of this water and any sediment it may carry from the construction site.

#### **PROTECT SLOPES**

Temporary stabilization will include the installation of silt fences on level contours spaces at 10-20 foot intervals. Slopes will be seeded and covered with hay, straw or erosion control blankets on slopes greater than 3:1, as needed to provide for temporary stabilization until vegetation is permanently established. All slopes within the project limits that are found to be eroding excessively within two years of permanent stabilization shall be provided additional slope stabilization methods such as seeding and mulching. Where slopes are steeper than 3:1 erosion control blankets (per specification requirements) will be utilized for final stabilization.

#### **PROTECT STORM DRAIN INLETS**

Inlet protection will be installed as soon as storm drain inlets are installed and before land disturbance activities begin in areas with existing storm drain systems. At the Contractor's discretion, additional temporary erosion control practices to include rock bags and sandbag barriers may be installed to prevent sediment movement. Inlet protection will include rock bags, erosion logs, and curb inlet sediment filters where an overflow capacity is necessary to prevent excessive ponding in front of the curb inlet. Concrete block and wire screen inlet protection detail, if used, will be added to Appendix prior to installation. This measure would be used where heavy flows are expected and where an overflow capacity is necessary to prevent excessive ponding around the inlet. Inlet protection devices will be inspected and accumulated sediment will be removed as needed.

#### **ESTABLISH PERIMETER CONTROLS AND SEDIMENT BARRIERS**

Temporary stabilization will include the installation of silt fences on the downslope perimeter of project area. The silt fence will be trenched in on the uphill side 6 inches deep and 6 inches wide,

as detailed in the silt fence exhibit. Sediment will be removed when it reaches 1/3 the height of the fence. Silt fence will be inspected and replaced or repaired as needed.

#### **RETAIN SEDIMENT ON-SITE**

Temporary sediment traps shall be installed to detain sediment laden runoff from small watersheds for a period long enough to allow sediment to settle before discharge into receiving waters. For small drainage locations, smaller sediment traps should be used. At a minimum, silt fences, vegetative buffer strips or equivalent sediment controls are required for all down-slope boundaries (and for those side slope boundaries deemed appropriate as dictated by individual site conditions) of the construction. The use of a combination of sediment and erosion control measures in order to achieve maximum pollutant removal will be utilized. Sediment traps will be checked regularly for sediment cleanout. Sediments shall be removed and the trap restored to its original dimensions when the sediment has accumulated to one half the design volume of the wet storage. Sediment shall be disposed in suitable areas and in such a manner that will not erode or cause sedimentation problems. The gravel outlets will be checked regularly for sediment buildup which will prevent damage. If the gravel is clogged by sediment, it shall be removed and cleaned or replaced.

An alternate to sediment traps is temporary sediment basins.

#### **ESTABLISH STABILIZED CONSTRUCTION EXITS**

The construction entrance will be established in the entry points of roads. The construction entrance will be at least 50 feet in length and approximately 12 feet wide and graded so runoff does not leave the site. The aggregate will be established at 8 inches thick on top of 4 inch minimum thick free draining material on top of geotextile and will consist of Type G dense graded material. A stabilized stone pad with a filter fabric under liner will be placed at points of vehicular ingress and egress.

#### **ADDITIONAL BMP'S BMP SCHEDULE:**

All Sediment and Erosion control BMP's (detailed below and only on BMP site map and details if utilized onsite) will be installed prior to any excavation or demolition and will be coordinated with the construction schedule. As construction changes and new temporary BMP's are needed to control sediment and erosion temporary BMP's will be installed within 24 hours of inspection report.

**RECOMMENDED BMP'S:** ALL RECOMMENDED BMP'S WILL BE INSTALLED PRIOR TO EXCAVATION NEAR ANY SENSITIVE AREAS.

**Culvert Inlet Protection** will be used to protect existing and new culvert inlets. Inlet Protection Detail will be included in Appendix before using onsite. Removal of this BMP will occur only after vegetation is established to a minimum of 70% pre construction coverage and after removal of BMP all sediment builds up will be removed and the area exposed shall be seeded.

**Silt Fence** is to be installed in sensitive areas to protect stream channels, pond, and overland runoff. On this site it will be used to protect runoff from the slip pits. See Silt Fence Detail. Removal of this BMP will occur only after vegetation is established to a minimum of 70% pre construction coverage and after removal of BMP all sediment builds up will be removed and the area exposed shall be seeded.

**Vehicle Tracking Control** is needed at the main construction entrance location. Vehicle tracking control shall be installed at the edge of the construction staging area where construction vehicles regularly exit onto existing asphalt road. If sediment tracking occurs it will be cleaned within 24 hours.

See Vehicle Tracking Control Detail in Construction Drawings. Removal of this BMP will occur only after project is substantially complete and is ready for seeding operations; the area will then be seeded per specification with the rest of the project.

**Check Dams** (rip rap) will be used to reduce storm water velocities in drainage channels during construction as a temporary measure until permanent stabilization can be created and vegetation has been established. Check Dam Detail will be included in the Appendix before using onsite. Removal of this BMP will occur only after vegetation is established to a minimum of 70% pre-construction coverage and after removal of BMP all sediment build-up will be removed and the area exposed shall be seeded.

**Portable Toilets:** Portable toilets are brought in from a service contractor and will be maintained in accordance with standard waste disposal practices using vacuum trucks and place on stable ground to minimize risk of spillage. All portable toilets will be kept a minimum of 500' from any waterway.

**Waste Disposal:** If needed Roll offs will be utilized for standard construction waste. A qualified contractor will remove waste weekly and take to an appropriate dump site off this project.

#### **PERMANENT BMP'S:**

**Re-vegetation:** During construction any disturbed area not being currently worked left dormant longer than 14 days will be re-vegetated per specification with native seed and mulched and crimped with weed free straw.

All BMPs shall be installed and maintained in accordance with the most recent Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual.

## **VIII. MATERIALS HANDLING AND SPILL PREVENTION**

### **MATERIAL HANDLING AND WASTE MANAGEMENT**

The site will use a private refuse collector that will remove litter twice weekly. No less than one litter receptacle will be present at the construction site. In the event that unusual items such as tanks, cylinders, unidentified containers, etc. which could contain potentially hazardous materials are discovered or disturbed, the Fire and Rescue services will be notified. Litter and

debris will be picked up and disposed of properly daily. Temporary toilet facilities will be located 500 feet away from any storm drain inlets and all waters of the state.

#### **ESTABLISH PROPER BUILDING MATERIAL STAGING AREAS**

A designated staging area will be used, location to be determined based on available space in the field and plans will be redlined. The staging area will be contained per SWMP guidelines. All Equipment and Materials will be brought into the site as needed.

#### **DESIGNATE WASHOUT AREAS**

A concrete washout will be installed to detail as shown on the Construction Drawings and will be placed more than 500 feet away from any waters of the state.

#### **ESTABLISH PROPER EQUIPMENT/VEHICLE FUELING AND MAINTENANCE PRACTICES**

During construction the site will be exposed to operation and maintenance of construction equipment. The contractor shall be responsible for all activities such as fueling, oil changing, lubrication and repair which require use of petroleum products. Such products shall be transported to and from the site in special trucks equipped for that purpose. No waste petroleum products, rags, residue, or equipment parts shall be left on site. In the event of a spill or leak, causing soil to be contaminated, that soil shall be excavated placed in sealed barrels and removed from the site for transport to an approved location for disposal.

#### **CONTROL EQUIPMENT/VEHICLE WASHING**

This activity will not be allowed onsite.

#### **ANY ADDITIONAL BMPs**

Additional BMP's will be added to this SWMP as needed.

#### **ALLOWABLE NON-STORMWATER DISCHARGE MANAGEMENT**

There are no visible natural springs or irrigation, or other non-stormwater discharges anticipated to be encountered.

#### **SELECTING POST-CONSTRUCTION BMPs**

Post Construction BMPs. Re-vegetation including seeding, mulching and erosion control blanket will be final BMP's. Permanent stabilization will be achieved with 70% preconstruction vegetative establishment.

#### **SPILL PREVENTION AND CONTROL PLAN**

The SITE SUPERINTENDENT will act as the point of contact for any spill that occurs at this jobsite. The project manager will be responsible for implementation of prevention practices, spill containment / cleanup, worker training, reporting and complete documentation in the event of a spill. The ECO shall immediately notify the Owner, /Construction Manager, STATE and the Local Fire Department in addition to the legally required Federal, State, and Local reporting

channels (including the National Response Center, 800.424.8802) if a reportable quantity is released to the environment.

**SPILL PREVENTION BEST MANAGEMENT PRACTICES** This section describes spill prevention methods Best Management Practices (BMP) that will be practiced to eliminate spills before they happen.

- **Equipment Staging and Maintenance:** Store and maintain equipment in a designated area Reduce the amount of hazardous materials and waste by substituting non-hazardous or less hazardous materials. Use secondary containment (drain pan) to catch spills when removing or changing fluids. Use proper equipment (pumps, funnels) to transfer fluids Keep spill kits readily accessible Check incoming vehicles for leaking oil and fluids. Transfer used fluids and oil filters to waste or recycling drums immediately following generation. Inspect equipment routinely for leaks and spills Repair equipment immediately, if necessary, implement a preventative maintenance schedule for equipment and vehicles.
- **Fueling Area:** Perform fueling in designated fueling area minimum 50' away from federal waters Use secondary containment (drain pan) to catch spills Use proper equipment (pumps, funnels) to transfer fluids Keep spill kits readily accessible Inspect fueling areas routinely for leaks and spills Hazardous Material Storage Areas Reduce the amount of hazardous materials by substituting non-hazardous or Less hazardous materials.
- **Hazardous Material Storage Areas:** Minimize the quantity of hazardous materials brought onsite Store hazardous materials in a designated area away from drainage points.
- **Unexpected Contaminated Soil and Water:** Perform all excavation activities carefully and only after the Owner/Construction Manager directed any activities.

## **SPILL CONTAINMENT METHODS**

The following discussion identifies the types of secondary containment that will be used in the event of a spill. The Table below summarizes the containment methods for each potential source.

- **Equipment Staging and Maintenance Area:** An equipment leak from a fuel tank, equipment seal, or hydraulic line will be contained within a spill containment cell placed beneath all stationary potential leak sources. An undetected leak from parked equipment will be cleaned up using hand shovels and containerized in a 55-gallon steel drum for offsite disposal.
- **Fueling Area:** A small spill during fueling operations will be contained using fuel absorbent pads at the nozzle. The transfer of fuel into portable equipment will be performed using a funnel and/or hand pump and a spill pad used to absorb any incidental spills/drips. Any leaking tanks or drums will have fluids removed and transferred to another tank, drum, or container for the fluids. A spill response kit will be located near the fueling area or on the fuel truck for easy access. The spill

response kit will include plastic sheeting, tarps, over pack drums, absorbent litter, and shovels.

- **Hazardous Material Storage Area:** A spill from containers or cans in a hazardous material storage area will be contained within the storage cabinet these materials are kept in.
- **Unexpected Contaminated Soil:** If contaminated soil is encountered during the project, the Owner/Construction Manager will be notified immediately. Small quantities of suspected contaminated soil will be placed on a 6-mil plastic liner and covered with 6-mil plastic. A soil berm or silt fence will be used to contain the stockpile and prevent migration of contaminated liquids in the soil.

#### Spill Prevention and Containment Methods Table

Potential Spill Source	Response Method
Equipment Staging and Maintenance Area	Spill containment pad, spill kit, pumps, funnels
Fueling Area (site equipment only)	Spill containment pad, spill kit, pumps, funnels
Hazardous Material Staging Area	Spill containment pad, spill kit, pumps, funnels
Unexpected Contaminated Soil	Plastic liner, plastic cover, soil berm, hay bales, lined super sacks

#### SPILL COUNTERMEASURES

Every preventative measure shall be taken to keep contaminated or hazardous materials contained. If a release occurs, the following actions shall be taken:

1. **Stop the Spill:** The severity of a spill at the site is anticipated to be minimal as large containers/quantities of Hazardous Materials (HM) are not anticipated. The type of spill would occur while dispensing material at the HM storage facility and would likely be contained in secondary containment. Thus, the use spill kits or other available absorbent materials should stop the spill.
2. **Warn Others:** Notify co-workers and supervisory personnel of the release. Notify emergency responders if appropriate. For site personnel, an alarm system will consist of three one second blasts on an air horn sounded by the person discovering a spill or fire. In the event of any spill, the Superintendent and Project Manager shall be notified if the spill is 5 gallons or more the STATE will be contacted along with the Fire Department.
3. **Isolate the Area:** Prevent public access to the area and continue to minimize the spread of the material. Minimize personal exposure throughout emergency response actions.
4. **Containment:** A spill shall only be contained by trained personnel and if it is safe to do so. **DO NOT PLACE YOURSELF IN DANGER.** Attempt to extinguish a fire only if it is in the incipient stage; trash can size or smaller. For larger spills, wait for the arrival of emergency response personnel and provide directions to the location of the emergency.
5. **Complete a Spill and Incident Report:** For each spill of a Hazardous Material a spill and incident report shall be completed and submitted to the Owner/Construction Manager and if applicable to the Engineer and the State of Colorado Department of Public Health and Environment

## **X. RECEIVING WATERS**

The project site is located within the West Falcon Tributary. Stormwater from this site drains to an existing unnamed tributary to Black Squirrel Creek No. 2 that routes to a regional detention pond designated as Detention Pond WU South. Pond WU is a regional detention pond that approximately holds 50 ac-ft of volume. Pond WU outfalls back into the unnamed tributary to Black Squirrel Creek No. 2 that then continues to flow into Black Squirrel Creek.

Stream Crossing – No stream crossing is required for this development.

## **IX. INSPECTION AND RECORD KEEPING**

The project is subject to inspections by the Colorado Division of Public Health and Environment (CDPHE), the Environmental Protection Agency (EPA), and El Paso County at any time.

Inspection of the stormwater management system shall be performed, by the SWMP Administrator, at least every 14 calendar days and after the occurrence of precipitation or snow melt event that may cause noticeable erosion or run-off. Time span greater than 14 calendar days is a violation of the CDPS permit.

### **SWMP ADMINISTRATOR**

The individual(s), position, or title responsible for developing, implementing, maintaining, and revising the SWMP is to be determined upon award of the project. The individual(s) will be sufficiently qualified for the required duties per the *El Paso County ECM Appendix I.5*. The individual listed as the Erosion Control Supervisor shall fill out the information below and place in the on-site copy before beginning installation of the BMPs for this site and notify the County of the appropriate contact information.

SWMP Administrator Name:  
Cell Phone:  
Office Phone:  
Email:

### **INSPECTION SCHEDULES**

Inspections of the stormwater management system are required at least every 14 calendar days and within 24 hours after any precipitation or snowmelt event that causes surface runoff. A more frequent inspection schedule may be necessary to ensure that BMPs continue to operate as designed.

Differences or modifications in the field from the approved SWMP are required to be made within 72 hours site changes are observed. The SWMP shall be onsite at all times when onsite construction activity is occurring.

### **INSPECTION SCOPE**

The construction site perimeter, all disturbed areas, material and/or waste storage areas that are exposed to precipitation, discharge locations, and locations where vehicles access the site shall be inspected for evidence of, or the potential for pollutants leaving the construction site boundaries or discharging to State Waters. All erosion and sediment control practices identified in the SWMP shall be evaluated to ensure that they are maintained and operating correctly.

### **INSPECTION REPORT**

A thorough record of inspection shall be maintained and identify any incidents of non-compliance with the SWMP. Inspection records shall be retained for three years from expiration or inactivation of permit coverage. Federal, State, local authority reserves the right to request that a copy of the inspection reports be submitted. At a minimum, the inspection report shall include the following:

1. Inspection date
2. Name(s) and title(s) and signature(s) of personnel making the inspection
3. Location(s) of discharges of sediment or other pollutants from the site
4. Location(s) of BMPs that need to be maintained
5. Location(s) of BMPs that failed to operate as designed or proved inadequate for a particular location
6. Location(s) where additional BMPs are needed or were not in place at the time of inspection
7. Deviations from the minimum inspection schedule
8. Description of corrective action for items c, d, e and f above, dates corrective action(s) taken, and measures taken to prevent future violations, including requisite changes to the SWMP, as necessary
9. After adequate corrective action(s) have been taken, or where a report does not identify any incidents requiring corrective action, the report shall contain a signed statement indicating the site is in compliance with the permit to the best of the signer's knowledge and belief
10. The date and amount of storm or snowmelt events that cause erosion.

### **BMP MAINTENANCE/REPLACEMENT AND FAILED BMPs**

Adequate site assessment shall be performed as part of comprehensive Inspection and Maintenance procedures to assess the adequacy of BMPs at the site and to evaluate the necessity of changes to those BMPs to ensure continued effective performance. Where site assessment results in the determination that new or replacement BMPs are necessary, the BMPs shall be installed to ensure ongoing implementation. Failed BMPs must be addressed as soon as possible, in most cases immediately, to ensure continued performance and minimize the likelihood of pollutant discharge. The SWMP shall be updated once new BMPs are installed or failed BMPs replaced. A specific timeline for implementing maintenance procedures is not included in the State Permit because BMP maintenance is expected to be proactive, not responsive. Observations resulting in BMP maintenance activities can be made during a site

inspection, or during general observations of site conditions. BMPs shall be maintained per DCM2 criteria and ECM criteria. Please refer to the Appendix for specific maintenance required for each BMP.

#### **PLAN REVIEW AND REVISIONS**

1. The plan must be signed in accordance with the general permit.
2. The plan must be made available, upon request, to CDPHE, United States Environmental Protection Agency, or operator of the local municipal storm sewer system, if applicable.
3. The plan must be amended whenever there is a change in design, construction, operation or maintenance that could have a significant effect on the potential for the discharge of pollutants to State Waters. It also must be amended if it is found to be ineffective in controlling pollutants present in stormwater.

#### **RECORD KEEPING AND DOCUMENTING OF INSPECTION**

The permittee shall retain a copy of the SWMP required by this permit (including a copy of the permit language) at the construction site (or other local location accessible to the Director; a State or local agency approving sediment and erosion plans, grading plans, or stormwater management plans; local government officials; or the operator of a municipal separate storm sewer receiving discharges from the site) from the date of project initiation to the date of final stabilization. Permittees with day-to-day operational control over SWMP implementation shall have a copy of the SWMP available at a central location on-site for the use of all operators and those identified as having responsibilities under the SWMP whenever they are on the construction site. If minor modifications to the SWMP are required, they shall be recorded on the owner's copy of the SWMP and be available during inspections. Whenever a significant change is made to the SWMP (including changes to design, construction, operation or maintenance), an amended SWMP shall be submitted for review and approval. The following documents must be kept in a field office, trailer, shed or vehicle that is onsite during normal working hours:

1. A completed and signed copy of the Notice of Intent
2. The permit coverage letter from the Colorado Department of Public Health and Environment (CDPHE)
3. The Stormwater Management Plan
4. Site Inspection Records
5. A copy of the Colorado General Permit for Stormwater Discharges from Construction Activities

If a reasonable onsite location is not available, then the documents may be retained at a readily available alternative location, preferably with the SWMP plan contact. If the site is inactive, then the documents may be stored at a local office.

All records and information must be kept for at least three years or longer if requested by the Colorado Department of Public Health and Environment or United States Environmental Protection Agency.

## **RECORD KEEPING**

The SWMP is a "living document" that is continuously reviewed and modified. The ECS shall make changes to the SWMP, including but not limited to: additions, deletions, changing locations of BMP's shall be marked in the plans, dated and initialed at time of occurrence.

All inspection and maintenance activities or other repairs will be documented by the ECS and the records kept on the project site.

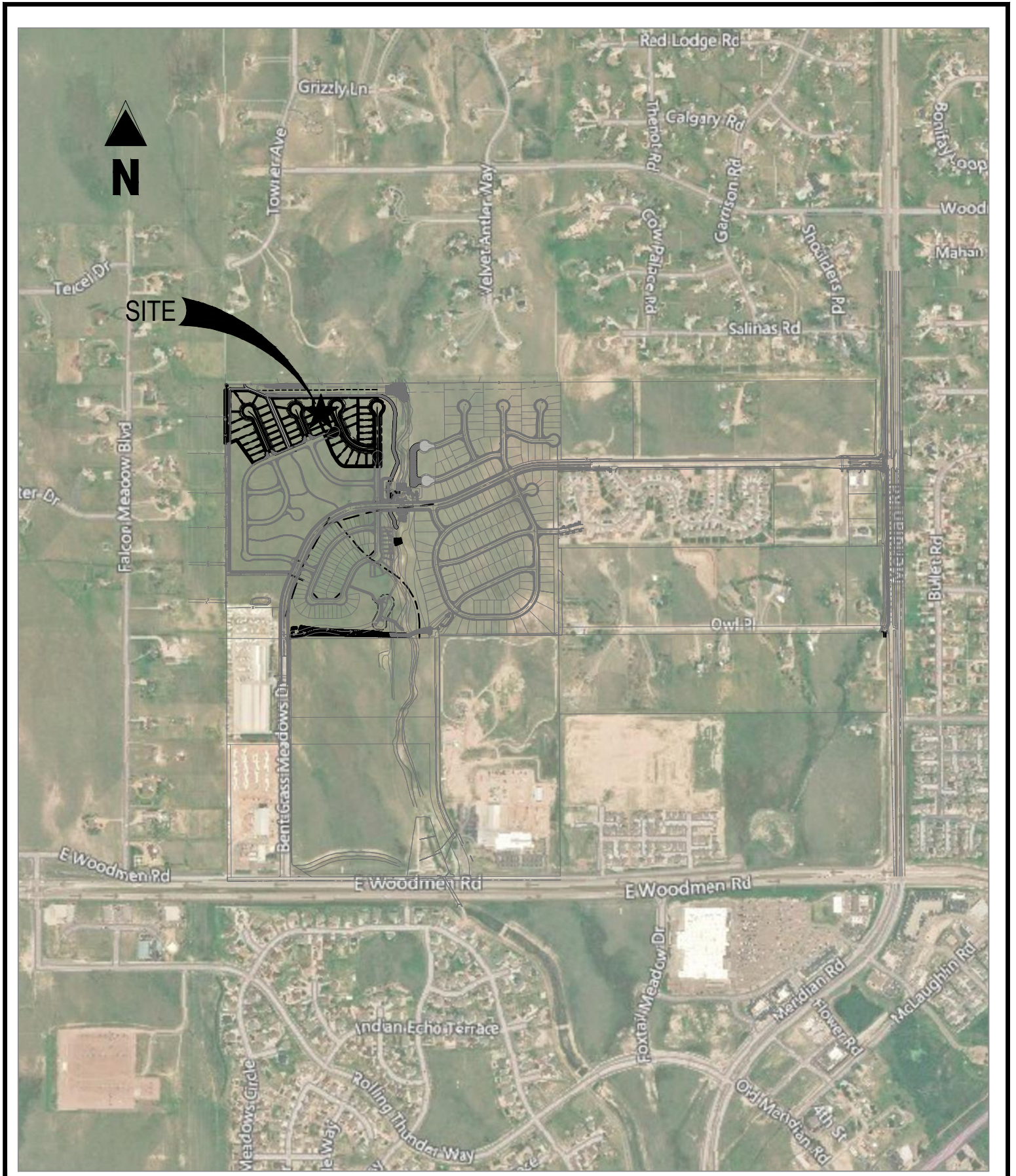
Records of spill, leaks or overflows that result in the discharge of pollutants will be documented and maintained. The following Information will be recorded for all occurrences:

1. Time and date
2. Weather conditions
3. Reasons for spill
4. A release of any chemical, oil, petroleum product, sewage, etc., which may enter state waters must be reported.

At 14-day inspections incidents of noncompliance, such as uncontrolled releases of pollutants including mud, muddy water or measurable quantities of sediment found off-site shall be noted, along with a brief explanation as to measures taken to prevent future violations and measures taken to clean up sediment that has left the site.

After measures have been taken to correct any problems and recorded, or where a report does not identify incidents of noncompliance, the report shall contain a signed certification indicating the site is in compliance.

## APPENDIX A



FALCON MEADOWS AT BENT GRASS  
FILING NO. 3  
BENT GRASS MEADOWS DRIVE  
SCALE: 1"=1,000'  
VICINITY MAP

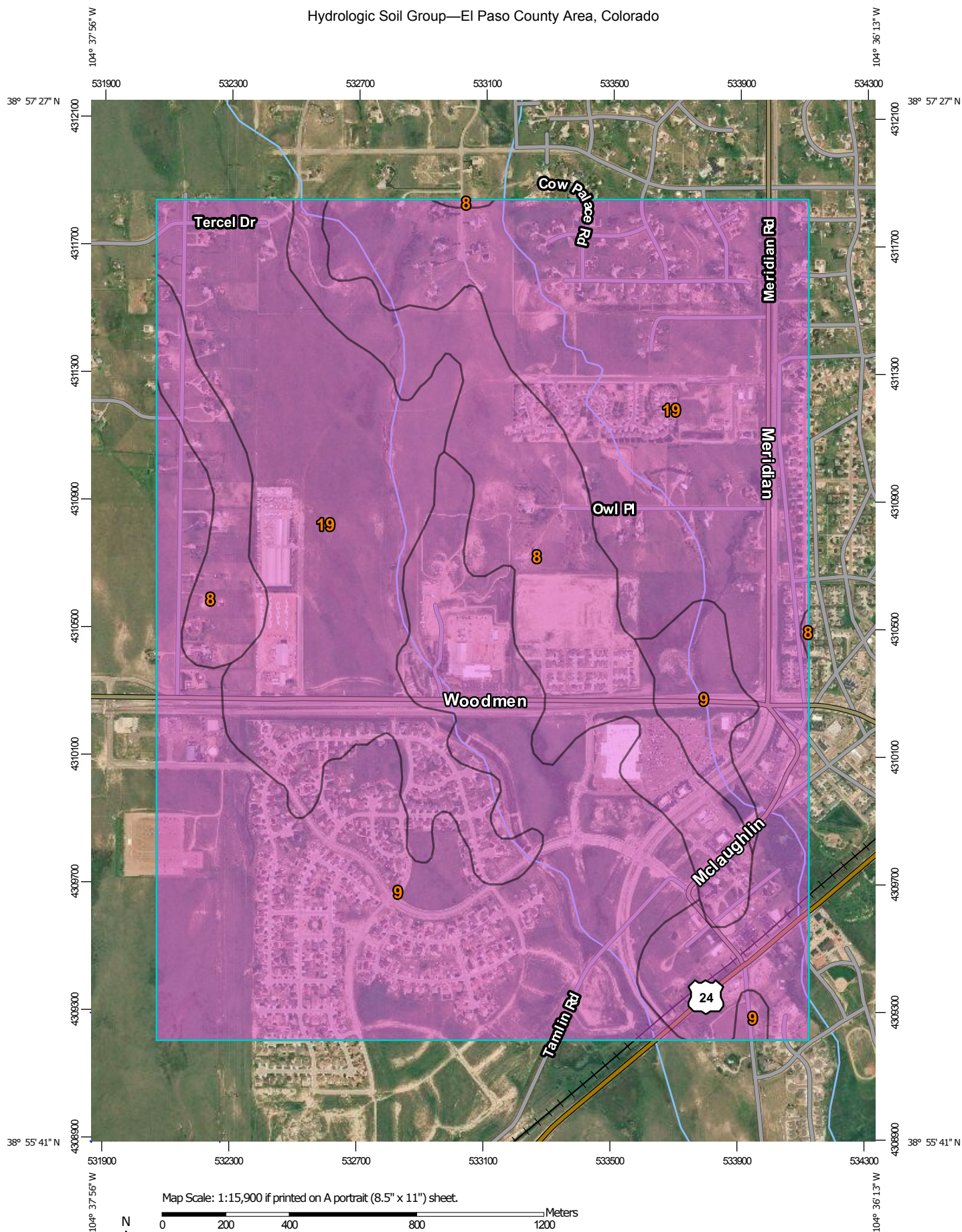
Project No:	CLH000020.20
Drawn By:	TJE
Checked By:	CMD
Date:	06/10/2021

**Galloway**

1155 Kelly Johnson Blvd., Suite 305  
Colorado Springs, CO 80920  
719.900.7220 • [GallowayUS.com](http://GallowayUS.com)

## APPENDIX B

# Hydrologic Soil Group—El Paso County Area, Colorado



Map Scale: 1:15,900 if printed on A portrait (8.5" x 11") sheet.

0 200 400 800 1200 Meters

0 500 1000 2000 3000 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84




**Natural Resources  
Conservation Service**

Web Soil Survey  
National Cooperative Soil Survey

4/2/2019  
Page 1 of 4

## 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.

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 16, Sep 10, 2018

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

Date(s) aerial images were photographed: Jun 7, 2016—Aug 17, 2017

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
8	Blakeland loamy sand, 1 to 9 percent slopes	A	214.3	16.0%
9	Blakeland-Fluvaquentic Haplaquolls	A	465.8	34.7%
19	Columbine gravelly sandy loam, 0 to 3 percent slopes	A	662.6	49.3%
<b>Totals for Area of Interest</b>			<b>1,342.6</b>	<b>100.0%</b>

## 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

## APPENDIX C



## APPENDIX D

# FINAL GRADING AND EROSION CONTROL PLANS

## FALCON MEADOWS AT BENT GRASS FILING NO. 3

### FALCON, CO 80831 - EL PASO COUNTY

#### CHALLENGER COMMUNITIES, LLC

#### PROJECT CONTACTS

##### OWNER/DEVELOPER

CHALLENGER COMMUNITIES, LLC  
13570 NORTHGATE ESTATES DR.  
COLORADO SPRINGS, CO 80921  
TELE: (719) 598-5190  
ATTN: JIM BYERS  
EMAIL: JIMBY@CHALLENGERHOMES.COM

##### APPLICANT

NES, INC.  
619 NORTH CASCADE AVENUE, SUITE 200  
COLORADO SPRINGS, CO 80903  
TELE: (719) 471-0073  
ATTN: BROOKS SAMPSON  
EMAIL: BSAMPSON@NESCOLORADO.COM

##### CIVIL ENGINEER

GALLOWAY & CO., INC.  
1155 KELLY JOHNSON BLVD., SUITE 305  
COLORADO SPRINGS, CO 80920  
TELE: (719) 900-7220  
ATTN: GRANT DENNIS, P.E.  
EMAIL: GRANTDENNIS@GALLOWAYUS.COM

##### GEOTECHNICAL ENGINEER

ROCKY MOUNTAIN GROUP  
2910 AUSTIN BLUFFS PKWY  
COLORADO SPRINGS, CO 80918  
TELE: (719) 594-3072  
ATTN: TONY MUNGER, P.E.  
EMAIL: TMUNGER@RMG-ENGINEERS.COM

##### TRAFFIC ENGINEER

LSC TRANSPORTATION CONSULTANTS, INC.  
545 EAST PIKE'S PEAK AVENUE, SUITE 210  
COLORADO SPRINGS, CO 80903  
TELE: (719) 633-2868  
ATTN: JEFFREY C. HODSON, P.E.  
EMAIL: JEFF@LSCTRANS.COM

##### SURVEYOR

GALLOWAY & CO., INC.  
1155 KELLY JOHNSON BLVD., SUITE 305  
COLORADO SPRINGS, CO 80920  
TELE: (719) 337-1262  
ATTN: BRIAN DENNIS  
EMAIL: BRIANDENNIS@GALLOWAYUS.COM

#### UTILITY CONTACTS

##### WATER & WASTEWATER

WOODMEN HILLS METRO DISTRICT  
8046 EASTONVILLE ROAD  
FALCON, CO 80831  
TELE: (719) 495-2500  
ATTN: CODY RITTER  
EMAIL: CODY@WHMD.ORG

##### ELECTRIC

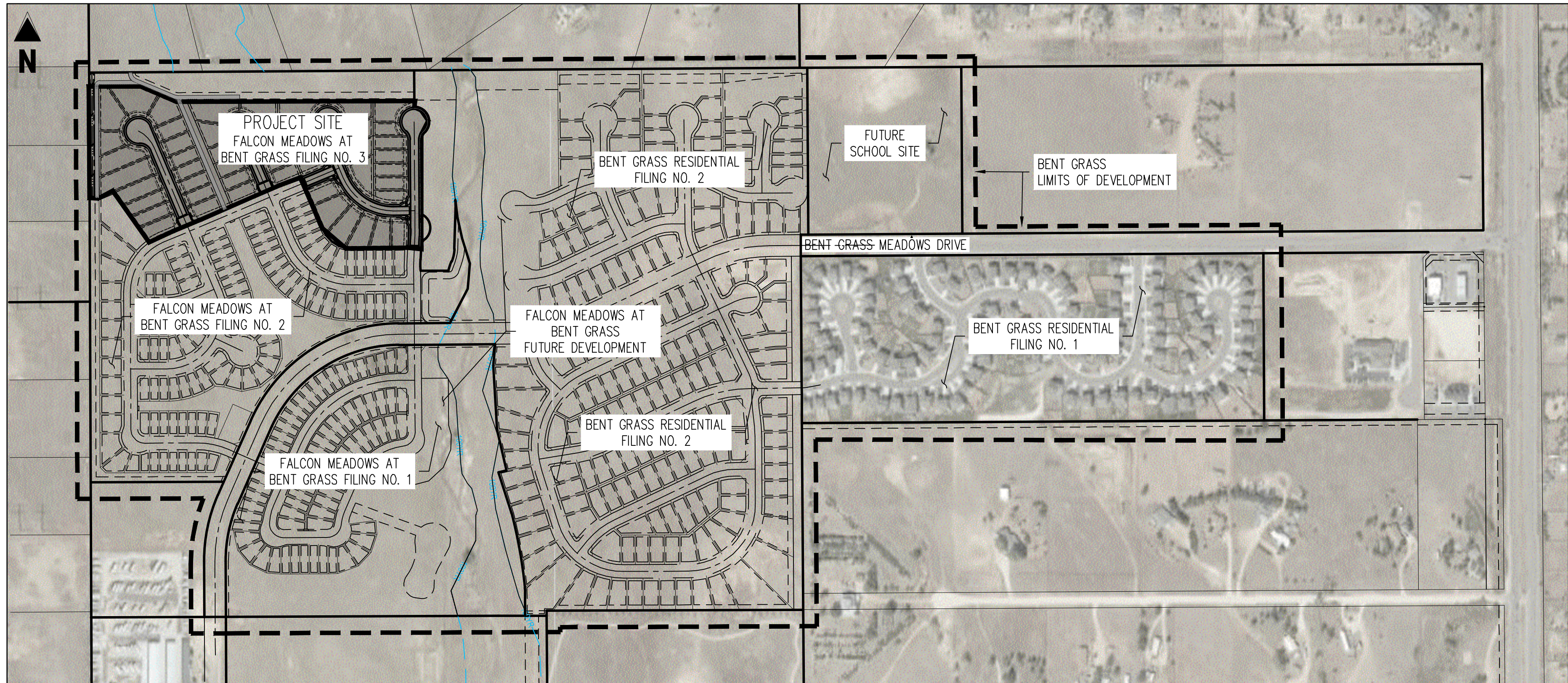
MOUNTAIN VIEW ELECTRIC  
11140 E. WOODMEN RD  
FALCON, CO 80831  
TELE: (719) 495-2283  
CATHY HANSEN-LEE  
EMAIL: CATHY@MVEA.COOP

##### NATURAL GAS

COLORADO SPRINGS UTILITIES (CSU)  
7710 DURANT DRIVE, P.O. BOX 1103, MAIL CODE 2150  
COLORADO SPRINGS, CO 80947-2150  
TELE: (719) 668-5573  
ARON CASSIO  
EMAIL: ACASSIO@CSU.ORG

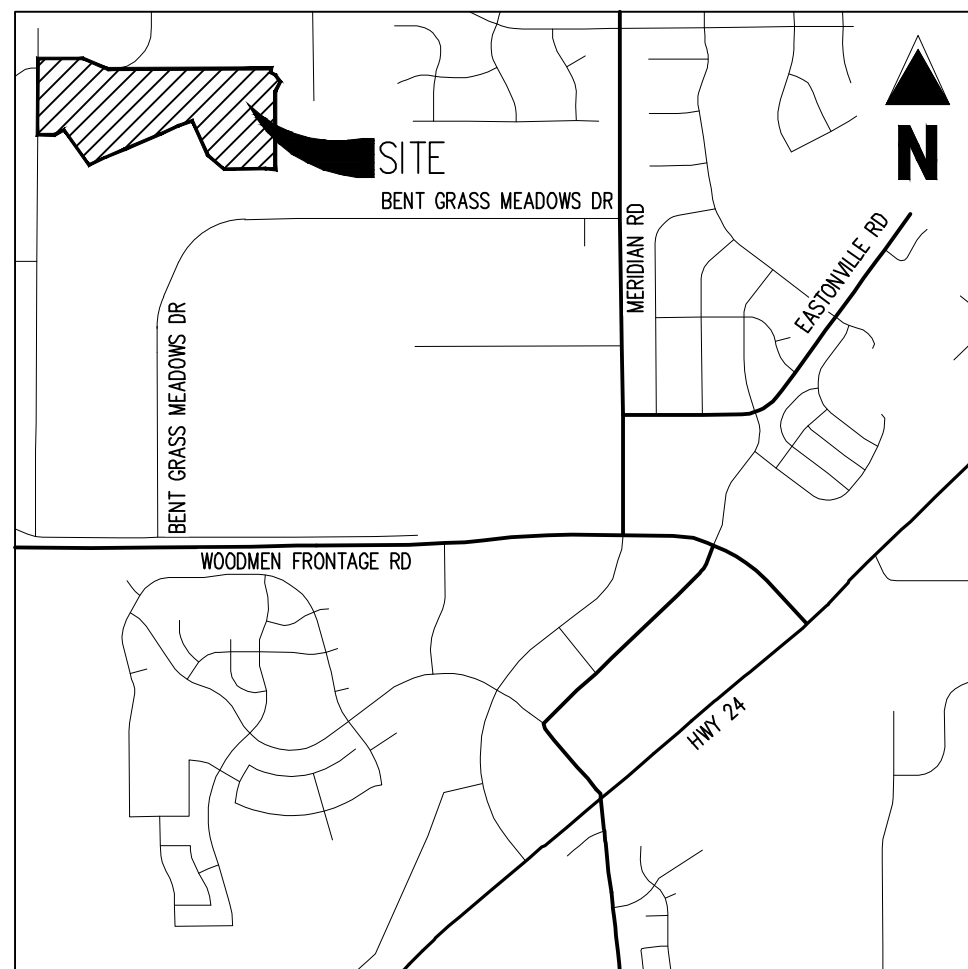
##### FIRE

FALCON FIRE PROTECTION DISTRICT  
7030 OLD MERIDIAN ROAD  
PEYTON, CO 80831  
TELE: (719) 495-4050  
EMAIL: FALCONFIRE@FALCONFIREPD.ORG



SITE MAP

SCALE: 1"=300'



VICINITY MAP

1"=2,000'

#### 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.

RONALD G. DENNIS, COLORADO P.E. NO. 0051622

DATE

#### OWNER'S STATEMENT

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

JIM BYERS

CHALLENGER COMMUNITIES, LLC

DATE

#### 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 EOM 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 DIRECTORS DISCRETION.

JOSHUA PALMER, P.E.

INTERIM COUNTY ENGINEER / EOM ADMINISTRATOR

DATE

SHEET INDEX		
SHEET NUMBER	SHEET TITLE	SHEET DESCRIPTION
1	GRADING & EROSION CONTROL COVER SHEET	G0.0
2	GRADING & EROSION CONTROL NOTES	G0.1
3	GRADING & EROSION CONTROL TYPICAL SECTIONS	G0.2
4	OVERALL GRADING PLAN	G1.0
5	GRADING & EROSION CONTROL INITIAL PLAN	G1.1
6	GRADING & EROSION CONTROL INITIAL PLAN	G1.2
7	GRADING & EROSION CONTROL INTERIM PLAN	G2.1
8	GRADING & EROSION CONTROL INTERIM PLAN	G2.2
9	GRADING & EROSION CONTROL FINAL PLAN	G3.1
10	GRADING & EROSION CONTROL FINAL PLAN	G3.2
11	SWALE CROSS SECTIONS	G4.1
12	GEC DETAILS	G5.1
13	GEC DETAILS	G5.2
14	GEC DETAILS	G5.3
15	GEC DETAILS	G5.4
16	GEC DETAILS	G5.5

\*SEE FALCON MEADOWS AT BENT GRASS FILING NO. 3 ROADWAY AND STORM SEWER CONSTRUCTION PLANS FOR ROADWAY AND STORM SEWER IMPROVEMENTS\*

\*SEE FALCON MEADOWS AT BENT GRASS FILING NO. 3 UTILITY CONSTRUCTION PLANS FOR WATER AND SANITARY IMPROVEMENTS\*

#### PCD FILING NO.

PUDSP-20-005 (FALCON MEADOWS AT BENT GRASS PRELIMINARY PLAN)  
SF-22-16 (FALCON MEADOWS AT BENT GRASS FILING NO. 3)

#### BASIS OF BEARINGS

ALL BEARINGS ARE GRID BEARINGS OF THE COLORADO STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE, NORTH AMERICAN DATUM 1983. THE BEARING OF THE LINE BETWEEN THE SOUTHWEST CORNER OF SECTION 1, T13S, R65W AND THE WEST QUARTER CORNER SECTION 1, T13S, R65W IS N001°3'45"W AND MONUMENTED AS SHOWN.

#### BENCHMARK

THE SOUTHWESTERLY CORNER OF LOT 1 WOODMEN HILLS FILING NO. 4, MONUMENTED BY A YELLOW PLASTIC SURVEYORS CAP ON A NO. 4 REBAR L5# 24954 ELEVATION = 6947.67

#### CAUTION - NOTICE TO CONTRACTOR

- ALL UTILITY LOCATIONS SHOWN ARE BASED ON MAPS PROVIDED BY THE APPROPRIATE UTILITY COMPANY AND FIELD SURFACE EVIDENCE AT THE TIME OF SURVEY AND IS TO BE CONSIDERED AN APPROXIMATE LOCATION ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE FIELD LOCATION OF ALL UTILITIES, PUBLIC OR PRIVATE, WHETHER SHOWN ON THE PLANS OR NOT, PRIOR TO CONSTRUCTION. REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO CONSTRUCTION.



Know what's below.  
Call before you dig.

- WHERE A PROPOSED UTILITY CROSSES AN EXISTING UTILITY, IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF SUCH EXISTING UTILITY, EITHER THROUGH POT-HOLING OR ALTERNATIVE METHOD. REPORT INFORMATION TO THE ENGINEER PRIOR TO CONSTRUCTION.

# Galloway

1155 Kelly Johnson Blvd., Suite 305  
Colorado Springs, CO 80920  
719.900.7220  
GallowayUS.com

#### COPYRIGHT

THESE PLANS ARE AN INSTRUMENT OF SERVICE AND ARE THE PROPERTY OF GALLOWAY, AND MAY NOT BE DUPLICATED, DISCLOSED, OR REPRODUCED WITHOUT THE WRITTEN CONSENT OF GALLOWAY. COPYRIGHTS AND INFRINGEMENTS WILL BE ENFORCED AND PROSECUTED.

## CHALLENGER HOMES

CONSTRUCTION DOCUMENTS  
FALCON MEADOWS AT BENT GRASS FILING NO. 3  
FOR  
CHALLENGER COMMUNITIES, LLC

BENT GRASS MEADOWS DRIVE & MERIDIAN ROAD  
FALCON, CO 80831 - EL PASO COUNTY

#	Date	Issue / Description	Init.
1			
2			
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16			

Project No:	CLH000020
Drawn By:	CMWJ
Checked By:	RGD
Date:	06/24/2022

GRADING & EROSION  
CONTROL COVER SHEET

# G0.0

Sheet 1 of 16

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

2. NOTWITHSTANDING ANYTHING DEPICTED IN THESE PLANS IN WORDS OR GRAPHIC REPRESENTATION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN, CONSTRUCTION AND EROSION CONTROL SHALL CONFORM TO THE STANDARDS AND REQUIREMENTS OF THE MOST RECENT VERSION OF THE RELEVANT ADOPTED EEL 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 TO REGULATIONS AND STANDARDS MUST BE REQUESTED, AND APPROVED, IN WRITING.

3. A SEPARATE STORMWATER MANAGEMENT PLAN (SWMP) FOR THIS PROJECT SHALL BE COMPLETED AND AN EROSION AND STORMWATER QUALITY CONTROL PERMIT (ESQCP) ISSUED PRIOR TO COMMENCING CONSTRUCTION. DURING CONSTRUCTION THE SWMP IS THE RESPONSIBILITY OF THE DESIGNATED QUALIFIED STORMWATER MANAGER OR CERTIFIED EROSION CONTROL INSPECTOR AND 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 STATE EROSION AND SEDIMENT CONTROL MEASURES AS INDICATED ON THE APPROVED EELP. A PRECONSTRUCTION MEETING BETWEEN THE CONTRACTOR, ENGINEER, AND THE DRAINAGE CRITERIA MANUAL VOLUME 2. ANY DEVIATIONS TO REGULATIONS AND STANDARDS MUST BE REQUESTED, AND APPROVED, IN WRITING.

5. CONTROL MEASURES MUST BE INSTALLED PRIOR TO COMMENCEMENT OF ACTIVITIES THAT MAY CONTRIBUTE POLLUTANTS TO SLOPES, STORMWATER SEDIMENT AND EROSION CONTROL MEASURES FOR ALL SLOPES, CHANNELS, DITCHES, OR ANY DISTURBED LAND AREA SHALL BE COMPLETED 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 INSTALLED. ANY PERSONS OR VEHICLES SHALL NOT BE ALLOWED TO ENTER ANY AREAS ENGAGED IN LAND DISTURBANCE ACTIVITIES SHALL ASSURE THE ADEQUACY OF CONTROL MEASURES AT THE SITE AND IDENTIFY IF CHANGES TO THOSE CONTROL MEASURES IS REQUIRED 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 PRIOR TO IMPLEMENTATION.

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. AN AREA THAT IS GOING TO REMAIN IN AN INTERM STATE FOR MORE THAN 60 DAYS SHALL ALSO BE STABILIZED.

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 PERMANENT CLOSURE.

9. ALL PERMANENT STORMWATER MANAGEMENT FACILITIES SHALL BE INSTALLED AS DEFINED IN THE ESQCP AND SHALL BE MAINTAINED IN ACCORDANCE WITH THE HYDROLOGY OR HYDRAULICS OF A PERMANENT STORMWATER MANAGEMENT STRUCTURES MUST BE APPROVED BY THE ECOM ADMINISTRATOR PRIOR TO IMPLEMENTATION.

10. EARTH DISTURBANCE SHALL BE CONDUCTED IN SUCH A MANNER 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 AND SHALL BE LIMITED TO THE SHORTEST PRACTICAL PERIOD OF THE PRE-EXISTING VEGETATION SHALL BE PROTECTED AND MAINTAINED WITHIN 50 HORIZONTAL FEET OF A WATER'S OF THE STATE UNLESS SUCH 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 SHALL ALSO BE PROTECTED FROM SEDIMENTATION DURING CONSTRUCTION UNTIL FINAL STABILIZATION IS ACHIEVED.

12. ANY TEMPORARY OR PERMANENT FACILITY DESIGNED AND CONSTRUCTED FOR THE STORAGE OF MATERIALS OR EQUIPMENT SHALL BE MAINTAINED IN ACCORDANCE WITH THE ESQCP AND SHALL BE A STABILIZED CONVEYANCE STRUCTURE 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 RUNOFF TO STATE WATERS, INCLUDING ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR FACILITIES. CONCRETE WASHOUT SHALL NOT BE LOCATED IN AN AREA WHERE SHALLOW GROUNDWATER MAY BE PRESENT, OR WITHIN 50 FEET OF A SURFACE WATER BODY.

14. DURING DETERMINING OPERATIONS OF UNCONTAMINATED GROUND SURFACE RUNOFF MAY BE DISCHARGED TO THE EXISTING DRAINAGE SYSTEM OR TO THE EXISTING DRAINAGE SYSTEM UNLESS AN APPROVED STATE DETERMINING 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 AND FOR DISPOSAL IN ACCORDANCE WITH ALL STATE AND FEDERAL REQUIREMENTS. NO CONSTRUCTION DEBRIS, TIRE, SLUSH, BUILDING MATERIAL WASTES OR UNUSING 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 EEL 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, AND SAND THAT MAY ACCUMULATE IN ROADS, STORM DRAINS AND OTHER DRAINAGE CONVEYANCE SYSTEM 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 MANNER. ALL MATERIALS STORED ON-SITE SHALL BE STORED IN A NEAT, ORDERLY MANNER, IN THEIR ORIGINAL CONTAINERS, WITH ORIGINAL MANUFACTURER'S LABELS.

21. NO CHEMICALS ARE TO BE USED BY THE CONTRACTOR, WHICH HAVE THE POTENTIAL TO BE RELEASED IN STORMWATER UNLESS PERMISSION FOR THE USE OF A SPECIFIC CHEMICAL IS GRANTED IN WRITING BY THE ECOM ADMINISTRATOR. IN GRANTING THE USE OF SUCH CHEMICALS, SPECIAL CONDITIONS AND MONITORING MAY BE REQUIRED.

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

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

24. INDIVIDUALS SHALL COMPLY WITH THE "COLORADO WATER QUALITY CONTROL ACT" (TITLE 25, ARTICLE 6, CRS), AND THE "CLEAN WATER ACT" (33 USC 1344), IN ADDITION TO THE REQUIREMENTS OF THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT. WATER QUALITY CONTROL PERMITS MUST BE OBTAINED BY THE CONTRACTOR PRIOR TO CONSTRUCTION (MDES, FLOODPLAIN, ADA, FUGITIVE DUST, ETC.). IN THE EVENT OF CONFLICTS BETWEEN THESE REQUIREMENTS AND LAWS, RULES, OR REGULATIONS OF OTHER FEDERAL, STATE, OR COUNTY AGENCIES, THE MORE RESTRICTIVE LAWS, RULES, OR REGULATIONS SHALL APPLY.

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

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

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

28. THE SOILS REPORT, TITLED "FALCON MEADOWS AT BENT GRASS, EEL PASO COUNTY, COLORADO" FOR THIS SITE HAS BEEN PREPARED BY ROCKY MOUNTAIN GROUP, LLC NO. 176147, DATED JUNE 22, 2020. LAST REVISED PREPARED 3, 2021 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 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 CONTROL. THE APPLICATION FOR CONSTRUCTION ACTIVITY SHALL BE A PART OF A STORMWATER MANAGEMENT PLAN (SWMP), OF WHICH THIS GRADING AND EROSION CONTROL PLAN MAY BE A PART. FOR INFORMATION OR APPLICATION MATERIALS CONTACT:

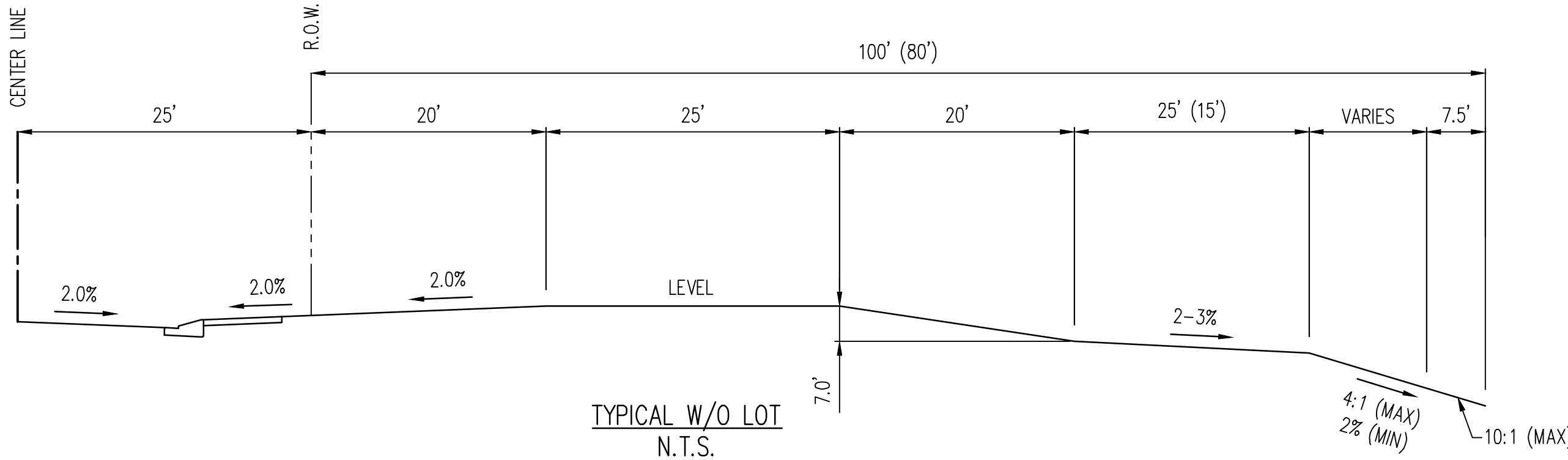
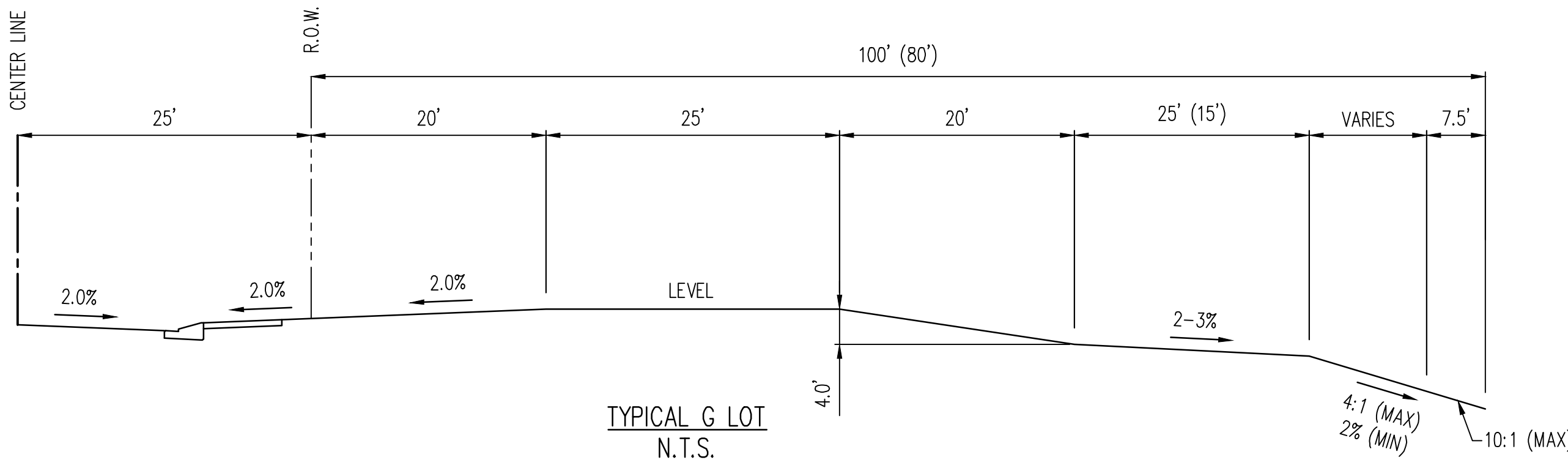
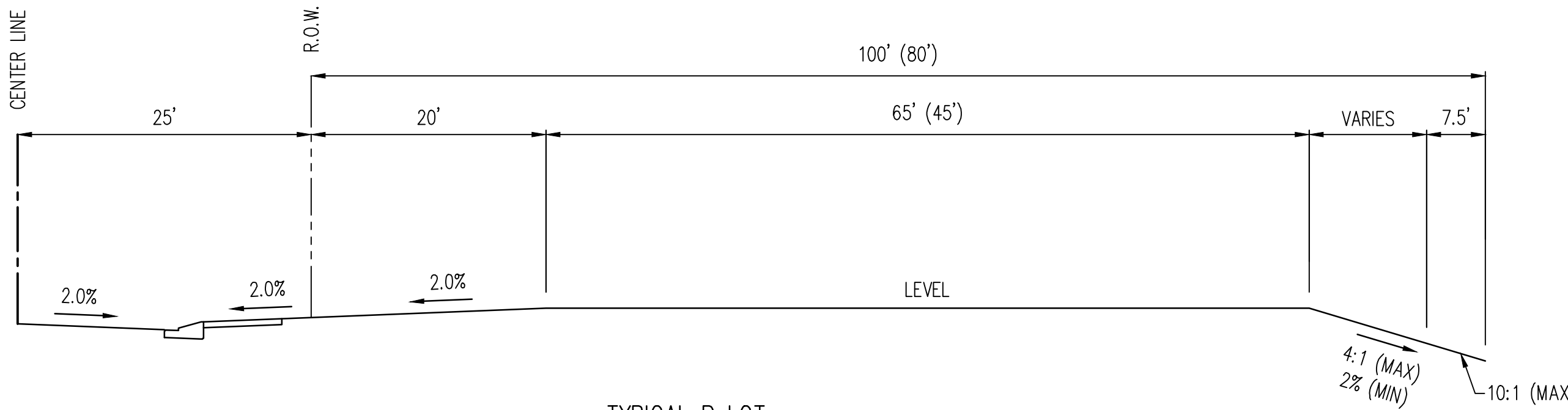
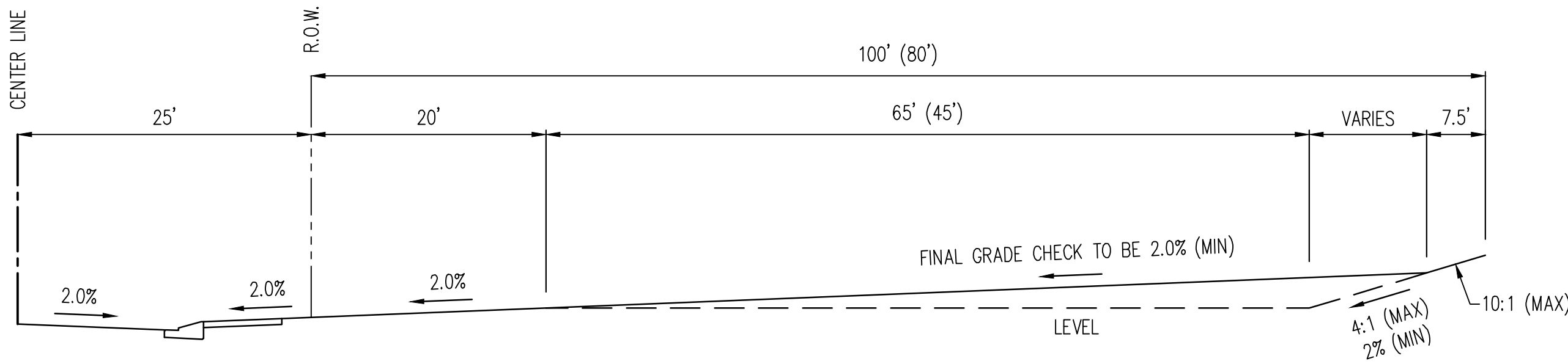
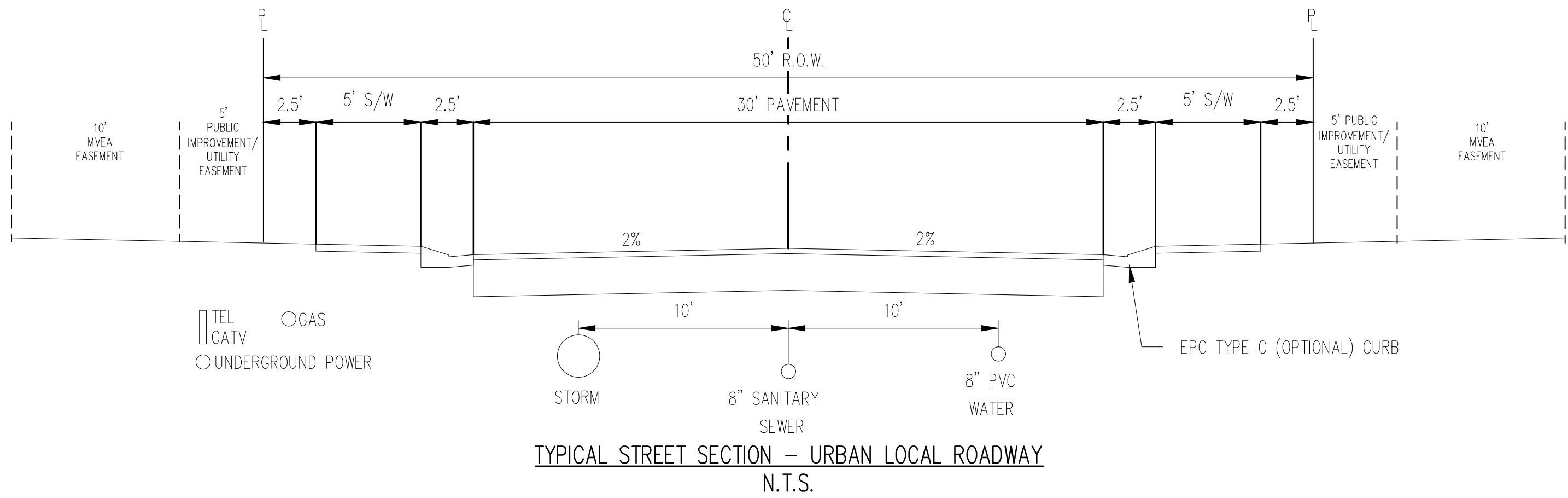
COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT  
WATER QUALITY CONTROL DIVISION  
WOOD - PERMITS  
4300 CHERRY CREEK DRIVE SOUTH  
DENVER, CO 80245-1530  
ATTN: PERMITS UNIT

1. ALL DRAINAGE AND ROADWAY CONSTRUCTION SHALL MEET THE STANDARDS AND SPECIFICATIONS OF THE CITY OF COLORADO SPRINGS/EL PASO COUNTY DRAINAGE CRITERIA MANUAL, VOLUMES 1 AND 2, AND THE EL PASO COUNTY ENGINEERING CTRIA MANUAL.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR THE NOTIFICATION AND FIELD NOTIFICATION OF ALL EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, BEFORE BEGINNING CONSTRUCTION. LOCATION OF EXISTING UTILITIES SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CALL 811 TO CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO (UNCC).
3. CONTRACTOR SHALL KEEP A COPY OF THESE APPROVED PLANS, THE GRADING AND EROSION CONTROL PLAN, THE STORMWATER MANAGEMENT PLAN (SWMP), THE SOILS AND GEOTECHNICAL REPORT, AND THE APPROPRIATE DESIGN AND CONSTRUCTION STANDARDS AND SPECIFICATIONS AT THE JOB SITE AT ALL TIMES, INCLUDING THE FOLLOWING:
  - A. EL PASO COUNTY ENGINEERING CTRIA MANUAL (CEM)
  - B. CITY OF COLORADO SPRINGS/EL PASO COUNTY DRAINAGE CRITERIA MANUAL, VOLUMES 1 AND 2
  - C. COLORADO DEPARTMENT OF TRANSPORTATION (CDOT) STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION
  - D. CDOT M & S STANDARDS
4. NOTWITHSTANDING ANYTHING DEPICTED IN THESE PLANS IN WORDS OR GRAPHICS REPRESENTING 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 CTRIA MANUAL, THE DRAINAGE CRITERIA MANUAL, AND THE ROADWAY CRITERIA MANUAL VOLUME 2. ANY DEVIATIONS FROM REGULATIONS AND STANDARDS MUST BE REQUESTED, AND APPROVED, IN WRITING. ANY MODIFICATIONS NECESSARY TO MEET CTRIA AFTER-THE-FACT WILL BE ENTIRELY THE DEVELOPER'S RESPONSIBILITY TO RECTIFY.
5. IT IS THE DESIGN ENGINEER'S RESPONSIBILITY TO ACCURATELY SHOW EXISTING CONDITIONS, BOTH ONSITE AND OFFSITE, ON THE CONSTRUCTION PLANS. ANY MODIFICATIONS NECESSARY DUE TO CONFLICTS, OMISSIONS, OR CHANGED CONDITIONS WILL BE ENTIRELY THE DEVELOPER'S RESPONSIBILITY TO RECTIFY.
6. CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT (PCD) – INSPECTIONS, PRIOR TO STARTING CONSTRUCTION.
7. IT IS THE CONTRACTOR'S RESPONSIBILITY TO UNDERSTAND THE REQUIREMENTS OF ALL JURISDICTIONAL AGENCIES AND TO OBTAIN ALL REQUIRED PERMITS, INCLUDING BUT NOT LIMITED TO EL PASO COUNTY EROSION AND STORMWATER QUALITY CONTROL PERMIT (ESQP), REGIONAL BUILDING FLOORPLAN DEVELOPMENT PERMIT, U.S. ARMY CORPS OF ENGINEERS-ISSUED 401 AND/OR 404 PERMITS, AND COUNTY AND STATE FLUVTIVE DUST PERMITS.
8. CONTRACTOR SHALL NOT DEVIATE FROM THE PLANS WITHOUT FIRST OBTAINING WRITTEN APPROVAL FROM THE DESIGN ENGINEER AND PCD. ANY CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER IMMEDIATELY UPON DISCOVERY OF ANY ERRORS OR INCONSISTENCIES.
9. ALL STORM DRAIN PIPE SHALL BE CLASS II RCP UNLESS OTHERWISE NOTED AND APPROVED BY PCD.
10. CONTRACTOR SHALL COORDINATE GEOTECHNICAL TESTING PER EOW STANDARDS. PAVEMENT DESIGN SHALL BE APPROVED BY EL PASO COUNTY PCD PRIOR TO PLACEMENT OF CURB AND GUTTER AND PAVEMENT.
11. ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THE SITE AT APPROVED CONSTRUCTION ACCESS POINTS.
12. SIGHT VISIBILITY TRIANGLES AS IDENTIFIED IN THE PLANS SHALL BE PROVIDED AT ALL INTERSECTIONS. OBSTRUCTIONS GREATER THAN 18 INCHES ABOVE FLOWLINE ARE NOT ALLOWED WITHIN SIGHT TRIANGLES.
13. SIGNING AND STRIPPING SHALL COMPLY WITH EL PASO COUNTY DOT AND MUTCO CTRIA. (IF APPLICABLE, ADDITIONAL SIGNING AND STRIPPING NOTES WILL BE PROVIDED.)
14. CONTRACTOR SHALL OBTAIN ANY PERMITS REQUIRED BY EL PASO COUNTY DOT, INCLUDING WORK WITHIN THE RIGHT-OF-WAY AND SPECIAL TRANSPORT PERMITS.
15. THE LIMITS OF CONSTRUCTION SHALL REMAIN WITHIN THE PROPERTY LINE UNLESS OTHERWISE NOTED. THE OWNER/DEVELOPER SHALL OBTAIN WRITTEN PERMISSION AND EASEMENTS, WHEN REQUIRED, FROM ADJOINING PROPERTY OWNER(S) FOR ANY OFF-SITE DISTURBANCE, GRADING, OR CONSTRUCTION.

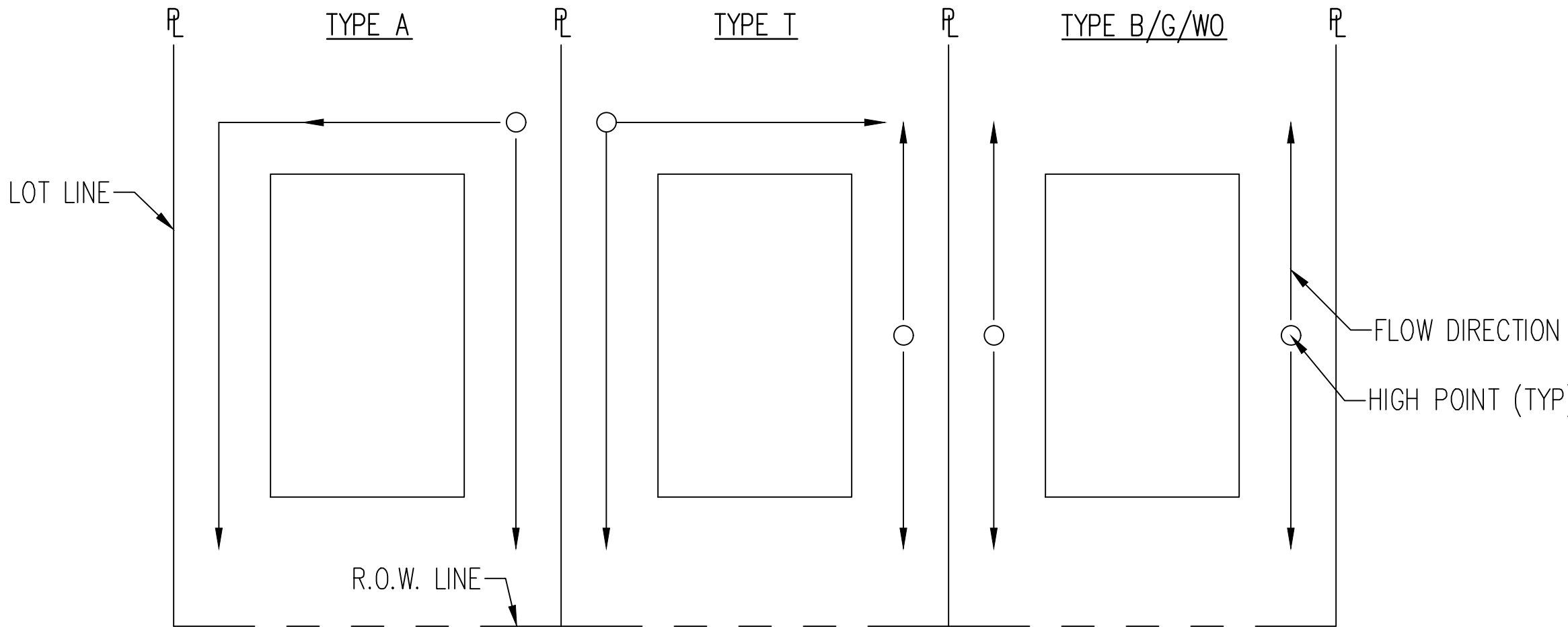
1. SOIL EROSION CONTROL MEASURES FOR ALL SLOPES, CHANNELS, DITCHES, OR ANY DISTURBED LAND AREA SHALL BE COMPLETED WITHIN TWENTY-ONE (21) CALENDAR DAYS AFTER FINAL GRADING, OR FINAL EARTH DISTURBANCE HAS BEEN COMPLETED. DISTURBED AREAS AND STOCKPILES WHICH ARE NOT AT FINAL GRADE BUT WILL REMAIN DORMANT FOR LONGER THAN 30 DAYS SHALL ALSO BE MULCHED WITHIN 21 DAYS AFTER INTERIM GRADING. AN AREA THAT IS GOING TO REMAIN IN AN INTERIM STATE FOR MORE THAN 60 DAYS SHALL ALSO BE SEEDED. ALL TEMPORARY SOIL EROSION CONTROL MEASURES AND BMPs SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED.
2. CONSTRUCTION FENCE AND SILT FENCE OFFSET FOR CLARITY. CONTRACTOR TO ENSURE BMPs ARE PLACED DOWNSTREAM OF DISTURBED AREAS TO PREVENT SEDIMENT FROM LEAVING THE SITE.
3. BENT GRASS MEADOWS DRIVE SHALL BE STREET SWEEPED AND INSPECTED ON A REGULAR BASIS DURING CONSTRUCTION.
4. NO NOTABLE EXISTING VEGETATION EXISTS ON THE SITE, APART FROM NATIVE GRASSES AND WEEDS. THE EXISTING SOIL TYPES WITHIN THE PROPERTY CONSISTS OF COLUMBIAN GRAVELLY SANDY LOAM, BLAKELAND-FLUVAQUENTIC HAPLAQUOLLS, AND BLAKELAND LOAMY SAND. ALL SOILS ARE DEFINED AS HAVING A HYDROLOGIC SOIL GROUP OF A, AS DETERMINED BY THE NRCS WEB SOIL SURVEY FOR EL PASO COUNTY AREA.

1. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES ALONG THE ROUTE OF THE WORK. THE OMISSION FROM THE RECORD DRAWINGS AND PLANS IS NOT TO BE CONSIDERED AS THE NONEXISTENCE OF A OR DEFINITE LOCATION OF EXISTING UNDERGROUND UTILITIES.
2. THE CONTRACTOR SHALL TAKE THE NECESSARY PRECAUTIONS TO PROTECT EXISTING UTILITIES FROM DAMAGE DUE TO THIS OPERATION. ANY DAMAGE TO THE UTILITIES WILL BE REPLACED AT THE CONTRACTORS EXPENSE AND ANY SERVICE DISRUPTION WILL BE SETTLED BY THE CONTRACTOR.
3. ADDITIONAL EROSION CONTROL STRUCTURES MAY BE REQUIRED AT THE TIME OF CONSTRUCTION.
4. ALL BACKFILL, SUB-BASE AND / OR BASE COURSE (CLASS 6) MATERIAL SHALL BE COMPACTED TO THE SOLS ENGINEERS RECOMMENDATIONS, AND APPROVED BY EL PASO COUNTY DEVELOPMENT SERVICES ENGINEERING DIVISION.
5. ALL STATIONING IS CENTERLINE UNLESS OTHERWISE INDICATED. ALL ELEVATIONS ARE FLOW LINE UNLESS OTHERWISE INDICATED.
6. ALL DISTURBED PAVEMENT EDGES SHALL BE CUT TO NEAT LINES. REPAIR SHALL CONFORM TO THE EPCV EGM APPENDIX K – 1.2C.
7. ALL INTERSECTION ACCESSES TO BE CONSTRUCTED WITH A 25 FOOT SIGN VISIBILITY TRIANGLES AND THERE SHALL BE NO OBSTRUCTIONS GREATER THAN 10" IN THIS AREA.
8. ALL CURBVERT AND STORM PIPES SHALL BE SMOOTH INTERIOR CORRUGATED POLYETHYLENE PIPE (HDPE), OR REINFORCED CONCRETE PIPE (RCP). ALL CURBVERTS SHALL BE PLACED CONFORM WITH FLARED END SECTIONS. ADEQUACY OF MATERIAL THICKNESS FOR ANY CSP INSTALLED SHALL BE VERIFIED BY OWNERS GEOTECHNICAL ENGINEER TO SUPPORT MINIMUM 50 YEAR DESIGN LIFE. CURBVERTS MUST CONFORM TO EPCV EGM SECTION 3.32 – CURBVERTS.
9. ASPHALT THICKNESS AND BASE COURSE THICKNESS (COMPACTED) FOR ROADS SHALL BE PER DESIGN REPORT BY OWNERS GEOTECHNICAL ENGINEER. OWNERS GEOTECHNICAL ENGINEER TO BE ON SITE AT TIME OF ROAD CONSTRUCTION TO EVALUATE SOIL CONDITIONS AND DETERMINE IF ADDITIONAL MEASURES ARE NECESSARY TO ASSURE STABILITY OF THE NEW ROADS. PAVEMENT DESIGN SHALL BE APPROVED BY EL PASO COUNTY DEVELOPMENT SERVICES ENGINEERING DIVISION prior TO CONSTRUCTION.
10. TYPE I RIP-RAP WITH 4" TYPE II GRANULAR BEDDING AND MARIACHI 180N OR EQUAL MAY BE SUBSTITUTED WHERE TYPE I RIP-RAP WITH MARIACHI 700 OR EQUAL IS SPECIFIED.
11. ALL MATERIALS AND INSTALLATION PROCEDURES SHALL BE IN COMPLIANCE WITH ANY AND ALL APPLICABLE EL PASO COUNTY STANDARDS AND WITH WOODMAN HILLS METRO DISTRICT CONSULTING ENGINEER APPROVAL.
12. ALL POTABLE WATER MAINS SHALL BE AWWA C900-SDR18 PIPE WITH PUSH-ON SINGLE GASKET TYPE JOINTS AND SHALL MEET THE REQUIREMENTS OF NSF 61.
13. ALL WATER MAIN FITTINGS SHALL BE MADE FROM GRAY-IRON OR DUCTILE IRON AND FURNISHED WITH MECHANICAL JOINT ENDS. ALL FITTINGS SHALL HAVE A PRESSURE RATING OF 250 PSID AND SHALL MEET THE REQUIREMENTS OF NSF / NSF 61.
14. ALL WATER LINE BEDS, TRENCHES, BLOW-OUTS AND PLUGS AT DEAD-END MAINS SHALL BE PROTECTED FROM THRUST BY USING CONCRETE THROCK BLOCKS AND / OR ROODING AND RESTRAINED PIPE PER THE WOODMAN HILLS METRO DISTRICT CONSULTING ENGINEER APPROVAL.
15. MAXIMUM DEFLECTION OF 8" OR 12" PVC WATER MAIN JOINTS IS 4 DEGREES. CORRESPONDING MINIMUM CURVE RADII IS 286'. ADDITIONAL 11.25" OR 22.5" BENDS MAY BE REQUIRED FOR PROPER ALIGNMENT.
16. CONTRACTOR IS RESPONSIBLE FOR PROVIDING DETAILED AS-BUILTS OF ALL WATER MAIN, STORM SEWER AND SANITARY SEWER MAIN INSTALLATIONS, INCLUDING ACCURATE DISTANCES OF MAIN LINES, VALVES, FITTINGS, MANHOLES AND LOCATIONS OF WATER AND SEWER SERVICES.
17. SANITARY SEWER PIPE AND FITTINGS: PVC 4" – 8" ASTM D3034, TYPE PSN, SDR 35; PUSH-ON JOINTS AND MOLDED RUBBER GASKETS MAXIMUM HORIZONTAL DEFLECTIONS, AFTER INSTALLATION AND BACK FILLING SHALL NOT EXCEED 3% OF THE PIPE DIAMETER. (MINIMUM CURVE RADIUS IS 100' FOR 4" PVC SANITARY SEWER MAIN)

[illegible]



- NOTES:
- TRANSITION LOTS IDENTIFIED BY A "T" ARE INCLUDED TO INDICATE LOTS THAT WILL REQUIRE HOME BUILDERS TO PREPARE A SITE SPECIFIC GRADING PLAN TO DETAIL THE GRADING TRANSITION FROM TYPE A/B LOTS TO GARDEN/WALKOUT LOTS
  - THE DEVELOPER/HOME BUILDER SHALL INSTALL SIDE LOT SWALES TO MINIMIZE THE LOT TO LOT DRAINAGE.



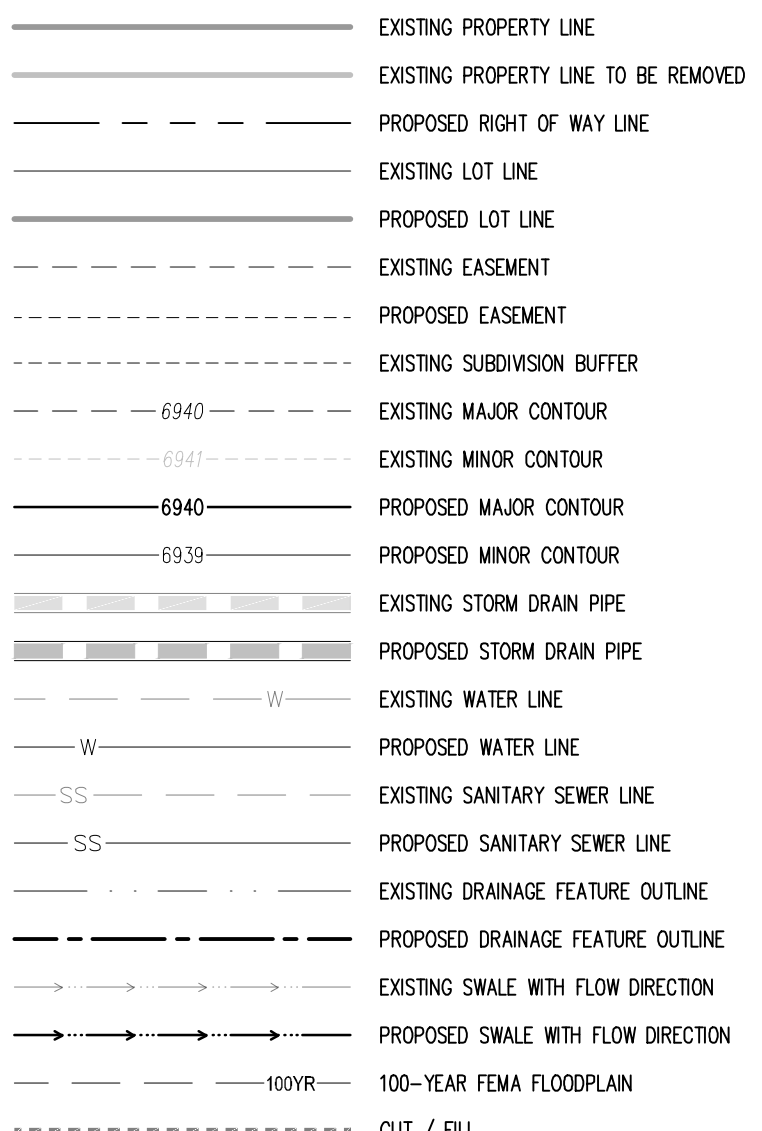
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Project No:	CLH000020
Drawn By:	CMWJ
Checked By:	RGD
Date:	06/24/2022

**GRADING & EROSION CONTROL TYPICAL SECTIONS**

#	Date	Issue / Description	Init.
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Project No:	CLH000020
Drawn By:	CMWJ
Checked By:	RGD
Date:	06/24/2022



1. ADD 6900 TO ALL SPOT ELEVATIONS
2. THE PLAN SHALL NOT SUBSTANTIALLY CHANGE THE DEPTH OF COVER, OR ACCESS TO UTILITY FACILITIES. ADDITIONALLY, THE PLAN SHALL NOT INCREASE OR DIVERT WATER TOWARDS UTILITY FACILITIES. ANY CHANGES TO UTILITY FACILITIES TO ACCOMMODATE THE PLAN, MUST BE DISCUSSED AND AGREED TO BY THE AFFECTED UTILITY PRIOR TO IMPLEMENTING THE PLAN. THE RESULTING COST TO RELOCATE OR PROTECT UTILITIES, OR PROVIDE INTERIM ACCESS IS AT THE EXPENSE OF THE PLAN APPLICANT.

EROSION CONTROL PHASING SCHEDULE	
PHASE	DESCRIPTION
INITIAL	<p>INSTALL SITE POSTING, SILT FENCE, SEDIMENT CONTROL LOGS, AND INLET PROTECTION MEASURES ON EXISTING INLETS, AND CURB SOOCS ALONG BENT GRASS MEADOWS DRIVE, DAELYN DRIVE, KITTICK PLACE, AND HENZELLE PLACE.</p> <p>INSTALL STABILIZED STAGING AREA, VEHICLE TRUCKING CONTROL AT ENTRANCES, AND CONCRETE WASHOUT AREA. THEN OVERLOUT GRADE, THE EXISTING PROJECT SITE AS SHOWN IN PHASE II PLAN. INSTALL STRAW BALE BARRIERS ALONG INTERNAL ROADWAYS, AND INSTALL CHECK DAMS ALONG EXPOSED SWALES. FINALLY, INSTALL PROPOSED STORM SEWER. CONTRACTOR TO EXERCISE EXTREME CAUTION TO PROTECT EXISTING AND FUTURE WATERIMPROVEMENTS CONTAINED IN THE UTILITY CONSTRUCTION PLANS. THE TEMPORARY SEDIMENT BASINS AND TRAPS SHALL BE REMOVED ONCE CONTRACTOR BEGINS CONSTRUCTION ON CURB/GUTTER AND PAVEMENT.</p>
FINAL	<p>CONSTRUCT CURB/GUTTER AND PAVEMENT. CONSTRUCT GAS/ELECTRIC/CABLE PHONE IN ROW AREAS. REMOVE CONSTRUCTION BMP'S ONCE VERTICAL CONSTRUCTION OF HOUSES AND REMOVAL LANDSCAPING IS COMPLETE.</p>

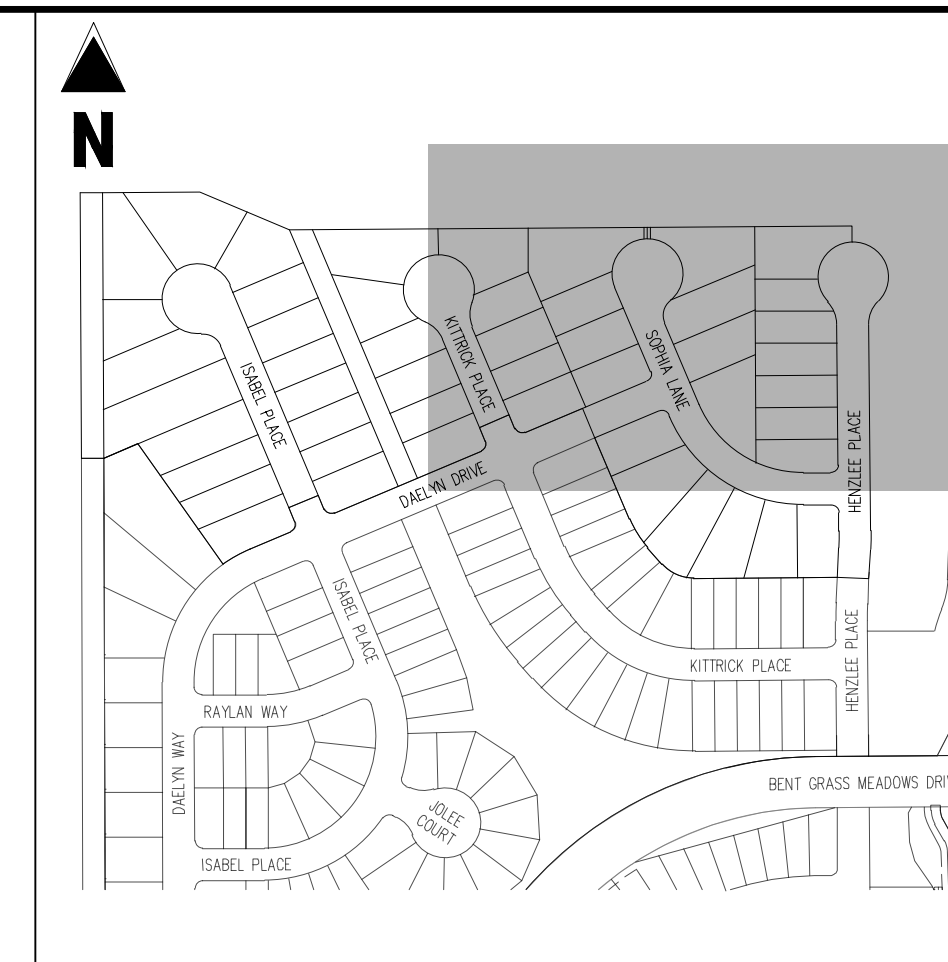
ALL BEARINGS ARE GRID BEARINGS OF THE COLORADO STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE, NORTH AMERICAN DATUM 1983. THE BEARING OF THE LINE BETWEEN THE SOUTHWEST CORNER OF SECTION 1, T13S, R65W AND THE WEST QUARTER CORNER SECTION 1, T13S, R65W IS N00°13'46"W AND MONUMENTED AS SHOWN:

THE SOUTHWESTERLY CORNER OF LOT 1 WOODMEN HILLS FILING NO. 4, MONUMENTED BY A  
YELLOW PLASTIC SURVEYORS CAP ON A NO. 4 REBAR LS# 24954 ELEVATION = 6947.67

1. ALL UTILITY LOCATIONS SHOWN ARE BASED ON MAPS PROVIDED BY THE APPROPRIATE UTILITY COMPANY AND FIELD SURFACE EVIDENCE AT THE TIME OF SURVEY AND IS TO BE CONSIDERED AN APPROXIMATE LOCATION ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE FIELD LOCATION OF ALL UTILITIES, PUBLIC OR PRIVATE, WHETHER SHOWN ON THE PLANS OR NOT, PRIOR TO CONSTRUCTION. REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO CONSTRUCTION.

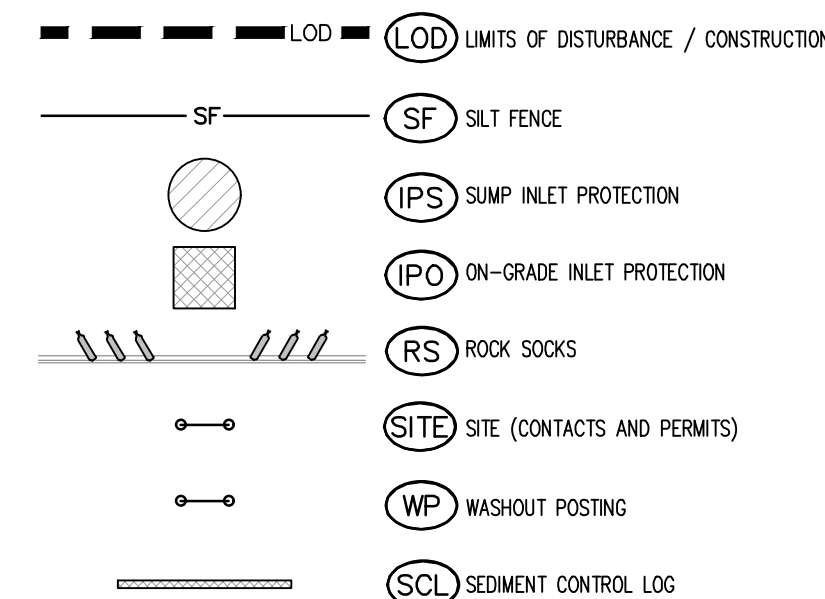
2. WHERE A PROPOSED UTILITY CROSSES AN EXISTING UTILITY, IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF SUCH EXISTING UTILITY, EITHER THROUGH POT-HOLING OR ALTERNATIVE METHOD. REPORT INFORMATION TO THE ENGINEER PRIOR TO CONSTRUCTION.





KEY MAP  
SCALE: 1"=300'

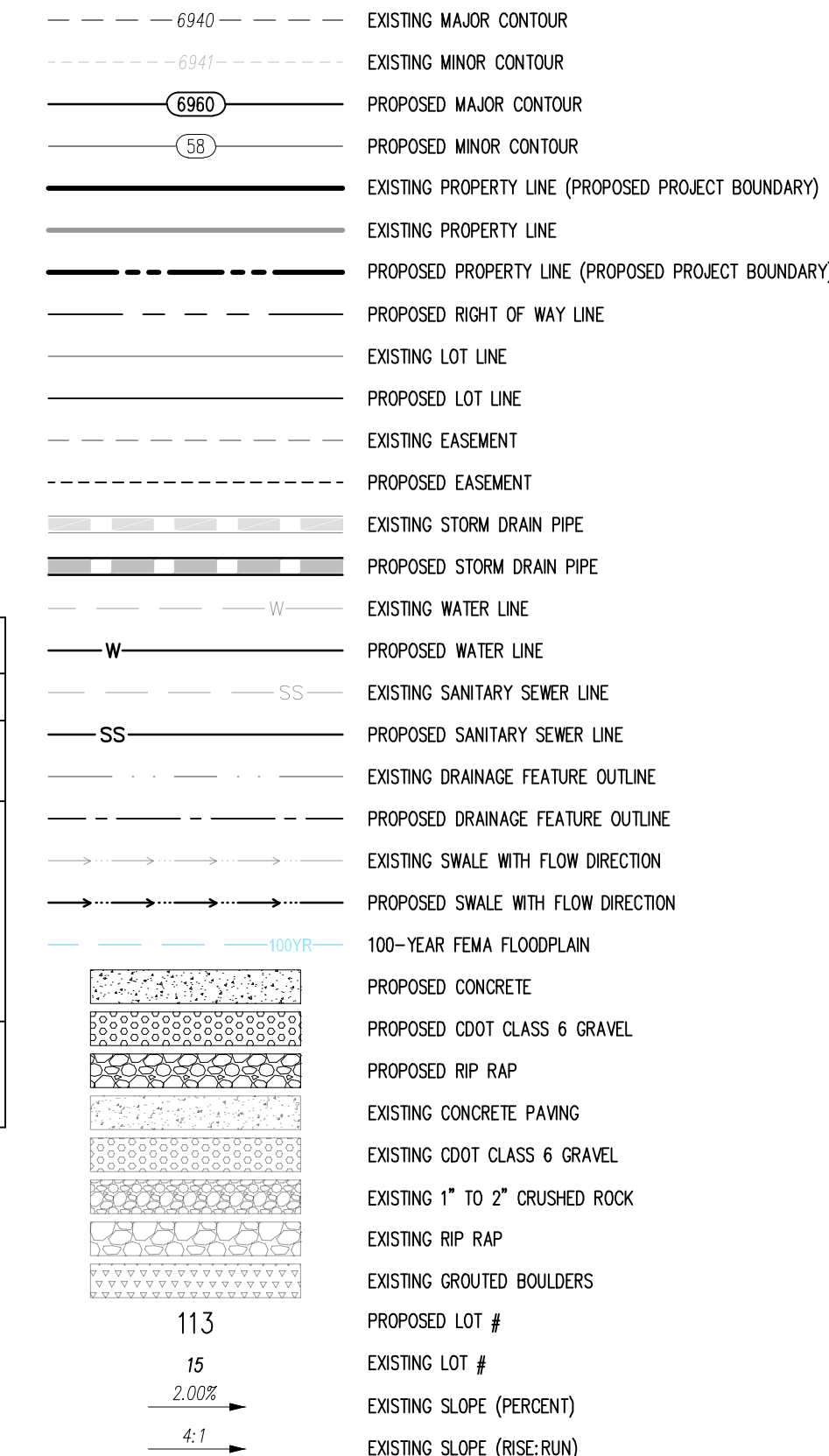
EROSION CONTROL LEGEND



### EROSION CONTROL PHASING SCHEDULE

PHASE	DESCRIPTION
INITIAL	INSTALL SITE POSTING, SILT FENCE, SEDIMENT CONTROL LOGS, AND INLET PROTECTION MEASURES ON EXISTING INLETS AND CURB SLOKS ALONG RIVER. GRASS MEADOW DRAINAGE, AND CONCRETE CHECK DAMS AND FENCELINE FLAG.
INTERIM	INSTALL STABILIZED STAGING AREA, VEHICLE TRACKING CONTROL AT ENTRANCES, AND CONCRETE WASHOUT AREA. THEN OVERLOFT GRADE THE ENTIRE PROJECT SITE AS SHOWN ON PLAN VIEW. INSTALL STRAW BALE BARRIERS ALONG INTERNAL ROADS AND INSTALL CHECK DAMS ALONG PROPOSED SWALES. FINALLY, INSTALL PROPOSED STORM SEWER. CONTRACTOR TO USE EXTREME CAUTION TO NOT DAMAGE THE WATER AND WASTEWATER TREATMENTS COMPLEX. CONTRACTOR TO REMOVE EXISTING TEMPORARY SEDIMENT BASINS AND TRAPS SHALL BE REMOVED ONCE CONTRACTOR BEGINS CONSTRUCTION ON CURB/GUTTER AND PAVEMENT.
FINAL	CONSTRUCT CURB/GUTTER AND PAVEMENT. CONSTRUCT GAS/ELECTRIC/CABLE/PHONE IN ROW AREAS. REMOVE CONSTRUCTION BMP'S ONCE VERTICAL CONSTRUCTION OF HOUSES AND APPLICABLE LANDSCAPING IS COMPLETE.

### LEGEND



## NOTES

1. ADD 6900 TO ALL SPOT ELEVATIONS
2. EXISTING VEGETATION ON THE PROJECT SITE CONSISTS OF NATIVE GRASSES AND SHRUBS.
3. NO WETLANDS ARE TO BE PERMANENTLY DISTURBED PER THIS PLAN.
4. NO GRADING IS TO OCCUR WITHIN THE 100-YEAR FLOODPLAIN.
5. THE EROSION CONTROL DELINEATED ON THIS PLAN SHALL BE REGULARLY UPDATED BY THE CONTRACTOR.
6. CONTRACTOR SHALL PROTECT ALL AREAS OUTSIDE OF THE CONSTRUCTION LIMITS WITH SILT FENCE OR OTHER METHOD TO PROTECT UNDISTURBED AREAS FROM EROSION.
7. ALL TEMPORARY OR PERMANENT GRADING DISTURBANCES SHALL BE RE-SEEDING AND MULCHED PER EL PASO COUNTY CRITERIA AND SPECIFICATIONS.

## BASIS OF BEARINGS

ALL BEARINGS ARE GRID BEARINGS OF THE COLORADO STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE, NORTH AMERICAN DATUM 1983. THE BEARING OF THE LINE BETWEEN THE SOUTHWEST CORNER OF SECTION 1, T13S, R65W AND THE WEST QUARTER CORNER SECTION 1, T13S, R65W IS N00°13'46"W AND MONUMENTED AS SHOWN:

## BENCHMARK

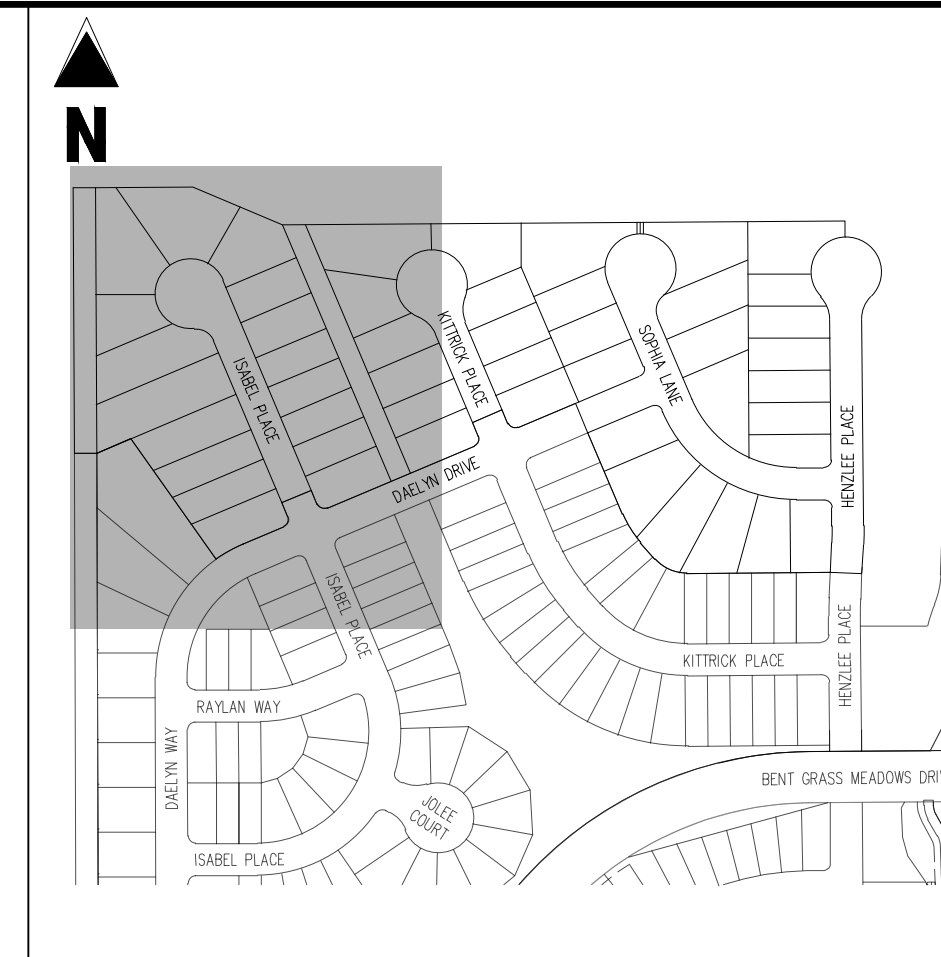
THE SOUTHWESTERLY CORNER OF LOT 1 WOODMEN HILLS FILING NO. 4. MONUMENTED BY A YELLOW PLASTIC SURVEYORS CAP ON A NO. 4 REBAR LS# 24954 ELEVATION = 6947.67

CAUTION - NOTICE TO CONTRACTOR

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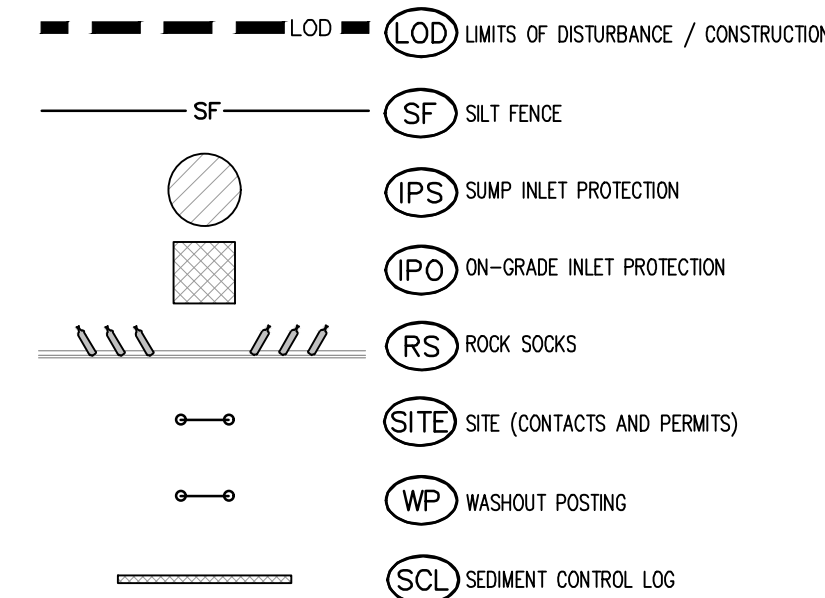


Know what's **below**.  
**Call** before you dig.



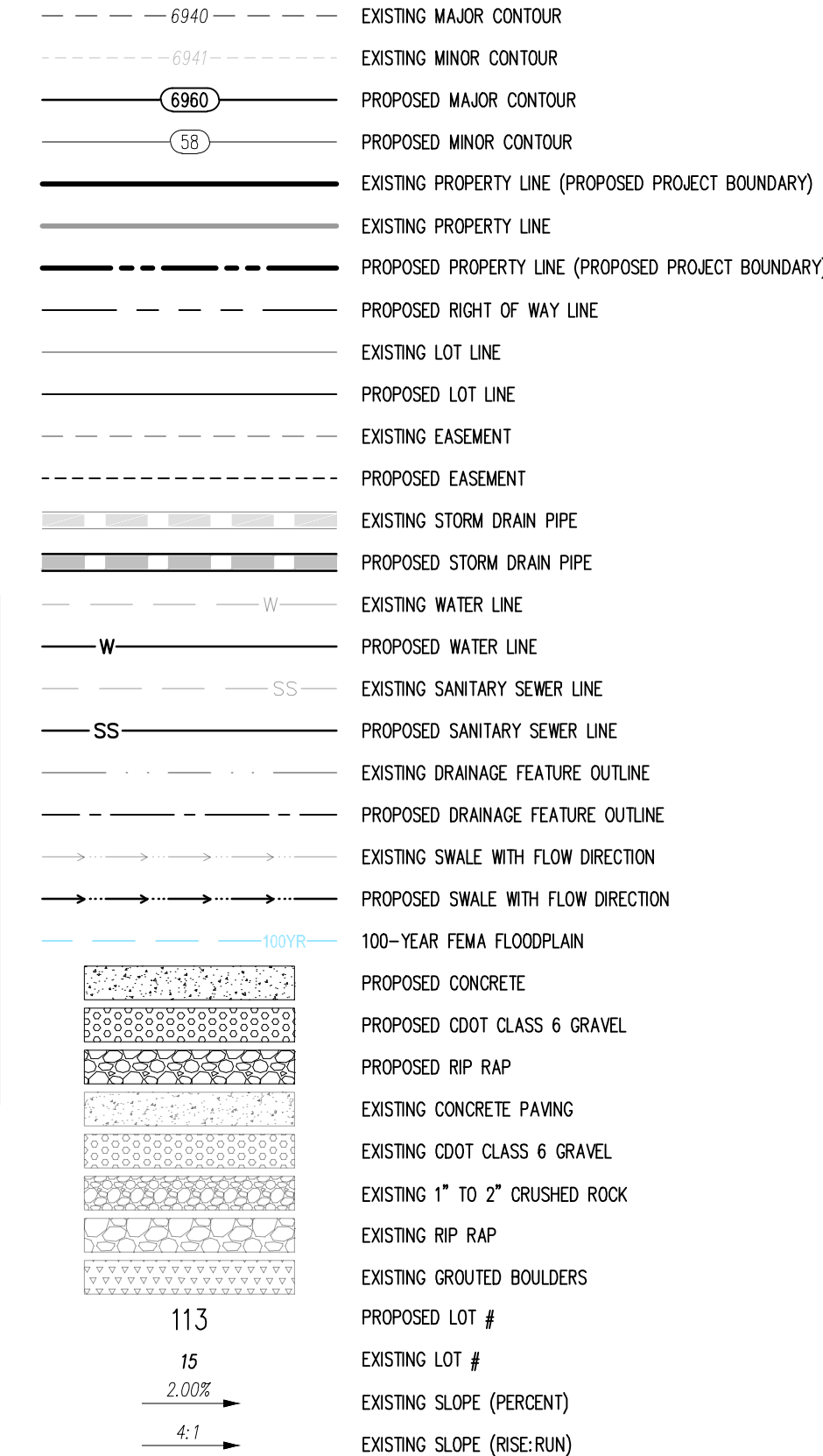
KEY MAP  
SCALE: 1"=300'

EROSION CONTROL LEGEND



EROSION CONTROL PHASING SCHEDULE	
PHASE	DESCRIPTION
INITIAL	INSTALL SITE POSTING, SLOPE FENCE, SEDIMENT CONTROL LOGS, AND INLET PROTECTION MEASURES ON EXISTING LOTS, AND CURB GROBS ALONG BENT GRASS MEADOWS DRIVE, DAELYN DRIVE, NITTRICK PLACE, AND HENZLEE PLACE.
INTERIM	INSTALL STABILIZED STAGING AREA, VEHICLE TRACKING CONTROL AT ENTRANCES, AND CONCRETE WASHOUT AREA. THEN OVERLOT GRADE THE ENTIRE PROJECT SITE AS SHOWN ON THE ATTACHED INSTALL STRAIN DRAIN BARRIERS ALONG INTERNAL ROADWAYS, AND INSTALL CHECK DAMS ALONG PROPOSED SWALES. FINALLY, INSTALL PROPOSED STORM SEWER. CONTRACTOR TO USE EXTREME CAUTION TO NOT DAMAGE THE WATER AND WASTEWATER IMPROVEMENTS COMPLETED TO DATE. THE TEMPORARY SEDIMENT BASINS AND TRAPS SHALL BE REMOVED ONCE CONTRACTOR BEGINS CONSTRUCTION ON CURB/GUTTER AND PAVEMENT.
FINAL	CONSTRUCT CURB/GUTTER AND PAVEMENT. CONSTRUCT GAS/ELECTRIC/CABLE/PHONE IN ROW AREAS. REMOVE CONSTRUCTION BMP'S ONCE VERTICAL CONSTRUCTION OF HOUSES AND AFFILIABLE LANDSCAPING IS COMPLETE.

LEGEND



## NOTES

1. ADD 6900 TO ALL SPOT ELEVATIONS
2. EXISTING VEGETATION ON THE PROJECT SITE CONSISTS OF NATIVE GRASSES AND SHRUBS.
3. NO WETLANDS ARE TO BE PERMANENTLY DISTURBED PER THIS PLAN.
4. NO GRADING IS TO OCCUR WITHIN THE 100-YEAR FLOODPLAIN.
5. THE EROSION CONTROL DELINEATED ON THIS PLAN SHALL BE REGULARLY UPDATED BY THE CONTRACTORS.
6. CONTRACTOR SHALL PROTECT ALL AREAS OUTSIDE OF THE CONSTRUCTION LIMITS WITH SILT FENCE OR OTHER METHOD TO PROTECT UNDISTURBED AREAS FROM EROSION.
7. ALL TEMPORARY OR PERMANENT GRADING DISTURBANCES SHALL BE RE-SEEDDED AND MULCHED PER EL PASO COUNTY CRITERIA AND SPECIFICATIONS.

## BASIS OF BEARINGS

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## BENCHMARK

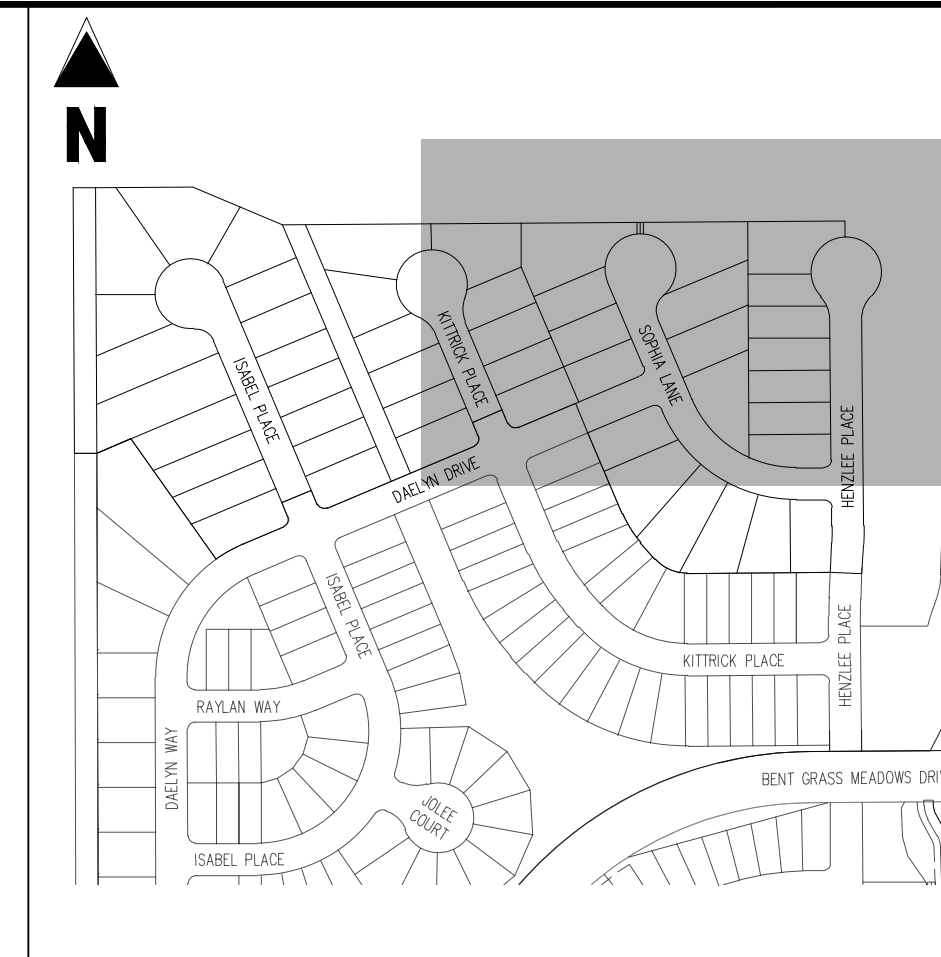
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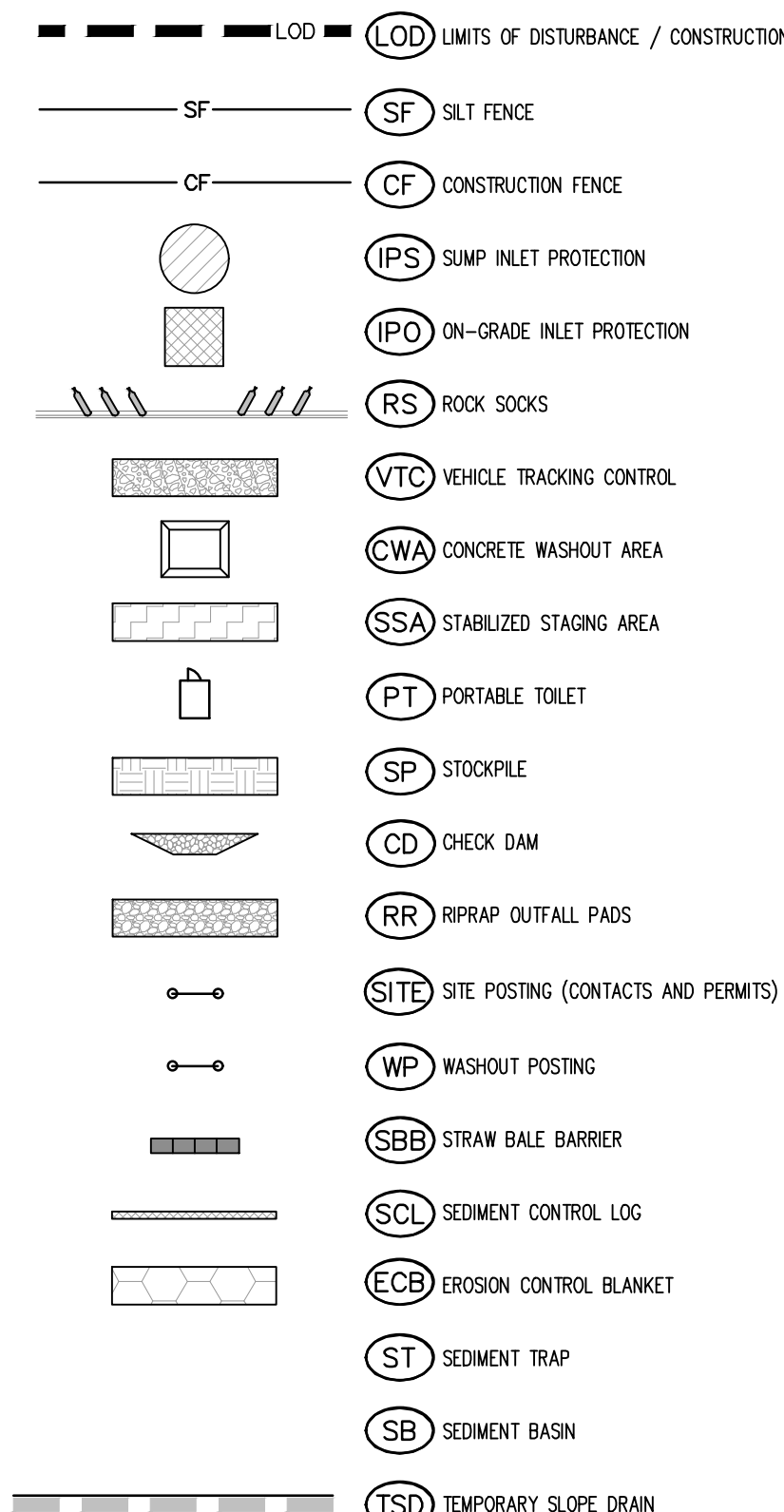


Know what's **below**.  
**Call** before you dig.



KEY MAP  
SCALE: 1"=300'

EROSION CONTROL LEGEND



### EROSION CONTROL PHASING SCHEDULE

PHASE	DESCRIPTION
INITIAL	INSTALL SITE POSTING, SILT FENCE, SEDIMENT CONTROL LOGS, AND INLET PROTECTION MEASURES ON EXISTING INLETS. CURB SLOKS ALONG FUTURE GRASS MEADOW DRIVE, DRIVE, DRIVE, DRIVE, DRIVE, AND HENCELY PLACE
INTERIM	INSTALL STABILIZED STONE AREA, VEHICLE TRACKING CONTROL AT ENTRANCES, AND CONCRETE WASHOUT AREA. THEN OVERLIFT GRADE THE ENTIRE PROJECT SITE AS SHOWN ON PLAN VIEW. INSTALL STRAW BALE BARRIERS ALONG INTERNAL ROADWAY AND INSTALL CHECK DAMS ALONG PROPOSED SWALES. FINALLY, INSTALL PROPOSED STORM SEWER. CONTRACTOR TO USE EXTREME CAUTION TO NOT DAMAGE THE WATER AND WASTEWATER IMPROVEMENTS COMPLETED BY UTILITIES. UTILITIES PLANS, THE TEMPORARY SEDIMENT BASINS AND BMPS SHALL REMAIN UNOCCUPIED UNTIL CONTRACTOR BEGINS CONSTRUCTION ON CURB/GUTTER AND PAVEMENT.
FINAL	CONSTRUCT CURB/GUTTER AND PAVEMENT. CONSTRUCT GAS/ELECTRIC/CABLE/PHONE IN ROW AREAS. REMOVE CONSTRUCTION BMP'S ON VARIOUS VERTICAL CONSTRUCTION OF HOUSES AND APPLICABLE LANDSCAPING COMPLETE.

LEGEND

	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR
	PROPOSED MAJOR CONTOUR
	PROPOSED MINOR CONTOUR
	EXISTING PROPERTY LINE (PROPOSED PROJECT BOUNDARY)
	EXISTING PROPERTY LINE
	PROPOSED PROPERTY LINE (PROPOSED PROJECT BOUNDARY)
	PROPOSED RIGHT OF WAY LINE
	EXISTING LOT LINE
	PROPOSED LOT LINE
	EXISTING EASEMENT
	PROPOSED EASEMENT
	EXISTING STORM DRAIN PIPE
	PROPOSED STORM DRAIN PIPE
	EXISTING WATER LINE
	PROPOSED WATER LINE
	EXISTING SANITARY SEWER LINE
	PROPOSED SANITARY SEWER LINE
	EXISTING DRAINAGE FEATURE OUTLINE
	PROPOSED DRAINAGE FEATURE OUTLINE
	EXISTING SWALE WITH FLOW DIRECTION
	PROPOSED SWALE WITH FLOW DIRECTION
	100-YEAR FEMA FLOODPLAIN
	PROPOSED RIP RAP
	EXISTING CONCRETE PAVING
	EXISTING CDOT CLASS 6 GRAVEL
	EXISTING 1" TO 2" CRUSHED ROCK
	EXISTING RIP RAP
	EXISTING GROUTED BOULDERS
	PROPOSED LOT #
	EXISTING LOT #
	EXISTING SLOPE (PERCENT)
	EXISTING SLOPE (RISE:RUN)
	PROPOSED SLOPE (PERCENT)
	PROPOSED SLOPE (RISE:RUN)

## NOTES

1. ADD 6900 TO ALL SPOT ELEVATIONS
2. EXISTING VEGETATION ON THE PROJECT SITE CONSISTS OF NATIVE GRASSES AND SHRUBS
3. NO WETLANDS ARE TO BE SIGNIFICANTLY DISTURBED PER THIS PLAN.
4. NO GRADING IS TO OCCUR WITHIN THE FIRST YEAR FLOODPLAIN.
5. THE EROSION CONTROL DELINEATED ON THIS PLAN SHALL BE REGULARLY UPDATED BY THE CONTRACTORS.
6. CONTRACTOR SHALL PROTECT ALL AREAS OUTSIDE OF THE CONSTRUCTION LIMITS WITH SILT FENCE OR OTHER METHOD TO PROTECT UNDISTURBED AREAS FROM EROSION.
7. ALL TEMPORARY OR PERMANENT GRADING DISTURBANCES SHALL BE RE-SEEDDED AND MULCHED PER EL PASO COUNTY CRITERIA AND SPECIFICATIONS.

## BASIS OF BEARINGS

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## BENCHMARK

THE SOUTHWESTERLY CORNER OF LOT 1 WOODMEN HILLS FILING NO. 4. MONUMENTED BY A YELLOW PLASTIC SURVEYORS CAP ON A NO. 4 REBAR LS# 24954 ELEVATION = 6947.67

CAUTION - NOTICE TO CONTRACTOR

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



SCALE: 1"=300'

	<b>(LOD)</b> LIMITS OF DISTURBANCE / CONSTRUCTION
	<b>(SF)</b> SILT FENCE
	<b>(CF)</b> CONSTRUCTION FENCE
	<b>(IPS)</b> SUMP INLET PROTECTION
	<b>(IPO)</b> ON-GRADE INLET PROTECTION
	<b>(RS)</b> ROCK SOCKS
	<b>(VTC)</b> VEHICLE TRACKING CONTROL
	<b>(CWA)</b> CONCRETE WASHOUT AREA
	<b>(SSA)</b> STABILIZED STAGING AREA
	<b>(PT)</b> PORTABLE TOILET
	<b>(SP)</b> STOCKPILE
	<b>(CD)</b> CHECK DAM
	<b>(RR)</b> RIPRAP OUTFALL PADS
	<b>(SITE)</b> SITE POSTING (CONTACTS AND PERMITS)
	<b>(WP)</b> WASHOUT POSTING
	<b>(SBB)</b> STRAW BALE BARRIER
	<b>(SCL)</b> SEDIMENT CONTROL LOG
	<b>(ECB)</b> EROSION CONTROL BLANKET
	<b>(ST)</b> SEDIMENT TRAP

EROSION CONTROL PHASING SCHEDULE	
PHASE	DESCRIPTION
INITIAL	<p>INSTALL SITE POSTING, SILT FENCE, SEDIMENT CONTROL LOGS, AND INLET PROTECTION MEASURES ON EXISTING INLETS, AND CURB SOOKS ALONG LARGE GRASS MEADOWS DRIVE, DAELYN DRIVE, KITTRICK PLACE, AND HENZLEE PLACE.</p> <p>INSTALL STABILIZED STAGING AREA, VEHICLE TRACKING CONTROL, AT ENTRANCES, AND CONCRETE WASHOUT AREA, THEN OVERLIFT GRADE, THE DRIVE PROJECT SITE SHOWS THE EXISTING, INSTALL STRAIN BARS BARRIERS ALONG INTERNAL ROADWAYS, AND INSTALL CHECK DAMS ALONG PROPOSED SNALES. FINALLY, INSTALL PROPOSED STORM SEWER, CONTRACTOR USE EXTREME CAUTION TO PREVENT ANY POTENTIAL WASTEWATER IMPROVEMENTS COMPLETED IN THE UTILITY CONSTRUCTION PLANS. THE TEMPORARY SEDIMENT BASINS AND TRAPS SHALL BE REMOVED ONCE CONTRACTOR BEGINS CONSTRUCTION ON CURB/GUTTER AND PAVEMENT.</p>
INTERM	<p>CONSTRUCT CURB/GUTTER AND PAVEMENT, CONSTRUCT GAS/ELECTRIC/CABLE PHASE IN ROW AREAS. REMOVE CONSTRUCTION BMP'S AND VERTICAL CURB/CONSTRUCTION OF HOUSES AND ADJOINING LANDSCAPING IS COMPLETE.</p>
FINAL	

6940	EXISTING MAJOR CONTOUR
6941	EXISTING MINOR CONTOUR
6960	PROPOSED MAJOR CONTOUR
SS	PROPOSED MINOR CONTOUR
	EXISTING PROPERTY LINE (PROPOSED PROJECT BOUNDARY)
	EXISTING PROPERTY LINE
	PROPOSED PROPERTY LINE (PROPOSED PROJECT BOUNDARY)
	PROPOSED RIGHT OF WAY LINE
	EXISTING LOT LINE
	PROPOSED LOT LINE
	EXISTING EASEMENT
	PROPOSED EASEMENT
	EXISTING STORM DRAIN PIPE
	PROPOSED STORM DRAIN PIPE
W	EXISTING WATER LINE
W	PROPOSED WATER LINE
SS	EXISTING SANITARY SEWER LINE
SS	PROPOSED SANITARY SEWER LINE
	EXISTING DRAINAGE FEATURE OUTLINE
	PROPOSED DRAINAGE FEATURE OUTLINE
	EXISTING SWALE WITH FLOW DIRECTION
	PROPOSED SWALE WITH FLOW DIRECTION
100YR	100-YEAR FLOODPLAIN
	PROPOSED RIP RAP
	EXISTING CONCRETE PAVING
	EXISTING CDOT CLASS 6 GRAVEL
	EXISTING 1" TO 2" CRUSHED ROCK
	EXISTING RIP RAP
	EXISTING GROUTED BOULDERS
113	PROPOSED LOT #
15	EXISTING LOT #
2.00%	EXISTING SLOPE (PERCENT)
4:1	EXISTING SLOPE (RISE:RUN)
2.00%	PROPOSED SLOPE (PERCENT)
4:1	PROPOSED SLOPE (RISE:RUN)

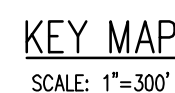
1. ADD 6900 TO ALL SPOT ELEVATIONS
2. EXISTING VEGETATION ON THE PROJECT SITE CONSISTS OF NATIVE GRASSES AND SHRUBS.
3. NO WETLANDS ARE TO BE PERMANENTLY DISTURBED BY THIS PLAN.
4. NO GRADING IS TO OCCUR WITHIN THE 100-YEAR FLOODPLAIN.
5. THE EROSION CONTROL Delineated ON THIS PLAN SHALL BE REGULARLY UPDATED BY THE CONTRACTORS.
6. CONTRACTOR SHALL PROTECT ALL AREAS OUTSIDE OF THE CONSTRUCTION LIMITS WITH SILT FENCE OR OTHER METHOD TO PROTECT UNDISTURBED AREAS FROM EROSION.
7. ALL TEMPORARY OR PERMANENT GRADING DISTURBANCES SHALL BE RE-SEEDDED AND MULCHED PER EL PASO COUNTY CRITERIA AND SPECIFICATIONS.

ALL BEARINGS ARE GRID BEARINGS OF THE COLORADO STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE, NORTH AMERICAN DATUM 1983. THE BEARING OF THE LINE BETWEEN THE SOUTHWEST CORNER OF SECTION 1, T13S, R65W AND THE WEST QUARTER CORNER SECTION 1, T13S, R65W IS N00°13'46"W AND MONUMENTED AS SHOWN:

THE SOUTHWESTERLY CORNER OF LOT 1 WOODMEN HILLS FILING NO. 4. MONUMENTED BY A  
YELLOW PLASTIC SURVEYORS CAP ON A NO. 4 REBAR LS# 24954 ELEVATION = 6947.67

1. ALL UTILITY LOCATIONS SHOWN ARE BASED ON MAPS PROVIDED BY THE APPROPRIATE UTILITY COMPANY AND FIELD SURFACE EVIDENCE AT THE TIME OF SURVEY AND IS TO BE CONSIDERED AN APPROXIMATE LOCATION ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE FIELD LOCATION OF ALL UTILITIES, PUBLIC OR PRIVATE, WHETHER SHOWN ON THE PLANS OR NOT, PRIOR TO CONSTRUCTION. REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO CONSTRUCTION.

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



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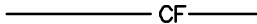



























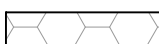

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THE SOUTHWESTERLY CORNER OF LOT 1 WOODMEN HILLS FILING NO. 4. MONUMENTED BY A  
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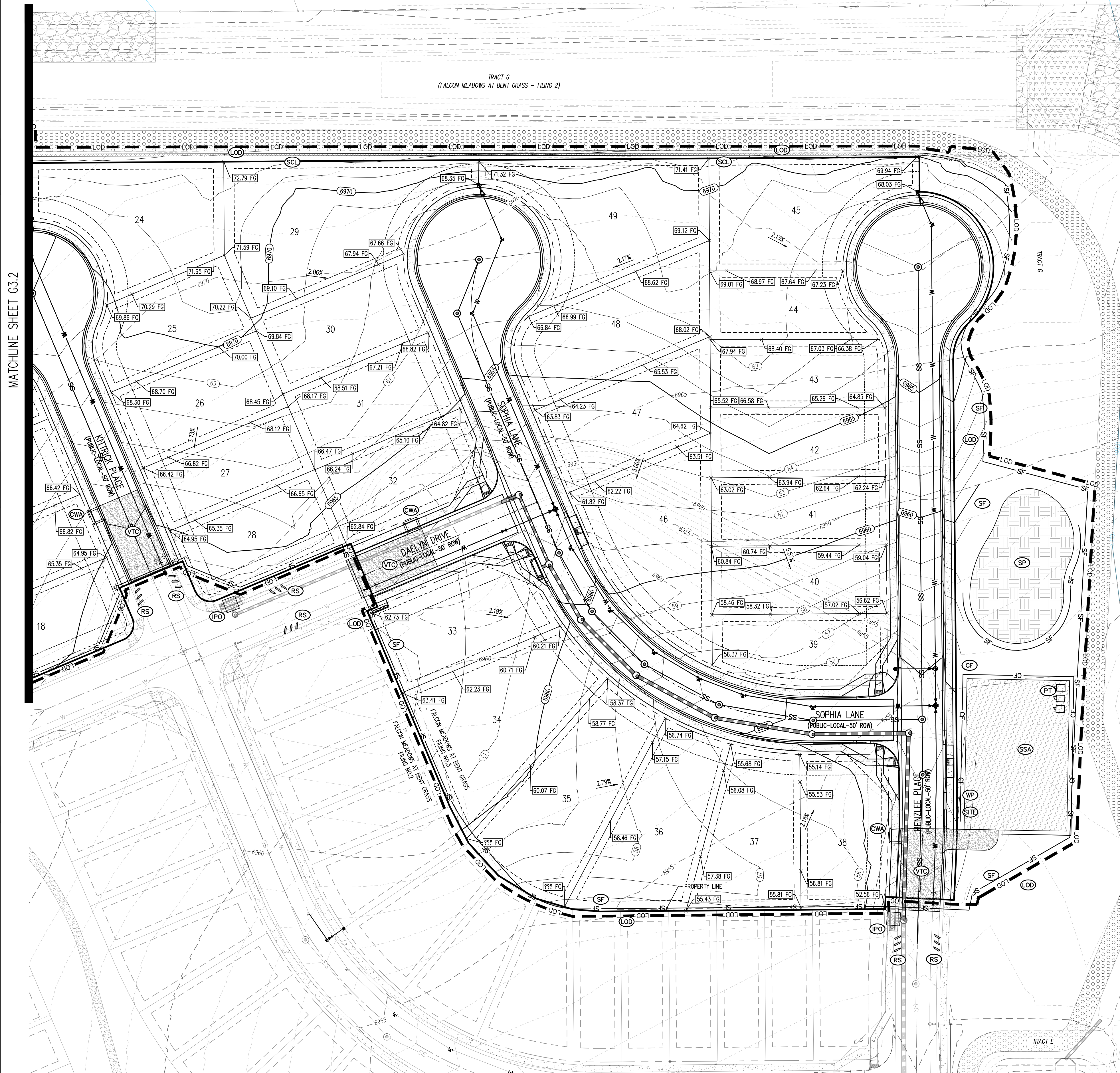
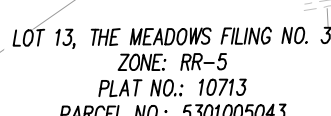
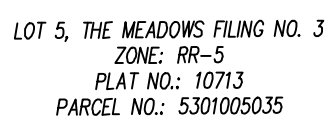
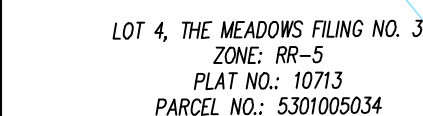
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2. WHERE A PROPOSED UTILITY CROSSES AN EXISTING UTILITY, IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF SUCH EXISTING UTILITY, EITHER THROUGH POT-HOLING OR ALTERNATIVE METHOD. REPORT INFORMATION TO THE ENGINEER PRIOR TO CONSTRUCTION.



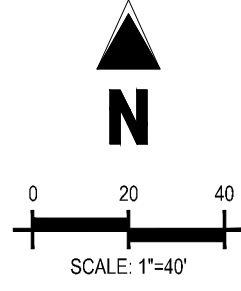
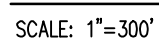
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|--|---|
|    <b>LOG</b> |  <b>LOD</b> LIMITS OF DISTURBANCE / CONSTRUCTION   |
|   |  <b>SF</b> SILT FENCE                              |
|   |  <b>CF</b> CONSTRUCTION FENCE                      |
|   |  <b>IPS</b> SUMP INLET PROTECTION                  |
|   |  <b>IPO</b> ON-GRADE INLET PROTECTION              |
|   |  <b>RS</b> ROCK SOCKS                              |
|   |  <b>VTC</b> VEHICLE TRACKING CONTROL               |
|   |  <b>CWA</b> CONCRETE WASHOUT AREA                  |
|   |  <b>SSA</b> STABILIZED STAGING AREA                |
|   |  <b>PT</b> PORTABLE TOILET                         |
|   |  <b>SP</b> STOCKPILE                               |
|   |  <b>CD</b> CHECK DAM                               |
|   |  <b>RR</b> RIPRAP OUTFALL PADS                     |
|   |  <b>SITE</b> SITE POSTING (CONTACTS AND PERMITS) |
|   |  <b>WP</b> WASHOUT POSTING                       |
|   |  <b>SCL</b> SEDIMENT CONTROL LOG                 |
|   |  <b>ECB</b> EROSION CONTROL BLANKET              |

EROSION CONTROL PHASING SCHEDULE	
PHASE	DESCRIPTION
INITIAL	<p>INSTALL SITE POSTING, SILT FENCE, SEDIMENT CONTROL LOGS, AND INLET PROTECTION MEASURES ON EXISTING BAYS AND DRAIN SOCKS. ALONG RENT GRASS MEADOWS DRIVE, DAELYN DRIVE, KITTRICK PLACE, AND HENZELLE PLACE.</p> <p>INSTALL STABILIZED STAGING AREA, VEHICLE TRACKING CONTROL AT ENTRANCES, AND CONCRETE WASHOUT AREA. THEN OVERLOUT GRADE THE EXISTING PROJECT SITE AS GUIDED BY THE PLAN. INSTALL STRAIN BAY BARRIERS ALONG INTERNAL ROADWAYS, AND INSTALL CHECK DAMS ALONG PROPOSED SWALES. FINALLY, INSTALL PROPOSED STORM SEWER. CONTRACTOR TO USE EXTREME CAUTION TO NOT DAMAGE THE WATER AND WASTEWATER IMPROVEMENTS COMPLETED BY THE PREVIOUS CONTRACTOR. DURING THE TEMPORARY SEDIMENT BASINS AND TRAPS SHALL BE REMOVED ONCE CONTRACTOR BEGINS CONSTRUCTION ON CURB/GUTTER AND PAVEMENT.</p>
INTERIM	<p>CONSTRUCT CURB/GUTTER AND PAVEMENT. CONSTRUCT GAS/ELECTRIC/CABLE/PHONE IN ROW AREAS. REMOVE CONSTRUCTION BMP'S ONCE VERTICAL CONSTRUCTION OF HOUSES AND ADJACENT LANDSCAPING IS COMPLETE.</p>
FINAL	



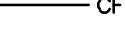









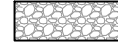






MATCHLINE SHEET G3.2

<sup>†</sup>Chaffin/Horner Horries Inc./CO. Fallon - CUH001020 • FM at Bent Grass F3UCV3-CD7/GECU120 G3.1 GEC Final Plan.dwg • CMB Johnson • 6/24/2022



### EROSION CONTROL LEGEND

- |   |               |   |
|---|---------------|---|
|    | <b>LOD</b>    | <b>(LOD)</b> LIMITS OF DISTURBANCE / CONSTRUCTION |
|    | <b>(SF)</b>   | <b>SILT FENCE</b>                                 |
|    | <b>(CF)</b>   | <b>CONSTRUCTION FENCE</b>                         |
|    | <b>(IPS)</b>  | <b>SUMP INLET PROTECTION</b>                      |
|    | <b>(IPO)</b>  | <b>ON-GRADE INLET PROTECTION</b>                  |
|    | <b>(RS)</b>   | <b>ROCK SOCKS</b>                                 |
|    | <b>(VTC)</b>  | <b>VEHICLE TRACKING CONTROL</b>                   |
|    | <b>(CWA)</b>  | <b>CONCRETE WASHOUT AREA</b>                      |
|    | <b>(SSA)</b>  | <b>STABILIZED STAGING AREA</b>                    |
|    | <b>(PT)</b>   | <b>PORTABLE TOILET</b>                            |
|    | <b>(SP)</b>   | <b>STOCKPILE</b>                                  |
|    | <b>(CD)</b>   | <b>CHECK DAM</b>                                  |
|    | <b>(RR)</b>   | <b>RIPRAP OUTFALL PADS</b>                        |
|  | <b>(SITE)</b> | <b>SITE POSTING (CONTACTS AND PERMITS)</b>        |
|  | <b>(WP)</b>   | <b>WASHOUT POSTING</b>                            |
|  | <b>(SCL)</b>  | <b>SEDIMENT CONTROL LOG</b>                       |
|  | <b>(ECB)</b>  | <b>EROSION CONTROL BLANKET</b>                    |

EROSION CONTROL PHASING SCHEDULE	
PHASE	DESCRIPTION
INITIAL	<p>INSTALL SITE POSTING, SILT FENCE, SEDIMENT CONTROL LOGS, AND INLET PROTECTION MEASURES ON EXISTING INLETS, AND CURB SOOKS ALONG PLANT GRASS MEADOWS DRIVE, DAELYN DRIVE, KITTRICK PLACE, AND HENZLEE PLACE.</p> <p>INSTALL STABILIZED STAGING AREA, VEHICLE TRACKING CONTROL AT ENTRANCES, AND CONTAINER WASHOUT AREA. THEN OVERLIFT GRADE, THE EXISTING PROJECT SITE AS SHOWN ON S.D. INSTALL STEEP BANK BARRIERS ALONG INTERNAL ROADWAYS, AND INSTALL CHECK DAMS ALONG PROPOSED SWALES. FINALLY, INSTALL PROPOSED STORM SEWER, CONTRACTOR TO TAKE EXTENSIVE CAUTION TO PREVENT ANY SOIL AND WASTEWATER IMPROVEMENTS COMBINED IN THE UTILITY CONSTRUCTION PLANS. THE TEMPORARY SEDIMENT BASINS AND TRAPS SHALL BE REMOVED ONCE CONTRACTOR BEGINS CONSTRUCTION ON CURB/GUTTER AND PAVEMENT.</p>
FINAL	<p>CONSTRUCT CURB/GUTTER AND PAVEMENT, CONSTRUCT GAS/ELECTRIC/CABLE PHONE IN ROW AREAS. REMOVE CONSTRUCTION BMP'S AND VERTICAL CURB/CONSTRUCTION OF HOUSES AND APPLICABLE LANDSCAPING IS COMPLETE.</p>

**LEGEND**

- |  |  |
|--|--|
|  | EXISTING MAJOR CONTOUR                             |
|  | EXISTING MINOR CONTOUR                             |
|  | PROPOSED MAJOR CONTOUR                             |
|  | PROPOSED MINOR CONTOUR                             |
|  | EXISTING PROPERTY LINE (PROPOSED PROJECT BOUNDARY) |
|  | EXISTING PROPERTY LINE                             |
|  | PROPOSED PROPERTY LINE (PROPOSED PROJECT BOUNDARY) |
|  | PROPOSED RIGHT OF WAY LINE                         |
|  | EXISTING LOT LINE                                  |
|  | PROPOSED LOT LINE                                  |
|  | EXISTING EASEMENT                                  |
|  | PROPOSED EASEMENT                                  |
|  | EXISTING STORM DRAIN PIPE                          |
|  | PROPOSED STORM DRAIN PIPE                          |
|  | EXISTING WATER LINE                                |
|  | PROPOSED WATER LINE                                |
|  | EXISTING SANITARY SEWER LINE                       |
|  | PROPOSED SANITARY SEWER LINE                       |
|  | EXISTING DRAINAGE FEATURE OUTLINE                  |
|  | PROPOSED DRAINAGE FEATURE OUTLINE                  |
|  | EXISTING SWALE WITH FLOW DIRECTION                 |
|  | PROPOSED SWALE WITH FLOW DIRECTION                 |
|  | 100-YEAR FEMA FLOODPLAIN                           |
|  | BASE FLOOD ELEVATION                               |
|  | PROPOSED CONCRETE                                  |
|  | PROPOSED CDOT CLASS 6 GRAVEL                       |
|  | PROPOSED RIP RAP                                   |
|  | EXISTING CONCRETE PAVING                           |
|  | EXISTING CDOT CLASS 6 GRAVEL                       |
|  | EXISTING 1" TO 2" CRUSHED ROCK                     |
|  | EXISTING RIP RAP                                   |
|  | EXISTING GROUTED BOULDERS                          |
|  | PROPOSED LOT #                                     |
|  | EXISTING LOT #                                     |
|  | EXISTING SLOPE (PERCENT)                           |
|  | EXISTING SLOPE (RISE:RUN)                          |
|  | PROPOSED SLOPE (PERCENT)                           |
|  | PROPOSED SLOPE (RISE:RUN)                          |
|  | SPOT ELEVATION - FLOW LINE                         |
|  | SPOT ELEVATION - FINISH GRADE                      |

## NOTES

1. ADD 6900 TO ALL SPOT ELEVATIONS
2. EXISTING VEGETATION ON THE PROJECT SITE CONSISTS OF NATIVE GRASSES AND SHRUBS.
3. NO WETLANDS ARE TO BE PERMANENTLY DISTURBED BY THIS PLAN.
4. NO GRADING IS TO OCCUR WITHIN THE 100-YEAR FLOODPLAIN.
5. THE EROSION CONTROL Delineated ON THIS PLAN SHALL BE REGULARLY UPDATED BY THE CONTRACTORS.
6. CONTRACTOR SHALL PROTECT ALL AREAS OUTSIDE OF THE CONSTRUCTION LIMITS WITH SILT FENCE OR OTHER METHOD TO PROTECT UNDISTURBED AREAS FROM EROSION.
7. ALL TEMPORARY OR PERMANENT GRADING DISTURBANCES SHALL BE RE-SEEDDED AND MULCHED PER EL PASO COUNTY CRITERIA AND SPECIFICATIONS.

## BASIS OF BEARINGS

ALL BEARINGS ARE GRID BEARINGS OF THE COLORADO STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE, NORTH AMERICAN DATUM 1983. THE BEARING OF THE LINE BETWEEN THE SOUTHWEST CORNER OF SECTION 1, T13S, R65W AND THE WEST QUARTER CORNER SECTION 1, T13S, R65W IS N00°13'46"W AND MONUMENTED AS SHOWN:

## BENCHMARK

THE SOUTHWESTERLY CORNER OF LOT 1 WOODMEN HILLS FILING NO. 4. MONUMENTED BY A  
YELLOW PLASTIC SURVEYORS CAP ON A NO. 4 REBAR L# 24954 ELEVATION = 6947.67

CAUTION - NOTICE TO CONTRACTOR

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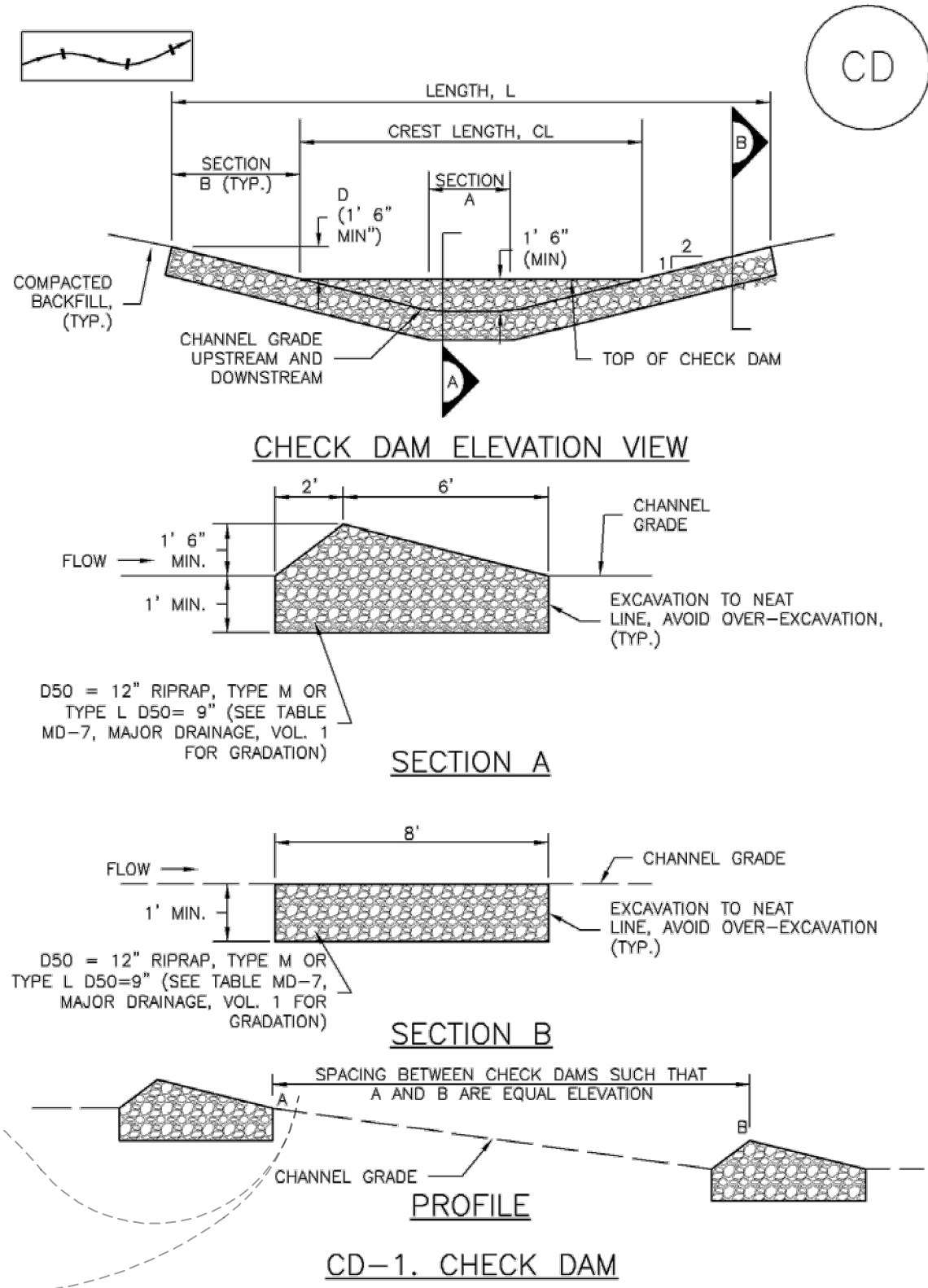


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Project No:	CLH000020
Drawn By:	CMWJ
Checked By:	RGD
Date:	06/24/2022

Check Dams (CD)

EC-12



REQUIRED SPACING FOR CHECK DAMS	
SLOPE OF DITCH FLOW LINE	SPACING (FT) (H = 1.5 FT)
1%	150.00
2%	75.00
3%	50.00
4%	37.50
5%	30.00
6%	25.00
7%	21.50
8%	18.75

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EC-12

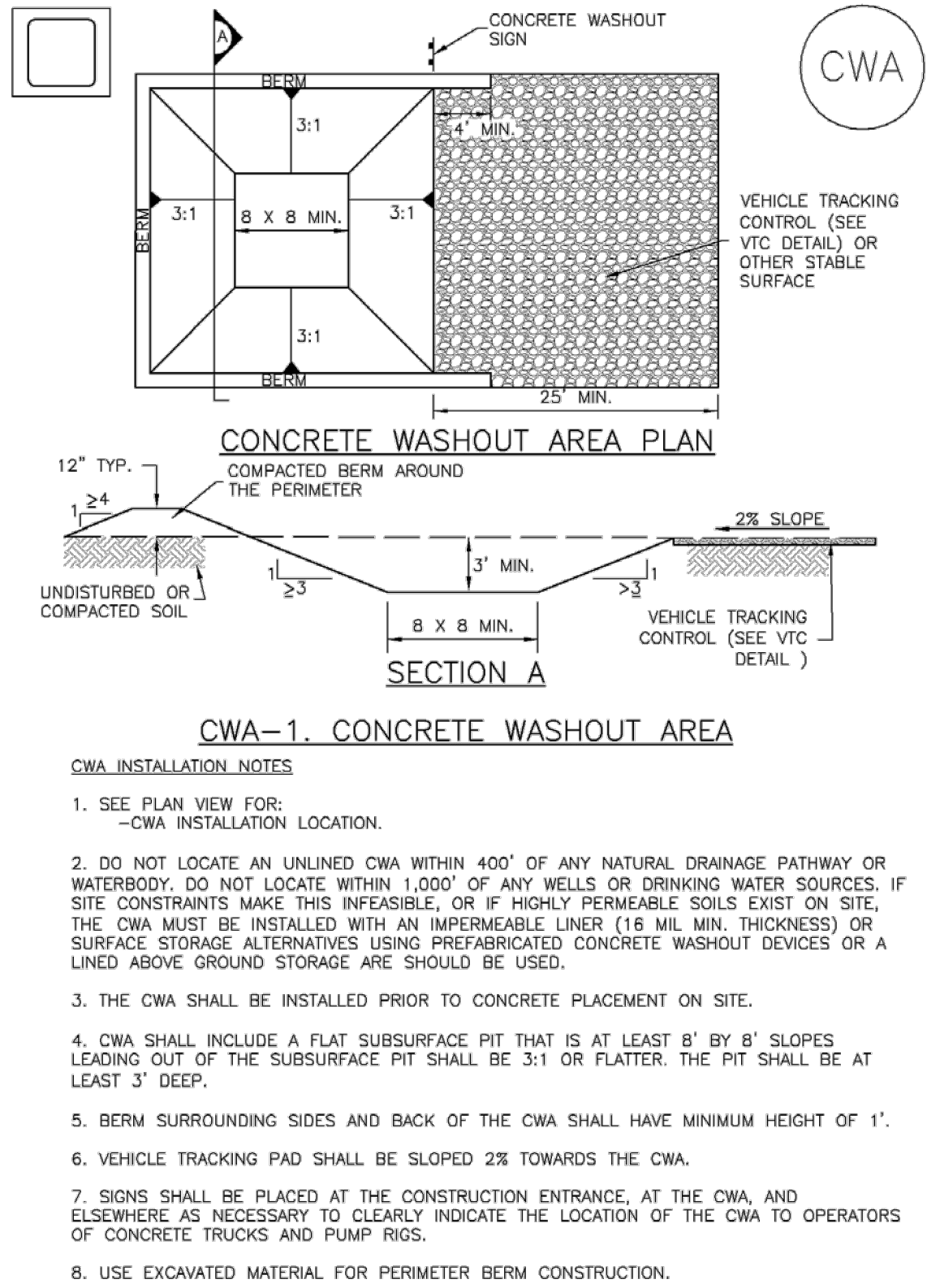
Check Dams (CD)

- CHECK DAM INSTALLATION NOTES**
- 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).
  - CHECK DAMS INDICATED ON INITIAL SWMP SHALL BE INSTALLED AFTER CONSTRUCTION FENCE, BUT PRIOR TO ANY UPSTREAM LAND DISTURBING ACTIVITIES.
  - 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").
  - RIPRAP PAD SHALL BE TRENCHED INTO THE GROUND A MINIMUM OF 1'.
  - 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**
- 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.
  - FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
  - WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
  - SEDIMENT ACCUMULATED UPSTREAM OF THE CHECK DAMS SHALL BE REMOVED WHEN THE SEDIMENT DEPTH IS WITHIN  $\frac{1}{2}$  OF THE HEIGHT OF THE CREST.
  - CHECK DAMS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.
  - 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.

CD-4 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3 November 2010

Concrete Washout Area (CWA)

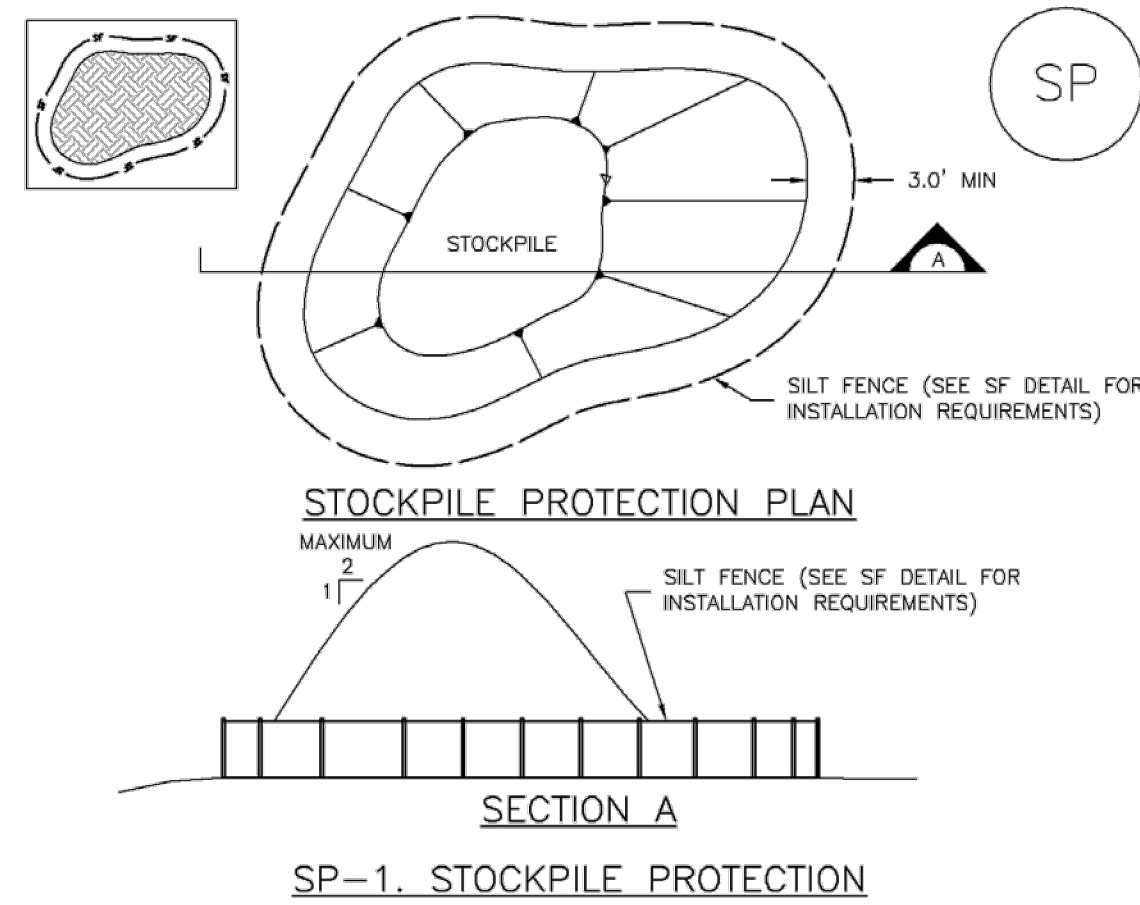
MM-1



November 2010 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3 CWA-3

Stockpile Management (SP)

MM-2



November 2010 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3 SP-3

MM-2

Stockpile Management (SM)

- STOCKPILE PROTECTION MAINTENANCE NOTES**
- 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.
  - FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
  - WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
- STOCKPILE PROTECTION MAINTENANCE NOTES**
- IF PERIMETER PROTECTION MUST BE MOVED TO ACCESS SOIL STOCKPILE, REPLACE PERIMETER CONTROLS BY THE END OF THE WORKDAY.
  - STOCKPILE PERIMETER CONTROLS CAN BE REMOVED ONCE ALL THE MATERIAL FROM THE STOCKPILE HAS BEEN USED.
- (DETAILS ADAPTED FROM 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.

SP-4 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3 November 2010

MM-1

Concrete Washout Area (CWA)

- CWA MAINTENANCE NOTES**
- 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.
  - FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
  - WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
  - 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'.
  - 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.
  - THE CWA SHALL REMAIN IN PLACE UNTIL ALL CONCRETE FOR THE PROJECT IS PLACED.
  - 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.

CWA-4 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3 November 2010

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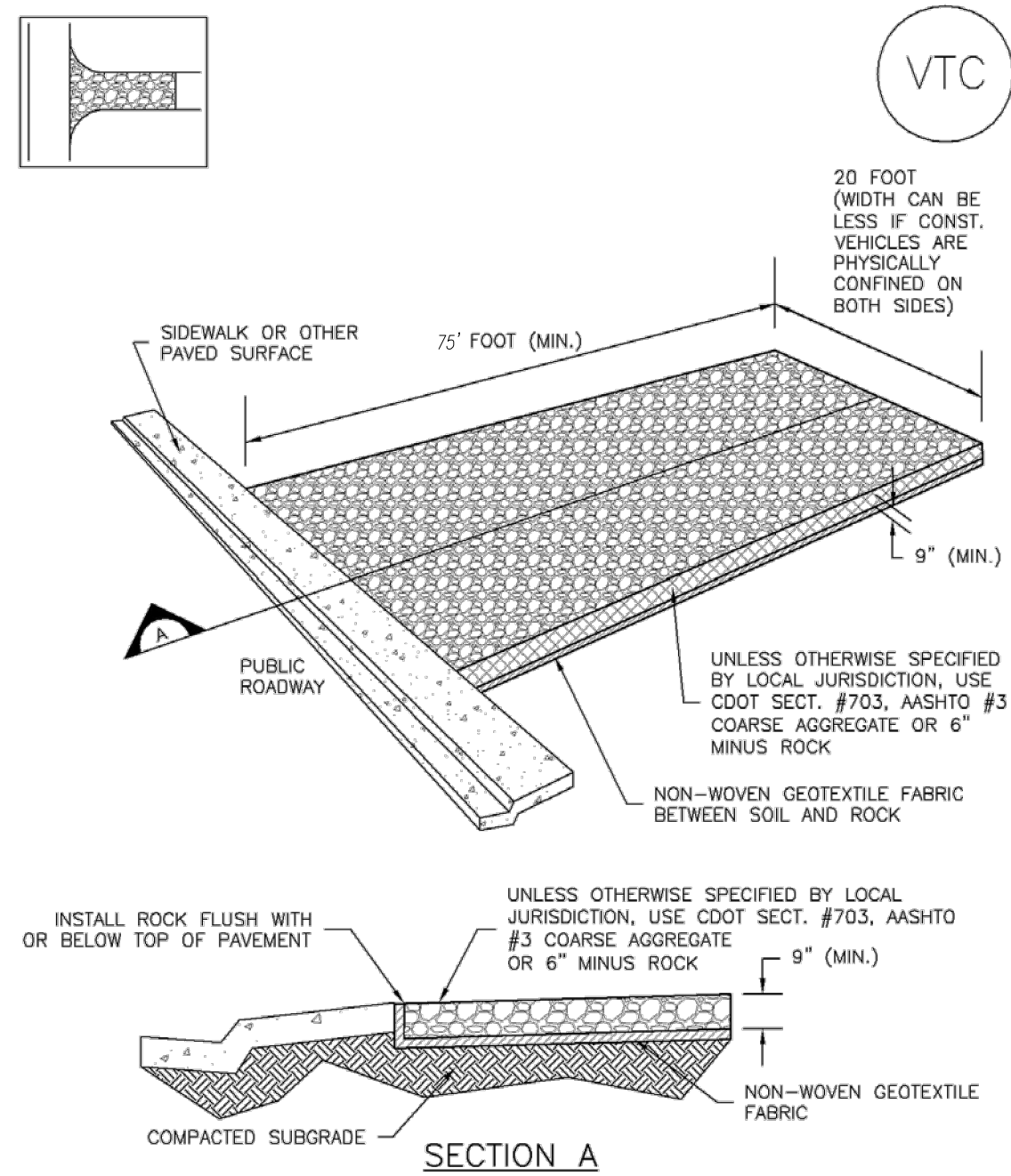
GEC DETAILS





Vehicle Tracking Control (VTC)

SM-4

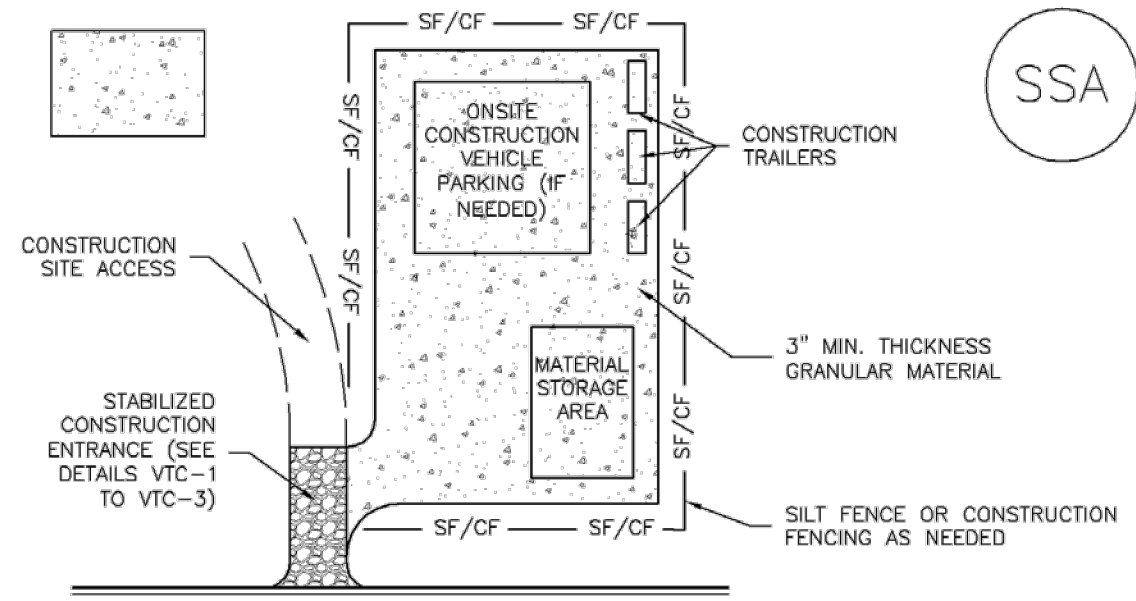


VTC-1. AGGREGATE VEHICLE TRACKING CONTROL

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Stabilized Staging Area (SSA)

SM-6



SSA-1. STABILIZED STAGING AREA

STABILIZED STAGING AREA INSTALLATION NOTES

1. SEE PLAN VIEW FOR  
-LOCATION OF STAGING AREA(S).  
-CONTRACTOR MAY ADJUST LOCATION AND SIZE OF STAGING AREA WITH APPROVAL FROM THE LOCAL JURISDICTION.
2. STABILIZED STAGING AREA SHOULD BE APPROPRIATE FOR THE NEEDS OF THE SITE. OVERSIZING RESULTS IN A LARGER AREA TO STABILIZE FOLLOWING CONSTRUCTION.
3. STAGING AREA SHALL BE STABILIZED PRIOR TO OTHER OPERATIONS ON THE SITE.
4. THE STABILIZED STAGING AREA SHALL CONSIST OF A MINIMUM 3" THICK GRANULAR MATERIAL.
5. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.
6. ADDITIONAL PERIMETER BMPs MAY BE REQUIRED INCLUDING BUT NOT LIMITED TO SILT FENCE AND CONSTRUCTION FENCING.

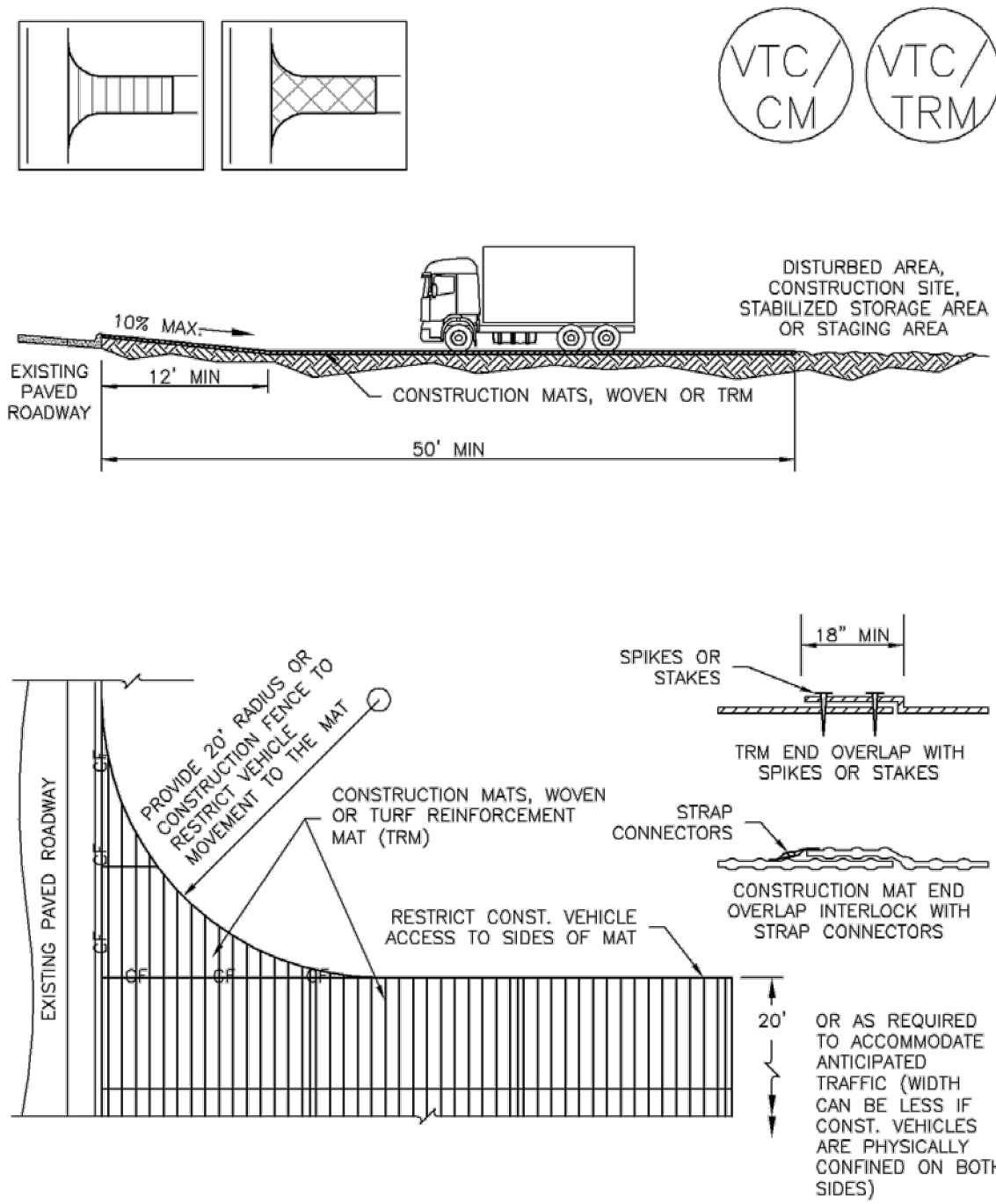
STABILIZED STAGING AREA MAINTENANCE NOTES

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. ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY IF RUTTING OCCURS OR UNDERLYING SUBGRADE BECOMES EXPOSED.

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Vehicle Tracking Control (VTC)

SM-4



VTC-3. VEHICLE TRACKING CONTROL W/ CONSTRUCTION MAT OR TURF REINFORCEMENT MAT (TRM)

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SM-6

Stabilized Staging Area (SSA)

STABILIZED STAGING AREA MAINTENANCE NOTES

5. STABILIZED STAGING AREA SHALL BE ENLARGED IF NECESSARY TO CONTAIN PARKING, STORAGE, AND UNLOADING/LOADING OPERATIONS.
6. THE STABILIZED STAGING AREA SHALL BE REMOVED AT THE END OF CONSTRUCTION. THE GRANULAR MATERIAL SHALL BE REMOVED OR, IF APPROVED BY THE LOCAL JURISDICTION, USED ON SITE, AND THE AREA COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY LOCAL JURISDICTION.

NOTE: MANY MUNICIPALITIES PROHIBIT THE USE OF RECYCLED CONCRETE AS GRANULAR MATERIAL FOR STABILIZED STAGING AREAS DUE TO DIFFICULTIES WITH RE-ESTABLISHMENT OF VEGETATION IN AREAS WHERE RECYCLED CONCRETE WAS PLACED.

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, NOT AVAILABLE IN AUTOCAD)

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SM-4

Vehicle Tracking Control (VTC)

STABILIZED CONSTRUCTION ENTRANCE/EXIT INSTALLATION NOTES

1. SEE PLAN VIEW FOR  
-LOCATION OF CONSTRUCTION ENTRANCE(S)/EXIT(S).  
-TYPE OF CONSTRUCTION ENTRANCE(S)/EXIT(S) (WITH/WITHOUT WHEEL WASH, CONSTRUCTION MAT OR TRM).
2. CONSTRUCTION MAT OR TRM STABILIZED CONSTRUCTION ENTRANCES ARE ONLY TO BE USED ON SHORT DURATION PROJECTS (TYPICALLY RANGING FROM A WEEK TO A MONTH) WHERE THERE WILL BE LIMITED VEHICULAR ACCESS.
3. A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE LOCATED AT ALL ACCESS POINTS WHERE VEHICLES ACCESS THE CONSTRUCTION SITE FROM PAVED RIGHT-OF-WAYS.
4. STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.
5. A NON-WOVEN GEOTEXTILE FABRIC SHALL BE PLACED UNDER THE STABILIZED CONSTRUCTION ENTRANCE/EXIT PRIOR TO THE PLACEMENT OF ROCK.
6. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.

STABILIZED CONSTRUCTION ENTRANCE/EXIT 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. ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY TO THE STABILIZED ENTRANCE/EXIT TO MAINTAIN A CONSISTENT DEPTH.
  5. SEDIMENT TRACKED ONTO PAVED ROADS IS TO BE REMOVED THROUGHOUT THE DAY AND AT THE END OF THE DAY BY SHOVELING OR SWEEPING. SEDIMENT MAY NOT BE WASHED DOWN STORM SEWER DRAINS.
- 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 CITY OF BROOMFIELD, COLORADO, NOT AVAILABLE IN AUTOCAD)

VTC-6 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3 November 2010

T-2

Grass Swale

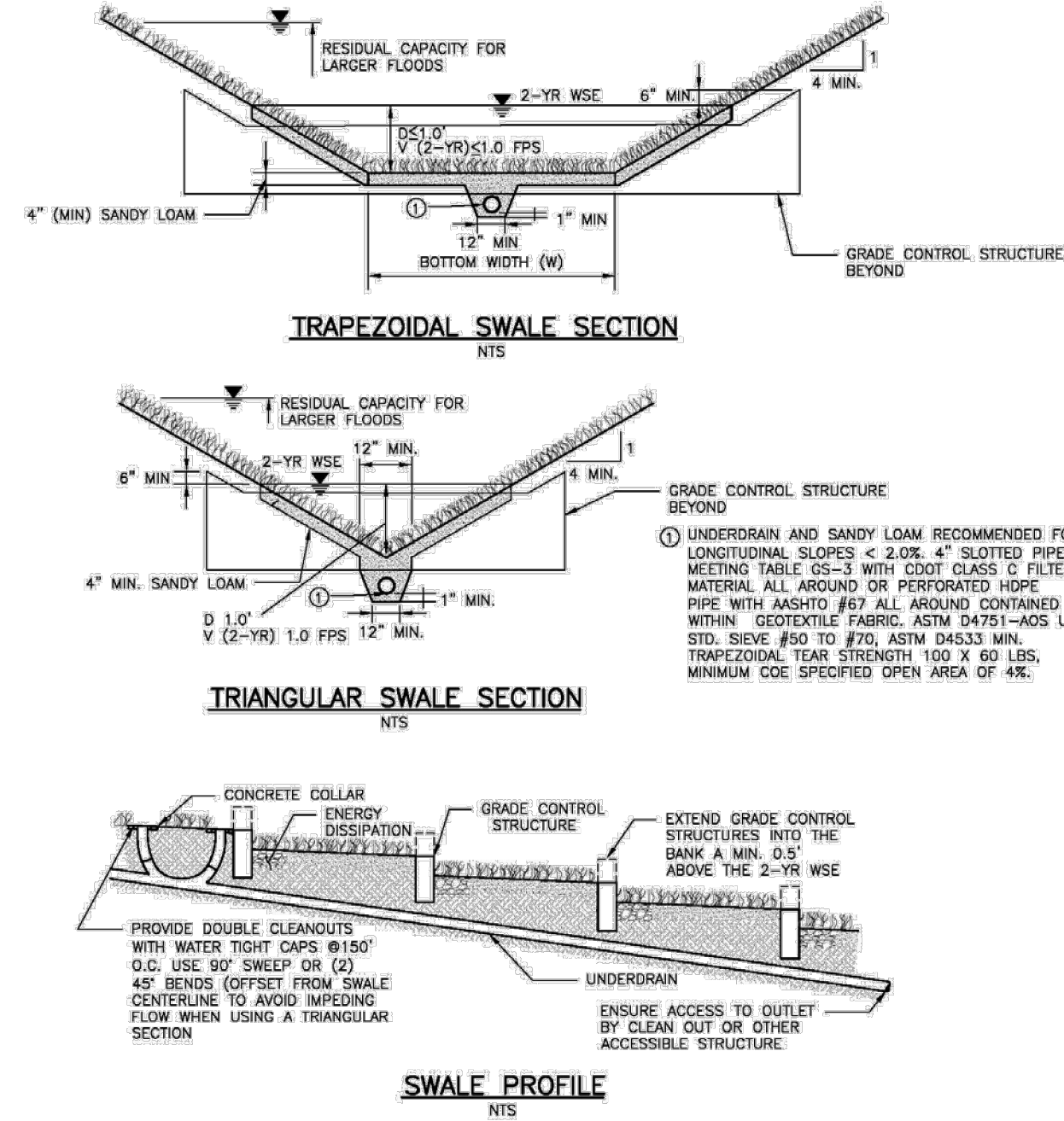


Figure GS-1. Grass Swale Profile and Sections

Design Example

The *UD-BMP* workbook, designed as a tool for both designer and reviewing agency is available at [www.udfed.org](http://www.udfed.org). This section provides a completed design form from this workbook as an example.

GS-6 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3 November 2010

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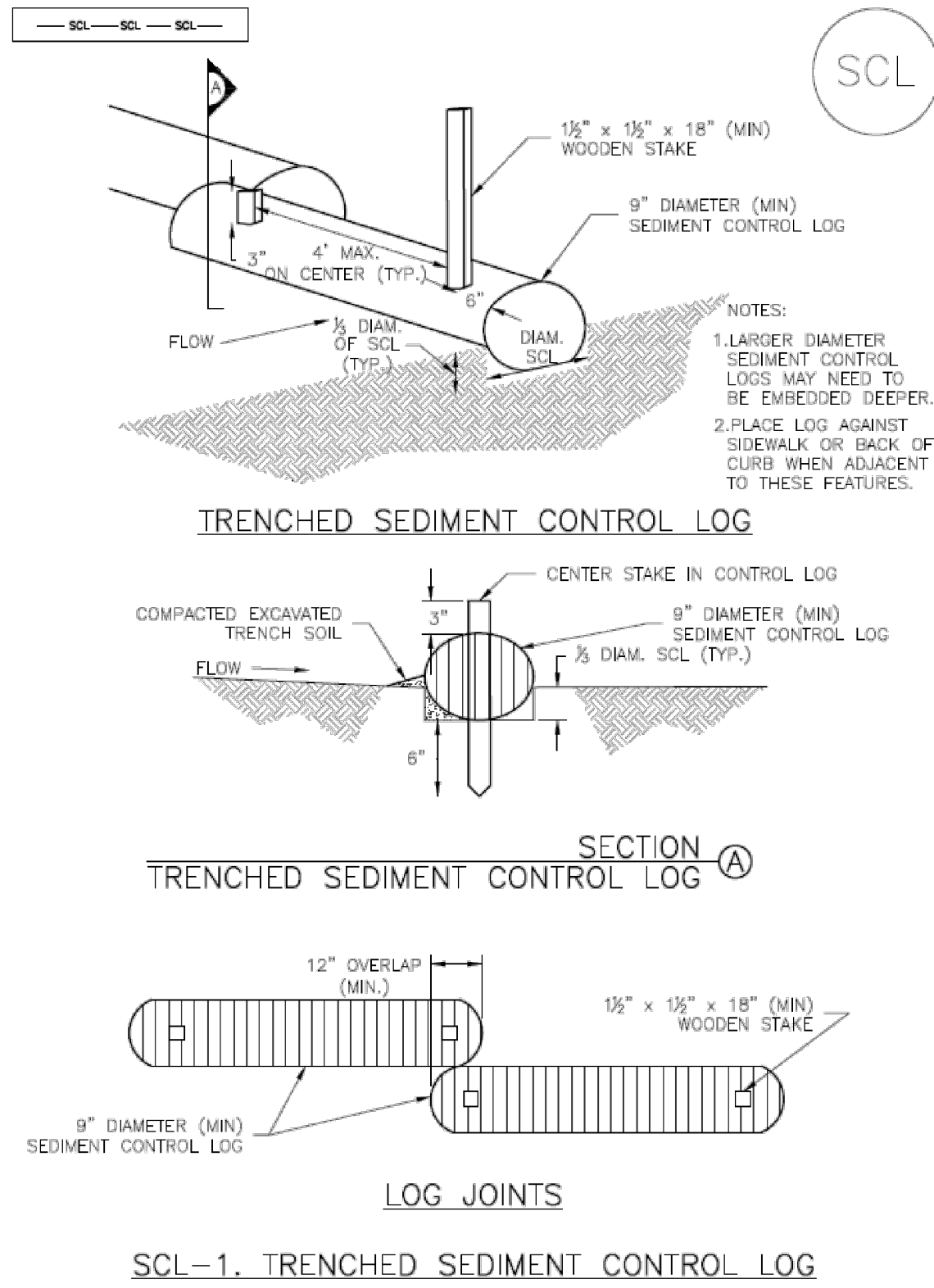
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Drawn By:	CMWJ
Checked By:	RGD
Date:	06/24/2022

GEC DETAILS

Sediment Control Log (SCL)

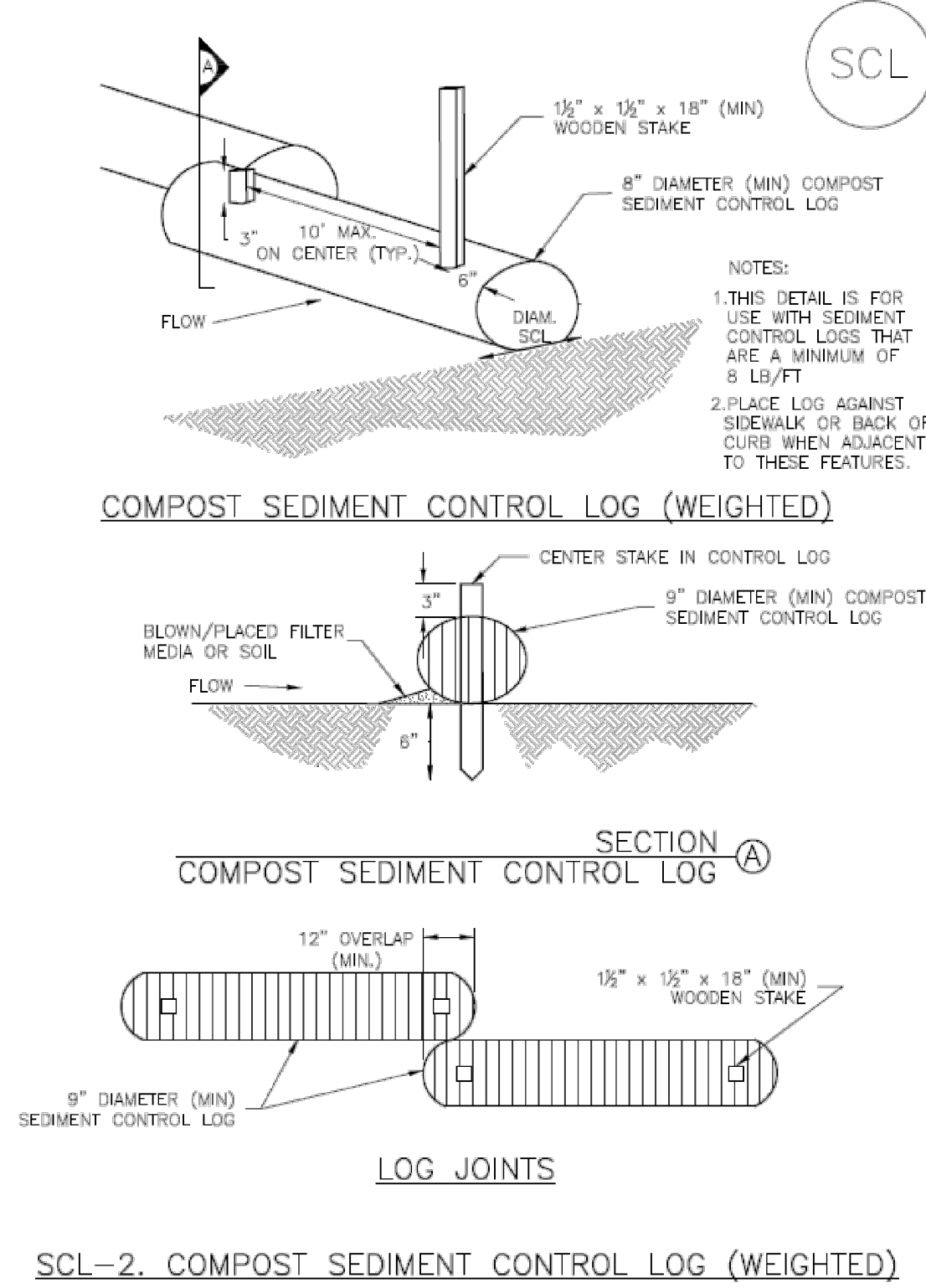
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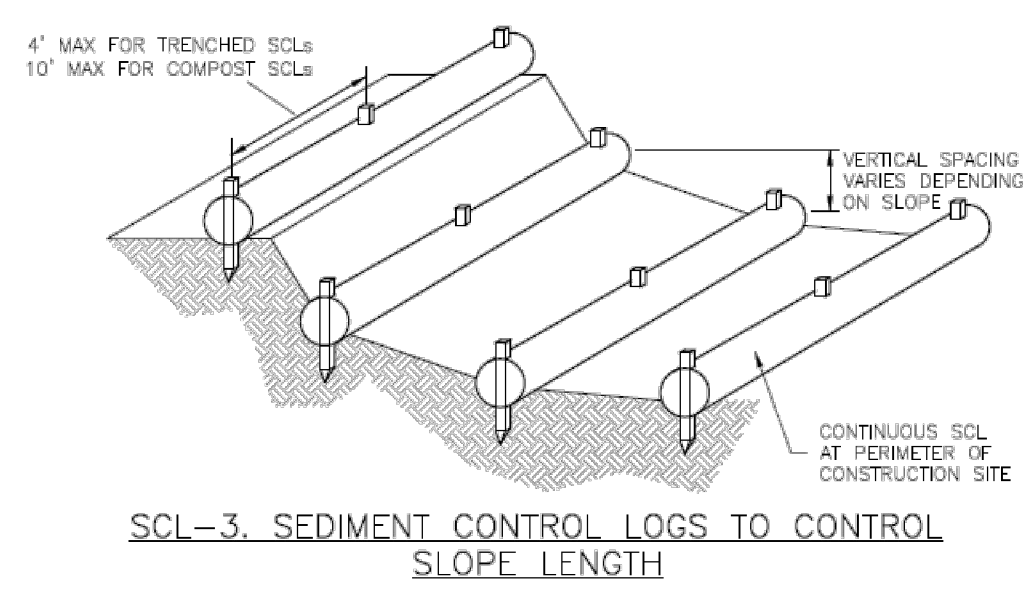
Sediment Control Log (SCL)



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Sediment Control Log (SCL)

SC-2



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SC-2

Sediment Control Log (SCL)

SEDIMENT CONTROL LOG INSTALLATION NOTES

- SEE PLAN VIEW FOR LOCATION AND LENGTH OF SEDIMENT CONTROL LOGS.
- SEDIMENT CONTROL LOGS THAT ACT AS A PERIMETER CONTROL SHALL BE INSTALLED PRIOR TO ANY UPGRADE/LAND-DISTURBING ACTIVITIES.
- SEDIMENT CONTROL LOGS SHALL CONSIST OF STRAW, COMPOST, EXCELSIOR OR COCONUT FIBER, AND SHALL BE FREE OF ANY NOXIOUS WEED SEEDS OR DEFECTS INCLUDING RIPS, HOLES AND OBVIOUS WEAR.
- SEDIMENT CONTROL LOGS MAY BE USED AS SMALL CHECK DAMS IN DITCHES AND SWALES. HOWEVER, THEY SHOULD NOT BE USED IN PERENNIAL STREAMS.
- IT IS RECOMMENDED THAT SEDIMENT CONTROL LOGS BE TRENCHED INTO THE GROUND TO A DEPTH OF APPROXIMATELY 1/2 OF THE DIAMETER OF THE LOG. IF TRENCHING TO THIS DEPTH IS NOT FEASIBLE AND/OR DESIRABLE (SHORT TERM INSTALLATION WITH DESIRE NOT TO DAMAGE LANDSCAPE) A LESSER TRENCHING DEPTH MAY BE ACCEPTABLE WITH MORE ROBUST STAKING. COMPOST LOGS THAT ARE 8 LB/FT DO NOT NEED TO BE TRENCHED.
- THE UPHILL SIDE OF THE SEDIMENT CONTROL LOG SHALL BE BACKFILLED WITH SOIL OR FILTER MATERIAL THAT IS FREE OF ROCKS AND DEBRIS. THE SOIL SHALL BE TIGHTLY COMPACTED INTO THE SHAPE OF A RIGHT TRIANGLE USING A SHOVEL OR WEIGHTED LAWN ROLLER OR BLOWN IN PLACE.
- FOLLOW MANUFACTURERS' GUIDANCE FOR STAKING. IF MANUFACTURERS' INSTRUCTIONS DO NOT SPECIFY SPACING, STAKES SHALL BE PLACED ON 4' CENTERS AND EMBEDDED A MINIMUM OF 6" INTO THE GROUND. 3" OF THE STAKE SHALL PROTRUDE FROM THE TOP OF THE LOG. STAKES THAT ARE BROKEN PRIOR TO INSTALLATION SHALL BE REPLACED. COMPOST LOGS SHOULD BE STAKED 10' ON CENTER.

SEDIMENT CONTROL LOG MAINTENANCE NOTES

- 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.
- FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
- WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
- SEDIMENT ACCUMULATED UPSTREAM OF SEDIMENT CONTROL LOG SHALL BE REMOVED AS NEEDED TO MAINTAIN FUNCTIONALITY OF THE BMP. TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY 1/2 OF THE HEIGHT OF THE SEDIMENT CONTROL LOG.
- SEDIMENT CONTROL LOG SHALL BE REMOVED AT THE END OF CONSTRUCTION. COMPOST FROM COMPOST LOGS MAY BE LEFT IN PLACE AS LONG AS BAGS ARE REMOVED AND THE AREA SEEDED. IF DISTURBED AREAS EXIST AFTER REMOVAL, THEY SHALL BE COVERED WITH TOP SOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAILS ADAPTED FROM TOWN OF PARKER, COLORADO, JEFFERSON COUNTY, COLORADO, DOUGLAS COUNTY, 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.

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Drawn By:	CMWJ
Checked By:	RGD
Date:	06/24/2022

GEC DETAILS

## APPENDIX E

Seeding dates for the highest success probability of perennial 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-3 for appropriate seeding dates.

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

Species <sup>a</sup> (Common name)	Growth Season <sup>b</sup>	Pounds of Pure Live Seed (PLS)/acre <sup>c</sup>	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. Sudangrass	Warm	5-10	½ - ¾
7. Sorghum	Warm	5-10	½ - ¾
8. Winter wheat	Cool	20-35	1 - 2
9. Winter barley	Cool	20-35	1 - 2
10. Winter rye	Cool	20-35	1 - 2
11. Triticale	Cool	25-40	1 - 2
<sup>a</sup> 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 8 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.  <sup>b</sup> See Table TS/PS-3 for seeding dates. Irrigation, if consistently applied, may extend the use of cool season species during the summer months.  <sup>c</sup> Seeding rates should be doubled if seed is broadcast, or increased by 50 percent if done using a Brillion Drill or by hydraulic seeding.			

# EC-2 Temporary and Permanent Seeding (TS/PS)

**Table TS/PS-2. Minimum Drill Seeding Rates for Perennial Grasses**

Common <sup>a</sup> Name	Botanical Name	Growth Season <sup>b</sup>	Growth Form	Seeds/ Pound	Pounds of PLS/acre
<b>Alakali Soil Seed Mix</b>					
Alkali sacaton	<i>Sporobolus airoides</i>	Cool	Bunch	1,750,000	0.25
Basin wildrye	<i>Elymus cinereus</i>	Cool	Bunch	165,000	2.5
Sodar streambank wheatgrass	<i>Agropyron riparium 'Sodar'</i>	Cool	Sod	170,000	2.5
Jose tall wheatgrass	<i>Agropyron elongatum 'Jose'</i>	Cool	Bunch	79,000	7.0
Arriba western wheatgrass	<i>Agropyron smithii 'Arriba'</i>	Cool	Sod	110,000	5.5
<b>Total</b>					<b>17.75</b>
<b>Fertile Loamy Soil Seed Mix</b>					
Ephriam crested wheatgrass	<i>Agropyron cristatum 'Ephriam'</i>	Cool	Sod	175,000	2.0
Dural hard fescue	<i>Festuca ovina 'duriuscula'</i>	Cool	Bunch	565,000	1.0
Lincoln smooth brome	<i>Bromus inermis leyss 'Lincoln'</i>	Cool	Sod	130,000	3.0
Sodar streambank wheatgrass	<i>Agropyron riparium 'Sodar'</i>	Cool	Sod	170,000	2.5
Arriba western wheatgrass	<i>Agropyron smithii 'Arriba'</i>	Cool	Sod	110,000	7.0
<b>Total</b>					<b>15.5</b>
<b>High Water Table Soil Seed Mix</b>					
Meadow foxtail	<i>Alopecurus pratensis</i>	Cool	Sod	900,000	0.5
Redtop	<i>Agrostis alba</i>	Warm	Open sod	5,000,000	0.25
Reed canarygrass	<i>Phalaris arundinacea</i>	Cool	Sod	68,000	0.5
Lincoln smooth brome	<i>Bromus inermis leyss 'Lincoln'</i>	Cool	Sod	130,000	3.0
Pathfinder switchgrass	<i>Panicum virgatum 'Pathfinder'</i>	Warm	Sod	389,000	1.0
Alkar tall wheatgrass	<i>Agropyron elongatum 'Alkar'</i>	Cool	Bunch	79,000	5.5
<b>Total</b>					<b>10.75</b>
<b>Transition Turf Seed Mix<sup>c</sup></b>					
Ruebens Canadian bluegrass	<i>Poa compressa 'Ruebens'</i>	Cool	Sod	2,500,000	0.5
Dural hard fescue	<i>Festuca ovina 'duriuscula'</i>	Cool	Bunch	565,000	1.0
Citation perennial ryegrass	<i>Lolium perenne 'Citation'</i>	Cool	Sod	247,000	3.0
Lincoln smooth brome	<i>Bromus inermis leyss 'Lincoln'</i>	Cool	Sod	130,000	3.0
<b>Total</b>					<b>7.5</b>

**Table TS/PS-2. Minimum Drill Seeding Rates for Perennial Grasses (cont.)**

Common Name	Botanical Name	Growth Season <sup>b</sup>	Growth Form	Seeds/ Pound	Pounds of PLS/acre
<b>Sandy Soil Seed Mix</b>					
Blue grama	<i>Bouteloua gracilis</i>	Warm	Sod-forming bunchgrass	825,000	0.5
Camper little bluestem	<i>Schizachyrium scoparium</i> 'Camper'	Warm	Bunch	240,000	1.0
Prairie sandreed	<i>Calamovilfa longifolia</i>	Warm	Open sod	274,000	1.0
Sand dropseed	<i>Sporobolus cryptandrus</i>	Cool	Bunch	5,298,000	0.25
Vaughn sideoats grama	<i>Bouteloua curtipendula</i> 'Vaughn'	Warm	Sod	191,000	2.0
Arriba western wheatgrass	<i>Agropyron smithii</i> 'Arriba'	Cool	Sod	110,000	5.5
<b>Total</b>					<b>10.25</b>
<b>Heavy Clay, Rocky Foothill Seed Mix</b>					
Ephriam crested wheatgrass <sup>d</sup>	<i>Agropyron cristatum</i> 'Ephriam'	Cool	Sod	175,000	1.5
Oahe Intermediate wheatgrass	<i>Agropyron intermedium</i> 'Oahe'	Cool	Sod	115,000	5.5
Vaughn sideoats grama <sup>e</sup>	<i>Bouteloua curtipendula</i> 'Vaughn'	Warm	Sod	191,000	2.0
Lincoln smooth brome	<i>Bromus inermis</i> leyss 'Lincoln'	Cool	Sod	130,000	3.0
Arriba western wheatgrass	<i>Agropyron smithii</i> 'Arriba'	Cool	Sod	110,000	5.5
<b>Total</b>					<b>17.5</b>
<sup>a</sup> All of the above seeding mixes and rates are based on drill seeding followed by crimped straw mulch. These rates should be doubled if seed is broadcast and should be increased by 50 percent if the seeding is done using a Brillion Drill or is applied through hydraulic seeding. Hydraulic seeding may be substituted for drilling only where slopes are steeper than 3:1. If hydraulic seeding is used, hydraulic mulching should be done as a separate operation. <sup>b</sup> See Table TS/PS-3 for seeding dates. <sup>c</sup> If site is to be irrigated, the transition turf seed rates should be doubled. <sup>d</sup> Crested wheatgrass should not be used on slopes steeper than 6H to 1V. <sup>e</sup> Can substitute 0.5 lbs PLS of blue grama for the 2.0 lbs PLS of Vaughn sideoats grama.					

## EC-2 Temporary and Permanent Seeding (TS/PS)

Table TS/PS-3. Seeding Dates for Annual and Perennial Grasses

Seeding Dates	Annual Grasses (Numbers in table reference species in Table TS/PS-1)		Perennial Grasses	
	Warm	Cool	Warm	Cool
January 1–March 15			✓	✓
March 16–April 30	4	1,2,3	✓	✓
May 1–May 15	4		✓	
May 16–June 30	4,5,6,7			
July 1–July 15	5,6,7			
July 16–August 31				
September 1–September 30		8,9,10,11		
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 Mulching BMP Fact Sheet 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.

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.

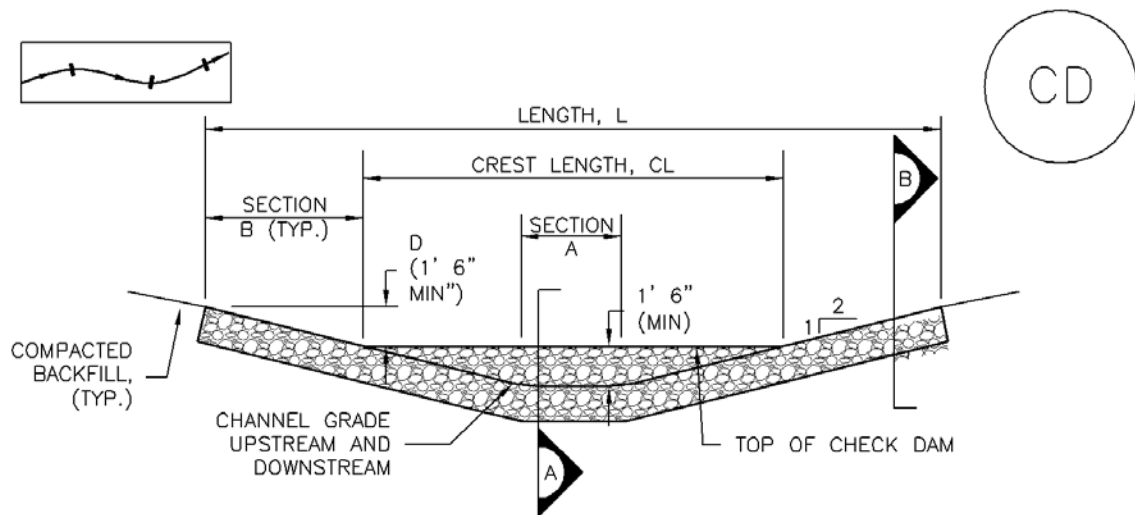
Seeded areas may require irrigation, particularly during extended dry periods. Targeted weed control may also be necessary.

Protect seeded areas from construction equipment and vehicle access.

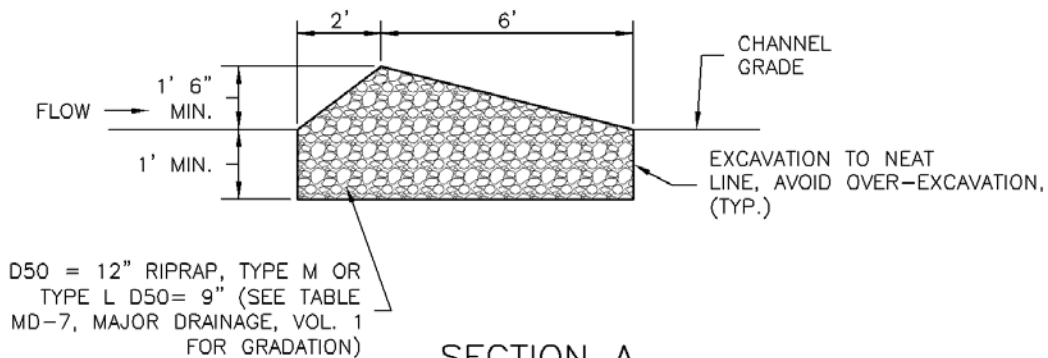
- Clean, weed-free and seed-free cereal grain straw should be applied evenly at a rate of 2 tons per acre and must be tacked or fastened by a method suitable for the condition of the site. Straw mulch must be anchored (and not merely placed) on the surface. This can be accomplished mechanically by crimping 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**

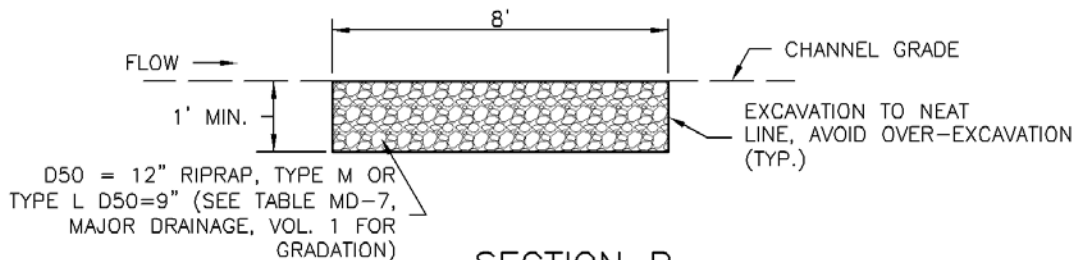
After mulching, the bare ground surface should not be more than 10 percent exposed. Reapply mulch, as needed, to cover bare areas.



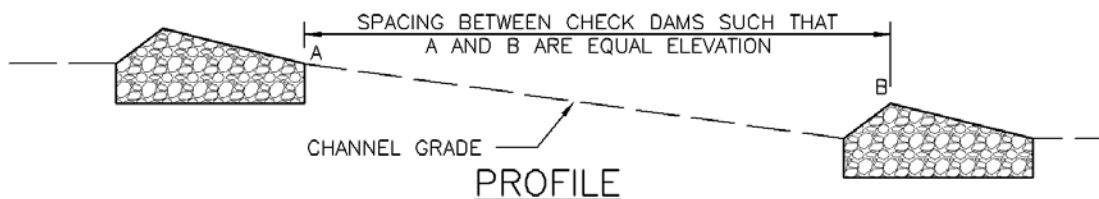
CHECK DAM ELEVATION VIEW



SECTION A



SECTION B



PROFILE

CD-1. CHECK DAM

CHECK DAM INSTALLATION NOTES

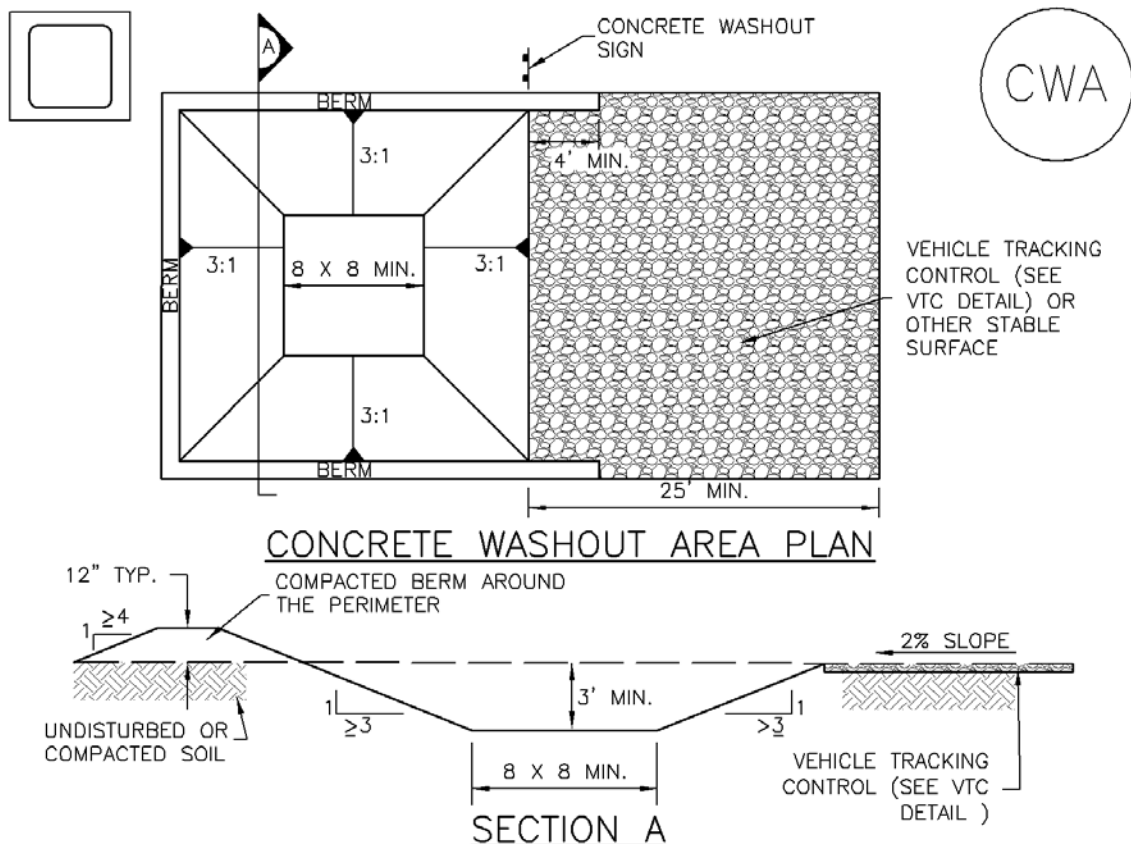
1. SEE PLAN VIEW FOR:
  - LOCATION OF CHECK DAMS.
  - CHECK DAM TYPE (CHECK DAM OR REINFORCED CHECK DAM).
  - LENGTH (L), CREST LENGTH (CL), AND DEPTH (D).
2. CHECK DAMS INDICATED ON INITIAL SWMP SHALL BE INSTALLED AFTER CONSTRUCTION FENCE, BUT PRIOR TO ANY UPSTREAM LAND DISTURBING ACTIVITIES.
3. RIPRAP 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  $\frac{1}{2}$  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.



## 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 PIT 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. SIGNS 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 RIGS.
8. USE EXCAVATED MATERIAL FOR PERIMETER BERM CONSTRUCTION.

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'.

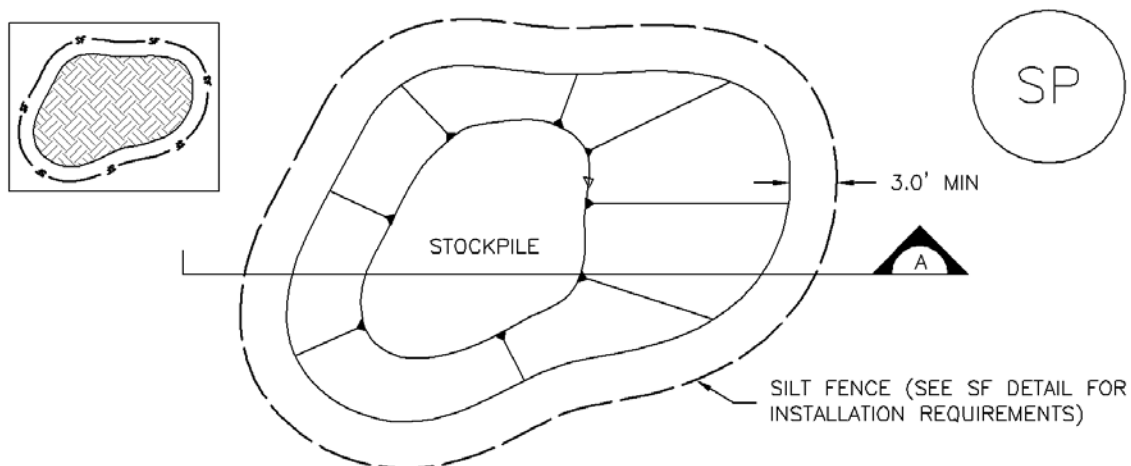
5. CONCRETE WASHOUT WATER, WASTED PIECES OF CONCRETE AND ALL OTHER DEBRIS IN THE SUBSURFACE PIT SHALL BE TRANSPORTED FROM THE JOB SITE IN A WATER-TIGHT CONTAINER AND DISPOSED OF PROPERLY.

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

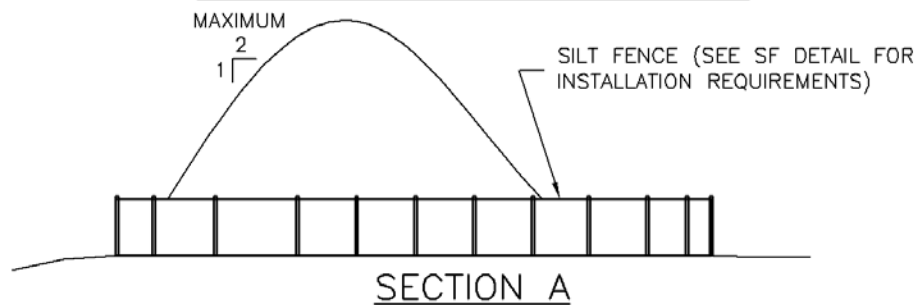
7. WHEN THE CWA IS REMOVED, COVER THE DISTURBED AREA WITH TOP SOIL, SEED AND MULCH OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(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.



## STOCKPILE PROTECTION PLAN



## SP-1. STOCKPILE PROTECTION

### STOCKPILE PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
  - LOCATION OF STOCKPILES.
  - TYPE OF STOCKPILE PROTECTION.
2. INSTALL PERIMETER CONTROLS IN ACCORDANCE WITH THEIR RESPECTIVE DESIGN DETAILS. SILT FENCE IS SHOWN IN THE STOCKPILE PROTECTION DETAILS; HOWEVER, OTHER TYPES OF PERIMETER CONTROLS INCLUDING SEDIMENT CONTROL LOGS OR ROCK SOCKS MAY BE SUITABLE IN SOME CIRCUMSTANCES. CONSIDERATIONS FOR DETERMINING THE APPROPRIATE TYPE OF PERIMETER CONTROL FOR A STOCKPILE INCLUDE WHETHER THE STOCKPILE IS LOCATED ON A PERVIOUS OR IMPERVIOUS SURFACE, THE RELATIVE HEIGHTS OF THE PERIMETER CONTROL AND STOCKPILE, THE ABILITY OF THE PERIMETER CONTROL TO CONTAIN THE STOCKPILE WITHOUT FAILING IN THE EVENT THAT MATERIAL FROM THE STOCKPILE SHIFTS OR SLUMPS AGAINST THE PERIMETER, AND OTHER FACTORS.
3. STABILIZE THE STOCKPILE SURFACE WITH SURFACE ROUGHENING, TEMPORARY SEEDING AND MULCHING, EROSION CONTROL BLANKETS, OR SOIL BINDERS. SOILS STOCKPILED FOR AN EXTENDED PERIOD (TYPICALLY FOR MORE THAN 60 DAYS) SHOULD BE SEEDDED AND MULCHED WITH A TEMPORARY GRASS COVER ONCE THE STOCKPILE IS PLACED (TYPICALLY WITHIN 14 DAYS). USE OF MULCH ONLY OR A SOIL BINDER IS ACCEPTABLE IF THE STOCKPILE WILL BE IN PLACE FOR A MORE LIMITED TIME PERIOD (TYPICALLY 30-60 DAYS).
4. FOR TEMPORARY STOCKPILES ON THE INTERIOR PORTION OF A CONSTRUCTION SITE, WHERE OTHER DOWNGRADIENT CONTROLS, INCLUDING PERIMETER CONTROL, ARE IN PLACE, STOCKPILE PERIMETER CONTROLS MAY NOT BE REQUIRED.

STOCKPILE 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.

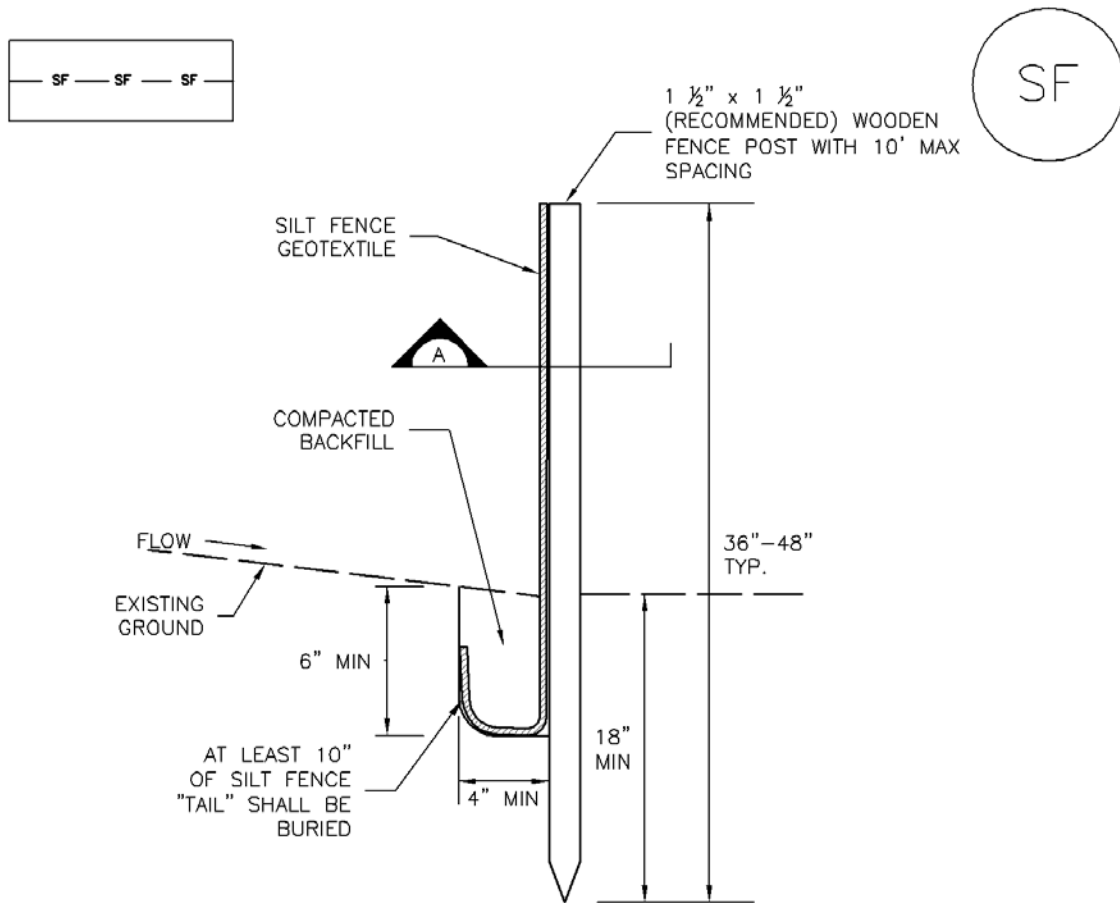
STOCKPILE PROTECTION MAINTENANCE NOTES

4. IF PERIMETER PROTECTION MUST BE MOVED TO ACCESS SOIL STOCKPILE, REPLACE PERIMETER CONTROLS BY THE END OF THE WORKDAY.

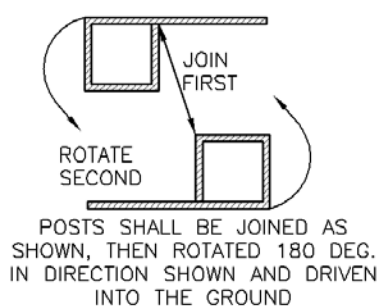
5. STOCKPILE PERIMETER CONTROLS CAN BE REMOVED ONCE ALL THE MATERIAL FROM THE STOCKPILE HAS BEEN USED.

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

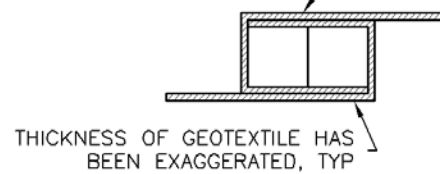
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## SILT FENCE



POSTS SHALL OVERLAP AT JOINTS SO THAT NO GAPS EXIST IN SILT FENCE



## SECTION A

## SF-1. SILT FENCE

SILT FENCE INSTALLATION NOTES

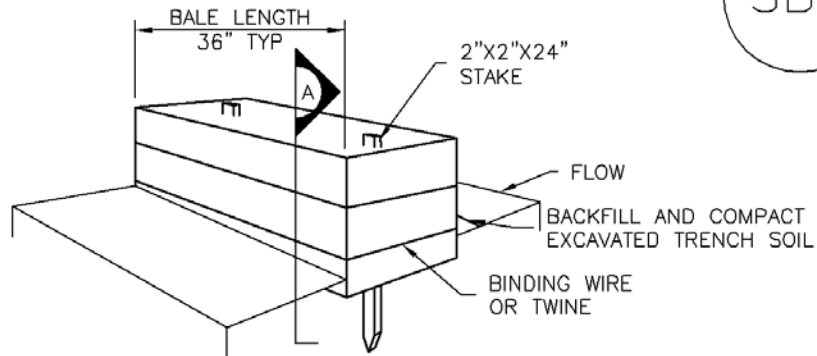
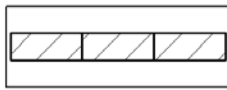
1. SILT FENCE MUST BE PLACED AWAY FROM THE TOE OF THE SLOPE TO ALLOW FOR WATER PONDING. SILT FENCE AT THE TOE OF A SLOPE SHOULD BE INSTALLED IN A FLAT LOCATION AT LEAST SEVERAL FEET (2–5 FT) FROM THE TOE OF THE SLOPE TO ALLOW ROOM FOR PONDING AND DEPOSITION.
2. A UNIFORM 6" X 4" ANCHOR TRENCH SHALL BE 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 RESISTS 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" EXTENDING PERPENDICULAR TO THE CONTOUR SHOULD BE OF SUFFICIENT LENGTH TO KEEP RUNOFF FROM FLOWING AROUND THE END OF THE SILT FENCE (TYPICALLY 10' – 20').
7. SILT FENCE SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

SILT FENCE MAINTENANCE NOTES

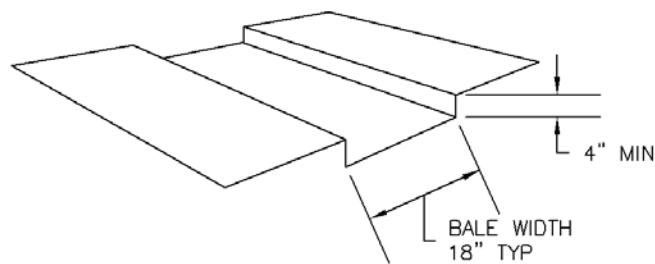
1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS 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 FENCE SHALL BE REMOVED AS NEEDED TO MAINTAIN THE FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY 6".
5. REPAIR OR REPLACE SILT FENCE WHEN THERE ARE SIGNS OF WEAR, SUCH AS SAGGING, TEARING, OR COLLAPSE.
6. SILT FENCE IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION, OR IS REPLACED BY AN EQUIVALENT PERIMETER SEDIMENT CONTROL BMP.
7. WHEN SILT FENCE IS REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

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

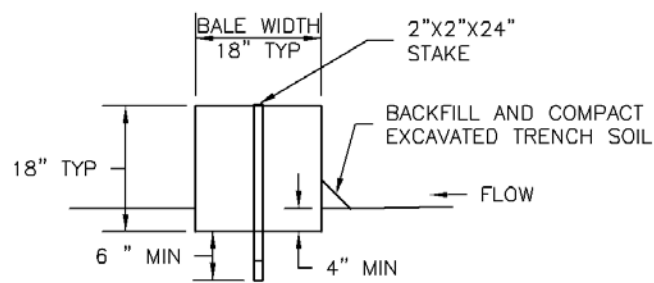
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STRAW BALE



TRENCH FOR STRAW BALE



SECTION A

SBB-1. STRAW BALE

## STRAW BALE INSTALLATION NOTES

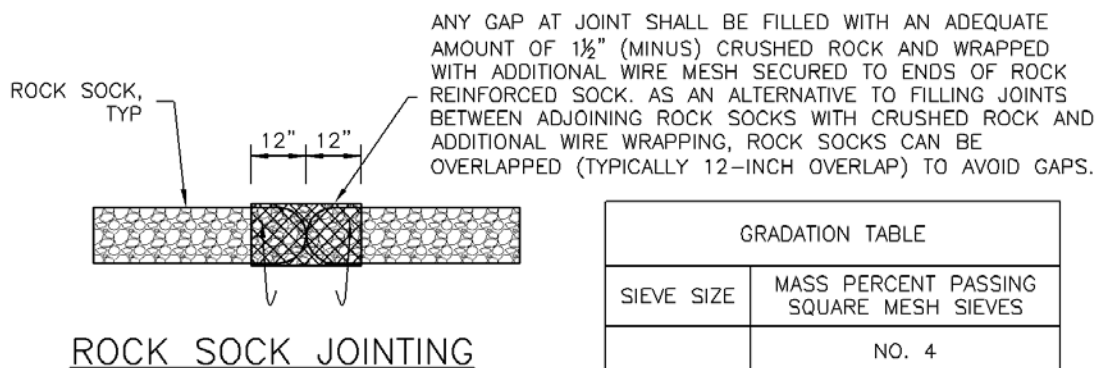
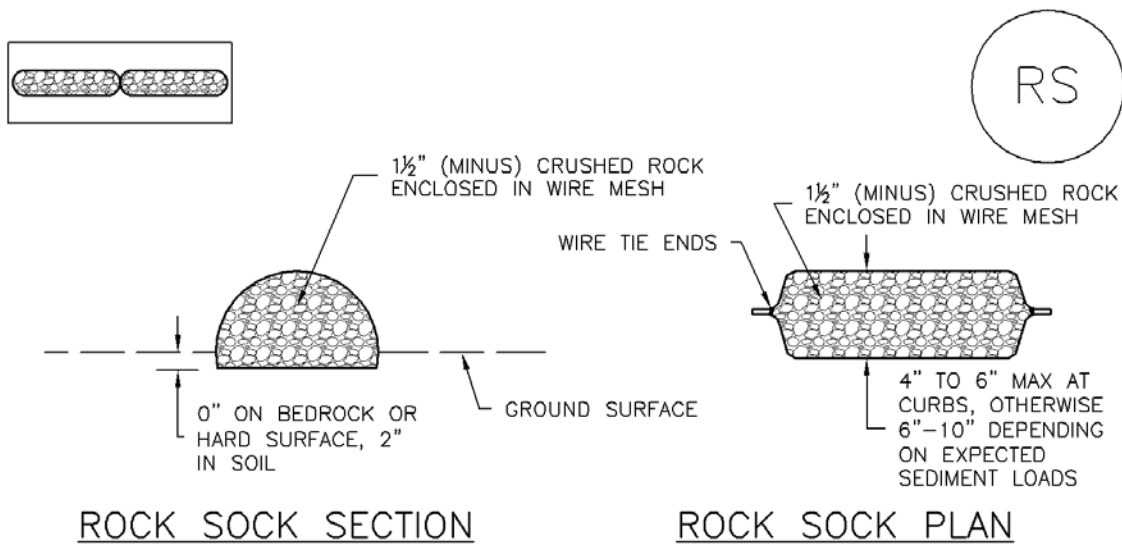
1. SEE PLAN VIEW FOR:  
-LOCATION(S) OF STRAW BALES.
2. STRAW BALES SHALL CONSIST OF CERTIFIED WEED FREE STRAW OR HAY. LOCAL JURISDICTIONS MAY REQUIRE PROOF THAT BALES ARE WEED FREE.
3. STRAW BALES SHALL CONSIST OF APPROXIMATELY 5 CUBIC FEET OF STRAW OR HAY AND WEIGH NOT LESS THAN 35 POUNDS.
4. WHEN STRAW BALES ARE USED IN SERIES AS A BARRIER, THE END OF EACH BALE SHALL BE TIGHTLY ABUTTING ONE ANOTHER.
5. STRAW BALE DIMENSIONS SHALL BE APPROXIMATELY 36"x18"x18".
6. A UNIFORM ANCHOR TRENCH SHALL BE EXCAVATED TO A DEPTH OF 4". STRAW BALES SHALL BE PLACED SO THAT BINDING TWINE IS ENCOMPASSING THE VERTICAL SIDES OF THE BALE(S). ALL EXCAVATED SOIL SHALL BE PLACED ON THE UPHILL SIDE OF THE STRAW BALE(S) AND COMPACTED.
7. TWO (2) WOODEN STAKES SHALL BE USED TO HOLD EACH BALE IN PLACE. WOODEN STAKES SHALL BE 2"x2"x24". WOODEN STAKES SHALL BE DRIVEN 6" INTO THE GROUND.

## STRAW BALE 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. STRAW BALES SHALL BE REPLACED IF THEY BECOME HEAVILY SOILED, ROTTEN, OR DAMAGED BEYOND REPAIR.
5. SEDIMENT ACCUMULATED UPSTREAM OF STRAW BALE BARRIER SHALL BE REMOVED AS NEEDED TO MAINTAIN FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY  $\frac{1}{4}$  OF THE HEIGHT OF THE STRAW BALE BARRIER.
6. STRAW BALES ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.
7. WHEN STRAW BALES ARE REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

(DETAILS ADAPTED FROM TOWN OF PARKER, COLORADO, NOT AVAILABLE IN AUTOCAD)

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#### ROCK SOCK INSTALLATION NOTES

1. SEE PLAN VIEW FOR:  
-LOCATION(S) OF ROCK SOCKS.
2. CRUSHED ROCK SHALL BE 1½" (MINUS) IN SIZE WITH A FRACTURED FACE (ALL SIDES) AND SHALL COMPLY WITH GRADATION SHOWN ON THIS SHEET (1½" MINUS).
3. WIRE MESH SHALL BE FABRICATED OF 10 GAGE POULTRY MESH, OR EQUIVALENT, WITH A MAXIMUM OPENING OF ½", RECOMMENDED MINIMUM ROLL WIDTH OF 48"
4. WIRE MESH SHALL BE SECURED USING "HOG RINGS" OR WIRE TIES AT 6" CENTERS ALONG ALL JOINTS AND AT 2" CENTERS ON ENDS OF SOCKS.
5. SOME MUNICIPALITIES MAY ALLOW THE USE OF FILTER FABRIC AS AN ALTERNATIVE TO WIRE MESH FOR THE ROCK ENCLOSURE.

#### RS-1. ROCK SOCK PERIMETER CONTROL

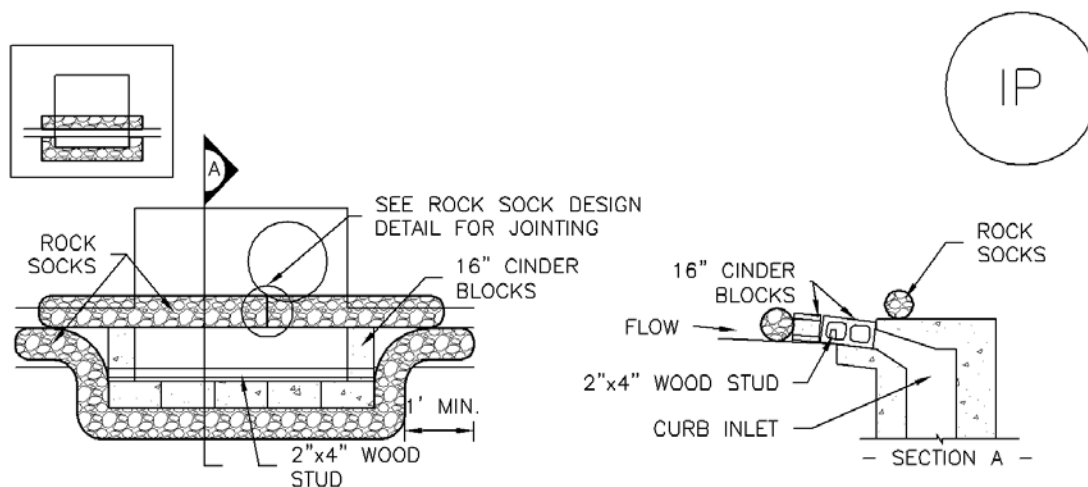
## ROCK SOCK MAINTENANCE NOTES

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. ROCK SOCKS SHALL BE REPLACED IF THEY BECOME HEAVILY SOILED, OR DAMAGED BEYOND REPAIR.
5. SEDIMENT ACCUMULATED UPSTREAM OF ROCK SOCKS SHALL BE REMOVED AS NEEDED TO MAINTAIN FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY  $\frac{1}{2}$  OF THE HEIGHT OF THE ROCK SOCK.
6. ROCK SOCKS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.
7. WHEN ROCK SOCKS ARE REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY 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.

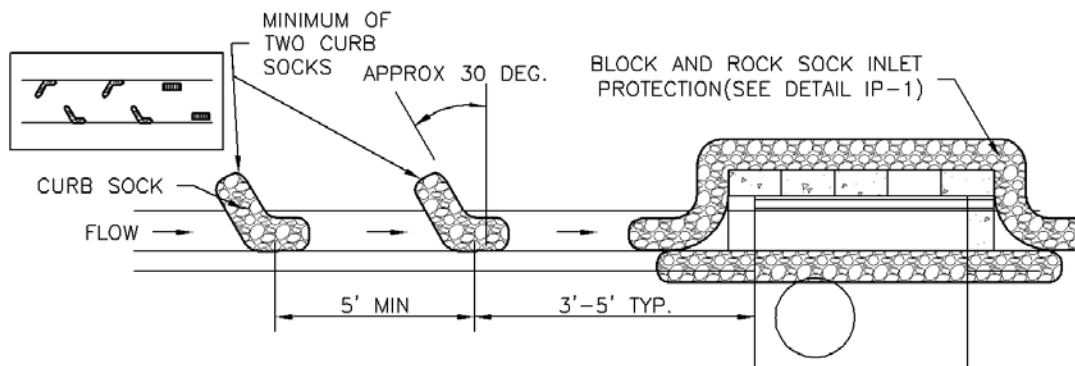
NOTE: THE DETAILS INCLUDED WITH THIS FACT SHEET SHOW COMMONLY USED, CONVENTIONAL METHODS OF ROCK SOCK INSTALLATION IN THE DENVER METROPOLITAN AREA. THERE ARE MANY OTHER SIMILAR PROPRIETARY PRODUCTS ON THE MARKET. UDFCD NEITHER NDORSES NOR DISCOURAGES USE OF PROPRIETARY PROTECTION PRODUCTS; HOWEVER, IN THE EVENT 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.



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

#### BLOCK AND CURB SOCK INLET PROTECTION INSTALLATION NOTES

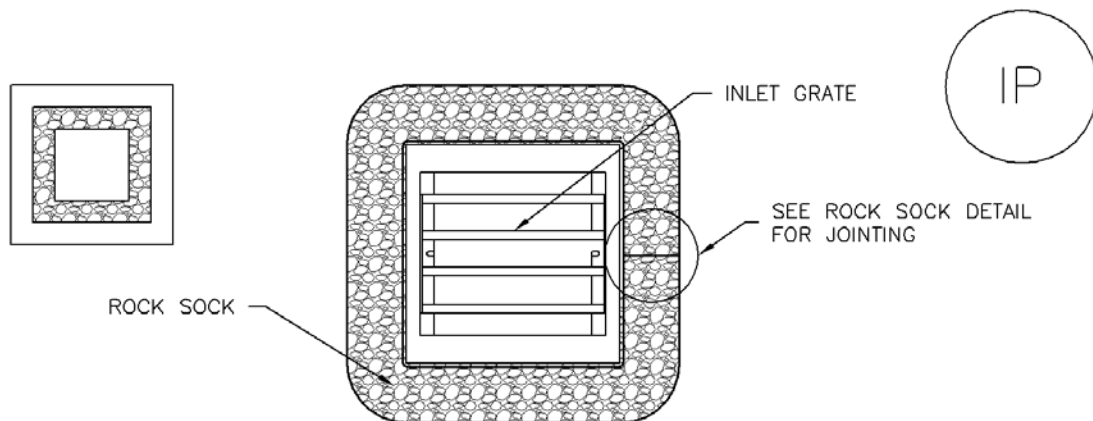
1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
2. CONCRETE "CINDER" BLOCKS SHALL BE LAID ON THEIR SIDES AROUND THE INLET IN A SINGLE ROW, ABUTTING ONE ANOTHER WITH THE OPEN END FACING AWAY FROM THE CURB.
3. GRAVEL BAGS SHALL BE PLACED AROUND CONCRETE BLOCKS, CLOSELY ABUTTING ONE ANOTHER 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

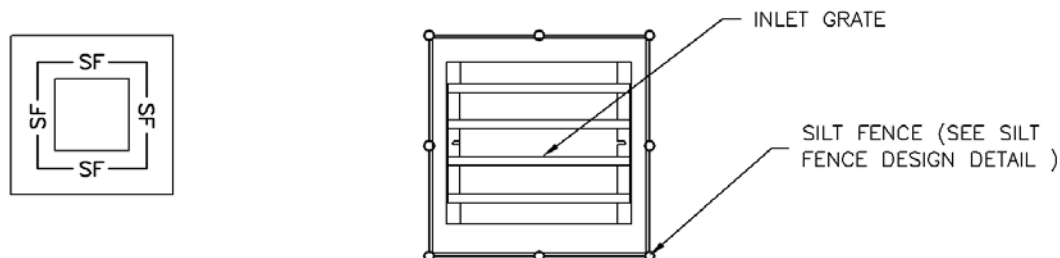
1. SEE ROCK SOCK DESIGN DETAIL INSTALLATION REQUIREMENTS.
2. PLACEMENT OF THE SOCK SHALL BE APPROXIMATELY 30 DEGREES FROM PERPENDICULAR IN THE OPPOSITE DIRECTION OF FLOW.
3. SOCKS ARE TO BE FLUSH WITH THE CURB AND SPACED A MINIMUM OF 5 FEET APART.
4. AT LEAST TWO CURB SOCKS IN SERIES ARE REQUIRED UPSTREAM 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.

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

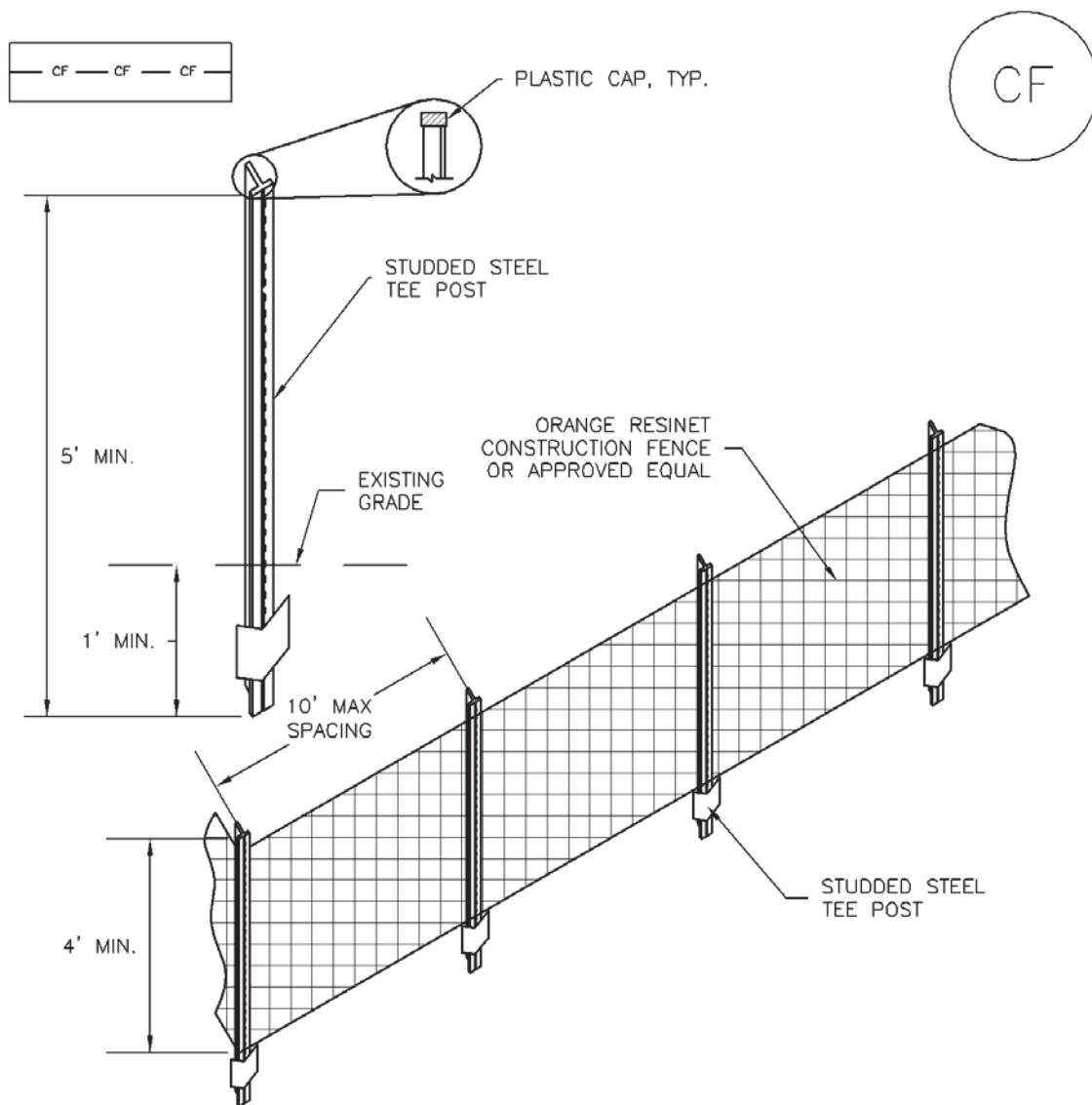
1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS 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 ¼ OF THE HEIGHT FOR STRAW BALES.
5. INLET PROTECTION IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS PERMANENTLY STABILIZED, UNLESS THE LOCAL JURISDICTION APPROVES EARLIER REMOVAL OF INLET PROTECTION IN STREETS.
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 USE OF PROPRIETARY INLET PROTECTION; HOWEVER, IN THE EVENT 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.



### CF-1. PLASTIC MESH CONSTRUCTION FENCE

#### CONSTRUCTION FENCE INSTALLATION NOTES

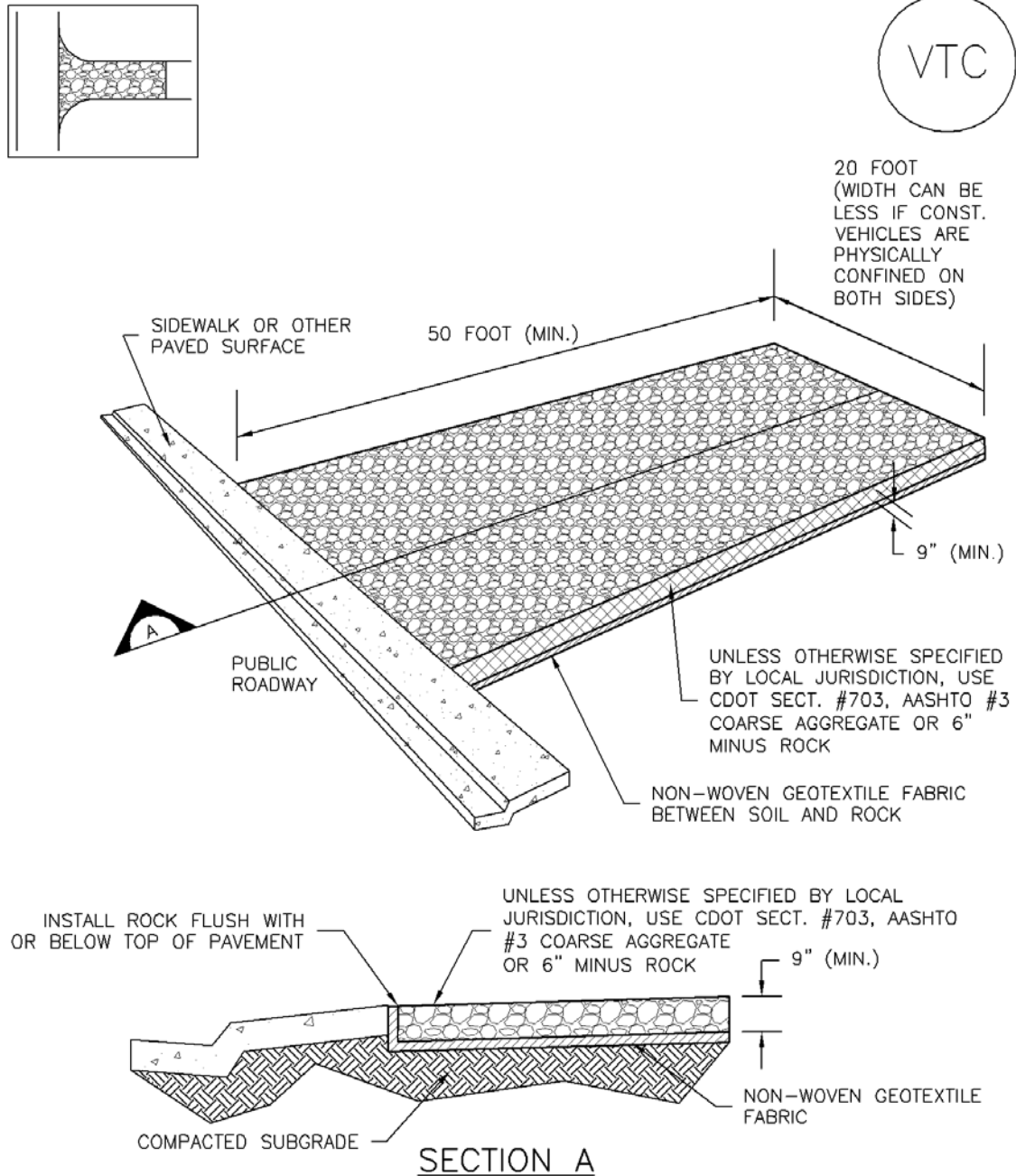
1. SEE PLAN VIEW FOR:  
-LOCATION OF CONSTRUCTION FENCE.
2. CONSTRUCTION FENCE SHOWN SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.
3. CONSTRUCTION FENCE SHALL BE COMPOSED OF ORANGE, CONTRACTOR-GRADE MATERIAL THAT IS AT LEAST 4' HIGH. METAL POSTS SHOULD HAVE A PLASTIC CAP FOR SAFETY.
4. STUDED STEEL TEE POSTS SHALL BE UTILIZED TO SUPPORT THE CONSTRUCTION FENCE. MAXIMUM SPACING FOR STEEL TEE POSTS SHALL BE 10'.
5. CONSTRUCTION FENCE SHALL BE SECURELY FASTENED TO THE TOP, MIDDLE, AND BOTTOM OF EACH POST.

## CONSTRUCTION FENCE MAINTENANCE NOTES

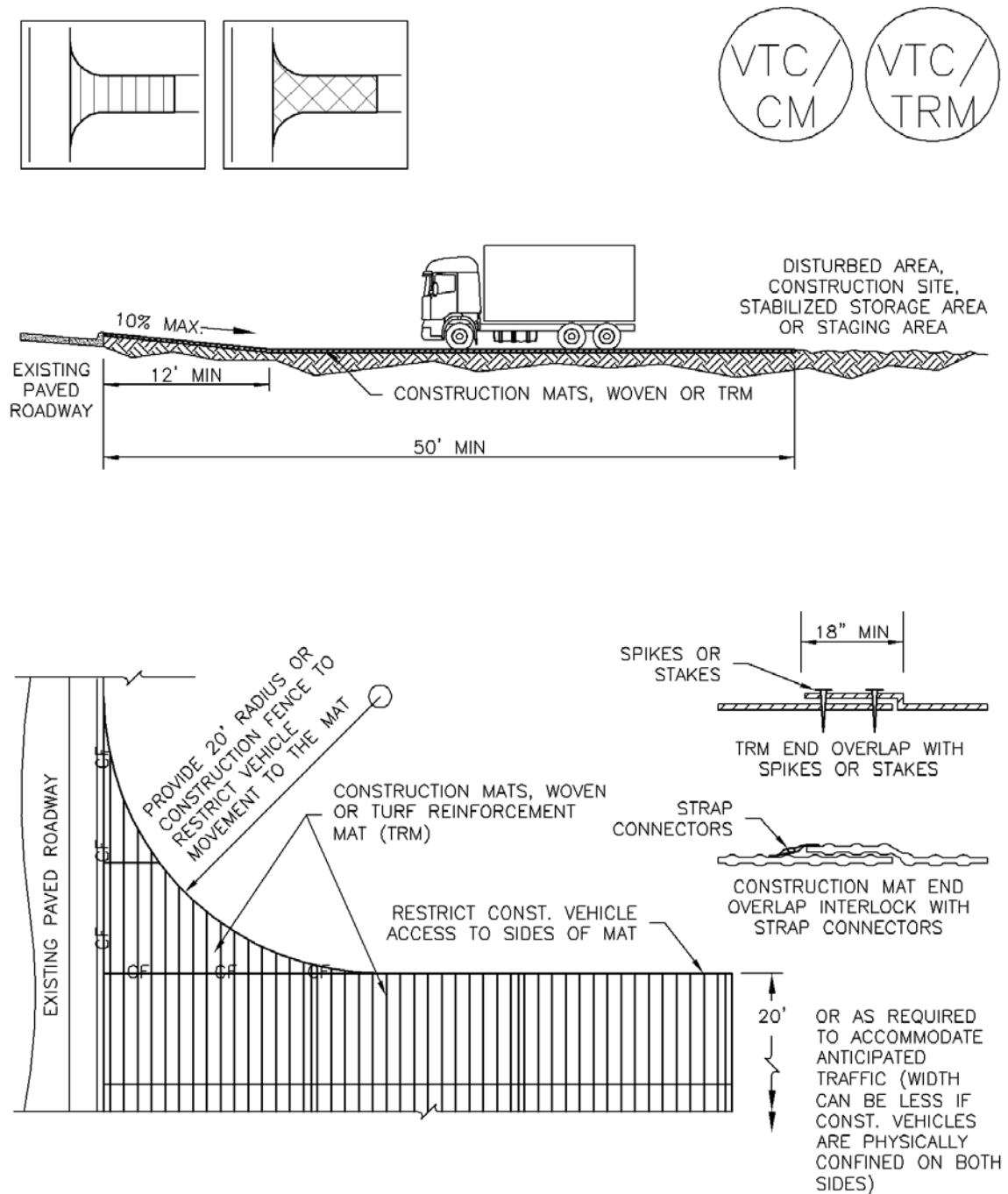
1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS 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. CONSTRUCTION FENCE SHALL BE REPAIRED OR REPLACED WHEN THERE ARE SIGNS OF DAMAGE SUCH AS RIPS OR SAGS. CONSTRUCTION FENCE IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.
5. WHEN CONSTRUCTION FENCES ARE REMOVED, ALL DISTURBED AREAS ASSOCIATED WITH THE INSTALLATION, MAINTENANCE, AND/OR REMOVAL OF THE FENCE SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED, OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

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.

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



## VTC-1. AGGREGATE VEHICLE TRACKING CONTROL



## VTC-3. VEHICLE TRACKING CONTROL W/ CONSTRUCTION MAT OR TURF REINFORCEMENT MAT (TRM)

STABILIZED CONSTRUCTION ENTRANCE/EXIT INSTALLATION NOTES

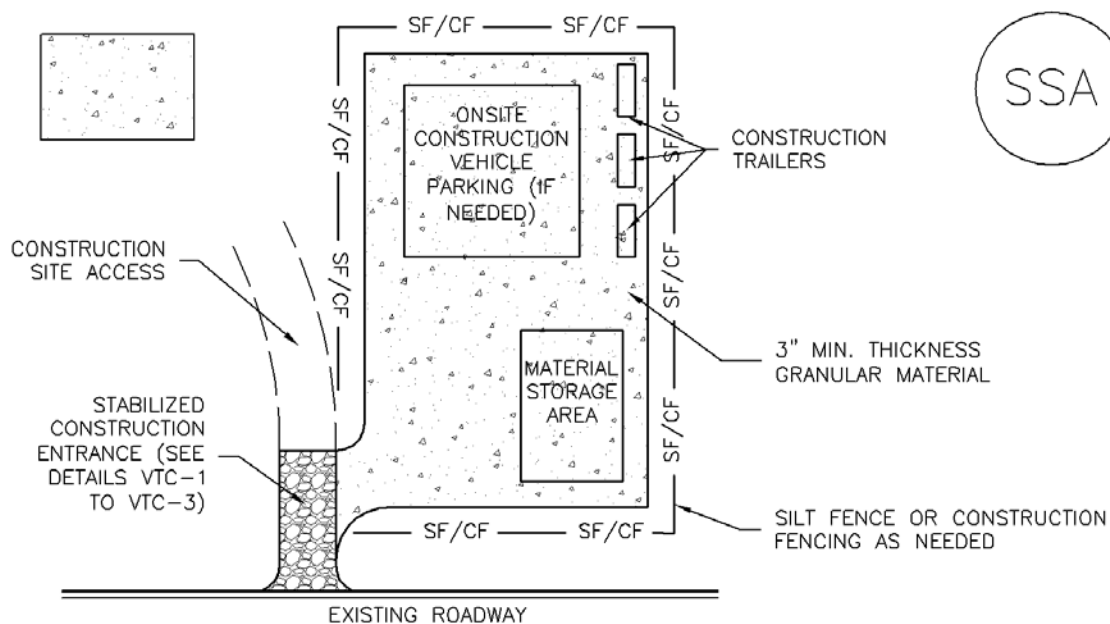
1. SEE PLAN VIEW FOR
  - LOCATION OF CONSTRUCTION ENTRANCE(S)/EXIT(S).
  - TYPE OF CONSTRUCTION ENTRANCE(S)/EXITS(S) (WITH/WITHOUT WHEEL WASH, CONSTRUCTION MAT OR TRM).
2. CONSTRUCTION MAT OR TRM STABILIZED CONSTRUCTION ENTRANCES ARE ONLY TO BE USED ON SHORT DURATION PROJECTS (TYPICALLY RANGING FROM A WEEK TO A MONTH) WHERE THERE WILL BE LIMITED VEHICULAR ACCESS.
3. A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE LOCATED AT ALL ACCESS POINTS WHERE VEHICLES ACCESS THE CONSTRUCTION SITE FROM PAVED RIGHT-OF-WAYS.
4. STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.
5. A NON-WOVEN GEOTEXTILE FABRIC SHALL BE PLACED UNDER THE STABILIZED CONSTRUCTION ENTRANCE/EXIT PRIOR TO THE PLACEMENT OF ROCK.
6. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.

STABILIZED CONSTRUCTION ENTRANCE/EXIT 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. ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY TO THE STABILIZED ENTRANCE/EXIT TO MAINTAIN A CONSISTENT DEPTH.
5. SEDIMENT TRACKED ONTO PAVED ROADS IS TO BE REMOVED THROUGHOUT THE DAY AND AT THE END OF THE DAY BY SHOVELING OR SWEEPING. SEDIMENT MAY NOT BE WASHED DOWN STORM SEWER DRAINS.

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 CITY OF BROOMFIELD, COLORADO, NOT AVAILABLE IN AUTOCAD)



## SSA-1. STABILIZED STAGING AREA

### STABILIZED STAGING AREA INSTALLATION NOTES

1. SEE PLAN VIEW FOR
  - LOCATION OF STAGING AREA(S).
  - CONTRACTOR MAY ADJUST LOCATION AND SIZE OF STAGING AREA WITH APPROVAL FROM THE LOCAL JURISDICTION.
2. STABILIZED STAGING AREA SHOULD BE APPROPRIATE FOR THE NEEDS OF THE SITE. OVERSIZING RESULTS IN A LARGER AREA TO STABILIZE FOLLOWING CONSTRUCTION.
3. STAGING AREA SHALL BE STABILIZED PRIOR TO OTHER OPERATIONS ON THE SITE.
4. THE STABILIZED STAGING AREA SHALL CONSIST OF A MINIMUM 3" THICK GRANULAR MATERIAL.
5. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.
6. ADDITIONAL PERIMETER BMPs MAY BE REQUIRED INCLUDING BUT NOT LIMITED TO SILT FENCE AND CONSTRUCTION FENCING.

### STABILIZED STAGING AREA 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. ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY IF RUTTING OCCURS OR UNDERLYING SUBGRADE BECOMES EXPOSED.

STABILIZED STAGING AREA MAINTENANCE NOTES

5. STABILIZED STAGING AREA SHALL BE ENLARGED IF NECESSARY TO CONTAIN PARKING, STORAGE, AND UNLOADING/LOADING OPERATIONS.

6. THE STABILIZED STAGING AREA SHALL BE REMOVED AT THE END OF CONSTRUCTION. THE GRANULAR MATERIAL SHALL BE REMOVED OR, IF APPROVED BY THE LOCAL JURISDICTION, USED ON SITE, AND THE AREA COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY LOCAL JURISDICTION.

NOTE: MANY MUNICIPALITIES PROHIBIT THE USE OF RECYCLED CONCRETE AS GRANULAR MATERIAL FOR STABILIZED STAGING AREAS DUE TO DIFFICULTIES WITH RE-ESTABLISHMENT OF VEGETATION IN AREAS WHERE RECYCLED CONCRETE WAS PLACED.

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, NOT AVAILABLE IN AUTOCAD)

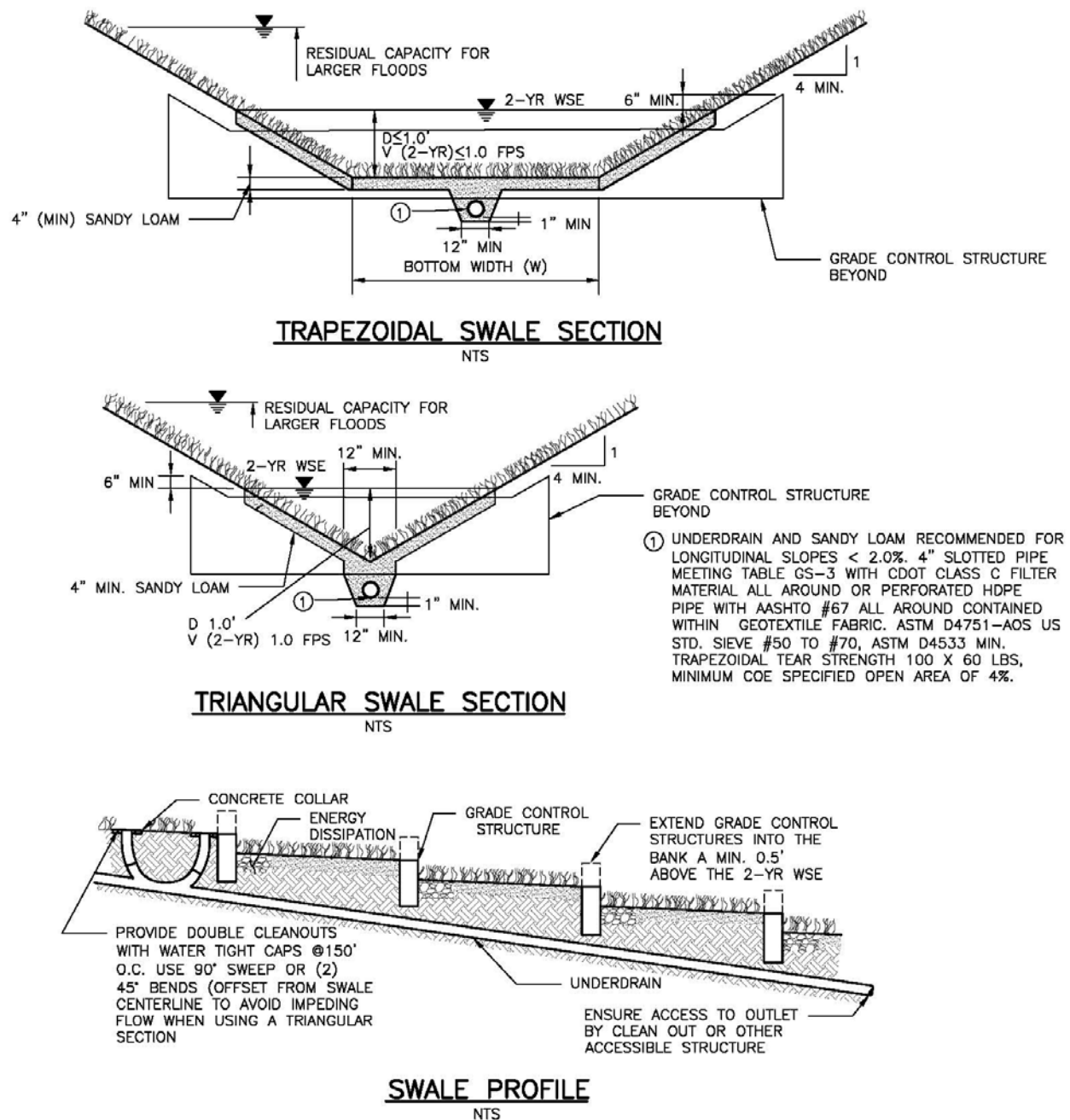


Figure GS-1. Grass Swale Profile and Sections

## Design Example

The *UD-BMP* workbook, designed as a tool for both designer and reviewing agency is available at [www.udfcd.org](http://www.udfcd.org). This section provides a completed design form from this workbook as an example.

## APPENDIX F

# EROSION AND STORMWATER QUALITY CONTROL PERMIT (ESQCP) EL PASO COUNTY APPLICATION AND PERMIT

EPC Project Number:

## APPLICANT INFORMATION

## PERMIT NUMBER

Owner Information	
Property Owner	
Applicant Name (Permit Holder)	
Company/Agency	
Position of Applicant	
Address (physical address, not PO Box)	
City	
State	
Zip Code	
Mailing address, if different from above	
Telephone	
FAX number	
Email Address	
Cellular Phone number	
Contractor/Operator Information	
Name (person of responsibility)	
Company	
Address (physical address, not PO Box)	
City	
State	
Zip Code	
Mailing address, if different from above	
Telephone	
FAX number	
Email Address	
Cellular Phone number	
Erosion Control Supervisor (ECS)*	
ECS Phone number*	
ECS Cellular Phone number*	

\*Required for all applicants. May be provided at later date pending securing a contract when applicable.

**PROJECT INFORMATION**

Project Information	
Project Name	
Legal Description	
Address (or nearest major cross streets)	
Acreage (total and disturbed)	Total:          acres Disturbed:          acres
Schedule	Start of Construction: Completion of Construction: Final Stabilization:
Project Purpose	
Description of Project	
Tax Schedule Number	

**FOR OFFICE USE ONLY**

The following signature from the ECM Administrator signifies the approval of this ESQCP. All work shall be performed in accordance with the permit, the El Paso County Engineering Criteria Manual (ECM) Standards, City of Colorado Springs Drainage Criteria Manual, Volume 2 (DCM2) as adopted by El Paso County Addendum, approved plans, and any attached conditions. The approved plans are an enforceable part of the ESQCP. Construction activity, except for the installation of initial construction BMPs, is not permitted until issuance of a Construction Permit and Notice to Proceed.

Signature of ECM Administrator: \_\_\_\_\_

Date \_\_\_\_\_

## **1.1 REQUIRED SUBMISSIONS**

In addition to this completed and signed application, the following items must be submitted to obtain an ESQCP:

- Permit fees;
- Stormwater Management Plan (SWMP) meeting the requirements of DCM2 and ECM either as part of the plan set or as a separate document;
- Operation and Maintenance Plan for any proposed permanent stormwater control measures; and
- Signed Private Detention Basin/Stormwater Quality Best Management Practice Maintenance Agreement and Easement, if any permanent stormwater control measures are to be constructed.

## **1.2 RESPONSIBILITY FOR DAMAGE**

The County and its officers and employees, including but not limited to the ECM Administrator, shall not be answerable or accountable in any manner for damage to property or for injury to or death of any person, including but not limited to a permit holder, persons employed by the permit holder, or persons acting in behalf of the permit holder, from any cause. The permit holder shall be responsible for any liability imposed by law and for damage to property or injuries to or death of any person, including but not limited to the permit holder, persons employed by the permit holder, persons acting in behalf of the permit holder, arising out of work or other activity permitted and done under a permit, or arising out of the failure to perform the obligations under any permit with respect to maintenance or any other obligations, or resulting from defects or obstructions, or from any cause whatsoever during the progress of the work or other activity, or at any subsequent time work or other activity is being performed under the obligations provided by and contemplated by the permit.

The permit holder shall indemnify, save, and hold harmless the County and its officers and employees, including but not limited to the BOCC and ECM Administrator, from all claims, suits or actions of every name, kind and description brought for or on account of damage to property or injuries to or death of any person, including but not limited to the permit holder, persons employed by the permit holder, persons acting in behalf of the permit holder and the public, resulting from the performance of work or other activity under the permit, or arising out of the failure to perform obligations under any permit with respect to maintenance or any other obligations, or resulting from defects or obstructions, or from any cause whatsoever during the progress of the work or other activity, or at any subsequent time work or other activity is being performed under the obligations provided by and contemplated by the permit, except as otherwise provided by state law. The permit holder waives any and all rights to any type of expressed or implied indemnity against the County, its officers or employees. It is the intent of the parties that the permit holder will indemnify, save, and hold harmless the County, its officers and employees from any and all claims, suits or actions as set forth above regardless of the existence or degree of fault of or negligence, whether active or passive, primary or secondary, on the part of the County, the permit holder, persons employed by the permit holder, or persons acting in behalf of the permit holder

### 1.3 APPLICATION CERTIFICATION

We, as the Applicants or the representative of the Applicants, hereby certify that this application is correct and complete as per the requirements presented in this application, the El Paso County Engineering Criteria Manual, and Drainage Criteria Manual, Volume 2 and El Paso County Addendum.

We, as the Applicants or the representatives of the Applicants, have read and will comply with all of the requirements of the specified Stormwater Management Plan and any other documents specifying stormwater best management practices to be used on the site, including permit conditions that may be required by the ECM Administrator. We understand that the stormwater control measures are to be maintained on the site and revised as necessary to protect stormwater quality as the project progresses. We further understand that a Construction Permit must be obtained and all necessary stormwater quality control measures are to be installed in accordance with the SWMP, the El Paso County Engineering Criteria Manual, Drainage Criteria Manual, Volume 2 and El Paso County Addendum before land disturbance begins and that failure to comply will result in a Stop Work Order and may result in other penalties as allowed by law. We further understand and agree to indemnify, save, and hold harmless the County and its officers and employees, including but not limited to the BOCC and ECM Administrator, from all claims, suits or actions of every name, kind and description as outlined in Section 1.2 Responsibility for Damage

\_\_\_\_\_  
Signature of Owner or Representative

Date: \_\_\_\_\_

\_\_\_\_\_  
Print Name of Owner or Representative

\_\_\_\_\_  
Signature of Operator or Representative

Date: \_\_\_\_\_

\_\_\_\_\_  
Print Name of Operator or Representative

Permit Fee \$ \_\_\_\_\_

Surcharge \$ \_\_\_\_\_

Financial Surety \$ \_\_\_\_\_

Type of Surety \_\_\_\_\_

Total \$ \_\_\_\_\_