

**Construction Activities Stormwater Management Plan (SWMP)
Grading, Erosion and Stormwater Quality Control Plan
Lorson Ranch
Fontaine Boulevard Bridge and Channel Design
El Paso County, Colorado
38.742243°N, -104.628328°W**

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STATE STORMWATER DISCHARGE PERMIT REQUIREMENTS

At least ten days prior to the anticipated start of construction activities (i.e. the initial disturbance of soils associated with clearing, grading, excavation activities, installation of structural Best Management Practices, or other activities), for projects that will disturb one (1.0) acre or more, the owner or operator of the construction activity must submit an application as provided by the Colorado Department of Public Health and Environment, Water Quality Control Division (Division). This form may be reproduced and is also available from the Division's web site. Applications received by the Division are processed and a permit certification and other relevant materials will be sent to the attention of the legally responsible person. The application contains certification of completion of a storm water management plan (SWMP). Do not include a copy of the Stormwater Management Plan, unless requested by the Division.

For information or application materials contact:

Colorado Department of Public Health and Environment
Water Quality Control Division
WQCD-P-B2
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530
<https://www.colorado.gov/pacific/cdphe/wq-construction-general-permits>

Electronic Application – CDPHE website:

<https://www.colorado.gov/pacific/cdphe/WQ%20permits%20construction%20electronic%20application>

I. STORMWATER MANAGEMENT PLAN OBJECTIVES

The objective of the Stormwater Management Plan (SWMP) is “to identify possible pollutant sources that may contribute pollutants to stormwater and identify Best Management Practices (BMPs) that, when implemented, will reduce or eliminate any possible water quality impacts. The SWMP must be completed and implemented at the time the project breaks ground and revised as construction proceeds, to accurately reflect the conditions and practices at the site (CDPHE *Stormwater Management Plan Preparation Guidance*)”. A general schedule or phasing of BMPs will be determined by construction schedule and ground disturbances necessitating required erosion control methods/BMPs. The SWMP shall be implemented until expiration or inactivation of permit coverage. Evaluations of and modifications to this plan may be necessary during the length of the construction project until the site is finally stabilized.

SWMP Plan Availability: A copy of the Stormwater Discharge Permit from the State of Colorado, SWMP Report, SWMP Site Map, SWMP Notes and Details; and inspection reports shall be kept on site by the SWMP Administrator at all times, as to be available for use by the operator/SWMP Administrator and to be available for inspection by federal, state and local agencies. If an office location is not available at the site, the SWMP must be managed so that it is available at the site when construction activities are occurring (for example: by keeping the SWMP in the superintendent's vehicle). The permittee shall retain copies of the SWMP and all reports required by the Permit and records of all data used to complete the Permit application for three (3) years minimum after expiration or inactivation of permit coverage, unless the community requires a longer period.

This 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 SWMP Administrator 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. If the SWMP Administrator feels that modifications to the BMPs shown on the SWMP are necessary to provide for a more effective plan, the SWMP Administrator should contact the County Inspector to obtain acceptance of the proposed modifications prior to installing the BMPs. The process will include: 1) Evaluate pollutant sources, 2) Select BMPs, 3) Document BMPs, 4) Implement BMPs. Minor field modifications to the BMPs may be approved by the County inspector. All other requested major modifications shall be in writing and submitted to the County for approval.

SWMP revisions must be made prior to changes in the site conditions, except for “Responsive SWMP Changes” as follows:

- SWMP revision must be made immediately after changes are made in the field to address BMP installation and/or implementation issues; or
- SWMP revisions must be made as soon as practicable, but in no case more than 72 hours, after change(s) in BMP installation and/or implementation occur at the site that require development of materials to modify the SWMP
 - ◊ A notation must be included in the SWMP prior to the site change(s) that includes the time and date of the change(s) in the field, and identification of the BMP(s) removed or added and the location(s) of the BMP(s). Modifications to the SWMP shall be submitted to the County within seven days.

An El Paso County Erosion and Stormwater Quality Control Permit (ESQCP) is required along with a Colorado Discharge Permit System (CDPS), Stormwater Discharge Associated with Construction

Activities Permit from the Colorado Department of Public Health and Environment for this project. The general conditions associated with the permits must be followed through the duration of the land disturbing activities at the site. For additional details or more specific information on the CDPS permit, consult the CDPS General Permit No. COR-030000. County ESQCP: Signoff and acceptance of both the Grading Plan and the Erosion Control Plan, or a combined plan, by the County constitutes an ESQCP authorizing the approved land disturbance and implementation of the approved erosion and stormwater quality control measures.

A. State Permit Applicant

The State Permit applicant (also referred to as the Permittee) must be a legal entity that meets the definition of the owner and/or operator of the construction site, in order for this application to legally cover the activities occurring at the site. The applicant must have day-to-day supervision and control over activities at the site and implementation of the SWMP. Although it is acceptable for the applicant to meet this requirement through the actions of a contractor, as discussed in the examples below, the applicant remains liable for violations resulting from the actions of their contractor and/or subcontractors. Examples of acceptable applicants include:

Owner or Developer - An owner or developer who is operating as the site manager or otherwise has supervision and control over the site, either directly or through a contract with an entity such as those listed below.

General Contractor or Subcontractor - A contractor with contractual responsibility and operational control (including SWMP implementation) to address the impacts construction activities may have on stormwater quality.

Other Designated Agents/Contractors - Other agents, such as a consultant acting as construction manager under contract with the owner or developer, with contractual responsibility and operational control (including SWMP implementation) to address the impacts construction activities may have on stormwater quality.

Refer to the CDPHE, *Stormwater Management Plan Preparation Guidance* for additional information.

The Permittee shall be legally responsible for compliance with the State Permit.

B. SWMP Terms

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

Nonstructural BMPs, such as preserving natural vegetation, preventive maintenance and spill response procedures, schedules of activities, prohibition of specific practices, education, and other management practices are mainly operational or managerial techniques.

Structural BMPs include treatment processes and practices ranging from diversion structures and silt fences, to retention ponds and inlet protection.

Construction Start Date: This is the day when ground disturbing activities are expected to begin, including grubbing, stockpiling, excavating, demolition, and grading activities.

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

Final Stabilization Date: In terms of permit coverage, this is when the site is finally stabilized. This means that all ground surface disturbing activities at the site have been completed, and all disturbed areas have been either built on, paved, or a uniform vegetative cover has been established with an individual plant density of at least 70 percent of pre-disturbance levels (refer to Final Stabilization Section). Permit coverage must be maintained until the site has reached Final Stabilization. Even if only one part of the project is being done, the estimated final stabilization date must be for the overall project. If permit coverage is still required once your part is completed, the permit certification may be transferred or reassigned to a new responsible entity(s).

SWMP Drawings: Also known as the SWMP Site Map.

C. Contractor Required Items

The Contractor shall include and/or provide the following items prior to beginning land disturbing activities:

- ☐ Add the SWMP Administrator and Alternate with phone numbers to this plan.
- ☐ Construction Dates – Verify the construction dates indicated in this report. Update as necessary to reflect the planned schedule.
- ☐ Material Handling and Spill Prevention procedures – See Section IV-4.
- ☐ Application - Insert Application for CDPS Stormwater Discharge Associated with Construction Activities Permit into Appendix.
- ☐ Permit - Insert Permit for CDPS Stormwater Discharge Associated with Construction Activities into Appendix.
- ☐ Location of SWMP and Records: The most current version of the SWMP. Construction activities discharge permit, inspection reports and other related files shall be kept by the Contractor onsite at all times during the period of construction.

II. SITE DESCRIPTION

A. Nature of the Construction Activity

The proposed development will be the Fontaine Boulevard bridge over the East Fork Jimmy Camp Creek which will be a 48-foot span, 126-foot long by 14-foot high arched pre-cast bridge and pre-cast headwall and cast-in-place wingwalls. Drainageway through the bridge is an un-grouted rock invert. Included in the project is the stabilization of the existing floodplain along the East Fork Jimmy Camp Creek. Stabilization measures include soil/riprap bank linings, low flow channel with grade controls, turf reinforcement and native revegetation. Bank lining is designated at outside bends of the natural floodplain, Low flow channel grade control is accomplished by three small grouted sloping boulder drop structures, 6-foot long. The bottom width of the low-flow channel will be 25-feet and the top width will be 43-feet.

i. Site Location

The site is located at the crossing of Fontaine Boulevard over the East Fork of Jimmy Camp Creek. The site is located within the portions of sections 13, 14 and 23, Township 15 South, Range 65 West of the 6th Principal Meridian, in El Paso County, Colorado. The location of the site is shown on the Vicinity Map (Figure 1).

ii. Adjacent Areas

The site is bounded to the west by Pioneer Landing Subdivision Filing No. 2, to the north by undeveloped ranchland on the Banning Lewis Ranch, on the south by the future Fontaine Boulevard right-of-way, and on the east by undeveloped Lorson Ranch East parcels.

B. Sequence of Major Activities

The major construction activities associated with this project are shown in the table below along with an approximate timing of the sequence. In general, the SWMP Administrator and the Contractor will identify the precise schedule to be used during the term of this project and modify this schedule as needed. Minimal clearing and grubbing may be necessary to install the initial erosion control features.

Approximate Sequence of Major Construction Activities:

Installation of Initial BMPs	March 2018
Clearing and grubbing	March 2018
Bridge and attendant features	March to June 2018
Drainageway Construction	March to June 2018
Site Restoration	July 2018
End Construction (refer to <i>Final Stabilization...</i> section)	Fall 2018

The temporary erosion control measures can be removed when Final Stabilization has occurred. Refer to the Final Stabilization section for a description of the requirements.

C. Estimate of Area and Volume Disturbed

The total site area associated with the bridge and channel construction is 14 acres and approximately 9.7 acres will be subject to disturbance. The estimated area of disturbance corresponds to that necessary to perform grading, install the Fontaine Boulevard Bridge and proposed improvements for the East Fork Jimmy Camp Creek). Locations of disturbed areas are as shown on the SWMP Site Map. All other areas are planned to remain undisturbed.

Earthwork operations will involve be roughly 17,500 cubic yards of Cut-to-Fill. Fill will be placed onsite. The earthwork quantity is approximate and assumes a shrinkage factor of 10 percent for the placement of fill material.

D. Soil Data

Soils within the area of disturbance are classified to be within Hydrologic Soils Group C and B as shown in the El Paso County Soils Survey. Specifically, the site includes Ascalon sandy loam (Soil Group B) and Manzanola (Soil Group C). Hydrologic Soil Group C soils have a low infiltration rate when thoroughly wet. These consist mainly of deep clay loams with a low rate of water transmission and a high hazard of erosion. Hydrologic Soil Group B soils have a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission and a moderate erosion hazard. Discharges of these soils into the receiving waterways could cause

localized areas of sediment deposition. Deposition of excessive amounts of sediment could in turn cause a decrease in the hydraulic capacity of the drainageway and roadway culverts.

Pre-construction 100-year runoff coefficient for the site is 0.25 and the post-construction runoff coefficient will be roughly 0.25.

E. Existing Vegetation and Ground Cover

The existing site is undeveloped and the vegetative cover is in fair condition with grasses throughout the site. The existing ground slopes within the property are moderate and range from 1 to 6 percent. The vegetative cover is estimated at about 70%.

It is recommended that the contractor take pictures of the existing vegetation cover prior to construction and any calculations they feel necessary to make the Final Stabilization comparison (refer to Final Stabilization section for additional information). The contractor will be responsible for providing the documentation to make this comparison to the County and the State of Colorado, Water Quality Control Division.

F. Potential Pollution Sources

The potential pollution sources for the site that may have an impact to stormwater include the following items:

1. Ground disturbing activities and grading - Sediment
2. Off-site vehicle tracking - Sediment
3. Vehicle maintenance or fueling – Fuel, oil, chemicals
4. Storage of demolition and disposal items – Sediment, asphalt, concrete
5. Soil, aggregate and sand stockpiling - Sediment
6. Storage of fertilizers, materials or chemicals - Chemicals
7. Concrete washouts – Concrete, slurry
8. Concrete work – Forms, form oil, curing compound
9. Haul routes – Sediment, fuel, oil
10. Landscaping – Fertilizers, sediment, over-watering, pesticides
11. Portolet – Chemicals, human waste

G. Non-stormwater Discharges

In the existing condition there are no known non-stormwater discharges from the project site, such as springs and landscape irrigation return flows. During construction, the following non-stormwater discharges from the project site could occur.

1. Construction dewatering – is not anticipated, but in the case groundwater is encountered, a CDPHE construction dewatering permit will be required prior to performing the dewatering activities. A dewatering bag or other approved BMP shall be used during dewatering.
2. Release of concrete washout water – Not anticipated. The washout water should be contained within the concrete washout BMP.
3. Runoff from water used for dust control – Not anticipated. The contractor should limit the amount of water used for dust control to an amount less than would result in runoff. Perimeter control BMPs are planned to filter water that may cause runoff.

If any other non-stormwater discharges from the site become apparent during the term of construction, the occurrence and mitigation shall be addressed by the SWMP Administrator.

H. Receiving Waters

In the existing condition, the site drains by the East Fork Jimmy Camp Creek via a natural upland channel flowing from the northeast in a southerly manner to join the mainstem of Jimmy Camp Creek about a mile downstream.

Immediate Receiving water(s): East Fork Jimmy Camp Creek

Ultimate Receiving Water(s): Jimmy Camp Creek

East Fork Jimmy Camp Creek is a major drainageway that crosses through the northwest portion of the site from northeast to southwest. The subject property is located within a Zone AE FEMA regulated floodplain based on Flood Insurance Rate Map 08041C07947F, dated March 17, 1997. The planned improvements to East Fork Jimmy Camp Creek will modify the existing floodplain. A Conditional Letter of Map Revision (CLOMR) has been submitted to and approved by FEMA for the floodplain modifications. The proposed 100 year floodplain will be contained within the proposed channel section and will not extend into the proposed lots.

III. SWMP SITE MAP CONTENTS

The SWMP Site Map and SWMP Drawings are considered a part of this plan. It identifies the following:

1. Construction site boundaries;
2. All areas of ground disturbance;
3. Areas of cut and fill;
4. Areas used for storage of building materials, equipment, soil, or waste;
5. Locations of all structural BMPs;
6. Locations of non-structural BMPs where applicable;
7. Locations of springs, streams, wetlands, detention basins, irrigation canals, roadside ditches and other surface waters.

The SWMP Site Map must be updated/red lined by the SWMP Administrator on a regular basis to reflect current conditions of the site at all times.

IV. STORMWATER MANAGEMENT CONTROLS

A. SWMP Administrator

The Permittee shall designate the SWMP Administrator. The SWMP Administrator is typically the Contractor or his/her designated representative and is responsible for developing, implementing, maintaining and revising the SWMP. The SWMP Administrator is the contact person with the County and State for all matters pertaining to the SWMP. The SWMP Administrator is the person responsible for the SWMP accuracy, completeness and implementation. Therefore the SWMP Administrator should be a person with authority to adequately manage and direct day to day stormwater quality management activities at the site. The SWMP Administrator shall have the authority to act on behalf of the Permittee(s) to ensure the site remains in compliance with the CDPS Stormwater Discharge Associated with Construction Activities Permit and the County's ESQCP. An Alternate SWMP Administrator who is able to serve in the same capacity as the SWMP Administrator shall also be selected.

The SWMP Administrator shall be present at the project site a majority of the time and (along with the Alternate SWMP Administrator) shall provide the County with a 24-hour emergency contact number.

If the SWMP Administrator or Alternate changes for any reason, it shall be noted/redlined on this Plan. The County shall be notified in writing of any change.

SWMP Administrator: _____

Phone: _____

Alternate SWMP Administrator: _____

Phone: _____

B. Identification of Potential Pollutant Sources:

At a minimum, the following sources and activities shall be evaluated for the potential to contribute pollutants to stormwater discharges and identified in the SWMP if found to have such potential. The sources of any potential pollutants must be controlled through BMP selection and implementation. Each pollutant source recognized through this process as having the potential to contribute pollutants to stormwater, must be identified in the SWMP along with the specific stormwater management control (BMPs) that will be implemented to adequately control the source. (Note: the actual evaluation of the potential pollutant sources does NOT need to be included in the SWMP – just the resultant pollutant sources and their associated BMPs.). The SWMP Administrator shall determine the need for and locations of each of the following potential pollutant sources during the course of the construction project.

Could it Contribute?	Potential Pollutant Source	BMP Implemented to Control Source
Yes	All disturbed and stored soils	Silt fence, sediment control logs, sediment basin, inlet protection, rock socks, seed and mulch
Yes	Vehicle tracking of sediments	Vehicle tracking control, street sweeping
No	Management of contaminated soils	
Yes	Loading and unloading operations	Stabilized staging area, materials storage area, vehicle tracking control, silt fence
Yes	Outdoor storage activities (building materials, fertilizers, chemicals, etc.)	Stabilized staging area, materials storage area, silt fence
Yes	Vehicle and equipment maintenance and fueling	Stabilized staging area, materials storage area, silt fence
Not expected	Significant dust or particulate generating processes	Control by sprinkling with water and other appropriate means.
Yes	Routine maintenance activities involving fertilizers, pesticides, detergents, fuels, solvents, oils, etc	Use as recommended by manufacturer and in areas specified, inlet protection
Yes	On-site waste management practices (waste piles, liquid wastes, dumpsters, etc)	Stabilized staging area, silt fence, inlet protection, sediment basin, non-structural BMPs

Yes	Concrete truck/equipment washing, including the concrete truck chute and associated fixtures and equipment	Concrete washout area, stabilized staging area, vehicle tracking control, silt fence
No	Dedicated asphalt and concrete batch plants	
Yes	Non-industrial waste sources such as worker trash and portable toilets	Stabilized staging area, construction fence, non-structural BMPs
Yes	Other areas or procedures where potential spills can occur	Construction fence

The Air Pollution Control Division of the Colorado Department of Public Health and Environment (CDPHE) has passed air quality regulations consistent with Federal legislation. Regulation No. 3 requires submittal of an Air Pollutant Emission Notice (APEN) for sources of fugitive dust from construction sites, as well as other sources. Regulation No. 1 defines particulate emission control regulations for haul roads and roadways. Additional controls, such as road watering, may be necessary to fully comply with these regulations at a construction site. The Contractor should contact CDPHE about APENs and other air quality requirements.

C. Best Management Practices (BMPs) for Pollution Prevention

1. A list of the Structural BMPs for erosion and sediment control implemented on the site to minimize erosion and sediment are as follows. Refer to the SWMP Drawings for Installation and Maintenance requirements for each structural BMP and refer to the SWMP drawings for the location of the BMPs.
 - a) Concrete Washout Area (CWA): A shallow excavation with a small perimeter berm to isolate concrete truck washout operations.
 - b) Construction Fence (CF): Installed to delineate the perimeter of the site.
 - c) Erosion Control Blanket (ECB): Slopes steeper than or equal to 4 (horizontal) to 1 (vertical) shall be protected with an erosion control blanket.
 - d) Seeding and Mulching (SM): Temporary seeding and mulching can be used to stabilize disturbed areas that will be inactive for an extended period of time. Permanent seeding should be used to stabilize areas at final grade that will not otherwise be stabilized.
 - e) Silt Fence (SF): A temporary sediment barrier constructed of woven fabric stretched across supporting posts.
 - f) Stabilized Staging Area (SSA): Consists of stripping topsoil and spreading a layer of granular material in the area to be used for a trailer, parking, storage, unloading and loading.
 - g) Temporary Stockpile Areas (SP): Temporary stockpiles of excess excavated material and stockpiles for imported materials shall be shown on the SWMP drawings. Slopes shall not be steeper than 3 to 1.
 - h) Vehicle Tracking Control (VTC): Consists of a rock pad that is intended to help strip mud from tires prior to vehicles leaving the construction site. Installed at all entrance/exit points to the site. The number of access points shall be minimized.

Minimal clearing and grubbing may be necessary prior to installing the initial erosion control features.

No clearing, grading, excavation, filling or other land disturbing activities shall be permitted until signoff and acceptance of the Grading Plan and Erosion Control Plan (or the combined plan) is received from the County.

Once signoff and acceptance is received, the approved erosion and sediment control measures must be installed before land-disturbing activities are initiated so that no adverse effect of site alteration will impact surrounding property.

2. Non-structural practices for erosion and sediment control to be used to minimize erosion and sediment transport are:

Seeding and mulching and landscape installation in areas that will not be hard surfaced. Minimize the amount of existing vegetation to be removed during construction, leaving native vegetation in place when possible. Only the existing vegetation that is specified or requiring removal shall be disturbed or removed. If possible, leave existing ground cover, including asphalt in place or remove just prior to grading to minimize the length of soil exposure.

3. Phased BMP Implementation:

The SWMP Administrator shall update the BMP Implementation if necessary to meet and/or address the Contractor's schedule. The SWMP shall be updated as necessary to reflect the BMPs installed.

- a) Installation of Initial BMPs

Prior to any construction activities, erosion control facilities shall be installed. Minimal demolition, clearing and grubbing may be necessary prior to installing the initial erosion control features. Stabilization of demolished asphalt and cleared or grubbed areas to be completed the same day if possible. The "initial" BMPs include, but may not be limited to, vehicle tracking control, silt fence (perimeter control and stockpile area(s)), stabilized staging area, materials storage area and concrete washout area. Designate areas for construction trailer (if used), trash container, portolets, vehicle and equipment parking and material storage. If these areas are not indicated on the plan, the contractor must "red line" the plan with the locations. Provide a confined area for maintenance and fueling of equipment from which runoff will be contained and filtered. BMP / Erosion Control facility waste shall be disposed of properly.

- b) Clearing, grubbing and site clearing

The measures included in the previous sequence shall be maintained and continue. The removal debris and dead vegetation shall be disposed of properly. If a soil stockpile area is needed, the area shall be protected in accordance with the DCM and the stockpile area shall be redlined onto the plan. Existing vegetation to remain shall be protected. Wind erosion shall be controlled on the site by sprinkling and other appropriate means.

- c) Site Grading, Drainageway and Bridge Construction

The measures included in the previous sequence shall be maintained and continue. The earthwork will occur within the 100-year floodplain of the drainageway when the stabilization measures and bridge is installed. It is the intent to minimize the disturbance of the native vegetation by limiting access points and haul roads within the drainageway. The

contractor shall not leave any equipment in the bottom of the creek in times when precipitation is expected or when the contractor is not on site. Sediment control logs shall be placed along the low flow channel once the low flow grade controls have been installed. Dewatering is not anticipated for the work within and adjacent to the drainageway. Any dewatering details if needed should be followed and a CDPHE construction dewatering permit is required prior to performing the dewatering activities. Excess and removed asphalt and concrete shall be disposed of properly. Materials associated with drainageway and bridge construction shall be stored in the designated areas delineated on the plan. If an area is not delineated on the plan, the contractor shall "red line" the plan to show the location. Material waste from drainageway, bridge or pavement construction shall be disposed of properly. Solvents, paints and chemicals shall be stored and disposed properly.

d) Landscaping

The measures included in the previous sequence shall be maintained and continue, unless the work requiring the measure is completed. Seeding and mulching shall be installed. Avoid excess watering and placing of fertilizers and chemicals.

e) Final Stabilization

The necessary erosion control measures included in the previous sequence shall continue until Final Stabilization is reached. Refer to Final Stabilization section for requirements.

The SWMP Administrator shall amend the SWMP if necessary and as required, refer to Section I.

4. Materials handling and spill prevention:

The SWMP Administrator will inspect daily to ensure proper use and disposal of materials on-site including building materials, paints, solvents, fertilizers, chemicals, waste materials and equipment maintenance or fueling procedures. All materials stored on-site will be stored in a neat and orderly manner in the original containers with the original manufacturer's label, and if possible under a roof or other enclosure to prevent contact with stormwater. Chemicals should be stored within berms or other secondary containment devices to prevent leaks and spills from contacting stormwater runoff. Before disposing of the container, all of a product will be used up whenever possible and manufacturer's recommendations for proper disposal will be followed according to state and local regulations.

Material and equipment necessary for spill cleanup will be kept in the material storage area on-site. Manufacturer's recommendations for spill cleanup will be posted and site personnel will be made aware of the procedures along with the location of the information and cleanup supplies.

The contractor shall have spill prevention and response procedures that include the following:

- a) Notification procedures to be used in the event of an accident. At the very least, the SWMP Administrator should be notified. Depending on the nature of the spill and the material involved, the Colorado Department of

Public Health and Environment (24-hour spill reporting line – 877-518-5608), downstream water users or other agencies may also need to be notified.

- b) Instructions for clean-up procedures and identification of spill kit location(s).
- c) Provisions for absorbents to be made available for use in fuel areas and for containers to be available for used absorbents.
- d) Procedures for properly washing out concrete truck chutes and other equipment in a manner and location so that the materials and wash water cannot discharge from the site and never into a storm drain system or stream.

5. Dedicated concrete or asphalt batch plants:

No dedicated concrete or asphalt batch plants will be used.

6. Vehicle tracking control:

Off-site vehicle tracking of sediment shall be minimized and is as shown on the SWMP Site Map. Vehicle Tracking Control shall be installed at the construction access points. The contractor shall minimize the number of construction access points to reduce the amount of sediment tracked from the site. Streets shall be kept clean and free of mud, soil and construction waste. Street sweeping or other acceptable methods shall be used to prevent sediment from being washed from the project site. Streets shall not be washed down with water. Street cleaning operations shall occur if necessary or as directed by the County.

7. Waste management and disposal including concrete washout:

A concrete washout area is specified on the SWMP. Concrete wash water shall not be discharged to state waters, to storm sewer systems or from the site as surface runoff. The washout area shall be a shallow excavation with a small perimeter berm to isolate concrete truck washout operations. At the end of construction, all concrete shall be removed from the site and disposed of at an approved waste site. Signs shall be placed at the washout to clearly indicate the concrete washout area to operators of concrete trucks and pump rigs. Refer to the standard detail for requirements.

All construction site waste both liquid and solid must be contained in approved waste containers and disposed of off-site according to state and local regulations. Portable sanitary facilities shall be provided at the site throughout the construction phase and must comply with state and local sanitary or septic system.

8. Groundwater and stormwater dewatering:

Groundwater dewatering is not anticipated for the work within channel. During groundwater or stormwater dewatering, locations and practices to be implemented to control stormwater pollution from excavations, etc. must be noted on the SWMP. A separate CDPHE construction discharge (dewatering) permit will be required for groundwater dewatering and shall be obtained by the SWMP Administrator. Construction dewatering water cannot be discharged to surface water or to storm sewer systems without separate permit coverage. The discharge of Construction Dewatering water to the ground, under specific conditions, may be allowed by the Stormwater Construction Permit when appropriate BMPs are implemented. Refer to USDCM Volume III (UDFCD) for County acceptable means of dewatering.

V. FINAL STABILIZATION AND LONG TERM STORMWATER MANAGEMENT

“Final stabilization is reached when all ground surface disturbing activities at the site have been completed and uniform vegetative cover has been established with an individual plant density of at least 70 percent of pre-disturbance levels, or equivalent permanent, physical erosion reduction methods have been employed.” When vegetation is used to achieve final stabilization, the 70% vegetation requirement applies to a uniform plant density, which means that all areas of the site that rely on a vegetative cover to achieve stabilization must be uniformly vegetated. The contractor will be responsible for providing the documentation to make this comparison to the County and the State of Colorado, Water Quality Control Division. The stormwater permit allows the permittee to use alternatives to vegetation to achieve final stabilization. All alternatives to vegetation must meet specific criteria to be considered equivalent to vegetation, specifically: Stabilization must be permanent, All disturbed areas must be stabilized and Alternatives must follow good practices, refer to CDPHE Memo, dated March 5, 2013 (see References).

Temporary seeding for the project site shall include seeding and mulching. For the application methods, soil preparation and seeding and mulching requirements, refer to SWMP Drawings. All slopes steeper than four-to-one (4:1) must be covered with an erosion control blanket meeting the County requirements.

Management of storm water after completion of construction will be accomplished by utilizing the practices listed below.

- Upon completion of construction, the site shall be inspected to ensure that all equipment, waste materials and debris have been removed.
- The site will be inspected to make certain that all graded surfaces have been paved, landscaped or seeded with an appropriate ground cover.
- All silt fence, inlet protection, sediment logs, rock socks, etc. and all other control practices and measures that are to remain after completion of construction will be inspected to ensure their proper functioning.
- The contractor shall remove erosion control measures that are not required to remain.

After all construction activities are completed on the site, but final stabilization has not been achieved, the contractor shall make a thorough inspection of the stormwater management system at least once every month.

The contractor shall be responsible for maintaining the BMPs and stormwater controls in good working order and shall also be responsible for the costs incurred until such time as final stabilization is reached. Once final stabilization has been achieved the contractor shall be responsible for removal of the erosion control measures.

Should any of the erosion control facilities (BMPs) become in disrepair prior to the establishment of the native or natural erosion control measures, the Contractor is responsible for the cost of such maintenance. The Contractor is also responsible for the clean-up of offsite areas affected by any sediment that may leave the site. Control of erosion from areas disturbed by drainageway, utility or building construction will be the responsibility of the respective contractor. All erosion control measures shown on the plan shall be installed and maintained in accordance with Best Management Practices.

Inactivation of permit coverage: Coverage under the Stormwater Construction Permit may be inactivated by the permittee when the site has attained final stabilization, all temporary erosion and sediment control measures have been removed, and all components of the SWMP are complete.

VI. RECOMMENDED INSPECTION AND MAINTENANCE PROCEDURES

A. Minimum Inspection Schedule

1. Frequency. Contractor should inspect and document Construction BMP's at the following times and intervals.
 - a) After installation of any Construction BMP;
 - b) At least once every 14 days, but a more frequent inspection schedule may be necessary to ensure that BMPs continue to operate as needed to comply with the permit.
 - c) Within 24 hours after a precipitation or snowmelt event that produces runoff or causes surface erosion.
2. Consult State Permit No. COR-030000 for alternate inspection requirements at temporarily idle sites, at completed sites, or for winter conditions.
3. Refer to the Standard Details for the maintenance procedures associated with each BMP.
4. Inspection Procedures. The inspection must include observation of:
 - a) The construction site perimeter and discharge points (including discharges into a storm sewer system);
 - b) All disturbed areas;
 - c) Areas used for material/waste storage that are exposed to precipitation
 - d) Other areas determined to have a significant potential for stormwater pollution, such as demolition areas or concrete washout locations, or locations where vehicles enter or leave the site;
 - e) Erosion and sediment control measures identified in the SWMP; and any other structural BMPs that may require maintenance, such as secondary containment around fuel tanks, or the condition of spill response kits.

The inspection must determine if there is evidence of, or the potential for, pollutants entering the drainage system. BMPs should be reviewed to determine if they still meet the design and operational criteria in the SWMP, and if they continue to adequately control pollutants at the site. Any BMPs not operating in accordance with the SWMP must be addressed as soon as possible, immediately in most cases, to minimize the discharge of pollutants, and the SWMP must be updated as described.

5. Record Keeping and Documenting Inspections: Keeping accurate and complete records serves several functions. First, keeping records of spills, leaks, inspections, etc. is a requirement of the State Stormwater Construction Permit; therefore, enforcement action, including fines, could result if records are not adequate. Second, by keeping accurate and detailed records, you will have documentation of events which could prove invaluable should complications arise concerning the permit, lawsuits, etc.
6. Inspection Checklist/Report. The Permittee must document inspection results and maintain a record of the results for a period of 3 years following expiration or inactivation of permit coverage. These records must be made available to CDPHE, the County or EPA upon request. The SWMP Administrator should record the inspection results on a site-specific standardized inspection report or County Inspection Checklist to be maintained and kept on the construction site. An example template for the inspection report format is included in the Appendix. The SWMP Administrator should develop a site-specific inspection report that itemizes

the selected Construction BMP's for their site. At a minimum the following information from each inspection should be recorded on the site-specific report:

- a) Date of inspection;
 - b) Name and title of inspector;
 - c) Location(s) of discharges of sediment or other pollutants from the site;
 - d) Location(s) of BMPs that need to be maintained;
 - e) Location(s) of BMPs that failed to operate as designed or proved inadequate for a particular location;
 - f) Location(s) where additional BMPs are needed that were not in place at the time of inspection;
 - g) Deviations from the minimum inspection schedule as provided in the permit;
 - h) Descriptions of corrective actions for any item above, date(s) of corrective actions taken, and measures taken to prevent future violations, including requisite changes to the SWMP, as necessary and
 - i) After adequate corrective action(s) has been taken, or where a report does not identify any incidents requiring corrective actions, the report shall contain a signed statement indicating the site is in compliance with the permit to the best of the signer's knowledge and belief.
7. Inspection Checklists/Reports to County: Completed Inspection Checklists will be submitted electronically to the assigned County Engineering inspector within 5 business days of the inspection. The inspections checklists must also be kept on-site. In the location designated,

B. BMP Operation and Maintenance.

The SWMP Administrator is responsible for operation and maintenance of construction BMPs. The SWMP Administrator will inspect the site per inspection and monitoring protocol outlined above and will make any necessary repairs to construction BMPs immediately after a defect or other need for repair is discovered. The project site and the adjacent streets impacted by the construction shall be kept neat, clean and free of debris. The erosion control measures and facilities will be maintained in good working order until final stabilization. Any items that are not functioning properly or are inadequate will be promptly repaired or upgraded. Records of inspections must be kept and be available for review by the State of Colorado Water Quality Control Division or the County.

VII. REFERENCES

- 1) CDPS General Permit: Stormwater Discharges Associated with Construction Activity Permit No. COR-030000. Colorado Department of Public Health and Environment, dated July 1, 2007. Administratively continued effective July 1, 2012.
- 2) CDPHE, Stormwater Discharges Associated with Construction Activity, Stormwater Management Plan Preparation Guidance, prepared by CDPHE, dated April 2011.
- 3) CDPHE Memorandum, Final Stabilization requirements for stormwater construction permit termination, Alternatives to the 70% plant density re-vegetation requirement, prepared by CDPHE, dated March 5, 2013.
- 4) El Paso County Drainage Criteria Manual (Volumes 1 and 2) and Engineering Criteria Manual, current editions.
- 5) Volume 3, Urban Storm Drainage Criteria Manual, by Urban Drainage and Flood Control District, current edition.
- 6) Soil Survey of El Paso County Area, Colorado, prepared by United States Department of Agriculture Soil Conservation Service.
- 7) Flood Insurance Rate Map, Map Number 08041C0752F, by Federal Emergency Management Administration, dated March 17, 1997.

APPENDIX TABLE OF CONTENTS

APPENDIX

Figure 1 - Vicinity Map

APPENDIX A

**Permittee Provided: Application for CDPS Stormwater Discharge Associated with Construction Activities Permit

APPENDIX B

**Permittee Provided: CDPS Stormwater Discharge Associated with Construction Activities Permit

APPENDIX C

Example – Exhibit A: Erosion and Sediment Control Field Inspection Report

Example – Exhibit B: Corrective Action Report

APPENDIX D

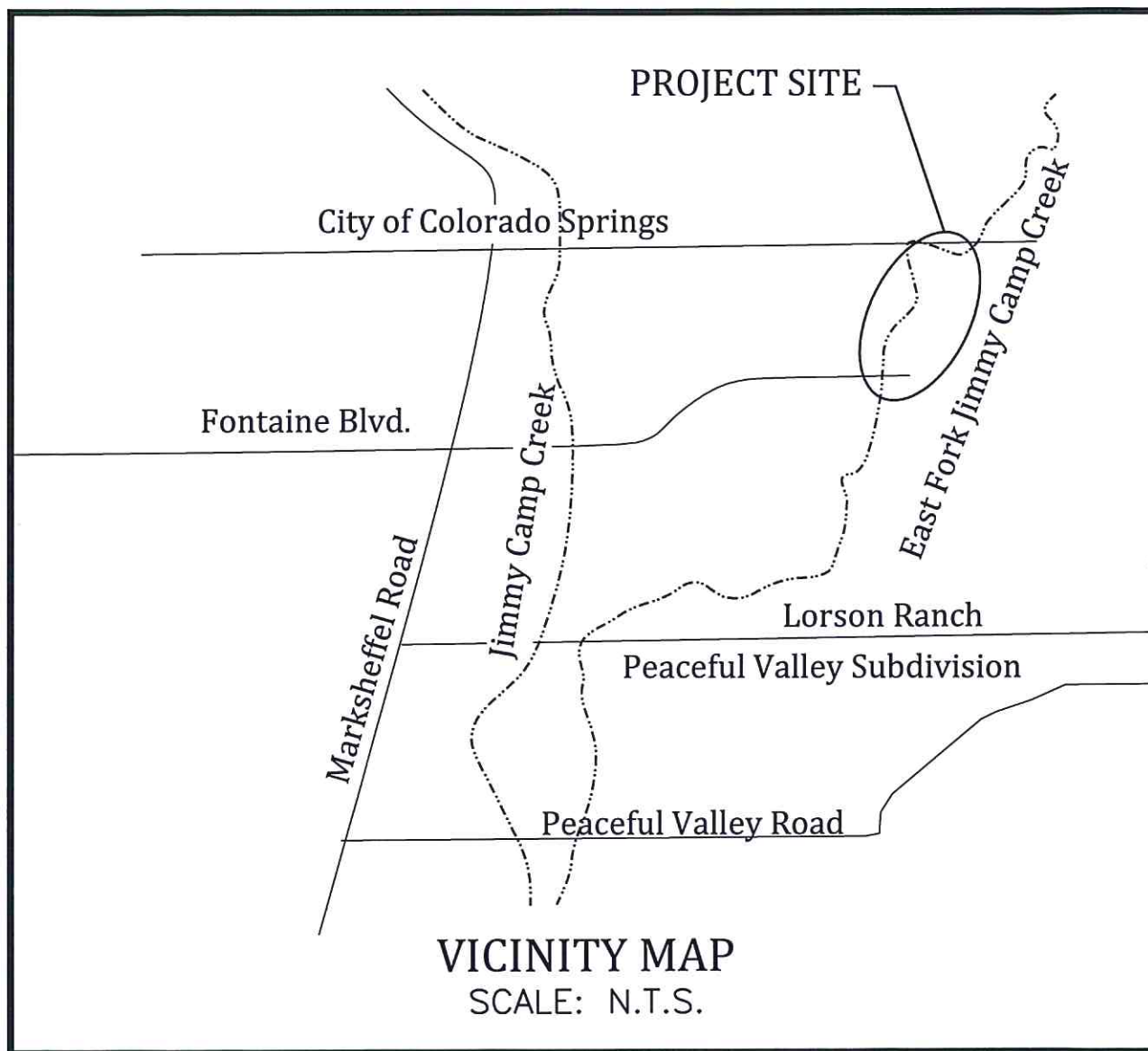
SWMP Plans – Sheets 9, 10 and 11

APPENDIX A

****Permittee Provided:** Application for CDPS Stormwater Discharge Associated
with Construction Activities Permit

APPENDIX

Figure 1 - Vicinity Map



APPENDIX B

****Permittee Provided:** CDPS Stormwater Discharge Associated with Construction Activities Permit

APPENDIX C

Example – Exhibit A: Erosion and Sediment Control Field Inspection Report

Example – Exhibit B: Corrective Action Report

Exhibit A

Erosion and Sediment Control Field Inspection Report

Project Name:	Date of Inspection:
Project Address/Location:	Time of Inspection:
Contractor:	Name of Inspector:

Reason for Inspection:

BMP for Erosion Control	Practice Used		Maintenance or Sediment Removal Required		Explain Required Action
	Yes	No	Yes	No	
Check Dams					
Concrete Washout Area					
Construction Fence					
Diversion Ditch/Swales/Berms					
Erosion Control Blankets					
Inlet Protection					
Reinforced Rock Berms					
Reinforced Rock Berms - Culvert					
Sediment Basin					
Sediment Control Log					
Seed & Mulch (Temp. or Permanent)					
Silt Fence					
Sodding					
Stabilized Staging Area					
Straw Bale Barrier					
Surface Roughening					
Vehicle Tracking Control Pad					

Contractor's Comments:
Inspector's Comments:

I certify this Erosion and Sediment Control Field Inspection Report is complete and accurate, to my knowledge and belief.	
Inspector Signature and Date:	Reviewed By:

Exhibit B
Corrective Action Report

Site: _____

Inspector: _____

Date: _____

.....

Erosion Control Measure/Facility Requiring Attention:

Recommended Corrective Action:

Scheduled Completion Date: _____ Date Completed: _____

.....

Erosion Control Measure/Facility Requiring Attention:

Recommended Corrective Action:

Scheduled Completion Date: _____ Date Completed: _____

.....

Erosion Control Measure/Facility Requiring Attention:

Recommended Corrective Action:

Scheduled Completion Date: _____ Date Completed: _____

APPENDIX D
SWMP Plans

FONTAINE BOULEVARD BRIDGE & EAST FORK JIMMY CAMP CREEK CHANNEL DESIGN

EL PASO COUNTY, COLORADO
PREPARED FOR LORSON DEVELOPMENT

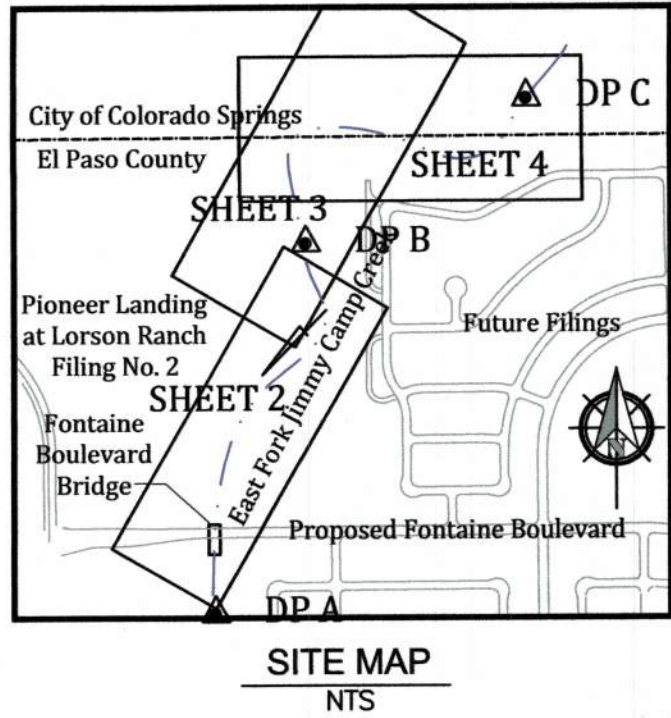
GENERAL NOTES

- Profile design lines are based on centerline, as shown, unless otherwise noted.
- All new construction to conform to the specifications of El Paso County Department of Public Works. Any asphalt removed is to be replaced to meet the specifications of the El Paso County Public Works Department.
- For pavement design, curb and gutter, and sidewalks see individual plan and profile sheets. Pavement design to be based on Resistance Value "R" derived from Hveem tests and are to be approved by the Engineering Division of the El Paso County Planning and Community Development prior to work above subgrade.
- At intersections, all curb returns will have 20-foot radius unless otherwise noted.
- All existing utilities have been shown according to the best available information. The contractor is responsible for field location and verification prior to beginning work. If it appears that there could be a conflict with any utilities, whether indicated on the plans or not, the contractor is to notify the engineer and owner immediately. The contractor is responsible for the protection and repair (if necessary) of all utilities.
- A Pre-Construction meeting shall be held with the El Paso County Planning and Community Development and Widefield Water and Sanitation District prior to any construction.
- Approved plans, Engineering Criteria Manual, etc. is required to be on-site at all times during construction.
- All necessary permits, such as SWMP, ESQCP, Fugitive Dust, Access, C.O.E. 404, etc. shall be obtained prior to construction.
- All handicap ramps to be per El Paso County Standard SD_2-40.
- The contractor shall coordinate locations and layout with the El Paso County Planning and Community Development on the placement of any pedestrian ramps prior to construction of the curb.
- Where appropriate, neatly saw cut all existing concrete and asphalt. Repair/replace all disturbed existing items with like materials and thicknesses.
- All disturbed areas shall be revegetated with native grasses within 21 days of excavation per Erosion Control Plan.
- The prepared Erosion/Sediment Control Plan is to be considered a part of these plans and its requirements adhered to during the construction of this project.
- All storm and sanitary sewer pipe lengths and slopes are figured from center of manhole or bend. Pipe lengths are given as a horizontal length.
- All storm sewer bedding to be per CDoT Standards.
- All storm sewer pipe shall be Class III B Wall unless otherwise shown on the storm sewer plan and profile sheets.
- All wyes and bends used in construction of storm sewer facilities shall be factory fabricated, unless approved by the El Paso County Development Services Department.
- Construction and materials used in all storm and sanitary sewer manholes shall be per specifications. Storm sewer radial deflections to be grouted or installed per manufacturer's recommendations.
- Storm sewer manholes sizes as follows unless otherwise shown:
18" thru 36" use 48" I.D. manhole
42" thru 48" use 60" I.D. manhole
54" thru 60" use 72" I.D. manhole
NOTE: Manhole sizes tabulated here shall be increased, if necessary, to accommodate incoming laterals.
- All horizontal stationing is based on the "Face of Curb", unless otherwise shown.
- All vertical design and top of curb are based on the design point shown in the typical cross section.
- The curb line design point is located at the intersection of the face and top of curb for the Type III Standard 6-inch vertical curb. See typical street section for design point locations.
- Vertical curb to be used between curb returns (CR) and at curb inlets. Transitions from ramp to vertical curb shall be 10-feet unless otherwise approved by the El Paso County Public Services Department. All other curb & gutter to be ramp curb & gutter.
- Cross pans to be per El Paso County Standard Detail SD_2-26.
- Contractor responsible for meeting all Widefield Water and Sanitation District criteria when connecting to existing stubs.
- Curb returns shall be straight graded from CR to CR unless otherwise noted.
- Inlets are Type "R" inlets (CDOT STD M-604-12) unless otherwise noted.

BENCHMARK: Monument is located at the Northwest corner of the intersection of Powers Boulevard and Fontaine Street. The monument is a 3-inch aluminum cap (FIMS ID #206). Located 51.3 feet west of the west edge of asphalt of Powers Blvd and 65.5 feet north of the north edge of asphalt of Fontaine Street. Elevation=5897.89 feet (NGVD 1929, 1960 Adj.)
Basis of Bearing: All bearings used herein are based on an assumed bearing of N89°42'02" E, a distance of 1873.45 feet between the northeasterly corner of Pioneer Landing at Lorson Ranch Filing No. 1, as recorded under Reception No. 210713013 of the records of the El Paso County Clerk and Recorder, as monumented by a rebar and orange surveyors cap stamped "Rampart PLS 26965", from which the east one-quarter corner (E₁) of said section 14, as monumented by a 2-1/2" pipe with galvanized screw on cap only partially stamped.

EL PASO COUNTY STANDARD NOTES

- All drainage and roadway construction shall meet the standards and specifications of the City of Colorado Springs/El Paso County Drainage Criteria Manual, Volumes 1 and 2, and the El Paso County Engineering Criteria Manual.
- Contractor shall be responsible for the notification and field notification of all existing utilities, whether shown on the plans or not, before beginning construction. Location of existing utilities shall be verified by the contractor prior to construction. Call 811 to contact the Utility Notification Center of Colorado (UNCC).
- 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:
 - El Paso County Engineering Criteria Manual (ECM)
 - City of Colorado Springs/El Paso County Drainage Criteria Manual, Volumes 1 and 2
 - Colorado Department of Transportation (CDOT) Standard Specifications for Road and Bridge Construction
 - CDOT M & S Standards
- Notwithstanding anything depicted in these plans in words or graphic representation, all design and construction related to roads, storm drainage and erosion control shall conform to the standards and requirements of the most recent 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.
- It is the design engineer's responsibility to accurately show existing conditions, both onsite and offsite, on the construction plans. Any modifications necessary due to conflicts, omissions, or changed conditions will be entirely the developer's responsibility to rectify.
- Contractor shall schedule a pre-construction meeting with El Paso County Planning and Community Development (PCD) - Inspections, prior to starting construction.
- 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.
- Contractor shall not deviate from the plans without first obtaining written approval from the design engineer and PCD. Contractor shall notify the design engineer immediately upon discovery of any errors or inconsistencies.
- All storm drain pipe shall be Class III RCP unless otherwise noted and approved by PCD.
- 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.
- All construction traffic must enter/exit the site at approved construction access points.
- 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.
- Signing and striping shall comply with El Paso County Department of Public Works and MUTCD criteria. [If applicable, additional signing and striping notes will be provided.]
- Contractor shall obtain any permits required by El Paso County Department of Public Works, including Work Within the Right-of-Way and Special Transport permits.
- The limits of construction shall remain within the property line unless otherwise noted. The owner/developer shall obtain written permission and easements, where required, from adjoining property owner(s) prior to any off-site disturbance, grading, or construction.



INDEX OF SHEETS

- Cover Sheet
- Plan and Profile - Sta 9+33 to Sta 21+00
- Plan and Profile - Sta 21+00 to Sta 34+00
- Plan and Profile - Sta 34+00 to Sta 39+18
- Grade Control Plan and Details
- Drainageway Details
- Bridge Structure Layout
- Bridge Structure Plans
- Grading & Erosion Control Plan
- Grading & Erosion Control Plan
- Erosion Control Details
- Roadway Details
- Drainageway Cross-Sections

STATEMENTS

Design Engineer's Statement:

These detailed plans and specifications were prepared under my direction and supervision. Said plans and specifications have been prepared according to the criteria established by the County for detailed roadway, drainage, grading and erosion control plans and specifications, and said plans and specifications are in conformity with applicable master drainage plans and master transportation plans. Said plans and specifications meet the purposes for which the particular roadway and drainage facilities are designed and are correct to the best of my knowledge and belief. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparation of these detailed plans and specifications.

Richard N. Wray, P.E. #19310
For and on behalf of Kiowa Engineering Corp.

Date

Owner/Developer's Statement:

I, the owner/developer have read and will comply with all of the requirements specified in these detailed plans and specifications.

Jeff Mark
Lorson Development
212 N. Wahsatch Ave. Suite 301
Colorado Springs, Colorado 80903

El Paso County:

County plan review is provided only for general conformance with County Design Criteria. The County is not responsible for the accuracy and adequacy of the design, dimensions, and/or elevations which shall be confirmed at the job site. The County through the approval of this document assumes no responsibility for completeness and/or accuracy of this document.

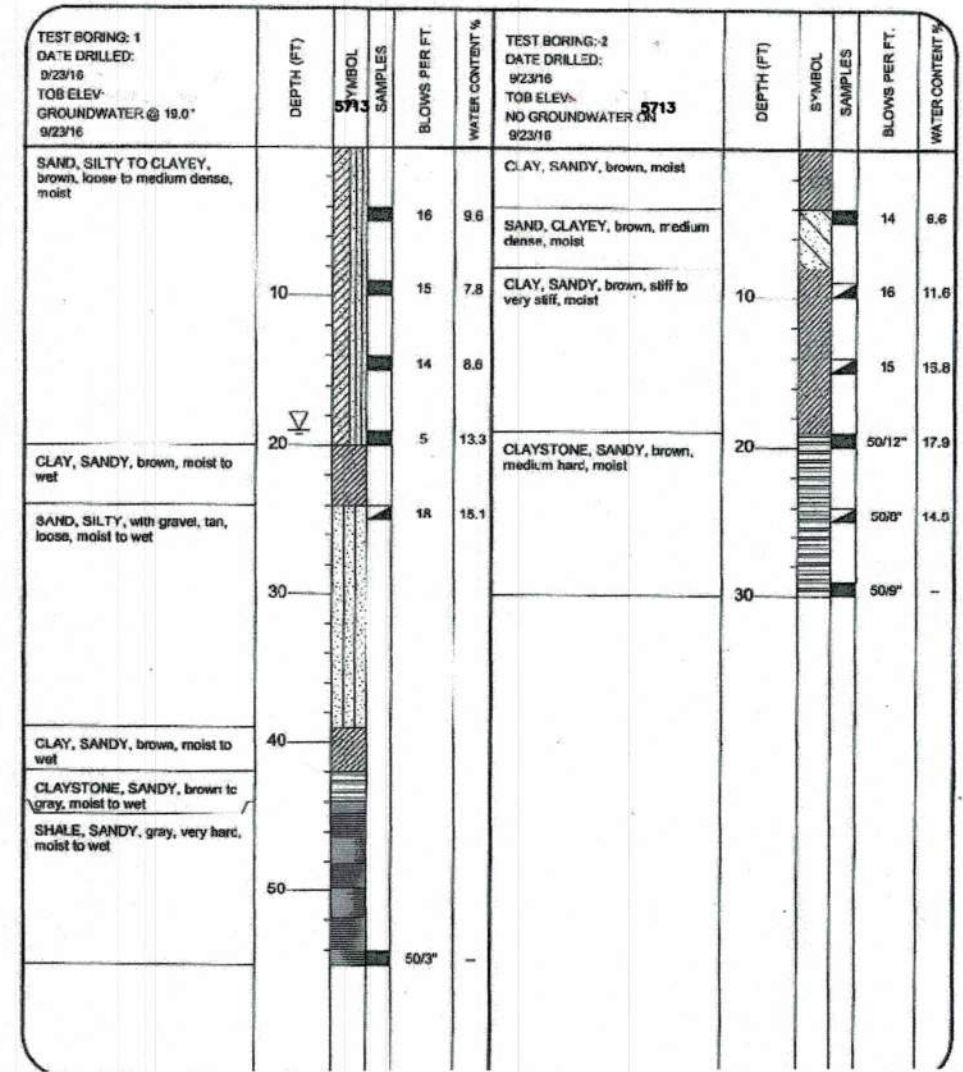
Filed in accordance with the requirements of the El Paso County Land Development Code, Drainage Criteria Manual, and Engineering Criteria Manual as amended.

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

Approved
By: Jennifer Irvine, County Engineer
Date: 02/06/2018
El Paso County Department of Public Works

Jennifer Irvine, P.E.,
County Engineer / ECM Administrator

Date



SOILS DESCRIPTION

- CLAYEY SAND
- CLAYSTONE
- SANDY CLAY
- SHALE
- SILTY SAND
- SILTY TO CLAYEY SAND

SYMBOLS AND NOTES

- STANDARD PENETRATION TEST - MADE BY DRIVING A SPLIT BARREL SAMPLER INTO THE SOIL BY DROPPING A 140 LB. HAMMER 30" IN GENERAL ACCORDANCE WITH ASTM D-1586. NUMBER INDICATES NUMBER OF HAMMER BLOWS PER FOOT (UNLESS OTHERWISE INDICATED).
- UNDISTURBED CALIFORNIA SAMPLE - MADE BY DRIVING A RING-LINED SAMPLER INTO THE SOIL BY DROPPING A 140 LB. HAMMER 30" IN GENERAL ACCORDANCE WITH ASTM D-3359. NUMBER INDICATES NUMBER OF HAMMER BLOWS PER FOOT (UNLESS OTHERWISE INDICATED).
- FREE WATER TABLE
- DEPTH AT WHICH BORING CAVED
- RULK DISTURBED BULK SAMPLE
- AUG AUGER "CUTTINGS"
- WATER CONTENT (%)

ABBREVIATIONS

- | | |
|-------------------------------|--------------------------------------|
| ASSY = ASSEMBLY | MIN. = MINIMUM |
| BNBY = BOUNDARY | NTS = NOT TO SCALE |
| BOP = BOTTOM OF PIPE | OD = OUTSIDE DIAMETER |
| CL = CENTERLINE | PC = POINT OF HORIZONTAL CURVATURE |
| CRA = CONCRETE REVERSE ANCHOR | PP = PROPOSED |
| CTRB = CONCRETE THRUST BLOCK | PT = POINT OF HORIZONTAL TANGENCY |
| CR = POINT OF CURB RETURN | PVC = POLY VINYL CHLORIDE PIPE |
| DIP = DUCTILE IRON PIPE | PVC = POINT OF VERTICAL CURVATURE |
| EL = ELEVATION | PVI = POINT OF VERTICAL INTERSECTION |
| ESMT = EASEMENT | PVT = POINT OF VERTICAL TANGENCY |
| EX = EXISTING | RCB = REINFORCED CONCRETE BOX |
| FC = FACE OF CURB | RCP = REINFORCED CONCRETE PIPE |
| FES = FLARED END SECTION | ROW = RIGHT OF WAY |
| FLG = FLANGE | RT = RIGHT |
| FL = FLOWLINE | SHT = SHEET |
| GB = GRADE BREAK | SS = SANITARY SEWER |
| HP = HIGH POINT | STA = STATION |
| HORIZ = HORIZONTAL | STD = STANDARD |
| HYD = HYDRANT | TA = TOP OF ASPHALT |
| I.D. = INSIDE DIAMETER | TC = TOP OF CURB |
| LT = LEFT | TOP = TOP OF PIPE |
| LF = LINEAR FEET | TOR = TOP OF ROCK |
| LP = LOW POINT | TYP = TYPICAL |
| MAX = MAXIMUM | VC = VERTICAL CURVE |
| MH = MANHOLE | VERT = VERTICAL |

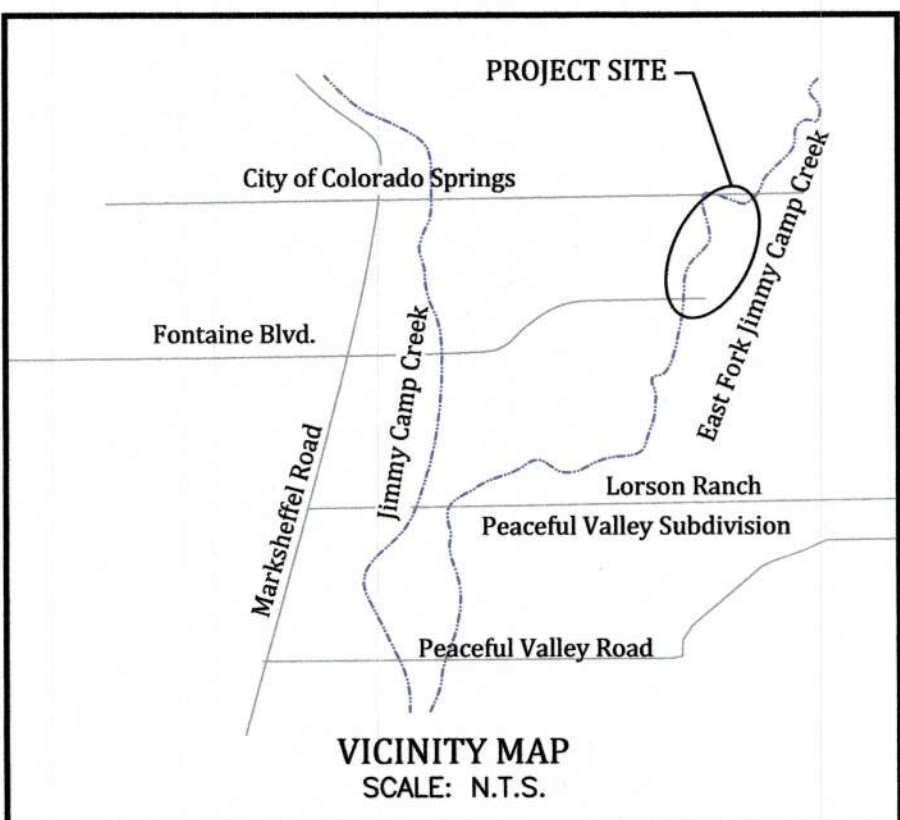


Kiowa Project No. 16031
January 26, 2018

SUMMARY OF DESIGN FLOWS (cfs)

DP	5yr	EPC FIS ⁽¹⁾		2014 DPBS		
		10yr	100yr	5yr	10yr	100yr
A	NR	2400	4750	100	1850	4260
B	NR	2200	4400	100	1830	4220
C	NR	2200	4400	100	1830	4220

- DESIGN OF MAJOR DRAINAGEWAYS AND FONTAINE BRIDGE BASED ON 100-YEAR FIS DISCHARGES.
- ALL DISCHARGES REPRESENT EXISTING BASIN DEVELOPMENT CONDITIONS.



DEVELOPER:

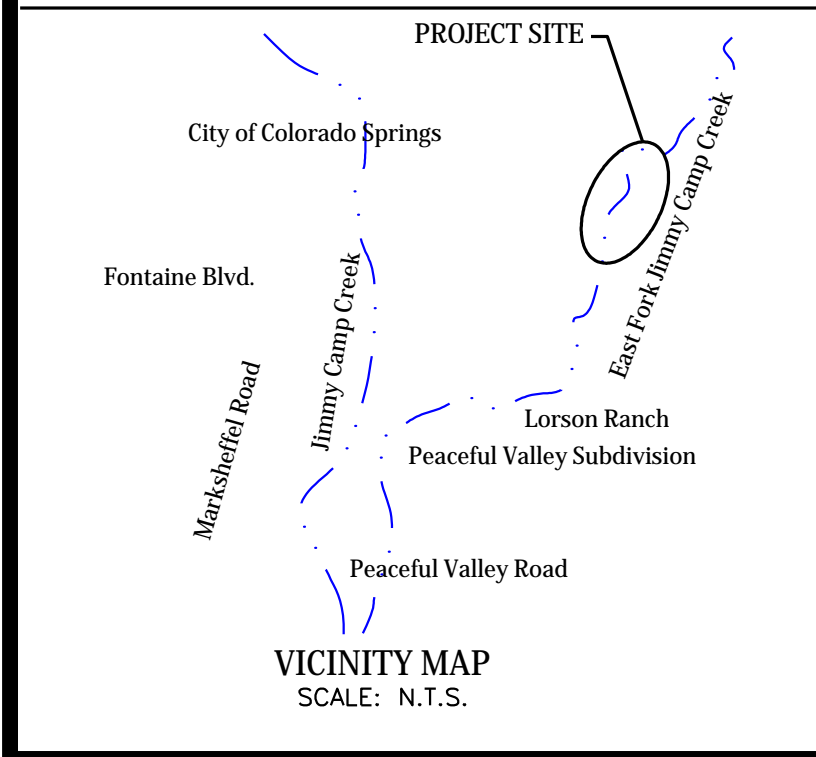
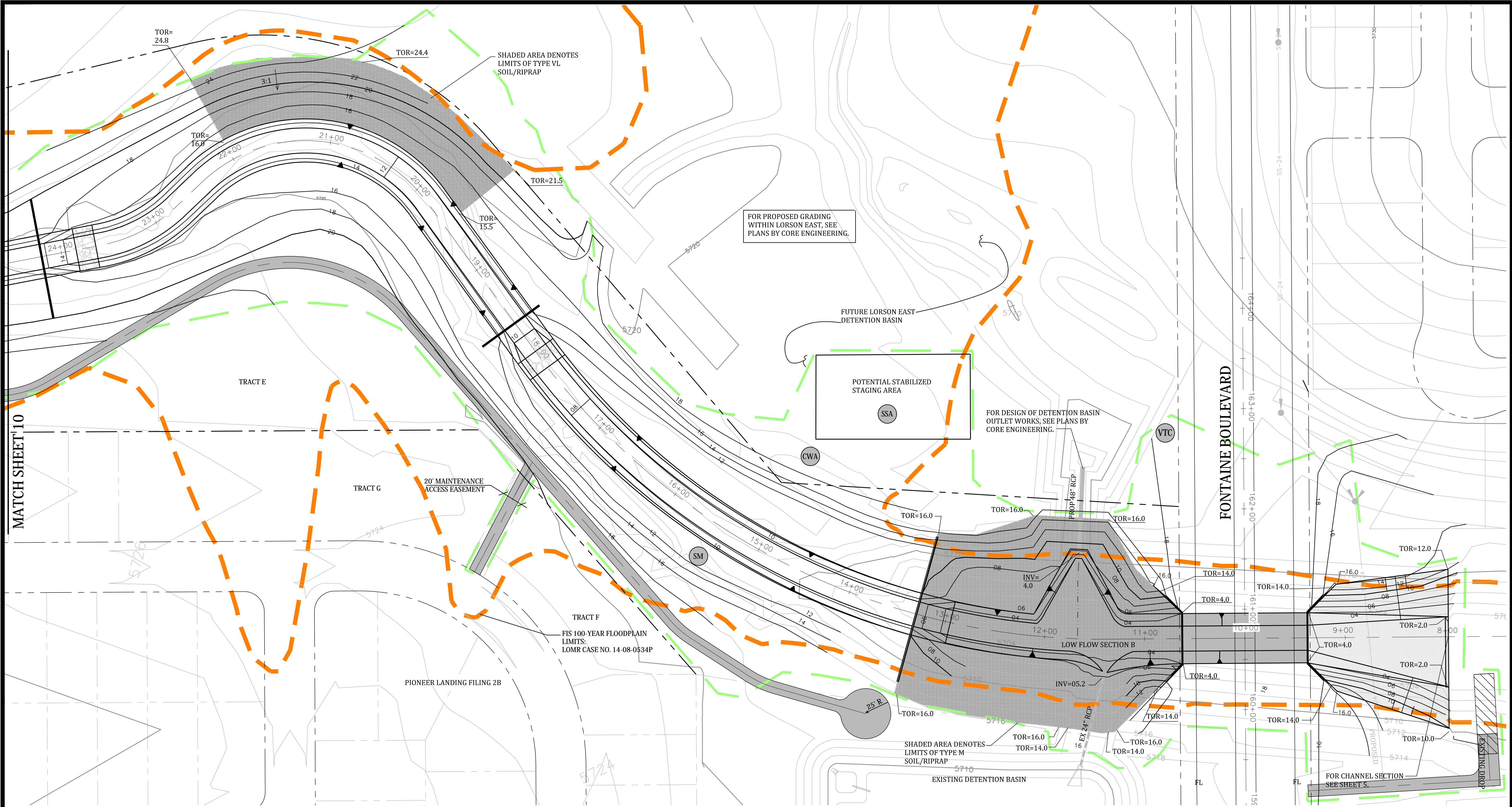
Lorson Development
212 N. Wahsatch #301
Colorado Springs, CO
80903

PREPARED BY:

Kiowa
Engineering Corporation

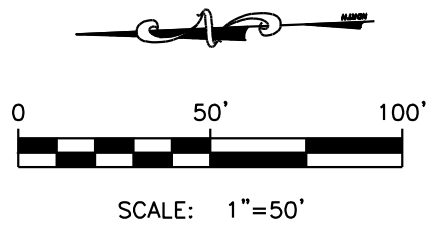
1604 South 21st Street
Colorado Springs, Colorado 80904
(719) 630-7342

PCD FILE # CDR-16-009



NOTES:
1. CONTRACTOR TO IDENTIFY MATERIAL AND SOIL STOCKPILES AREA ON THE SWMP PRIOR TO THE COMMENCEMENT OF MOBILIZATION.
2. CONTRACTOR TO IDENTIFY STABILIZED STAGING AREA PRIOR TO THE COMMENCEMENT OF MOBILIZATION.

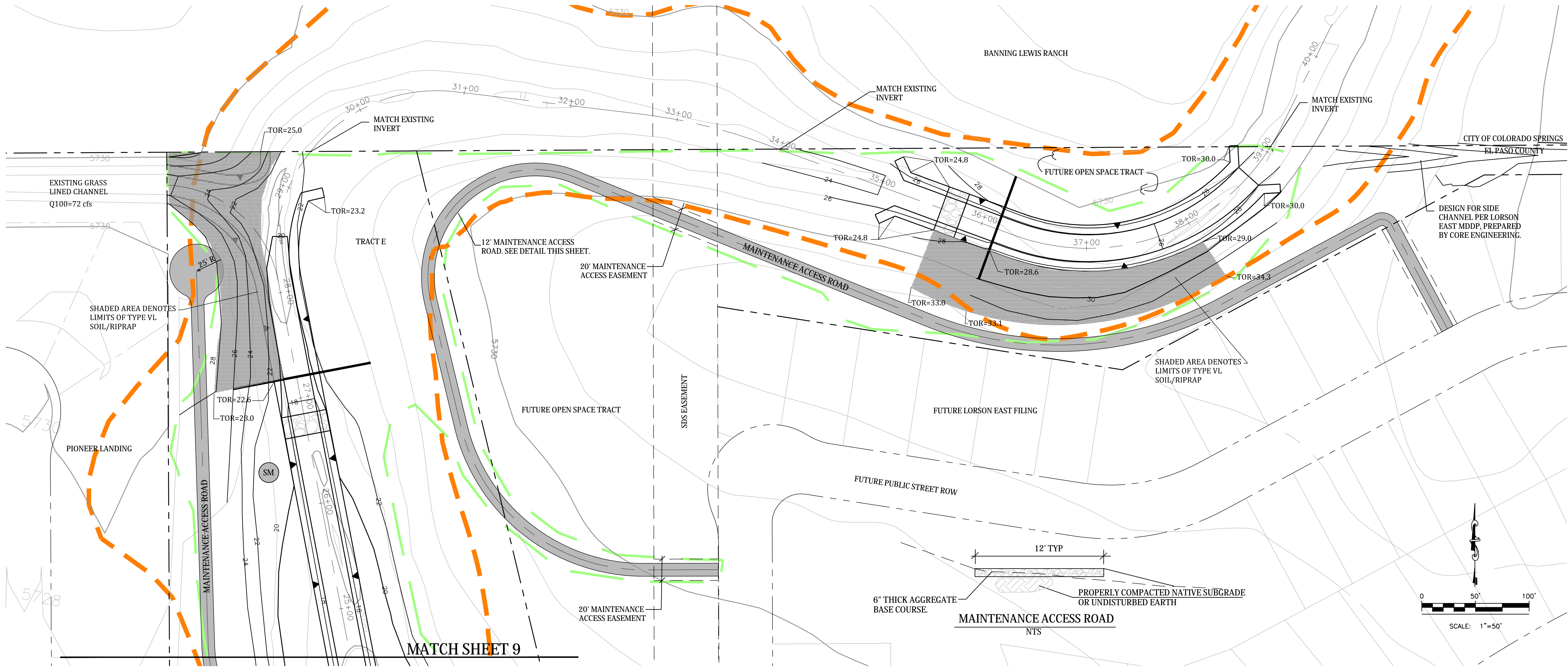
- LEGEND
- LIMITS OF GRADING & CONSTRUCTION
 - VTC VEHICLE TRACKING CONTROL
 - CWA CONCRETE WASHOUT AREA
 - SSA STABILIZED STAGING AREA
 - SM SEED AND MULCH
 - TOR TOP OF SOIL/RIPRAP



EPC 2/6/18

LORSON RANCH
FONTAINE BOULEVARD BRIDGE AND CHANNEL DESIGN
GRADING PLAN & EROSION CONTROL PLAN
EL PASO COUNTY, COLORADO

Project No:	16031
Date:	1/26/18
Design:	RNW
Drawn:	EAK
Check:	RNW
Revisions:	



Concrete Washout Area (CWA)

MM-1

MM-1

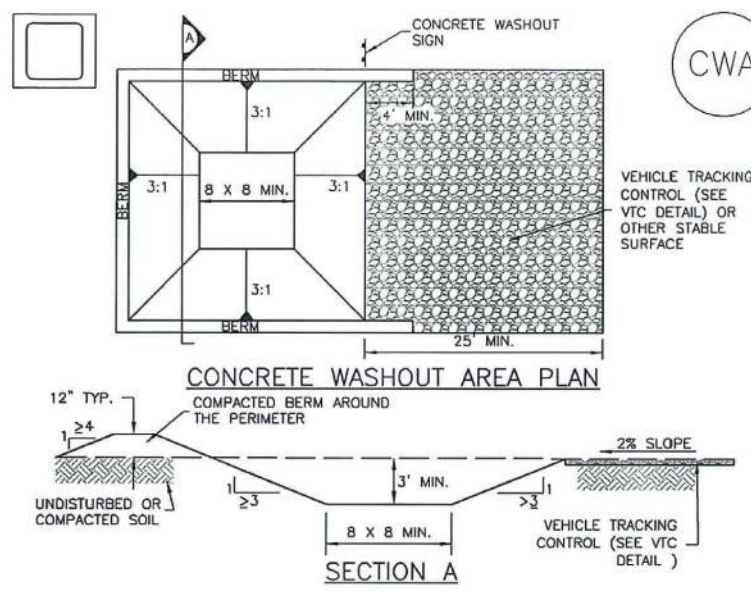
Concrete Washout Area (CWA)

Stabilized Staging Area (SSA)

SM-6

SM-6

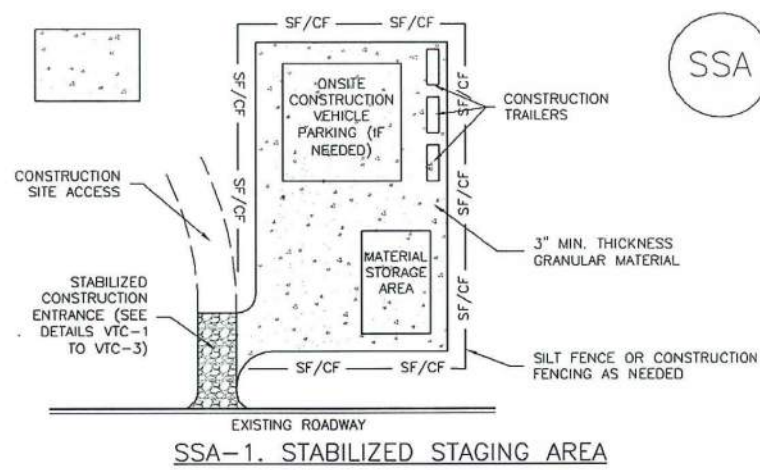
Stabilized Staging Area (SSA)



CWA-1. CONCRETE WASHOUT AREA

- CWA INSTALLATION NOTES**
1. SEE PLAN VIEW FOR CWA INSTALLATION LOCATION.
 2. DO NOT LOCATE AN UNLINED CWA WITHIN 400' OF ANY NATURAL DRAINAGE PATHWAY OR WATERBODY. DO NOT LOCATE WITHIN 1,000' OF ANY WELLS OR DRINKING WATER SOURCES. IF SITE CONSTRAINTS HAVE THIS INFUSIBLE OR IF HIGHLY PENETRABLE SOILS EXIST ON SITE, THE CWA MUST BE INSTALLED WITH AN IMPERMEABLE LINER (16 MIL MIN. THICKNESS) OR SURFACE STORAGE ALTERNATIVES USING PREHARDENED CONCRETE WASHOUT DEVICES OR A LINED ABOVE GROUND STORAGE ARE SHOULD BE USED.
 3. THE CWA SHALL BE INSTALLED PRIOR TO CONCRETE PLACEMENT ON SITE.
 4. CWA SHALL INCLUDE A FLAT SUBSURFACE PIT THAT IS AT LEAST 8" BY 8" SLOPES LEADING OUT OF THE SUBSURFACE PIT SHALL BE 3:1 OR FLATTER. THE PIT SHALL BE AT LEAST 3' DEEP.
 5. BERM SURROUNDING SIDES AND BACK OF THE CWA SHALL HAVE MINIMUM HEIGHT OF 1'.
 6. VEHICLE TRACKING PAD SHALL BE SLOPED 2% TOWARDS THE CWA.
 7. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE CWA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CWA TO OPERATORS OF CONCRETE TRUCKS AND PUMP TRUCKS.
 8. USE EXCAVATED MATERIAL FOR PERIMETER BERM CONSTRUCTION.

- CWA MAINTENANCE NOTES**
1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
 2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
 3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
 4. THE CWA SHALL BE REPAIRED, CLEANED, OR ENLARGED AS NECESSARY TO MAINTAIN CAPACITY FOR CONCRETE WASTE. CONCRETE MATERIALS, ACCUMULATED IN PIT, SHALL BE REMOVED ONCE THE MATERIALS HAVE REACHED A DEPTH OF 2'.
 5. CONCRETE WASHOUT WATER, WASTED PIECES OF CONCRETE AND ALL OTHER DEBRIS IN THE SUBSURFACE PIT SHALL BE TRANSPORTED FROM THE JOB SITE IN A WATER-TIGHT CONTAINER AND DISPOSED OF PROPERLY.
 6. THE CWA SHALL REMAIN IN PLACE UNTIL ALL CONCRETE FOR THE PROJECT IS PLACED.
 7. WHEN THE CWA IS REMOVED, COVER THE DISTURBED AREA WITH TOP SOIL, SEED AND MULCH OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.
- (DETAIL ADAPTED FROM DOUGLAS COUNTY, COLORADO AND THE CITY OF PARKER, COLORADO, NOT AVAILABLE IN AUTOCAD)
- NOTE:** MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM USED STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.



SSA-1. STABILIZED STAGING AREA

- STABILIZED STAGING AREA INSTALLATION NOTES**
1. SEE PLAN VIEW FOR LOCATION OF STAGING AREAS.
 2. STABILIZED STAGING AREA SHOULD BE APPROPRIATE FOR THE NEEDS OF THE SITE. OVERSIZING RESULTS IN A LARGER AREA TO STABILIZE FOLLOWING CONSTRUCTION.
 3. STAGING AREA SHALL BE STABILIZED PRIOR TO OTHER OPERATIONS ON THE SITE.
 4. THE STABILIZED STAGING AREA SHALL CONSIST OF A MINIMUM 3" THICK GRANULAR MATERIAL.
 5. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 8" (MINUS) ROCK.
 6. ADDITIONAL PERIMETER BMPs MAY BE REQUIRED INCLUDING BUT NOT LIMITED TO SILT FENCE AND CONSTRUCTION FENCING.
- STABILIZED STAGING AREA MAINTENANCE NOTES**
1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
 2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
 3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
 4. ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY IF RUTTING OCCURS OR UNDERLYING SUBGRADE BECOMES EXPOSED.

- STABILIZED STAGING AREA MAINTENANCE NOTES**
5. STABILIZED STAGING AREA SHALL BE ENLARGED IF NECESSARY TO CONTAIN PARKING, STORAGE, AND UNLOADING/LOADING OPERATIONS.
 6. THE STABILIZED STAGING AREA SHALL BE REMOVED AT THE END OF CONSTRUCTION. THE GRANULAR MATERIAL SHALL BE REMOVED OR, IF APPROVED BY THE LOCAL JURISDICTION, USED ON SITE, AND THE AREA COVERED WITH TOPSOIL, SEEDS AND MULCH OR OTHERWISE STABILIZED IN A MANNER APPROVED BY LOCAL JURISDICTION.
- NOTE:** MANY MUNICIPALITIES PROHIBIT THE USE OF RECYCLED CONCRETE AS GRANULAR MATERIAL FOR STABILIZED STAGING AREAS DUE TO DIFFICULTIES WITH RE-ESTABLISHMENT OF VEGETATION IN AREAS WHERE RECYCLED CONCRETE WAS PLACED.
- NOTE:** MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM USED STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.
- (DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO, NOT AVAILABLE IN AUTOCAD)

SEEDING AND MULCHING INSTALLATION NOTES

- SEE PLAN VIEW FOR:
 - AREA OF SEEDING AND MULCHING.
 - TYPE OF SEED MIX.
- ALL BRANDS FURNISHED SHALL BE FREE FROM SUCH NOXIOUS SEEDS AS RUSSIAN OR CANADIAN THISTLE, COARSE FESCUE, EUROPEAN BINDWEED, JOHNSON GRASS, KNAW WEED AND LEAFY SPURGE.
- THE SEEDER SHALL FURNISH TO THE CONTRACTOR A SIGNED STATEMENT CERTIFYING THAT THE SEED FURNISHED IS FROM A LOT THAT HAS BEEN TESTED BY A RECOGNIZED LABORATORY. SEED WHICH HAS BECOME WET, MOLDED OR OTHERWISE DAMAGED IN TRANSIT OR IN STORAGE WILL NOT BE ACCEPTABLE. SEED TICKETS SHALL BE PROVIDED TO REGULATING AGENCY UPON REQUEST.
- DRILL SEEDING MIX SHALL CONFORM TO THE TABLE ON THE RIGHT.
- IF THE SEED AVAILABLE ON THE MARKET DOES NOT MEET THE MINIMUM PURITY AND GERMINATION PERCENTAGES SPECIFIED, THE SUBCONTRACTOR MUST COMPENSATE FOR A LESSER PERCENTAGE OF PURITY OR GERMINATION BY FURNISHING SUFFICIENT ADDITIONAL SEED TO EQUAL THE SPECIFIED PRODUCT. THE TAGS FROM THE SEED MIXES MUST BE SUPPLIED TO CONTRACTOR AND FORWARDED TO THE REGULATING AGENCY'S GESC INSPECTOR.
- THE FORMULA USED FOR DETERMINING THE QUANTITY OF PURE LIVE SEED (PLS) SHALL BE (POUNDS OF SEED) X (PURITY %) X (GERMINATION %) = POUNDS OF PURE LIVE SEED (PLS).
- PERMANENT SEED MIX SHALL BE USED UNLESS OTHERWISE APPROVED BY THE REGULATING AGENCY.
- ALL AREAS TO BE SEED AND MULCHED SHALL HAVE NATIVE TOPSOIL OR APPROVED SOIL AMENDMENTS SPREAD TO A DEPTH OF AT LEAST 6 INCHES (LOOSE DEPTH). HAIL ROADS AND OTHER COMPACTED AREAS SHALL BE LOOSENED TO A DEPTH OF 6 INCHES PRIOR TO SPREADING TOPSOIL.
- SOIL IS TO BE THOROUGHLY LOOSE (TILLED) TO A DEPTH OF AT LEAST 6 INCHES PRIOR TO SEEDING. THE TOP 6 INCHES OF THE SEED BED SHALL BE FREE OF ROCKS GREATER THAN 4 INCHES AND SOIL CLODS GREATER THAN 2 INCHES. SEEDING OVER ANY COMPACTED AREAS THAT HAVEN'T BEEN THOROUGHLY LOOSENED SHALL BE REJECTED.
- SEED IS TO BE APPLIED USING A MECHANICAL DRILL TO A DEPTH OF 1/4 INCH. ROW SPACING SHALL BE NO MORE THAN 8 INCHES. MATERIAL USED FOR MULCH SHALL CONSIST OF LONG-STEAMED STRAW. AT LEAST 50 PERCENT OF THE MULCH, BY WEIGHT, SHALL BE 10 INCHES OR MORE IN LENGTH. MULCH SHALL BE APPLIED AND MECHANICALLY ANCHORED TO A DEPTH OF AT LEAST 2 INCHES. MULCH SHALL BE APPLIED AT A RATE OF 4000 LB. OF STRAW PER ACRE.
- IF THE PERMITTEE DEMONSTRATES TO THE REGULATING AGENCY THAT IT IS NOT POSSIBLE TO DRILL SEED, SEED IS TO BE UNIFORMLY BROADCAST AT TWO TIMES THE DRILLED RATE, THEN LIGHTLY HARROWED TO PROVIDE A SEED DEPTH OF APPROXIMATELY 1/4 INCH, THEN ROLLED TO COMPACT, THEN MULCHED AS SPECIFIED ABOVE.
- SEEDING AND MULCHING SHALL BE COMPLETED WITHIN 30 DAYS OF INITIAL EXPOSURE OR 7 DAYS AFTER GRADING IS SUBSTANTIALLY COMPLETE IN A GIVEN AREA (AS DEFINED BY THE REGULATING AGENCY). THIS MAY REQUIRE MULTIPLE MOBILIZATIONS FOR SEEDING AND MULCHING.
- MULCH SHALL BE APPLIED WITHIN 24 HOURS OF SEEDING.
- TACKIFIER SHOULD BE UTILIZED TO HELP WITH STRAW DISPLACEMENT.

SEEDING AND MULCH NTS

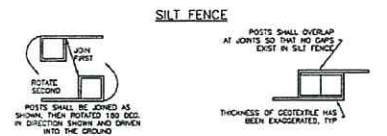
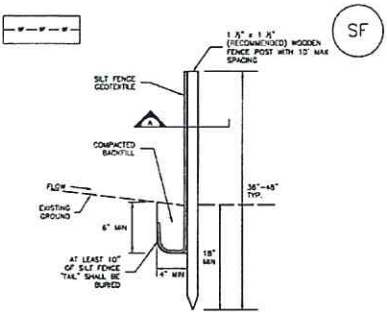
SEEDING AND MULCHING MAINTENANCE NOTES

- SEED AND MULCHED AREAS SHALL BE INSPECTED FOR REQUIRED COVERAGE MONTHLY FOR A PERIOD OF TWO YEARS FOLLOWING INITIAL SEEDING. REPAIRS AND RE-SEEDING AND MULCHING SHALL BE UNDERTAKEN AFTER THE FIRST GROWING SEASON FOR ANY AREAS FAILING TO MEET THE REQUIRED COVERAGE.
- REQUIRED COVERAGE FOR STANDARD, OPEN SPACE AND LOW GROWTH SEED MIXES SHALL BE DEFINED AS FOLLOWS:
 - THREE (3) PLANTS PER SQUARE FOOT WITH A MINIMUM HEIGHT OF 3 INCHES. THE 3 PLANTS PER SQUARE FOOT SHALL BE OF THE VARIETY AND SPECIES FOUND IN THE DOUGLAS COUNTY-APPROVED MIX.
 - NO BARE AREAS LARGER THAN 4 SQUARE FEET (TWO-FOOT BY TWO-FOOT OR EQUIVALENT).
 - FREE OF ERODED AREAS.
 - FREE FROM INFESTATION OF NOXIOUS WEEDS IN ACCORDANCE WITH SECTION 6.4 OF THE GESC CRITERIA MANUAL.
- REQUIRED COVERAGE FOR TURF GRASS AREAS SHALL BE DEFINED AS FOLLOWS:
 - AT LEAST 80% VEGETATIVE COVER OF GRASS SPECIES PLANTED.
 - NO BARE AREAS LARGER THAN 4 SQUARE FEET (TWO-FOOT BY TWO-FOOT OR EQUIVALENT).
 - FREE OF ERODED AREAS.
 - FREE FROM INFESTATION OF NOXIOUS WEEDS IN ACCORDANCE WITH SECTION 6.4 OF THE GESC CRITERIA MANUAL.
- RILL AND GULLY EROSION SHALL BE FILLED WITH TOPSOIL PRIOR TO RESEEDING. THE RESEEDING METHOD SHALL BE APPROVED BY THE COUNTY.



Silt Fence (SF)

SC-1



SECTION A

SF-1. SILT FENCE

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SC-1

Silt Fence (SF)

- SILT FENCE INSTALLATION NOTES**
- SILT FENCE MUST BE PLACED ANYWHERE FROM THE TOE OF THE SLOPE TO ALLOW FOR WATER FLOWING SILENTLY AT THE TOE OF A SLOPE SHOULD BE INSTALLED IN A FLAT LOCATION AT LEAST 5 FEET (1.5 TO 2 FT) FROM THE TOE OF THE SLOPE TO ALLOW ROOM FOR FLOWING AND DEPOSITION.
 - A UNIFORM 6" x 4" x 18" TRENCH SHALL BE EXCAVATED USING TRENCHER OR SILT FENCE INSTALLATION DEVICE. NO ROAD SIGNING, BARRIERS, OR SIMILAR EQUIPMENT SHALL BE USED.
 - COMPACT ANCHOR TRENCH BY HAND WITH A "SHOULDER JACK" OR BY WHEEL ROLLING. TRENCHER SHALL BE SUCH THAT SILT FENCE POSTS BEING PULLED OUT OF ANCHOR TRENCH BY HAND.
 - SILT FENCE SHALL BE PULLED TIGHT AS IT IS ANCHORED TO THE STAKES. THERE SHOULD BE NO NOTICEABLE GAP BETWEEN STAKES AFTER IT HAS BEEN ANCHORED TO THE STAKES.
 - SILT FENCE FABRIC SHALL BE ANCHORED TO THE STAKES USING 1" HEAVY DUTY STAPLES OR NAILS WITH 1" HEADS. STAPLES AND NAILS SHOULD BE PLACED 3" ALONG THE FABRIC DOWN THE STAKE.
 - AT THE END OF A RUN OF SILT FENCE ALONG A CONTOUR, THE SILT FENCE SHOULD BE EXTENDING PERPENDICULAR TO THE CONTOUR SHOULD BE OF SUFFICIENT LENGTH TO KEEP RUNOFF FROM FLOWING AROUND THE END OF THE SILT FENCE (TYPICALLY 10' - 20').
 - SILT FENCE SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

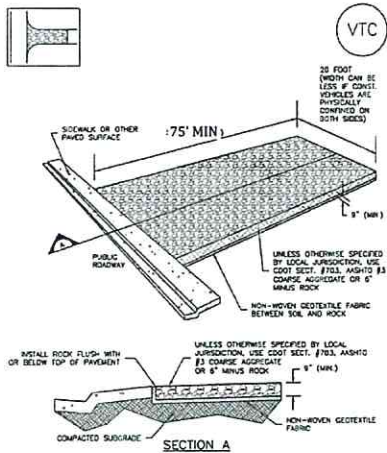
- SILT FENCE MAINTENANCE NOTES**
- INSPECT BUMP EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BUMP SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BUMP AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
 - PREVENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BUMP IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
 - WHERE BUMP HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
 - SEDIMENT ACCUMULATED UPSTREAM OF THE SILT FENCE SHALL BE REMOVED AS NEEDED TO MAINTAIN THE FUNCTIONALITY OF THE BUMP. TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY 8".
 - REPAIR OR REPLACE SILT FENCE WHEN THERE ARE SIGNS OF WEAR, SUCH AS SAGGING, TYPING, OR COLLAPSE.
 - SILT FENCE IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION, OR IS REPLACED BY AN EQUIVALENT PERMANENT SEDIMENT CONTROL BUMP.
 - WHEN SILT FENCE IS REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDS AND MULCH OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

(DETAILS ADAPTED FROM TYPICAL PLAN, COLORED AND CITY OF DENVER, NOT AVAILABLE IN ALL AREAS)

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Vehicle Tracking Control (VTC)

SM-4

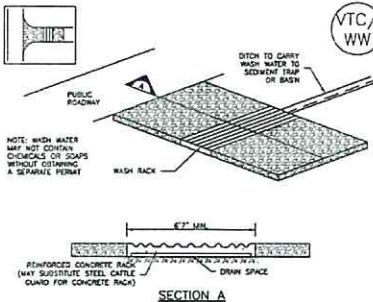


VTC-1. AGGREGATE VEHICLE TRACKING CONTROL

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SM-4

Vehicle Tracking Control (VTC)

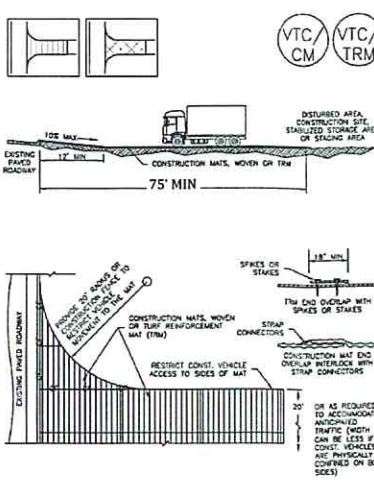


VTC-2. AGGREGATE VEHICLE TRACKING CONTROL WITH WASH RACK

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Vehicle Tracking Control (VTC)

SM-4



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

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PROJECT SPECIFIC GRADING AND EROSION CONTROL NOTES

- All earthwork required of this construction shall be completed in accordance with all applicable sections of the Project Specifications and Soil Investigation Report (Geotechnical Report).
- Rubbish including timber, concrete rubble, trees, brush, and asphalt shall not be backfilled adjacent to any of the structures or be in the placement of any undissolved fill. The Contractor shall be responsible for the removal and hauling of such materials to a suitable spoil area. Costs associated with the removal of such materials shall be paid for as documented in the Project Specifications.
- Excess excavation shall become the property of the Contractor and shall be disposed of at the Contractor's expense. The cost of haulage and spoiling of excess excavated materials shall be paid for as documented in the Project Specifications.
- Water shall be used as a dust palliative as required and shall be included in the cost for earthwork item(s). No separate payment will be made for dust control associated with the site construction.
- The road grades shall be cleared of vegetation and the topsoil stockpiled for later use.
- All grading shall be in conformance with the Geotechnical Report for the area.
- Placement of fill for roadway embankments shall be completed in conformance with the Geotechnical Report.
- Grading contours shown on this plan are to final grade.
- Compaction under filled areas, including roadway and detention basin embankments, shall be 95 percent of the maximum Standard Proctor Density (ASTM D698) at two (2) percent of optimum moisture content.
- No rubble or debris shall be placed in the backfill under any of the proposed buildings, streets, curb & gutter, sidewalk and drainage structures or within five (5) feet of a building footprint. Properly graded rubble may be used in some locations as specified and verified by the Geotechnical Engineer.
- Contractor is responsible for reviewing the site prior to bidding to verify site conditions.
- Contractor is responsible for providing erosion control measures as approved by the El Paso County PCD Engineering Division and as may be required by the El Paso County Inspector.
- All slopes equal to or greater than 3:1 shall require anchored soil retention blanket (SRB), Geocir 700 or equal.
- The Developer is responsible for maintaining erosion control measures until a mature stage of vegetation is established.
- All soils used for fill must be approved by a representative of the Geotechnical Engineer.
- All natural ground to receive fill must be properly scarified, watered and compacted prior to placing fill.
- The Contractor is solely responsible for the design, maintenance and operation of any required dewatering system. The Contractor shall perform such independent investigation as he deems necessary to satisfy himself as to the subsurface groundwater conditions and unstable soil conditions to be encountered throughout the construction. Contractor shall coordinate the dewatering system with El Paso County when associated with public facilities.
- No fill shall be placed, spread or rolled while it is frozen, thawing or during unfavorable weather conditions. When the work is interrupted by heavy rain, fill operations shall not be resumed until a representative of the Geotechnical Engineer indicates that the moisture content and density of the previously placed fill are as specified. Fill surfaces may be scarified and recompacted after rainfall if necessary, to obtain proper moisture density relation.
- Additional erosion control structures and/or grading may be required at the time of construction.
- Sediment removal for erosion control facilities shall be performed continuously for proper function.
- Base mapping was provided by Core Engineering. The date of the last survey update was January 2016.
- Proposed Construction Schedule:
 - Begin Construction: pending
 - End Construction: pending
- Total Site Area = 9.7 Acres
- Area to be disturbed = 9.7 Acres (est.).
 - Existing 100-year runoff coefficient = 0.25
 - Proposed 100-year runoff coefficient = 0.25
 - Existing Hydrologic Soil Groups: B/C
 - (B) MANZANIT CLAY LOAM
 - (C) MANZANIT CLAY LOAM
- Site is currently undeveloped and covered with native grasses on moderate to steep slopes (3%-6%).
- Site is located in the Jimmy Camp Creek Drainage Basin.

SEED MIX

AREAS DISTURBED BY THE EARTHWORK SHALL BE PERMANENTLY REVEGETATED WITH NATIVE GRASSES. NATIVE SEED MIX FOR THIS PROJECT SHALL BE AS FOLLOWS:

SPECIES	lbs/acre
WESTERN WHEAT GRASS	<i>Paspalum smithii</i> 3.0
SIDEGRASS GRAMA	<i>Bouteloua curtipendula</i> 2.0
SLENDER WHEAT GRASS	<i>Elymus trachycarpus</i> 2.0
LITTLE BLUESTEM	<i>Setochrymium scoparium</i> 2.0
BLUE GRAMA	<i>Bouteloua gracilis</i> 0.5
SWITCH GRASS	<i>Panicum virgatum</i> 0.5
JUNE GRASS	<i>Koeleria cristata</i> 0.5
SAND DROPSSEED	<i>Sporobolus cryptandrus</i> 0.5
	12.5 lbs

SEEDING APPLICATION: DRILL SEED 1/4" TO TOPSOIL, IN AREAS INACCESSIBLE TO A DRILL, HAND BROADCAST AT DOUBLE THE RATE AND RAKE 1/4" TO 1/2" INTO THE TOPSOIL.
MULCHING APPLICATION: 1-1/2 TONS NATIVE HAY PER ACRE, MECHANICALLY CRIMPED INTO THE TOPSOIL OR HYDROMULCH.

STANDARD EPC GRADING AND EROSION CONTROL NOTES

- Construction may not commence until a Construction Permit is obtained from Planning and Community Development Department (PCD) and a Preconstruction Conference is held with PCD Inspectors.
- 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.
- 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 to regulations and standards must be requested, and approved in writing.
- A separate Stormwater Management Plan (SWMP) for this project shall be completed and an Erosion and Stormwater Quality Control Permit (ESQCP) issued prior to commencing construction. During construction the SWMP is the responsibility of the designated Stormwater Manager. The SWMP shall be located on site at all times and shall be kept up to date with work progress and changes in the field.
- Once the ESQCP has been issued, the contractor may install the initial stage erosion and sediment control BMP's as indicated on the 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 PCD inspectors staff.
- Soil erosion control measures for all slopes, channels, ditches, or any disturbed land area shall be completed within 21 calendar days after final grading, or earth disturbance, has been completed. Disturbed areas and stockpiles, which are not at final grade but will remain dormant for longer than 30 days, shall also be mulched within 21 days after interim grading. And area that is going to remain an interim for more than 60 days shall also be seeded. All temporary soil erosion control measures and BMP's shall be maintained until permanent soil erosion control measures are implemented and established.
- Temporary soil erosion control facilities shall be removed and earth disturbance areas graded and stabilized with permanent soil erosion control measures pursuant to standards and specification prescribed in the DCM Volume II and the Engineering Criteria Manual (ECM) appendix I.
- All persons engaged with earth disturbance shall implement and maintain acceptable soil erosion and sediment control measures including BMP's in conformance with the erosion control technical standards of the Drainage Criteria Manual (DCM) Volume II and in accordance with the Stormwater Management Plan (SWMP).
- All temporary erosion control facilities including BMP's and all permanent facilities intended to control erosion of any earth disturbance operations shall be installed as defined in the approved plans, the SWMP and the DCM Volume II and maintained throughout the duration of the earth disturbance operation.
- Any earth disturbance shall be conducted in such a manner so as to effectively reduce 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.
- Any temporary or permanent facility designed and constructed for the conveyance of stormwater around, through, or from the earth disturbance area shall be designed to limit the discharge to a non-erosive velocity.
- Complete wash water shall be contained and disposed of in accordance with the SWMP. No wash water shall be discharged to or allowed to runoff to State Waters, including any surface or subsurface storm drainage system or facilities.
- Erosion control blanketing is to be used on slopes steeper than 3:1.
- Building, construction, excavation, or other 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. BMP's may be required by El Paso County Department of Public Works if deemed necessary, based on specific conditions and circumstances.
- Vehicle tracking of soils and construction debris off-site shall be minimized. Materials tracked offsite shall be cleaned up and properly disposed of immediately.
- 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.
- The owner, site developer, contractor, and/or their authorized agents shall be responsible for the removal of all construction debris, dirt, trash, rock, sediment, and sand that may accumulate in the storm sewer or other drainage conveyance and stormwater appearances as a result of site development.
- The quantity of materials stored on the project site shall be limited, as much as practical, to that quantity required to perform the work in an orderly sequence. All materials stored on-site shall be stored in a neat, orderly manner, in their original containers, with original manufacturer's labels.
- No chemicals are to be used by the contractor, which have the potential to be released in stormwater unless permission for the use of a specific chemical is granted in writing by the ECM Administrator. In granting the use of such chemicals, specific conditions and monitoring may be required.
- Bulk storage structures for petroleum products and other chemicals shall have adequate protection so as to contain all spills and prevent any spilled material from entering State Waters, including any surface or subsurface storm drainage system or facilities.
- No person shall cause the impediment of stormwater flow in the flow line of the curb and gutter or in the ditchline.
- Individuals shall comply with the "Colorado Water Quality Control Act" (Title 25, Articles 6, CRS), and the Clean Water Act" (33 USC 1344), in addition to the requirements included in the DCM Volume II and the ECM Appendix I. All appropriate permits must be obtained by the Contractor prior to the construction (NPDES, Floodplain, 404, fugitive dust, etc.). In the event of conflicts between these requirements and laws, rules, or regulations of other Federal, State, or County Agencies, the more restrictive laws, rules, or regulations shall apply.
- All construction traffic must enter/exit the site at approved construction access points.
- Prior to actual construction the permittee shall verify the location of existing utilities.
- A water source shall be available on site during earthwork operations and utilized as required to minimize dust from earthwork equipment and vehicles.
- The soils report for this site entitled *Geotechnical Report Fontaine Boulevard Bridge over East Tributary Jimmy Camp Creek, Lorson Ranch, El Paso county, Colorado, prepared by RMG engineers, Sept. 24, 2016* and shall be considered a part of these plans.
- At least ten days prior to the anticipated start of construction, for projects that will disturb 1 acre or more, the owner or operator of construction activity shall submit a permit application for stormwater discharge to the Colorado Department of Public Health and Environment, Water Quality 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, Colorado 80246-1530
 - Attn: Permits Unit

LORSON RANCH

FONTAINE BOULEVARD BRIDGE AND CHANNEL DESIGN

EROSION CONTROL DETAILS

EL PASO COUNTY, COLORADO

Kiowa
Engineering Corporation

1604 South 21st Street
Colorado Springs, Colorado 80904
(719) 690-7342

Project No.: 16029
Date: 1/26/18
Design: RNW
Drawn: EAK
Check: RNW
Revisions: