



# **STORMWATER MANAGEMENT PLAN FOR LATIGO TRAILS FILING NO. 10**

## **Prepared For (Applicant):**

**BRJM, LLC**  
101 N. Cascade Avenue, Suite 200  
Colorado Springs, CO 80903  
(719) 475-7474  
Contact: Bob Irwin

## **Prepared By:**

**JR Engineering, LLC**  
5475 Tech Center Drive, Suite 235  
Colorado Springs, Colorado 80919  
(303) 267-6240  
Contact: Mike Bramlett

## **Qualified Stormwater Manager:**

To Be Determined

## **Contractor:**

To Be Determined

**September, 2021**

El Paso County PCD File No.:  
XX-XX-XXX

ENGINEER OF RECORD:

The Stormwater Management 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 and State for Stormwater Management Plans.

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Mike Bramlett, P.E.  
Registered Professional Engineer  
State of Colorado No. 32314  
For and on behalf of JR Engineering, LLC.

Date

REVIEW ENGINEER:

The Stormwater Management Plan was reviewed and found to meet the checklist requirements except where otherwise noted or allowed by an approved deviation request.

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Review Engineer

Date

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- B. Soils Map**
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## **1. Applicant / Contact Information**

**Owner/Developer:** BRJM, LLC  
Attn: Bob Irwin  
101 N. Cascade Avenue, Suite 200  
Colorado Springs, CO 80903  
(719) 475-7474

**Engineer:** JR Engineering, LLC  
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Colorado Springs, CO 80919  
Attn: Mike Bramlett (303) 267-6240  
[mbramlett@jrengineering.com](mailto:mbramlett@jrengineering.com)

**SWMP Administrator:** To Be Determined

**Contractor:** To Be Determined

## **2. Site Description and Location**

The site is located in the southern quarter of Section S17, Township 12 South, Range 64 West of the Sixth Principal Meridian, in the County of El Paso, State of Colorado. Latigo Trails – Filing No. 10 is a 106.62 acre, single family-development and is comprised of 39 lots and associated infrastructure. Lot 1–Lot 39 will be an rural subdivision proposed for RR-2.5 zoning. The site is bounded by existing Latigo Trails – Filing 2 residential subdivision to the north, existing Londonderry Drive to the east, future Meridian Ranch residential subdivision to the south, and private residential parcels 4218000011 and 4218000012 to the west. The nearest street intersection of Buffalo River Trail and Oregon Wagon Trail is located approximately 750 feet northeast of the northeastern corner of the site boundary. See Appendix A for a vicinity map.

Latigo Trails is currently partially undeveloped. The existing ground cover is sparse vegetation and open space. The development of the proposed site will include implementation of BMPs, site grading, utility and storm installation, roadway paving, associated residential site development, and removal of temporary BMPs. Refer to the GEC plans in Appendix C for the phasing of BMPs.

Site details:

- a. Estimated area to undergo disturbance: 13.19 acres
  - i. Offsite grading is to be expected for this project.
- b. Estimated 100-year runoff coefficients:
  - i. Historic: C = 0.36
  - ii. Developed: C = 0.41
- c. Soil Type: Site soils consist of Stapleton sandy loam, 3 to 8 percent slopes and

Columbine gravelly sandy loam, 0 to 3 percent; the soils are classified as Hydrologic Soils Group B and A, respectively. Group B Soils have a moderate infiltration rate when thoroughly wet, which have a moderate runoff potential. Soil Group A have a high infiltration rate (low runoff potential) when thoroughly wet with a high rate of water transmission. Refer to Appendix B for a soils map. Eroded soil may adversely impact downstream drainage ways. BMP's will be installed and maintained to mitigate adverse impacts due to soil erosion.

- d. Receiving Waters: Geick Ranch Tributary 1 – via overland flow or controlled release from Southern Pond Full-Spectrum Outlet Structure
- e. Soil erosion potential and potential impacts upon discharge:
  - i. Conduct land-disturbing activities in a manner that effectively reduces accelerated soil erosion and reduces sediment movement and deposition off site.
  - ii. Schedule construction activities to minimize the total amount of soil exposed at any given time.
  - iii. Establish temporary or permanent cover on areas that have been disturbed as soon as practical after grading is completed.
  - iv. Design and construct temporary or permanent facilities to limit the flow of water to non-erosive velocities for the conveyance of water around, through or from the disturbed area.
  - v. Remove sediment caused by accelerated soil erosion from surface runoff water before it leaves the site.
  - vi. Stabilize disturbed areas with permanent vegetative cover and provide permanent storm water quality control measures for the post-construction condition.
- f. Existing vegetation: Native meadow grasses (approximately 60% coverage), determined using a combination of visual field verification and aerial inspection.
- g. Location and description of potential pollution sources: Potential sources of pollution include: Onsite waste management, portable toilets, onsite vehicle fueling, and outdoor storage, vehicle tracking pads, dust management, and temporary stock pile. The locations of these sources are shown in the GEC plans in Appendix C or will be determined by the contractor.
  - i. Non-industrial waste sources such as worker trash and portable toilets – Clean up litter and debris from the construction site daily and worker trash receptacles will be located by entrance/exit for easy removal/replace access. All portable toilets should be kept a minimum of 50 feet from a storm drain inlet or drainage course and secured to the ground. Toilets will be cleaned regularly and inspected daily for any spills or leaks. Waste disposal bins will be reasonably maintained at regular intervals to check for leaks and overflow capacity, and will be emptied routinely to prevent overflow.
  - ii. Routine maintenance activities involving fertilizers, pesticides, detergents, fuels, solvents, oils, etc. – oil, grease, coolants, etc. that leak onto the soil or impervious surface should be cleaned up as soon as possible and on-site personnel notified.
  - iii. Vehicle, equipment maintenance, and fueling – all designated fueling and

maintenance areas shall be located a minimum of 100 feet from any drainage course whenever possible. If the fueling area is located on a pervious surface, the area shall be covered with a non-pervious lining so as to prevent soil contamination by way of infiltration. Any spillage shall be cleaned up immediately.

- iv. Raw materials, intermediate products, byproducts, process residuals, Finished products, containers, and materials storage areas can be sources of pollutants such as metals, oils and grease, sediment and other contaminants. Where practical, conduct operations indoors. Where impractical, select an appropriate temporary or permanent covering to reduce exposure of materials to rainfall and runoff.
  - v. Vehicle tracking controls (VTC) provide stabilized construction site access where vehicles exit the site onto paved public roads. An effective vehicle tracking control helps remove sediment (mud or dirt) from vehicles, reducing tracking onto the paved surface. With aggregate vehicle tracking controls, ensure rock and debris from this area do not enter the public right-of-way. Inspect the VTC for degradation and replace aggregate or material used for a stabilized entrance/exit as needed.
  - vi. Wind erosion and dust control BMPs help to keep soil particles from entering the air as a result of land disturbing construction activities. Dust control measures should be used on any site where dust poses a problem to air quality. Dust control is important to control for the health of construction workers and surrounding waterbodies.
  - vii. Stockpile management should be used when soils or other erodible materials are stored at the construction site. Special attention should be given to stockpiles in close proximity to natural or manmade storm systems. Soils stockpiled for an extended period (typically for more than 30 days) mulched with a temporary grass cover once the stockpile is placed (typically within 21 days). An area that will remain in an interim state for over 60 days must also be seeded. 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). Refer to DCM Vol 2 – Section 3.2- General principles - Basic Grading, Erosion and Stormwater Quality Requirements and General Prohibitions #16 for more information.
- h. Spill prevention and pollution controls for dedicated batch plants: Not applicable for this site since there will be no dedicated batch plants.
  - i. Street sweeping or vacuuming should be conducted when there is noticeable sediment accumulation on roadways adjacent to the construction site. Typically, this will be concentrated at the entrance/exit to the construction site. Well-maintained stabilized construction entrances and vehicle tracking controls can help reduce the necessary frequency of street sweeping and vacuuming.
  - j. Location and description of anticipated non-stormwater components of discharge: There will be a concrete washout area (CWA) where the cleaning of concrete trucks could produce a non-stormwater discharge. Proper installation and maintenance of the CWA will not allow runoff from this area. Another potential source of non-stormwater discharge could be the irrigation of permanent seeding

- (PS). Irrigation will be kept at a rate so as to not create runoff.
- k. Existing basin drainage patterns are generally from northeast to southwest by way of sheet flow.
  - l. Receiving water: Flows from the ponds will be released across the southern boundary, where flows will follow existing drainage patterns. Runoff from the site will follow historic drainage patterns in the Gieck Ranch drainage basin.
  - m. There are no streams that cross the project site.

### **3. Proposed Sequence of Major Activities**

The project will follow standard construction sequences for construction, i.e., clearing and grubbing, over excavation, roadside grading, utility installation, and street paving.

The contractor will be responsible for implementing and maintaining the erosion and sediment control measures described in this document and the accompanying design drawings. The contractor may designate these tasks to certain subcontractors as they see fit, but the ultimate responsibility for implementing these controls and their proposed function at each phase of the project remains with the contractor.

The order of major activities (with estimated completion dates) will be as follows:

1. Install VTC and other perimeter soil erosion control measures (TBD).
2. Clear and rough grade for improvements (TBD).
3. Place Seed and Mulch (TBD).
4. Clean up and final stabilization (TBD).

### **4. BMPs for Stormwater Pollution Prevention**

See GEC plans in Appendix C for BMP locations and detail sheets.

#### a. Erosion and Sediment Controls

##### i. Structural BMPs:

1. Sediment basins (SB) to collect runoff before it enters receiving waters (initial, interim), see custom design in Appendix C
2. Silt fence (SF) along downstream limits of disturbed areas to filter sediment from runoff (initial, interim)
3. Stabilized staging area (SSA) near site entrance to consolidate construction equipment in a stabilized location (initial, interim)
4. Construction fence (CF) to identify limits of construction (LOC) where silt fence is not needed (initial, interim)
5. Vehicle tracking control (VTC) at site entrance to prevent sediment from leaving the site via vehicle tires (initial, interim)
6. Rough Cut Street Control (RCS) is material placed after a road has been cut and before base has been installed for paving (initial)
7. Erosion Control Blanket (ECB) is used on slopes greater than a 3:1 slope (interim)

8. Temporary stock pile (TSP) to consolidate materials such as topsoil in a controlled area bounded by silt fence (interim)
9. Inlet protection (IP) around culvert entrances (interim, final)
10. Outlet protection (OP) at culvert outlets (interim, final)
11. Concrete washout area (CWA) to allow a controlled area for concrete trucks to be washed (initial, interim)
12. Temporary Swale (TSW) to Convey runoff to sediment basins (initial, interim)
13. Straw Bale Barrier (STB) to be used as check dams in swales to slow and filter sediment from runoff (initial, interim)
14. Sediment Control Logs (SCL) to slow and filter sediment from runoff, to be placed behind sidewalks (initial, interim)

ii. Non-structural BMPs:

1. Mulching (MU) to stabilize soils and promote seed growth (final)
2. Permanent seeding (PS) to stabilize disturbed areas (final)

b. Materials Handling and Spill Prevention

i. General Materials Handling Practices:

1. Potential pollutants shall be stored and used in a manner consistent with the manufacturer's instructions in a secure location. To the extent practical, material storage areas should not be located near storm drain inlets and should be equipped with covers, roofs, or secondary containment as required to prevent storm water from contacting stored materials. Chemicals that are not compatible shall be stored in segregated areas so that spilled materials cannot combine and react.
2. Disposal of materials shall be in accordance with the manufacturer's instructions and applicable local, state, and federal regulations.
3. Materials no longer required for construction shall be removed from the site as soon as possible.
4. Adequate garbage, construction waste, and sanitary waste handling and disposal facilities shall be provided as necessary to keep the site clear of obstruction and BMPs clear and functional.

ii. Specific Materials Handling Practices

1. All pollutants, including waste materials and demolition debris, that occur onsite during construction shall be handled in a way that does not contaminate storm water.
2. All chemicals including liquid products, petroleum products, water treatment chemicals, and wastes stored onsite shall be covered and protected from vandalism.
3. Maintenance, fueling, and repair of all equipment and vehicles involving oil changes, hydraulic system drain down, degreasing operations, fuel tank drain down and removal, and other activities which may result in the accidental release of contaminants, shall be conducted under cover during wet weather and on an impervious surface to prevent release of contaminants onto the ground. Materials spilled during maintenance operations shall be cleaned up

- immediately and properly disposed of.
4. Wheel wash water shall be settled and discharged onsite by infiltration.
  5. Application of agricultural chemicals, including fertilizers and pesticides, shall be conducted in a manner and at application rates that will not result in loss of chemical to storm water runoff. Follow manufacturer's recommendations for application rates and procedures.
  6. pH-modifying sources shall be managed to prevent contamination of runoff and storm water collected onsite. The most common sources of pH-modifying materials are bulk cement, cement kiln dust (CKD), fly ash, new concrete washing and curing waters, waste streams generated from concrete grinding and sawing, exposed aggregate processes, and concrete pumping and mixer washout waters.

iii. Spill Prevention and Response Procedures

1. The primary objective in responding to a spill is to quickly contain the material(s) and prevent or minimize their migration into storm water runoff and conveyance systems. If the release has impacted onsite storm water, it is critical to contain the released materials onsite and prevent their release into receiving waters.
2. Spill Response Procedures:
  - a. Notify site superintendent immediately when a spill, or the threat of a spill, is observed. The superintendent shall assess the situation and determine the appropriate response.
  - b. If spills represent an imminent threat of escaping onsite facilities and entering the receiving waters, site personnel shall respond immediately to contain the release and notify the superintendent after the situation has stabilized.
  - c. The site superintendent, or his/her designee, shall be responsible for completing a spill reporting form and for reporting the spill to the appropriate agency.
  - d. Spill response equipment shall be inspected and maintained as necessary to replace any materials used in spill response activities.
3. Spill kits shall be on-hand at all fueling sites. Spill kit location(s) shall be reported to the SWMP administrator.
4. Absorbent materials shall be on-hand at all fueling areas for use in containing inadvertent spills. Containers shall be on-hand at all fueling sites for disposal of used absorbents.
5. Recommended components of spill kits include the following:
  - a. Oil absorbent pads (one bale)
  - b. Oil absorbent booms (40 feet)
  - c. 55-gallon drums (2)
  - d. 9-mil plastic bags (10)
  - e. Personal protective equipment including gloves and goggles

6. Concrete wash water: unless confined in a pre-defined, bermed containment area, the cleaning of concrete truck delivery chutes is prohibited at the job site.
7. Notification procedures:
  - a. In the event of an accident or spill, the SWMP administrator shall be notified.
  - b. Depending on the nature of the spill material involved, the Colorado Department of Public Health and Environment (24-hour spill reporting line: 887-518-5608), downstream water users, or other agencies may also need to be notified.
  - c. Any spill of oil which 1) violates water quality standards, 2) produces a “sheen” on a surface water, or 3) causes a sludge or emulsion, or any hazardous substance release, or hazardous waste release which exceeds the reportable quantity, must be reported immediately by telephone to the National Response Center Hotline at (800) 424-8802.

## **5. Final Stabilization and Long-Term Stormwater Management**

- a. Permanent seeding will be provided to achieve long-term stabilization of the site.
- b. Seed Mix: Sand dropseed, or approved equal.
- c. Seeding Application Rate: Drill seed 0.25” to 0.5” into the soil. In small areas not accessible to a drill, hand broadcast at double the rate and rake 0.25” to 0.5” into the soil. Apply seed at the following rates:
  - i. Dryland: 20-25 lbs/acre
  - ii. Irrigated: 40 lbs/acre
- d. Soil stabilization Practices:
  - i. Mulching Application: Apply 1-1/2 tons of certified weed free hay per acre mechanically crimped into the soil in combination with an organic mulch tackifier. On slopes and ditches requiring a blanket, the blanket shall be placed in lieu of much and mulch tackifier.
- e. Soil Conditioning and Fertilization Requirements:
  - i. Soil conditioner, organic amendment shall be applied to all seeded areas at 3 CY / 1000 SF.
  - ii. Fertilizer shall consist of 90% fungal biomass (mycelium) and 10% potassium-magnesia with a grade of 6-1-3 or approved equal. Fertilizer shall be applied as recommended by seed supplier.
- f. Final stabilization is reached when all soil-disturbing activities at the site have been completed, and uniform vegetative cover has been established with an individual plant density of at least 70 percent of pre-disturbance levels, or equivalent permanent, physical erosion reduction methods have been employed.
  - i. The overall project does not solely rely on another entity or control measures for final stabilization or permanent water quality or detention.
- g. Final Stabilization and Long-term Stormwater Quality:
  - i. After final stabilization occurs, Stormwater Quality of the site will be maintained via the use of 2 detention ponds/water quality ponds, all flows

on site will be routed to these ponds and treated.

1. Mowing and Trimming shall occur on a regular basis in the ponds and at their spillways.
- ii. Onsite flows will also be treated via grass swales that route flows present to the detention ponds.

## **6. Inspection and Maintenance**

### **a. Inspection Schedules:**

- i. The contractor shall inspect BMPs once every 14 days at a minimum, and immediately (within 24 hours) after any precipitation or snowmelt event that causes surface erosion (i.e. that results in storm water running across the ground), to ensure that BMPs are maintained in effective operating condition.
- ii. 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.

### **b. Inspection Procedures:**

#### **i. Site Inspection / Observation Items:**

1. Construction site perimeter and discharge points
2. All disturbed areas
3. Areas used for material / waste storage that are exposed to precipitation
4. Other areas having a significant potential for storm water pollution, such as demolition areas or concrete washout areas, or locations where vehicles enter or leave the site
5. Erosion and sediment control measures identified in the SWMP
6. Any other structural BMPs that may require maintenance, such as secondary containment around fuel tanks, or the conditions of spill response kits.

#### **ii. Inspection Requirements:**

1. Determine if there is any evidence of, or potential for, pollutants entering the receiving waters.
2. Review BMPs to determine if they still meet design and operational criteria in the SWMP, and if they continue to adequately control pollutants at the site.
3. Upgrade and/or revise any BMPs not operating in accordance with the SWMP and update the SWMP to reflect any revisions.
4. The SWMP should be viewed as a “living document” that is continuously being reviewed and modified as a part of the overall process of evaluating and managing storm water quality issues at the site.

5. The QSM will be sufficiently qualified for the required duties per the ECM Appendix I.5.2.A.
6. The Qualified Storm water Manager shall amend the SWMP when there is a change in design, construction, operation or maintenance of the site which would require the implementation of new or revised BMPs or if the SWMP proves to be ineffective in achieving the general objectives of controlling pollutants in storm water discharges associated with construction activity or when BMPs are no longer necessary and are removed.

iii. BMP Maintenance / Replacement and Failed BMPs:

1. The contractor shall remove sediment that has been collected by perimeter controls, such as silt fence and inlet protection, on a regular basis to prevent failure of BMPs, and remove potential of sediment from being discharged from the site in the event of BMP failure.
2. Removed sediment must be moved to an appropriate location where it will not become an additional pollutant source, and should never be placed in ditches or streams.
3. The contractor shall update the GEC as required with any new BMPs added during the construction period.
4. The SWMP should be viewed as a “living document” that is continuously being reviewed and modified as a part of the overall process of evaluating and managing storm water quality issues at the site.
5. The Qualified Storm water Manager shall amend the SWMP when there is a change in design, construction, operation or maintenance of the site which would require the implementation of new or revised BMPs or if the SWMP proves to be ineffective in achieving the general objectives of controlling pollutants in storm water discharges associated with construction activity or when BMPs are no longer necessary and are removed.
6. The contractor shall address BMPs that have failed or have the potential to fail without maintenance or modifications, as soon as possible, immediately in most cases, to prevent discharge of pollutants.

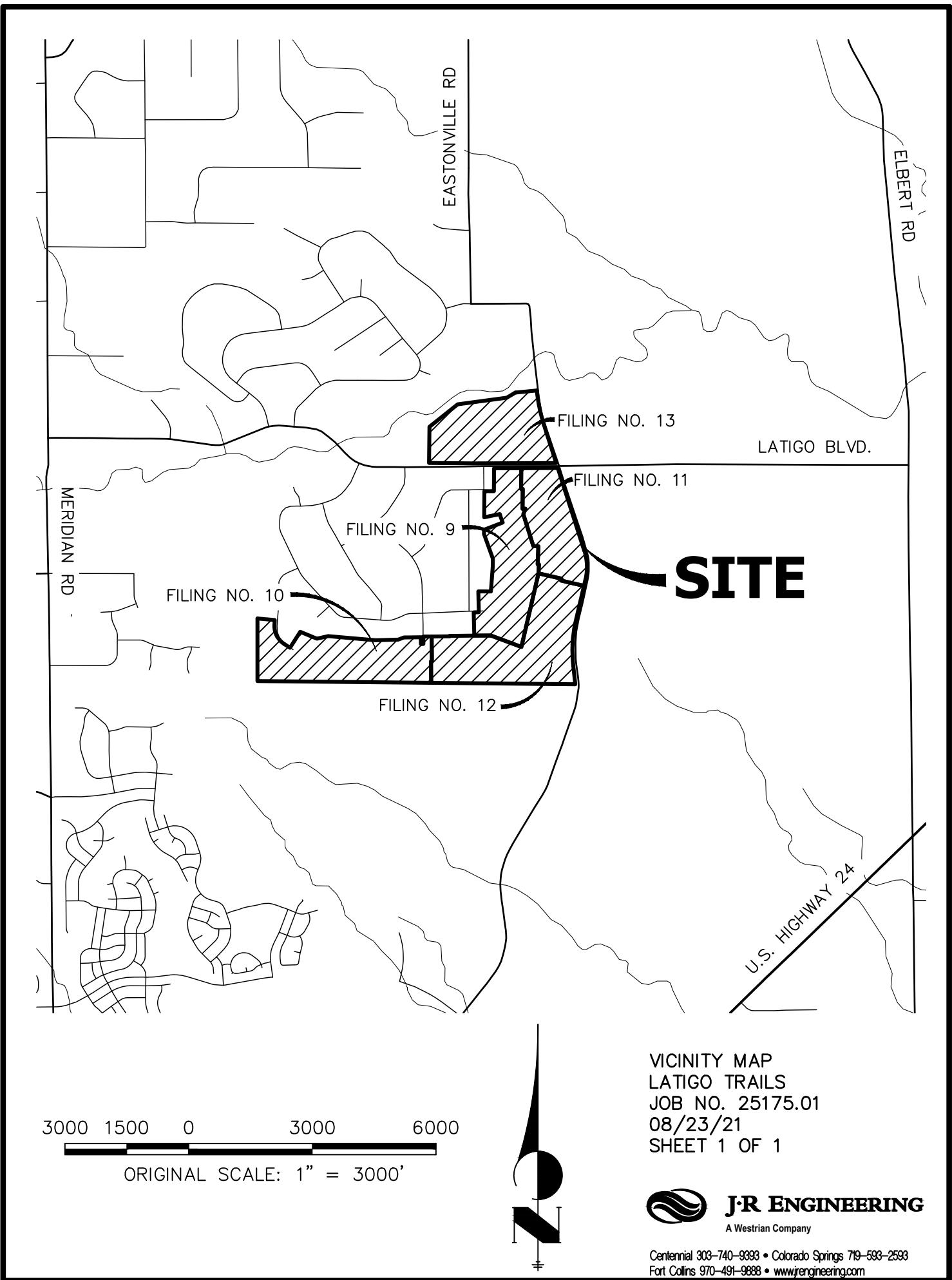
iv. Record Keeping and Documenting Inspections:

1. The contractor shall maintain records of all inspection reports, including signed inspection logs, at the project site.
2. The permittee shall document inspection results and maintain a record of the results for a period of 3 years following expiration or inactivation of permit coverage.
3. Site inspection records shall include the following:
  - a. Inspection date
  - b. Name and title of personnel making the inspection
  - c. Location of discharges of sediment or other pollutants from the site

- d. Location(s) of BMPs in need of maintenance
- e. Location(s) of BMPs that failed to operate as designed or proved inadequate for a particular location
- f. Location(s) where additional BMPs are needed that were not in place at the time of inspection
- g. Deviations from the minimum inspection schedule

## APPENDIX A – VICINITY MAP

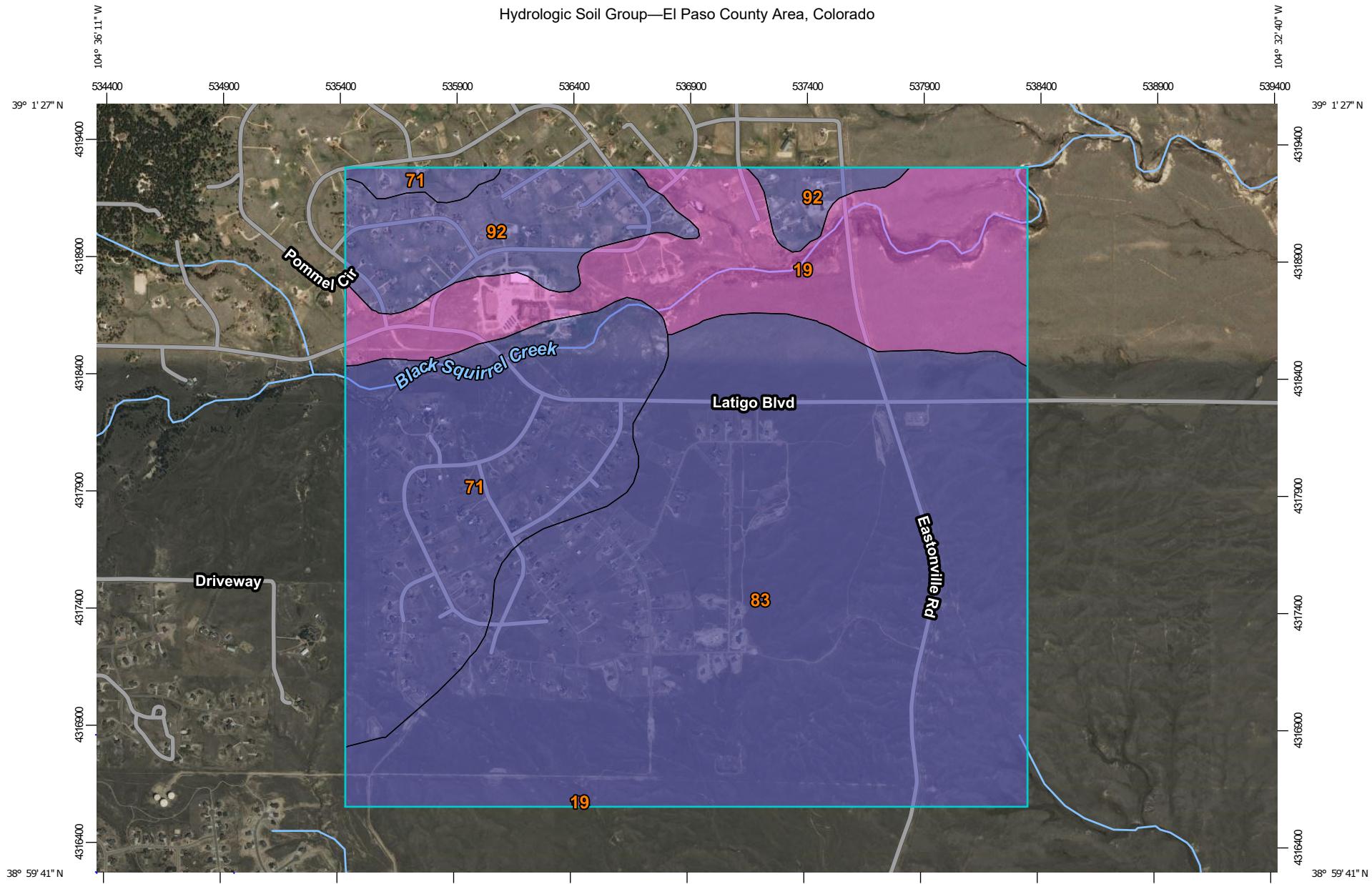
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## APPENDIX B – SOILS MAP

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## Hydrologic Soil Group—El Paso County Area, Colorado



Map Scale: 1:23,100 if printed on A landscape (11" x 8.5") sheet.



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

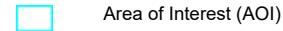


Natural Resources  
Conservation Service

Web Soil Survey  
National Cooperative Soil Survey

## MAP LEGEND

### 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

	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 18, Jun 5, 2020

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

Date(s) aerial images were photographed: Sep 8, 2018—May 26, 2019

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
19	Columbine gravelly sandy loam, 0 to 3 percent slopes	A	330.2	16.7%
71	Pring coarse sandy loam, 3 to 8 percent slopes	B	393.4	19.9%
83	Stapleton sandy loam, 3 to 8 percent slopes	B	1,081.8	54.7%
92	Tomah-Crowfoot loamy sands, 3 to 8 percent slopes	B	172.5	8.7%
<b>Totals for Area of Interest</b>			<b>1,977.9</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 – GEC PLANS AND DETAILS**

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# LATIGO PRESERVE FILING 10

A PARCEL OF LAND LOCATED IN THE SOUTH QUARTER OF SECTION S17

TOWNSHIP 12 SOUTH, RANGE 64 WEST OF THE 6TH P.M.,

EL PASO COUNTY, STATE OF COLORADO

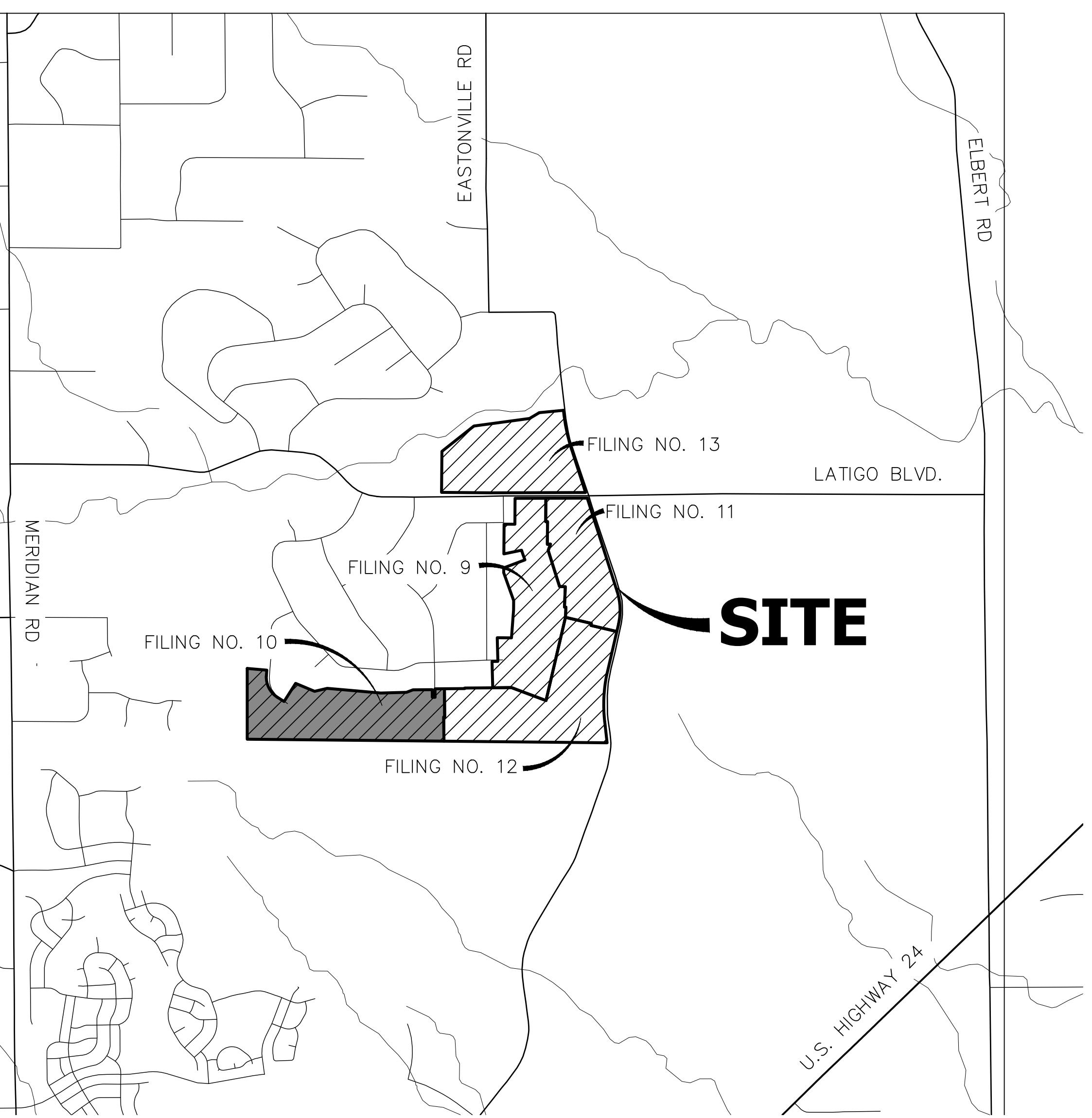
## GRADING AND EROSION CONTROL

### STANDARD NOTES FOR EL PASO COUNTY CONSTRUCTION PLANS

- 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 CRITERIA MANUAL.
- 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 (UNCO).
- CONTRACTOR SHALL KEEP A COPY OF THESE APPROVED PLANS, THE GRADING AND EROSION CONTROL PLAN, THE STORMWATER MANAGEMENT PLAN (SWMP), THE SOIL AND GEOTECHNICAL REPORT, AND THE APPROPRIATE DESIGN AND CONSTRUCTION STANDARDS AND SPECIFICATIONS AT THE JOB SITE AT ALL TIMES, INCLUDING THE FOLLOWING:
  1. EL PASO COUNTY ENGINEERING CRITERIA MANUAL (ECM)
  2. CITY OF COLORADO SPRINGS / EL PASO COUNTY DRAINAGE CRITERIA MANUAL, VOLUMES 1 AND 2
  3. COLORADO DEPARTMENT OF TRANSPORTATION (CDOT) STANDARD SPECIFICATIONS AND BRIDGE CONSTRUCTION
  4. CDOT M&S STANDARDS
- NOTWITHSTANDING ANYTHING DEPICTED IN THESE PLANS IN WORDS OR GRAPHIC REPRESENTATION, ALL DESIGN AND CONSTRUCTION RELATED TO ROADS, STORM DRAINAGE AND EROSION CONTROL SHALL CONFORM TO THE STANDARDS AND REQUIREMENTS OF THE MOST RECENT VERSIONS OF THE RELEVANT ADOPTED EL PASO COUNTY STANDARDS, INCLUDING THE LAND DEVELOPMENT CODE, THE ENGINEERING CRITERIA MANUAL, THE DRAINAGE CRITERIA MANUAL, AND THE DRAINAGE CRITERIA MANUAL VOLUME 2. ANY DEVIATIONS FROM REGULATIONS AND STANDARDS MUST BE REQUESTED, AND APPROVED, IN WRITING. ANY MODIFICATIONS NECESSARY TO MEET CRITERIA AFTER-THE-FACT WILL BE ENTIRELY THE DEVELOPER'S RESPONSIBILITY TO RECTIFY.
- 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.
- CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT INSPECTIONS, PRIOR TO STARTING CONSTRUCTION.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO UNDERSTAND THE REQUIREMENTS OF ALL JURISDICTIONAL AGENCIES TO OBTAIN ALL REQUIRED PERMITS, INCLUDING BUT NOT LIMITED TO EL PASO COUNTY EROSION AND STORMWATER QUALITY CONTROL PERMIT (ESQCP), REGIONAL BUILDING FLOODPLAIN DEVELOPMENT PERMIT, U.S. ARMY CORPS OF ENGINEERS-ISSUED 401 AND/OR 404 PERMITS, AND COUNTY AND STATE FUGITIVE DUST PERMITS.
- CONTRACTOR SHALL NOT DEViate FROM THE PLANS WITHOUT FIRST OBTAINING WRITTEN APPROVAL FROM THE DESIGN ENGINEER AND PCP. CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER IMMEDIATELY UPON DISCOVERY OF ANY ERRORS OR INCONSISTENCIES.
- CONTRACTOR SHALL COORDINATE GEOTECHNICAL TESTING PER ECM STANDARDS. PAVEMENT DESIGN SHALL BE APPROVED BY EL PASO COUNTY PCP PRIOR TO PLACEMENT OF CURB AND GUTTER AND PAVEMENT.
- ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THE SITE AT APPROVED CONSTRUCTION ACCESS POINTS.
- SIGHT VISIBILITY TRIANGLES ARE IDENTIFIED IN THE PLANS SHALL BE PROVIDED AT ALL INTERSECTIONS. OBSTRUCTIONS GREATER THAN 18 INCHES ABOVE FLOWLINE ARE NOT ALLOWED IN SIGHT TRIANGLES.
- SIGNING AND STRIPING SHALL COMPLY WITH EL PASO COUNTY DEPARTMENT OF PUBLIC WORKS AND MUTCD CRITERIA.
- CONTRACTOR SHALL OBTAIN ANY PERMITS REQUIRED BY EL PASO COUNTY DEPARTMENT OF PUBLIC WORKS, INCLUDING WORK WITHIN THE RIGHT-OF-WAY AND SPECIAL TRANSPORT PERMITS.
- THE LIMITS OF CONSTRUCTION SHALL REMAIN WITHIN THE PROPERTY LINE UNLESS OTHERWISE NOTED. THE OWNER/DEVELOPER SHALL OBTAIN WRITTEN PERMISSION AND EASEMENTS, WHERE REQUIRED, FROM ADJOINING PROPERTY OWNER(S) PRIOR TO ANY OFF-SITE DISTURBANCE, GRADING, OR CONSTRUCTION.

### ABBREVIATIONS

AC	ACRE	FL	FLOWLINE	RT	RIGHT
AD	ALGEBRAIC DIFFERENCE	FIL	FILING	S	SOUTH
AH	AHEAD	FO	FIBER OPTIC CABLE	STE	STEEL
ARCH	ARCHITECT	GE	GRADE BREAK	SAN	SANITARY SEWER
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS	GIS	GAS EASEMENT	SF	SQUARE FOOT
ASSY	ASSEMBLY	SYSTEM	GIS INFORMATION	ST	STREET
AVE	AVENUE	GL	GLASS LINE	STA	STATION
BB	BOX BASE	GPS	GLOBAL POSITIONING SYSTEM	STM	STORM SEWER
BK	BLOCK	GYV	GYM VALVE	SY	SQUARE YARD
BNDY	BOUNDARY	HBP	HOT BITUMINOUS PAVEMENT	TH-1IN	THICKNESS 1 INCH
BOP	BOTTOM OF PIPE	HC	HANDICAP	TBC	THRUST BLOCK
BOV	BLOW OFF VALVE	HDC	HIGH DEFLECTION COUPLING	TBW	TOP BACK OF CURB
BFV	BUTTERFLY VALVE	HDP	HIGH DENSITY POLYETHYLENE	TBC	TOP BACK OF WALK
BLVD	BOULEVARD	HGL	HYDRAULIC GRADE LINE	TEL	TELEPHONE
BW	BOTTOM OF WALL	HMA	HOT MIX ASPHALT	TN	TON
C&G	CURB & GUTTER	HOA	HOME OWNERS ASSOCIATION	TOA	TOP OF ASPHALT
CATV	CABLE TELEVISION	HP	HIGH POINT	TOB	TOP OF BOX
CB	CATCH BASIN	HOUR	HOUR	TOC	TOP OF CURB OR CONCRETE
CBC	CONCRETE BOX CULVERT	I	INLET	TOF	TOP OF FOUNDATION
CDOT	COLORADO DEPARTMENT OF TRANSPORTATION	IE	IRRIGATION EASEMENT	TOP	TOP OF PIPE
CDS	CURE DE SAC	INT	INTERSECTION	TW	TOP OF WALL
CF	CUBIC FOOT	INV	INVENTORY	TYP	Typical
CFS	CUBIC FEET PER SECOND	IRR	IRRIGATION	UDFCD	URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
CIP	COMPLETE IN PLACE	KB	KICK (THRUST) BLOCK	UE	UTILITY EASEMENT
CL	CENTER LINE	LB	POUND	U&DE	UTILITY & DRAINAGE EASEMENT
CLMR	CONDITIONAL LETTER OF MAP REVISION	LE	LANDSCAPE EASEMENT	UE	UNDERGROUND ELECTRIC
CLR	CLEAR	LF	LINEAR FOOT	VCP	VITRIFIED CLAY PIPE
CMP	CORRUGATED METAL PIPE	LN	LANE	VP	VERTICAL POINT OF CURVATURE
CO	CLEAN OUT	LP	LOW POINT	VPC	VERTICAL POINT OF
COCS	CITY OF COLORADO SPRINGS	LS	LUMP SUM	VPT	VERTICAL POINT OF TANGENCY
CONC	CONCRETE	LTC	LT	VTC	VEHICLE TRACKING CONTROL
CR	CIRCLE	MAX	MAXIMUM	W	WEST
CSP	CORRUGATED STEEL PIPE	M/D	MOISTURE DENSITY	WL	WATER LINE
CSU	COLORADO SPRINGS UTILITIES	MDDP	MASTER DEVELOPMENT	WM	WATER MAIN
CT	COURT	DR	DRAINAGE PLAN	WRD	WATER RESOURCES
CTR	CONCRETE THRUST REDUCER	MH	MANHOLE	DEPARTMENT	
BLOCK	BLOCK	MIN	MINIMUM	WS	WATER SURFACE
CY	CUBIC YARD	MS	MOUNTABLE SIDEWALK	WSE	WATER SURFACE ELEVATION
DBPS	DRAINAGE BASIN PLANNING STUDY	N	NORTH	WTR	WATER
DE	DRAINAGE EASEMENT	NRCP	NON-REINFORCED CONCRETE PIPE	YR	YEAR
DIA	DIAMETER	OOP	OFFICIAL DEVELOPMENT PLAN		
DIP	DUCTILE IRON PIPE	OHE	OVERHEAD ELECTRIC		
DR	DRIVE	OHU	OVERHEAD UTILITY		
DRC	DESIGN REVIEW COMMITTEE	PCC	POINT OF CURVATURE		
DU	DWELLING UNITS	PC	POINT OF COMPOUND		
DY	DAY	PCR	POINT OF CURB RETURN		
E	EAST	PPD	PRELIMINARY DEVELOPMENT PLAN		
EA	EACH	PE	PROFESSIONAL ENGINEER		
EGL	ENERGY GRADE LINE	PI	POINT OF INTERSECTION		
EL	ELEVATION	PKwy	PARKWAY		
ELEC	ELECTRIC	PL	PROPERTY LINE		
EPA	EMUL PT ASPHALT	PR	PROPOSED		
EPO	EL PASO COUNTY	PRC	POINT OF REVERSE CURVATURE		
ERCP	ELLIPTICAL RCP	PT	POINT OF TANGENCY		
ESMT	EASEMENT	PV	PLUG VALVE		
EST	ESTIMATE	PVC	POLYVINYL CHLORIDE		
EX	EXISTING	R	RADIUS		
FDP	FINAL DEVELOPMENT PLAN	RBCB	REINFORCED CONCRETE BOX CULVERT		
FDR	FINAL DRAINAGE REPORT	RCP	REINFORCED CONCRETE PIPE		
FES	FLARED END SECTION	RD	ROAD		
FF	FINISHED FLOOR ELEVATION	ROW	RIGHT OF WAY		
FG	FINISHED GRADE				
FH	FIRE HYDRANT				



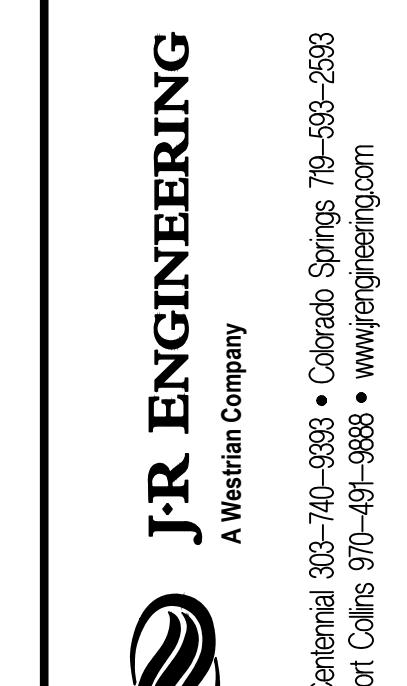
### SHEET INDEX

- 1 : COVER SHEET
- 2 : LEGEND
- 3 : LOCAL SECTIONS
- 4-6 : GRADING AND EROSION CONTROL PLAN
- 7-11: GRADING AND EROSION CONTROL DETAILS

### CONTACTS:

OWNER/DEVELOPER:	BRJM, LLC ATTN: BOB IRWIN 101 N CASCADE, SUITE 200 COLORADO SPRINGS, CO 80903 P~719-475-7474
ENGINEER/SURVEYOR:	JR ENGINEERING, LLC ATTN: MIKE A. BRAMLETT 5475 TECH CENTER DRIVE, SUITE 235 COLORADO SPRINGS, CO 80919 P~303-267-6240
FIRE PROTECTION DISTRICT:	FALCON FIRE FPD 7030 N MERIDIAN RD FALCON, CO 80831 P~719-494-4050
DISTRICT:	MERIDIAN SERVICE METROPOLITAN DISTRICT 11886 STAPLETON DR PEYTON, CO 80831 P~719-495-6567
EL PASO COUNTY:	PLANNING AND COUNTY DEVELOPMENT 2880 INTERNATIONAL CIRCLE, SUITE 110 COLORADO SPRINGS, COLORADO 80910 P ~ (719) 520-6819
DEPARTMENT OF PUBLIC WORKS	DEPARTMENT OF PUBLIC WORKS 3257 AKERS DR COLORADO SPRINGS, CO 80910 P ~ (719) 529-6460
ELECTRIC COMPANY:	MOUNTAIN VIEW ELECTRIC ASSOC., INC. 11140 EAST WOODMEN ROAD FALCON, COLORADO 80831 (719) 495-2283

PREPARED FOR	BRJM, LLC 101 N. CASCADE, SUITE 200 COLORADO SPRINGS, CO 80903 P~(719)-475-7474
BY	DATE



### BENCHMARK

NGS MONUMENT T 294 BEING MONUMENTED BY A 3-1/4" BRASS DISC SET IN A 4"X4" BOULDER, LOCATED 1.8 MILES EAST ALONG HIGBY ROAD FROM ITS INTERSECTION WITH JACKSON CREEK PARKWAY, 40 FEET SOUTH OF THE CENTERLINE OF THE ROAD, 6 FEET SOUTH OF A FENCE, AND 6.2 FEET SOUTH OF A WITNESS POST. SAID MONUMENT HAVING A PUBLISHED ELEVATION OF 7247.10 FEET, NAVD88.

### OWNER/DEVELOPER STATEMENT

I, THE OWNER/DEVELOPER HAVE READ AND WILL COMPLY WITH ALL OF THE REQUIREMENTS SPECIFIED IN THESE DETAILED PLANS AND SPECIFICATIONS.

BOB IRWIN \_\_\_\_\_ DATE

BRJM, LLC  
101 N. CASCADE  
COLORADO SPRINGS, CO 80903

### EL PASO COUNTY STATEMENT

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

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

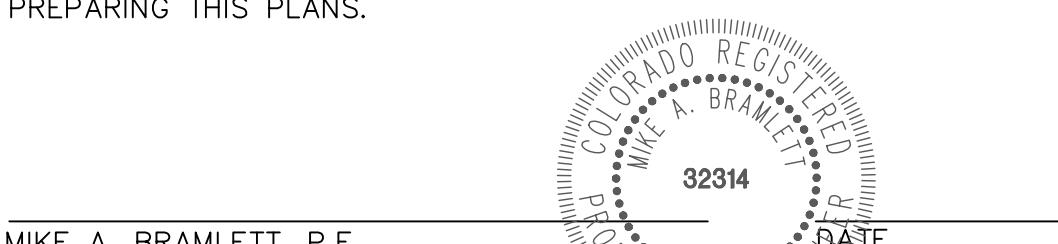
IN ACCORDANCE WITH ECM SECTION 1.12, THESE CONSTRUCTION DOCUMENTS WILL BE VALID FOR CONSTRUCTION FOR A PERIOD OF 2 YEARS FROM THE DATE SIGNED BY THE EL PASO COUNTY ENGINEER. IF CONSTRUCTION HAS NOT STARTED WITHIN THOSE 2 YEARS, THE PLANS WILL NEED TO BE RESUBMITTED FOR APPROVAL INCLUDING PAYMENT OF REVIEW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

JENNIFER IRVINE, P.E. \_\_\_\_\_ DATE

COUNTY ENGINEER/ECM ADMINISTRATOR

### 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 NEGIGENT ACTS, ERRORS OR OMISSIONS ON MY PART IN PREPARING THIS PLANS.



SHEET 1 OF 11	JOB NO. 25175.01
---------------	------------------

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

### LAYER LINETYPE LEGEND

	EXISTING	PROPOSED
PHASE LINE	—	—
MATCH LINE	—	—
SECTION LINE	—	—
BOUNDARY LINE	—	—
PROPERTY LINE	—	—
EASEMENT LINE	—	—
RIGHT OF WAY	—	—
R.O.W. A LINE	—	—
CENTERLINE	—	—
CITY LIMITS	====	====
WIRE FENCE	—x—	—x—
CHAIN LINK FENCE	—o—	—o—
WOOD FENCE	—◊—	—◊—
MASONRY FENCE	—□—	—□—
GUARDRAIL	—□—	—□—
CONC. BARRIER	—□—	—□—
CABLE TV	—TV—	—TV—
ELECTRIC	—E—	—E—
FIBER OPTIC	—FO—	—FO—
GAS MAIN	—G—	—G—
IRRIGATION MAIN	—IRR—	—IRR—
OIL/PETRO. MAIN	—O—	—O—
OVERHEAD UTILITY	—OHU—	—OHU—
SANITARY SEWER	—S—	—S—
STORM DRAIN	====	====
TELEPHONE	—T—	—T—
WATER MAIN	—W—	—W—
RAW WATER LINE	—RWL—	—RWL—
SWALE/WATERWAY FLOWLINE	~~~~~	~~~~~
DIVERSION DITCH	~~~~~	~~~~~
DIVERSION CHANNEL	=====	=====
MAJOR DRAINAGE BASIN	=====	=====
MINOR DRAINAGE BASIN	=====	=====
TOP OF SLOPE	V V	V V
TOE OF SLOPE	V V	V V
EDGE OF WATER	~~~~~	~~~~~
INDEX CONTOUR	6100	6100
INTERMEDIATE CONTOUR	6100	6100
DEPRESSION CONT. (INDEX)	T T	T T
DEPRESSION CONT. (INTER)	T T	T T
TOP OF CUTS	—	—
TOE OF FILLS	—	—
CUT AND FILL LINE	—SF—	—SF—
SILT FENCE	—SF—	—SF—
100 YEAR FLOODPLAIN	—100YR—	—100YR—
500 YEAR FLOODPLAIN	—500YR—	—500YR—
FLOODWAY	—FLDWY—	—FLDWY—
BASE FLOOD ELEVATION	~~~~~	~~~~~
EDGE OF WETLANDS	~~~~~	~~~~~
STONE WALL	~~~~~	~~~~~

### UTILITIES LEGEND

	EXISTING	PROPOSED
STORM SEWER		
MANHOLE	◎	●
STORM INLET	□	■
AREA INLET – SQUARE	○	
AREA INLET – ROUND	○	
FLARED END SECTION	△	▲
RIPRAP	[REINFORCED CONCRETE]	[REINFORCED CONCRETE]
SANITARY SEWER		
LINE MARKER	Mkr Son°	
SERVICE MARKER	▲	
CLEAN-OUT	○	●
MANHOLE W/ DIRECTIONAL FLOW ARROW	◎△	●●
WATER LINE		
LINE MARKER	Mkr W°	
SERVICE MARKER	▲	
FIRE HYDRANT	○	
FIRE CONNECTION	●	
MANHOLE	◎	●
BEND	△	▲
BLOW-OFF VALVE	△	●
WELL	○ WELL	● WELL
METER	◎	●
VALVE	△	+
REDUCER	+	+
THRUST BLOCK	+	+
CROSS	+	+
PLUG W/ THRUST BLOCK	+	+
TEE	+	+
REVERSE ANCHOR	—	—
ANODE	○	○
AIR & VACUUM VALVE ASSEMBLY	○	○
TRANSMISSION BLOW-OFF ASSEMBLY	○	○
GAS LINE		
MARKER	Mkr G°	
SERVICE MARKER	▲	
METER	◎	●
VALVE	△	+
PLUG	△	+
TEE	+	+
DRY UTILITIES		
CABLE TV MARKER	Mkr TV°	
CABLE TELEVISION PEDESTAL	■	
ELECTRIC MARKER	Mkr E°	
ELECTRIC SERVICE MARKER	▲	
ELECTRICAL PEDESTAL	■	
ELECTRICAL METER	◎	
ELECTRICAL MANHOLE	○	
FIBER-OPTIC MARKER	Mkr FO°	
IRRIGATION PEDESTAL	■	
TELEPHONE MARKER	Mkr T°	
TELEPHONE PEDESTAL	■	
TELEPHONE MANHOLE	○	
UTILITY POLE	○	
GUY ANCHOR	○	
GUY POLE	○	
MISC. UTILITIES		
VENT PIPE	VP VP	● VP
TEST HOLE DESIGNATOR	TH# FIRM&FID	

### STORM WATER MANAGEMENT

KEY	SYMBOL
CHECK DAM	CD
CONSTRUCTION ROAD STABILIZATION	CRS
CURB SOCK INLET PROTECTION	CS
CONCRETE WASHOUT AREA	CWA
DIVERSION DITCH AND DIKE, TEMPORARY	DD
DIVERSION CHANNEL, TEMPORARY	DV
DEWATERING	DW
EROSION CONTROL BLANKET	ECB
INLET FILTER	IF
INLET PROTECTION	IP
MULCHING	MU
OUTLET PROTECTION	OP
PAVED FLUME	PF
PERMANENT SEEDING	PS
REINFORCED CONCRETE DAM	RCD
ROUGH CUT STREET CONTROL	RCS
SEDIMENT BASIN	SB
SEDIMENT CONTROL LOG	SCL
SILT FENCE	SF
SURFACE ROUGHENING	SR
STABILIZED STAGING AREA	SSA
SEDIMENT TRAP	ST
STRAW BALE BARRIER	STB
TERRACING	TER
TEMPORARY SLOPE DRAIN	TSD
VEHICLE TRACKING CONTROL	VTC
VEHICLE TRACKING CONTROL WITH WASH RACK	WR

### GRADING AND EROSION CONTROL STANDARD NOTES

- STORMWATER DISCHARGES FROM CONSTRUCTION SITES SHALL NOT CAUSE OR THREATEN TO CAUSE POLLUTION, CONTAMINATION, OR DEGRADATION OF STATEWATERS. ALL WORK AND EARTH DISTURBANCE SHALL BE DONE IN A MANNER THAT MINIMIZES POLLUTION OF ANY ON-SITE OR OFF-SITE WATERS, INCLUDING WETLANDS.
- NOTWITHSTANDING ANYTHING DEPICTED IN THESE PLANS IN WORDS OR GRAPHIC REPRESENTATION, ALL DESIGN AND CONSTRUCTION RELATED TO ROADS, STORM DRAINAGE AND EROSION CONTROL SHALL CONFORM TO THE STANDARDS AND REQUIREMENTS OF THE MOST RECENT EDITION OF THE REGULATORY APPROVED EL PASO COUNTY STANDARDS, INCLUDING THE LAND DEVELOPMENT CODE, THE ENGINEERING CRITERIA MANUAL, THE DRAINAGE CRITERIA MANUAL, AND THE DRAINAGE CRITERIA MANUAL VOLUME 2. ANY DEVIATIONS FROM REGULATIONS AND STANDARDS MUST BE REQUESTED, AND APPROVED, IN WRITING.
- A SEPARATE STORMWATER MANAGEMENT PLAN (SMWP) FOR THIS PROJECT SHALL BE COMPLETED AND AN EROSION AND STORMWATER QUALITY CONTROL PERMIT (ESQCP) ISSUED PRIOR TO COMMENCING CONSTRUCTION. MANAGEMENT OF THE SWMP DURING CONSTRUCTION IS THE RESPONSIBILITY OF THE DESIGNATED QUALIFIED STORMWATER MANAGER OR CERTIFIED EROSION CONTROL INSPECTOR. THE SWMP SHALL BE LOCATED ON SITE AT ALL TIMES DURING CONSTRUCTION AND SHALL BE KEPT UP TO DATE WITH WORK PROGRESS AND CHANGES IN THE FIELD.
- ONCE THE ESQCP IS APPROVED AND A NOTICE TO PROCEED HAS BEEN ISSUED, THE CONTRACTOR MAY INSTALL THE INITIAL STAGE EROSION AND SEDIMENT CONTROL MEASURES AS INDICATED ON THE APPROVED GEC. A PRECONSTRUCTION MEETING BETWEEN THE CONTRACTOR, ENGINEER, AND EL PASO COUNTY WILL BE HELD PRIOR TO ANY CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE APPLICANT TO COORDINATE THE MEETING TIME AND PLACE WITH COUNTY STAFF.
- CONTROL MEASURES MUST BE INSTALLED PRIOR TO COMMENCEMENT OF ACTIVITIES THAT COULD CONTRIBUTE POLLUTANTS TO STORMWATER. CONTROL MEASURES FOR ALL SLOPES, CHANNELS, DITCHES, AND DISTURBED LAND AREAS SHALL BE INSTALLED IMMEDIATELY UPON COMPLETION OF THE DISTURBANCE.
- ALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES SHALL BE MAINTAINED AND REMAIN IN EFFECTIVE OPERATING CONDITION UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED AND FINAL STABILIZATION IS ESTABLISHED. ALL PERSONS ENGAGED IN LAND DISTURBANCE ACTIVITIES SHALL ASSESS THE ADEQUACY OF CONTROL MEASURES AT THE SITE AND IDENTIFY IF CHANGES TO THOSE CONTROL MEASURES ARE NEEDED TO ENSURE THE CONTINUED EFFECTIVE PERFORMANCE OF THE CONTROL MEASURES. ALL CHANGES TO TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES MUST BE INCORPORATED INTO THE STORMWATER MANAGEMENT PLAN.
- 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.
- FINAL STABILIZATION MUST BE IMPLEMENTED AT ALL APPLICABLE CONSTRUCTION SITES. FINAL STABILIZATION IS ACHIEVED WHEN ALL GROUND DISTURBING ACTIVITIES ARE COMPLETE AND ALL DISTURBED AREAS EITHER HAVE A UNIFORM VEGETATIVE COVER WITH INDIVIDUAL PLANT DENSITY OF 70 PERCENT OF PRE-DISTURBANCE LEVELS ESTABLISHED OR EQUIVALENT PERMANENT ALTERNATIVE STABILIZATION METHOD IS IMPLEMENTED. ALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES SHALL BE REMOVED UPON FINAL STABILIZATION AND BEFORE PERMIT CLOSURE.
- ALL PERMANENT STORMWATER MANAGEMENT FACILITIES SHALL BE INSTALLED AS DESIGNED IN THE APPROVED PLANS. ANY PROPOSED CHANGES THAT AFFECT THE DESIGN OR FUNCTION OF PERMANENT STORMWATER MANAGEMENT STRUCTURES MUST BE APPROVED BY THE ECM ADMINISTRATOR PRIOR TO IMPLEMENTATION.
- EARTH DISTURBANCES SHALL BE CONDUCTED IN SUCH A MANNER SO AS TO EFFECTIVELY MINIMIZE ACCELERATED SOIL EROSION AND RESULTING SEDIMENTATION. ALL DISTURBANCES SHALL BE DESIGNED, CONSTRUCTED, AND COMPLETED SO THAT THE EXPOSED AREA OF ANY DISTURBED LAND SHALL BE LIMITED TO THE SHORTEST PRACTICAL PERIOD OF TIME. PRE-EXISTING VEGETATION SHALL BE PROTECTED AND MAINTAINED WITHIN 50 HORIZONTAL FEET OF A WATERS OF THE STATE UNLESS SHOWN TO BE INEFFECTIVE AND SPECIFICALLY REQUESTED AND APPROVED.
- COMPACTION OF SOIL MUST BE PREVENTED IN AREAS DESIGNATED FOR INFILTRATION CONTROL MEASURES OR WHERE FINAL STABILIZATION WILL BE ACHIEVED BY VEGETATIVE COVER. AREAS DESIGNATED FOR INFILTRATION CONTROL MEASURES SHALL ALSO BE PROTECTED FROM SEDIMENTATION DURING CONSTRUCTION UNTIL FINAL STABILIZATION IS ACHIEVED. IF COMPACTION PREVENTION IS NOT FEASIBLE DUE TO SITE CONSTRAINTS, ALL AREAS DESIGNATED FOR INFILTRATION AND VEGETATION CONTROL MEASURES MUST BE LOOSENED PRIOR TO INSTALLATION OF THE CONTROL MEASURE(S).
- ANY TEMPORARY OR PERMANENT FACILITY DESIGNED AND CONSTRUCTED FOR THE CONVEYANCE OF STORMWATER AROUND, THROUGH, OR FROM THE EARTH DISTURBANCE AREA SHALL BE A STABILIZED CONVEYANCE DESIGNED TO MINIMIZE EROSION AND THE DISCHARGE OF SEDIMENT OFF SITE.
- CONCRETE WASH WATER SHALL BE CONTAINED AND DISPOSED OF IN ACCORDANCE WITH THE SWMP. NO WASH WATER SHALL BE DISCHARGED TO OR ALLOWED TO ENTER STATEWATERS, INCLUDING ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR FACILITIES. CONCRETE WASHOUTS SHALL NOT BE LOCATED IN AN AREA WHERE SHALLOW GROUNDWATER MAY BE PRESENT, OR WITHIN 50 FEET OF A SURFACE WATER BODY, CREEK OR STREAM.
- DURING DEWATERING OPERATIONS OF UNCONTAMINATED GROUND WATER MAY BE DISCHARGED ON SITE, BUT SHALL NOT LEAVE THE SITE IN THE FORM OF SURFACE RUNOFF UNLESS AN APPROVED STATE DEWATERING PERMIT IS IN PLACE.
- EROSION CONTROL BLANKETING OR OTHER PROTECTIVE COVERING SHALL BE USED ON SLOPES STEEPER THAN 3:1.
- CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL WASTES FROM THE CONSTRUCTION SITE FOR DISPOSAL IN ACCORDANCE WITH LOCAL AND STATE REGULATORY REQUIREMENTS. NO CONSTRUCTION DEBRIS, TREE SLASH, BUILDING MATERIAL WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURIED, DUMPED, OR DISCHARGED AT THE SITE.
- WASTE MATERIALS SHALL NOT BE TEMPORARILY PLACED OR STORED IN THE STREET, ALLEY, OR OTHER PUBLIC WAY, UNLESS IN ACCORDANCE WITH AN APPROVED TRAFFIC CONTROL PLAN. CONTROL MEASURES MAY BE REQUIRED BY EL PASO COUNTY ENGINEERING IF DEEMED NECESSARY, BASED ON SPECIFIC CONDITIONS AND CIRCUMSTANCES.
- TRACKING OF SOILS AND CONSTRUCTION DEBRIS OFF-SITE SHALL BE MINIMIZED. MATERIALS TRACKED OFF-SITE SHALL BE CLEANED UP AND PROPERLY DISPOSED OF IMMEDIATELY.
- THE OWNER/DEVELOPER SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL CONSTRUCTION DEBRIS, DIRT, TRASH, ROCK, SEDIMENT, SOIL, AND SAND THAT MAY ACCUMULATE IN ROADS, STORM DRAINS AND OTHER DRAINAGE CONVEYANCE SYSTEMS AND STORMWATER APPURTENANCES AS A RESULT OF SITE DEVELOPMENT.
- THE QUANTITY OF MATERIALS STORED ON THE PROJECT SITE SHALL BE LIMITED, AS MUCH AS PRACTICAL, TO THAT QUANTITY REQUIRED TO PERFORM THE WORK IN AN ORDERLY SEQUENCE. ALL MATERIALS STORED ON-SITE SHALL BE STORED IN A NEAT, ORDERLY MANNER, IN THEIR ORIGINAL CONTAINERS, WITH ORIGINAL MANUFACTURER'S LABELS.
- NO CHEMICAL(S) HAVING THE POTENTIAL TO BE RELEASED IN STORMWATER ARE TO BE STORED OR USED ON SITE. UNLESS PERMISSION FOR THE USE OF SUCH CHEMICAL(S) IS GRANTED IN WRITING BY THE ECM ADMINISTRATOR, IN GRANTING APPROVAL FOR THE USE OF SUCH CHEMICAL(S), SPECIAL CONDITIONS AND MONITORING MAY BE REQUIRED.
- BULK STORAGE OF ALLOWED PETROLEUM PRODUCTS OR OTHER ALLOWED LIQUID CHEMICALS IN EXCESS OF 55 GALLONS SHALL REQUIRE APPROPRIATE SECONDARY CONTAINMENT PROTECTION TO CONTAIN ANY SPILLS ON SITE AND TO PREVENT ANY SPILLED MATERIALS FROM ENTERING STATEWATERS, ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR OTHER FACILITIES.
- NO PERSON SHALL CAUSE THE IMPEDIMENT OF STORMWATER FLOW IN THE CURB AND GUTTER OR DITCH EXCEPT WITH APPROVED SEDIMENT CONTROL MEASURES.
- OWNER/DEVELOPER AND THEIR AGENTS SHALL COMPLY WITH THE "COLORADO WATER QUALITY CONTROL ACT" (TITLE 25, ARTICLE 8, CRS), AND THE "CLEAN WATER ACT" (33 USC 1344). IN ADDITION TO THE REQUIREMENTS OF THE LAND DEVELOPMENT CODE, DCM VOLUME II AND THE ECM APPENDIX I, ALL APPROPRIATE PERMITS MUST BE OBTAINED BY THE CONTRACTOR PRIOR TO CONSTRUCTION (1041, NPDES FLOODPLAIN, 404, FUGITIVE DUST, ETC.). IN THE EVENT OF CONFLICTS BETWEEN THESE REQUIREMENTS AND OTHER LAWS, RULES, OR REGULATIONS OF OTHER FEDERAL, STATE, LOCAL OR COUNTY AGENCIES, THE MOST RESTRICTIVE LAWS, RULES, OR REGULATIONS SHALL APPLY.
- ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THE SITE ONLY AT APPROVED CONSTRUCTION ACCESS POINTS.
- PRIOR TO CONSTRUCTION THE PERMITTEE SHALL VERIFY THE LOCATION OF EXISTING UTILITIES.
- A WATER SOURCE SHALL BE AVAILABLE ON SITE DURING EARTHWORK OPERATIONS AND SHALL BE UTILIZED AS REQUIRED TO MINIMIZE DUST FROM EARTHWORK EQUIPMENT AND WIND.
- THE SOILS REPORT FOR THIS SITE HAS BEEN PREPARED BY ENTECH ENGINEERING, INC. (DATED 04/07/2020) AND SHALL BE CONSIDERED A PART OF THESE PLANS.
- AT LEAST TEN (10) DAYS PRIOR TO THE ANTICIPATED START OF CONSTRUCTION, FOR PROJECTS THAT WILL DISTURB ONE (1) ACRE OR MORE, THE OWNER OR OPERATOR OF CONSTRUCTION ACTIVITY SHALL SUBMIT A PERMIT APPLICATION FOR STORMWATER DISCHARGE TO THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, WATER QUALITY DIVISION. THE APPLICATION CONTAINS CERTIFICATION OF COMPLETION OF A STORMWATER MANAGEMENT PLAN (SWMP), OF WHICH THIS GRADING AND EROSION CONTROL PLAN MAY BE A PART. FOR INFORMATION OR APPLICATION MATERIALS CONTACT:

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

BRAMLETT, P.E.  
32314

MIKE A. BRAMLETT, P.E.  
COLORADO P.E., 32314

FOR AND ON BEHALF OF JR ENGINEERING, JR LOCAL ENGINEERING

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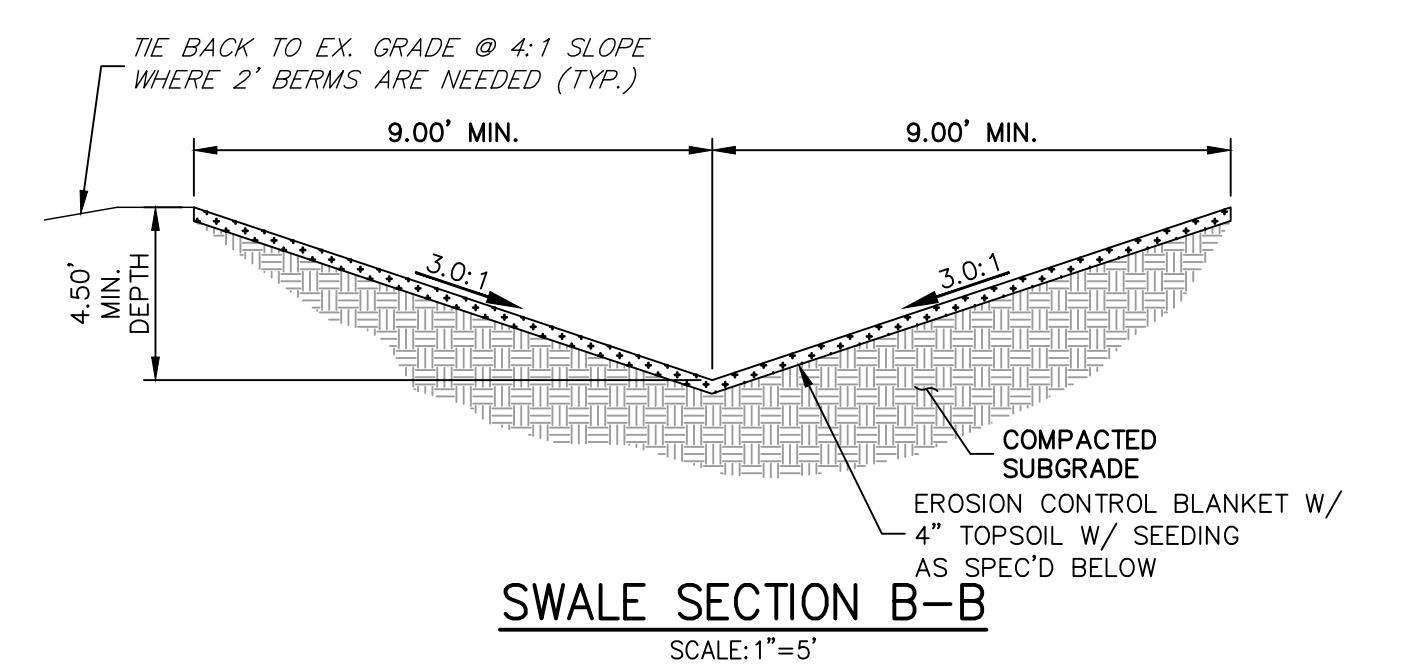
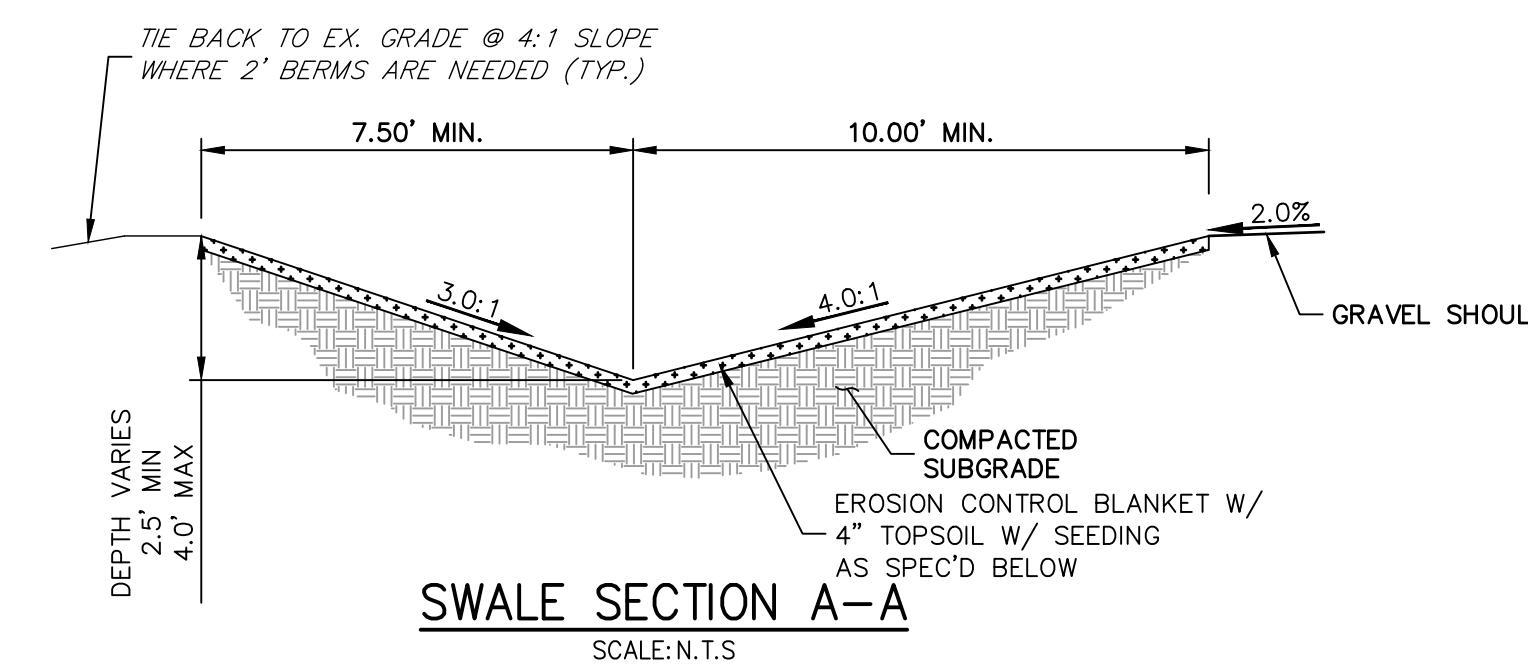
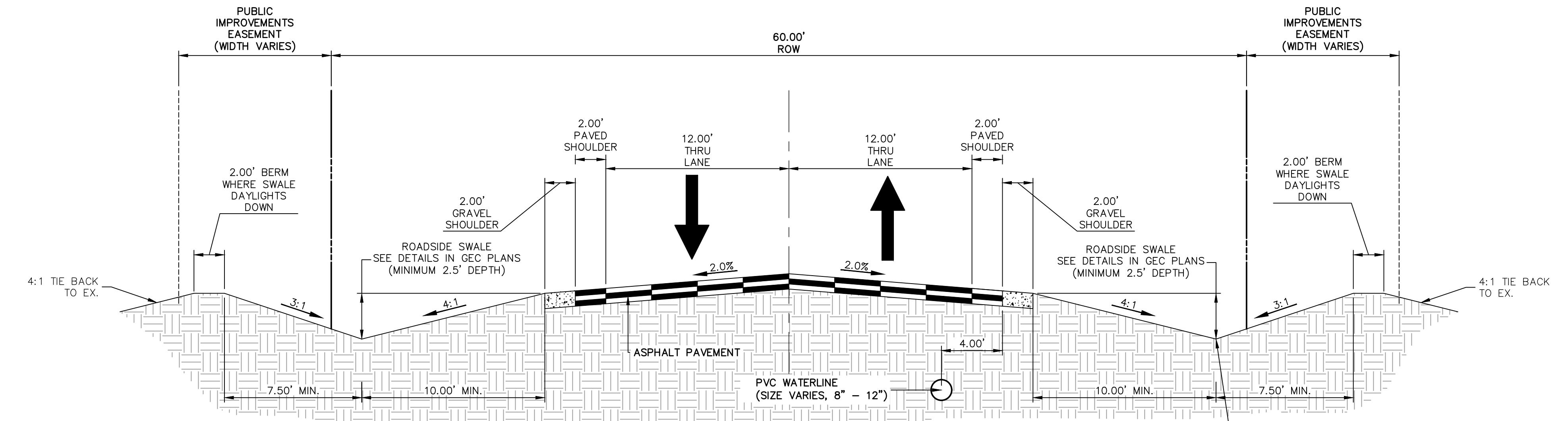
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UNTIL SUCH TIME AS  
THESE DRAWINGS ARE  
APPROVED BY THE  
ENGINEERING  
AGENCIES, THESE DRAWINGS  
ARE FOR THE PURPOSES  
ONLY FOR THE PURPOSES  
DESIGNATED BY WRITTEN  
AUTHORIZATION.



**ENGINEER'S STATEMENT**

PREPARED UNDER MY DIRECT SUPERVISION AND ON BEHALF OF JR ENGINEERING

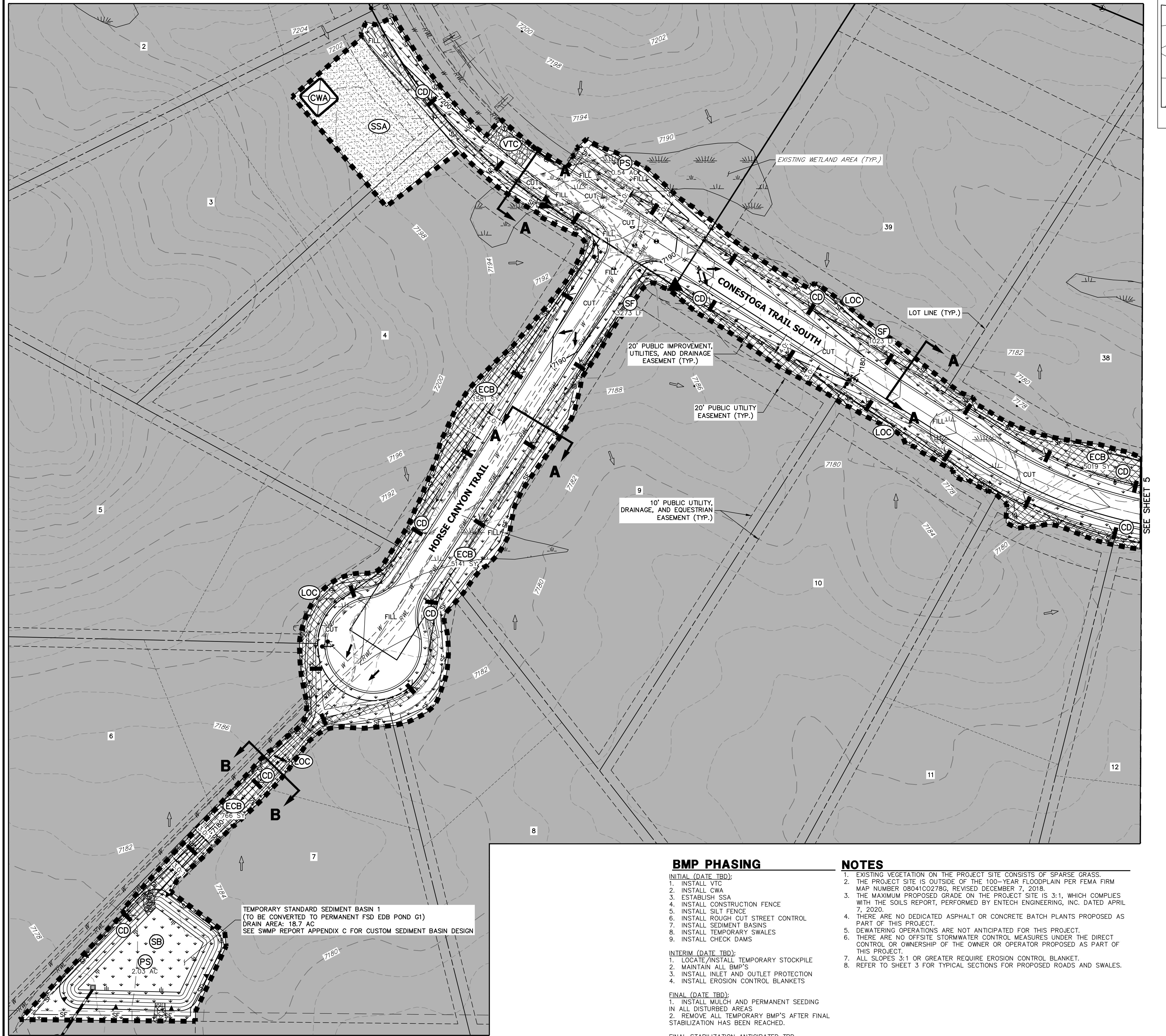
MIKE A. BRAMLETT, P.E.  
COLORADO P.E. 32314  
FOR AND ON BEHALF OF JR ENGINEERING

32314  
PROFESSIONAL LOCAL ENGINEER  
DATE

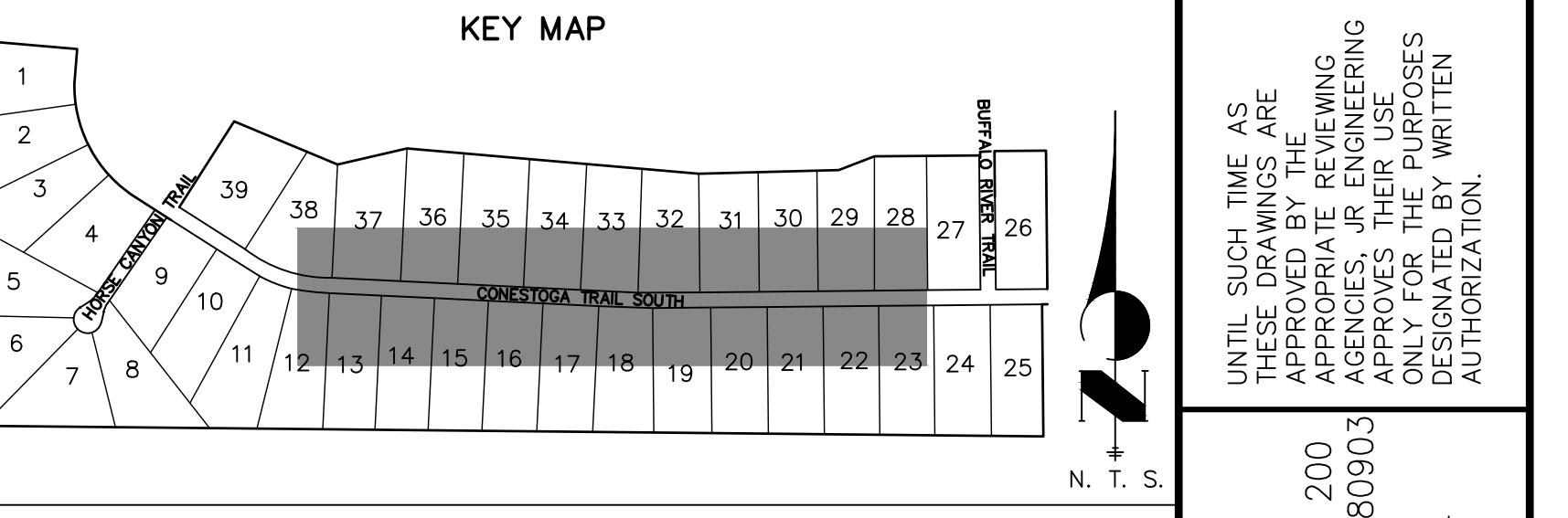
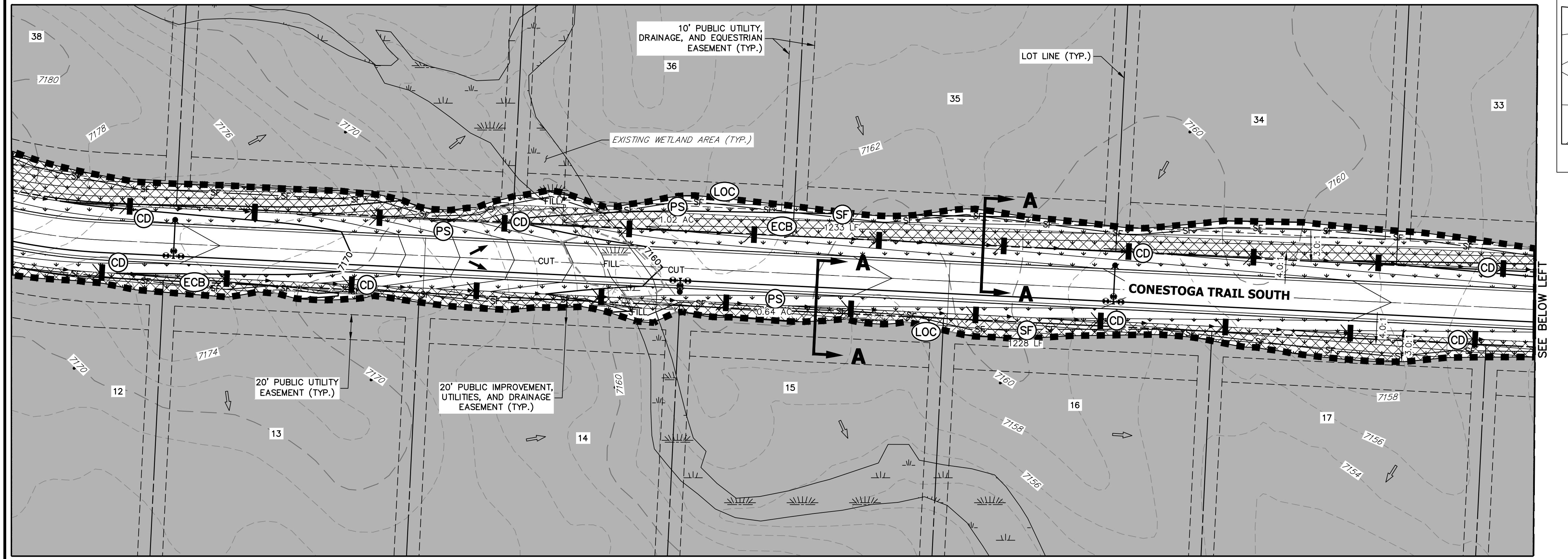
PREPARED FOR <b>BRJM, LLC</b> A Western Company	101 N. CASCADE, SUITE 200 COLORADO SPRINGS, CO 80903 ATTN: BOB IRWIN P~(719)~475-7474
<b>J.R. ENGINEERING</b> A Western Company	Centennial 303-740-6333 • Colorado Springs 719-593-2588 Fort Collins 970-491-5888 • www.jrengineering.com

LATIGO PRESERVE FILING 10	H-SCALE 1"=5'	V-SCALE 1"=5'	No. REVISION	BY DATE
TYPICAL SECTIONS				
DESIGNED BY APL				
DRAWN BY RWK				
CHECKED BY				

SHEET 3 OF 11  
JOB NO. 25175.01



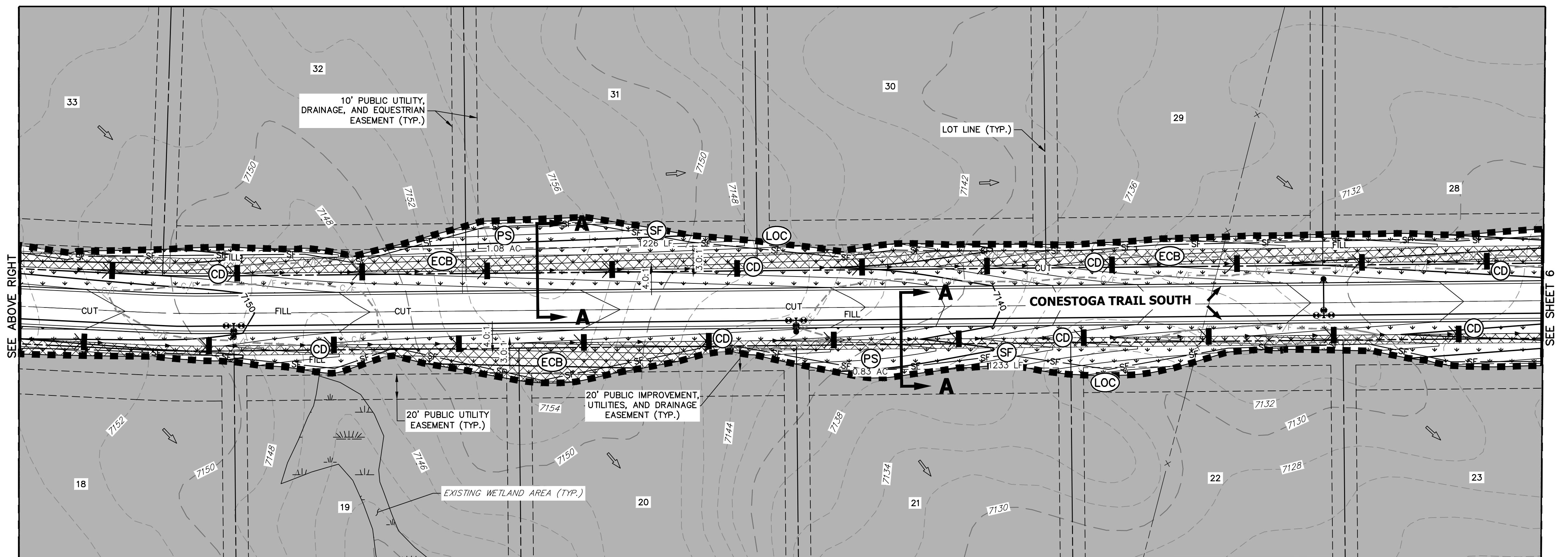
<b>KEY MAP</b> 		PREPARED FOR	
		BRJM, LLC 101 N. CASCADE, SUITE 200 COLORADO SPRINGS, CO 80903 ATTN: BOB IRWIN P~(719)~475-7474	APPROPRIATE REVIVING ENGINEERING AGENCIES. THESE DRAWINGS ARE FOR THE PURPOSES ONLY FOR THE PURPOSES DESIGNATED BY WRITTEN AUTHORIZATION.
<b>J·R ENGINEERING</b> A Western Company  Centennial 303-740-5393 • Colorado Springs 719-593-2588 Fort Collins 970-491-5988 • www.jrengineering.com		<b>LEGEND</b> <ul style="list-style-type: none"> <li>STRAW BALE BARRIER (STB)</li> <li>CONSTRUCTION FENCE (CF)</li> <li>CONCRETE WASHOUT AREA (CWA)</li> <li>INLET PROTECTION (IP)</li> <li>LIMITS OF CONSTRUCTION/DISTURBANCE (LOC)</li> <li>OUTLET PROTECTION (OP)</li> <li>PERMANENT SEEDING &amp; MULCHING (PS MU)</li> <li>SEDIMENT BASIN (SB)</li> <li>SILT FENCE (SF)</li> <li>STABILIZED STAGING AREA (SSA)</li> <li>TEMPORARY STOCK PILE (TSP)</li> <li>TEMPORARY SWALE (TSW)</li> <li>VEHICLE TRACKING CONTROL (VTC)</li> <li>EROSION CONTROL BLANKET (ECB)</li> <li>ROUGH CUT STREET CONTROL (RCS)</li> <li>SEDIMENT CONTROL LOG (WATTLE) (SCL)</li> <li>CUT AND FILL LINE (C/F)</li> </ul>	
		H-SCALE 1" = 50' V-SCALE N/A DATE 09/17/21 DESIGNED BY XXX DRAWN BY XXX CHECKED BY XXX	
<b>OWNER/DEVELOPER STATEMENT</b> I, THE OWNER/DEVELOPER HAVE READ AND WILL COMPLY WITH THE REQUIREMENTS OF THE GRADING AND EROSION CONTROL PLAN.			
BOB IRWIN BRJM, LLC 101 N. CASCADE AVENUE, SUITE 200 COLORADO SPRINGS, CO 80903			
<b>ENGINEER'S STATEMENT</b> 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 NEGIGENT ACTS, ERRORS OR OMISSIONS ON MY PART IN PREPARING THIS PLANS.			
MIKE A. BRAMLETT, P.E. COLORADO P.E. 32314 FOR AND ON BEHALF OF JR ENGINEERING, LLC SHEET 4 OF 11 JOB NO. 25175.01			



PREPARED FOR  
**BRJM, LLC**  
101 N. CASCADE, SUITE 200  
COLORADO SPRINGS, CO 80903  
ATTN: BOB IRWIN  
P~(719)~475-7474

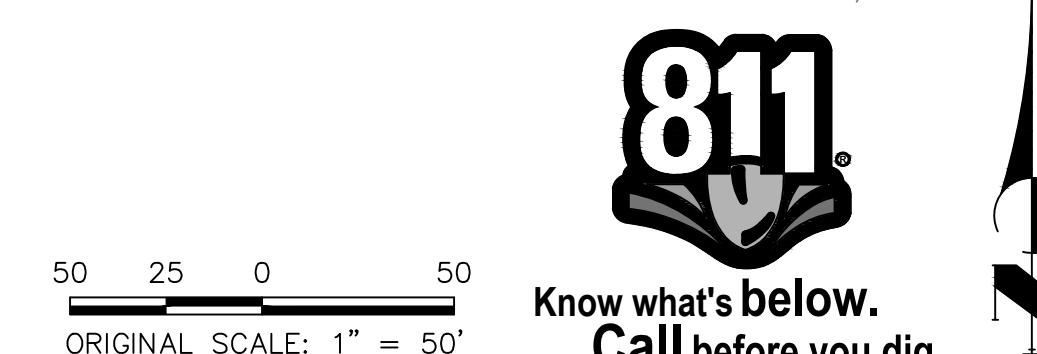
UNTIL SUCH TIME AS  
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APPROPRIATE REVIVING  
AND ENGINEERS THE PURPOSES  
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AUTHORIZATION.

**J·R ENGINEERING**  
A Western Company  
Centennial 303-740-5393 • Colorado Springs 719-593-2588  
Fort Collins 970-491-5988 • www.jrge.com



#### LEGEND

STRAW BALE BARRIER	
CONSTRUCTION FENCE	
CONCRETE WASHOUT AREA	
INLET PROTECTION	
LIMITS OF CONSTRUCTION/ DISTURBANCE	
OUTLET PROTECTION	
PERMANENT SEEDING & MULCHING	
SEDIMENT BASIN	
SILT FENCE	
STABILIZED STAGING AREA	
TEMPORARY STOCK PILE	
TEMPORARY SWALE	
VEHICLE TRACKING CONTROL	
EROSION CONTROL BLANKET	
ROUGH CUT STREET CONTROL	
SEDIMENT CONTROL LOG (WATTLE)	
CUT AND FILL LINE	



#### OWNER/DEVELOPER STATEMENT

I, the owner/developer have read and will comply with the requirements of the grading and erosion control plan.

BOB IRWIN  
BRJM, LLC  
101 N. CASCADE AVENUE, SUITE 200  
COLORADO SPRINGS, CO 80903

DATE

#### 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 NEGIGENT ACTS, ERRORS OR OMISSIONS ON MY PART IN PREPARING THIS PLANS.



#### BMP PHASING

##### INITIAL (DATE TBD):

1. INSTALL VTC
2. INSTALL CWA
3. ESTABLISH SSA
4. INSTALL CONSTRUCTION FENCE
5. INSTALL SILT FENCE
6. INSTALL ROUGH CUT STREET CONTROL
7. INSTALL SEDIMENT BASINS
8. INSTALL TEMPORARY SWALES
9. INSTALL CHECK DAMS

##### INTERIM (DATE TBD):

1. LOCATE/INSTALL TEMPORARY STOCKPILE
2. MAINTAIN ALL BMP'S
3. INSTALL INLET AND OUTLET PROTECTION
4. INSTALL EROSION CONTROL BLANKETS

##### FINAL (DATE TBD):

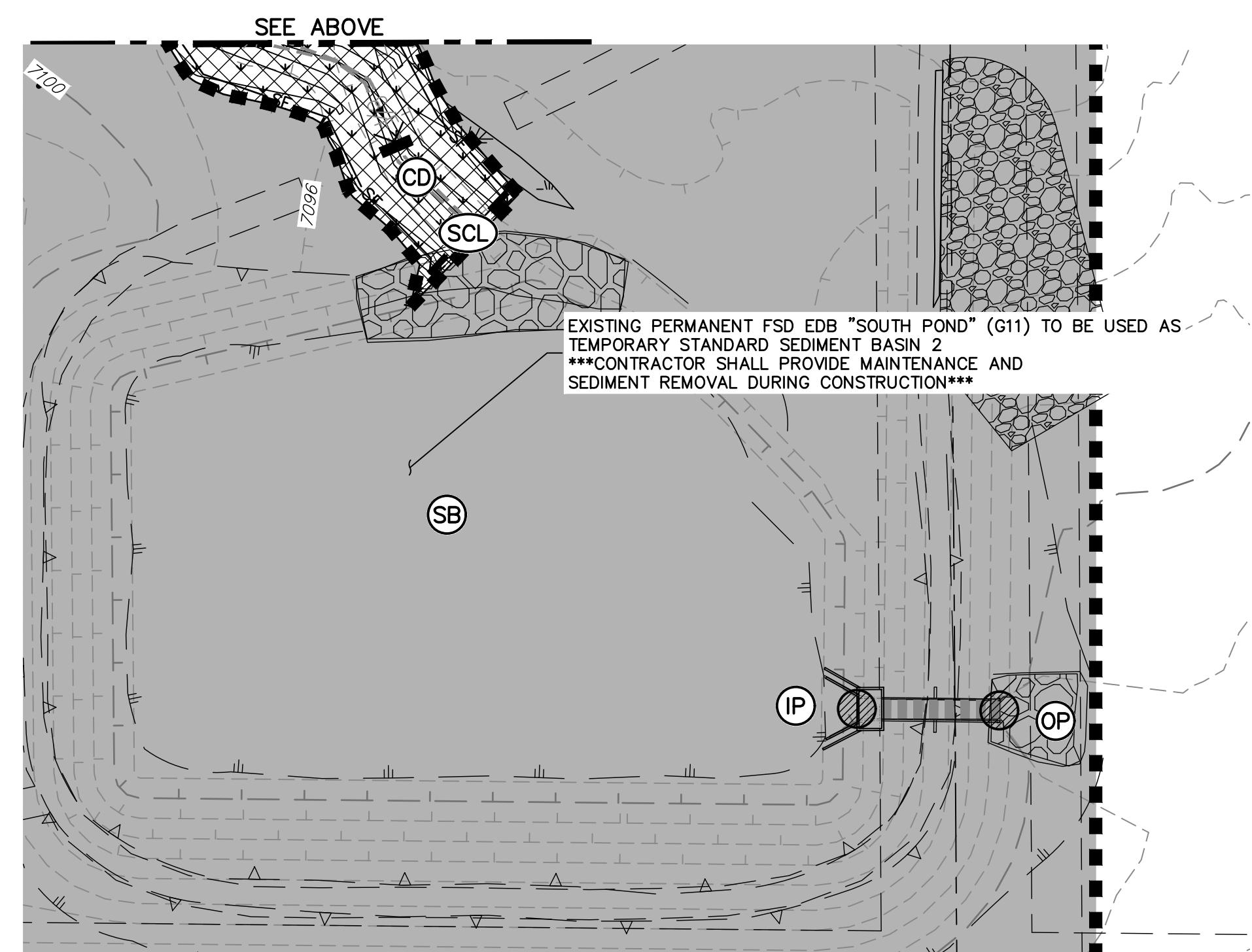
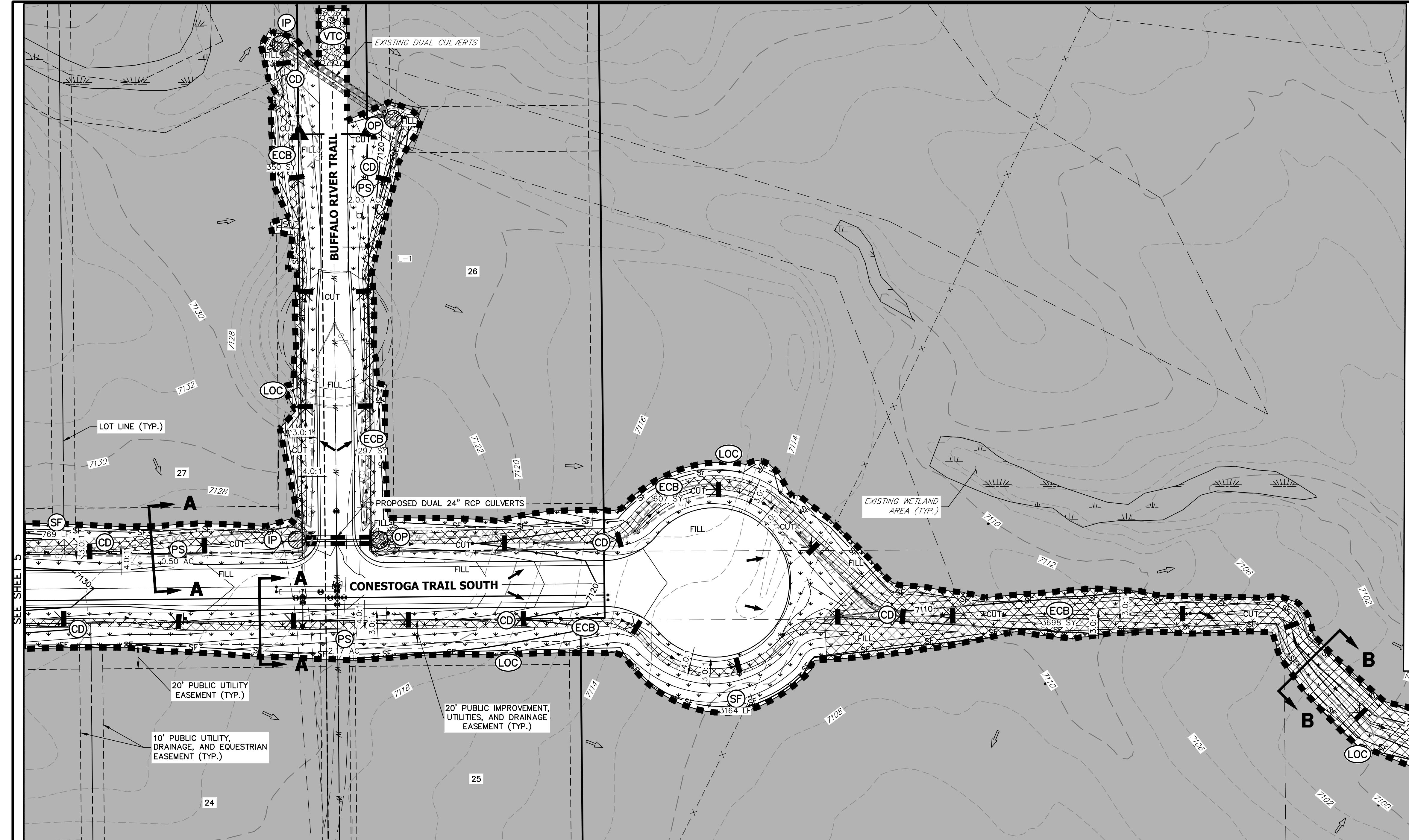
1. INSTALL MULCH AND PERMANENT SEEDING IN ALL DISTURBED AREAS
2. REMOVE ALL TEMPORARY BMP'S AFTER FINAL STABILIZATION HAS BEEN REACHED.

FINAL STABILIZATION ANTICIPATED TBD.

#### NOTES

1. EXISTING VEGETATION ON THE PROJECT SITE CONSISTS OF SPARSE GRASS.
2. THE PROJECT SITE IS OUTSIDE OF THE 100-YEAR FLOODPLAIN PER FEMA FIRM MAP NUMBER 08041C0278G, REVISED DECEMBER 7, 2018.
3. THE MAXIMUM PROPOSED GRADE ON THE PROJECT SITE IS 3:1, WHICH COMPLIES WITH THE SOILS REPORT, PERFORMED BY ENTECH ENGINEERING, INC. DATED APRIL 7, 2020.
4. THERE ARE NO DEDICATED ASPHALT OR CONCRETE BATCH PLANTS PROPOSED AS PART OF THIS PROJECT.
5. Dewatering operations are not anticipated for this project.
6. There are no offsite stormwater control measures under the direct control or ownership of the owner or operator proposed as part of this project.
7. All slopes 3:1 or greater require erosion control blanket.
8. REFER TO SHEET 3 FOR TYPICAL SECTIONS FOR PROPOSED ROADS AND SWALES.

LATIGO PRESERVE FILING 10		GRADING AND EROSION CONTROL PLAN	
H-SCALE	V-SCALE	DESIGNED BY	DRAWN BY
1" = 50'	N/A	09/17/21	XXX
DATE	DATE	CHECKED BY	XXX
		BOB IRWIN	
		BRJM, LLC	
		101 N. CASCADE AVENUE, SUITE 200	
		COLORADO SPRINGS, CO 80903	
<b>ENGINEER'S STATEMENT</b>			
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 NEGIGENT ACTS, ERRORS OR OMISSIONS ON MY PART IN PREPARING THIS PLANS.			
MIKE A. BRAMLETT, P.E. COLORADO P.E. 32314 FOR AND ON BEHALF OF JR ENGINEERING, LLC DATE			
SHEET 5 OF 11		JOB NO. 25175.01	



#### BMP PHASING

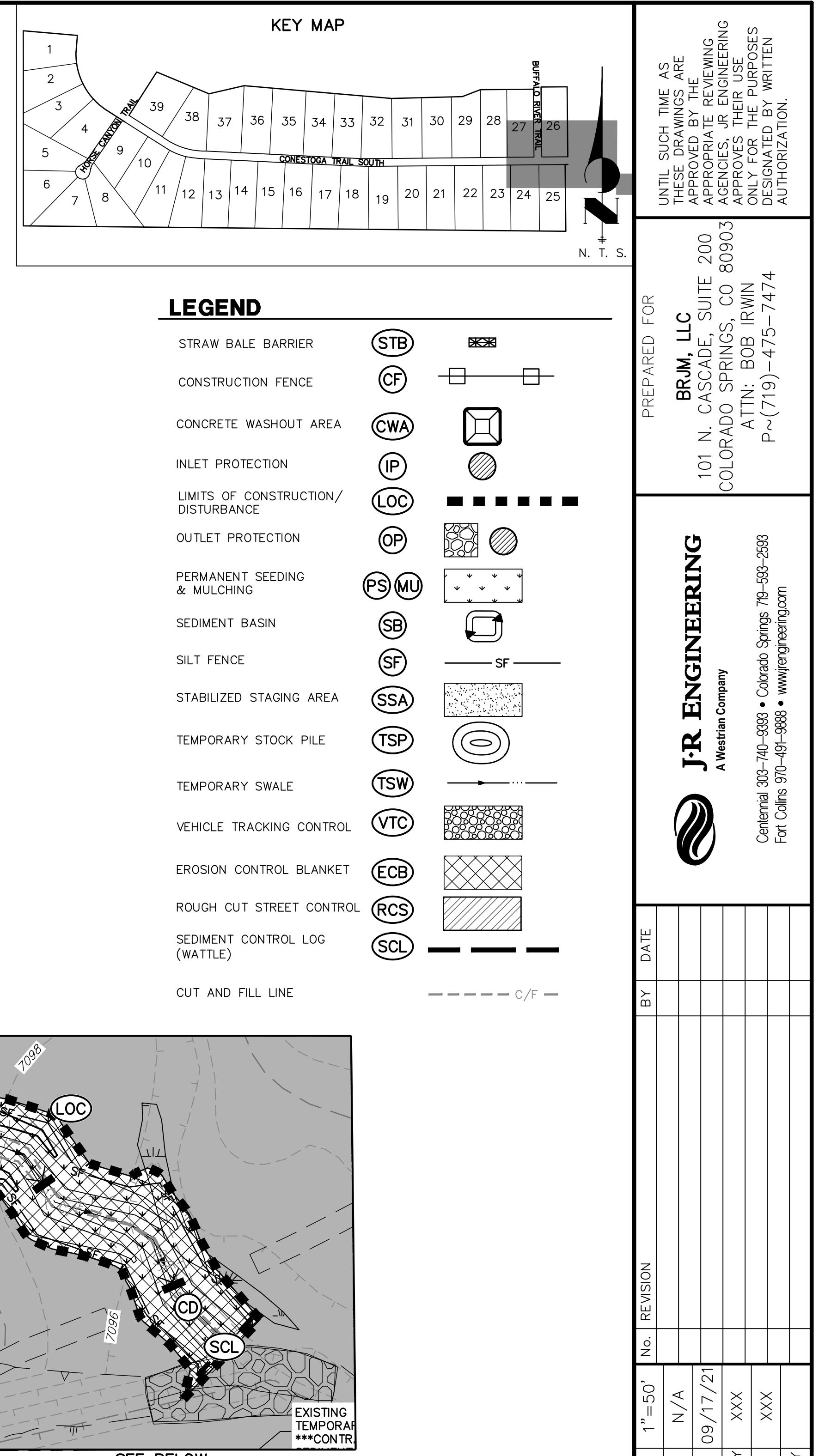
- INITIAL (DATE TBD):**
1. INSTALL VTC
  2. INSTALL CWA
  3. ESTABLISH SSA
  4. INSTALL CONSTRUCTION FENCE
  5. INSTALL SILT FENCE
  6. INSTALL ROUGH CUT STREET CONTROL
  7. INSTALL SEDIMENT BASINS
  8. INSTALL TEMPORARY SWALES
  9. INSTALL CHECK DAMS
- INTERIM (DATE TBD):**
1. LOCATE/INSTALL TEMPORARY STOCKPILE
  2. MAINTAIN ALL BMP'S
  3. INSTALL INLET AND OUTLET PROTECTION
  4. INSTALL EROSION CONTROL BLANKETS
- FINAL (DATE TBD):**
1. INSTALL MULCH AND PERMANENT SEEDING IN ALL DISTURBED AREAS
  2. REMOVE ALL TEMPORARY BMP'S AFTER FINAL STABILIZATION HAS BEEN REACHED.

FINAL STABILIZATION ANTICIPATED TBD.

#### NOTES

1. EXISTING VEGETATION ON THE PROJECT SITE CONSISTS OF SPARSE GRASS.
2. THE PROJECT SITE IS OUTSIDE OF THE 100-YEAR FLOODPLAIN PER FEMA FIRM MAP NUMBER 08041C0278G, REVISED DECEMBER 7, 2018.
3. THE MAXIMUM PROPOSED GRADE ON THE PROJECT SITE IS 3:1, WHICH COMPLIES WITH THE SOILS REPORT, PERFORMED BY ENTECH ENGINEERING, INC. DATED APRIL 7, 2020.
4. THERE ARE NO DEDICATED ASPHALT OR CONCRETE BATCH PLANTS PROPOSED AS PART OF THIS PROJECT.
5. DEWATERING OPERATIONS ARE NOT ANTICIPATED FOR THIS PROJECT.
6. THERE ARE NO OFFSITE STORMWATER CONTROL MEASURES UNDER THE DIRECT CONTROL OR OWNERSHIP OF THE OWNER OR OPERATOR PROPOSED AS PART OF THIS PROJECT.
7. ALL SLOPES 3:1 OR GREATER REQUIRE EROSION CONTROL BLANKET.
8. REFER TO SHEET 3 FOR TYPICAL SECTIONS FOR PROPOSED ROADS AND SWALES.

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



#### OWNER/DEVELOPER STATEMENT

I, the owner/developer have read and will comply with the requirements of the grading and erosion control plan.

BOB IRWIN  
BRJM, LLC  
101 N. CASCADE AVENUE, SUITE 200  
COLORADO SPRINGS, CO 80903

DATE

#### ENGINEER'S STATEMENT

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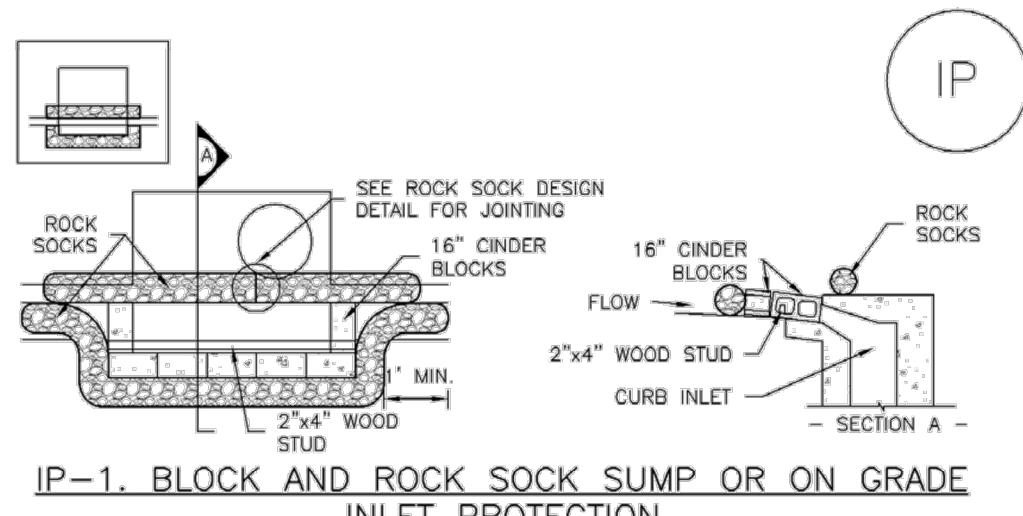
MIKE A. BRAMLETT, P.E.  
COLORADO P.E. 32314  
FOR AND ON BEHALF OF JR ENGINEERING, LLC

LATIGO PRESERVE FILING 10  
GRADING AND EROSION  
CONTROL PLAN

SHEET 6 OF 11  
JOB NO. 25175.01



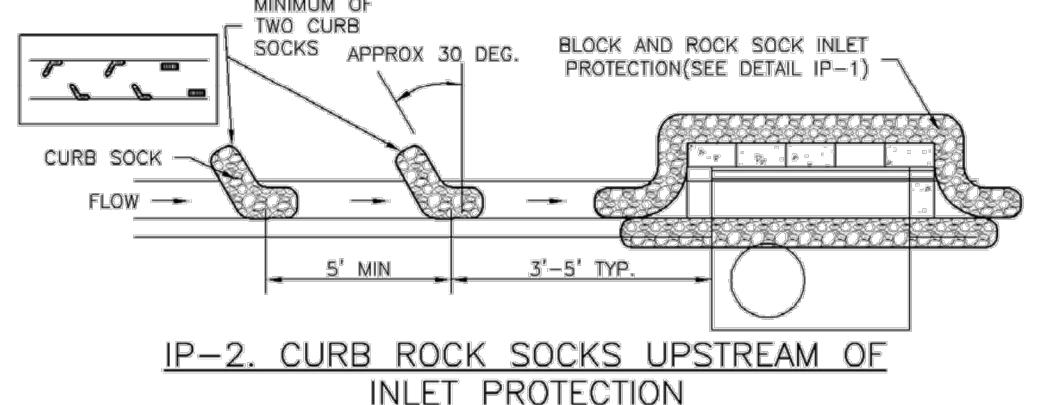
SC-6

**Inlet Protection (IP)**

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

## BLOCK AND CURB SOCK INLET PROTECTION INSTALLATION NOTES

- SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
- 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.
- GRAVEL BAGS SHALL BE PLACED AROUND CONCRETE BLOCKS, CLOSELY ABUTTING ONE ANOTHER AND JOINED TOGETHER IN ACCORDANCE WITH ROCK SOCK DESIGN DETAIL.



IP-2. CURB ROCK SOCKS UPSTREAM OF INLET PROTECTION

## CURB ROCK SOCK INLET PROTECTION INSTALLATION NOTES

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

IP-4

Urban Drainage and Flood Control District  
Urban Storm Drainage Criteria Manual Volume 3

August 2013

August 2013 Urban Drainage and Flood Control District  
Urban Storm Drainage Criteria Manual Volume 3

IP-5

Urban Drainage and Flood Control District  
Urban Storm Drainage Criteria Manual Volume 3**EC-4****Mulching (MU)**

**GENERAL INLET PROTECTION INSTALLATION NOTES**

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

- 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.

2. 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 ½ 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 STREET.

6. WHEN INLET PROTECTION IN 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 AND MARKET FOR THESE PRODUCTS. LOCAL JURISDICTIONS NOR DISCOURSES 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 JURISDICTIONS DISCOURSE OR PROHIBIT THE USE OF STRAW BALES FOR INLET PROTECTION. CHECK WITH LOCAL JURISDICTION TO DETERMINE IF STRAW BALE INLET PROTECTION IS ACCEPTABLE.

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-LOCATION OF INLET PROTECTION.  
-TYPE OF INLET PROTECTION (IP-1, IP-2, IP-3, IP-4, IP-5, IP-6)

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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 ½ 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 STREET.

6. WHEN INLET PROTECTION IN 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.

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

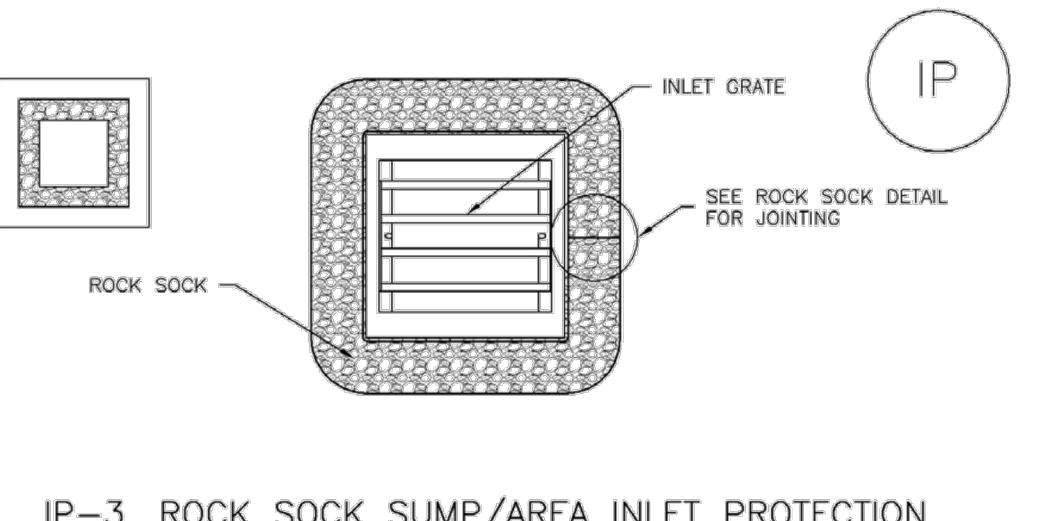
IP-8

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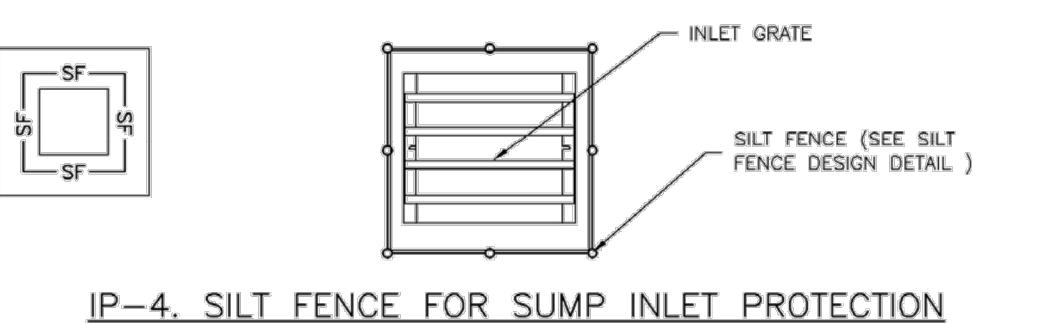
SC-6

**Inlet Protection (IP)**

IP-3. ROCK SOCK SUMP/AREA INLET PROTECTION

ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS

- SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
- STRAW WATTERS/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF ROCK SOCKS FOR INLETS IN PERVERSUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.



IP-4. SILT FENCE FOR SUMP INLET PROTECTION

SILT FENCE INLET PROTECTION INSTALLATION NOTES

- SEE SILT FENCE DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
- POSTS SHALL BE PLACED AT EACH CORNER OF THE INLET AND AROUND THE EDGES AT A MAXIMUM SPACING OF 3 FEET.
- STRAW WATTERS/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF SILT FENCE FOR INLETS IN PERVERSUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.

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.

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4. SEDIMENT ACCUMULATED UPSTREAM OF INLET PROTECTION SHALL BE REMOVED WHEN NECESSARY TO MAINTAIN BMP EFFECTIVENESS. TYPICALLY WHEN STORAGE VOLUME REACHES 50% OF CAPACITY, A DEPTH OF 6" WHEN SILT FENCE IS USED, OR ½ 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 STREET.

6. WHEN INLET PROTECTION IN 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.

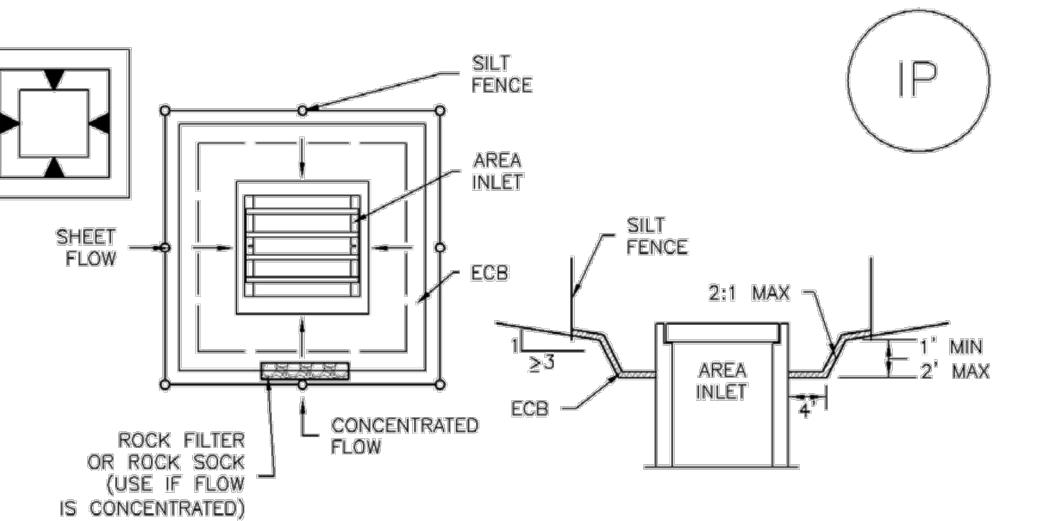
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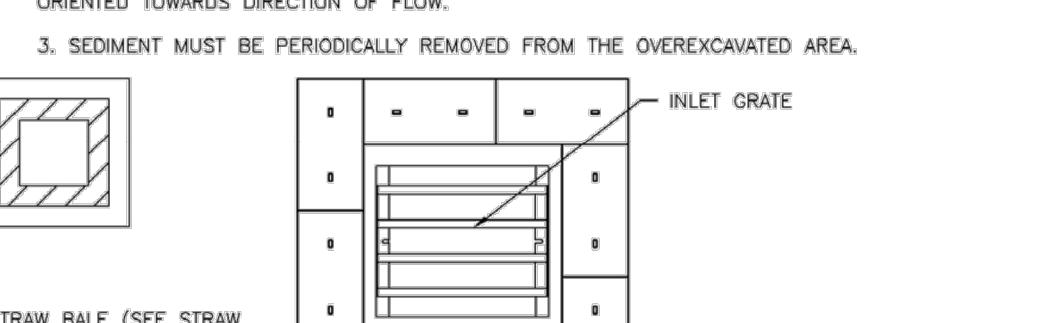
SC-6

**Inlet Protection (IP)**

IP-5. OVEREXCAVATION INLET PROTECTION

OVEREXCAVATION INLET PROTECTION INSTALLATION NOTES

- THIS FORM OF INLET PROTECTION IS PRIMARILY APPLICABLE FOR SITES THAT HAVE NOT YET REACHED FINAL GRADE AND SHOULD BE USED ONLY FOR INLETS WITH A RELATIVELY SMALL CONTRIBUTING DRAINAGE AREA.
- WHEN USING FOR CONCENTRATED FLOWS, SHAPE BASIN IN 2:1 RATIO WITH LENGTH ORIENTED TOWARDS DIRECTION OF FLOW.
- SEDIMENT MUST BE PERIODICALLY REMOVED FROM THE OVEREXCAVATED AREA.



IP-6. STRAW BALE FOR SUMP INLET PROTECTION

STRAW BALE INLET PROTECTION INSTALLATION NOTES

- SEE STRAW BALE DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
- BALES SHALL BE PLACED IN A SINGLE ROW AROUND THE INLET WITH ENDS OF BALES TIGHTLY ABUTTING ONE ANOTHER.

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.

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

4. SEDIMENT ACCUMULATED UPSTREAM OF THE CULVERT SHALL BE REMOVED WHEN NECESSARY TO MAINTAIN BMP EFFECTIVENESS. TYPICALLY WHEN STORAGE VOLUME REACHES 50% OF CAPACITY, A DEPTH OF 6" WHEN SILT FENCE IS USED, OR ½ THE HEIGHT FOR STRAW BALES.

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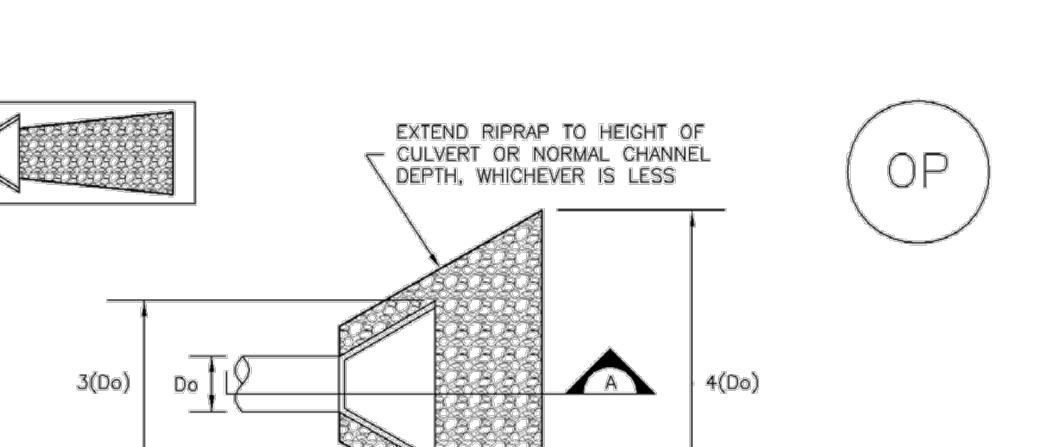
6. WHEN INLET PROTECTION IN AREA INLETS IS REMOVED, THE DISTURBED AREA SHALL BE COVERED WITH TOP SOIL, SEEDED AND MULCHED, OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

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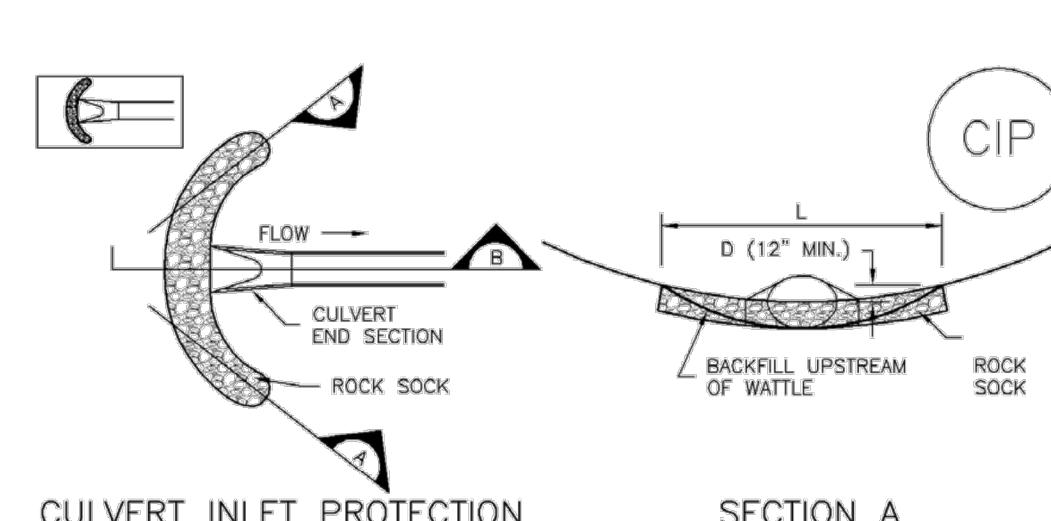
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EC-8. TEMPORARY OUTLET PROTECTION (TOP)

SC-6

**Inlet Protection (IP)**

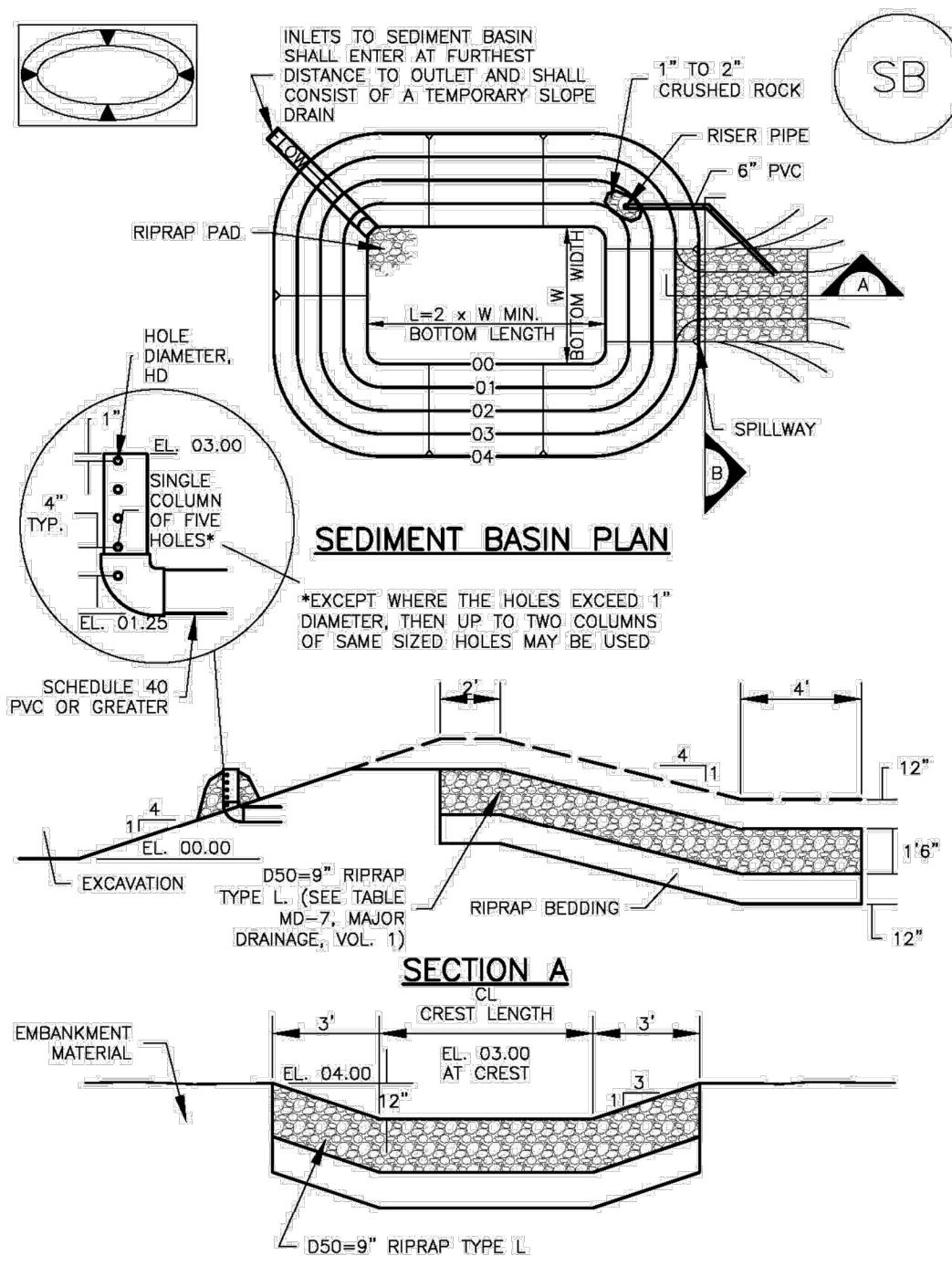
CIP-1. CULVERT INLET PROTECTION

CULVERT INLET PROTECTION PLAN SECTION A

CULVERT INLET PROTECTION SECTION B

## Sediment Basin (SB)

SC-7



August 2013 Urban Drainage and Flood Control District  
Urban Storm Drainage Criteria Manual Volume 3

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## Sediment Basin (SB)

SC-7

TABLE SB-1. SIZING INFORMATION FOR STANDARD SEDIMENT BASIN			
Upstream Drainage Area (rounded to nearest acre), (ac)	Basin Bottom Width (W), (ft)	Spillway Crest Length (CL), (ft)	Hole Diameter (HD), (in.)
1	12 1/2	2	9 1/2
2	23	3	11 1/2
3	33 1/2	5	12 1/2
4	38 1/2	6	13 1/2
5	43	8	15 1/2
6	47 1/4	9	17 1/2
7	51	11	19 1/2
8	55	12	21 1/2
10	69 1/4	13	23 1/2
11	64	16	25 1/2
12	67 1/2	18	27 1/2
13	70 1/2	21	31 1/2
14	73 1/4	22	33 1/2
15	73 1/4	22	33 1/2

### SEDIMENT BASIN INSTALLATION NOTES

- SEE PLAN VIEW FOR -LOCATION OF SEDIMENT BASIN.
  - TYPE OF BASIN (STANDARD BASIN OR NONSTANDARD BASIN).
  - FOR STANDARD BASIN, BOTTOM WIDTH W, CREST LENGTH CL, AND HOLE DIAMETER, HD.
  - FOR NONSTANDARD BASIN, SEE CONSTRUCTION DRAWINGS FOR DESIGN OF BASIN INCLUDING RISER HEIGHT H, NUMBER OF COLUMNS N, HOLE DIAMETER HD AND PIPE DIAMETER D.
  - FOR STANDARD BASIN, BOTTOM DIMENSION MAY BE MODIFIED AS LONG AS BOTTOM AREA IS NOT REDUCED.
  - SEDIMENT BASINS SHALL BE INSTALLED PRIOR TO ANY OTHER LAND-DISTURBING ACTIVITY THAT RELIES ON BASIN AS A STORMWATER CONTROL DEVICE.
  - EMBANKMENT MATERIAL SHALL CONSIST OF SOIL FREE OF DEBRIS, ORGANIC MATERIAL, AND ROCKS OR CONCRETE GREATER THAN 3 INCHES AND SHALL HAVE A MINIMUM OF 15 PERCENT BY WEIGHT PASSING THE NO. 200 SIEVE.
  - EMBANKMENT MATERIAL SHALL BE COMPAKTED TO AT LEAST 95 PERCENT OF MAXIMUM DENSITY IN ACCORDANCE WITH ASTM D698.
  - PIPE SCH 40 OR GREATER SHALL BE USED.
7. THE DETAILS SHOWN ON THESE SHEETS PERTAIN TO STANDARD SEDIMENT BASIN(S) FOR DRAINAGE AREAS LESS THAN 15 ACRES. SEE CONSTRUCTION DRAWINGS FOR EMBANKMENT, STORAGE VOLUME, SPILLWAY, OUTLET, AND OUTLET PROTECTION DETAILS FOR ANY SEDIMENT BASIN(S) THAT HAVE BEEN INDIVIDUALLY DESIGNED FOR DRAINAGE AREAS LARGER THAN 15 ACRES.

## Sediment Basin (SB)

SC-7

SEDIMENT BASIN 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.

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

4. SEDIMENT ACCUMULATED UPSTREAM OF THE SEDIMENT BASIN 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 SEDIMENT BASIN WHEN THERE ARE SIGNS OF WEAR, SUCH AS SAGGING, TEARING, OR COLLAPSE.

6. SEDIMENT BASIN 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 SEDIMENT BASIN IS REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

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

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 <sup>d</sup>	<i>Agropyron cristatum 'Ephriam'</i>	Cool	Sod	175,000	2.0
Durat hard fescue	<i>Festuca ovina 'Durifuscua'</i>	Cool	Bunch	565,000	1.0
Lincoln smooth bromo	<i>Bromus inermis lessy '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 bromo	<i>Bromus inermis lessy 'Lincoln'</i>	Cool	Sod	130,000	3.0
Pathfinder switchgrass	<i>Panicum virgatum 'Pathfinder'</i>	Warm	Sod	389,000	1.0
Alka tall wheatgrass	<i>Agropyron elongatum 'Alka'</i>	Cool	Bunch	79,000	5.5
<b>Total</b>					<b>10.75</b>
<b>Transition Turf Seed Mix<sup>e</sup></b>					
Ruebens Canadian bluegrass	<i>Poa compressa 'Ruebens'</i>	Cool	Sod	2,500,000	0.5
Durat hard fescue	<i>Festuca ovina 'Durifuscua'</i>	Cool	Bunch	565,000	1.0
Citation perennial ryegrass	<i>Lolium perenne 'Citation'</i>	Cool	Sod	247,000	3.0
Lincoln smooth bromo	<i>Bromus inermis lessy 'Lincoln'</i>	Cool	Sod	130,000	3.0
<b>Total</b>					<b>7.5</b>

June 2012 Urban Drainage and Flood Control District TS/PS-3  
Urban Storm Drainage Criteria Manual Volume 3

TS/PS-4 Urban Drainage and Flood Control District June 2012  
Urban Storm Drainage Criteria Manual Volume 3

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

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 'Camper'</i>	Warm	Bunch	240,000	1.0
Prairie sandreed	<i>Calamovilia longifolia</i>	Warm	Open sod	274,000	1.0
Sand dropseed	<i>Sporobolus cryptandrus</i>	Cool	Bunch	5,298,000	0.25
Vaughn side oats grama	<i>Bouteloua curtipendula 'Vaughn'</i>	Warm	Sod	191,000	2.0
Arriba western wheatgrass	<i>Agropyron smithii 'Arriba'</i>	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 'Ephriam'</i>	Cool	Sod	175,000	1.5
Oake Intermediate wheatgrass	<i>Agropyron intermediate 'Oake'</i>	Cool	Sod	115,000	5.5
Vaughn side oats grama <sup>e</sup>	<i>Bouteloua curtipendula 'Vaughn'</i>	Warm	Sod	191,000	2.0
Lincoln smooth bromo	<i>Bromus inermis lessy 'Lincoln'</i>	Cool	Sod	130,000	3.0
Arriba western wheatgrass	<i>Agropyron smithii 'Arriba'</i>	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 mixes should be drilled 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.

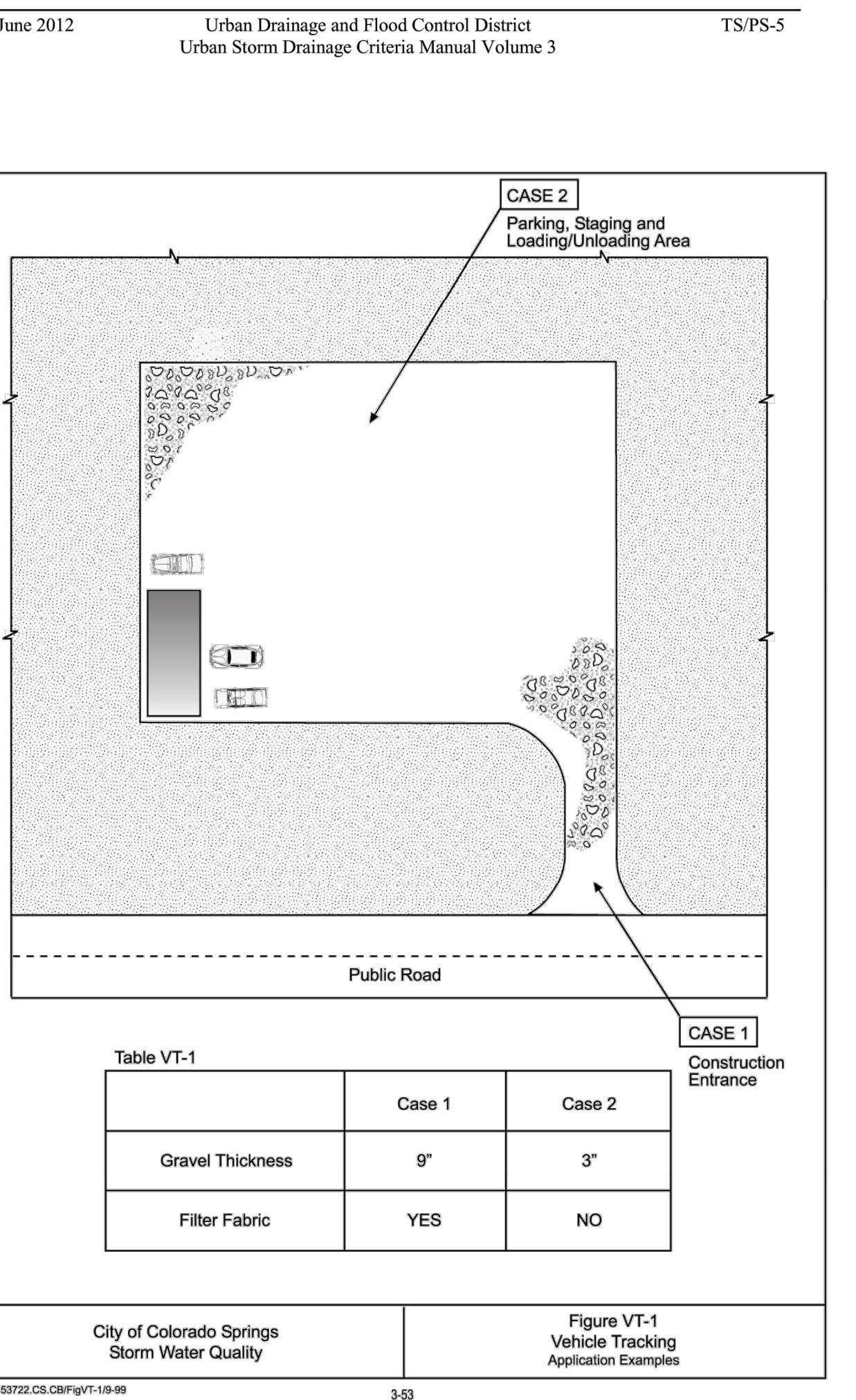
<sup>d</sup> Crested wheatgrass should not be used on slopes steeper than 6H to 1V.

<sup>e</sup> Can substitute 0.5 lbs PLS of blue grama for the 2.0 lbs PLS of Vaughn side oats grama.

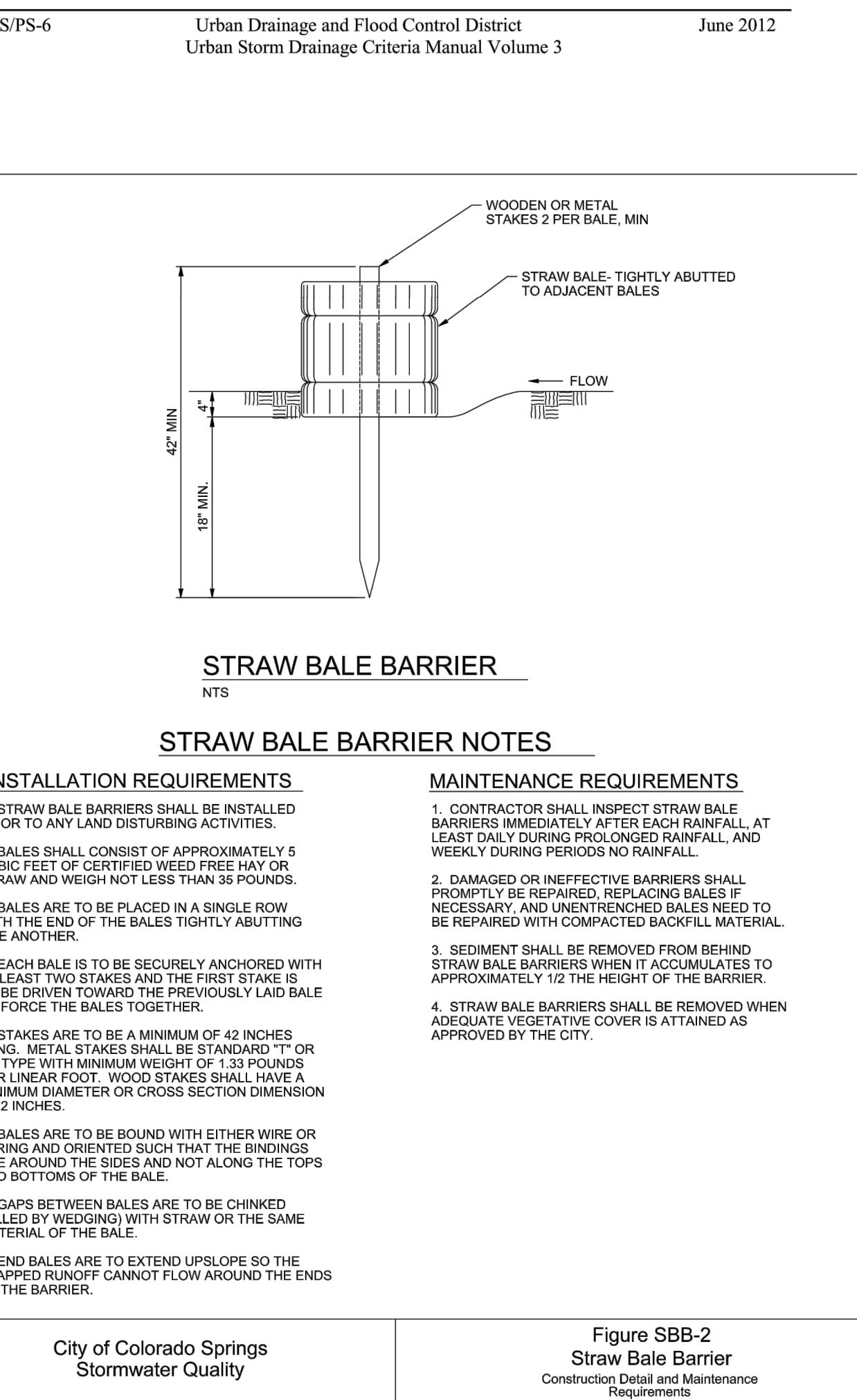
November 2010 Urban Drainage and Flood Control District SP-3  
Urban Storm Drainage Criteria Manual Volume 3

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

June 2012 Urban Drainage and Flood Control District TS/PS-5  
Urban Storm Drainage Criteria Manual Volume 3



TS/PS-6 Urban Drainage and Flood Control District June 2012  
Urban Storm Drainage Criteria Manual Volume 3



H-SCALE	N/A	No. REVISION
V-SCALE	N/A	
DATE	08/17/21	
DESIGNED BY	RPD	
DRAWN BY	RPD	
CHECKED BY		
GRADING AND EROSION CONTROL DETAILS		
Figure SBB-2 Straw Bale Barrier Construction Detail and Maintenance Requirements		
GEC PLANS		
ENGINEER'S STATEMENT		
STANDARD DETAILS SHOWN WERE REVIEWED ONLY AS TO THEIR APPLICATION ON THIS PROJECT		
MIKE A. BRAMLETT, P.E. COLORADO P.E. 32314 FOR AND ON BEHALF OF JR ENGINEERING LOCAL ENGINEER DATE 32314 32314 32314 32314		
SHEET 10 OF 11 JOB NO. 25158.01		

PREPARED FOR  
**BRJM, LLC**  
101 N. CASCADE, SUITE 200  
COLORADO SPRINGS, CO 80903  
ATTN: BOB IRWIN  
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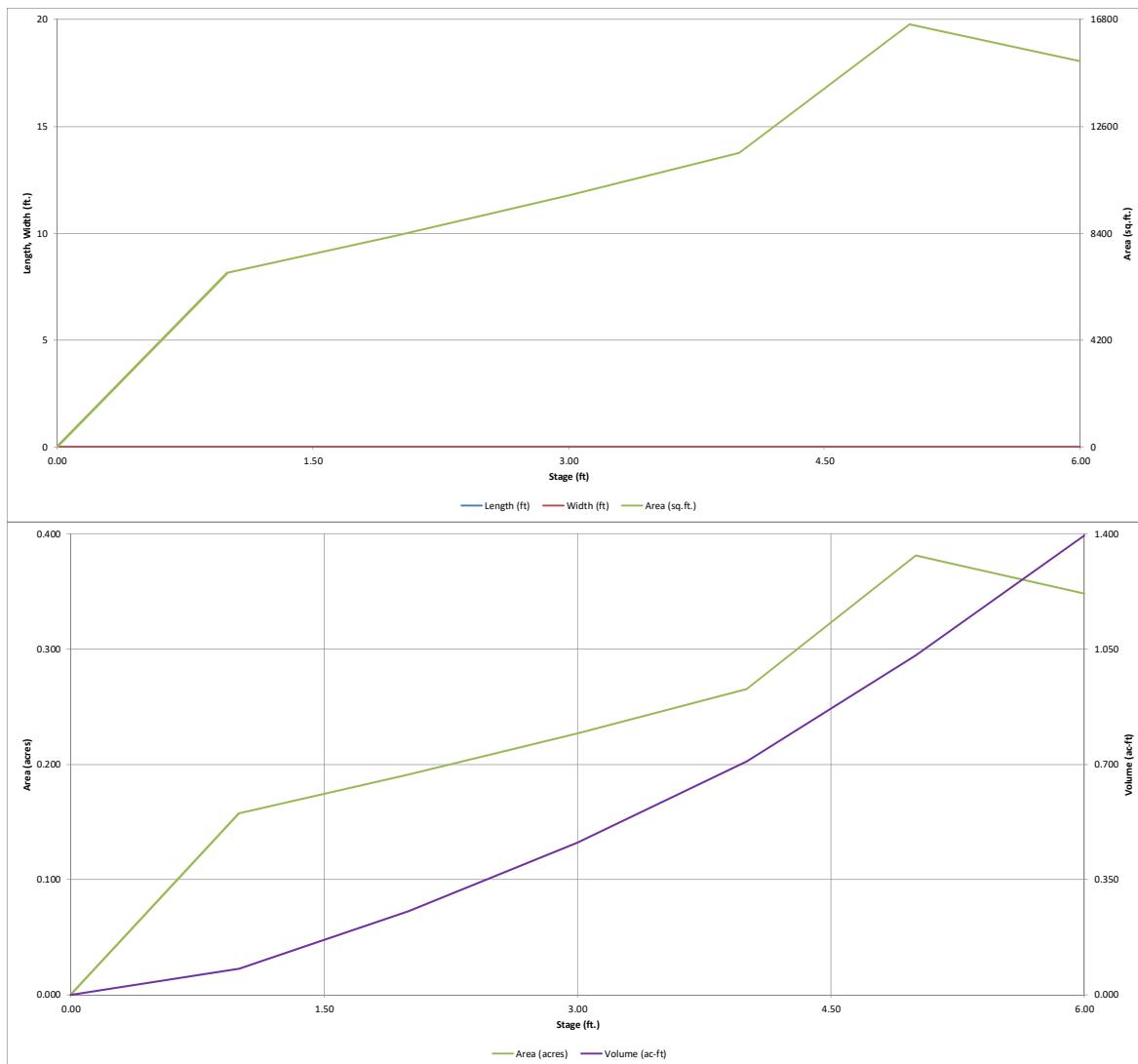
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## DETENTION BASIN STAGE-STORAGE TABLE BUILDER

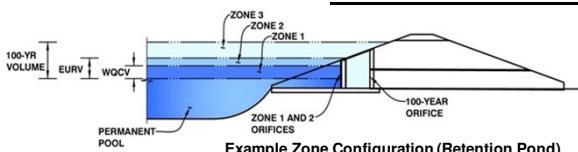
MHFD-Detention, Version 4.04 (February 2021)



# DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.04 (February 2021)

**Project:** Latigo Trails Filing 10  
**Basin ID:** Pond G1-Sediment Basin



**Example Zone Configuration (Retention Pond)**

	Estimated Stage (ft)	Estimated Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)	3.22	0.511	Orifice Plate
Zone 2			Not Utilized
Zone 3			Not Utilized
Total (all zones)		0.511	

**User Input:** Orifice at Underdrain Outlet (typically used to drain WOCV in a Filtration BMP)

Underdrain Orifice Invert Depth =  ft (distance below the filtration media surface)  
 Underdrain Orifice Diameter =  inches

**Calculated Parameters for Underdrain**  
 Underdrain Orifice Area =  ft<sup>2</sup>  
 Underdrain Orifice Centroid =  feet

**User Input:** Orifice Plate with one or more orifices or Elliptical Slot Weir (typically used to drain WOCV and/or EURV in a sedimentation BMP)

Invert of Lowest Orifice =  ft (relative to basin bottom at Stage = 0 ft)  
 Depth at top of Zone using Orifice Plate =  ft (relative to basin bottom at Stage = 0 ft)  
 Orifice Plate: Orifice Vertical Spacing =  inches  
 Orifice Plate: Orifice Area per Row =  sq. inches (diameter = 13/16 inch)

**Calculated Parameters for Plate**  
 WQ Orifice Area per Row =  ft<sup>2</sup>  
 Elliptical Half-Width =  feet  
 Elliptical Slot Centroid =  feet  
 Elliptical Slot Area =  ft<sup>2</sup>

**User Input:** Stage and Total Area of Each Orifice Row (numbered from lowest to highest)

Row 1 (required)	Row 2 (optional)	Row 3 (optional)	Row 4 (optional)	Row 5 (optional)	Row 6 (optional)	Row 7 (optional)	Row 8 (optional)	
Stage of Orifice Centroid (ft)	0.00	0.30	0.60	0.90	1.20	1.50	1.80	2.10
Orifice Area (sq. inches)	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57
Row 9 (optional)	Row 10 (optional)	Row 11 (optional)	Row 12 (optional)	Row 13 (optional)	Row 14 (optional)	Row 15 (optional)	Row 16 (optional)	
Stage of Orifice Centroid (ft)	2.40	2.70	3.00					
Orifice Area (sq. inches)	0.57	0.57	0.57					

**User Input:** Vertical Orifice (Circular or Rectangular)

Not Selected      Not Selected  
 Invert of Vertical Orifice =  ft (relative to basin bottom at Stage = 0 ft)  
 Depth at top of Zone using Vertical Orifice =  ft (relative to basin bottom at Stage = 0 ft)  
 Vertical Orifice Diameter =  inches

**Calculated Parameters for Vertical Orifice**  
 Not Selected      Not Selected  
 Vertical Orifice Area =  ft<sup>2</sup>  
 Vertical Orifice Centroid =  feet

**User Input:** Overflow Weir (Dropbox with Flat or Sloped Grate and Outlet Pipe OR Rectangular/Trapezoidal Weir (and No Outlet Pipe))

Not Selected      Not Selected  
 Overflow Weir Front Edge Height, Ho =  ft (relative to basin bottom at Stage = 0 ft)  
 Overflow Weir Front Edge Length =  feet  
 Overflow Weir Grate Slope =  H:V  
 Horiz. Length of Weir Sides =  feet  
 Overflow Grate Type =   
 Debris Clogging % =  %

Height of Grate Upper Edge, H<sub>t</sub> =  ft  
 Overflow Weir Slope Length =  feet  
 Grate Open Area / 100-yr Orifice Area =   
 Overflow Grate Open Area w/o Debris =  ft<sup>2</sup>  
 Overflow Grate Open Area w/ Debris =  ft<sup>2</sup>

**User Input:** Outlet Pipe w/ Flow Restriction Plate (Circular Orifice, Restrictor Plate, or Rectangular Orifice)

Not Selected      Not Selected  
 Depth to Invert of Outlet Pipe =  ft (distance below basin bottom at Stage = 0 ft)  
 Circular Orifice Diameter =  inches

**Calculated Parameters for Outlet Pipe w/ Flow Restriction Plate**  
 Not Selected      Not Selected  
 Outlet Orifice Area =  ft<sup>2</sup>  
 Outlet Orifice Centroid =  feet  
 Half-Central Angle of Restrictor Plate on Pipe =  radians

**User Input:** Emergency Spillway (Rectangular or Trapezoidal)

Spillway Invert Stage=  ft (relative to basin bottom at Stage = 0 ft)  
 Spillway Crest Length =  feet  
 Spillway End Slopes =  H:V  
 Freeboard above Max Water Surface =  feet

**Calculated Parameters for Spillway**  
 Spillway Design Flow Depth=  feet  
 Stage at Top of Freeboard =  feet  
 Basin Area at Top of Freeboard =  acres  
 Basin Volume at Top of Freeboard =  acre-ft

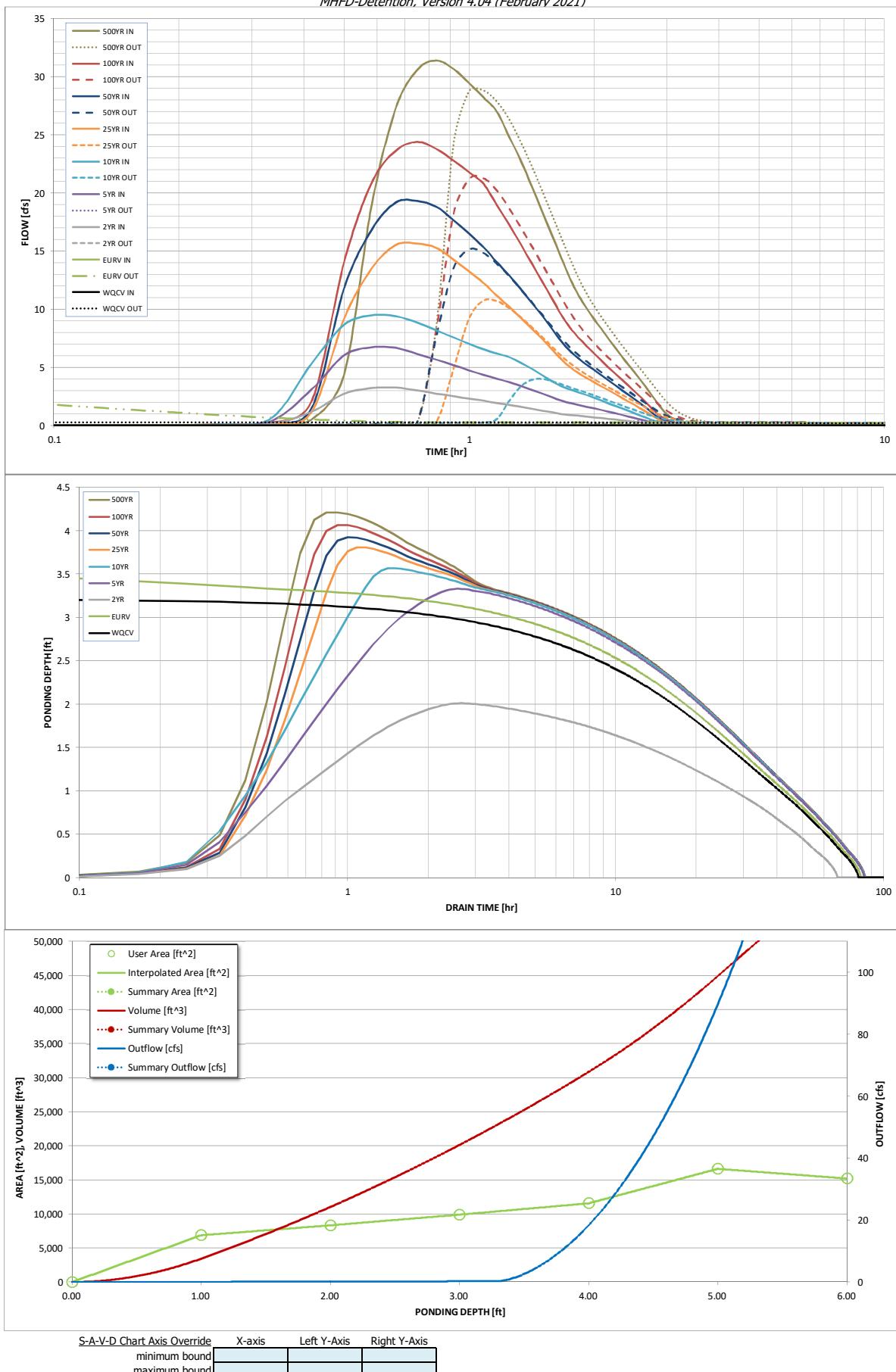
## Routed Hydrograph Results

The user can override the default CUHP hydrographs and runoff volumes by entering new values in the Inflow Hydrographs table (Columns W through AF).

	WQCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	500 Year
Design Storm Return Period =									
One-Hour Rainfall Depth (in) =	N/A	N/A	1.19	1.50	1.75	2.00	2.25	2.52	3.00
CUHP Runoff Volume (acre-ft) =	0.511	0.600	0.277	0.585	0.890	1.423	1.790	2.315	3.054
Inflow Hydrograph Volume (acre-ft) =	N/A	N/A	0.277	0.585	0.890	1.423	1.790	2.315	3.054
CUHP Predevelopment Peak Q (cfs) =	N/A	N/A	1.9	5.2	7.8	14.1	17.7	22.7	29.5
OPTIONAL Override Predevelopment Peak Q (cfs) =	N/A	N/A							
Predevelopment Unit Peak Flow, q (cfs/acre) =	N/A	N/A	0.10	0.28	0.42	0.75	0.95	1.21	1.58
Peak Inflow Q (cfs) =	N/A	N/A	3.3	6.7	9.5	15.6	19.3	24.4	31.4
Peak Outflow Q (cfs) =	0.3	3.3	0.1	0.4	4.0	10.7	15.1	21.2	28.8
Ratio Peak Outflow to Predevelopment Q =	N/A	N/A	0.1	0.5	0.8	0.9	0.9	1.0	
Structure Controlling Flow =	Plate	Spillway	Plate	Spillway	Spillway	Spillway	Spillway	Spillway	Spillway
Max Velocity through Grate 1 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Max Velocity through Grate 2 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Time to Drain 97% of Inflow Volume (hours) =	64	64	55	66	62	56	52	48	43
Time to Drain 99% of Inflow Volume (hours) =	72	73	62	75	73	69	67	64	60
Maximum Ponding Depth (ft) =	3.22	3.59	2.01	3.33	3.57	3.81	3.92	4.06	4.21
Area at Maximum Ponding Depth (acres) =	0.24	0.25	0.19	0.24	0.25	0.26	0.26	0.27	0.29
Maximum Volume Stored (acre-ft) =	0.513	0.602	0.255	0.536	0.595	0.656	0.687	0.724	0.766

# DETENTION BASIN OUTLET STRUCTURE DESIGN

*MHFD-Detention, Version 4.04 (February 2021)*



S-A-V-D Chart Axis Override	X-axis	Left Y-Axis	Right Y-Axis
minimum bound			
maximum bound			

# DETENTION BASIN OUTLET STRUCTURE DESIGN

Outflow Hydrograph Workbook Filename: \_\_\_\_\_

## Inflow Hydrographs

The user can override the calculated inflow hydrographs from this workbook with inflow hydrographs developed in a separate program.

SOURCE	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	
Time Interval	TIME	WQCV [cfs]	EURV [cfs]	2 Year [cfs]	5 Year [cfs]	10 Year [cfs]	25 Year [cfs]	50 Year [cfs]	100 Year [cfs]	500 Year [cfs]
5.00 min	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	0:15:00	0.00	0.00	0.04	0.06	0.08	0.05	0.07	0.07	0.09
	0:20:00	0.00	0.00	0.15	0.37	0.60	0.15	0.17	0.22	0.50
	0:25:00	0.00	0.00	1.16	3.06	5.26	1.10	1.42	1.99	4.34
	0:30:00	0.00	0.00	2.72	6.02	8.65	9.18	11.78	14.03	19.02
	0:35:00	0.00	0.00	3.21	6.72	9.47	13.50	16.86	20.90	27.31
	0:40:00	0.00	0.00	3.25	6.66	9.38	15.51	19.17	23.62	30.56
	0:45:00	0.00	0.00	3.01	6.15	8.84	15.64	19.29	24.36	31.37
	0:50:00	0.00	0.00	2.74	5.66	8.17	15.26	18.80	23.77	30.65
	0:55:00	0.00	0.00	2.51	5.19	7.58	14.26	17.65	22.77	29.42
	1:00:00	0.00	0.00	2.30	4.73	7.01	13.24	16.47	21.77	28.18
	1:05:00	0.00	0.00	2.12	4.34	6.54	12.25	15.33	20.77	26.97
	1:10:00	0.00	0.00	1.93	4.02	6.19	11.14	14.02	18.94	24.79
	1:15:00	0.00	0.00	1.76	3.71	5.86	10.18	12.88	17.24	22.75
	1:20:00	0.00	0.00	1.60	3.39	5.39	9.23	11.70	15.53	20.53
	1:25:00	0.00	0.00	1.44	3.06	4.86	8.32	10.55	13.91	18.40
	1:30:00	0.00	0.00	1.28	2.74	4.32	7.43	9.42	12.40	16.39
	1:35:00	0.00	0.00	1.12	2.43	3.80	6.54	8.31	10.92	14.45
	1:40:00	0.00	0.00	0.99	2.13	3.38	5.69	7.24	9.52	12.64
	1:45:00	0.00	0.00	0.89	1.92	3.08	5.02	6.40	8.41	11.21
	1:50:00	0.00	0.00	0.83	1.76	2.84	4.51	5.77	7.56	10.10
	1:55:00	0.00	0.00	0.76	1.61	2.61	4.09	5.25	6.84	9.15
	2:00:00	0.00	0.00	0.70	1.47	2.38	3.72	4.78	6.19	8.30
	2:05:00	0.00	0.00	0.63	1.32	2.14	3.36	4.32	5.57	7.46
	2:10:00	0.00	0.00	0.56	1.18	1.90	3.02	3.88	4.99	6.67
	2:15:00	0.00	0.00	0.50	1.04	1.67	2.70	3.45	4.44	5.93
	2:20:00	0.00	0.00	0.43	0.91	1.46	2.38	3.05	3.93	5.24
	2:25:00	0.00	0.00	0.37	0.78	1.25	2.08	2.66	3.44	4.58
	2:30:00	0.00	0.00	0.31	0.65	1.05	1.77	2.27	2.95	3.93
	2:35:00	0.00	0.00	0.25	0.52	0.86	1.47	1.89	2.47	3.28
	2:40:00	0.00	0.00	0.20	0.40	0.67	1.18	1.52	1.99	2.64
	2:45:00	0.00	0.00	0.14	0.28	0.48	0.88	1.14	1.51	2.01
	2:50:00	0.00	0.00	0.09	0.18	0.34	0.60	0.78	1.04	1.41
	2:55:00	0.00	0.00	0.05	0.12	0.25	0.37	0.51	0.68	0.96
	3:00:00	0.00	0.00	0.04	0.09	0.20	0.25	0.34	0.46	0.67
	3:05:00	0.00	0.00	0.03	0.07	0.16	0.17	0.24	0.32	0.47
	3:10:00	0.00	0.00	0.03	0.06	0.13	0.11	0.17	0.21	0.32
	3:15:00	0.00	0.00	0.02	0.05	0.10	0.08	0.12	0.14	0.22
	3:20:00	0.00	0.00	0.02	0.04	0.08	0.05	0.09	0.08	0.14
	3:25:00	0.00	0.00	0.01	0.03	0.06	0.04	0.06	0.05	0.09
	3:30:00	0.00	0.00	0.01	0.02	0.04	0.03	0.04	0.03	0.06
	3:35:00	0.00	0.00	0.01	0.02	0.03	0.02	0.03	0.03	0.05
	3:40:00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.04
	3:45:00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.03
	3:50:00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.02
	3:55:00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02
	4:00:00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01
	4:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	4:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:15:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:20:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:25:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:30:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:35:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:40:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:15:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:20:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:25:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:30:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:35:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:40:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

# DETENTION BASIN OUTLET STRUCTURE DESIGN

*MHFD-Detention, Version 4.04 (February 2021)*

## Summary Stage-Area-Volume-Discharge Relationships

The user can create a summary S-A-V-D by entering the desired stage increments and the remainder of the table will populate automatically.

The user should graphically compare the summary S-A-V-D table to the full S-A-V-D table in the chart to confirm it captures all key transition points.

## APPENDIX D – SWMP REPORT & GEC PLAN CHECKLIST



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**EL PASO COUNTY  
STORMWATER MANAGEMENT  
PLAN CHECKLIST**

EPC Project Number:

Revised: July 2019

Applicant	EPC
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**1. STORMWATER MANAGEMENT PLAN**

1	Applicant (owner/designated operator), SWMP Preparer, Qualified Stormwater Manager, and Contractor Information. (On cover/title sheet)	
2	Table of Contents	
3	Site description and location to include: vicinity map with nearest street/crossroads description	
4	Narrative description of construction activities proposed (e.g., may include clearing and grubbing, temporary stabilization, road grading, utility / storm installation, final grading, final stabilization, and removal of temporary control measures)	
5	Phasing plan – may require separate drawings indicating initial, interim, and final site phases for larger projects. Provide “living maps” that can be revised in the field as conditions dictate	
6	Proposed sequence for major activities: Provide a construction schedule of anticipated starting and completion dates for each stage of land-disturbing activity depicting conservation measures anticipated, including the expected date on which the final stabilization will be completed	
7	Estimates of the total site area and area to undergo disturbance; current area of disturbance must be updated on the SWMP as changes occur	
8	Soil erosion potential and impacts on discharge that includes a summary of the data used to determine soil erosion potential	
9	A description of existing vegetation at the site and percent ground cover and method used to determine ground cover	
10	Location and description of all potential pollution sources including but not limited to: disturbed and stored soils; vehicle tracking; management of contaminated soils; loading and unloading operations; outdoor storage of materials; vehicle and equipment maintenance and fueling; significant dust generating process; routine maintenance activities involving fertilizers, pesticides, herbicides, detergents, fuels, solvents, oils, etc.; on-site waste management; concrete truck/equipment washing; dedicated asphalt, concrete batch plants and masonry mixing stations; non-industrial waste such as trash and portable toilets	
11	Material handling to include spill prevention and response plan and procedures	
12	Spill prevention and pollution controls for dedicated batch plants	
13	Other SW pollutant control measures to include waste disposal and off-site soil tracking	
14	Location and description of any anticipated allowable non-stormwater discharge (ground water, springs, irrigation, discharge covered by CDPHE Low Risk Guidance, etc.)	
15	Name(s) of ultimate receiving waters; size, type and location of stormwater outfall or storm sewer system discharge	
16	Description of all stream crossings located within the project area or statement that no streams cross the project area	



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## EL PASO COUNTY STORMWATER MANAGEMENT PLAN CHECKLIST

EPC Project Number:

Revised: July 2019

		Applicant	EPC
17	SWMP Map to include:		
17a	construction site boundaries		
17b	flow arrows to depict stormwater flow directions		
17c	all areas of disturbance		
17d	areas of cut and fill		
17e	areas used for storage of building materials, soils (stockpiles) or wastes		
17f	location of any dedicated asphalt / concrete batch plants		
17g	location of all structural control measures		
17h	location of all non-structural control measures		
17i	springs, streams, wetlands and other surface waters, including areas that require maintenance of pre-existing vegetation within 50 feet of a receiving water		
18	Narrative description of all structural control measures to be used. Modifications to EPC standard control measures must meet or exceed County-approved details		
19	Description of all non-structural control measures to be used including seeding, mulching, protection of existing vegetation, site watering, sod placement, etc.		
20	Technical drawing details for all control measure installation and maintenance; custom or other jurisdiction's details used must meet or exceed EPC standards		
21	Procedure describing how the SWMP is to be revised		
22	Description of Final Stabilization and Long-term Stormwater Quality (describe nonstructural and structural measures to control SW pollutants after construction operations have been completed, including detention, water quality control measure etc.)		
23	Specification that final vegetative cover density is to be 70% of pre-disturbed levels		
24	Outline of permit holder inspection procedures to install, maintain, and effectively operate control measures to manage erosion and sediment		
25	Record keeping procedures identified to include signature on inspection logs and location of SWMP records on-site		
26	If this project relies on control measures owned or operated by another entity, a documented agreement must be included in the SWMP that identifies location, installation and design specifications, and maintenance requirements and responsibility of the control measure(s)		
	<b>Please note: all items above must be addressed. If not applicable, explain why, simply identifying "not applicable" will not satisfy CDPHE requirement of explanation.</b>		
<b>2. ADDITIONAL REPORTS/PERMITS/DOCUMENTS</b>			
a	Grading and Erosion Control Plan (signed)		
b	Erosion and Stormwater Quality Control Permit (ESQCP) (signed)		



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# **EL PASO COUNTY STORMWATER MANAGEMENT PLAN CHECKLIST**

EPC Project Number:

Revised: July 2019

Revised: July 2019		Applicant	EPC
<b>3. APPLICANT COMMENTS</b>			
a			
b			
c			
<b>4. CHECKLIST REVIEW CERTIFICATIONS</b>			
a	<p>Engineer of Record: The Stormwater Management 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 and State for Stormwater Management Plans.</p>  _____ Date _____		
b	<p>Review Engineer: The Stormwater Management Plan was reviewed and found to meet the checklist requirements except where otherwise noted or allowed by an approved deviation request.</p> _____ Date _____		



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**EL PASO COUNTY  
GRADING AND EROSION CONTROL  
PLAN CHECKLIST**

EPC Project Number:

Revised: July 2019

Applicant	EPC
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**1. GRADING AND EROSION CONTROL PLAN**

a	Vicinity map	
b	Adjacent city/town/jurisdictional boundaries, subdivision names, and property parcel numbers labeled	
c	North arrow and acceptable scale (1"=20' to 1"=100')	
d	Legend for all symbols used in the plan	
e	Existing and proposed property lines. Proposed subdivision boundary for subdivision projects	
f	All existing structures	
g	All existing utilities	
h	Construction site boundaries	
i	Existing vegetation (notes are acceptable in cases where there is no notable vegetation, only grasses/weeds, or site has already been stripped)	
j	FEMA 100-yr floodplain	
k	Existing and proposed water courses including springs, streams, wetlands, detention ponds, stormwater quality structures, roadside ditches, irrigation ditches and other water surfaces. Show maintenance of pre-existing vegetation within 50 feet of a receiving water	
l	Existing and proposed contours 2 feet or less (except for hillside)	
m	Limits of disturbance delineating all anticipated areas of soil disturbance	
n	Identify and protect areas outside of the construction site boundary with existing fencing, construction fencing or other methods as appropriate	
o	Off-site grading clearly shown and called out	
p	Areas of cut and fill identified	
q	Conclusions from soils/geotechnical report and geologic hazards report incorporated in grading design (slopes, embankments, materials, mitigation, etc.)	
r	Proposed slopes steeper than 3:1 with top and toe of slope delineated. Erosion control blanketing or other protective covering required	
s	Stormwater flow direction arrows	
t	Location of any dedicated asphalt / concrete batch plants	
u	Areas used for staging, storage of building materials, soils (stockpiles) or wastes. The use of construction office trailers requires PCD permitting	
v	All proposed temporary construction control measures, structural and non-structural. Temporary construction control measures shall be identified by phase of implementation to include "initial," "interim," and "final" or shown on separate phased maps identifying each phase	
w	Vehicle tracking provided at all construction entrances/exits. Construction fencing, barricades, and/or signage provided at access points not to be used for construction	
x	Temporary sediment ponds provided for disturbed drainage areas greater than 1 acre	



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GRADING AND EROSION CONTROL  
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		Applicant	EPC
y	Dewatering operations to include locations of diversion, pump and discharge(s) as anticipated at time of design		
z	All proposed temporary construction control measure details. Custom or other jurisdiction's details used must meet or exceed EPC standards		
aa	Any off-site stormwater control measure proposed for use by the project and not under the direct control or ownership of the Owner or Operator		
bb	Existing and proposed permanent storm water management facilities, including areas proposed for stormwater infiltration or subsurface detention		
cc	Existing and proposed easements (permanent and construction) including required off-site easements		
dd	Retaining walls (not to be located in County ROW unless approved via license agreement). Design by P.E. and building permit from Regional Building Department required for walls greater than or equal to 4 feet in height, series of walls, or walls supporting a surcharge		
ee	Plan certified by a Colorado Registered P.E., with EPC standard signature blocks for Engineer, Owner and EPC		
ff	Engineer's Statement (for standalone GEC Plan): 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.		
_____ Engineer of Record Signature		Date	
gg	Engineer's Statement (for GEC Plan within Construction Drawing set): These detailed plans and specifications were prepared under my direction and supervision. Said plans and specifications have been prepared according to the criteria established by the County for detailed roadway, drainage, grading and erosion control plans and specifications, and said plans and specifications are in conformity with applicable master drainage plans and master transportation plans. Said plans and specifications meet the purposes for which the particular roadway and drainage facilities are designed and are correct to the best of my knowledge and belief. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparation of these detailed plans and specifications.		
_____ Engineer of Record Signature		Date	
hh	Owner's Statement (for standalone GEC Plan): I, the owner/developer have read and will comply with the requirements of the Grading and Erosion Control Plan.		
_____ Owner Signature		Date	
ii	Owner's Statement (for GEC Plan within Construction Drawing set): I, the owner/developer have read and will comply with the requirements of the grading and erosion control plan and all of the requirements specified in these detailed plans and specifications.		
_____ Owner Signature		Date	



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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.

jj Filed in accordance with the requirements of the El Paso County Land Development Code, Drainage Criteria Manual Volumes 1 and 2, and Engineering Criteria Manual, as amended.

In accordance with ECM Section 1.12, these construction documents will be valid for construction for a period of 2 years from the date signed by the El Paso County Engineer. If construction has not started within those 2 years, the plans will need to be resubmitted for approval, including payment of review fees at the Planning and Community Development Director's discretion.

County Project Engineer Signature \_\_\_\_\_ Date \_\_\_\_\_

**2. ADDITIONAL REPORTS/PERMITS/DOCUMENTS**

a	Soils report / geotechnical investigation as appropriate for grading/utilities/drainage/road construction.		
b	Use Agreement/easement between the Owner or Operator and other third party for use of all off-site grading or stormwater control measures, used by the owner or operator but not under their direct control or ownership.		
c	Floodplain Development Permit		
d	USACE 404/wetlands permit/mitigation plan		
e	FEMA CLOMR		
f	State Engineer's permit/Notice Of Intent to Construct		
g	Stormwater Management Plan (SWMP)		
h	Financial Assurance Estimate (FAE) (signed)		
i	Erosion and Stormwater Quality Control Permit (ESQCP) (signed)		
j	Pre-Development Site Grading Acknowledgement & Right of Access Form (signed)		
k	Conditions of Approval met?		



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**3. STANDARD NOTES FOR EL PASO COUNTY GRADING AND EROSION CONTROL PLANS**

#			
1	Stormwater discharges from construction sites shall not cause or threaten to cause pollution, contamination, or degradation of State Waters. All work and earth disturbance shall be done in a manner that minimizes pollution of any on-site or off-site waters, including wetlands.		
2	Notwithstanding anything depicted in these plans in words or graphic representation, all design and construction related to roads, storm drainage and erosion control shall conform to the standards and requirements of the most recent version of the relevant adopted El Paso County standards, including the Land Development Code, the Engineering Criteria Manual, the Drainage Criteria Manual, and the Drainage Criteria Manual Volume 2. Any deviations from regulations and standards must be requested, and approved, in writing.		
3	A separate Stormwater Management Plan (SWMP) for this project shall be completed and an Erosion and Stormwater Quality Control Permit (ESQCP) issued prior to commencing construction. Management of the SWMP during construction is the responsibility of the designated Qualified Stormwater Manager or Certified Erosion Control Inspector. The SWMP shall be located on-site at all times during construction and shall be kept up to date with work progress and changes in the field.		
4	Once the ESQCP is approved and a "Notice to Proceed" has been issued, the contractor may install the initial stage erosion and sediment control measures as indicated on the approved GEC. A Preconstruction Meeting between the contractor, engineer, and El Paso County will be held prior to any construction. It is the responsibility of the applicant to coordinate the meeting time and place with County staff.		
5	Control measures must be installed prior to commencement of activities that could contribute pollutants to stormwater. Control measures for all slopes, channels, ditches, and disturbed land areas shall be installed immediately upon completion of the disturbance.		
6	All temporary sediment and erosion control measures shall be maintained and remain in effective operating condition until permanent soil erosion control measures are implemented and final stabilization is established. All persons engaged in land disturbance activities shall assess the adequacy of control measures at the site and identify if changes to those control measures are needed to ensure the continued effective performance of the control measures. All changes to temporary sediment and erosion control measures must be incorporated into the Stormwater Management Plan.		
7	Temporary stabilization shall be implemented on disturbed areas and stockpiles where ground disturbing construction activity has permanently ceased or temporarily ceased for longer than 14 days.		
8	Final stabilization must be implemented at all applicable construction sites. Final stabilization is achieved when all ground disturbing activities are complete and all disturbed areas either have a uniform vegetative cover with individual plant density of 70 percent of pre-disturbance levels established or equivalent permanent alternative stabilization method is implemented. All temporary sediment and erosion control measures shall be removed upon final stabilization and before permit closure.		
9	All permanent stormwater management facilities shall be installed as designed in the approved plans. Any proposed changes that effect the design or function of permanent stormwater management structures must be approved by the ECM Administrator prior to implementation.		



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**GRADING AND EROSION CONTROL**  
**PLAN CHECKLIST**

EPC Project Number:

Revised: July 2019

		Applicant	EPC
10	Earth disturbances shall be conducted in such a manner so as to effectively minimize accelerated soil erosion and resulting sedimentation. All disturbances shall be designed, constructed, and completed so that the exposed area of any disturbed land shall be limited to the shortest practical period of time. Pre-existing vegetation shall be protected and maintained within 50 horizontal feet of a waters of the state unless shown to be infeasible and specifically requested and approved.		
11	Compaction of soil must be prevented in areas designated for infiltration control measures or where final stabilization will be achieved by vegetative cover. Areas designated for infiltration control measures shall also be protected from sedimentation during construction until final stabilization is achieved. If compaction prevention is not feasible due to site constraints, all areas designated for infiltration and vegetation control measures must be loosened prior to installation of the control measure(s).		
12	Any temporary or permanent facility designed and constructed for the conveyance of stormwater around, through, or from the earth disturbance area shall be a stabilized conveyance designed to minimize erosion and the discharge of sediment off-site.		
13	Concrete wash water shall be contained and disposed of in accordance with the SWMP. No wash water shall be discharged to or allowed to enter State Waters, including any surface or subsurface storm drainage system or facilities. Concrete washouts shall not be located in an area where shallow groundwater may be present, or within 50 feet of a surface water body, creek or stream.		
14	During dewatering operations, uncontaminated groundwater may be discharged on-site, but shall not leave the site in the form of surface runoff unless an approved State dewatering permit is in place.		
15	Erosion control blanketing or other protective covering shall be used on slopes steeper than 3:1.		
16	Contractor shall be responsible for the removal of all wastes from the construction site for disposal in accordance with local and State regulatory requirements. No construction debris, tree slash, building material wastes or unused building materials shall be buried, dumped, or discharged at the site.		
17	Waste materials shall not be temporarily placed or stored in the street, alley, or other public way, unless in accordance with an approved Traffic Control Plan. Control measures may be required by El Paso County Engineering if deemed necessary, based on specific conditions and circumstances.		
18	Tracking of soils and construction debris off-site shall be minimized. Materials tracked off-site shall be cleaned up and properly disposed of immediately.		
19	The owner/developer shall be responsible for the removal of all construction debris, dirt, trash, rock, sediment, soil, and sand that may accumulate in roads, storm drains and other drainage conveyance systems and stormwater appurtenances as a result of site development.		
20	The quantity of materials stored on the project site shall be limited, as much as practical, to that quantity required to perform the work in an orderly sequence. All materials stored on-site shall be stored in a neat, orderly manner, in their original containers, with original manufacturer's labels.		
21	No chemical(s) having the potential to be released in stormwater are to be stored or used on-site unless permission for the use of such chemical(s) is granted in writing by the ECM Administrator. In granting approval for the use of such chemical(s), special conditions and monitoring may be required.		
22	Bulk storage of allowed petroleum products or other allowed liquid chemicals in excess of 55 gallons shall require adequate secondary containment protection to contain all spills on-site and to prevent any spilled materials from entering State Waters, any surface or subsurface storm drainage system or other facilities.		



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23	No person shall cause the impediment of stormwater flow in the curb and gutter or ditch except with approved sediment control measures.		
24	Owner/developer and their agents shall comply with the "Colorado Water Quality Control Act" (Title 25, Article 8, CRS), and the "Clean Water Act" (33 USC 1344), in addition to the requirements of the Land Development Code, DCM Volume II and the ECM Appendix I. All appropriate permits must be obtained by the contractor prior to construction (1041, NPDES, Floodplain, 404, fugitive dust, etc.). In the event of conflicts between these requirements and other laws, rules, or regulations of other Federal, State, local, or County agencies, the most restrictive laws, rules, or regulations shall apply.		
25	All construction traffic must enter/exit the site only at approved construction access points.		
26	Prior to construction the permittee shall verify the location of existing utilities.		
27	A water source shall be available on-site during earthwork operations and shall be utilized as required to minimize dust from earthwork equipment and wind.		
28	The soils report for this site has been prepared by <u>[Company Name, Date of Report]</u> and shall be considered a part of these plans.		
29	At least ten (10) days prior to the anticipated start of construction, for projects that will disturb one (1) acre or more, the owner or operator of construction activity shall submit a permit application for stormwater discharge to the Colorado Department of Public Health and Environment, Water Quality Division. The application contains certification of completion of a stormwater management plan (SWMP), of which this Grading and Erosion Control Plan may be a part. For information or application materials contact:  Colorado Department of Public Health and Environment Water Quality Control Division WQCD – Permits 4300 Cherry Creek Drive South Denver, CO 80246-1530 Attn: Permits Unit		
<b>4. APPLICANT COMMENTS</b>			
a			
b			
c			



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**EL PASO COUNTY  
GRADING AND EROSION CONTROL  
PLAN CHECKLIST**

EPC Project Number:

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Applicant	EPC
-----------	-----

**5. CHECKLIST REVIEW CERTIFICATIONS**

a	<p>Engineer of Record: The Grading and Erosion Control Plan was prepared under my direction and supervision and is complete and 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.</p> <p></p> <hr/> <p>Engineer of Record Signature</p>	<p>Date</p>		
b	<p>Review Engineer: The Grading and Erosion Control Plan was reviewed and found to meet the checklist requirements except where otherwise noted or allowed by an approved deviation request.</p> <hr/> <p>Review Engineer</p>	<p>Date</p>		

## APPENDIX E – INSPECTION REPORT TEMPLATE

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# CONSTRUCTION STORMWATER SITE INSPECTION REPORT

Facility Name		Permittee		
Date of Inspection		Weather Conditions		
Permit Certification #		Disturbed Acreage		
Phase of Construction		Inspector Title		
Inspector Name				
Is the above inspector a qualified stormwater manager? (permittee is responsible for ensuring that the inspector is a qualified stormwater manager)			YES <input type="checkbox"/>	NO <input type="checkbox"/>

INSPECTION FREQUENCY			
Check the box that describes the minimum inspection frequency utilized when conducting each inspection			
At least one inspection every 7 calendar days		<input type="checkbox"/>	
At least one inspection every 14 calendar days, with post-storm event inspections conducted within 24 hours after the end of any precipitation or snowmelt event that causes surface erosions		<input type="checkbox"/>	
• This is this a post-storm event inspection. Event Date: _____		<input type="checkbox"/>	
Reduced inspection frequency - Include site conditions that warrant reduced inspection frequency		<input type="checkbox"/>	
• Post-storm inspections at temporarily idle sites		<input type="checkbox"/>	
• Inspections at completed sites/area		<input type="checkbox"/>	
• Winter conditions exclusion		<input type="checkbox"/>	
Have there been any deviations from the minimum inspection schedule? If yes, describe below.		YES <input type="checkbox"/>	NO <input type="checkbox"/>

INSPECTION REQUIREMENTS*			
<ol style="list-style-type: none"> <li>i. Visually verify all implemented control measures are in effective operational condition and are working as designed in the specifications</li> <li>ii. Determine if there are new potential sources of pollutants</li> <li>iii. Assess the adequacy of control measures at the site to identify areas requiring new or modified control measures to minimize pollutant discharges</li> <li>iv. Identify all areas of non-compliance with the permit requirements, and if necessary, implement corrective action</li> </ol>			
<p>*Use the attached <b>Control Measures Requiring Routine Maintenance</b> and <b>Inadequate Control Measures Requiring Corrective Action</b> forms to document results of this assessment that trigger either maintenance or corrective actions</p>			

AREAS TO BE INSPECTED			
Is there evidence of, or the potential for, pollutants leaving the construction site boundaries, entering the stormwater drainage system or discharging to state waters at the following locations?			
		NO	YES
		If "YES" describe discharge or potential for discharge below. Document related maintenance, inadequate control measures and corrective actions <b>Inadequate Control Measures Requiring Corrective Action</b> form	
Construction site perimeter		<input type="checkbox"/>	<input type="checkbox"/>
All disturbed areas		<input type="checkbox"/>	<input type="checkbox"/>
Designated haul routes		<input type="checkbox"/>	<input type="checkbox"/>
Material and waste storage areas exposed to precipitation		<input type="checkbox"/>	<input type="checkbox"/>
Locations where stormwater has the potential to discharge offsite		<input type="checkbox"/>	<input type="checkbox"/>
Locations where vehicles exit the site		<input type="checkbox"/>	<input type="checkbox"/>
Other: _____		<input type="checkbox"/>	<input type="checkbox"/>

## CONTROL MEASURES REQUIRING ROUTINE MAINTENANCE

Definition: Any control measure that is still operating in accordance with its design and the requirements of the permit, but requires maintenance to prevent a breach of the control measure. These items are not subject to the corrective action requirements as specified in Part I.B.1.c of the permit.

Are there control measures requiring maintenance?	NO	YES	
	<input type="checkbox"/>	<input type="checkbox"/>	If "YES" document below

## **INADEQUATE CONTROL MEASURES REQUIRING CORRECTIVE ACTION**

**Definition:** Any control measure that is not designed or implemented in accordance with the requirements of the permit and/or any control measure that is not implemented to operate in accordance with its design. This includes control measures that have not been implemented for pollutant sources. If it is infeasible to install or repair the control measure immediately after discovering the deficiency the reason must be documented and a schedule included to return the control measure to effective operating condition as possible.

Are there inadequate control measures requiring corrective action?	NO	YES	
	<input type="checkbox"/>	<input type="checkbox"/>	If "YES" document below

Are there additional control measures needed that were not in place at the time of inspection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	If "YES" document below
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## REPORTING REQUIREMENTS

The permittee shall report the following circumstances orally within twenty-four (24) hours from the time the permittee becomes aware of the circumstances, and shall mail to the division a written report containing the information requested within five (5) working days after becoming aware of the following circumstances. The division may waive the written report required if the oral report has been received within 24 hours.

All Noncompliance Requiring 24-Hour Notification per Part II.L.6 of the Permit	
a. Endangerment to Health or the Environment	Circumstances leading to any noncompliance which may endanger health or the environment regardless of the cause of the incident (See Part II.L.6.a of the Permit) <i>This category would primarily result from the discharge of pollutants in violation of the permit</i>
b. Numeric Effluent Limit Violations	<ul style="list-style-type: none"><li>o Circumstances leading to any unanticipated bypass which exceeds any effluent limitations (See Part II.L.6.b of the Permit)</li><li>o Circumstances leading to any upset which causes an exceedance of any effluent limitation (See Part II.L.6.c of the Permit)</li><li>o Daily maximum violations (See Part II.L.6.d of the Permit)</li></ul> <i>Numeric effluent limits are very uncommon in certifications under the COR400000 general permit. This category of noncompliance only applies if numeric effluent limits are included in a permit certification.</i>

Has there been an incident of noncompliance requiring 24-hour notification?	NO <input type="checkbox"/>	YES <input type="checkbox"/>	If "YES" document below
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Date and Time of Incident	Location	Description of Noncompliance	Description of Corrective Action	Date and Time of 24 Hour Oral Notification	Date of 5 Day Written Notification *

\*Attach copy of 5 day written notification to report. Indicate if written notification was waived, including the name of the division personnel who granted waiver.

After adequate corrective action(s) and maintenance have been taken, or where a report does not identify any incidents requiring corrective action or maintenance, the individual(s) designated as the Qualified Stormwater Manager, shall sign and certify the below statement:

"I verify that, to the best of my knowledge and belief, all corrective action and maintenance items identified during the inspection are complete, and the site is currently in compliance with the permit."

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Name of Qualified Stormwater Manager

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Title of Qualified Stormwater Manager

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Signature of Qualified Stormwater Manager

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Date

Notes/Comments