STORMWATER MANAGEMENT PLAN

FOR CREEKSIDE SOUTH AT LORSON RANCH

PUDSP 20-001
SF 20-017

Stormwater Permit # _

Certification # _____

Owner/Developer:
Lorson, LLC
212 N. Wahsatch Avenue, Suite 301
Colorado Springs, Colorado 80903
Contact: Jeff Mark
(719) 635-3200

SWMP Administrator/ Qualified Stormwater Manager:

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SWMP Preparer:

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Contact: Wade Fothergill
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SWMP Location
On-site (copy) and Lorson, LLC (original)

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1.0 INTRODUCTION

Creekside South at Lorson consists of 200 residential lots and several tracts of land for a total site area of 64.257 acres. The site is currently farm and ranching land within Lorson Ranch.

Lorson, LLC is the overall developer and will construct major infrastructure (grading, roads, utilities, etc.) to serve the entire site. This Stormwater Management Plan (SWMP) will only cover construction activities that are provided as the overall developer. As the Lorson Ranch development progresses, this SWMP plan may need to be updated to reflect the revised scope of infrastructure.

Site Description:
The site is located south of the East Tributary of Jimmy Camp Creek and west of Trappe Drive (See Vicinity Map, Appendix A). The nearest major intersection is Trappe Drive and Lorson Boulevard. The major infrastructure for ***Creekside South at Lorson Ranch*** includes but is not limited to construction of residential streets, offsite/onsite utilities, and grading the site for residential lots. Armoring of the East Tributary of Jimmy Camp Creek is not included in this SWMP and will be completed as a separate project. Detention/Water quality for this development is located in two on-site ponds (one existing, one new ponds) and the new pond will function as a sediment basin. These on-site ponds will treat and detain stormwater runoff prior to discharging into the East Tributary of Jimmy Camp Creek.

The legal description for ***Creekside South at Lorson Ranch*** is:

LEGAL DESCRIPTION:

A PARCEL OF LAND IN THE NORTH HALF (N1/2) OF SECTION 23, T15S, R65W OF THE 6th P.M., EL PASO COUNTY, COLORADO MORE PARTICULARLY DESCRIBED AS FOLLOWS:
BASIS OF BEARING:
THE EAST-WEST CENTERLINE OF SAID SECTION 23 BEING MONUMENTED AT THE WEST QUARTER CORNER OF SAID SECTION WITH A FOUND NO. 6 REBAR, FROM WHICH THE EAST QUARTER CORNER OF SAID SECTION 23 MONUMENTED WITH AN ALUMINUM CAP STAMPED "PLS NO. 31161", BEARS N89°41'54"E A DISTANCE OF 5319.46 FEET, TO WHICH LINE ALL BEARINGS IN THIS LEGAL DESCRIPTION ARE RELATIVE;

COMMENCING AT THE WEST QUARTER CORNER OF SAID SECTION 23;
THENCE N89°41'54"E ALONG THE CENTERLINE OF SAID SECTION 892.24 FEET TO THE SOUTHEAST CORNER OF "CREEKSIDE AT LORSON RANCH FILING NO. 1" AS RECORDED UNDER RECEPTION NO. _____, IN THE RECORDS OF EL PASO COUNTY, COLORADO;
THENCE ALONG THE SOUTHERLY AND EASTERLY LINES OF "CREEKSIDE AT LORSON RANCH FILING NO. 1" THE FOLLOWING TWENTY-TWO (22) COURSES;

1) THENCE N36°43'29"E A DISTANCE OF 311.41 FEET;
2) THENCE N28°55'26"E A DISTANCE OF 265.02 FEET;
3) THENCE S77°01'58"E A DISTANCE OF 350.83 FEET;
4) THENCE N83°30'09"E A DISTANCE OF 446.06 FEET;
5) THENCE N16°26'24"E A DISTANCE OF 116.82 FEET TO A POINT OF CURVE;
6) THENCE 281.40 FEET ALONG THE ARC OF A CURVE TO THE RIGHT, SAID CURVE HAVING A RADIUS OF 215.00 FEET, A CENTRAL ANGLE OF 74°59'26", THE CHORD OF 261.74 FEET BEARS N53°56'07"E TO A POINT OF TANGENT
7) THENCE S88°34'10"E A DISTANCE OF 160.16 FEET;
8) THENCE S44°43'03"E A DISTANCE OF 230.04 FEET;
9) THENCE S65°32'01"E A DISTANCE OF 188.46 FEET;
10) THENCE N85°20'33"E A DISTANCE OF 169.20 FEET;
11) THENCE N17°08'25"E A DISTANCE OF 123.42 FEET;
12) THENCE N60°55'25"E A DISTANCE OF 219.41 FEET;
13) THENCE N77°50'20"E A DISTANCE OF 405.01 FEET;
14) THENCE S82°16'06"E A DISTANCE OF 188.62 FEET;
15) THENCE N76°28'55"E A DISTANCE OF 247.86 FEET;

16) THENCE N31°05'09"E A DISTANCE OF 90.00 FEET;
17) THENCE N58°54'51"W A DISTANCE OF 4.71 FEET;
18) THENCE N31°55'05"E A DISTANCE OF 182.34 FEET;
19) THENCE N11°17'09"E A DISTANCE OF 285.14 FEET;
20) THENCE N00°29'43"E A DISTANCE OF 173.06 FEET;
21) THENCE N11°46'57"E A DISTANCE OF 127.69 FEET;
22) THENCE N21°18'01"E A DISTANCE OF 20.20 FEET TO THE SOUTHERLY RIGHT-OF-WAY LINE OF LORSON BOULEVARD AS SHOWN IN THE PLAT OF " LORSON RANCH EAST FILING NO. 1" AS RECORDED UNDER RECEPTION NO. 219714288 IN THE RECORDS OF EL PASO COUNTY, COLORADO;

THENCE ALONG SAID LINE THE FOLLOWING FOUR (4) COURSES:
1) THENCE S86°49'28"E A DISTANCE OF 128.25 FEET;
2) THENCE N89°35'58"EA DISTANCE OF 125.90 FEET;
3) THENCE S47°05'26"E A DISTANCE OF 38.26 FEET;
4) THENCE S00°24'02"E A DISTANCE OF 38.12 FEET TO A POINT ON THE WEST LINE OF THAT PARCEL DESCRIBED IN A WARRANTY DEED UNDER RECEPTION NO. 217154370 IN THE EL PASO COUNTY RECORDS;

THENCE ALONG THE WEST LINES OF SAID PARCEL THE FOLLOWING FOUR (4) COURSES;
1) THENCE S00°24'02"E A DISTANCE OF 429.71 FEET TO A POINT OF CURVE;
2) THENCE 538.03 FEET ALONG THE ARC OF A CURVE TO THE LEFT, SAID CURVE HAVING A RADIUS OF 595.00 FEET, A CENTRAL ANGLE OF 51°48'35", THE CHORD OF 519.88 FEET BEARS S26°18'20"E TO A POINT OF TANGENT;
3) THENCE S52°12'37"E A DISTANCE OF 365.17 FEET TO A POINT ON A TANGENT CURVE;
4) THENCE 160.11 FEET ALONG THE ARC OF A CURVE TO THE LEFT, SAID CURVE HAVING A RADIUS OF 780.00 FEET, A CENTRAL ANGLE OF 11°45'39", THE CHORD OF 159.83 FEET BEARS S58°05'27"E TO THE WEST LINE OF THAT EASEMENT DESCRIBED IN BOOK 2665 AT PAGE 715 OF THE EL PASO COUNTY RECORDS;

THENCE S38°22'41"W ALONG SAID EASEMENT LINE 250.28 FEET;
THENCE S00°19'53"E ALONG SAID EASEMENT LINE 168.88 FEET TO THE EAST-WEST CENTERLINE OF SECTION 23;
THENCE S89°41'54"W ALONG SAID CENTERLINE 4073.30 FEET TO THE POINT OF BEGINNING;

2.0 SEQUENCE OF MAJOR ACTIVITIES – Exhibit 1 Construction

The anticipated date for beginning construction activities is June, 2020 and will be complete in June, 2021. Implementation of the storm water management plan should be in place prior to initiating construction activities. Infrastructure for all residential lots will be installed in one phase. The anticipated sequence of construction is as follows:

Initial: (June, 2020):
1. Installation of perimeter erosion control measures as shown on Exhibit 1 (Grading/Erosion Control Plan)
2. Vehicle Tracking Control Pads
3. Inlet Protection on existing inlets

Interim Stage (June-October, 2020)
4. Site Clearing/Grubbing and topsoil stockpiling.
5. Rough Grade Site
6. Construct new detention/sediment ponds
7. Construct underground water/sewer/storm.
8. Construct curb/gutter and pavement.

Final: (October, 2020 to June, 2021)
9. Final stabilize areas outside of ROW.
10. Construct gas/electric/cable/phone in the ROW areas.
11. Final stabilize ROW.
12. Final erosion control measures as areas are completed
13. Remove construction BMP's

3.0 PRE-DEVELOPMENT CONDITIONS

According to the current FEMA Flood Insurance Rate Map (FIRM) number 08041CO957 G, this site is not located within the 100-year floodplain. A portion of the offsite grading will be within the 100-year floodplain. See Appendix A.

Existing Vegetation:
The site is currently undeveloped and has been used as a pasture for the past several years. The East Tributary has also been used as pasture for cattle grazing and includes sparse to dense brush and several trees throughout the site. Ground cover is estimated at 70% density and will be visually verified in the field prior to groundbreaking activities.

Existing Slopes:
Existing slopes are around 2-4% that direct runoff northerly to the East Tributary of Jimmy Camp Creek. No grading will be done in the floodway of the East Tributary of Jimmy Camp Creek.

Existing Drainage Patterns:
Pre-development drainage patterns are split into two areas (east/west). The easterly areas which compriseof about half of the site flows north to the East Tributary. A detention pond was graded in 2019 next to the East Tributary that collects runoff from existing residential developments east of Trappe Drive. The existing detention pond outlets west into the East Tributary. Pre-development drainage patterns also include the westerly portions of the site flowing west/north directly to the East Tributary of Jimmy Camp Creek. This westerly portion is roughly half of the entire site. The East Tributary of Jimmy Camp Creek north of this site was reconstructed in 2013 and the portion north of this site will be selectively armored with a low flow channel in 2020 per construction plans prepared by Kiowa Engineering. This project does not change the grading within the creek. A separate permit for grading within the creek will be secured by Kiowa Engineering. The drainage patterns will remain the same after construction.

Existing Soil Types:
The following table summarizes the characteristics of the soil type. Additional information can be found in the soils/geology report by RMG for Creekside South.

Table 3.1: SCS Soils Survey.

Soil	Hydro. Group	Shrink/Swell Potential	Permeability	Surface Runoff Potential	Erosion Hazard
3-Ascalon Sandy Loam (2%)	B	Moderate	Moderate	Slow to Medium	Moderate
10-Blendon Sandy Loam (1%)	B	Low	Moderately Rapid	Slow	Moderate
52-Manzanst Clay Loam (11%)	C	Moderate to high	Slow	Medium	Moderate

54-Midway Clay Loam (10%)	D	High	Slow	Medium to Rapid	Moderate to High
56-Nelson-Tassel sandy loam (29%)	B	Moderate	Moderately Rapid	Slow	Moderate
104-Vona Sandy Loam (12%)	C	Moderate to High	Slow	Medium	Moderate
108-Vona Sandy Loam (35%)	B	Moderate	Moderate	Medium	Moderate

The existing soil types have a moderate potential for erosion which can be mitigated by employing appropriate downstream construction BMP's before/during/after construction to limit potential impacts to discharges. Based upon the location of the different soil types and type of construction, the contractor shall employ the most appropriate method of erosion control measures based on the El Paso County/City of Colorado Springs Drainage Criteria Manual, Vol. 2 or as directed by the SWMP administrator or his representative.

The existing soil types have a moderate potential for erosion which can be mitigated by employing appropriate downstream construction BMP's before/during/after construction to limit potential impacts to stormwater discharges. The potential impacts are sediment discharge into the existing storm sewer system, proposed storm sewer system, and the discharge into existing E2. Sediment should not be allowed to enter these existing and proposed facilities and can be mitigated by constructing small temporary sediment traps at low points prior to discharge into the systems. Potential impacts from runoff flowing to the East Tributary will be mitigated by constructing temporary sediment basins in the new pond location and by grading the site to reduce area draining south to the East Tributary. Based upon the location of the different soil types and type of construction, the contractor shall employ the most appropriate method of erosion control measures based on the El Paso County/City of Colorado Springs Drainage Criteria Manual, Vol. 2 or as directed by the SWMP administrator or his representative.

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

4.0 DEVELOPED CONDITIONS

The overall drainage concept for ***Creekside South at Lorson Ranch*** is to direct the easterly portions of the on-site flow north to the existing on-site detention Pond E2 for Stormwater Quality and detention prior to discharge into the East Tributary of Jimmy Camp Creek. In the westerly portions of the site runoff will be directed north to a new detention/WQ facility prior to discharge into the East Tributary. .

Proper erosion protection will be installed so no sediment enters the storm sewer system or is discharged offsite. All erosion control measures will be owned/maintained by Lorson Ranch.

Construction Site Estimates:

- Project Site: 64.257 acres
- Disturbed Area: 42.9 acres

- Percent Impervious before Construction: 0%
- Runoff Coefficient before Construction: 0.35 for
- Ground Cover density prior to construction 70%

- Percent Impervious after Construction: 52%
- Runoff Coefficient after Construction: 0.55 for developed areas
- Final stabilization must be 70% of pre-construction density.

Receiving Waters:

- East Tributary of Jimmy Camp Creek
- This SWMP does not include any grading within the floodway of the East Tributary of Jimmy Camp Creek.
- Description: The creek channels are dry creek beds that flows water intermittently after significant rainfall events in the drainage basin.
- Description of Storm Sewer System: There is an existing storm sewer system from Trappe Drive west to existing Pond E2 and the Pond E2 outlet structure.
- Description of impaired waters or waters subject to TMDLs: The site contains no impaired waters or waters subject to TMDLs.
- Description of unique features that are to be preserved**:** There are no known protected plant species within the project limits.
- Describe measures to protect these features: there are no known features to be protected.

Site Features and Sensitive Areas to be Protected:
This site is located within (100-year floodplain) and contains no other sensitive areas including wetlands or endangered species and no grading will occur in the floodway of the creek.

Stream Crossings:
This site is located within (100-year floodplain) but there will be no stream crossings with this development.

5.0 POTENTIAL SOURCES OF POLLUTION AND CONTROL STRATEGIES

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

Potential pollutants and sources, other than sediment, to stormwater runoff include Trash, debris, sediment tracking, sediment, concrete, paint, sanitary facilities, line transfer, fueling and equipment failure.

A dewatering permit is not anticipated with this project.

There are no asphalt or concrete batch plants proposed with this project.

Construction activities produce many different kinds of pollutants which may cause storm water contamination problems. Grading activities remove rocks, vegetation and other erosion controlling surfaces, resulting in the exposure of underlying soil to the elements. Because the soil surface is unprotected, soil and sand particles are easily picked up by wind and/or washed away by rain or other water sources.

The following sections highlight the potential sources of pollution at the Project Site and list the "Best Management" strategies that will be used to prevent migration of pollution offsite. Chemical materials stored indoors or that have no reasonable chance of impacting storm water quality will not be discussed in this plan.

Materials of significance stored on the project site include:

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

5.1 Wind Erosion & Dust Control
Pollutant: Sediment
Best Management Strategies:

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

5.2 Vehicular Transport
Pollutant: Sediment Tracking
Best Management Strategies:

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

5.3 Stockpiles
Pollutant: Sediment
Best Management Strategies:

- Locate stockpiles clear of any water flow paths.
- Locate stockpiles within the property boundary.
- Stockpiles will have erosion control devices as needed installed around the base to prevent the migration of soil.
- Topsoil stock piles and disturbed portions of the site where construction activity temporarily ceases for at least 30 days will be stabilized with temporary seed and mulch no later than 21 days from the last construction activity in the area.

5.4 Grading, Trenching, Export/Import
Pollutant: Sediment
Best management Strategies:

- Earth moving will be minimized by the engineering balancing of the site.

- Disturbed portions of the site where construction activity temporarily ceases for at least 30 days will be stabilized with temporary seed and mulch no later than 21 days from the last construction activity in the area.
- Seed bed preparation is not required if soil is in loose condition.
- Prior to seeding, fertilizer shall be applied to each acre to be stabilized in accordance with the manufacturer's specifications.
- If required seeding areas shall be mulched with straw to a uniformed cover. The straw mulch is to be tacked into place by a disk with blades set nearly straight.
- A site specific erosion control drawing has been developed showing the location of Best Management practices to be used during site construction.
- Where indicated on the erosion control plan, Best Management Practices will be installed.
- Material shall be in accordance with the plans and specifications and all construction shall be provided in accordance with the manufacturer's specifications.
- All BMP's will be inspected bi-weekly and cleaned/maintained as required.

5.5 Waste, Residual Concrete

Pollutant: Concrete, paint, and Phosphoric Acid

Best Management Strategies:

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

5.6 Sanitary Facilities, Trash Containers & Littering

Pollutant: Bacteria, Ammonia, Trash

Best Management Strategies:

- Portable facilities will be regularly serviced to prevent excessive waste containment and overflow.
- All waste materials will be collected and stored in a container which will meet all local and any state solid waste management regulations.
- Trash dumpsters will be emptied prior to becoming 90% full or when debris control becomes an issue.
- Employees will be instructed on the importance of recycling and waste management, and will be held responsible for improper waste management.

5.7 Fueling, Hazardous Materials, Equipment Leakage, Fertilizer

Pollutant: Petroleum Hydrocarbons, Ethylene Glycol, Sediment

Best Management Strategies:

- MSDS sheets will be maintained in the project trailer for all onsite materials
- All dry materials such as cement will be covered and protected from rain.
- Secondary containment will be provided for stored fuel, oil, paint and any material classified as hazardous.
- Subcontractors are responsible for hazardous waste removal back to their own facilities for ultimate transportation, storage and disposal.
- Supplies will be kept onsite as necessary to control any potential spill.

- Employees will be held responsible for any illegal dumping.
- Seals will be checked by a qualified professional on all equipment and containers containing significant materials that could contribute potential pollutants and will be replaced as necessary.
- Equipment will be inspected by a qualified professional.
- Drip pans will be available for minor leaks and during fueling operations.
- Fueling nozzles, gauges, hoses, seals, and emergency shutoff valves will be inspected for leaks prior to use.
- Under no circumstances during fueling will the fueling hose/nozzle be left unattended.
- Fertilizers used will be applied only in the minimum amounts recommended by soil tests.
- Once applied, fertilizers will be worked into the soil to limit exposure to storm water.
- Stored fertilizer will be protected from exposure to precipitation and storm water runoff.

5.8 Dewatering – not anticipated to be necessary. This shown for information only
Pollutant: Sediment, Oil and/or Grease and Phosphoric Acid
Best Management Strategies:

- All dewatering will be filtered through rock and/or woven geo mesh fabric.
- All dewatering will be tested for Pollutants per state guidelines weekly

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

6.0 BEST MANAGEMENT PRACTICES (BMP's)

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

6.1 – Erosion and Sediment Control BMP's

6.1.1 Minimize Disturbed Area and Protect Natural Features and Soil

All work will occur inside the limits of construction per the erosion Control Site Plan. See Exhibit 1. Linear construction of the sanitary sewer will occur from downstream to upstream. Erosion control measures noted on Exhibit 1 shall be employed linear along the trench excavation as construction progresses to minimize disturbed area.

6.1.2 Phase Construction Activity

The sequence for the installation and removal of erosion and sediment control measures is as follows:

1. Installation of perimeter erosion control measures as shown on Exhibit 1.
2. Site Clearing/Grubbing and topsoil stockpiling.
3. Construct detention/sediment pond
4. Final grading of street ROW's and other areas
5. Construct underground water/sewer/storm.
6. Construct curb/gutter and pavement.
7. Final stabilize areas outside of ROW.

8. Construct gas/electric/cable/phone in the ROW areas.
9. Final stabilize ROW.
10. Final erosion control measures as areas are completed

6.1.3 Control Stormwater Flowing onto and through the Project

Narrative:
There is offsite stormwater flowing onto this project from one existing storm sewer outfalls from Trappe Drive entering Pond E2. Pond E2 detains/treats runoff from residential developments west of Trappe Drive and discharges into a 48" RCP and swale directly to the East Tributary. Pond E2 will be expanded to accommodate development of this site. The existing full spectrum outlet structure will be slightly modified to meet full spectrum detention requirements by El Paso County.

6.1.4 Stabilize Soils

No disturbed area which is not actively being worked shall remain denuded for more than 30 calendar days unless otherwise authorized by the director. Temporary cover by seeding or mulching should be provided on areas which will be exposed for a period greater than 21 days before permanent stabilization can be achieved. Permanent cover should be provided on all areas as soon as possible, by means of seeding and mulching, straw or hay mulch is required. All soil stock piles and borrow areas must protected with silt fence within 21 days after grading. All slopes within the project limits that are found to be eroding excessively within two years of permanent stabilization shall be provided additional slope stabilization methods such as seeding and mulching.
Water is to be used for dust control. The Contractor will prevent the escape of this water and any sediment it may carry from the construction site.

6.1.5 Protect Slopes

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

6.1.6 Protect Storm Drain Inlets

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

6.1.7 Establish Perimeter Controls and Sediment Barriers

Temporary stabilization will include the installation of silt fences on the downslope perimeter of project area. The silt fence will be trenched in on the uphill side 6 inches deep and 6 inches wide as detailed in the silt fence exhibit. Sediment will be removed when it reaches 1/3 the height of the fence. Silt fence will be inspected and replaced or repaired as needed.

6.1.8 Retain Sediment On-Site

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

An alternate to sediment traps are temporary sediment basins.

6.1.9 Establish Stabilized Construction Exits

The construction entrance will be established in the entry points of roads. The construction entrance will be at least 75 feet in length and approximately 12 feet wide and graded so runoff does not leave the site. The aggregate will be established at 8 inches thick on top of 4 inch minimum thick free draining material on top of geotextile and will consist of Type G dense graded material. A stabilized stone pad with a filter fabric under liner will be placed at points of vehicular ingress and egress.

6.1.10 Additional BMP's

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

INITIAL BMP'S:
1. PERIMETER SILT FENCE
2. VEHICLE TRACKING CONTOL PADS
3. INLET PROTECTION FOR EXISTING OUTLET STRUCTURE FOR POND E2
4. PLACEMENT OF ON-SITE SWMP MANUAL

INTERIM BMP'S:
1. TEMPORARY SEDIMENT BASINS AS GRADING PROGRESSES
2. TEMPORARY SEEDING/MULCHING AS NEEDED
3. STRAW BALE CHECKS AS NEEDED DURING GRADING

FINAL BMP'S:
1. FINAL SEEDING AND MULCHING
2. STRAW ECB ON PERMANENT SLOPES 6:1 OR STEEPER.

3. POND OUTLET STRUCTURES

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

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

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

Vehicle Tracking Control is needed at the main construction entrance location. Vehicle tracking control shall be installed at the edge of the construction staging area where construction vehicles regularly exit onto existing asphalt road. If sediment tracking occurs it will be cleaned within 24 hours.
See Vehicle Tracking Control Detail in Appendix C. Removal of this BMP will occur only after project is substantially complete and is ready for seeding operations; the area will then be seeded per specification with the rest of the project.

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

Portable Toilets: Portable toilets are brought in from a service contractor and will be maintained in accordance with standard waste disposal practices using vacuum trucks and place on stable ground to minimize risk of spillage. All portable toilets will be kept a minimum of 50' from any waters of the state. They shall be adequately staked and cleaned on a weekly basis and inspected for spills.

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

6.1.11 Permanent BMP'S:

Re-vegetation:

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

Final Stabilization will be considered complete when all disturbed areas have a minimum of 70% preconstruction coverage for the specification requirements. Then all temporary BMP's will be removed and the exposed areas left behind will be seeded.

Other permanent BMP's include Detention/WQ Pond E2 and Pond J to treat storm runoff prior to entering the East Tributary of Jimmy Camp Creek.

6.2 Good Housekeeping BMP'S

6.2.1 Material Handling and Waste Management

The site will use a private refuse collector that will remove litter twice weekly. No less than one litter receptacle will be present at the construction site. In the event that unusual items such as tanks, cylinders, unidentified containers, etc. which could contain potentially hazardous materials are discovered or disturbed, the Fire and Rescue services will be notified.
Litter and debris will be picked up and disposed of properly daily.
Temporary toilet facilities will be located 50 feet away from any storm drain inlets and all waters of the state. They shall be adequately staked, cleaned, and inspected for spills on a weekly basis.

6.2.2 Establish Proper Building Material Staging Areas

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

6.2.3 Designate Washout Areas

A concrete washout will be installed to detail as shown in Exhibit 1, and will be placed more than 500 feet away from any waters of the state.

6.2.4 Establish Proper Equipment/Vehicle Fueling and Maintenance Practices

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

See section 7 for the Spill Plan.

6.2.5 Control Equipment/Vehicle Washing
Washing any equipment will not be allowed on-site

6.2.6 Any Additional BMPs
There are no additional BMP's anticipated

6.2.7 Allowable Non-Stormwater Discharge Management
There are no visible natural springs or irrigation or other non-stormwater discharges anticipated to be encountered. The existing FMIC irrigation facility is underground in a pipe and does not discharge onto this site.

6.2.8: SELECTING POST-CONSTRUCTION BMPs
Post Construction BMPs. Re-vegetation including seeding, mulching and erosion control blanket, and WQ ponds for long-term stormwater quality will be final BMP's. Permanent stabilization will be achieved with 70% pre construction vegetative establishment.

7.0 SPILL PREVENTION AND CONTROL PLAN

The SITE SUPERINTENDENT will act as the point of contact for any spill that occurs at this jobsite. The project manager will be responsible for implementation of prevention practices, spill containment / cleanup, worker training, reporting and complete documentation in the event of a spill. The ECO shall immediately notify the Owner, /Construction Manager, STATE and the Local Fire Department in addition to the legally required Federal, State, and Local reporting channels (including the National Response Center,
800.424.8802) if a reportable quantity is released to the environment
.

7.1 SPILL PREVENTION BEST MANAGEMENT PRACTICES

This section describes spill prevention methods Best Management Practices (BMP) that will be practiced to eliminate spills before they happen.

7.1.a Equipment Staging and Maintenance
Store and maintain equipment in a designated area Reduce the amount of hazardous materials and waste by substituting non-hazardous or less hazardous materials.
Use secondary containment (drain pan) to catch spills when removing or changing fluids.
Use proper equipment (pumps, funnels) to transfer fluids Keep spill kits readily accessible Check incoming vehicles for leaking oil and fluids.
Transfer used fluids and oil filters to waste or recycling drums immediately following generation.
Inspect equipment routinely for leaks and spills Repair equipment immediately, if necessary implement a preventative maintenance schedule for equipment and vehicles.

7.1.b Fueling Area
Perform fueling in designated fueling area minimum 50' away from federal waters
Use secondary containment (drain pan) to catch spills
Use proper equipment (pumps, funnels) to transfer fluids
Keep spill kits readily accessible
Inspect fueling areas routinely for leaks and spills

Hazardous Material Storage Areas
Reduce the amount of hazardous materials by substituting non-hazardous or Less hazardous materials.

7.1. c Hazardous Material Storage Areas
Minimize the quantity of hazardous materials brought onsite
Store hazardous materials in a designated area away from drainage points.

7.1. d Unexpected Contaminated Soil and Water
• Investigate historical site use
• Perform all excavation activities carefully and only after the Owner/Construction Manager directed any activities

7.2 **SPILL CONTAINMENT METHODS**
The following discussion identifies the types of secondary containment that will be used in the event of a spill. Table 1 summarizes the containment methods for each potential source.

• **Equipment Staging and Maintenance Area.** An equipment leak from a fuel tank, equipment seal, or hydraulic line will be contained within a spill containment cell placed beneath all stationary potential leak sources. An undetected leak from parked equipment will be cleaned up using hand shovels and containerized in a 55-gallon steel drum for offsite disposal.
• **Fueling Area.** A small spill during fueling operations will be contained using fuel absorbent pads at the nozzle. The transfer of fuel into portable equipment will be performed using a funnel and/or hand pump and a spill pad used to absorb any incidental spills/drips. Any leaking tanks or drums will have fluids removed and transferred to another tank, drum, or container for the fluids. A spill response kit will be located near the fueling area or on the fuel truck for easy access. The spill response kit will include plastic sheeting, tarps, over pack drums, absorbent litter, and shovels.
• **Hazardous Material Storage Area.** A spill from containers or cans in a hazardous material storage area will be contained within the storage cabinet these materials are kept in.
• **Unexpected Contaminated Soil.** If contaminated soil is encountered during the project, the
Owner/Construction Manager will be notified immediately. Small quantities of suspected contaminated soil will be placed on a 6-mil plastic liner and covered with 6-mil plastic. A soil berm or silt fence will be used to contain the stockpile and prevent migration of contaminated liquids in the soil.

Table 1: Spill Prevention and Containment Methods

Potential Spill Source	**Potential Spill Source**
Equipment Staging and Maintenance Area	Spill containment pad, spill kit, pumps, funnels
Fueling Area (site equipment only	Spill containment pad, spill kit, pumps, funnels
Hazardous Material Staging Area	Spill containment pad, spill kit, pumps, funnels

Unexpected Contaminated Soil	Plastic liner, plastic cover, soil berm, hay bales, lined super sacks

7.3 SPILL COUNTERMEASURES

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

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

8.0 INSPECTIONS

8.1 Inspections

Inspections will occur at least every 14 days and within 24 hours of a precipitation or snow melt event producing runoff, which from past experience this occurs with precipitation of 1/4 inch of rain or more. The primary site for tracking weather data and rainfall measurements will be taken from
Weather Underground and a rain gauge will be onsite for verification only.

1. Inspection Personnel:

The contract Qualified Stormwater Manager will conduct the site inspections as mentioned above in Section 1. This individual is required to be qualified per criteria in El Paso County Engineering Criteria Manual, Appendix I, Section I.5.

2. Inspection Schedule and Procedures:

The inspection schedule will be routinely accomplished every 14 days and after every storm event or snow melt for the entire site with all BMP's evaluated for performance and need. Inspection logs must be signed. Any BMP found to be ineffective will be re-accomplished or replaced with a new BMP to provide the level of protection needed. BMP's found to be no longer needed will be removed. Inspections will also be

accomplished as soon as practical, but within 24 hours of the end of a precipitation or snow melt event causing surface erosion.
The general procedures for correcting problems when they are identified will be to document the problem in the log and devise a solution utilizing all resources available to formulate BMP's that will correct the problem as soon as possible.
A copy of the inspection report to be used for the site is attached. See Appendix.

8.2 Delegation of Authority

Duly Authorized Representative(s) or Position(s):
Authorized representatives for the SWMP plan will be: Jeff Mark – Primary Contact
Qualified Stormwater Manager – Trevor Terrill

8.3 Revisions to the SWMP

The Qualified Stormwater Manager and/or the site superintendent have the authority to add/subtract/revise BMP's as necessary to accommodate stormwater flow and prevent runoff. However, the engineer should be notified when any major redirection of runoff, offsite runoff, pond modifications, or other substantial changes are made to this SWMP. Changes should be documented per Section 9.0. The SWMP should be viewed as a "living document" that is continuously being reviewed and modified as a part of the overall process of evaluating and managing stormwater quality issues at the site. The Qualified Stormwater Manager shall amend the SWMP when there is a change in design, construction, 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 stormwater discharges associated with construction activity or when BMPs are no longer necessary and are removed.

9.0 RECORDKEEPING AND TRAINING

9.1 Recordkeeping

Records will be retained for a minimum period of at least 3 years after the permit is terminated.
Major activities will start on 4/01/2020:
Date(s) when construction activities permanently cease on a portion of the site: 6/2021
Date(s) when an area is either temporarily or permanently stabilized: 6/2021

9.2 *Changes to the SWMP*

Any changes will be referenced in APPENDIX. See Section 8.3 for authority to change the SWMP.

9.3 Training

Individual(s) Responsible for Training:
All personnel on site will trained on the site specific SWMP requirements to be conducted by the Qualified Stormwater Manager and/or the site superintendent.

9.4 SWMP Location

The on-site SWMP will be located at the SW corner of Trappe Drive and Horton Drive as indicated on Exhibit 1. All signed inspection logs will be kept on-site with the SWMP.

10.0 FINAL STABILIZATION

Final stabilization will be accomplished by contractors to re-vegetate the area of disturbance per the approved plans and specifications. Final stabilization will include permanent seeding/mulching of disturbed areas, sediment forebays, erosion control blankets, turf reinforcement mats, and permanent BMP's.

Once 70% of the pre-development vegetative cover has been established and has been accepted, temporary BMP's will be removed and the permit will be terminated and filed.

Long term stormwater quality will be achieved by on-site full spectrum detention ponds with WQ outlet structures.

Final stabilization is anticipated to be completed in June, 2021

APPENDIX A

VICINITY MAP
NO SCALE

CORE
ENGINEERING GROUP

15004 1ST AVE. S.
BURNSVILLE, MN 55306
PH: 719.570.1100

CONTACT: RICHARD L. SCHINDLER, P.E.
EMAIL: Rich@ceg1.com

CREEKSIDE SOUTH AT LORSON RANCH
VICINITY MAP

SCALE:	DATE:	FIGURE NO.
NTS	JANUARY, 2020	--

JOINS PANEL 0769

104° 37' 30.00"

38° 45' 0.00"

$^{42}89^{000m}$N

NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 15 SOUTH, RANGE 65 WEST.

City of Colorado Springs
080060

5733.0 I

5731.2

5730.9

5728.6

ZONE AE

5736.7

H 5726.2

14

13

REVISED AREA

5719.6

5724.3

5718.8

ZONE AE

REVISED AREA

5718.8

5718.8

5718.8

5718.8

5718.2

$^{42}88^{000m}$N

G 5711.8

Bridge

FONTAINE BLVD

5710.4

Jimmy Camp Creek - East Tributary

5709.2

5709.7

El Paso County Unincorporated Areas
080059

ZONE AE

5709.5

5709.3 F

Bridge

5709.2

5697.2

5698.8

5701.6 E

5704.7

5705.2

LORSON BLVD

ZONE AE

SITE

ZONE AE

ZONE AE

5705.0

5696

5699.8

City of Fountain
080061

23

APPLE TREE PL

CITY OF FOUNTAIN

EL PASO COUNTY

ROLLING RIDGE RD

HERITAGE RD

JOINS PANEL 0976

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99*
	With BFE or Depth *Zone AE, AO, AH, VE, AR*
	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2 % Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	Area with Reduced Flood Risk due to Levee See Notes. *Zone X*

SCALE

N

Map Projection:
Universal Transverse MercatorNAD 1983 UTM Zone 13N
Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 500 feet 1:6,000

0 250 500 1,000 Feet

0 62.5 125 250 Meters

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

EL PASO COUNTY, COLORADO
and Incorporated Areas

PANEL 957 OF 1300

FEMA

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
COLORADO SPRINGS, CITY OF	080060	0957	G
EL PASO COUNTY	080059	0957	G
FOUNTAIN, CITY OF	080061	0957	G

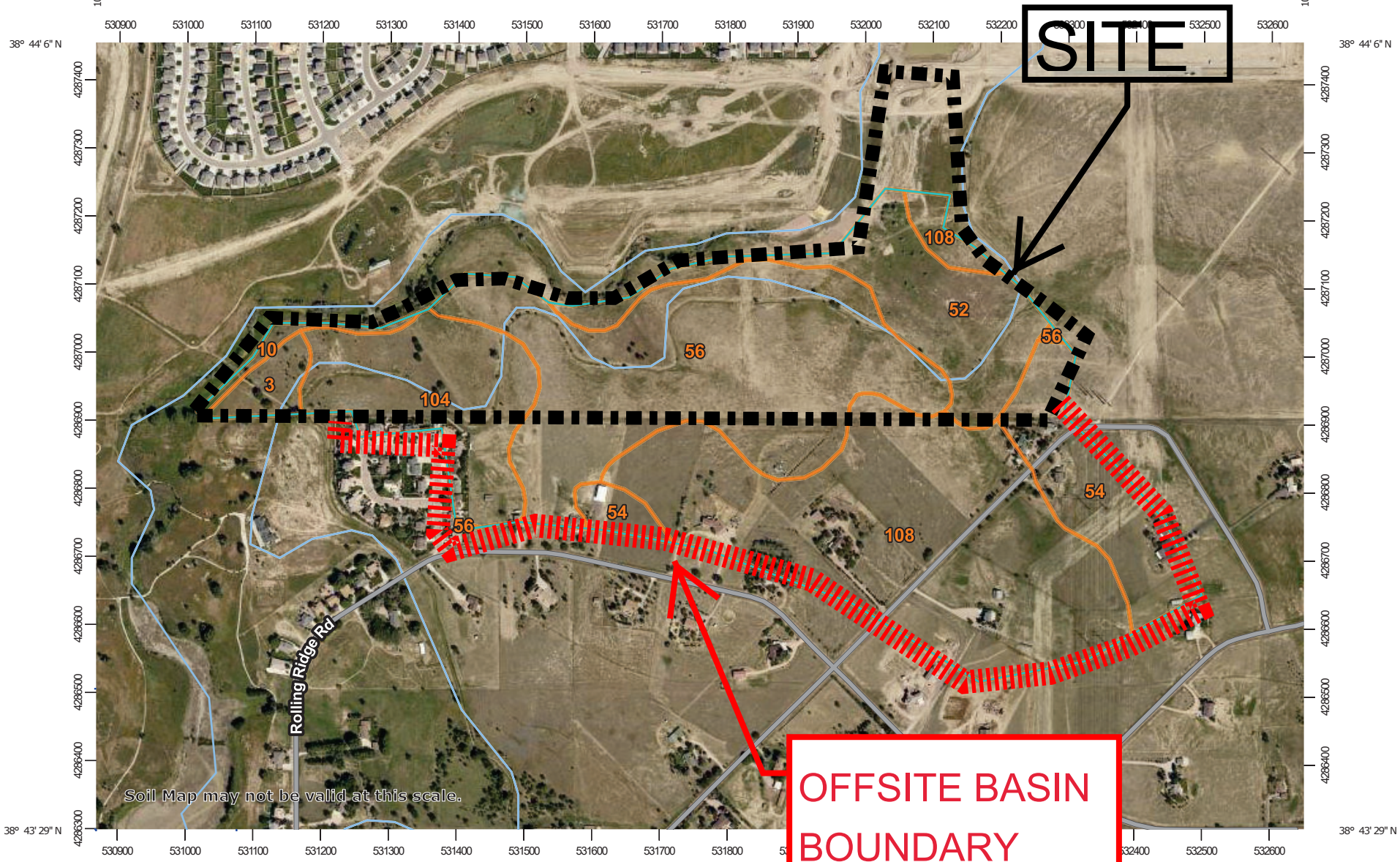
REVISED TO REFLECT LOMR EFFECTIVE: May 4, 2020

VERSION NUMBER
1.1.1.0

MAP NUMBER
08041C0957G

MAP REVISED
DECEMBER 7, 2018

Soil Map—El Paso County Area, Colorado
(Creekside South)



Map Scale: 1:8,150 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 350 700 1400 2100

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

APPENDIX B

EROSION CONTROL PLANS

PRELIMINARY SITE GRADING CONSTRUCTION PLANS
FOR

CREEKSIDE SOUTH AT LORSON RANCH

EARLY OVERLOT GRADING / EROSION CONTROL PLANS

VICINITY MAP
NO SCALE

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

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

SHEET INDEX	
SHEET NO.	SHEET DESCRIPTION
C0.1	COVER SHEET
C0.2	NOTES (GENERAL, GRADING, EROSION CONTROL)
C0.3	TYPICAL SECTIONS
C4.1 ~ C4.3	GRADING AND EROSION CONTROL PLAN
C9.1 ~ C9.6	POND GRADING AND OUTLET STRUCTURE DETAILS
C12.1 ~ C12.3	DETAILS

LEGEND

STREET R.O.W.

PROPOSED STORM SEWER

WATER / SANITARY
WIDEFIELD WATER AND SANITATION DISTRICT
8495 FONTAINE BLVD.
COLORADO SPRINGS, CO 80925
719-390-7111

CABLE
COMCAST
P.O. BOX 173838
DENVER, CO 80217
970-641-4774

ELECTRIC
MOUNTAIN VIEW ELECTRIC
11140 E. WOODMEN RD.
COLORADO SPRINGS, CO 80831
719-495-2283

SECURITY FIRE PROTECTION DISTRICT
400 SECURITY BOULEVARD
SECURITY, CO 80911
719-392-7121

TELEPHONE
CENTURYLINK
7925 INDUSTRY ROAD
COLORADO SPRINGS, CO 80939
719-278-4651

GAS
BLACK HILLS ENGERGY
7060 ALLEGRE ST.
FOUNTAIN, CO 80817
719-393-6639

EL PASO COUNTY
PLANNING AND COMMUNITY DEVELOPMENT
2880 INTERNATIONAL CIRCLE
COLORADO SPRINGS, CO 80910
719-520-6300

BASIS OF BEARING
BEARINGS ARE BASED ON THE SOUTH LINE OF THE NORTH HALF OF SECTION 23, TOWNSHIP 15 SOUTH, RANGE 65 WEST OF THE 6TH PRINCIPAL MERIDIAN AS BEING SOUTH 8941'52" WEST. THE EAST QUARTER CORNER OF SAID SECTION 23 IS A FOUND 3-1/2" ALUMINUM CAP MONUMENT AND THE WEST QUARTER CORNER OF SAID SECTION 23 IS A FOUND 2-1/2" ALUMINUM CAP MONUMENT

BENCHMARK
FIMS MONUMENT F204 LOCATED AT THE NORTHWEST CORNER OF FONTAINE BLVD AND COTTONWOOD GROVE DR. ELEVATION 5724.072 (N.G.V.D. 29)

TRAFFIC CONTROL NOTE
THE CONTRACTOR SHALL PROVIDE ALL TRAFFIC CONTROL DEVICES AND MONITORING NECESSARY TO SAFELY COMPLETE THE WORK SHOWN IN THESE CONSTRUCTION DOCUMENTS IN CONFORMANCE WITH M.U.T.C.D. GUIDELINES. THE CONTRACTOR SHALL COMPLETE ALL NECESSARY WORK FOR PLAN REVIEW, PERMITS AND PROCESSING. TRAFFIC CONTROL WILL NOT BE PAID SEPARATELY BUT IS INCLUDED IN THE COST OF THE PROJECT.

PREPARED FOR:
LORSON, LLC
N. WAHSATCH AVE., SUITE 301
COLORADO SPRINGS, CO 80903
719-635-3200
CONTACT: JEFF MARK

PREPARED BY:
CORE ENGINEERING GROUP
15004 1ST AVENUE S.
BURNSVILLE, MN 55306
719-570-1100
CONTACT: RICHARD L. SCHINDLER P.E.

DEVELOPER'S STATEMENT
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.

BUSINESS NAME LORSON, LLC

BY JEFF MARK DATE

TITLE MANAGER

ADDRESS 212 N. WAHSATCH AVE. SUITE 301
COLORADO SPRINGS, CO 80903

CONSTRUCTION APPROVAL
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 ECM SECTION 1.12, THESE CONSTRUCTION DOCUMENTS WILL BE VALID FOR CONSTRUCTION FOR A PERIOD OF 2 YEARS, THE PLANS WILL NEED TO BE RESUBMITTED FOR APPROVAL, INCLUDING PAYMENT OF REVIEW FEES AT THE PLANNING AN COMMUNITY DEVELOPMENT DIRECTOR'S DISCRETION.

JENNIFER IRVINE, P.E., COUNTY ENGINEER/ECM ADMINISTRATOR DATE
CONDITIONS:

ENGINEER'S APPROVAL
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 RESPONSIB9ILITY FOR ANY NEGLIGENT ACTS, ERRORS, OR OMISSIONS ON MY PART IN PREPARING THIS PLAN

RICHARD L. SCHINDLER, P.E. # 33997
FOR AND ON BEHALF OF CORE ENGINEERING GROUP

PUDSP-20-001

CORE ENGINEERING GROUP
15004 1ST AVENUE S.
BURNSVILLE, MN 55306
PH: 719.570.1100
CONTACT: RICHARD L. SCHINDLER, P.E.
EMAIL: Rich@Ceng1.com

NO. | DESCRIPTION | DATE

PREPARED FOR:
LORSON, LLC
212 N. WAHSATCH AVE. SUITE 301
COLORADO SPRINGS, COLORADO 80903
(719) 635-3200
CONTACT: JEFF MARK

PROJECT:
CREEKSIDE SOUTH AT LORSON RANCH
TRAPPE DR - HORTON DR
COLORADO SPRINGS, COLORADO

DRAWN: RLS
DESIGNED: RLS
CHECKED: RLS

COVER SHEET
EARLY GRADING AND
EROSION CONTROL PLAN

DATE:
MAY 12, 2020

PROJECT NO.
100.051

SHEET NUMBER
C0.1
TOTAL SHEETS: 15

CONSTRUCTION NOTES

1. ALL WORK SHALL COMPLY WITH THE CODES AND POLICIES FOR EL PASO COUNTY.
2. EXISTING TOPOGRAPHIC INFORMATION SHOWN ON THIS GRADING PLAN WAS OBTAINED FROM AERIAL CONTOURS AND PREVIOUS CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE TO EXAMINE THE SITE AND BE FAMILIAR WITH THE EXISTING CONDITIONS.
3. DEPTH OF MOISTURE–DENSITY CONTROL FOR THIS PROJECT SHALL BE AS FOLLOWS:
   BASE OF ALL CUTS AND FILLS – 12 INCHES,
   FULL DEPTH OF ALL EMBANKMENTS
4. THE CONTRACTOR IS RESPONSIBLE FOR THE RE–ESTABLISHMENT OF ALL SURVEY MONUMENTS DISTURBED WITHIN THE PROJECT LIMITS.
5. THE CONTRACTOR SHALL PROTECT ALL WORK AREAS AND FACILITIES FROM FLOODING AT ALL TIMES. AREAS AND FACILITIES SUBJECTED TO FLOODING, REGARDLESS OF THE SOURCE OF WATER, SHALL BE PROMPTLY DEWATERED AND RESTORED.
6. PRIOR TO PAVING OPERATIONS, THE ENTIRE SUBGRADE SHALL BE PROOF–ROLLED WITH A LOADED 988 FRONT–END LOADER OR SIMILAR HEAVY RUBBER TIRED VEHICLE (GVW OF 50,000 POUNDS WITH 18 KIP PER AXLE AT TIRE PRESSURES OF 90 PSI) TO DETECT ANY SOFT OR LOOSE AREAS. IN AREAS WHERE SOFT OR LOOSE SOILS, PUMPING OR EXCESSIVE MOVEMENT IS OBSERVED, THE EXPOSED MATERIALS SHALL BE OVER–EXCAVATED TO A MINIMUM DEPTH OF TWO FEET BELOW PROPOSED FINAL GRADE OR TO A DEPTH AT WHICH SOILS ARE STABLE. AFTER THIS HAS BEEN COMPLETED, THE EXPOSED MATERIALS SHALL BE SCARIFIED TO A DEPTH OF 12 INCHES AND MOISTURE CONDITIONED. THE SUBGRADE SHALL THEN BE UNIFORMLY COMPACTED TO A MINIMUM OF 95% OF STANDARD PROCTOR DENSITY (ASTMM D–698) AT 0 TO +4.0% OF OPTIMUM MOISTURE CONTENT FOR A–6 AND A–7–6 SOILS ENCOUNTERED. OTHER SUBGRADE TYPES SHALL BE UNIFORMLY COMPACTED TO A MINIMUM OF 95% OF MODIFIED PROCTOR DENSITY (ASTM D–1557) AT PLUS OR MINUS 2.0% OF OPTIMUM MOISTURE CONTENT. AREAS WHERE STABLE NATURAL SOILS ARE ENCOUNTERED AT PROPOSED SUBGRADE ELEVATION SHALL ALSO BE SCARIFIED (18 INCHES FOR A–7–6 SOILS BELOW FULL–DEPTH ASPHALT CONCRETE) AND COMPACTED AS OUTLINED ABOVE PRIOR TO PAVING OPERATIONS. SUBGRADE FILL SHALL BE PLACED IN SIX–INCH LIFTS AND UNIFORMLY COMPACTED, MEETING THE REQUIREMENTS AS PREVIOUSLY DESCRIBED.
7. SUBGRADE MATERIALS DEEMED UNSUITABLE BY THE ENGINEER SHALL BE EXCAVATED, DISPOSED OF AND REPLACED WITH APPROVED MATERIALS.
8. FILL SHALL BE PLACED IN 8–INCH MAXIMUM LOOSE LIFTS AND SHALL BE COMPACTED PRIOR TO SUCCESSIVE LIFTS.
9. THE CONTRACTOR IS RESPONSIBLE FOR PREVENTING AND CONTROLLING EROSION DURING CONSTRUCTION ACTIVITIES AT ALL TIMES DURING GRADING AND CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE THE FOLLOWING EROSION AND SEDIMENT CONTROL MEASURES:
   - HAY BALE BARRIERS WHERE NEEDED AND/OR AS DIRECTED BY THE ENGINEER.
   - SILT FENCE WHERE NEEDED AND/OR AS DIRECTED BY THE ENGINEER.
   - TEMPORARY SEDIMENTATION BASINS WHERE NEEDED AND/OR AS DIRECTED BY THE ENGINEER.
   - MULCHING AND SEEDING OF EXCESSIVE SLOPED AREAS AS NEEDED OR AS DIRECTED BY THE ENGINEER.
   - TEMPORARY VEHICLE TRACKING CONTROL AS NEEDED AND/OR DIRECTED BY THE ENGINEER.
   - CONCRETE WASH AREAS.
   - INLET PROTECTION.

   THESE AND ALL EROSION CONTROL BEST MANAGEMENT PRACTICES AS SHOWN IN THE GRADING AND EROSION CONTROL PLANS SHALL BE STRICTLY ADHERED TO.
10. FINISHED CONTOURS/SPOT ELEVATIONS SHOWN HEREON REPRESENT FINISHED GRADES. ALL PAVEMENT SUBGRADES ARE BASED ON THE COMPOSITE ASPHALT PAVEMENT RECOMMENDATIONS MADE IN THE "GEOTECHNICAL STUDY" FOR THIS PROJECT.
11. ALL GRADING SHALL CONFORM TO THE GEOTECHICAL RECOMMENDATIONS FOR CREEKSIDE PREPARED BY RMG, "PRELIMINARY SOILS AND GEOLOGY FOR CREEKSIDE SOUTH AT LORSON RANCH", DATED JANUARY, 2020. CONSTRUCTION OF DETENTION PONDS SHALL CONFORM TO THE GEOTECHNICAL RECOMMENDATIONS IN A REPORT BY RMG TITLED "PRELIMINARY SOILS AND GEOLOGY FOR CREEKSIDE SOUTH AT LORSON RANCH", DATED JANUARY, 2020. THIS INCLUDES POND OUTFALL DESIGN, KEY–IN, AND SLOPE/EMBANKMENT COMPACTION REQUIREMENTS.
12. THERE MAY BE SOME TOPSOIL WITHIN LORSON RANCH EAST THAT IS NOT SUITABLE FOR RE–USE. CONTRACTOR SHALL AMEND THE TOPSOIL AS NECESSARY AND RE–SPREAD IN ACCORDANCE WITH THE GEOTECHNICAL RECOMMENDATIONS. IF TOPSOIL CANNOT BE AMENDED IT SHALL BE USED AS FILL WHERE NO FUTURE STRUCTURES OR ROADS WILL BE BUILT.

EL PASO COUNTY STANDARD CONSTRUCTION NOTES:

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

ADDITIONAL SWMP PLAN CONTRACTOR NOTES.

1. *CONTRACTOR MUST ADD THEIR CONTACT INFORMATION TO THE SWMP PLANS PRIOR TO CONSTRUCTION*
2. *IF THE GRADING IS TO BE PHASED THE CONTRACTOR MUST PROVIDE PHASING MAPS FOR INSERTION INTO THE SWMP PLANS.*
3. *THE CONTRACTOR MUST PROVIDE THE CLIENT THE LOCATION OF ANY POTENTIAL SOURCES OF POLUTIONS SUCH AS FUELING AREAS, ETC TO BE INSERTED INTO THE SWMP PLANS.*
4. *THE ON–SITE SWMP PLAN SHALL BE LOCATED AT THE SE CORNER OF TRAPPE DRIVE AND HORTON DR UNLESS OTHERWISE DOCUMENTED.*
5. *EXISTING VEGETATION WITHIN THE LIMITS OF CONSTRUCTION CONSISTS OF NATIVE GRASSES AND WEEDS. GROUND COVER IS ESTIMATED AT 70% DENSITY*

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 (SMWP) for this project shall be completed and an Erosion and Stormwater Quality Control Permit (ESQCP) issued prior to commencing construction. Management of the SWMP during construction is the responsibility of the designated Qualified Stormwater Manager or Certified Erosion Control Inspector. The SWMP shall be located on site at all times during construction and shall be kept up to date with work progress and changes in the field.
4. Once the ESQCP is approved and a "Notice to Proceed" has been issued, the contractor may install the initial stage erosion and sediment control measures as indicated on the approved GEC. A Preconstruction Meeting between the contractor, engineer, and El Paso County will be held prior to any construction. It is the responsibility of the applicant to coordinate the meeting time and place with County staff.
5. Control measures must be installed prior to commencement of activities that could contribute pollutants to stormwater. control measures for all slopes, channels, ditches, and disturbed land areas shall be installed immediately upon completion of the disturbance
6. All temporary sediment and erosion control measures shall be maintained and remain in effective operating condition until permanent soil erosion control measures are implemented and final stabilization is established. All persons engaged in land disturbance activities shall assess the adequacy of control measures at the site and identify if changes to those control measures are needed to ensure the continued effective performance of the control measures. All changes to temporary sediment and erosion control measures must be incorporated into the Stormwater Management Plan.
7. Temporary stabilization shall be implemented on disturbed areas and stockpiles where ground disturbing construction activity has permanently ceased or temporarily ceased for longer than 14 days.
8. Final stabilization must be implemented at all applicable construction sites. Final stabilization is achieved when all ground disturbing activities are complete and all disturbed areas either have a uniform vegetative cover with individual plant density of 70 percent of pre–disturbance levels established or equivalent permanent alternative stabilization method is implemented. All temporary sediment and erosion control measures shall be removed upon final stabilization and before permit closure.
9. All permanent stormwater management facilities shall be installed as designed in the approved plans. Any proposed changes that effect the design or function of permanent stormwater management structures must be approved by the ECM Administrator prior to implementation.
10. Earth disturbances shall be conducted in such a manner so as to effectively minimize accelerated soil erosion and resulting sedimentation. All disturbances shall be designed, constructed, and completed so that the exposed area of any disturbed land shall be limited to the shortest practical period of time. Pre–existing vegetation shall be protected and maintained within 50 horizontal feet of a waters of the state unless shown to be infeasible and specifically requested and approved.
11. Compaction of soil must be prevented in areas designated for infiltration control measures or where final stabilization will be achieved by vegetative cover. Areas designated for infiltration control measures shall also be protected from sedimentation during construction until final stabilization is achieved. If compaction prevention is not feasible due to site constraints, all areas designated for infiltration and vegetation control measures must be loosened prior to installation of the control measure(s).
12. Any temporary or permanent facility designed and constructed for the conveyance of stormwater around, through, or from the earth disturbance area shall be a stabilized conveyance designed to minimize erosion and the discharge of sediment off site.
13. Concrete wash water shall be contained and disposed of in accordance with the SWMP. No wash water shall be discharged to or allowed to enter State Waters, including any surface or subsurface storm drainage system or facilities. Concrete washouts shall not be located in an area where shallow groundwater may be present, or within 50 feet of a surface water body, creek or stream.
14. During dewatering operations of uncontaminated ground water may be discharged on site, but shall not leave the site in the form of surface runoff unless an approved State dewatering permit is in place.
15. Erosion control blanketing or other protective covering shall be used on slopes steeper than 3:1.
16. Contractor shall be responsible for the removal of all wastes from the construction site for disposal in accordance with local and State regulatory requirements. No construction debris, tree slash, building material wastes or unused building materials shall be buried, dumped, or discharged at the site.
17. Waste materials shall not be temporarily placed or stored in the street, alley, or other public way, unless in accordance with an approved Traffic Control Plan. control measures may be required by El Paso County Engineering if deemed necessary, based on specific conditions and circumstances.
18. Tracking of soils and construction debris off–site shall be minimized. Materials tracked off–site shall be cleaned up and properly disposed of immediately.
19. The owner/developer shall be responsible for the removal of all construction debris, dirt, trash, rock, sediment, soil, and sand that may accumulate in roads, storm drains and other drainage conveyance systems and stormwater appurtenances as a result of site development.
20. The quantity of materials stored on the project site shall be limited, as much as practical, to that quantity required to perform the work in an orderly sequence. All materials stored on–site shall be stored in a neat, orderly manner, in their original containers, with original manufacturer's labels.
21. No chemical(s) having the potential to be released in stormwater are to be stored or used onsite unless permission for the use of such chemical(s) is granted in writing by the ECM Administrator. In granting approval for the use of such chemical(s), special conditions and monitoring may be required.
22. Bulk storage of allowed petroleum products or other allowed liquid chemicals in excess of 55 gallons shall require adequate secondary containment protection to contain all spills onsite and to prevent any spilled materials from entering State Waters, any surface or subsurface storm drainage system or other facilities.
23. No person shall cause the impediment of stormwater flow in the curb and gutter or ditch except with approved sediment control measures.
24. Owner/developer and their agents shall comply with the "Colorado Water Quality Control Act" (Title 25, Article 8, CRS), and the "Clean Water Act" (33 USC 1344), in addition to the requirements of the Land Development Code, DCM Volume II and the ECM Appendix I. All appropriate permits must be obtained by the contractor prior to construction (1041, NPDES, Floodplain, 404, fugitive dust, etc.). In the event of conflicts between these requirements and other laws, rules, or regulations of other Federal, State, local, or County agencies, the most restrictive laws, rules, or regulations shall apply.
25. All construction traffic must enter/exit the site only at approved construction access points.
26. Prior to construction the permittee shall verify the location of existing utilities.
27. A water source shall be available on site during earthwork operations and shall be utilized as required to minimize dust from earthwork equipment and wind.
28. The soils report for this site has been prepared by RMG 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

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NO. | DESCRIPTION | DATE

PREPARED FOR:
LORSON, LLC
212 N. WAHSATCH AVE, SUITE 301
COLORADO SPRINGS, COLORADO 80903
(719) 635–3200
CONTACT: JEFF MARK

PROJECT:
CREEKSIDE SOUTH AT LORSON RANCH
TRAPPE DR – HORTON DR
COLORADO SPRINGS, COLORADO

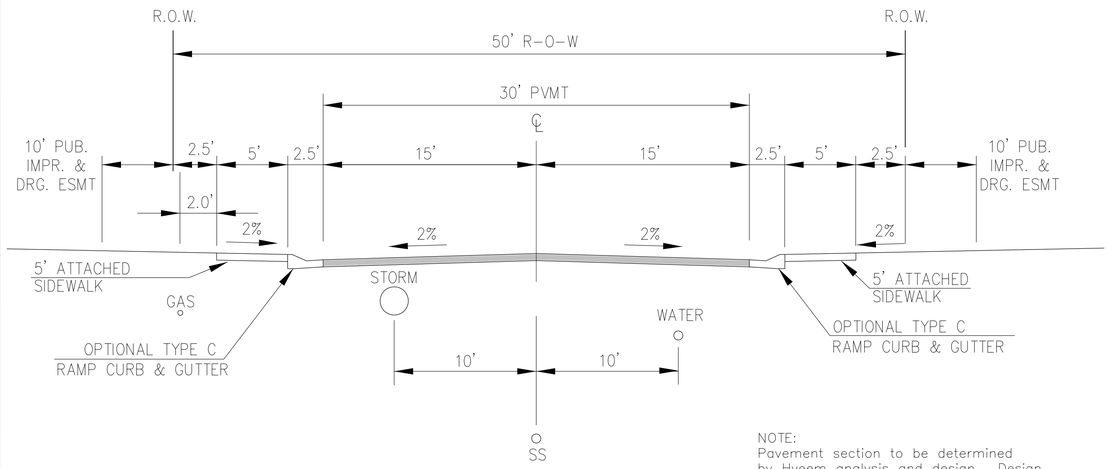
DRAWN: RLS
DESIGNED: RLS
CHECKED: RLS

OVERLOT EARLY SITE GRADING PLAN NOTES

DATE:
MAY 12, 2020

PROJECT NO.
100.051

SHEET NUMBER
C0.2
TOTAL SHEETS: 15



TYPICAL SECTION 50' R.O.W.
RESIDENTIAL URBAN LOCAL
NOT TO SCALE

NOTE:
Pavement section to be determined by Hveem analysis and design. Design to be approved by El Paso County Engineering

HORTON DRIVE
LUNA DRIVE
NAKAI LANE
SHUNKA LANE
AKELA LANE

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TRAPPE DR – HORTON DR
COLORADO SPRINGS, COLORADO

DRAWN: RLS
DESIGNED: RLS
CHECKED: RLS

OVERLOT EARLY
SITE GRADING
TYPICAL ROADWAY SECTIONS

DATE:
MAY 12, 2020

PROJECT NO.
100.051

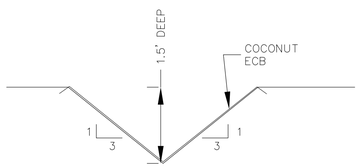
SHEET NUMBER
C0.3
TOTAL SHEETS: 15

LEGEND

- 5721 EXISTING MINOR CONTOUR
- 5720 EXISTING MAJOR CONTOUR
- 5720 PROPOSED CONTOUR
- EXISTING STORM SEWER
- SF PERIMETER EROSION CONTROL SILT FENCE, EROSION LOG, OR EARTH BERM
- SUBDIVISION BOUNDARY
- LIMITS OF CONSTRUCTION / DISTURBANCE
- P/L PROPERTY LINE OR TRACT LINE
- ROW LINE
- RUNOFF DIRECTION
- X% SLOPE DIRECTION AND GRADE
- 100-YR FEMA FLOODPLAIN
- CUT/FILL LINE
- VEHICLE TRACKING CONTROL
- EARTHEN BERM FOR ROUGH CUT STREET CONTROL PLAN

NOTE:

1. SLOPES SHALL BE 3:1 UNLESS OTHERWISE NOTED
2. POND SLOPES SHALL BE 3:1
3. STRAW ECB SHALL BE PLACED ON ALL SIDE SLOPES AND PERMANENT SLOPES 6:1 OR STEEPER.
4. TEMPORARY SEEDING REQUIRED ON DISTURBED AREAS AND STOCKPILES WHICH ARE NOT AT FINAL GRADE BUT WILL REMAIN DORMANT FOR LONGER THAN 30 DAYS SHALL ALSO BE MULCHED AND SEEDED WITHIN 21 DAYS AFTER INTERIM GRADING.
5. THERE ARE NO ASPHALT BATCH PLANTS OR CONSTRUCTION OFFICE TRAILERS PLANNED FOR THIS SITE OR CONTRACTOR SHALL OBTAIN PERMIT IF DESIRED.
6. CONTRACTOR TO DETERMINE STOCKPILE AREAS AND STAGING AREAS AND SHOW THEM ON THE WORKING MAPS.
7. EXISTING VEGETATION CONSISTS OF GRASSES AND WEEDS. GROUND COVER ESTIMATED AT 70% DENSITY



TEMP SWALE TO POND BTM

INITIAL BMP'S:

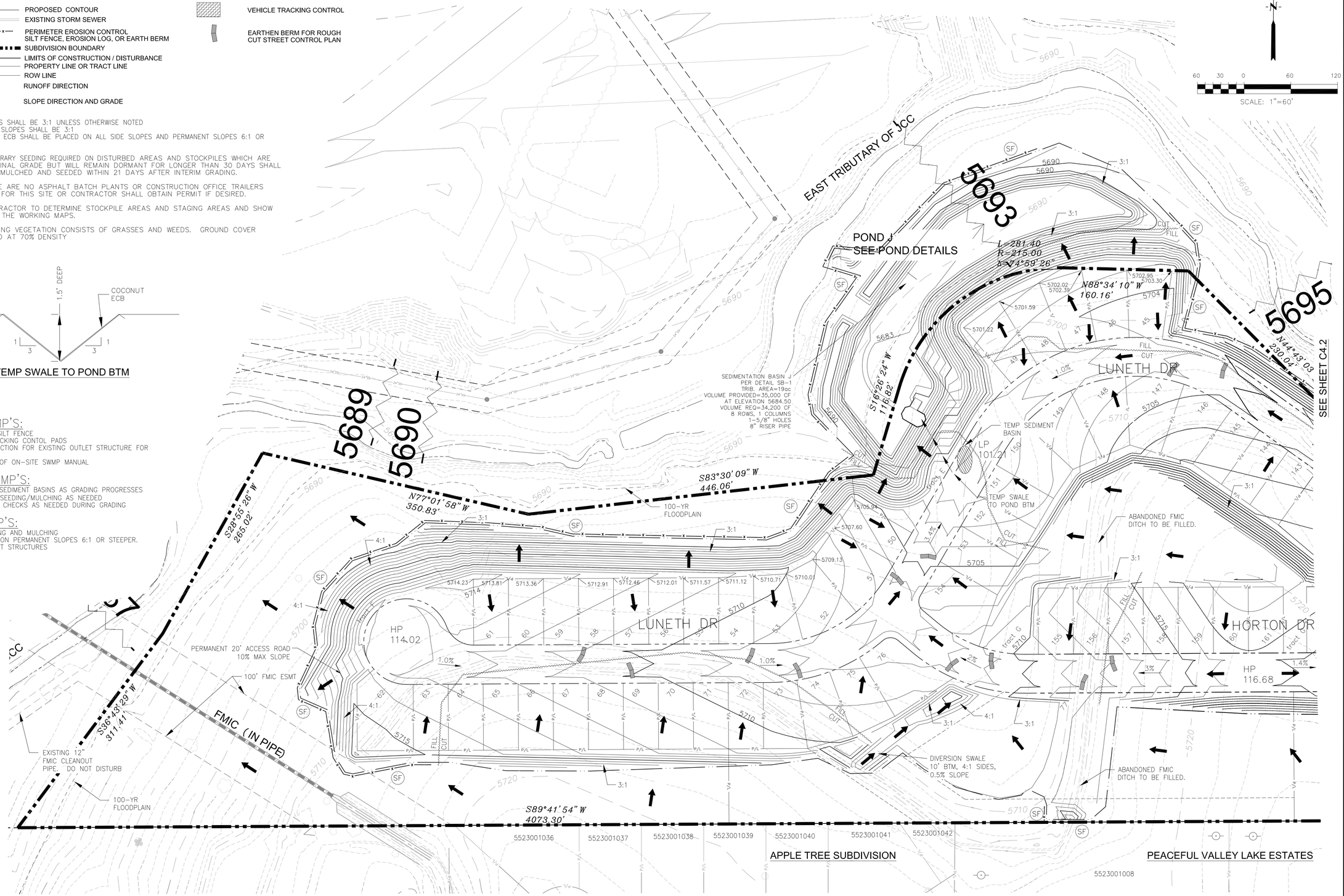
1. PERIMETER SILT FENCE
2. VEHICLE TRACKING CONTOL PADS
3. INLET PROTECTION FOR EXISTING OUTLET STRUCTURE FOR POND E2
4. PLACEMENT OF ON-SITE SWMP MANUAL

INTERIM BMP'S:

1. TEMPORARY SEDIMENT BASINS AS GRADING PROGRESSES
2. TEMPORARY SEEDING/MULCHING AS NEEDED
3. STRAW BALE CHECKS AS NEEDED DURING GRADING

FINAL BMP'S:

1. FINAL SEEDING AND MULCHING
2. STRAW ECB ON PERMANENT SLOPES 6:1 OR STEEPER.
3. POND OUTLET STRUCTURES



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PROJECT:
CREEKSIDE SOUTH AT LORSON RANCH
TRAPPE DR - HORTON DR
COLORADO SPRINGS, COLORADO

NO. | DESCRIPTION | DATE

DRAWN: RLS
DESIGNED: RLS
CHECKED: RLS

CREEKSIDE SOUTH AT LORSON RANCH
OVERLOT EARLY GRADING AND EROSION CONTROL PLAN

DATE: MAY 12, 2020
PROJECT NO. 100.051
SHEET NUMBER C4.1
TOTAL SHEETS: 15

LEGEND

- 5721 — EXISTING MINOR CONTOUR
- 5720 — EXISTING MAJOR CONTOUR
- 5720 — PROPOSED CONTOUR
- EXISTING STORM SEWER
- (SF) — PERIMETER EROSION CONTROL SILT FENCE, EROSION LOG, OR EARTH BERM
- SUBDIVISION BOUNDARY
- LIMITS OF CONSTRUCTION / DISTURBANCE
- P/L — PROPERTY LINE OR TRACT LINE
- ROW LINE
- RUNOFF DIRECTION
- X% — SLOPE DIRECTION AND GRADE
- 100-YR FEMA FLOODPLAIN
- CUT/FILL LINE
- VEHICLE TRACKING CONTROL
- EARTHEN BERM FOR ROUGH CUT STREET CONTROL PLAN

NOTE:

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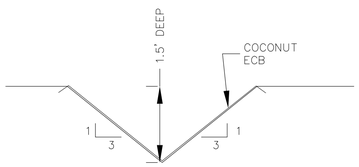
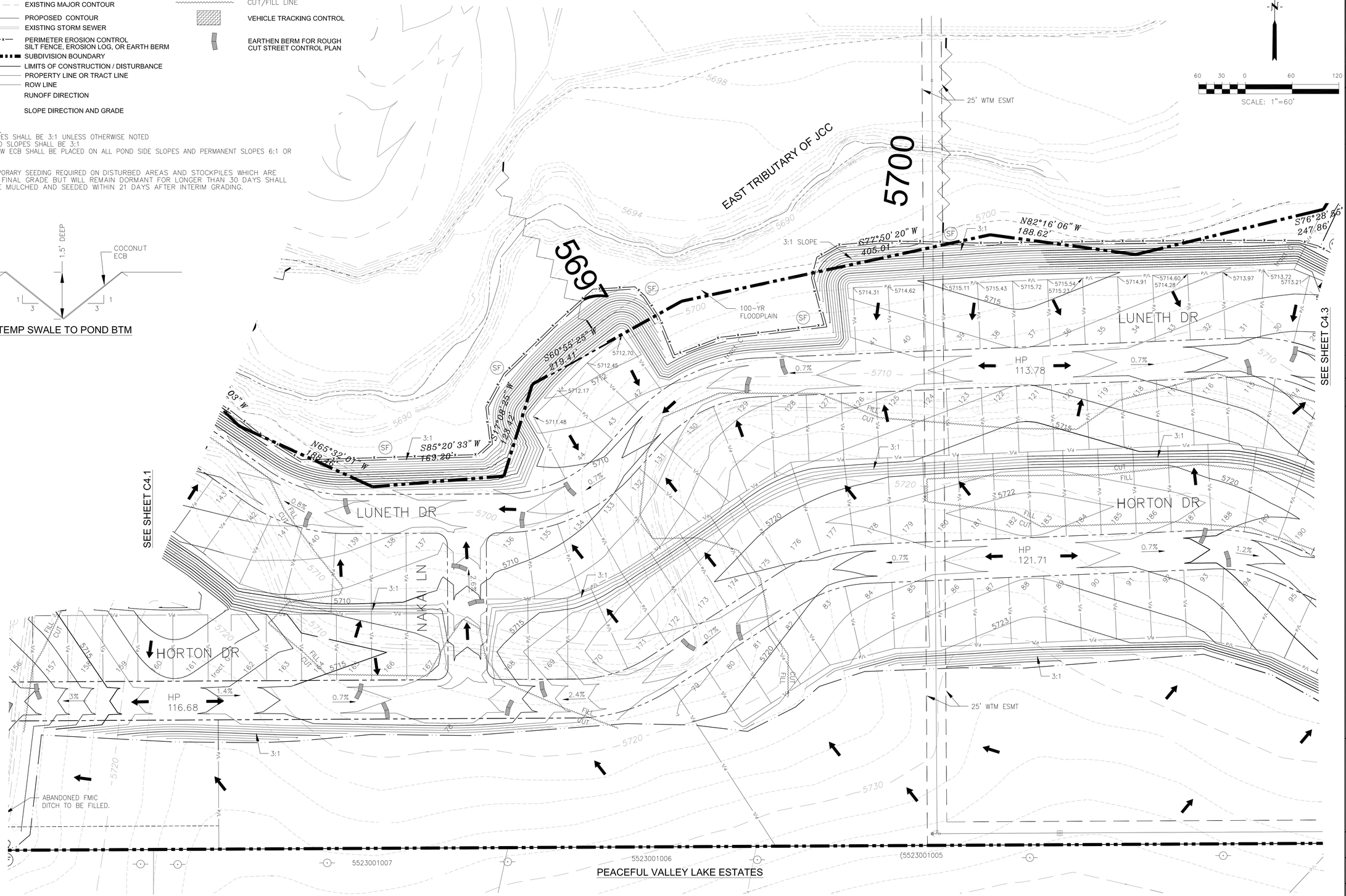
2. POND SLOPES SHALL BE 3:1
3. STRAW ECB SHALL BE PLACED ON ALL POND SIDE SLOPES AND PERMANENT SLOPES 6:1 OR STEEPER.

(TS) 4. TEMPORARY SEEDING REQUIRED ON DISTURBED AREAS AND STOCKPILES WHICH ARE NOT AT FINAL GRADE BUT WILL REMAIN DORMANT FOR LONGER THAN 30 DAYS SHALL ALSO BE MULCHED AND SEEDED WITHIN 21 DAYS AFTER INTERIM GRADING.



TEMP SWALE TO POND BTM



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PROJECT:
CREEKSIDE SOUTH AT LORSON RANCH
TRAPPE DR - HORTON DR
COLORADO SPRINGS, COLORADO

DRAWN: RLS
DESIGNED: RLS
CHECKED: RLS

CREEKSIDE SOUTH AT LORSON RANCH
OVERLOT EARLY GRADING AND EROSION CONTROL PLAN

DATE: MAY 12, 2020

PROJECT NO. 100.051

SHEET NUMBER C4.2

TOTAL SHEETS: 15

LEGEND

- 5721 — EXISTING MINOR CONTOUR
- 5720 — EXISTING MAJOR CONTOUR
- 5720 — PROPOSED CONTOUR
- EXISTING STORM SEWER
- SF — PERIMETER EROSION CONTROL SILT FENCE, EROSION LOG, OR EARTH BERM
- SUBDIVISION BOUNDARY
- LIMITS OF CONSTRUCTION / DISTURBANCE
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NOTE:
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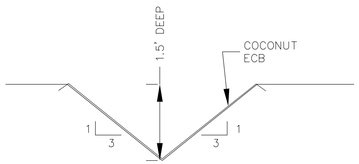
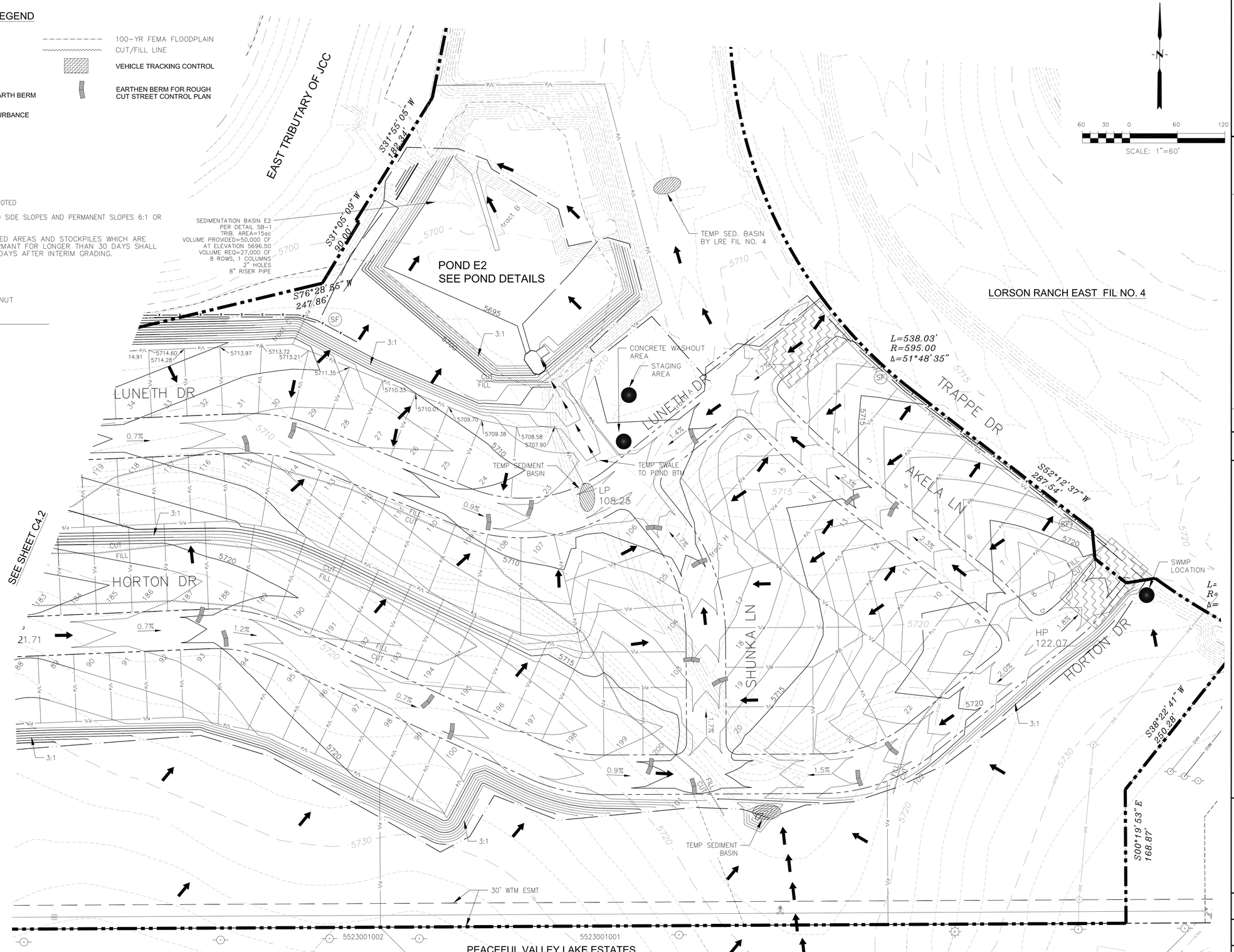


TEMP SWALE TO POND BTM



60 30 0 60 120

SCALE: 1"=60'

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TRAPPE DR - HORTON DR
COLORADO SPRINGS, COLORADO

DRAWN: RLS
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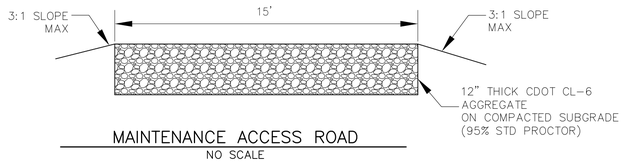
CHECKED: RLS

CREEKSIDE SOUTH AT LORSON RANCH
OVERLOT EARLY GRADING AND EROSION CONTROL PLAN

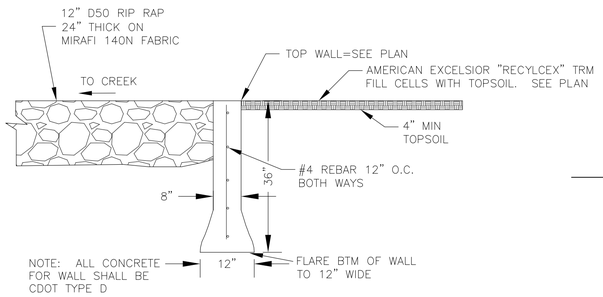
DATE: MAY 12, 2020

PROJECT NO. 100.051

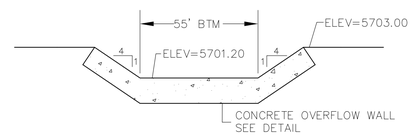
SHEET NUMBER C4.3
TOTAL SHEETS: 15



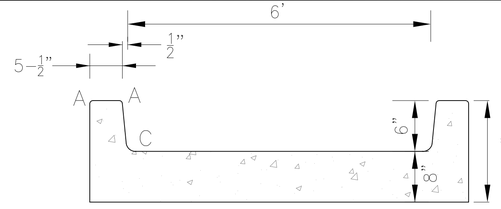
MAINTENANCE ACCESS ROAD
NO SCALE



POND CONCRETE OVERFLOW WALL
NO SCALE

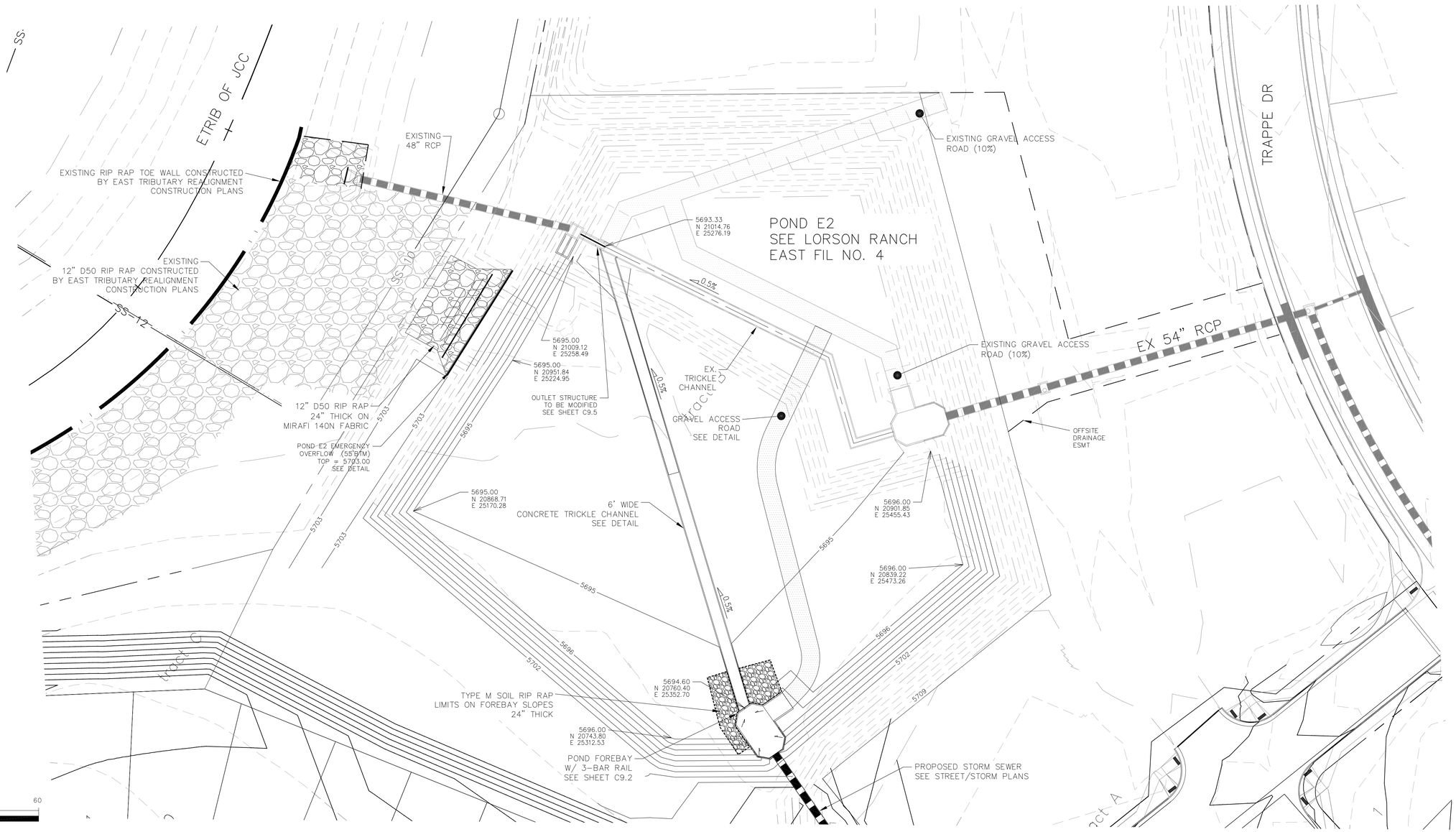


POND E2
EMERGENCY OVERFLOW
PROFILE
SCALE: NTS



TRICKLE CHANNEL DETAIL
NO SCALE

LENGTH FOR RADII
A = 1/2"
C = 1-1/2"



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PROJECT:
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TRAPPE DR - HORTON DR
COLORADO SPRINGS, COLORADO

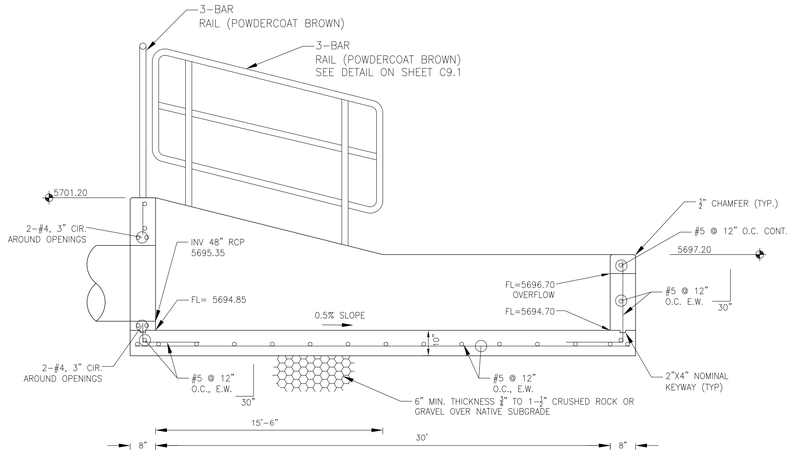
DRAWN: RLS
DESIGNED: RLS
CHECKED: RLS

POND E2
POND E2 OUTFALL AND TRICKLE CHANNEL

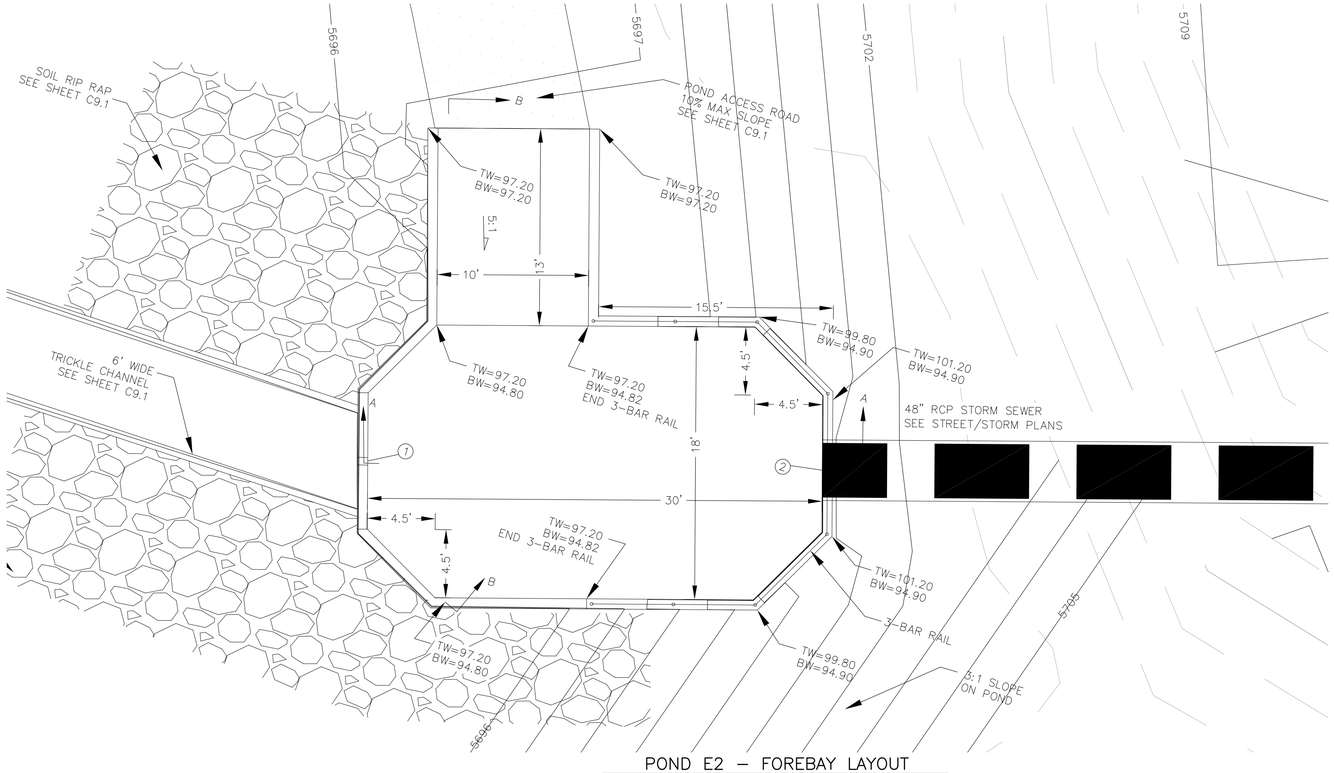
DATE:
MAY 12, 2020

PROJECT NO.
100.051

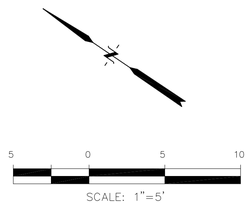
SHEET NUMBER
C9.1
TOTAL SHEETS: 15



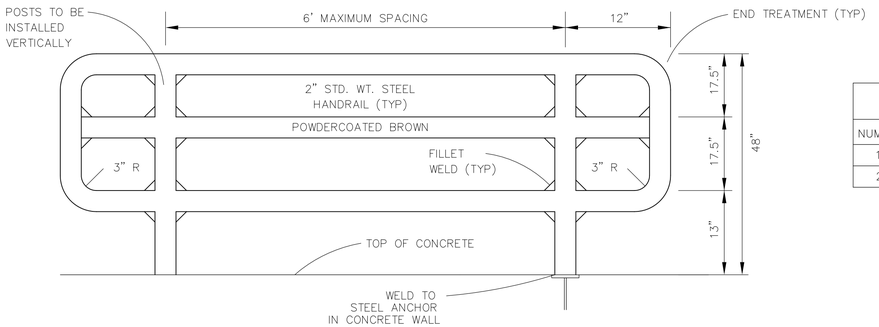
FOREBAY SECTION A-A
NO SCALE



POND E2 – FOREBAY LAYOUT
SCALE: 1"=5'

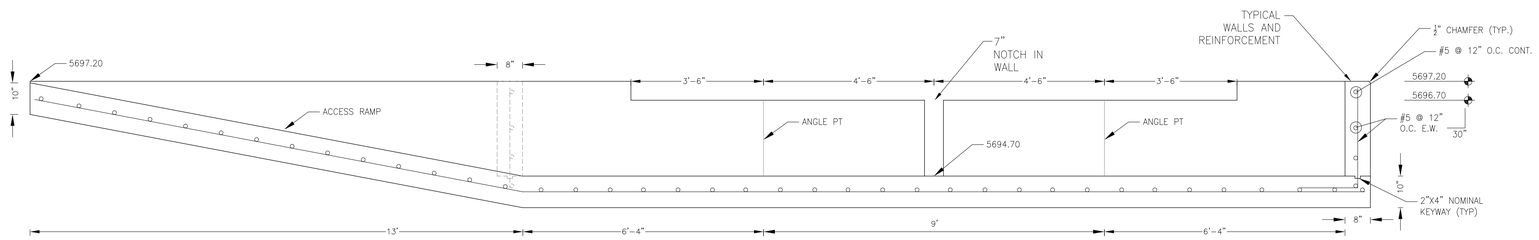


SCALE: 1"=5'



3-BAR RAIL DETAIL
NO SCALE

POINT TABLE (FOREBAY)				
NUMBER	NORTHING	EASTING	ELEVATION	NOTES
1	20759.85	25353.08	5694.70	FOREBAY BOTTOM
2	20734.93	25369.79	5694.85	FOREBAY BOTTOM, INV 54"=5695.50



NOTE: ALL CONCRETE FOR FOREBAY SHALL BE CDOT TYPE D

FOREBAY SECTION B-B
NO SCALE

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DATE
DESCRIPTION
NO.

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CONTACT: JEFF MARK

PROJECT:
CREEKSIDE SOUTH AT
LORSON RANCH
TRAPPE DR - HORTON DR
COLORADO SPRINGS, COLORADO

DRAWN: RLS
DESIGNED: RLS
CHECKED: RLS

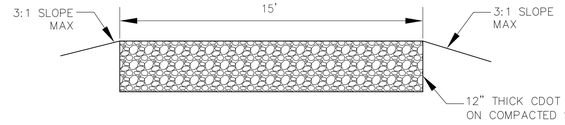
POND E2

FOREBAY DETAILS

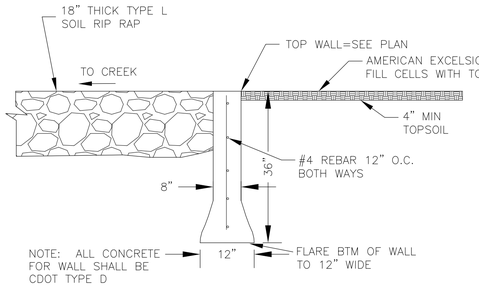
DATE:
MAY 12, 2020

PROJECT NO.
100.051

SHEET NUMBER
C9.2
TOTAL SHEETS: 15

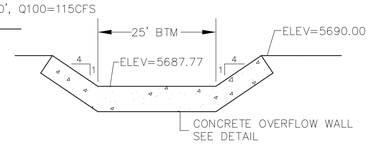


MAINTENANCE ACCESS ROAD
NO SCALE

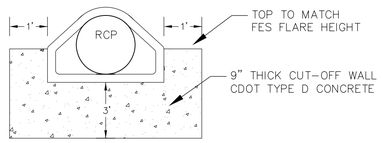


POND CONCRETE OVERFLOW WALL
NO SCALE

POND J
EMERGENCY OVERFLOW
BTM=5687.77, TOP=5690.00
BTM WIDTH=25', 4:1 SIDE SLOPES
FLOW DEPTH=1.20', Q100=115CFS

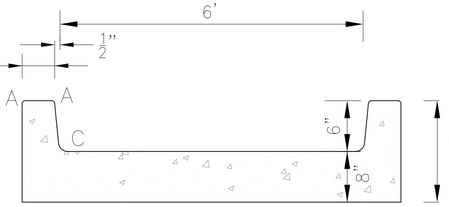


POND J
EMERGENCY OVERFLOW
PROFILE
SCALE: NTS



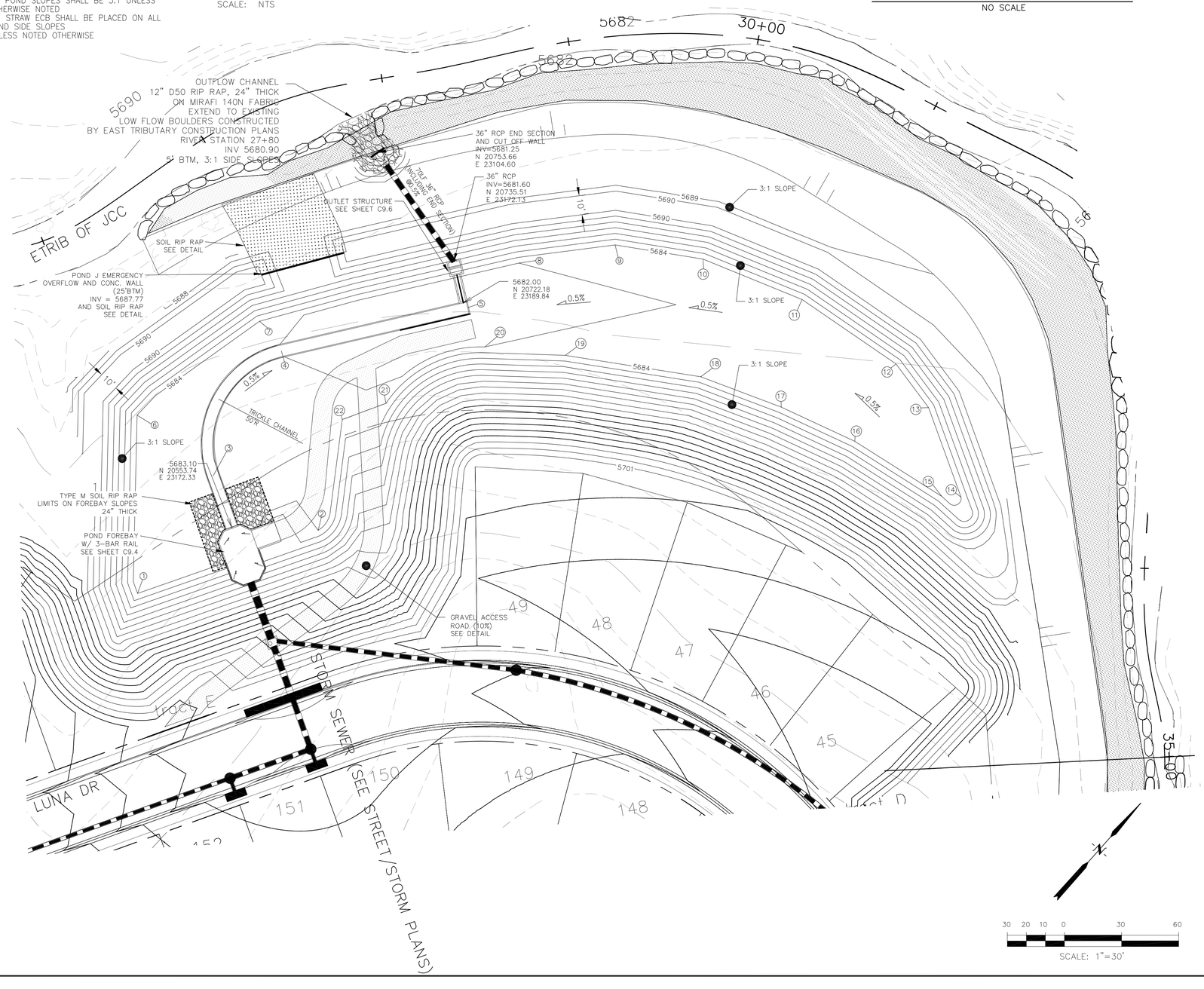
CONCRETE CUT-OFF WALL
N.T.S.

LENGTH FOR RADII
A = 1/2"
C = 1-1/2"



TRICKLE CHANNEL DETAIL
NO SCALE

NOTE:
1. POND SLOPES SHALL BE 3:1 UNLESS OTHERWISE NOTED
2. STRAW ECB SHALL BE PLACED ON ALL POND SIDE SLOPES UNLESS NOTED OTHERWISE



POINT TABLE				
NUMBER	NORTHING	EASTING	ELEVATION	NOTES
1	20495.27	23156.87	5684.00	POND BOTTOM
2	20581.64	23208.23	5684.00	POND BOTTOM
3	20568.14	23147.59	5682.95	TRICKLE CHANNEL INVERT
4	20641.42	23132.80	5682.52	TRICKLE CHANNEL INVERT
5	20721.68	23193.21	5682.02	TRICKLE CHANNEL INVERT
6	20566.83	23096.50	5684.00	POND BOTTOM
7	20645.98	23114.05	5684.00	POND BOTTOM
8	20756.94	23198.76	5683.00	POND BOTTOM
9	20796.72	23231.37	5684.00	POND BOTTOM
10	20820.69	23271.46	5684.00	POND BOTTOM
11	20837.87	23324.99	5684.00	POND BOTTOM
12	20843.65	23384.56	5684.00	POND BOTTOM
13	20837.10	23412.40	5684.00	POND BOTTOM
14	20812.02	23455.68	5684.00	POND BOTTOM
15	20805.80	23447.70	5684.00	POND BOTTOM
16	20798.61	23394.12	5684.00	POND BOTTOM
17	20787.54	23352.97	5684.00	POND BOTTOM
18	20772.57	23310.30	5684.00	POND BOTTOM
19	20735.49	23248.59	5684.00	POND BOTTOM
20	20711.70	23213.38	5683.00	POND BOTTOM
21	20655.59	23192.65	5684.00	POND BOTTOM
22	20634.46	23180.98	5684.00	POND BOTTOM

30 20 10 0 30 60
SCALE: 1"=30'

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PROJECT:
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TRAPPE DR - HORTON DR
COLORADO SPRINGS, COLORADO

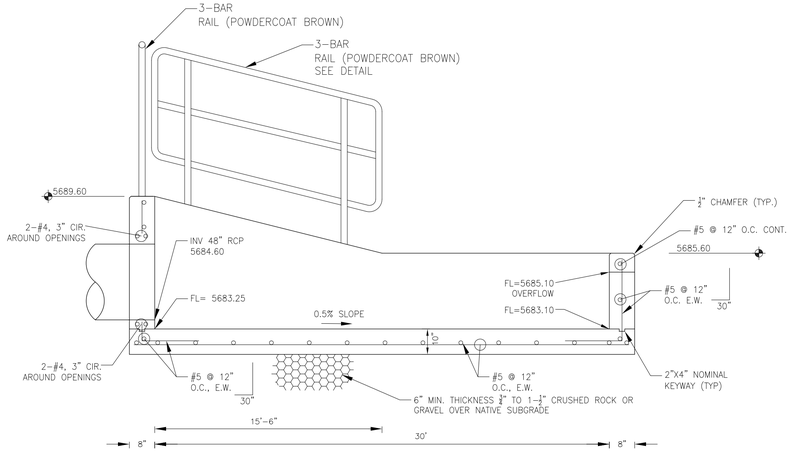
DRAWN: RLS
DESIGNED: RLS
CHECKED: RLS

POND J
POND J OUTFALL AND TRICKLE CHANNEL

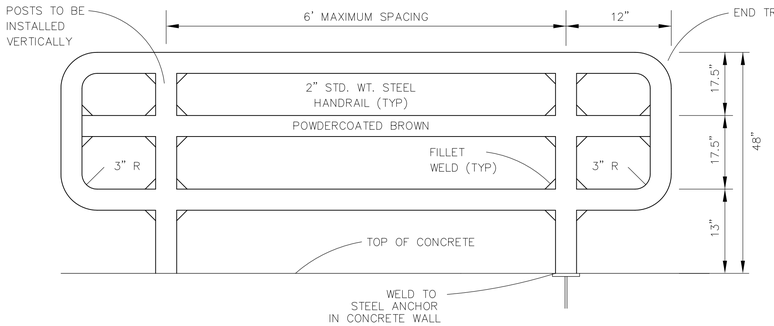
DATE:
MAY 12, 2020

PROJECT NO.
100.051

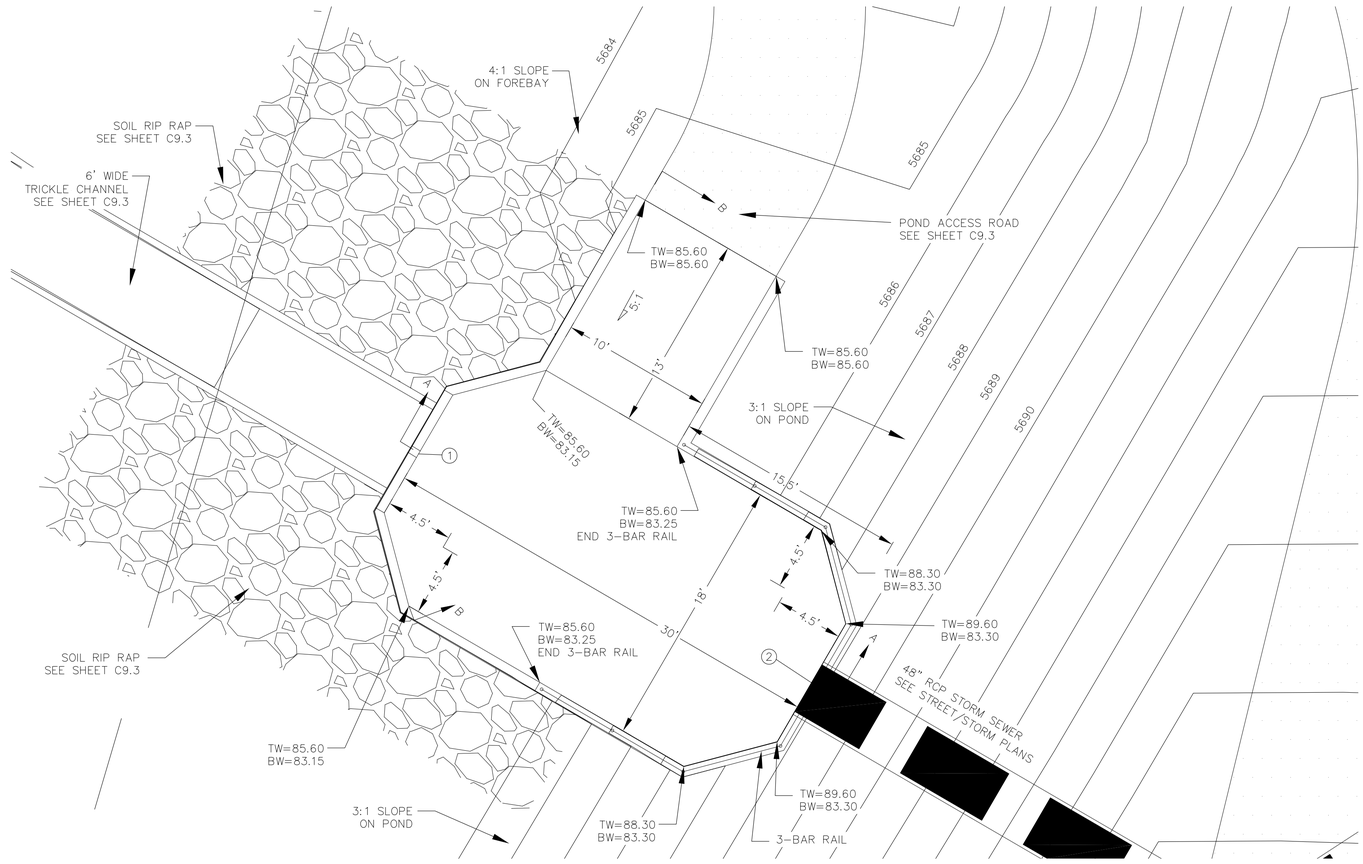
SHEET NUMBER
C9.3
TOTAL SHEETS: 15



FOREBAY SECTION A-A
NO SCALE

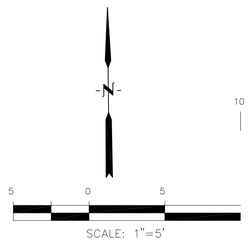


3-BAR RAIL DETAIL
NO SCALE

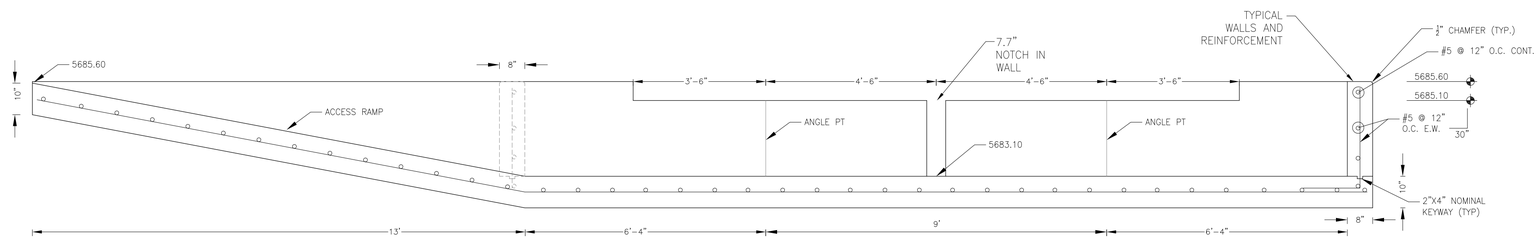


POND J – FOREBAY LAYOUT
SCALE: 1"=5'

POINT TABLE (FOREBAY)				
NUMBER	NORTHING	EASTING	ELEVATION	NOTES
1	20553.40	23172.91	5683.10	FOREBAY BOTTOM
2	20538.31	23198.84	5683.25	FOREBAY BOTTOM, INV 48"=5684.60



SCALE: 1"=5'



NOTE: ALL CONCRETE FOR FOREBAY SHALL BE CDOT TYPE D

FOREBAY SECTION B-B
NO SCALE

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PROJECT:
CREEKSIDE SOUTH AT
LORSON RANCH
TRAPPE DR – HORTON DR
COLORADO SPRINGS, COLORADO

NO.	DESCRIPTION	DATE

DRAWN: RLS
DESIGNED: RLS
CHECKED: RLS

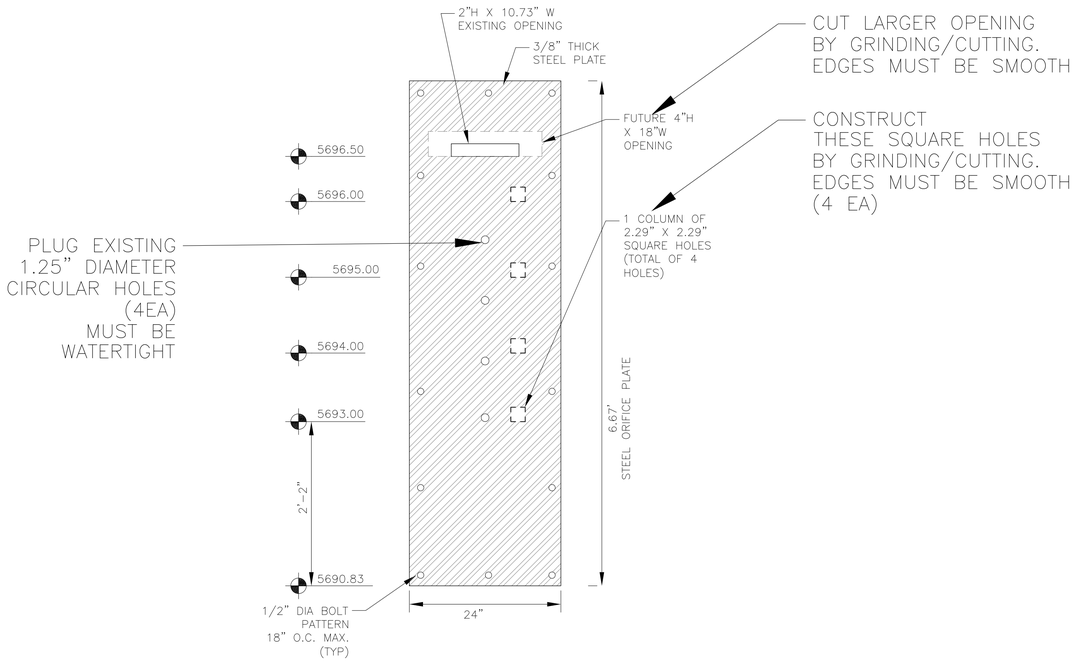
POND J

FOREBAY DETAILS

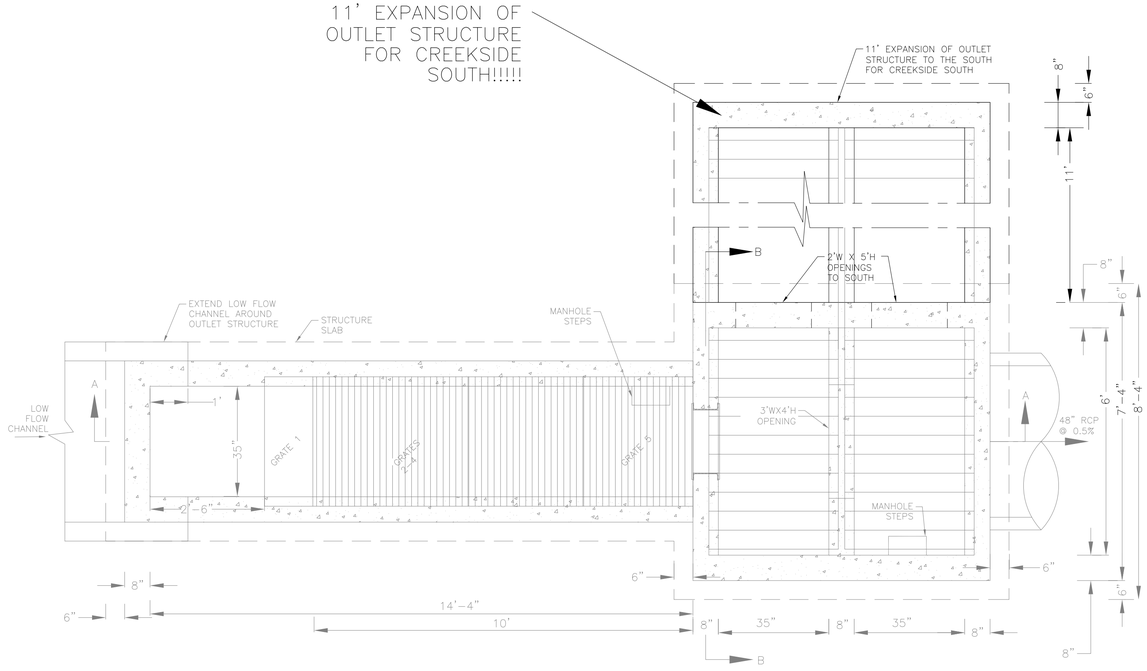
DATE:
MAY 12, 2020

PROJECT NO.
100.051

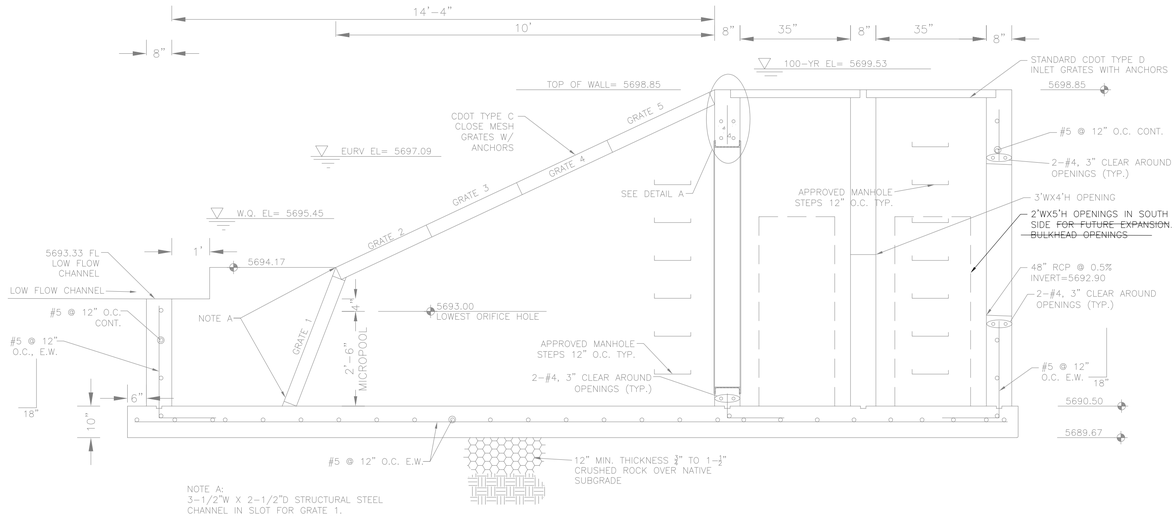
SHEET NUMBER
C9.4
TOTAL SHEETS: 15



ORIFICE PLATE DETAIL
NO SCALE



OUTLET STRUCTURE DETAIL – PLAN VIEW
NO SCALE



NOTE A:
3-1/2"W X 2-1/2"D STRUCTURAL STEEL CHANNEL IN SLOT FOR GRATE 1. SECURE TO STRUCTURE WITH ¾" DIA. STUD X 3"L, 18" O.C. MAX.

OUTLET STRUCTURE DETAIL – SECTION A–A
NO SCALE

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NO.	DESCRIPTION	DATE

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CONTACT: JEFF MARK

PROJECT:
CREEKSIDE SOUTH AT LORSON RANCH
TRAPPE DR – HORTON DR
COLORADO SPRINGS, COLORADO

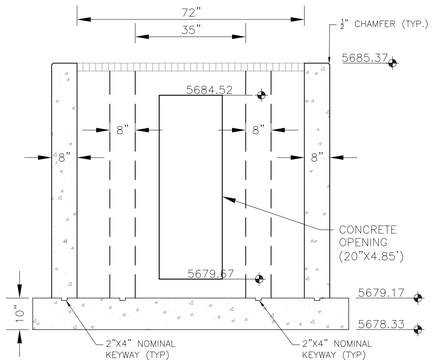
DRAWN: RLS
DESIGNED: RLS
CHECKED: RLS

CREEKSIDE SOUTH AT LORSON RANCH
FULL SPECTRUM POND E2
OUTLET STRUCTURE MODIFICATIONS

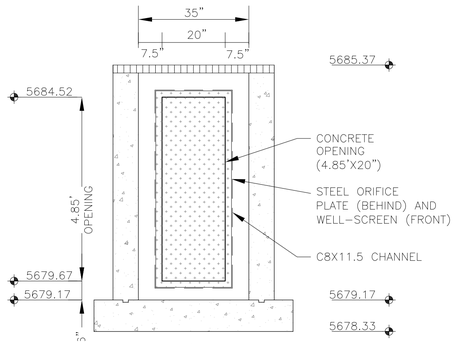
DATE:
MAY 12, 2020

PROJECT NO.
100.051

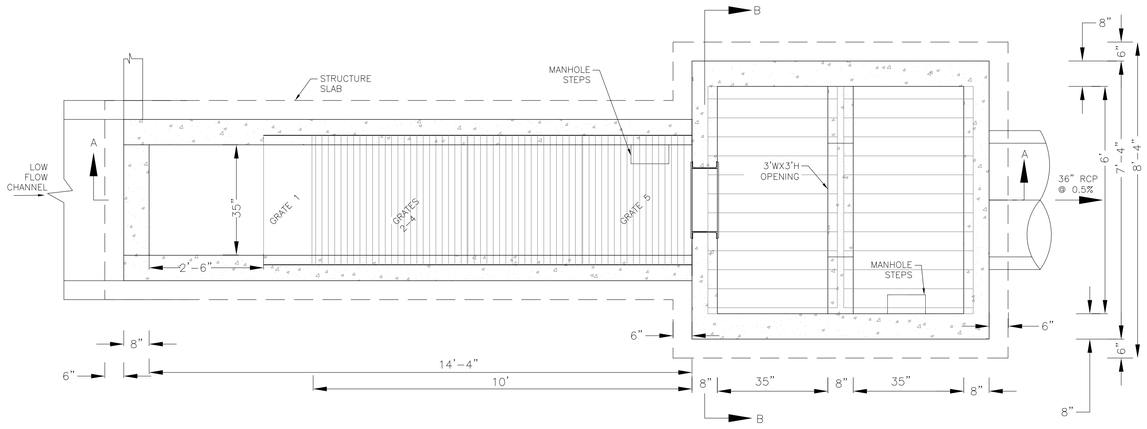
SHEET NUMBER
C9.5
TOTAL SHEETS: 15



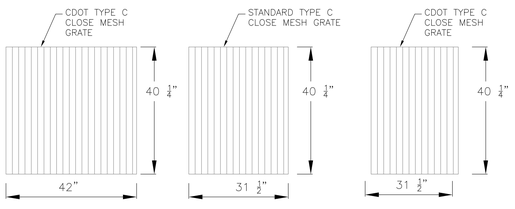
OUTLET STRUCTURE DETAIL – SECTION B–B
NO SCALE



OUTLET STRUCTURE W/ PLATE/SCREEN DETAIL – SECTION B–B
NO SCALE



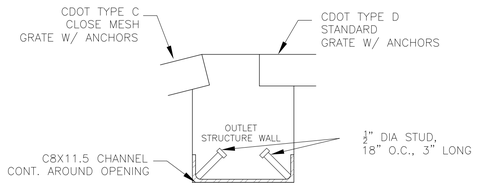
NOTE:
AFTER CONCRETE STRUCTURE HAS BEEN POURED ALL GRATE DIMENSIONS SHALL BE FIELD VERIFIED PRIOR TO GRATE CONSTRUCTION



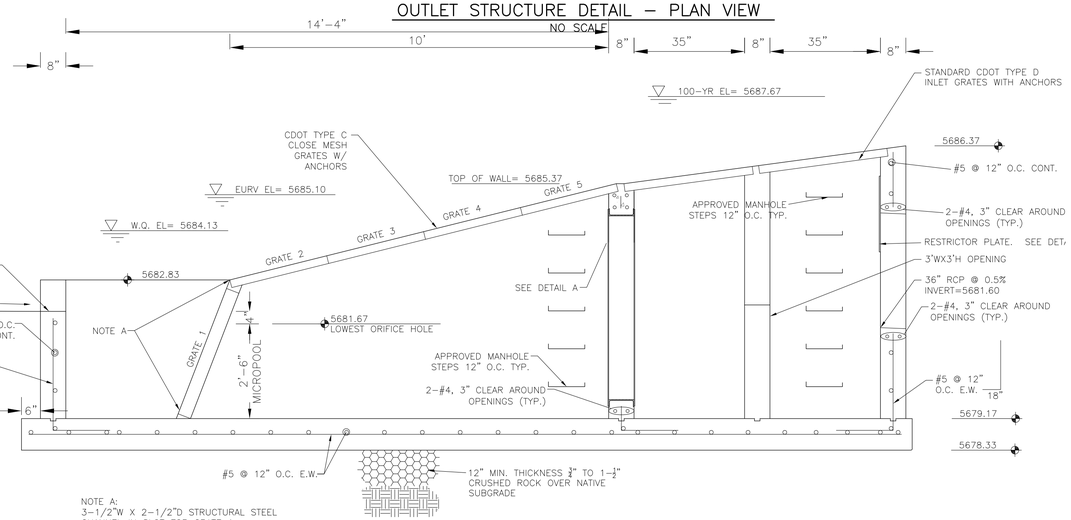
GRATE 1
NO SCALE

GRATES 2–4
NO SCALE

GRATE 5
NO SCALE

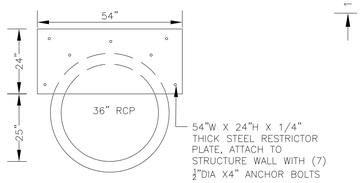


DETAIL A
NO SCALE

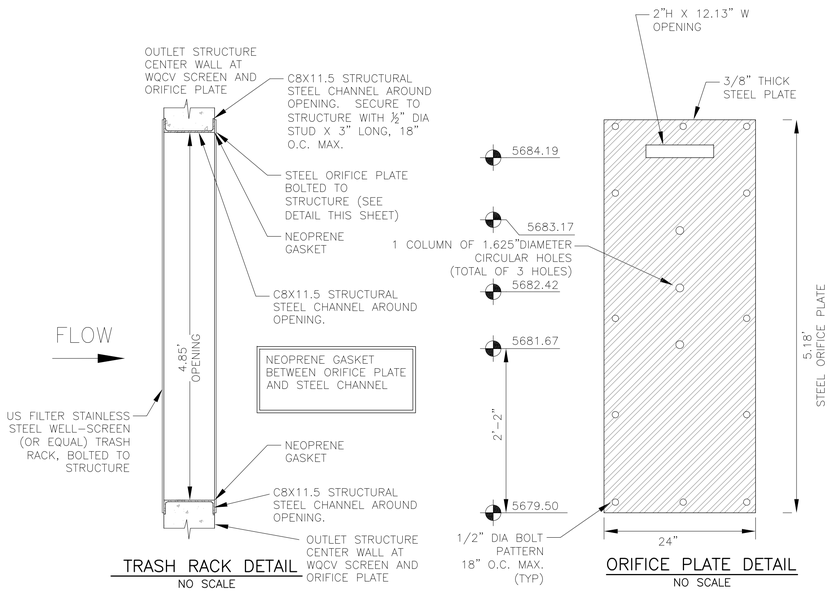


NOTE A:
3–1/2"W X 2–1/2"D STRUCTURAL STEEL CHANNEL IN SLOT FOR GRATE 1. SECURE TO STRUCTURE WITH ½" DIA. STUD X 3"L, 18" O.C. MAX.

OUTLET STRUCTURE DETAIL – SECTION A–A
NO SCALE



RESTRICTOR PLATE DETAIL
NO SCALE



TRASH RACK DETAIL
NO SCALE

ORIFICE PLATE DETAIL
NO SCALE

OUTLET STRUCTURE, FOREBAY, AND DRAIN CHANNEL NOTES:

1. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR ALL COMPONENTS OF THE OUTLET STRUCTURE.
2. GRADE 60 REINFORCING STEEL REQUIRED. SEE TABLE FOR THE MINIMUM LAP SPLICE LENGTH FOR REINFORCING BARS. ALL REINFORCING STEEL SHALL HAVE A TWO–INCH MINIMUM CLEARANCE FROM EDGE OF CONCRETE, UNLESS OTHERWISE NOTED.

BAR SIZE	#4	#5	#6
MIN. SPLICE LENGTH	1'–3"	1'–7"	2'–0"

3. CONCRETE FOR THE OUTLET STRUCTURE AND FOREBAY SHALL BE CDOT CLASS D CONCRETE.
4. CONCRETE FOR DRAIN CHANNELS SHALL BE CDOT CLASS B CONCRETE
5. EXPANSION JOINT MATERIAL SHALL MEET AASHTO SPECIFICATION M–213. EXPANSION JOINT MATERIAL SHALL BE ½" THICK, SHALL EXTEND THE FULL DEPTH OF CONTACT SURFACE AND THE JOINT SHALL BE SEALED, REFER TO DETAILS.
6. ALL EXPOSED CONCRETE CORNERS SHALL HAVE A ¾" CHAMFER UNLESS OTHERWISE NOTED.
7. SUBGRADE TO BE 12" THICK CLEAN FILL COMPACTED TO 95% STANDARD PROCTOR DENSITY PER ASTM M698 UNDER STRUCTURE.
8. REFER TO SHEET C9.1 FOR PRESEDIMENTATION/FOREBAY DESIGN.
9. ENGINEER SHALL BE NOTIFIED PRIOR TO BEGINNING CONSTRUCITON OF OUTLET STRUCTURE TO SCHEDULE OBSERVATION VISITS FOR STRUCTURES.
10. SEE RIGHT FOR WELL–SCREEN DESIGN NOTES

WQCV WELL–SCREEN NOTES:

1. Well–Screen shall be stainless steel and attached by stainless steel bolts along edge of the mounting frame.
2. WQCV Well Screen
- Type of Screen: Stainless steel #93 Vee Wire (Johnson Vee Wire (tm) Stainless Steel Screen or equivalent with 60% open area)
- Screen slot opening dimension: 0.139" (Screen #93 Vee Wire Slot Opening)
- Type and Size of Support Rod: TE 0.074"X0.50"
- Spacing of Support Rod (O.C.): 1.0 Inch
- Total Screen Thickness: 0.655"
- Carbon Steel Holding Frame Type: 3/4" x 1.0" angle

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TRAPPE DR – HORTON DR
COLORADO SPRINGS, COLORADO

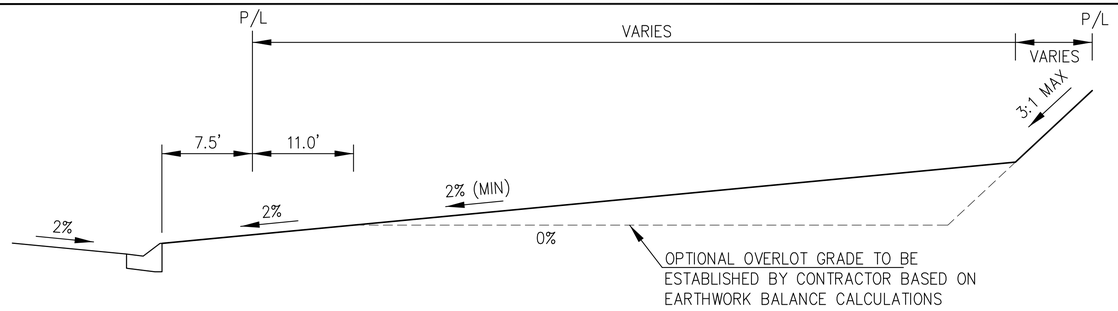
DRAWN: RLS
DESIGNED: RLS
CHECKED: RLS

CREEKSIDE SOUTH AT LORSON RANCH
FULL SPECTRUM POND J
OUTLET STRUCTURE

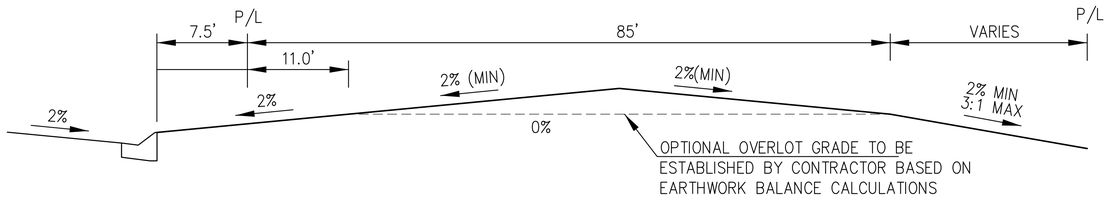
DATE:
MAY 12, 2020

PROJECT NO.
100.051

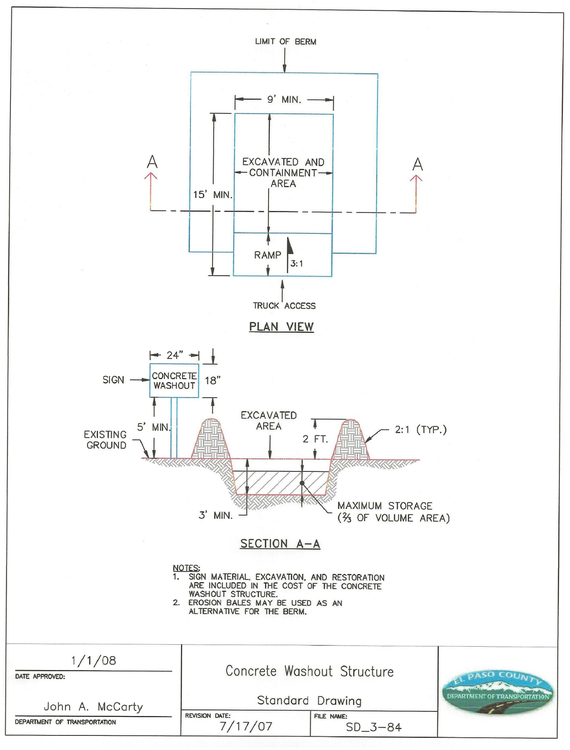
SHEET NUMBER
C9.6
TOTAL SHEETS: 15



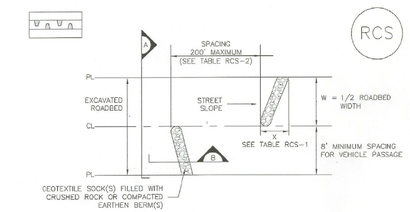
TYPICAL "A" LOT



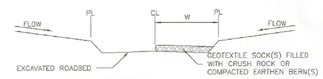
TYPICAL "B" LOT



EC-9 Rough Cut Street Control (RCS)



ROUGH CUT STREET CONTROL PLAN



SECTION A

SECTION B

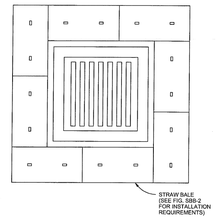
TABLE RCS-1

W (FT)	X (FT)
20-30	5
31-40	7
41-50	9
51-60	10.5
61-70	12

TABLE RCS-2

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

RCS-1, ROUGH CUT STREET CONTROL



STRAW BALE INLET PROTECTION
NTS

STRAW BALE INLET PROTECTION NOTES

INSTALLATION REQUIREMENTS

1. INLET PROTECTION SHALL BE INSTALLED IMMEDIATELY AFTER CONSTRUCTION OF INLET.

2. BALES ARE TO BE PLACED IN A SINGLE ROW AROUND THE INLET WITH THE END OF THE BALES TIGHTLY ABUTTING ONE ANOTHER.

3. SEE STRAW BALE BARRIER FIGURE SB8-2 FOR INSTALLATION REQUIREMENTS.

MAINTENANCE REQUIREMENTS

1. CONTRACTOR SHALL INSPECT STRAW BALE INLET PROTECTION IMMEDIATELY AFTER EACH RAIN FALL, AT LEAST DAILY DURING PROLONGED RAINFALL, AND WEEKLY DURING PERIODS NO RAINFALL.

2. DAMAGED OR INEFFECTIVE INLET PROTECTION SHALL PROMPTLY BE REPAIRED, REPLACING BALES AS NECESSARY, AND UNENTRENCHED BALES NEED TO BE RE-PACKED WITH COMPACTED BACKFILL MATERIAL.

3. SEDIMENT SHALL BE REMOVED FROM BEHIND STRAW BALES WHEN IT ACCUMULATES TO APPROXIMATELY 1/3 THE HEIGHT OF THE BARRIER.

4. INLET PROTECTION SHALL BE REMOVED WHEN ADEQUATE VEGETATIVE COVER IS ATTAINED WITHIN THE DRAINAGE AREA AS APPROVED BY THE CITY.

City of Colorado Springs
Stormwater Quality

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

3-26

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NO. | DESCRIPTION | DATE

PREPARED FOR:
LORSON, LLC
212 N. WAHSATCH AVE. SUITE 301
COLORADO SPRINGS, COLORADO 80903
(719) 635-3200
CONTACT: JEFF MARK

PROJECT:
CREEKSIDE SOUTH AT LORSON RANCH
TRAPPE DR - HORTON DR
COLORADO SPRINGS, COLORADO

DRAWN: RLS
DESIGNED: RLS
CHECKED: RLS

GRADING AND EROSION CONTROL DETAILS

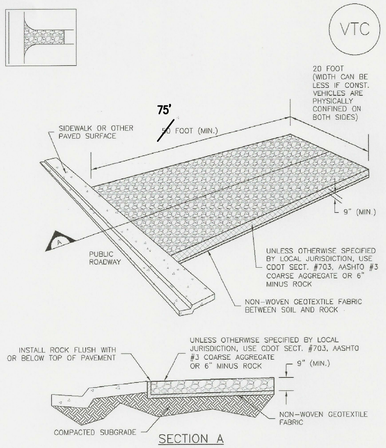
DATE: MAY 12, 2020

PROJECT NO. 100.051

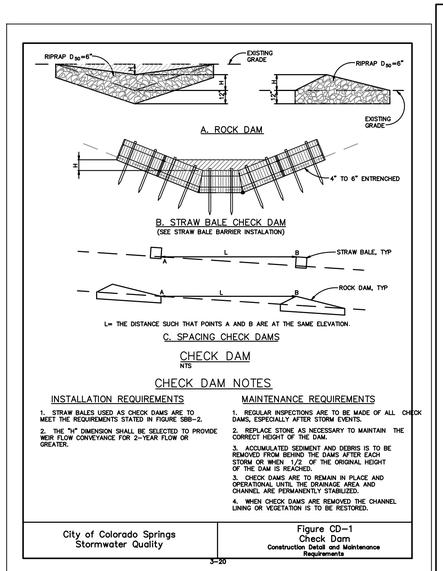
SHEET NUMBER C12.1

TOTAL SHEETS: 15

Vehicle Tracking Control (VTC) SM-4



VTC-1. AGGREGATE VEHICLE TRACKING CONTROL



CHECK DAM
NTS

CHECK DAM NOTES

INSTALLATION REQUIREMENTS

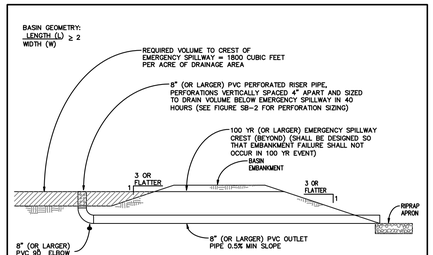
1. STRAW BALES USED AS CHECK DAMS ARE TO MEET THE REQUIREMENTS STATED IN FIGURE SBB-2.
2. THE "H" DIMENSION SHALL BE SELECTED TO PROVIDE WEIR FLOW CONVEYANCE FOR 2-YEAR FLOW OR GREATER.

MAINTENANCE REQUIREMENTS

1. REGULAR INSPECTIONS ARE TO BE MADE OF ALL CHECK DAMS, ESPECIALLY AFTER STORM EVENTS.
2. REPLACE STONE AS NECESSARY TO MAINTAIN THE CORRECT HEIGHT OF THE DAM.
3. ACCUMULATED SEDIMENT AND DEBRIS IS TO BE REMOVED FROM BEHIND THE DAMS AFTER EACH STORM OR WHEN 1/2 OF THE ORIGINAL HEIGHT OF THE DAM IS REACHED.
3. CHECK DAMS ARE TO REMAIN IN PLACE AND OPERATIONAL UNTIL THE DRAINAGE AREA AND CHANNEL ARE PERMANENTLY STABILIZED.
4. WHEN CHECK DAMS ARE REMOVED THE CHANNEL LINING OR VEGETATION IS TO BE RESTORED.

City of Colorado Springs Stormwater Quality	Figure CD-1 Check Dam Construction Detail and Maintenance Requirements

3-20



SEDIMENT BASIN
NTS

SEDMENT BASIN NOTES

INSTALLATION REQUIREMENTS

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

MAINTENANCE REQUIREMENTS

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

City of Colorado Springs Stormwater Quality	Figure SB-1 Sediment Basin Construction Detail and Maintenance Requirements

3-32

SEED MIX TABLE

GRASS MIX FOR QUICK REVEGETATION ALL SITES:

GRASS	VARIETY	AMOUNT IN PLS LBS PER ACRE
CRESTED WHEAT GRASS	EPHRAIM OR HYCREST	4.0
PERENNIAL RYE	LINN	2.0
WESTERN WHEAT GRASS	BARTON	3.0
SMOOTH BROME GRASS	LINCOLN OR MANCHAR	5.0
SIDEOATS GRAMA	EL RENO	2.5
	TOTAL	16.5 LBS

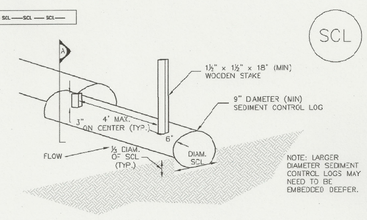
GRASS MIX FOR SANDY SOILS:

GRASS	VARIETY	AMOUNT IN PLS LBS PER ACRE
SIDEOATS GRAMA	EL RENO	3.0
WESTERN WHEAT GRASS	BARTON	2.5
SLENDER WHEAT GRASS	NATIVE	2.0
LITTLE BLUESTEM	PASTURA	2.0
SAND DROPSEED	NATIVE	0.5
SWITCH GRASS	NEBRASKA 28	3.0
WEEPING LOVE GRASS	MORPHA	1.0
	TOTAL	14.0 LBS

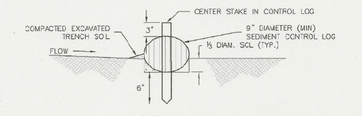
GRASS MIX FOR HEAVIER SOIL AREAS:

GRASS	VARIETY	AMOUNT IN PLS LBS PER ACRE
WESTERN WHEAT GRASS	BARTON	5.0
SIDEOATS GRAMA	EL RENO	3.0
SLENDER WHEAT GRASS	SODAR	2.5
SMOOTH BROME	LINCOLN OR MANCHAR	4.0
CRESTEDWHEAT GRASS	EPHRAIM	3.0
	TOTAL	17.5 LBS

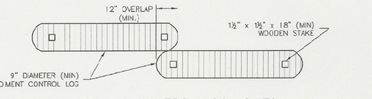
Sediment Control Log (SCL) SC-2



SEDIMENT CONTROL LOG

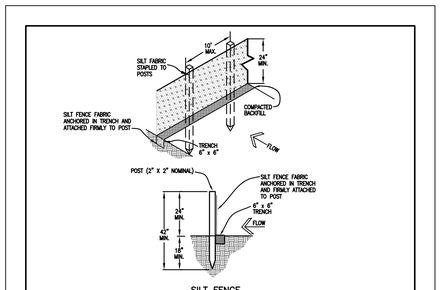


SECTION A



SEDIMENT CONTROL LOG JOINTS

SCL-1. SEDIMENT CONTROL LOG



SILT FENCE

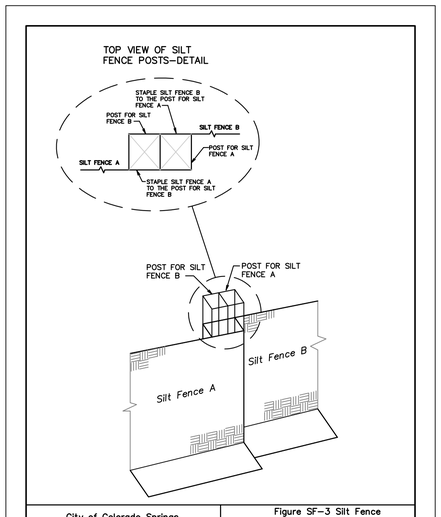
INSTALLATION REQUIREMENTS

1. SILT FENCES SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.
2. WHEN JOINTS ARE NECESSARY, SILT FENCE GEOTEXTILE SHALL BE SPLICED TOGETHER ONLY AT SUPPORT POST AND SECURELY SEALED.
3. METAL POSTS SHALL BE "STUDDED TEE" OR "U" TYPE WITH MINIMUM WEIGHT OF 1.33 POUNDS PER LINEAR FOOT. WOOD POSTS SHALL HAVE A MINIMUM DIAMETER OR CROSS SECTION DIMENSION OF 2 INCHES.
4. THE FILTER MATERIAL SHALL BE FASTENED SECURELY TO METAL OR WOOD POSTS USING WIRE TIES, OR TO WOOD POSTS WITH 3/4" LONG #9 HEAVY-DUTY STAPLES. THE SILT FENCE GEOTEXTILE SHALL NOT BE STAPLED TO EXISTING TREES.
5. WHILE NOT REQUIRED, WIRE MESH FENCE MAY BE USED TO SUPPORT THE GEOTEXTILE. WIRE FENCE SHALL BE FASTENED SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING HEAVY-DUTY WIRE STAPLES AT LEAST 3/4" LONG, TIE WIRES OR HOG RINGS. THE WIRE SHALL EXTEND INTO THE TRENCH A MINIMUM OF 6" AND SHALL NOT EXTEND MORE THAN 3' ABOVE THE ORIGINAL GROUND SURFACE.
6. ALONG THE TOE OF FILLS, INSTALL THE SILT FENCE ALONG A LEVEL CONTOUR AND PROVIDE AN AREA BEHIND THE FENCE FOR RUNOFF TO POND AND SEDIMENT TO SETTLE. A MINIMUM DISTANCE OF 5 FEET FROM THE TOE OF THE FILL IS RECOMMENDED.
7. THE HEIGHT OF THE SILT FENCE FROM THE GROUND SURFACE SHALL BE MINIMUM OF 24 INCHES AND SHALL NOT EXCEED 36 INCHES. HIGHER FENCES MAY IMPOUND VOLUMES OF WATER SUFFICIENT TO CAUSE FAILURE OF THE STRUCTURE.

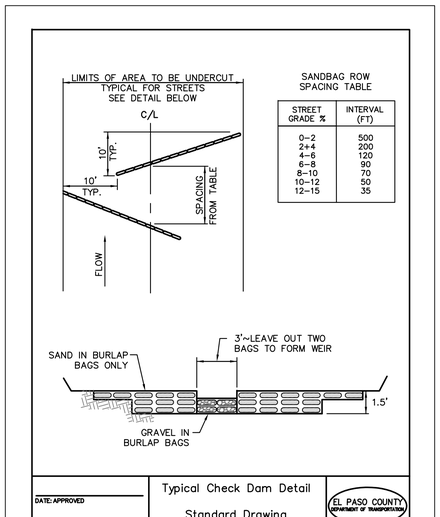
MAINTENANCE REQUIREMENTS

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

City of Colorado Springs Stormwater Quality	Figure SF-2 Silt Fence Construction Detail and Maintenance Requirements



City of Colorado Springs Stormwater Quality	Figure SF-3 Silt Fence Joint Tying Construction Detail and Maintenance Requirements



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NO. | DESCRIPTION | DATE

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CHECKED: RLS

GRADING AND EROSION CONTROL DETAILS

DATE: MAY 12, 2020
PROJECT NO. 100.051
SHEET NUMBER C12.2
TOTAL SHEETS: 15

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

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

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

Common Name	Botanical Name	Growth Season[b]	Growth Form	Seeds/ Pound	Pounds of PLS/acre
Sandy Soil Seed Mix					
Blue grama	*Bouteloua gracilis*	Warm	Sod-forming bunchgrass	825,000	0.5
Camper little bluestem	*Schizachyrium scoparium 'Camper'*	Warm	Bunch	240,000	1.0
Prairie sandreed	*Calamovilfa longifolia*	Warm	Open sod	274,000	1.0
Sand dropseed	*Sporobolus cryptandrus*	Cool	Bunch	5,298,000	0.25
Vaughn sideoats grama	*Bouteloua curtipendula 'Vaughn'*	Warm	Sod	191,000	2.0
Arriba western wheatgrass	*Agropyron smithii 'Arriba'*	Cool	Sod	110,000	5.5
Total					**10.25**
Heavy Clay, Rocky Foothill Seed Mix					
Ephriam crested wheatgrass[d]	*Agropyron cristatum 'Ephrium'*	Cool	Sod	175,000	1.5
Oahe Intermediate wheatgrass	*Agropyron intermedium 'Oahe'*	Cool	Sod	115,000	5.5
Vaughn sideoats grama[d]	*Bouteloua curtipendula 'Vaughn'*	Warm	Sod	191,000	2.0
Lincoln smooth brome	*Bromus inermis leyss 'Lincoln'*	Cool	Sod	130,000	3.0
Arriba western wheatgrass	*Agropyron smithii 'Arriba'*	Cool	Sod	110,000	5.5
Total					**17.5**

[a] All of the above seeding mixes and rates are based on drill seeding followed by crimped straw mulch. These rates should be doubled if seed is broadcast and should be increased by 50 percent if the seeding is done using a Brillion Drill or is applied through hydraulic seeding. Hydraulic seeding may be substituted for drilling only where slopes are steeper than 3:1. If hydraulic seeding is used, hydraulic mulching should be done as a separate operation.

[b] See Table TS/PS-3 for seeding dates.

[c] If site is to be irrigated, the transition turf seed rates should be doubled.

[d] Crested wheatgrass should not be used on slopes steeper than 6H to 1V.

[e] Can substitute 0.5 lbs PLS of blue grama for the 2.0 lbs PLS of Vaughn sideoats grama.

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

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

[b] See Table TS/PS-3 for seeding dates. Irrigation, if consistently applied, may extend the use of cool season species during the summer months.

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

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

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

Mulch

Cover seeded areas with mulch or an appropriate rolled erosion control product to promote establishment of vegetation. Anchor mulch by crimping, netting or use of a non-toxic tackifier. See the Mulching BMP Fact Sheet for additional guidance.

Maintenance and Removal

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

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

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

Protect seeded areas from construction equipment and vehicle access.

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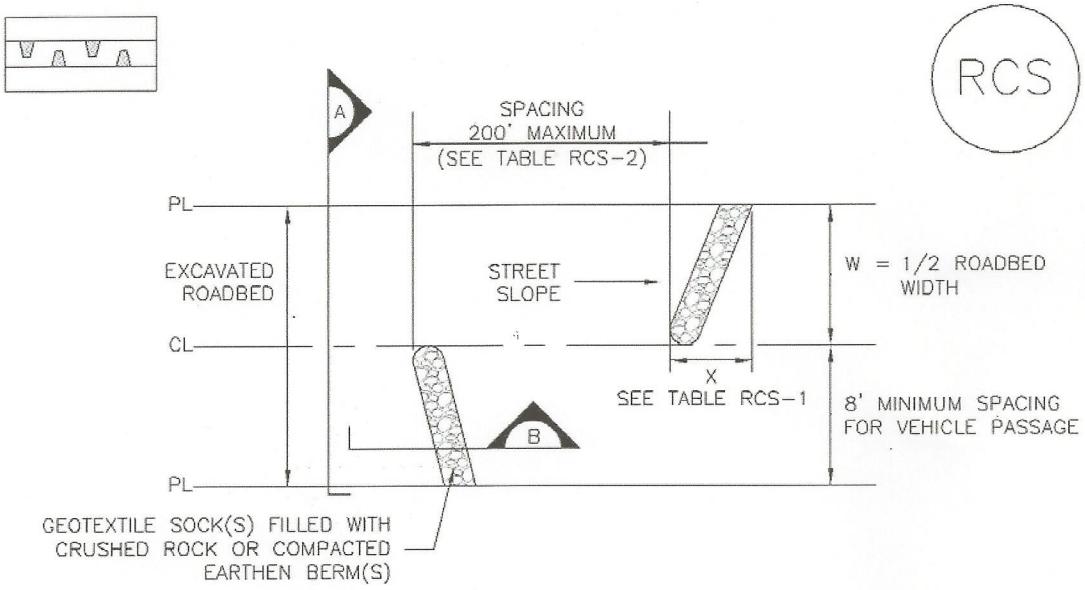
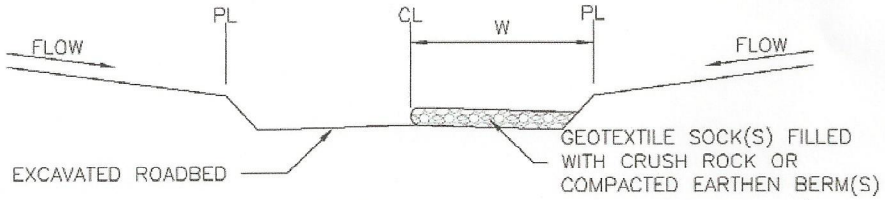


ROUGH CUT STREET CONTROL PLAN



SECTION A

SECTION B

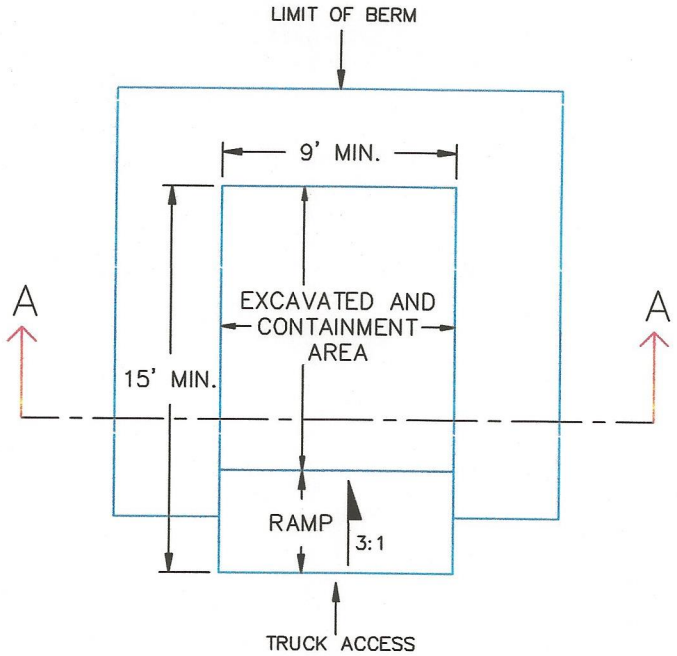
TABLE RCS-1

W (FT)	X (FT)
20-30	5
31-40	7
41-50	9
51-60	10.5
61-70	12

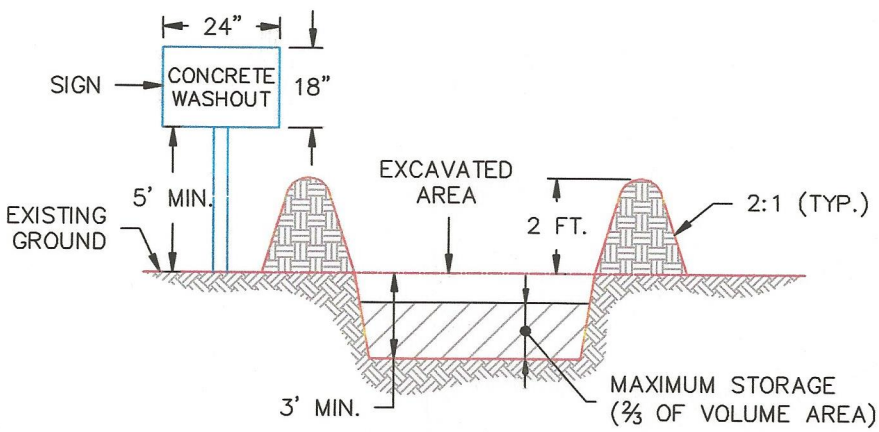
TABLE RCS-2

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

RCS-1. ROUGH CUT STREET CONTROL



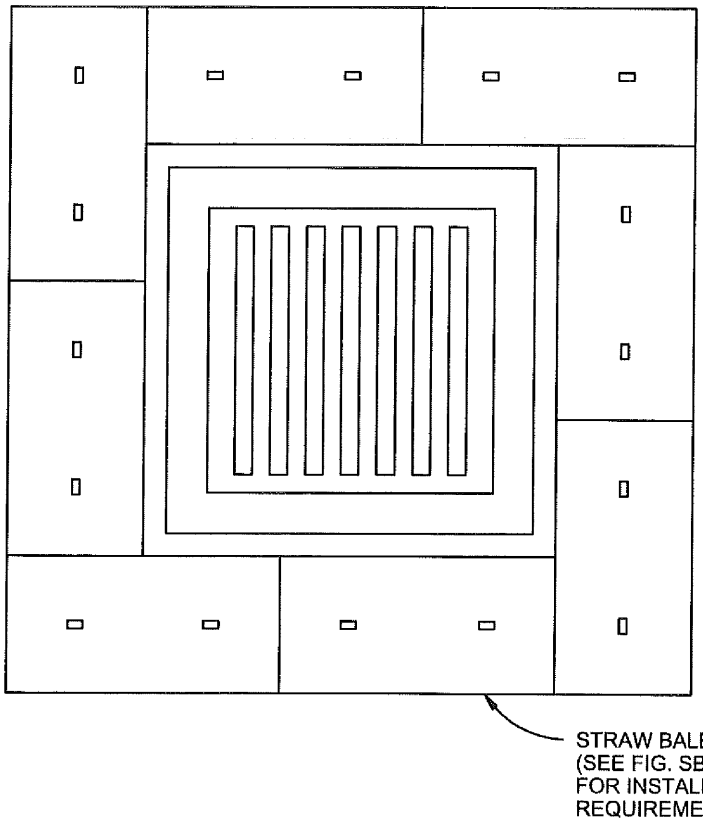
PLAN VIEW



SECTION A–A

NOTES:
1. SIGN MATERIAL, EXCAVATION, AND RESTORATION ARE INCLUDED IN THE COST OF THE CONCRETE WASHOUT STRUCTURE.
2. EROSION BALES MAY BE USED AS AN ALTERNATIVE FOR THE BERM.

1/1/08 DATE APPROVED: John A. McCarty DEPARTMENT OF TRANSPORTATION	Concrete Washout Structure Standard Drawing REVISION DATE: 7/17/07 FILE NAME: SD_3-84	EL PASO COUNTY DEPARTMENT OF TRANSPORTATION



STRAW BALE INLET PROTECTION

NTS

STRAW BALE INLET PROTECTION NOTES

INSTALLATION REQUIREMENTS

1. INLET PROTECTION SHALL BE INSTALLED IMMEDIATELY AFTER CONSTRUCTION OF INLET.

2. BALES ARE TO BE PLACED IN A SINGLE ROW AROUND THE INLET WITH THE END OF THE BALES TIGHTLY ABUTTING ONE ANOTHER.

3. SEE STRAW BALE BARRIER FIGURE SBB-2 FOR INSTALLATION REQUIREMENTS.

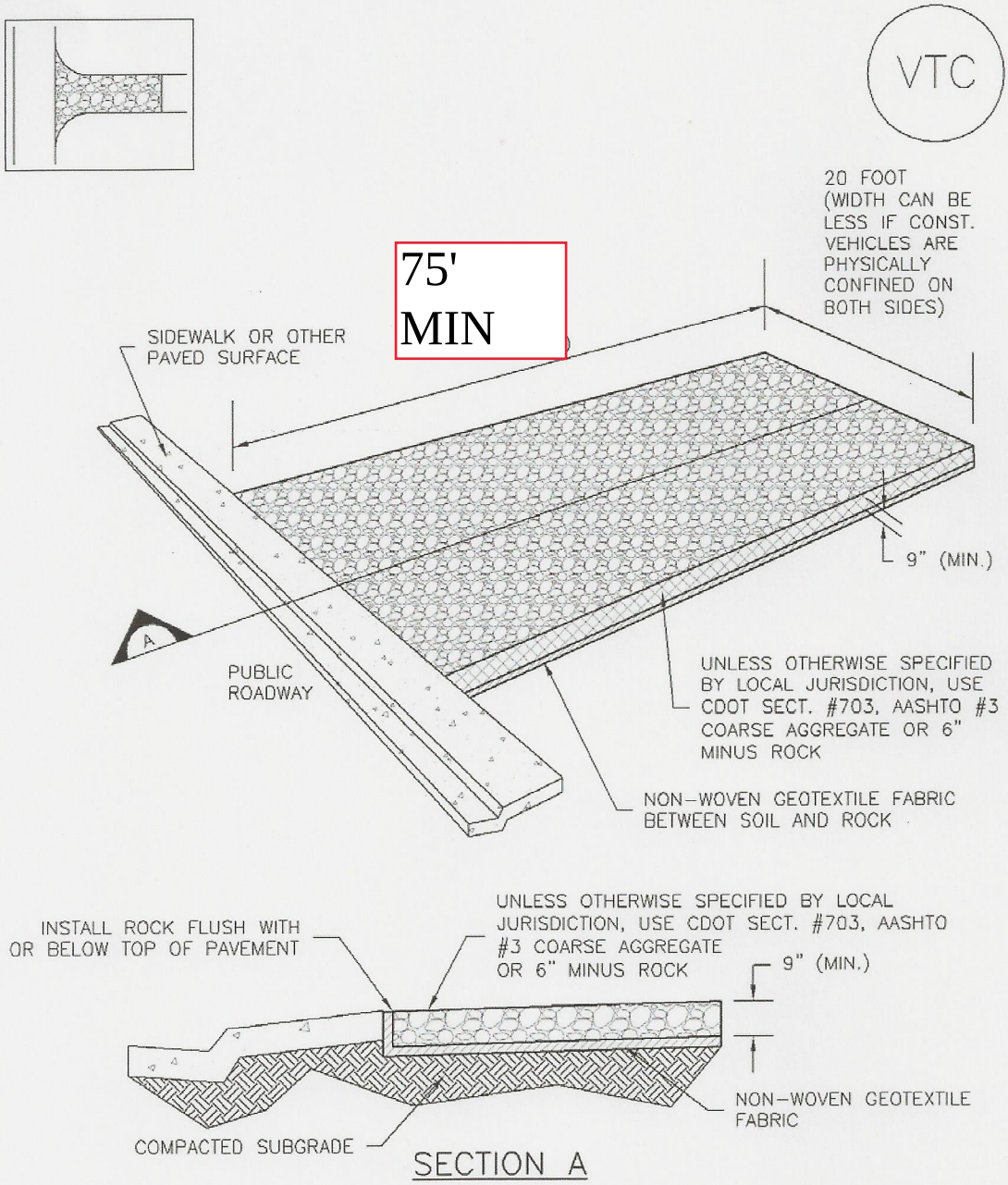
MAINTENANCE REQUIREMENTS

1. CONTRACTOR SHALL INSPECT STRAW BALE INLET PROTECTION IMMEDIATELY AFTER EACH RAINFALL, AT LEAST DAILY DURING PROLONGED RAINFALL, AND WEEKLY DURING PERIODS NO RAINFALL.

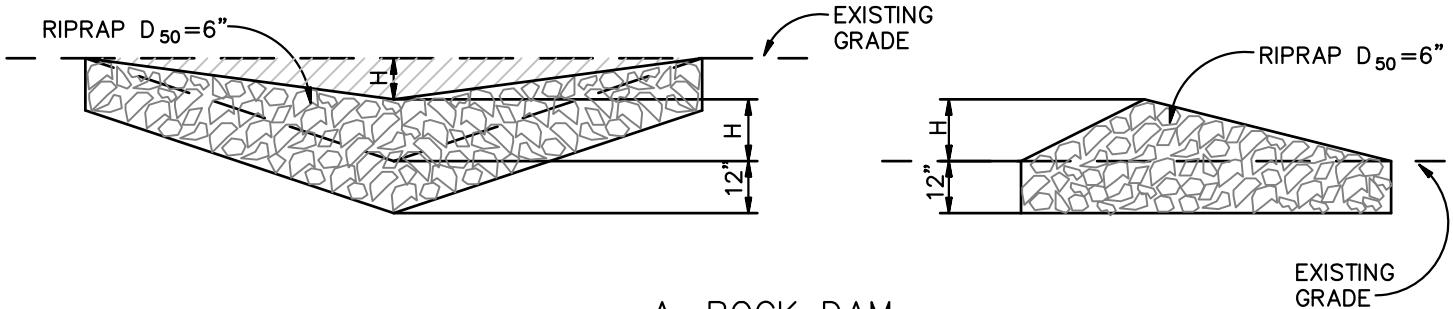
2. DAMAGED OR INEFFECTIVE INLET PROTECTION SHALL PROMPTLY BE REPAIRED, REPLACING BALES IF NECESSARY, AND UNENTRENCHED BALES NEED TO BE REPAIRED WITH COMPACTED BACKFILL MATERIAL.

3. SEDIMENT SHALL BE REMOVED FROM BEHIND STRAW BALES WHEN IT ACCUMULATES TO APPROXIMATELY 1/3 THE HEIGHT OF THE BARRIER.

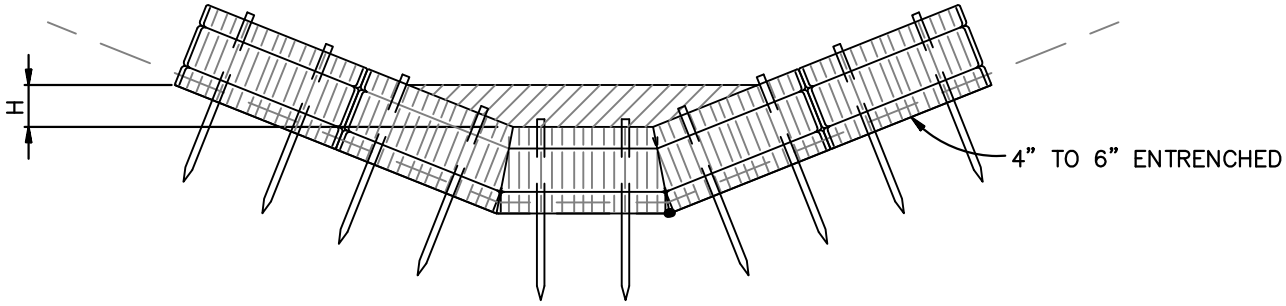
4. INLET PROTECTION SHALL BE REMOVED WHEN ADEQUATE VEGETATIVE COVER IS ATTAINED WITHIN THE DRAINAGE AREA AS APPROVED BY THE CITY.



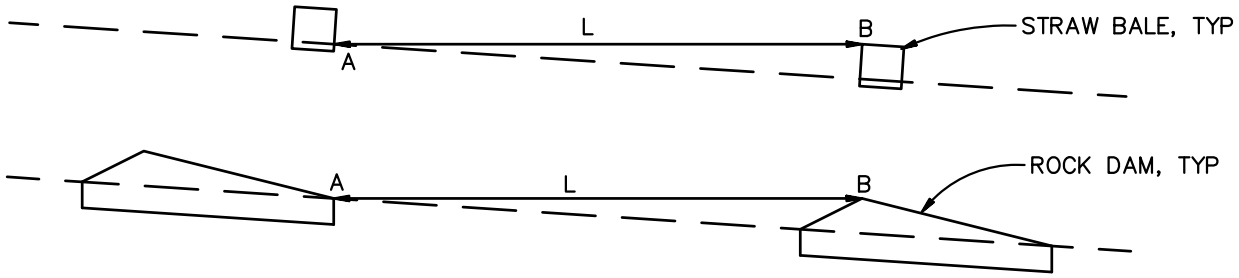
VTC-1. AGGREGATE VEHICLE TRACKING CONTROL



A. ROCK DAM



B. STRAW BALE CHECK DAM
(SEE STRAW BALE BARRIER INSTALATION)



L= THE DISTANCE SUCH THAT POINTS A AND B ARE AT THE SAME ELEVATION.

C. SPACING CHECK DAMS

CHECK DAM
NTS

CHECK DAM NOTES

INSTALLATION REQUIREMENTS

1. STRAW BALES USED AS CHECK DAMS ARE TO MEET THE REQUIREMENTS STATED IN FIGURE SBB–2.

2. THE "H" DIMENSION SHALL BE SELECTED TO PROVIDE WEIR FLOW CONVEYANCE FOR 2–YEAR FLOW OR GREATER.

MAINTENANCE REQUIREMENTS

1. REGULAR INSPECTIONS ARE TO BE MADE OF ALL CHECK DAMS, ESPECIALLY AFTER STORM EVENTS.

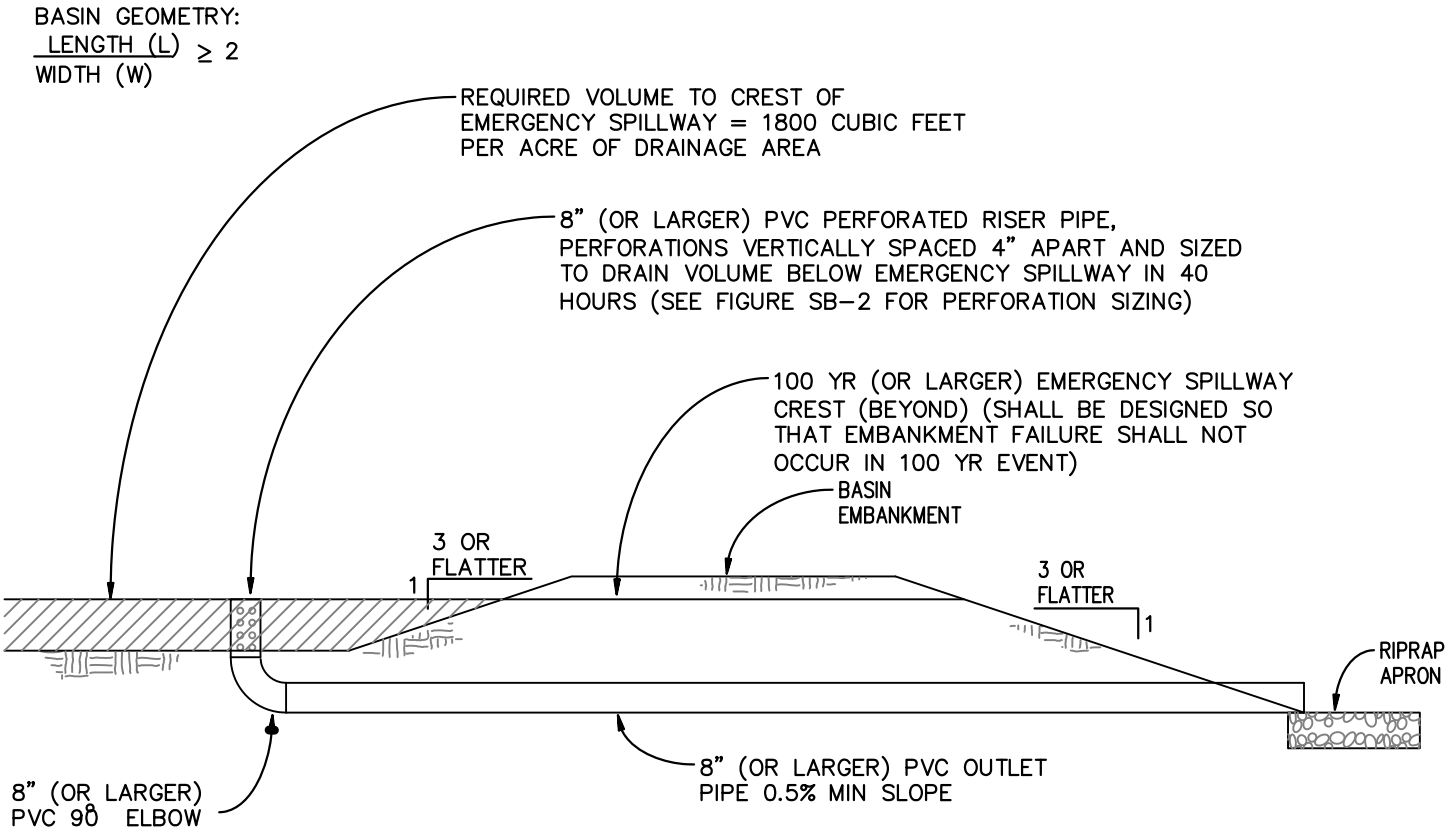
2. REPLACE STONE AS NECESSARY TO MAINTAIN THE CORRECT HEIGHT OF THE DAM.

3. ACCUMULATED SEDIMENT AND DEBRIS IS TO BE REMOVED FROM BEHIND THE DAMS AFTER EACH STORM OR WHEN 1/2 OF THE ORIGINAL HEIGHT OF THE DAM IS REACHED.

3. CHECK DAMS ARE TO REMAIN IN PLACE AND OPERATIONAL UNTIL THE DRAINAGE AREA AND CHANNEL ARE PERMANENTLY STABILIZED.

4. WHEN CHECK DAMS ARE REMOVED THE CHANNEL LINING OR VEGETATION IS TO BE RESTORED.

City of Colorado Springs Stormwater Quality	Figure CD–1 Check Dam **Construction Detail and Maintenance Requirements**



SEDIMENT BASIN
NTS

SEDMENT BASIN NOTES

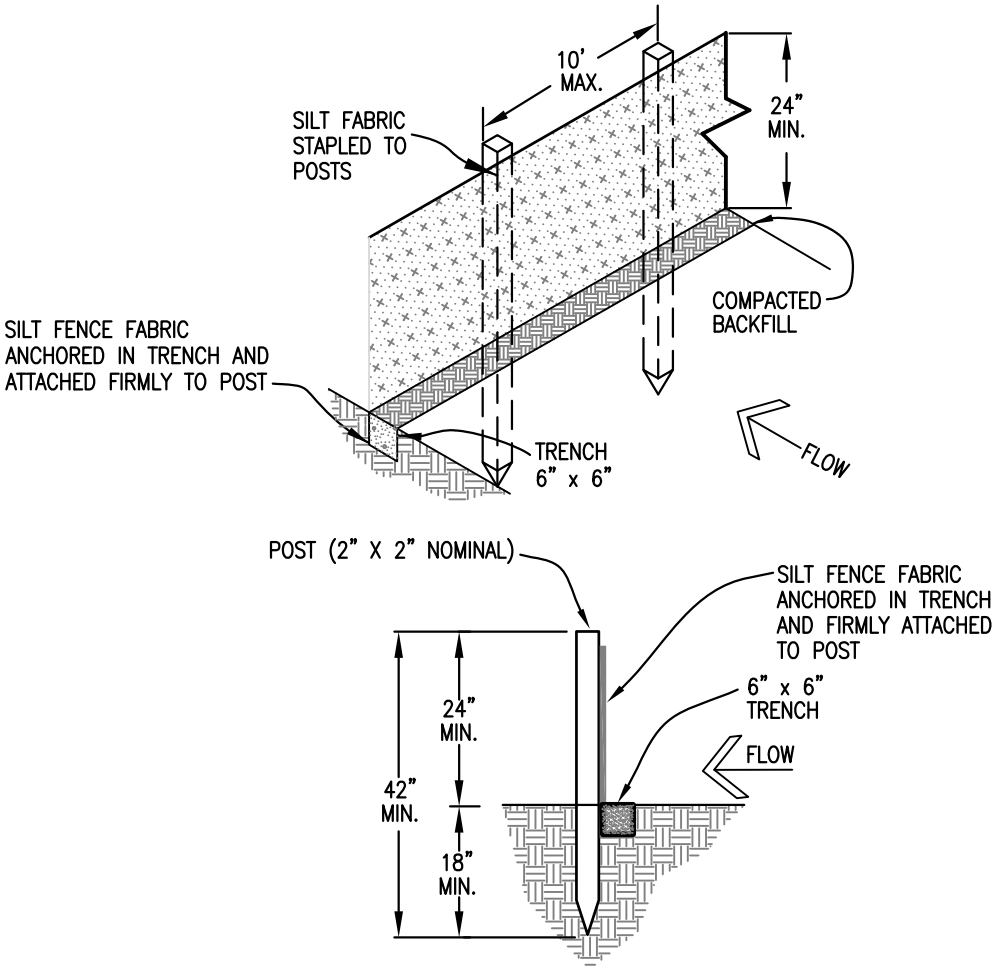
INSTALLATION REQUIREMENTS

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

MAINTENANCE REQUIREMENTS

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

City of Colorado Springs Stormwater Quality	Figure SB–1 Sediment Basin Construction Detail and Maintenance Requirements



SILT FENCE

INSTALLATION REQUIREMENTS

1. SILT FENCES SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

2. WHEN JOINTS ARE NECESSARY, SILT FENCE GEOTEXTILE SHALL BE SPLICED TOGETHER ONLY AT SUPPORT POST AND SECURELY SEALED.

3. METAL POSTS SHALL BE "STUDDED TEE" OR "U" TYPE WITH MINIMUM WEIGHT OF 1.33 POUNDS PER LINEAR FOOT. WOOD POSTS SHALL HAVE A MINIMUM DIAMETER OR CROSS SECTION DIMENSION OF 2 INCHES.

4. THE FILTER MATERIAL SHALL BE FASTENED SECURELY TO METAL OR WOOD POSTS USING WIRE TIES, OR TO WOOD POSTS WITH 3/4" LONG #9 HEAVY-DUTY STAPLES. THE SILT FENCE GEOTEXTILE SHALL NOT BE STAPLED TO EXISTING TREES.

5. WHILE NOT REQUIRED, WIRE MESH FENCE MAY BE USED TO SUPPORT THE GEOTEXTILE. WIRE FENCE SHALL BE FASTENED SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING HEAVY-DUTY WIRE STAPLES AT LEAST 3/4" LONG, TIE WIRES OR HOG RINGS. THE WIRE SHALL EXTEND INTO THE TRENCH A MINIMUM OF 6" AND SHALL NOT EXTEND MORE THAN 3' ABOVE THE ORIGINAL GROUND SURFACE.

6. ALONG THE TOE OF FILLS, INSTALL THE SILT FENCE ALONG A LEVEL CONTOUR AND PROVIDE AN AREA BEHIND THE FENCE FOR RUNOFF TO POND AND SEDIMENT TO SETTLE. A MINIMUM DISTANCE OF 5 FEET FROM THE TOE OF THE FILL IS RECOMMENDED.

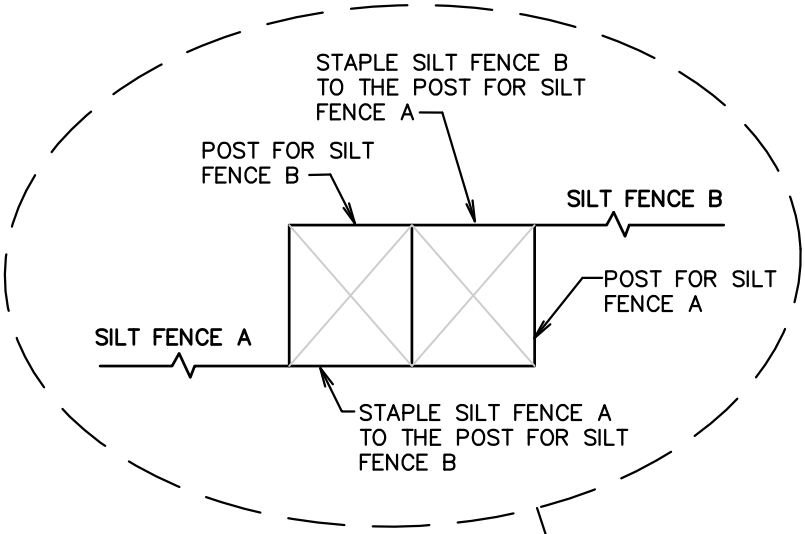
7. THE HEIGHT OF THE SILT FENCE FROM THE GROUND SURFACE SHALL BE MINIMUM OF 24 INCHES AND SHALL NOT EXCEED 36 INCHES; HIGHER FENCES MAY INPOUND VOLUMES OF WATER SUFFICIENT TO CAUSE FAILURE OF THE STRUCTURE.

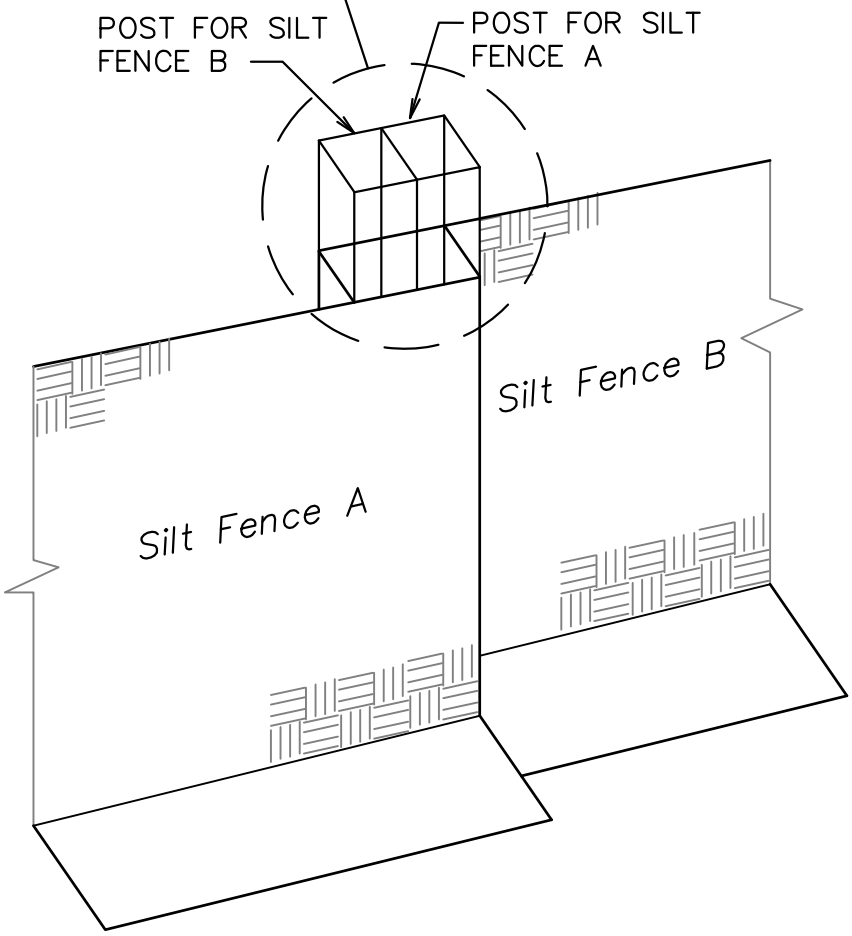
MAINTENANCE REQUIREMENTS

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

City of Colorado Springs Stormwater Quality	Figure SF-2 Silt Fence Construction Detail and Maintenance Requirements

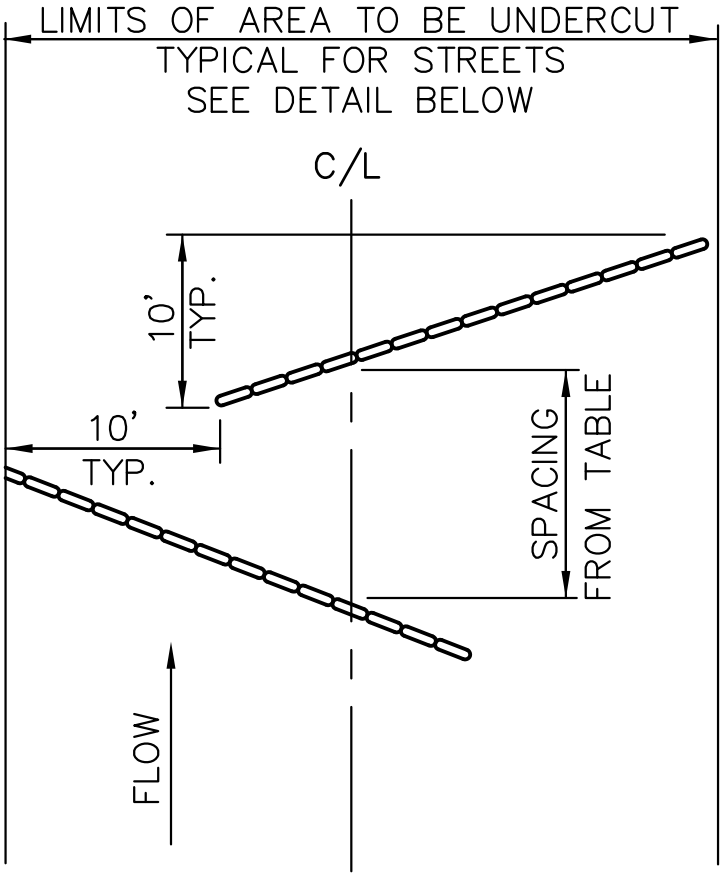
TOP VIEW OF SILT FENCE POSTS–DETAIL





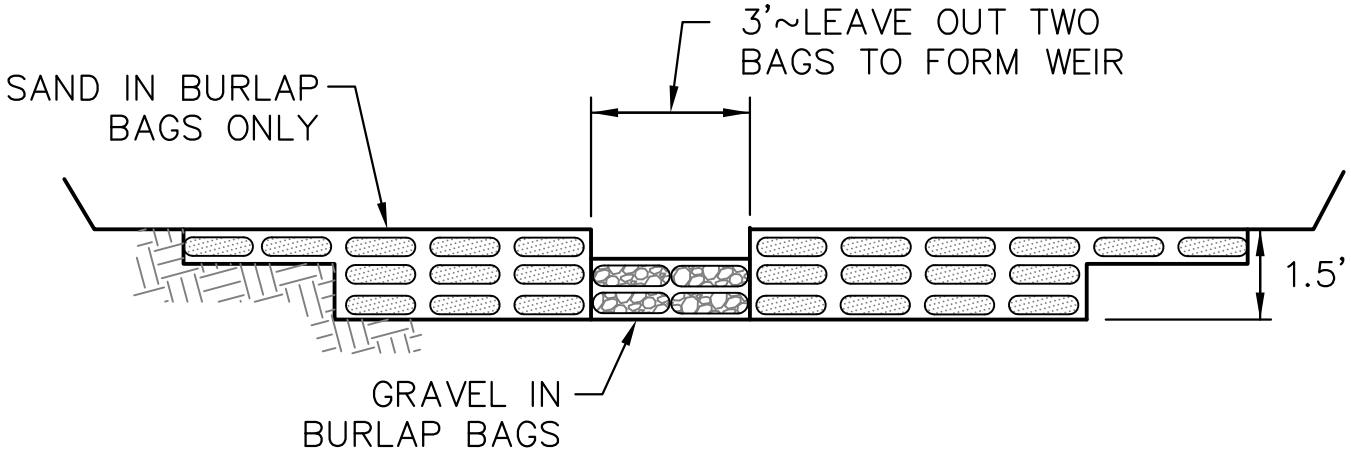
City of Colorado Springs
Stormwater Quality

Figure SF–3 Silt Fence Joint Tying
Construction Detail and Maintenance Requirements



SANDBAG ROW
SPACING TABLE

STREET GRADE %	INTERVAL (FT)
0–2	500
2+4	200
4–6	120
6–8	90
8–10	70
10–12	50
12–15	35



DATE: APPROVED

DEPARTMENT OF TRANSPOTATION

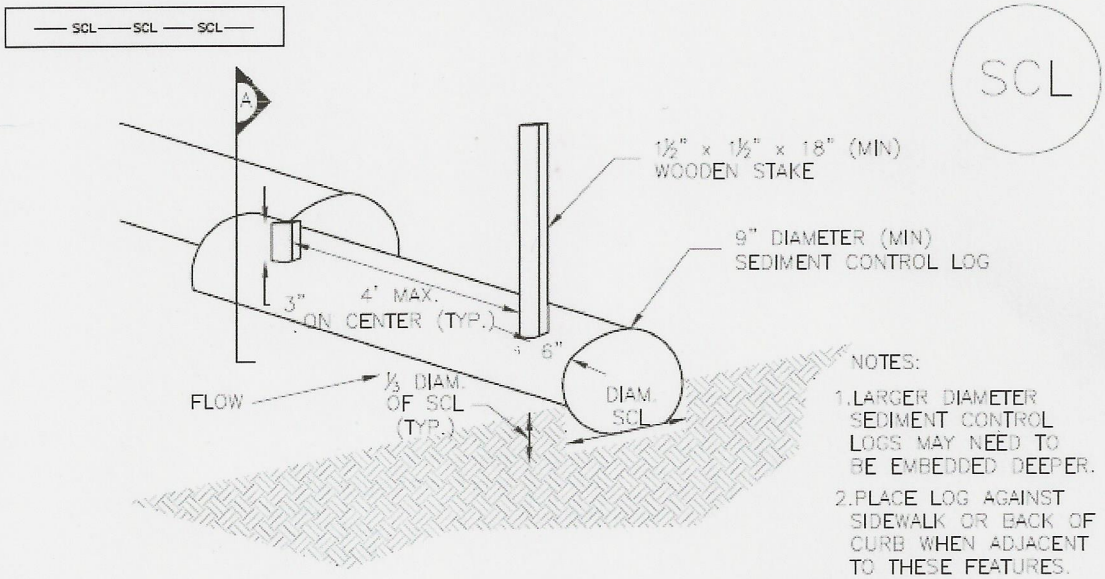
Typical Check Dam Detail

Standard Drawing

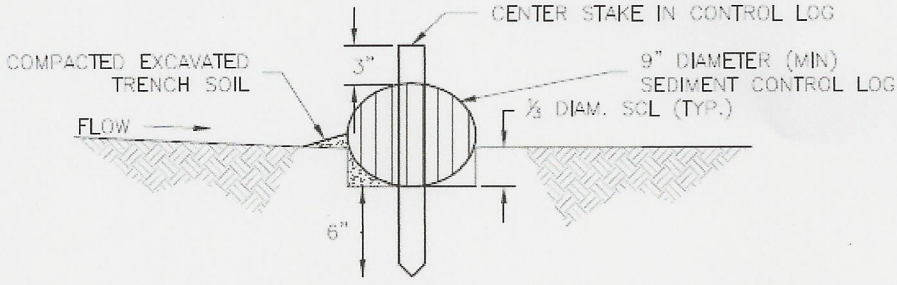
REVISION DATE: 11/10/04

FILE NAME: SD_3-62

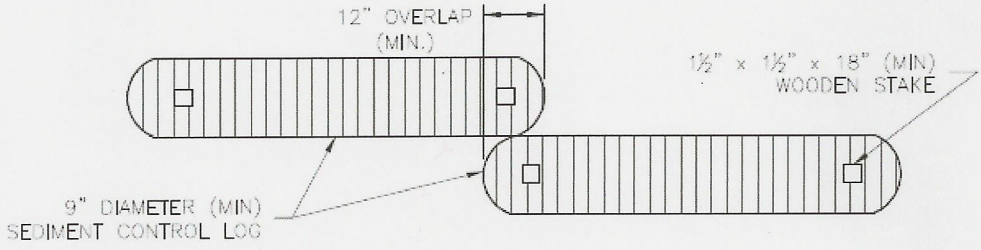
EL PASO COUNTY
DEPARTMENT OF TRANSPORTATION



TRENCHED SEDIMENT CONTROL LOG



SECTION (A)
TRENCHED SEDIMENT CONTROL LOG



LOG JOINTS

SCL-1. TRENCHED SEDIMENT CONTROL LOG

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

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

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

Common Name	Botanical Name	Growth Season[b]	Growth Form	Seeds/ Pound	Pounds of PLS/acre
Sandy Soil Seed Mix					
Blue grama	*Bouteloua gracilis*	Warm	Sod-forming bunchgrass	825,000	0.5
Camper little bluestem	*Schizachyrium scoparium 'Camper'*	Warm	Bunch	240,000	1.0
Prairie sandreed	*Calamovilfa longifolia*	Warm	Open sod	274,000	1.0
Sand dropseed	*Sporobolus cryptandrus*	Cool	Bunch	5,298,000	0.25
Vaughn sideoats grama	*Bouteloua curtipendula 'Vaughn'*	Warm	Sod	191,000	2.0
Arriba western wheatgrass	*Agropyron smithii 'Arriba'*	Cool	Sod	110,000	5.5
Total					**10.25**
Heavy Clay, Rocky Foothill Seed Mix					
Ephriam crested wheatgrass[d]	*Agropyron cristatum 'Ephriam'*	Cool	Sod	175,000	1.5
Oahe Intermediate wheatgrass	*Agropyron intermedium 'Oahe'*	Cool	Sod	115,000	5.5
Vaughn sideoats grama[e]	*Bouteloua curtipendula 'Vaughn'*	Warm	Sod	191,000	2.0
Lincoln smooth brome	*Bromus inermis leyss 'Lincoln'*	Cool	Sod	130,000	3.0
Arriba western wheatgrass	*Agropyron smithii 'Arriba'*	Cool	Sod	110,000	5.5
Total					**17.5**

[a] All of the above seeding mixes and rates are based on drill seeding followed by crimped straw mulch. These rates should be doubled if seed is broadcast and should be increased by 50 percent if the seeding is done using a Brillion Drill or is applied through hydraulic seeding. Hydraulic seeding may be substituted for drilling only where slopes are steeper than 3:1. If hydraulic seeding is used, hydraulic mulching should be done as a separate operation.

[b] See Table TS/PS-3 for seeding dates.

[c] If site is to be irrigated, the transition turf seed rates should be doubled.

[d] Crested wheatgrass should not be used on slopes steeper than 6H to 1V.

[e] Can substitute 0.5 lbs PLS of blue grama for the 2.0 lbs PLS of Vaughn sideoats grama.

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

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

[b] See Table TS/PS-3 for seeding dates. Irrigation, if consistently applied, may extend the use of cool season species during the summer months.

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

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

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

Mulch

Cover seeded areas with mulch or an appropriate rolled erosion control product to promote establishment of vegetation. Anchor mulch by crimping, netting or use of a non-toxic tackifier. See the Mulching BMP Fact Sheet for additional guidance.

Maintenance and Removal

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

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

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

Protect seeded areas from construction equipment and vehicle access.

APPENDIX C

STORMWATER INSPECTION REPORT

Stormwater Inspection Report

Project Name and Location: _____

_____

Inspector Name and Title: _____Director: _____

_____

Date/Time of Inspection: _____Weather Conditions: _____

_____

Schedule Completion Date: _____ Construction Stage (circle all that apply):

Clearing/Grubbing Paving Rough Grading Infrastructure Building Construction Final Grading Final Stabilization Terminate Permit _____

Type of Control	**Describe status, identify problems, maintenance needs, or non-conformance with details or temporary alteration**	**Problem addressed (date and description of corrective action)**
Structural:		
Silt Fence ❒ OK ❒ N/A	❒Tears/Holes ❒Burial ❒Sed. Accum. ❒Sediment bypass	
Const. Exit ❒ OK ❒ N/A	❒Voids Filled ❒Trackout	
Check Dam ❒ OK ❒ N/A	❒Sediment Accumulation	
Inlet Protection ❒ OK ❒ N/A	❒Sed. Accum. ❒Sed. Bypass ❒Application not appropriate	
DiversionDitch/Berm ❒ OK ❒ N/A	❒Erosion ❒Stabilization	
Sediment Trap ❒ OK ❒ N/A	❒Sediment Accumulation	
Sediment Basin ❒ OK ❒ N/A	❒Sed. Accumulation ❒Bank erosion ❒Stabilization	
Discharge Point ❒ OK ❒ N/A	❒Erosion ❒Sediment Discharge	
Material Storage/ Secondary Contain. ❒ OK ❒ N/A	❒Not shown on Site Map ❒Spills ❒Out of design. area ❒Improper storage: chemicals; solvents; paint; fuels, etc.	

Other Structural Controls ❒ OK ❒ N/A		
Non-Structural:		
Good Housekeeping ❒ OK ❒ N/A	❒Solid Waste ❒Sanitary Waste ❒Dust Control	

Project Name and Location: _____Date: _____ Page 2

Equip. Wash/Maint. ❒ OK ❒ N/A	❒Spills ❒Outside designated area	
Concrete Washout ❒ OK ❒ N/A	❒Spills out of designated area ❒Not shown on Site Map	
Stabilization:		
Seed/Sod Mulching, Geotextile, Blankets ❒ OK ❒ N/A	❒Need Temp. stab. ❒Need final stab. ❒Health of veg.	
Record Keeping:		
Entrance Postings ❒ OK ❒ N/A	❒NOI ❒Permits ❒Construction Site Notice	
SWPPP Notebook ❒ OK ❒ N/A	❒Missing Sections ❒Missing Forms	
Site Map/Details ❒ OK ❒ N/A	❒Activities not up-to-date ❒Deviate from details ❒BMP Additions ❒Modifications ❒Not up-to-date	
Other ❒ OK ❒ N/A		

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

_____

Inspector's Signature Date

APPENDIX D

SPILL REPORT FORM

Spill Report Form

Project Type and Location: _____

Spill Reported by: _____

Date/Time Spill: _____

Describe spill location and events leading to spill: _____

_____

_____

Material spilled: _____

Source of spill: _____

Amount spilled: _____ Amount spilled to waterway: _____

Containment or clean up action: _____

_____

_____

Approximate depth of soil excavation: _____

List Injuries or Personal Contamination: _____

Action to be taken to prevent future spills: _____

_____

Modifications to the SWPPP necessary due to this spill: _____

_____

Agencies notified of the spill: _____

_____

_____

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

_____ _____

Contractor Superintendent Date

APPENDIX E

RECORD OF STABILIZATION AND CONSTRUCTION ACTIVITY DATES

SITE STABILIZATION and CONSTRUCTION ACTIVITY DATES

A record of dates when BMPs are installed or removed, stabilization measures are initiated, major grading activities occur, and construction activities temporarily or permanently cease on a portion of the site shall be maintained until final site stabilization is achieved.

MAJOR STABILIZATION AND GRADING ACTIVITIES

Description of Activity:_____

Site Contractor: _____ Begin (date): _____ End(date):_____

Location:_____

Description of Activity:_____

Site Contractor: _____ Begin (date): _____ End(date):_____

Location:_____

Description of Activity:_____

Site Contractor: _____ Begin (date): _____ End(date):_____

Location:_____

APPENDIX F

FEDERAL, STATE, OR LOCAL STORM WATER OR OTHER ENVIRONMENTAL INSPECTOR SITE VISIT LOG

Federal, State, or Local Storm Water or other Environmental Inspector Site Visit Log

Inspectors Name: _____ Agency: _____

Contractors Representative Present: _____

Others Present: _____

Comments: _____

Time and Date: _____ Report Prepared:
Yes No

Inspectors Name: _____ Agency: _____

Contractors Representative Present: _____

Others Present: _____

Comments: _____

Time and Date: _____ Report Prepared:
Yes No

Inspectors Name: _____ Agency: _____

Contractors Representative Present: _____

Others Present: _____

Comments: _____

Time and Date: _____ Report Prepared:
Yes No

APPENDIX G

GENERAL PERMIT