For File
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El Paso County Planning & Community Development

**Winsome Filing No 1**
17480 Meridian Road
Colorado Springs, Colorado 80924

# Stormwater Management Plan

**MAY 4, 2020**

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## 1.0 INTRODUCTION

This Erosion and Stormwater Water Management Plan and Report (SWMP) includes the construction activities associated with the Winsome Filing 1 Subdivision project. Construction activities will include clearing, grading, and road paving. Soil disturbing activities will include clearing/grubbing, grading, excavation for drainage facilities, installation of paved areas, and preparation for final seeding, planting, and landscaping. This SWMP identifies and describes the stormwater best management practices (BMP's) that will be implemented to minimize the potential release of sediment and chemicals to the atmosphere, surface, or ground. During the development of the project the intent is to:

- Protect as much existing vegetation as possible
- Slow down runoff to prevent or minimize erosion from construction activities
- Stabilize earth disturbances to prevent sediment from reaching receiving or surface waters

The SWMP is considered a living/dynamic document and is to be updated periodically per state and local requirements. If there is a need for construction modifications due to site design changes or additional maintenance of the site due to previously placed BMPs ineffectively controlling pollutants, the SWMP Administrator shall provide additional BMPs were applicable to control stormwater discharges associated with construction activity or when BMPs are no longer necessary and are removed.

### GENERAL LOCATION AND DESCRIPTION

The full site is located between the west side of Meridian Road, the north side of Hodgen Road, and on the east side of Goshawk Road in City of Colorado Springs, latitude 39°04’38” N and longitude 104°36’47” W. Filing 1 constitutes a southwest portion of the full site. The subject filing

is undeveloped and situated in Section 24, Township 11 South, Range 65 West of the 6th P.M., County of El Paso, State of Colorado.

The full site is bound on the south by Hodgen Road and a low-density single-family development. On the east by Median Road and a low-density single-family development. To the west by Goshawk Road and a low-density single-family development, and the Northerly side of site is open space. The site is within the KIKI0200 West Kiowa Creek drainage basin. Flows from the West Kiowa Creek basin ultimately discharge to the South Platt river. Filing 1 occupies the southwestern portion of the site as shown in the image below.

## CONSTRUCTION ACTIVITIES

The proposed project includes access roads and stormwater ponds. Anticipated construction activities include clearing and grubbing, temporary stabilization, grading access roads &

sediment/storm water ponds, final grading, final stabilization, and removal of temporary controls.

## EXISTING CONDITIONS

Filing 1 consists of 164.4 acres of undeveloped land. Ground cover consists mainly of native grasses, shrubs, and coniferous trees. Based on visual inspection, 90% of the ground is covered and stabilized by existing vegetation.

A wetland channel is present in Filing 1 fully contained in dedicated open space. No wetland areas are being disturbed as part of Filing 1. A soils map prepared by Natural Resources Conservation Service is included in the Appendix and classifies these soils as Hydrologic Soil Group B, C and D. The site is shown on FEMA flood map 08041CO325F and 08041CO350, which indicates the site as being in Zone A and X – area outside of the 0.2% annual chance flood (see the accompanying map in the Appendix). There are no existing irrigation canals or ditches on the project site.

## ADJACENT AREAS

The site is located in the basin identified as KIKI0200 West Kiowa Creek drainage basin. The basin is characterized as rural residential 5 acre lots with an average imperviousness of 5%.

## SOILS

The property slopes to the drainage channel in the middle of the site with slopes ranging between 1% and 16%. Soils consist of Alamosa loam (1.2%) at 1 to 3% slopes, Elbeth sandy loam (31.7% to 31.8%) at 3 to 8 percent slopes and 8 to 15 percent slopes, Holderness loam (0.2% to 4.3%) at 1 to 5 percent and at 8 to 15 percent slopes, Tomah-Crowford loamy sands (10.1%) 3 to 8 percent slopes and Tomah-Crowfoot complex. These soils are classified in Hydrologic Group B, C and D. Further details can be found in the project geotechnical report by Entech Engineering.

## SITE AREAS AND VOLUMES

The overall existing site contains approximately 760 acres. Area associated with Filing 1 is 164.4 acres, and a small portion of this area will undergo disturbance from construction activities in Filing 1. The disturbed area associated with this filing is 24.47 acres plus an additional 3.38 acres around Pond 3 (outside of the Filing 1 boundary), totaling 27.85 acres. The disturbed area will be impacted by clearing & grubbing, grading, areas receiving overburden (e.g. stockpiles), areas with heavy equipment/vehicle traffic, and storage sites that will disturb existing vegetative cover.

## STORMWATER MANAGEMENT CONSIDERATIONS

Roadside ditches will be graded on the sides of proposed road development. Stormwater flowing in the ditches has been studied for velocity and shear as outlined in the table below and identified on the plan following the table. Analysis was done using Hydraulic Toolbox distributed by the Federal Highway Administration. Ditch sections with flow rates over 4 fps will be lined with erosion control fabric.

| ROADSIDE DITCH Q 100Y VALUES | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DITCH SECTION DESIGNATOR | START STATION | END STATION | LENGTH | GRADE | WATER SHED FROM ROAD | FRACTION OF BASIN FLOW | BASIN DESIGNATOR | BASIN 100Y Q | DITCH FRACTION OF Q | DITCH 100Y Q FROM BASIN | ROAD WATERSHED 100Y Q | CONNECTING DITCH 100Y Q | TOTAL 100Y Q IN DITCH SECTION | AVERAGE VELCITY | MAX SHEER |
| | (FT) | (FT) | (FT) | % | | | | (CFS) | % | (CFS) | (CFS) | (CFS) | (CFS) | (FPS) | (LB/FT$^2$) |
| WINSOME WAY | | | | | | | | | | | | | | | |
| B2-3 | +32 | 5+14 | 482' | 4.83% | X | | B2 | | | - | 1.69 | | 1.69 | 3.00 | 1.13 |
| B4-3.1 | 5+14 | 6+60 | 146' | 3.85% | X | | B4 | | | - | 0.51 | | 0.51 | 3.52 | 1.36 |
| B4-3.2 | 6+60 | 9+50 | 290' | 7.89% | X | | B5 | | | - | 1.01 | 0.51 | 1.52 | 3.51 | 1.62 |
| B4-3.3 | 9+50 | 18+00 | 850' | 3.22% | X | | B6 | | | - | 2.97 | 1.52 | 4.50 | 3.29 | 1.18 |
| B4-4 | 18+00 | 20+96 | 296' | 1.00% | X | | B4 | | | - | 1.03 | | 1.03 | 1.47 | 0.26 |
| C2-1.1 | +32 | 6+10 | 578' | 3.85% | X | | C2 | | | - | 2.02 | | 2.02 | 2.65 | 1.01 |
| C2-1.2 | 6+10 | 10+17 | 407' | 7.89% | X | | C2 | | | - | 1.42 | 2.02 | 3.44 | 4.30 | 2.90 |
| C3-3 | 10+17 | 18+00 | 783' | 3.22% | X | | C3 | | | - | 2.74 | 6.45 | 9.19 | 3.93 | 1.54 |
| C3-4 | 18+00 | 20+96 | 296' | 1.00% | X | | C4 | | | - | 1.03 | | 1.03 | 1.47 | 0.26 |
| ALAMAR WAY | | | | | | | | | | | | | | | |
| C3-5 | 70+00 | 78+93 | 893' | 1.43% | X | X | C3 | 22.1 | 10% | 2.21 | 3.12 | | 5.33 | 2.42 | 0.60 |
| D2-1 | 78+93 | 84+31 | 538' | 3.72% | X | X | D2 | 81.3 | 2% | 1.63 | 1.88 | | 3.51 | 3.39 | 1.27 |
| D5-1 | 78+93 | 84+31 | 538' | 3.72% | X | | D5 | | | - | 1.88 | | 1.88 | 2.79 | 0.95 |
| C4-1 | 70+00 | 78+93 | 893' | 1.43% | X | | C4 | | | - | 3.12 | | 3.12 | 2.21 | 0.53 |
| BISON MEADOWS CT | | | | | | | | | | | | | | | |
| D2-3.1 | +8 | 5+50 | 542' | 1.37% | X | X | | 81.3 | 1% | 0.81 | 1.90 | 7.29 | 10.00 | 2.92 | 0.79 |
| D2-3.2 | 5+50 | 24+02 | 1852' | 3.47% | X | X | | 81.3 | 1% | 0.81 | 6.48 | | 7.29 | 3.82 | 1.50 |
| D3.4.6-1.1 | 5+50 | 24+02 | 1852' | 3.47% | X | | | | | - | 6.48 | | 6.48 | 3.71 | 1.43 |
| D3.4.6-2.2 | +8 | 5+50 | 542' | 1.37% | X | | | | | - | 1.90 | 6.48 | 8.37 | 2.79 | 0.74 |
| CLOVE HITCH CT | | | | | | | | | | | | | | | |
| B2-1 | +14 | 5+80 | 566' | 5.34% | | | B2 | 19.9 | 10% | 1.99 | 1.98 | | 3.97 | 3.85 | 1.69 |
| B2-2 | 5+80 | 7+82 | 202' | 1.13% | | | B2 | 19.9 | 20% | 3.98 | 0.71 | | 4.69 | 2.37 | 0.57 |
| B4-1 | 5+80 | 7+82 | 202' | 1.13% | | | B4 | 53.1 | | - | 0.71 | | 0.71 | 1.48 | 0.28 |
| B4-2 | +14 | 5+80 | 566' | 5.34% | | | B4 | 53.1 | | - | 1.98 | | 1.98 | 3.24 | 1.30 |
| MOSEY TRAIL | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C2-2.1 | +14 | 2+74 | 260' | 1.43% | X | X | C2 | 23.7 | 5% | 1.19 | 0.91 | | 2.09 | 2.00 | 0.46 |
| C2-2.2 | 2+74 | 5+25 | 251' | 1.03% | X | X | C2 | 23.7 | 10% | 2.37 | 0.88 | | 3.25 | 2.16 | 0.50 |
| C2-3 | 5+25 | 14+60 | 935' | 7.03% | X | X | C2 | 23.7 | 40% | 9.48 | 3.27 | | 12.75 | 5.72 | 3.28 |
| C3-1 | 5+25 | 14+60 | 935' | 7.03% | X | | C3 | 22.1 | | - | 3.27 | | 3.27 | 2.38 | 2.67 |
| C3-2.1 | 2+74 | 5+25 | 251' | 1.03% | X | | C3 | 22.1 | | - | 0.88 | | 0.88 | 1.56 | 0.31 |
| C3-2.2 | +14 | 2+74 | 260' | 1.43% | X | | C3 | 22.1 | | - | 0.91 | | 0.91 | 2.26 | 0.33 |

Q PER FOOT FOR 1' X 20' (HALF OF ROAD SECTION TO DITCH X 1' WIDE) = 0.00349671716220391 CFS

For ditch areas connecting to future filings of this project, stormwater will pass through sediment traps before leaving the disturbed area boundary. Over lot grading will not occur on this project, and a majority of the existing established ground cover on the site will remain undisturbed.

### LAND RELEASES / CONSTRUCTION PHASING

Due to the size and scope of this project, the site has been broken into sections that will be built one at a time. For the purpose of this report, focus will be on Filing 1. Culverts, detention ponds, water quality/sediment ponds, and all other BMP's will be installed according to the land filing releases. Stormwater will otherwise flow through historic conveyances in areas of the project where construction has not started.

## 2.0 BEST MANAGEMENT PRACTICES (BMPS)

BMPs for stormwater pollution prevention include structural and non-structural practices intended to reduce the amount of pollutants entering stormwater runoff and leaving the job site. All personnel working on the project site, including those responsible for implementation and maintenance of BMP's should review and understand the BMP's identified herein and on the accompanying Grading, Erosion & Sediment Control Plan, and their specifications in the Appendix.

Methods for limiting erosion of on-site soils and minimizing sediments in stormwater can be summarized in four basic approaches:

- Minimize onsite erosion from occurring by preventing erosion opportunities. Techniques for this approach include installing BMP's up-stream of significant surface disturbances to reduce the volume and velocity of run-on entering disturbed areas, staging construction to minimize the amount of time in which soil is left bare, surface roughening, and temporary seeding and mulching areas when practical to protect open disturbances. These practices help reduce the area of land susceptible to erosion.

- Capture sediment from stormwater runoff before it leaves the site. Methods to achieve this approach use a combination of temporary structural sediment controls to manage runoff onsite (i.e. silt fence, etc.). These measures encourage sediment in stormwater runoff to deposit and accumulate, reducing the total amount of sediment in runoff.
- Detain stormwater runoff for frequently occurring events using sediment basins and/or sediment traps.
- Release stormwater runoff in a controlled manner through the use of release control structures.

1. *Structural Practices for Erosion and Sediment Control*

Structural BMPs are physical features constructed on-site to reduce runoff and/or remove pollutants from runoff. The BMPs that are designed for use during construction activities and are to be removed after final stabilization are considered Temporary Structural BMPs. Those designed for use after construction as an integral part of the final stabilization strategy are considered Permanent Structural BMPs.

Temporary Structural BMP's identified for this site include:

- Check Dams
- Silt Fence
- Stabilized Staging and Storage Area
- Vehicle Tracking Control

*Please see the Table of Potential Pollutants on page 20 and in the GESC Plan found in the Appendix for a listing of potential pollutants on-site and the corresponding BMP's to be utilized to mitigate the potential pollutants in each of the installation phases.*

Permanent Structural BMP's identified for this site include:

- Paving and hardscape
- Erosion Control Blanket

Permanent soil stabilization for the area of disturbance of the site will include asphalt pavement as shown in the approved Site Plan.

2. *Temporary Soil Stabilization*

   All disturbed areas shall be surface roughened and contained with either roadside ditches or perimeter BMPs (silt fence) in accordance with the GESC plan within thirty days of initial exposure or within seven days of substantial completion (as defined by City of Colorado Springs) of an area, whichever is less. This may require multiple mobilizations for different areas as site construction progresses. Soil surface stabilization should also be applied to disturbed areas that may not be at final grade but will remain inactive for more than 30 days.

3. *Non-Structural Practices for Erosion and Sediment Control*

   Non-Structural BMP's are practices and procedures aimed at preventing and reducing the amount of pollutants from entering runoff. Practices include good housekeeping, materials handling and spill prevention, and waste management and disposal.

   The most effective practices for preventing pollution in stormwater from worksites begin with implementing basic good housekeeping methods on-site. Poor housekeeping practices result in more waste being generated than necessary and an increased potential for stormwater contamination. Alternatively, a clean and orderly worksite reduces the possibility of stormwater mixing with pollutants. Good housekeeping practices include the following:

   - Preventative maintenance of equipment (including daily inspections for equipment leaks)

- Proper materials storage and inventory
- Regular cleanup schedules
- Maintaining well organized work areas
- Proper signage
- On-going training of all site personnel
- Utilizing redundant measures (i.e. secondary containment practices)
- Providing tree protection
- Stabilization practices

Materials handling, spill prevention, and waste management and disposal are discussed later in this report.

4. *Phased BMP Implementation*

   Erosion and sediment controls for construction shall be phased to be fully effective. A vehicular tracking control device shall be installed prior to the mobilization of construction equipment onsite. Prior to the clearing and grubbing of the construction area, localized clearing shall be performed for the placement of necessary perimeter sediment control measures (i.e. silt fence). Site clearing shall commence only after perimeter erosion control measures are in place.

5. *Materials Handling and Spill Prevention*

   Materials used at construction sites can present a potential for contamination of stormwater runoff. These include fuel, oil, lubricants, paints, solvents, concrete curing compounds, and other liquid chemicals such as fertilizers, herbicides, and pesticides. Practices that can be used to prevent or minimize toxic materials in runoff from a construction site are described in this section.

Areas where potential spills can occur, e.g., stabilized storage areas, fueling areas, etc. shall have the following prevention and response procedures in place:

a. A list of all potentially toxic or hazardous chemicals used shall be maintained on the site. Warning labels must be attached to all potentially toxic or hazardous chemicals. Material safety data sheets (MSDS) and other safety information for a potentially toxic or hazardous substance shall be on file in binder(s) labeled "MSDS Data" on the site, within the construction trailer during all periods in which the substance is used or stored.

b. In addition to maintaining an inventory of potentially toxic and/or hazardous materials and associated safety information, the following materials management practices must be followed:
   - Materials will be handled in accordance with Occupational Safety and Health Administration (OSHA) requirements and manufacturer's instructions.
   - Chemicals regulated under the Comprehensive Environmental Response, Compensations and Liability Act (CERCLA) will be reported and handled in accordance with relevant regulations.
   - Materials stored at the construction site will be covered or otherwise protected from the elements.
   - The quantity of fuel and lubricants stored at the construction site will be limited to the amount that is reasonable to support the specific construction or maintenance activity. Offsite storage of vehicle and equipment fuel, hydraulic oil, and form oil will be provided for during this project. It is anticipated that there will up to three (3) – 5 gallon fuel containers which will be stored onsite. These shall be stored within the stabilized staging area and shall be protected from the elements in accordance with the materials handling BMP procedures located in the Appendix.

- Bulk storage areas for materials not consumed on a daily basis will be enclosed and protected from the elements and contained in a manner to prevent release to the environment.
- Petroleum products and fertilizers will be stored at separate facilities or isolated by impermeable barriers.
- Areas at the construction site that are used for storage of toxic materials and petroleum products shall be designed with an enclosure, container, or dike located around the perimeter of the storage area to prevent discharge of these materials in runoff from the construction site. These barriers will also function to contain spilled materials from contact with surface runoff. These areas shall be sized to handle a minimum of twice the volume of material to be stored.
- Measures to prevent spills or leaks of fuel, gear oil, lubricants, antifreeze, and other fluids from construction vehicles and heavy equipment shall be considered to protect groundwater and runoff quality. All equipment maintenance shall be performed in a designated area in the stabilized staging area and measures, such as drip pans, shall be used to contain petroleum products. Spills of construction-related materials, such as paints, solvents, or other fluids and chemicals, shall be cleaned up immediately and disposed of properly. Spill kits containing personal protective equipment, absorbent pads/materials, and a collection container for used absorbents shall be located in the stabilized staging area near the location of maintenance, refueling, and materials storage area.
- Concrete trucks and other concrete coated equipment shall be cleaned only in designated concrete washout areas.
- Hazardous materials and wastes shall be stored in covered, leak-proof containers.

- When fueling must take place onsite, designate an area away from drainage courses to be used. Dedicated fueling areas shall be protected from stormwater run-on and runoff, and shall be a minimum of 50 feet away from drainage courses. The area is to be protected with secondary containment such as compacted berms and dikes. Provisions for spill kits which consist of personal protective equipment, absorbent pads/materials, and containers for used absorbents shall be made available for all fueling areas. Drop cloths or drain pans can be used to catch spills if necessary. If a small spill does occur, the operator will use absorbent materials to remove as much of the spill as possible. The spent absorbent material will be disposed of legally, properly, and promptly. There will be no bulk storage of fuel onsite.
- Portable toilets will be located at least 50 feet away from storm sewer inlets and/or drainage course. They will be located in level locations, but not in drainage paths, curb and gutter, or on sidewalks or drives. They shall also be stabilized and staked with rebar (utilizing caps if rebar sticks up in the air a significant amount) to minimize the risk of tipping over. Downstream perimeter controls shall be installed to prevent leaks from entering the storm sewer system.

c. All employees (including all subcontractors, trades, etc. who will be working on the project site) must be trained to recognize “significant spills” based on the relative toxicity of the material. Spills should be cleaned immediately, using as little water as possible to avoid spreading. Stockpiles of unused cleanup materials (spill kits) should be stored in easily accessible areas. All employees should be notified of the location of the MSDS and the storage location of cleanup material/spill kits and should be trained to clean up spills. All construction site personnel must follow spill prevention and control practices as follows:

- Designated individuals on the site will receive training on cleanup procedures for various types of chemicals and the location of information and cleanup supplies. The MSDS for a chemical provides information about health hazards, safe handling, use, and control measures. The MSDS for all chemicals used on the site will be kept on the site, and workers will be required to review the MSDS for materials they are working around.
- Spills will be cleaned up promptly after discovery, and materials used for spill cleanup must be disposed of offsite at an approved facility.
- The designated coordinator and the GESC Administrator will be notified immediately of any spill of a toxic or hazardous material that threatens human health or the environment. The GESC Administrator (or designee) must in turn report the spill to the appropriate federal, state (CDPHE spill reporting line 877-518-5608), or local agencies in accordance with applicable regulations as well as any downstream water users or other applicable agencies.
- If a spill occurs, this plan will be reviewed and appropriately revised to incorporate measures to reduce the likelihood of a spill recurring and to improve response time and cleanup effectiveness.
- For any construction activities covered by this plan that involve the use of toxic or hazardous substances, onsite spill prevention and cleanup coordination, in the event of a spill, will be the responsibility of the GESC Administrator.

6. *Dedicated Concrete or Asphalt Batch Plants*

   The use of a concrete or asphalt batch plants are not anticipated; its use will not be permitted under this application.

7. *Vehicle Tracking Control*

Practices implemented at the site to control potential sediment discharges from vehicle tracking include:

- Vehicle Tracking Control (VTC)
- Minimizing site access to ensure that only the (2) designated site access points with vehicle tracking control are used for access.
- Street sweeping or scraping
- Graveled parking areas
- Requiring vehicles stay on paved areas onsite
- Contractor education

Vehicle access to the site will be minimized through the use of construction and/or silt fence (or other barrier). Where access is allowed a Vehicle Tracking Control (VTC) pad will be installed. A VTC will be provided at the site access point for the construction trailer and for the designated concrete washout. Streets will be scraped, swept, or both, and gutters will be cleaned as necessary and at a minimum of once a week and inspected daily. Parking for production staff and sub-contractors will be allowed only on paved or otherwise stabilized areas. During wet weather, vehicle access to lots will be minimized to the extent practical.

8. *Waste Management and Disposal*

The site shall implement BMP's to control stormwater pollution from site wastes such as construction waste and concrete wash out activities. Liquid waste shall be properly contained in sealed containers and is not allowed in roll off dumpster containers.

a. *Construction Waste*

Additional provisions of the erosion and sediment control plan relating to waste disposal are as follows:

- The contractor shall remove all sediment, mud, and construction debris that may accumulate in the flow lines and public Rights of Way as a result of the site development. This shall be performed in a timely manner.
- The contractor shall control sediment, debris, and all other pollutants from entering the storm sewer system as a result of construction operations.
- The owner and designated agents shall ensure that all loads of cut and fill material imported or exported from the site shall be properly covered to prevent loss of the material during transport on public rights-of-way.
- Blow trash will be picked up and disposed of on building sites as necessary.
- Where possible, trash/recycle bins will be located at least 50 feet away from storm sewer inlets. They will be located in level locations, but not in drainage paths, curb and gutter, or on sidewalks or drives. Downstream perimeter controls shall be installed to prevent contaminants in stormwater from entering the storm sewer system.

9. *Groundwater and Stormwater Dewatering*

Although groundwater and stormwater dewatering is not anticipated with this project, should it be required, the following requirement guidelines shall be followed.

The contractor shall use an appropriate filter when pumping water from the excavation and discharge in a manner that does not cause erosion or surface runoff. This land application can be accomplished through using an energy dissipater such as spraying over a large portion of land, or discharging onto riprap which drains into a sediment basin or sediment trap. The GESC must be updated to indicate locations of dewatering land applications. In no case will this water be allowed into flow lines or otherwise enter a storm sewer system.

The permittee must apply for coverage under a separate CDPS discharge permit, such as the Construction Dewatering general permit, if there is a potential for discharges to surface waters and/or the water contains pollutants in concentrations exceeding the State groundwater standards in Regulations 5 CCR 100-41 and 42.

Permittee shall also coordinate with and obtain any required permits through the City of Colorado Springs.

10. *BMP Specifications*

BMP's shall be implemented, installed, operated, and maintained in accordance with El Paso County and the City of Colorado Springs standards and regulations.

All BMP's located on the site shall comply with the following technical standards:

- City of Colorado Springs's Drainage Criteria Manual
- El Paso County Engineering Criteria Manual

11. *Fugitive Dust and Wind Erosion Controls*

Erosion control measures will be used to mitigate erosion caused by wind. Inactive areas will be surfaced roughened to reduce wind erosion. During dry and windy conditions watering trucks will be used to water exposed, unvegetated areas with potable water to control fugitive dust and wind erosion.

The contractor shall be responsible for dust control on the site. Disturbed areas not yet ready to be seeded, landscaped, paved or otherwise stabilized shall be watered to reduce visible dust emissions.

## PROPOSED BMP SEQUENCE

The planned construction of this project will be divided into land releases. The construction of each release will be divided into 3 phases lasting approximately 3 months each. The anticipated first release, and start of construction follows:

*Phase I (May 2020 – July 2020)*

1. Demolition & Grading

    Potential pollutants include: sediment, vehicle/equipment fuels and lubricants, bituminous products (including asphalt), concrete, construction debris, trash, timber, masonry, various pipe materials, sanitary facilities.

*Phase II (August 2020 – October 2020)*

2. Access Pavement Installation

    Potential pollutants include: sediment, vehicle/equipment fuels and lubricants, solvents and paints, bituminous products (including asphalt), construction debris, trash, curing compounds. During Phase II construction, there may be overlap with construction sequences from the Phase I.

*Phase III (June 2020 – August 2020)*

3. Landscaping (will occur concurrently as grading is completed)

    Potential pollutants include: sediment, vehicle/equipment fuels and lubricants, fertilizer, herbicides, pesticides, construction debris, trash. Phase III construction will only cover seeding and mulching of disturbed areas. No fertilizer use is anticipated.

The following controls and measures will be implemented prior to and during the various sequences of construction:

*Please note - The following information has also been organized into a table format – Potential Pollutant Sources, and is located on Page 20 and on the GESC Plans located in the Appendix.*

*Phase I – Demolition, Clearing, Grubbing, Grading, and Utility Installation*

Prior to commencement of demolition, define work area and place construction fencing. Identify and control construction access points, locate stabilized staging area, haul off dumpster locations, construction trailer(s), and portable toilet facilities. Minimize disturbance to existing vegetation (i.e. utilize vegetated buffers). Provide vehicle tracking pads for disturbed access points. Install silt fence for locations down gradient of disturbed areas. Designate soil stockpile areas and provide stockpile management controls (i.e. silt fence, etc.) beyond toe of slope. Upon inspection of the initial erosion and sediment control measures, grading can commence, based on the requirements of the approved erosion control plan and the local municipality.

As grading progresses, sediment basins will be maintained during construction activities on site. Utilize surface roughening, seeding/mulching, and erosion control blanket protection upon finalization of grading activities for areas that are to be open until final seeding and/or landscaping can be completed.

1. *Underground Utility Main Installation*

   Maintain all previous controls and measures from previous phases. When trenching for utilities located outside of protected areas, silt fencing, rock socks, sediment control logs, and/or rock sock check dams shall be provided at down slope areas of disturbance when possible. Practice locating temporary spoils piles from trenching on up-gradient side of trench. Backfill utility trenches as soon as possible (after inspection).

Excess material shall be salvaged when possible, waste material will be disposed of in a legal and proper manner. Empty containers that held hazardous material such as solvents, lubricants, fuels, etc., shall be disposed of in a proper and lawful manner.

At completion of construction disturbed areas shall be paved, landscaped, reseeded, mulched and/or erosion control blanketed per the approved design documents. Erosion and sediment control measures shall remain in place until stabilization has been achieved.

*Phase II – Paving*

As construction progresses, designate the trash and recycle containers, vehicle and equipment refueling, material storage locations. Materials shall be stored within the stabilized staging area and shall be protected from the elements per the materials handling BMP procedures identified in the Appendix. Bulk stored building materials (i.e. masonry products, cement, mortar, steel products, etc.) shall be free of contact with soil and covered when possible. Materials in containers shall be protected from the elements (i.e. stored under cover) until they are properly disposed of. Equipment maintenance (whenever possible) and fueling activities shall take place within the stabilized staging area. Fuel storage areas shall be protected as a minimum with a one-foot high compacted earthen berm (or other containment device) with a total volumetric capacity at least twice that of the materials being stored, to prevent migration of any spills.

2. *Paving Installation* – Maintain all previous controls and measures from previous phases. Materials shall be stored within the stabilized staging area and shall be protected from the elements per the materials handling BMP procedures identified in the Appendix. Bulk stored building materials (i.e. masonry products, steel products, roofing materials, insulation, etc.) shall be free of contact with soil and covered when possible. Materials in containers shall be protected from the elements (i.e. stored under cover) until they are properly disposed of. Maintain area around construction activities, cleanup construction debris, and provide sweeping regularly.

## POTENTIAL POLLUTANT SOURCES

The following table identifies potential pollution sources at the project site and includes the BMP's and timing which will be utilized to control each source.

| POLLUTANT BMP TABLE | |
|---|---|
| **Potential Pollutants** | **Proposed BMPs** |
| **Phase I: Demolition and Grading** | |
| Sediment | SF, SB, VTC |
| Equipment Fuels & Lubricants | SSA, Sec. Containment, Spill Kit |
| Asphalt | Site Trash Receptacle |
| Concrete | |
| Construction Debris/Waste | Site Trash Receptacle |
| Timber | |
| Masonry | |
| Portable Toilet | SSA, Staking |
| Pipes, cables, wires | |
| **Phase II: Underground Utilities** | |
| Sediment | SF, SB, VTC |
| Equipment Fuels & Lubricants | SSA, Sec. Containment, Spill Kit |
| Adhesives | |
| Solvents | |
| Concrete | |
| Construction Debris/Waste | Site Trash Receptacle |
| Portable Toilet | SSA, Staking |
| Pipes, cables, wires | Site Trash Receptacle |
| **Phase II: Curb, Gutter, & Sidewalk** | |
| Sediment | SF, SB, VTC |
| Equipment Fuels & Lubricants | SSA, Sec. Containment, Spill Kit |
| Solvents & Paints | SSA |
| Asphalt | SSA |
| Concrete | |
| Construction Debris/Waste | Site Trash Receptacle |
| Portable Toilet | SSA, Staking |
| Curing Compounds | SSA |
| **Phase II: Building Construction** | |
| Equipment Fuels & Lubricants | SSA, Sec. Containment, Spill Kit |
| Solvents,Paints, Stains, & Varnishes | |
| Sediment | SF, SB, VTC |
| Adhesives | SSA |
| Cleaners | SSA |
| Asphalt | SSA |
| Concrete | |
| Cement, Masonry, & Grout | SSA, Sec. Containment, CWA |
| Construction Debris/Waste | Site Trash Receptacle |
| Portable Toilet | SSA, Staking |
| **Phase III: Landscaping** | |
| Sediment | SF, SB, VTC |
| Equipment Fuels & Lubricants | SSA, Sec. Containment, Spill Kit |
| Fertilizer | SSA |
| Herbicides | SSA |
| Pesticides | SSA |
| Construction Debris/Waste | Site Trash Receptacle |
| Portable Toilet | SSA, Staking |

Onsite storage of potential pollution source materials shall be at the stabilized staging area, except for soil stockpile(s) whose location(s) will be noted on the GESC plan. The GESC plan shall be continually updated should the storage location(s) and stockpile locations be moved and/or added.

Careful handling, storage, and application of these materials reduce the likelihood that these chemicals will contribute to pollution of the environment. Preventative practices are discussed in greater detail in Section III.C.4 and in Appendix C.

## NON-STORMWATER DISCHARGES

Potable water is anticipated as a non-stormwater discharge. Potable water may be used for grading, dust control, and building construction. An effort shall be made to use only the amount of potable water required for these operations. Flows from emergency firefighting activities and uncontaminated springs may also contribute to non-stormwater discharges.

Discharge to the ground of construction dewatering is not anticipated. Should dewatering become necessary for construction, land application of construction water will be an allowed non-stormwater discharge and must be carried out per the requirements described in a later section of this report.

## OUTFALL AND RECEIVING WATERS

The site resides within the West Kiowa Creek Watershed which is located near the northern boundary of El Paso County, approximately 14.5 miles east of downtown Monument, CO. This watershed begins approximately 5 miles southwest of the Winsome property and continues another 10 miles to the northeast where it outfalls into Kiowa Creek which eventually discharges into the South Platte River near Fort Morgan, CO.

## 3.0 FINAL STABILIZATION AND LONG-TERM STORMWATER QUALITY

Final stabilization of the site 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.

Planned structural practices to control pollutants in stormwater discharges that will occur after construction operations have been completed at the site will include the detention and treatment basin, and outlet protection.

All temporary erosion and sediment control measures shall be removed and disposed within 30 days after final site stabilization is achieved. Trapped sediment and disturbed soil areas resulting from the disposal of temporary measures must be returned to final plan grades and permanently stabilized to prevent further soil erosion.

### INSPECTION AND MAINTENANCE

All temporary and permanent erosion and sediment control practices shall be maintained and repaired by the contractor during the construction phases as needed to ensure continued performance of their intended function. Inspections will occur weekly, and after all major storm events. All disturbed surface areas are to be stabilized in accordance with the approved GESC or approved amendments and shall be reviewed on-site by the GESC Administrator. The GESC Administrator, or their representative, shall observe each BMP that is shown on the approved GESC exhibit or approved amendments. This review shall include completing and signing the "Field Inspection Report" (see Appendix) for each review date. Any deviations from the approved plan shall be noted on the report. The reviewer shall especially note any BMP that is not in compliance with the approved plan/approved amendments. Deficiencies that are not

immediately repairable should be reported to the construction superintendent, the owner, or their designee for instructions on how to proceed. The review shall also include, and document recommended courses of action based on the field review. All documented inspection forms shall be kept onsite and available at the construction trailer. BMP's shall be reviewed in accordance with the BMP specifications and criteria listed in the Appendix.

## 4.0 REFERENCES

1. City of Colorado Springs, Drainage Criteria Manual Volume 1, Dated October 12, 1994

2. City of Colorado Springs, Drainage Criteria Manual Volume 2

3. El Paso County, Engineering Criteria Manual, Adopted December 23, 2004, Revised December 13, 2016, Revision 6

4. Federal Emergency Management Agency, November 17, 2005. Flood Insurance Rate Map Index Map 08041CO325F and 08041CO350

5. Natural Cooperative Soil Survey, Dated March 2, 2018

6. Entech Engineering Geotechnical Report, Dated October 2, 2018

# VICINITY MAP

# VICINITY MAP

| | | | |
|---|---|---|---|
| VICINITY MAP | | | |
| WINSOME SUBDIVISION FILING 1<br><br>17480 MERIDIAN ROAD<br>ELBERT, COLORADO | File No.:<br>Date: 01/21/20<br>Drawn: JCP<br>Checked: LPV<br>Job No.: 49388 | FIGURE<br>1 | VERTEX ® |

Z:\Shared\Projects\49000-49999\49300-49399\49388.McCune Ranch\06-Engineering\Vertex Drawings\Exhibits\49388_EXH_VinMap.dwg
Tuesday, January 21, 2020 2:05:49 PM
Copyright: 2018 THE VERTEX COMPANIES, INC.

# SOILS MAP

# Soil Map—El Paso County Area, Colorado

Map Scale: 1:6,260 if printed on A landscape (11" x 8.5") sheet.

Meters: 0 50 100 200 300

Feet: 0 300 600 1200 1800

N

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

## MAP LEGEND

**Area of Interest (AOI)**

Area of Interest (AOI)

**Soils**

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

**Special Point Features**

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

**Water Features**

Streams and Canals

**Transportation**

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

**Background**

Aerial Photography

## MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 17, Sep 13, 2019

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

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

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

# Map Unit Legend

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|---|---|---|---|
| 1 | Alamosa loam, 1 to 3 percent slopes | 28.7 | 15.6% |
| 26 | Elbeth sandy loam, 8 to 15 percent slopes | 35.5 | 19.3% |
| 36 | Holderness loam, 8 to 15 percent slopes | 21.4 | 11.6% |
| 92 | Tomah-Crowfoot loamy sands, 3 to 8 percent slopes | 84.7 | 46.1% |
| 93 | Tomah-Crowfoot complex, 8 to 15 percent slopes | 13.5 | 7.4% |
| **Totals for Area of Interest** | | **183.9** | **100.0%** |

# EL PASO COUNTY CHECKLISTS AND PERMITS

# APPENDIX E CHECKLISTS AND PERMITS

As described in Appendix I, an Erosion and Stormwater Quality Control Permit is required for any project disturbing 1 acre or more of land, as well as any disturbance associated with a non-residential land use application. During the vertical building phase, builders of single-family residences and duplexes may obtain a Builders Erosion and Stormwater Quality Control Permit for each lot with a separate address instead.

Projects that go through any part of the development review process (land use applications include subdivision, site development plan, location approval, etc), shall obtain their ESQC permit from Department of Community Services, Development Services Division. Projects that are not associated with a land use application, but propose to disturb more than one acre of land (e.g. roadwork, installation of minor utility lines, maintenance/minor upgrades within existing utility corridors), shall obtain their ESQC Permits through Department of Public Services, Transportation Division (Stormwater Program).

To assist in preparing the plan sets required for the ESQCP approval, a land use committee comprised of DSD and the Housing and Building Association prepared a joint policy statement on grading, erosion control, and dust. The group sought to clarify the requirements of each plan to meet the current regulations. The effort resulted in checklists for Stormwater Management Plans and Grading and Erosion Control Plan Submittals plus Standard Notes for Grading and Erosion Control Plans.

<u>Permits – Applications</u>

Erosion and Stormwater Quality Control Permit – Issued by Department of Public Services, Transportation Division

Builders Erosion and Stormwater Quality Control Permit – Issued by Department of Department of Community Services, Development Services Division

<u>Checklists and Standard Notes</u>

El Paso County Stormwater Management Plan Checklist

El Paso County Grading and Erosion Control Plan Submittal Checklist

Standard Notes for El Paso County Grading and Erosion Control Plans

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

PERMIT NUMBER _____

***APPLICANT INFORMATION***

| **Applicant Contact Information** | |
|---|---|
| Owner | |
| Name (person of responsibility) | |
| Company/Agency | |
| Position of Applicant | |
| Address (physical address, not PO Box) | |
| City | |
| State | |
| Zip Code | |
| Mailing address, if different from above | |
| Telephone | |
| FAX Number | |
| Email Address | |
| Cellular Phone Number | |

***CONTRACTOR INFORMATION***

| Contractor | |
|---|---|
| Name (person of responsibility) | |
| Company | |
| Address (physical address, not PO Box) | |
| City | |
| State | |
| Zip Code | |
| Mailing address, if different from above | |
| Telephone | |
| FAX number | |
| Email Address | |
| Cellular Phone number | |
| Erosion Control Supervisor (ECS)* | |
| ECS Phone number* | |
| ECS Cellular Phone number* | |

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

PROJECT INFORMATION

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

FOR OFFICE USE ONLY

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

Signature of ECM Administrator: _____ Date _____

## 1.1 REQUIRED SUBMISSIONS

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

- Permit fees;
- Stormwater Management Plan (SWMP) meeting the requirements of DCM2 and ECM either as part of the plan set or as a separate document;
- Cost estimates of construction and maintenance of construction and permanent stormwater control measures (Cost estimates shall be provided on a unit cost basis for all stormwater BMPs);
- Financial surety in an amount agreeable to the ECM Administrator based on the cost estimates of the stormwater quality protection measures provided. The financial surety shall be provided in the form of a Letter of Credit, Surety with a Bonding Company, <u>or other forms acceptable to El Paso County</u>;
- Operation and Maintenance Plan for any proposed permanent BMPs; and
- **Signed Private Detention Basin/Stormwater Quality Best Management Practice Maintenance Agreement and Easement, if any Permanent Best Management Practices are to be located on site**.

## 1.2 RESPONSIBILITY FOR DAMAGE

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

To the extent allowed by law, the permit holder shall indemnify, save, and hold harmless the County and its officers and employees, including but not limited to the BOCC and ECM Administrator, from all claims, suits or actions of every name, kind and description brought for or on account of injuries to or death of any person, including but not limited to the permit holder, persons employed by the permit holder, persons acting in behalf of the permit holder and the public, or damage to property resulting from the performance of work or other activity under the permit, or arising out of the failure on the permit holder's part to perform his obligations under any permit in respect to maintenance or any other obligations, or resulting from defects or obstructions, or from any cause whatsoever during the progress of the work, or other activity or at any subsequent time work or other activity is being performed under the obligations provided by and contemplated by the permit, except as otherwise provided by state law. The permit holder waives any and all rights to any type of expressed or implied indemnity against the County, its officers or employees.

## 1.3 APPLICATION CERTIFICATION

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

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

_____ Date: _____

Signature of Applicant or Representative

_____

Print Name and Title of Applicant or Representative

Permit Fee $_____

Surcharge $_____

Financial Surety $_____ Type of Surety _____

Total $_____

# APPLICATION AND PERMIT
# BUILDERS EROSION AND STORMWATER QUALITY CONTROL PERMIT (BESQCP)

PERMIT NUMBER _____

***APPLICANT INFORMATION***

| **Applicant Contact Information** | |
|---|---|
| Owner | |
| Name (person of responsibility) | |
| Company | |
| Position of Applicant | |
| Address (physical address, not PO Box) | |
| City | |
| State | |
| Zip Code | |
| Phone | |

***CONTRACTOR INFORMATION***

| Contractor | |
|---|---|
| Name (person of responsibility) | |
| Company | |
| Position of Applicant | |
| Address | |
| City | |
| State | |
| Zip Code | |
| Phone | |

***PROJECT INFORMATION***

| **Project Specifications** | |
|---|---|
| Name and Legal Description | |
| Name of Subdivision Filing | |
| Address (or nearest major cross streets) | |
| Acreage (total and disturbed) | |
| Schedule (start and finish and date of final stabilization) | |
| Description of Project | |
| Tax Schedule Number | |

FOR OFFICE USE ONLY

The following signature from the ECM Administrator signifies the approval of this BESQCP. All work shall be performed in accordance with the permit and the El Paso County ECM Standards.

Signature of ECM Administrator: _____ Date _____

### 1.1 1.1 REQUIRED SUBMISSIONS

In addition to this completed and signed application, all permit fees must be submitted to obtain a BESQCP. Submission and review of a Stormwater Management Plan or posting of financial sureties are not required for a BESQCP.

### 1.2 1.2 RESPONSIBILITY FOR DAMAGE

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

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

### 1.3 1.3 APPLICATION CERTIFICATION

I, as the Applicant or the representative of the Applicant, hereby certify that this application is correct and complete as per the requirements presented in this application and the El Paso County Engineering Criteria Manual and Drainage Criteria Manual, Volume 2 and El Paso County Addendum. I own and will build on ten (10) or fewer lots in the referenced subdivision filing.

I understand that the Best Management Practices are to be maintained on the site and revised as necessary to protect stomwater quality as the project progresses. The site and adjacent areas will be self-inspected as often as necessary to be sure that Best Management Practices are installed correctly and functioning for each stage of construction and following each rain event.

Installation and maintenance of Best Management Practices include, but are not limited to:

- Source control and physical barriers that prevent pollutants, including sediment, from leaving the site, especially into waterways or storm drain systems. Pollutants are also to be kept off of roadways, including roadside ditches, and adjacent properties.
- Protection of downstream storm drains, channels, ponds, or waterways.
- Immediate cleanup of sediment and other pollutants that are tracked or otherwise leave the permitted site.

Examples of pollutants that must be contained and cleaned up are:

- Sediment (mud or dirt)
- Excavated or imported soil, aggregate, or rock
- Landscaping materials, including topsoil
- Concrete washout water
- Stucco
- Paints
- Solvents
- Fuels and lubricants
- Pesticides and fertilizers
- Cleaning products
- Other chemicals
- Trash, litter, garbage
- Sanitary waste (e.g. portable toilets), other animal waste

Note: El Paso County does not require that a Stormwater Management Plan (SWMP) be reviewed for a BESQCP. However, it is recommended that a SWMP be prepared and site personnel **be trained in the procedures necessary to protect stormwater quality. The measures in the** City of Colorado Springs' Drainage Criteria Manual, Volume 2, Chapter 3, and the El Paso County approved Addendum provide guidance on BMPs for construction sites. S**ites covered by BESQCPs are still subject** to any other relevant regulations such as the Colorado Discharge Permit System regulations. The permit holder is responsible for subcontractors onsite complying with the terms of the permit holder's BESQCP.

_____ Date:_____

Signature of Applicant or Representative

# EL PASO COUNTY STORMWATER MANAGEMENT PLAN CHECKLIST

Revised 5/21/07

1) Applicant (owner/ designated operator), Prepared By, SWMP Administrator, and Contractor Information.
☐

2) Table of Contents.
☐

3) Site description and location to include vicinity map (not just Section, Township, Range)
☐

4) Narrative description of construction activities proposed (e.g., may include clearing and grubbing, temporary stabilization, road grading, utility / storm installation, final grading, final stabilization, and removal of temporary control measures).
☐

5) Phasing plan – may require separate drawings indicating initial, interim, and final site phases for larger projects. Provide “living maps” that can be revised in the field as conditions dictate.
☐

6) Proposed sequence for major activities: Provide a construction schedule of anticipated starting and completion dates for each stage of land-disturbing activity depicting conservation measures anticipated, including the expected date on which the final stabilization will be completed.
☐

7) Estimates of the total site area and area to undergo disturbance.
☐

8) An estimate of runoff coefficients before and after project construction (may not be required with next State update).
☐

9) Soil erosion potential and potential impacts upon discharge.
☐

10) A description of existing vegetation at the site and percent ground cover.
☐

11) The location and description of any other potential pollution sources such as fueling (mobile or stationary), chemical storage, etc.
☐

12) Material handling to include spill prevention and response procedures.
☐

13) Spill prevention and pollution controls for dedicated batch plants.
☐

14) Other SW pollutant control measures to include waste disposal and off site soil tracking.
☐

15) The location and description of any anticipated non-stormwater components of discharge (springs, irrigation, etc.).
☐

16) The name of ultimate receiving waters; size, type and location of stormwater outfall or storm sewer system discharge.
☐

17) SWMP Map to include:

a) construction boundaries
☐

b) all areas of disturbance
☐

c) areas of cut and fill
☐

d) areas used for storage of building materials, soils or wastes (stockpiles)
☐

e) location of any dedicated asphalt / concrete batch plants
☐

f) major erosion control facilities or structures (sedimentation ponds, etc.)
☐

g) springs, streams, wetlands and other surface waters
☐

h) boundaries of FEMA mapped 100 year flood plain
☐

18) Narrative description of structural BMPs to be used, including silt fence, straw bales, check dams, sediment basins, drainage swales,etc. Ensure method is ECM / DCM approved.
☐

19) Description of non-structural BMPs to be used including seeding, mulching, protection of existing vegetation, site watering, sod placement, etc.
☐

20) Technical drawing details for BMP installation and maintenance.
☐

21) Procedure for how the SWMP will be revised.
☐

22) Description of Final Stabilization and Long-term Stormwater Quality (describe measures to control SW pollutants after construction operations have been completed.
☐

23) Provide for vegetative cover density to be 70% of pre-disturbed levels.
☐

24) Outline of permit holder inspection procedures to install, maintain, and effectively operate BMPs, to manage erosion and sediment.
☐

25) Record keeping procedures identified to include signature on inspection logs and location of SWMP records on-site.
☐

Please note: all items need to be addressed. If not applicable, explain; simply identifying “not applicable” will not satisfy CDPHE requirement of explanation.

# Joint Policy Statement on Grading, Erosion Control and Dust El Paso County Development Services Department, and Housing and Building Association – Land Use Committee

1. Summary:

Earthwork and grading operations at construction sites have long been a concern because of the potential for soil erosion carried by storm runoff and related dust generated during dry seasons. Dust first, then runoff sediment were both significant problems in El Paso County in 2006 and came to the attention of the County Commissioners, the County Health Department, and the Colorado Department of Public Health and the Environment (CDPHE). In meetings that followed, County Administration asked County Development Services Department (DSD) to work with the construction industry through the Housing and Building Association (HBA) to improve compliance with the current regulations. A working group was formed between DSD and the HBA to make improvements to processes, and make clarifications of requirements so that the result would be improved compliance (less erosion and related dust) at construction sites. The working group has met six times to date, and held "work" meetings where the current requirements were discussed and clarified in detail. The industry acknowledged that it can do a better job of compliance through required self- inspection and maintaining compliance at construction sites. The working group used the meetings to prepare submittal checklists for two of the main required documents: Grading and Erosion Control (GEC) Plans, and Storm Water Management Plans. A set of standard notes for GEC Plans was also prepared. These checklists and notes are attached. The meetings allowed for much improved understanding of specific regulations, requirements, and enforcement along with some of the challenges industry faces in maintaining compliance.

County staff believes that we are already seeing the benefit of this work in construction site compliance. No additional regulations have been proposed at this time. More thought about these issues and planning is being brought to pre-construction conferences. More attention is being paid in the field.

After endorsement from both El Paso County and the Industry, the working group proposes follow up actions. These clarifications and policies would be shared with the wider development and construction community through public workshops. A trial period of a year is proposed to allow for improvement and then evaluation of effectiveness. After that time, the working group could be convened again to make necessary changes to policies and procedures, and if necessary to propose changes to the regulations.

The sections that follow provide detailed discussion of these policies and procedures in an effort to lessen the impact of construction and to improve construction site compliance.

2. Background:

Soil erosion along with blowing dust has long been a concern in the region. Dry weather early in 2006 and blowing dust that resulted made this a significant concern on construction sites that were undergoing earthwork and grading operations. Later in 2006, the other concern over

construction site stabilization was illustrated as severe rain events threatened to send sediment laden runoff to downstream properties from many construction sites in the County.

The County development-related regulations concerning grading and erosion control requirements emphasize storm water management, water quality concerns, and prevention of soil erosion from rainfall events. It is clear that wind erosion is also a significant concern, both from the standpoint of soil transfer to surrounding properties, and the impact to public health. From ongoing experience on various construction sites it is also evident that the amount of disturbed land area actively being graded is directly related to dust production.

3. Current Regulations and Enforcement:

Dust is regulated in El Paso County by the County Health Department. Grading, Erosion Control and storm water quality is regulated in El Paso County by the County Development Services Department, the County Public Services Department under the County MS4 (Municipal Separate Storm Sewer System) storm water quality permit, and by the Colorado Department of Public Health and Environment under a Colorado Discharge Permit for each construction site.

The overlapping requirements from different jurisdictions is confusing and has added to the problem. When County DSD or DOT staff receive dust complaints, those specific complaints are turned over to the County Health Department. If a construction site in the County is implicated by the complaint, DSD inspections staff does follow up with a site visit in order to determine if non-compliance with GEC or water quality best management practices are contributing to the dust complaint. The responsibility for dust enforcement is with the Health Department, but there are times when DSD or DOT get involved with enforcement of related GEC requirements.

The County Health Department issues Construction Activity Permits for projects that disturb more than one acre of ground under the County Air Quality Regulations. The permit regulates visual dust emissions (opacity), and often sets a maximum wind speed under which earthwork activities can be performed. The regulations list control measures such as compacting, minimizing disturbed areas, phasing, watering among others that may be required in order to minimize dust. Projects larger than 25 acres, or that will exceed six months in duration are also regulated by the CDPHE Air Quality Control Commission. County Health Department enforcement includes possible revocation of the permit, and civil penalties up to $10,000.

Regulations concerning grading, erosion control and storm water quality management are primarily in the El Paso County Engineering Criteria Manual (ECM), and the City / County Drainage Criteria Manual (DCM) Volumes 1 and 2 that are administered by County DSD and DOT. Builder's Erosion and Storm water Quality Control Permits (BESQCP), and Erosion and Storm water Quality Control Permits (ESQCP) for development and larger projects are issued for construction projects under the County's MS4 permit.

The County regulations currently require that:

- "All earth disturbances shall be designed, constructed, and completed in such a manner so that the exposed area of any disturbed land shall be limited to the shortest practical period of time." (DCM, vol. 2)
- "All disturbed areas and stockpiles shall be mulched within 21 days after final grade is reached." (DCM, vol. 2)
- "The overall area being graded should be kept to a minimum per provisions presented in an approved Erosion and Stormwater Quality Control Permit (ESQCP)." (ECM)
- Areas that will be dormant for more than 30 days be stabilized by mulching. (DCM vol. 2)

- Areas that are at final grade or will be dormant for more than 60 days be stabilized by seeding and mulching (DCM vol. 2)

Enforcement provisions are carried out by DSD and DOT under the procedure provided in the ECM Appendix I and include: Letter of Non-Compliance, Stop Work Order, permit revocation, and ultimately court summons.

The Colorado Department of Public Health and Environment administers the NPDES water quality program for the EPA. CDPHE requires separate Colorado Discharge Permits for construction sites. State enforcement can include stop work orders and significant daily fines for violations.

4. County and Industry Committee Meetings:

To address the concerns over erosion, sediment and the related dust from construction sites, County DSD staff met with the County Health Department and the Housing and Building Association (HBA) land use committee. Initially, County staff discussed the possibility of specific disturbed area limits, similar to Douglas and Arapahoe County where a limit is placed on the amount of land (e.g., 40 acres, 50 acres, etc.) that could be undergoing active earth disturbance, at any given time.

In August, 2006, the HBA provided a letter to County Administration requesting that disturbed area limits not be applied. The letter requested that the County work to better enforce the existing regulations, and acknowledged that the construction industry can do a better job of compliance with the regulations. The HBA requested that a committee be set up to work on these improvements. Upon direction from County Administration, County DSD and the HBA formed a grading and erosion control working group to provide clarification of the requirements and enforcement as called for in current regulations. To date, this group has met six times.

5. Resulting Clarification of County Engineering Criteria, Grading / Erosion Control Plans and Storm Water Management Plans:

As described earlier, there are overlapping regulations in the County and at the State level concerning grading and erosion control. The County's water quality permit required by the State (MS4 permit) is fairly recent. It began in 2004 with a 5-year implementation period. The County Engineering Criteria Manual (ECM) was initially adopted in December 2004, also with an implementation period. The ECM in place now sets forth construction site requirements for grading and erosion control in Chapter 5 and in Appendix I. These current County regulations are those that implement the County's obligation under the State MS4 permit.

Two critical requirements of the ECM are Grading and Erosion Control (GEC) Plans, and Storm Water Management Plans (SWMP). Because of the overlapping regulations and permit requirements, clarifying the scope and timing of these two plans has been the main focus of the County / HBA working group. Early on, the working group determined that clarifying these plan requirements would allow for more efficient preparation and County review, and much improved construction related compliance.

Because the GEC Plan and SWMP are so inter-related, the working group sought clarification on what each plan includes, when each of the plans is actually prepared, approved and carried out.

It is clear from the ECM that GEC Plans are required to be prepared by the Professional Engineer, reviewed and approved by County DSD as part of the development related Construction Drawings. It was less clear as to when the SWMP would be required in the

development review process. Further, many of the State mandated requirements for the SWMP overlap with the GEC Plan.

Through much discussion, the working group sought to sort out the requirements and timing for each plan to meet all the current regulations. As a work product the group developed simplified checklists for both the GEC Plan and SWMP. As there has been inconsistency in the standard notes on GEC Plans that are intended to help the project stay in compliance with applicable regulations (many have evolved from other jurisdictions or old regulations, etc.), another work product was to develop together standard County notes to be placed on the GEC Plan. These checklists and standard notes are attached. The following are the resulting scope and timing policies that have resulted from the work of the working group:

Grading and Erosion Control (GEC) Plan: The intent of the GEC Plan is to provide for overall subdivision or development grading design as part of the engineering required for review and approval by the County. This plan is done at the time subdivision or development construction drawings are prepared by the Professional Engineer working for the developer. This is complex work whereby cuts and fills are analyzed for balance, slopes and contours are proposed as an integral part of the engineering design. A second important use of the GEC Plan is to estimate the cost of the overall grading, erosion control measures known as Best Management Practices (BMPs), and ultimate site stabilization. The County subdivision regulations require that collateral for these activities be posted prior to any land disturbing activity. The GEC Plan is therefore important to be completed and approved at the time of subdivision construction drawing approval so that these costs can be accurately estimated and included with the required subdivision collateral.

It was also determined that at the time of GEC Plan approval, the exact timing and phasing of the work is not always known. The exact starting date is sometimes delayed, and often the contractor that will do the earthwork is not yet under contract. The earthwork contractor has expertise in planning and phasing the earth disturbing activity to maintain compliance that is not yet a part of the project at the time of GEC Plan approval. Although overall phasing and general timing may be known and presented, the exact dates, phasing and progression of the earthwork and stabilization work is not known at plan approval. It is therefore the working group's recommendation that detailed phasing of the work and the proposed construction schedule be deferred to the required SWMP. The GEC Plan checklist and Standard Notes prepared by the working group are attached.

Storm Water Management Plan (SWMP): The SWMP is required before any ground disturbing activities. It describes in detail exactly what BMPs will be used prior to construction, during the construction period and at project closeout. It is the plan that is required to show how the project will maintain compliance throughout construction to final stabilization. The consulting engineer, the owner and contractors should collaborate on the preparation to provide the best information possible.

The SWMP does not have to be prepared by a registered Professional Engineer. The SWMP is required to be kept up to date on site by the designated permit Site Manager. On larger projects it will include "Living Maps" that are marked to show current status of disturbance, and stabilized areas. This plan is required before a notice to proceed is issued by the County and should be provided to the DSD Inspections group at least 2 weeks prior to ground disturbance. The SWMP checklist prepared by the working group is attached.

6. Enforcement of Regulations:

Concerning enforcement, the working group determined that the current County enforcement tools (i.e., Letter of Non-Compliance, Stop Work, Court injunction, etc.) are adequate. Letter of Non-Compliance and Stop Work orders have been used since the time of ECM adoption, and have been effective. During this intervening time, the CDPHE has also been active in enforcing its Colorado Discharge Permit regulations through inspection of construction projects in the unincorporated County. The State enforcement actions have also been effective. The working group is not recommending any changes to enforcement regulations at this time. The industry acknowledges that it can do a better job of self inspection and compliance with the regulations. It is the working group's belief that renewed focus on the regulations, and the beneficial clarifications in this policy will result in better compliance and a significant decrease in the concern of the public over construction related soil erosion and related dust.

Acknowledgements:

The Development Services Department and the Housing and Building Association wishes to thank the following individuals for participating in the working group meetings:

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Mike Mallon, Mallon Development Co.
Charlie Williams, Infinity Land Corp.
Brenda Quinones, Housing and Building Assoc.
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Larry Lee, Raw Land Detailing, Inc.
Mike Lee, Raw Land Detailing, Inc.
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Roger DeKloe, New Generation Homes
Mel Keys, Banning Lewis Ranch
Tara McGowan, El Paso County DSD
Larry Syslo, El Paso County DSD
Paul Danley, El Paso County DSD
Robert Wolf, El Paso County DSD
Todd Sturtevant, City Stormwater Enterprise

# EL PASO COUNTY GRADING AND EROSION CONTROL PLAN SUBMITTAL CHECKLIST

Revised 5/21/07

1) Vicinity map. ☐
2) North arrow and acceptable scale (1"=20' to 1"=100'). ☐
3) Existing and proposed Contours 2 feet or less (except for hillside). ☐
4) Standard EPC Grading and Erosion Control Notes included. ☐
5) Delineate mapped FEMA 100-yr floodplain. ☐
6) Construction site boundaries clearly delineated. ☐
7) Areas of soil disturbance shown. ☐
8) All proposed construction BMPs and Construction BMP details shown. ☐
9) Show existing vegetation. ☐
10) Existing and proposed water courses including springs, streams, wetlands, Detention ponds, roadside ditches, irrigation ditches and other water surfaces. ☐
11) Show any existing structures. ☐
12) Show all existing utilities. ☐
13) Submit geotechnical investigation from soils engineer. ☐
14) Conclusions from soils report and geologic hazards report incorporated in grading design. ☐
15) Show existing and proposed property lines and subdivision boundary. ☐
16) All existing and proposed easements (permanent and construction) including required off site easements. ☐
17) Any offsite grading clearly shown and called out. ☐
18) Existing and proposed storm drainage facilities as necessary to show all BMPs. ☐
19) Temporary sediment ponds provided for disturbed drainage areas greater than 1 acre. ☐
20) Proposed slopes steeper than 3:1 with top and toe of slope delineated. ☐
21) Erosion control blanketing shown on slopes steeper than 3:1. ☐
22) Retaining walls greater than or equal to 4ft in height require design by P.E. and building permit from Regional Building Department. Locations to be shown on the plan (not located in County ROW). ☐
23) Vehicle tracking shown at all construction entrances. ☐
24)The erosion control plan is to be certified by a Colorado Registered P.E. with appropriate signature blocks for EPC and the Engineer and the statement "The Owner will comply with the requirements of the Erosion Control Plan" signed by the owner. ☐
25) Required Signature blocks: ☐

Engineer's Statement:

This Grading and Erosion Control Plan was prepared under my direction and supervision and is correct to the best of my knowledge and belief. Said Plan has been prepared according to the criteria established by the County for Grading and Erosion Control Plans. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this report.

_____ _____

Name Date

El Paso County Grading and Erosion Control Plan

Submittal Checklist

Page 2 of 2

Owner's Statement:

The Owner will comply with the requirements of the Grading and Erosion Control Plan.

_____ _____

Name Date

El Paso County:

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

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

_____ _____

County Engineer / Director Date

Standard Notes for El Paso County Grading and Erosion Control Plans

Revised 5/21/07

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 to 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. During construction the SWMP is the responsibility of the designated Stormwater Manager, shall be located on site at all times and shall be kept up to date with work progress and changes in the field.

4. Once the ESQCP has been issued, the contractor may install the initial stage erosion and sediment control BMPs 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 DSD inspections staff.

5. 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 final earth disturbance, has been completed. Disturbed areas and stockpiles which are not at final grade but will remain dormant for longer than 30 days shall also be mulched within 21 days after interim grading. An area that is going to remain in an interim state for more than 60 days shall also be seeded. All temporary soil erosion control measures and BMPs shall be maintained until permanent soil erosion control measures are implemented and established.

6. 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.

7. All persons engaged in earth disturbance shall implement and maintain acceptable soil erosion and sediment control measures including BMPs 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).

8. All temporary erosion control facilities including BMPs 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.

9. 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.

10. 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.

11. Concrete wash water shall be contained and disposed of in accordance with the SWMP. No wash water shall be discharged to or allowed to runoff to State Waters, including any surface or subsurface storm drainage system or facilities.

12. Erosion control blanketing is to be used on slopes steeper than 3:1.

13. 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 Engineering if deemed necessary, based on specific conditions and circumstances.

14. Vehicle tracking of soils and construction debris off-site shall be minimized. Materials tracked offsite shall be cleaned up and properly disposed of immediately.

15. 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.

16. 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 system and stormwater appurtenances as a result of site development.

17. 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.

18. 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, special conditions and monitoring may be required.

19. 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.

20. No person shall cause the impediment of stormwater flow in the flow line of the curb and gutter or in the ditchline.

21. Individuals 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 included in the DCM Volume II and the ECM Appendix I. All appropriate permits must be obtained by the contractor prior to 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.

22. All construction traffic must enter/exit the site at approved construction access points.

23. Prior to actual construction the permitee shall verify the location of existing utilities.

24. A water source shall be available on site during earthwork operations and utilized as required to minimize dust from earthwork equipment and wind.

25. The soils report for this site has been prepared by _____ and shall be considered a part of these plans.

26. 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, CO 80246-1530
Attn: Permits Unit

# EL PASO COUNTY STORMWATER BMP MAINTAINANCE AGREEMENTS

# APPENDIX G STORMWATER BMP MAINTENANCE AGREEMENTS

To ensure good operation and maintenance of Post-Construction Best Management Practices (PBMPs), a responsible entity must inspect and provide appropriate services for the PBMPs. A maintenance agreement is required for this purpose. Maintenance agreements for three types of responsible entities are included in this appendix.

The maintenance agreement must cover any PBMP that is submitted as part of the water quality system, such as Extended Detention Basins and Porous Landscape Detention included in DCM2, plus any additional PBMPs such as Grassy Swales & Buffers that are used as part of "Minimizing Directly Connected Impervious Areas" (MDCIA), if they are used to decrease the size of WQCV as shown in Figure ND-1 of Drainage Criteria Manual, Volume 2.

Contents:

Private Detention Basin / Stormwater Quality Best Management Practice Maintenance Agreement and Easement

- Developer and Homeowners Association
- Developer-Owner
- Metropolitan District

**DRAFT**
**PRIVATE STORMWATER QUALITY STRUCTURAL BEST MANAGEMENT PRACTICE AGREEMENT AND EASEMENT**

This PRIVATE STORMWATER QUALITY STRUCTURAL BEST MANAGEMENT PRACTICE AGREEMENT (Agreement) is made by and between THE BOARD OF COUNTY COMMISSIONERS OF EL PASO COUNTY, COLORADO (Board or County) and _____, a Colorado Corporation ("Developer") and _____HOMEOWNERS ASSOCIATION ("Homeowners Association" or "Association"), A Colorado nonprofit corporation. The above may occasionally be referred to herein singularly as "Party" and collectively as "Parties."

Recitals

1. WHEREAS, Developer is the owner of certain real estate (the Property or Subdivision) in El Paso County, Colorado, which Property is legally described as:

More particularly described as follows:

2. WHEREAS, Developer desires to plat and develop on the Property a subdivision to be known as _____; and

3. WHEREAS, the development of this Subdivision will decrease the quality of the stormwater runoff from the Property, and, therefore, it is in the interest of public health, safety and welfare for the County to condition approval of this subdivision on Developer's promise to construct adequate drainage and stormwater quality structural Best Management Practices (BMPs) in the subdivision described as

4. WHEREAS, [insert legal citations] as periodically amended, promulgated pursuant to [insert legal citations], as amended, requires the County to condition approval of all subdivisions on a developer's promise to so construct adequate drainage and BMPs in subdivisions; and

5. WHEREAS, [insert legal citations] provides for a developer's promise to maintain a subdivision's BMPs; and

6. WHEREAS, Developer and the Association desire to construct the described BMPs as the means for providing adequate stormwater quality control in the Subdivision; and,

7. WHEREAS, the Association shall be charged in the Subdivision's Covenants with the duty of maintaining all common areas and common structures within the Subdivision, including the BMPs; and

8. WHEREAS, these BMPs when not properly cleaned, maintained, and repaired, threaten the public health, safety and welfare; and

9. WHEREAS, the County in order to so protect the public health, safety and welfare, may be required to expend valuable and limited public resources to so properly clean, maintain, and repair these BMPs when developer and homeowner's association have failed in their responsibilities, and therefore, the County desires the means to recover its costs incurred in the event the burden falls on the County to so clean, maintain and repair the BMPs in this Subdivision; and

10. WHEREAS, the County conditions approval of this Subdivision on the Developer's and the Association's promise to so construct this BMP, and conditions approval on the Association's promise to reimburse the County in the event the burden falls upon the County to so clean, maintain and/or repair the BMP in this Subdivision; and

11. WHEREAS, the County in order to secure performance of the promises contained herein, conditions approval of this Subdivision upon the Developer's grant herein of a perpetual Easement over a portion of the Subdivision for the purpose of allowing the County to periodically access, inspect, and, when so necessary, to clean, maintain and/or repair the BMPs; and

12. WHEREAS, given that the Association could potentially avoid liability hereunder by dissolving and reforming as a different entity, and given the difficulties inherent in collecting an unsecured promise, the County, in order to secure performance of the promises contained herein, conditions approval of this Subdivision upon the Developer's creation, by and through this Agreement, of a covenant running with the land upon each and every lot in the Subdivision.

## Agreement

NOW, THEREFORE, in consideration of the mutual Promises contained herein, the sufficiency of which are hereby acknowledged, the Parties agree as follows:

1. Incorporation of Recitals: The Parties incorporated the Recitals above into this Agreement.

2. Covenants Running with the Land and Pro Rata Liability upon Individual Lot Owners: Developer and the Homeowners' Association agree that this entire Agreement and the

performance thereof shall become a covenant running with the land, which land is legally described in Paragraph One (1) of the Recitals set forth above, and that this entire Agreement and the performance thereof shall be binding upon themselves, their respective successors and assigns, including individual lot owners within the Subdivision.

However, any liability imposed under this Agreement against an individual lot owner shall not be joint and several with the Developer and the Association, but shall be prorated on a per-lot basis as determined by the following formula and illustration: each individual lot owner(s) shall be liable for no more than the total monetary amount of liability multiplied by a fraction in which the numerator is the number of lots in the Subdivision owned by a particular lot owner, and the denominator is the total number of lots in the Subdivision. As to any lot(s) owned by more than one person or entity, the liability among co-owners shall be joint and several for the pro rata obligation of that lot. The application of this Paragraph is best illustrated by the following example. Assume the following parameters: total liability is $10,000; total number of lots in the Subdivision is 100; Lot 1 is owned by persons A and B; person B also owns Lot 2. Liability is as follows: The Developer, $10,000; the Association, $10,000; Lot 1 is $100.00, joint and several as to A and B, Lot 2 is $100.00 owed solely by B. Thus person A's total liability is $100.00 and Person B's is $200.00. Applying the principle that the County cannot collect more than it is owed, and assuming that the County cannot collect anything from the Developer and the Association, if the County collected the whole $200.00 from B, then it could not collect the $100.00 from A. Likewise, if the County collected the $100.00 from A, then it could only collect $100.00 from B.

3. Construction: Developer and the Homeowners' Association agree that they shall construct on [Tract _____ or Lot _____] as indicated on the final plat of the subdivision and as described below a private stormwater quality control BMP _____[specify BMP] [for multiple BMPs, insert the following here: consisting of _____( ) [specify BMP] on Tract or Lot _____ for each type of BMP used in the Subdivision. The Developer and the Homeowners' Association shall not commence construction of the BMPs until the Planning Department and the ECM Administrator have approved in writing the plans and specifications for the BMPs. Failure to obtain such approval shall be a material breach of this Agreement, and shall entitle the County to pursue any remedies available to it at law or in equity to enforce the same. Construction of the BMP must be complete prior to occupation of the site.

In the event construction is not so substantially completed within the occupation, then the County may exercise its discretion to complete the project, and shall have the right to seek reimbursement from the Developer and the Homeowners' Association and their respective successors and assigns, including individual lot owners in the Subdivision, for its actual costs and expenses incurred in the process of completing construction. The term actual costs and expenses shall be liberally construed in favor of the County, and shall include, but shall not be limited to, labor costs, tool and equipment costs, supply costs, and engineering and design costs, regardless of whether the County uses its own personnel, tools, equipment and supplies, etc. to correct the matter. In the event the County initiates any litigation or engages the services of legal

counsel in order to enforce the Provisions arising herein, the County shall be entitled to its damages and costs, including reasonable attorney fees, regardless of whether the County contracts with outside legal counsel or utilizes in-house legal counsel for the same. The scope of liability therefore of the Developer, the Association, and the individual lot owners shall be as set forth in paragraph Two (2) above.

The structural BMP shall be located on the following parcel(s) within the Subdivision:
BMP: _____Tract: _____ [or Lot: _____]

4. Maintenance: The Developer and the Association agree for themselves, their respective successors and assigns, including individual lot owners within the Subdivision, that they will regularly and routinely inspect, clean and maintain the BMP, and otherwise keep the same in good repair, all at their own cost and expense. No trees or shrubs that will impair the structural integrity of the BMP shall be planted or allowed to grow on the BMP.

5. Creation of Easement: Developer and the Association hereby grant the County a non-exclusive perpetual easement upon the entire Tract(s) [or Lot(s)] describe above. The purpose of the easement is to allow the County to access, inspect, clean, repair and maintain the BMP; however, the creation of the easement does not expressly or implicitly impose on the County a duty to so inspect, clean, repair or maintain the BMP.

6. County's Rights and Obligations: Any time the County determines, in the sole exercise of its discretion, that the BMP is not properly cleaned, maintained and/or otherwise kept in good repair, the County shall give reasonable notice to the Developer, the Association and their respective successors and assigns, including the individual lot owners within the Subdivision, that the BMP needs to be cleaned, maintained and/or otherwise repaired. The notice shall provide a reasonable time to correct the problem(s). Should the responsible parties fail to correct the specified problem(s), the County may enter upon the Property to so correct the specified problem(s). Notice shall be effective to the above by the County's deposit of the same into the regular United States mail, postage pre-paid. However, this Agreement does not expressly impose on the County a duty to so inspect, clean, repair or maintain the BMP.

7. Reimbursement of County's Costs/Covenant Running With the Land: The Developer and the Association agree and covenant, for themselves, their respective successors and assigns, including individual lot owners within the Subdivision, that they will reimburse the County for its costs and expenses incurred in the process of cleaning, maintaining, and/or repairing the BMP. However, the obligation and liability of the Developer hereunder shall only continue until such time as the Developer transfers the entire management and operation of the Association to the individual lot owners within the Subdivision. Notwithstanding the previous

sentence, the Association and the individual lot owners within the Subdivision shall always remain obligated and liable hereunder, and as per the provision of Paragraph Two (2) above.

The terms actual costs and expenses shall be liberally constructed in favor of the County, and shall include, but shall not be limited to, labor costs, tools and equipment costs, supply costs, and engineering and design costs, regardless of whether the County uses its own personnel, tools, equipment and supplies, etc. to correct the matter. In the event the County initiates any litigation or engages the services of legal counsel in order to enforce the Provision arising herein, the County shall be entitled to its damages and costs, including reasonable attorney's fees, regardless of whether the County contracts with outside legal counsel or utilizes in-house legal counsel for the same. The scope of liability therefor of the Developer, the Association, and the individual lot owners shall be as set forth in Paragraph Two (2) above.

8. Contingencies of Subdivision Approval: Developer's and the Association's execution of the Agreement is a condition of subdivision approval. Additional conditions of this Agreement include, but are not limited to the following:

a. Conveyance of Tract(s) _____ from Developer to the Association (which will include a reservation of easement in favor of the County for purposed of accessing, inspecting, cleaning, maintaining, and repairing the BMP), and recording of the Deed for the same; and

**[If not a conveyance of a fee interest but merely creating and conveying an easement on the affected lot(s), then substitute the following alternative Paragraph a:]**

a. Conveyance of easements on Lot(s) _____ from the Developer to the Association and to the County for purposes of accessing, inspecting, cleaning, maintaining, and repairing the BMP, and recording of appropriate conveyance documents for the same; and

b. The County's receipt of a copy of the Articles of Incorporation for the Association, as filed with the Colorado Secretary of State; receipt of the Certificate of Incorporation or other comparable proof for the same from the Colorado Secretary of State; a copy of the Bylaws of the Association; a copy of the organization minutes or other appropriate document of the Association, properly executed and attested, establishing that the Association has adopted this Agreement as an obligation of the Association; and

c. A copy of the Covenants of the Subdivision establishing that the Association is obligated to inspect, clean, maintain, and repair the BMP; that the Association has adopted this Agreement as an obligation of the Association; and that a funding mechanism is in place whereby individual

lot owners within the Subdivision pay a regular fee to the Association for, among other matters, the inspection, cleaning, maintenance, and repair of the BMP.

d. A copy of the Covenants of the Subdivision establishing that this Agreement is incorporated into the Covenants, and that such Agreement touches and concerns each every lot within the Subdivision.

The County shall have the right, in the sole exercise of its discretion, to approve or disapprove any documentation submitted to it under the conditions of this Paragraph. The County's rejection of any documentation submitted hereunder shall mean that the appropriate condition of this Agreement has not been fulfilled.

9. Distribution to Lot Purchasers: Upon the initial sale of any lot within the Subdivision, prior to closing on such sale, the Developer shall give a copy of this Agreement to the potential Buyer.

10. Agreement Monitored by Engineering Criteria Manual Administrator: Any and all actions and decisions to be made hereunder by the County shall be made by the Engineering Criteria Manual (ECM) Administrator. Accordingly, any and all documents, submissions, plan approval, inspections, etc. shall be submitted to and shall be made by the ECM Administrator.

11. Indemnification and Hold Harmless: To the extent authorized by law, Developer and the Association agree, for themselves, their respective successors and assigns, including the individual lot owners in the Subdivision, that they will indemnify, defend, and hold the County harmless from any and all loss, costs, damage, injury, liability, claim, lien, demand, action and causes of action whatsoever, whether at law or in equity, arising from or related to their respective intentional or negligent acts, errors, or omissions or that of its agents, officers, servants, employees, invitees and licensees in the construction, operation, inspection, cleaning (including analyzing and disposing of any solid or hazardous wastes as defined by State and/or Federal environmental laws and regulations), maintenance and repair of the BMP, and such obligation arising under this Paragraph shall be joint and several. Nothing in the Paragraph shall be deemed to waive or otherwise limit the defense available to the County pursuant to the Colorado Governmental Immunity Act, Sections 24-10-101, *et seq.* C.R.S. 2001, as amended, or as otherwise provided by law. However, the obligation and liability of the Developer hereunder shall only continue until such time as the Developer transfers the entire management and operation of the Association to the individual lot owners within the Subdivision.

12. Severability: In the event any Court of competent jurisdiction declares any part of this Agreement to be unenforceable, such declaration shall not affect the enforceability of the remaining parts of this agreement.

13. Third Parties: This Agreement does not and shall not be deemed to confer upon or grant to any third party any right to claim damages or to bring any lawsuit, action or other

proceeding against either the County, the Developer or the Association, their respective successors and assigns, including any individual lot owners in the Subdivision, because of any breach hereof or because of any terms, covenants, agreements or conditions contained herein.

14. Solid or Hazardous Wastes: Should any refuse from the BMP be suspected or identified as solid waste and/or hazardous waste, the Developer and the Association shall take all necessary and proper steps to characterize the waste and properly dispose of it in accordance with applicable State and/or Federal environmental laws and regulations, including, but not limited to, the following: Solid Wastes Disposal Sites and Facilities Acts, §§ 30-20-100.5 – 30-20-119, C.R.S. (2001) as amended, Colorado Regulations Pertaining to Solid Waste Disposal Sites and Facilities, 6 C.C.R. 1007-2, *et seq.*, as amended, Solid Waste Disposal Act, 42 U.S.C. §§ 6901-6992k (2001) as amended, and Federal Solid Waste Regulations 40 CFR Ch. I. (2001) as amended. The County shall not be responsible or liable for identifying, characterizing, cleaning up, or disposing of such solid and/or hazardous waste. Notwithstanding the previous sentence, should any refuse cleaned up and disposed of by the County be determined to be solid and/or hazardous waste, the Developer and the Association, but not the County, shall be responsible and liable as the owner, generator, and/or transporter of said solid and/or hazardous waste.

15. Applicable Law and Venue: The laws, rules, and regulations of the State of Colorado and El Paso County shall be applicable in the enforcement, interpretation, and execution of this Agreement, except that Federal law may be applicable regarding solid or hazardous wastes. Venue shall be the El Paso County District Court.

IN WITNESS WHEREOF, the Parties affix their signatures below.

Executed this _____ day of _____, _____, by:
[DEVELOPER'S NAME]:

By: _____
(Insert name)_____, President

The foregoing instrument was acknowledged before me this _____ day of _____, _____, by _____, President, _____.

Witness my hand and official seal.
My commission expires: _____

_____
Notary Public

Executed this _____ day of _____, _____, by:
_____ HOMEOWNERS ASSOCIATION, a Colorado nonprofit corporation.

By: _____
(insert name)_____, President

The foregoing instrument was acknowledged before me this _____ day of _____, _____, by _____, President, _____ Homeowners Association, a Colorado nonprofit corporation.

Witness my hand and official seal.

My commission expires: _____

_____
Notary Public

Executed this _____ day of _____, _____, by:

BOARD OF COUNTY COMMISSIONERS
OF EL PASO COUNTY, COLORADO

By: _____
_____, Chairperson

Attest:
_____
Deputy Clerk

The foregoing instrument was acknowledged before me this _____ day of _____, by_____, Chairperson of the Board of County Commissioners of El Paso County, Colorado, as Attested to by _____, Deputy Clerk to the Board of County Commissioners of El Paso County, Colorado.

Witness my hand and official seal.

My commission expires: _____

_____
Notary Public

Approved as to Content and Form:

_____
Assistant County Attorney

# PRIVATE DETENTION BASIN / STORMWATER QUALITY BEST MANAGEMENT PRACTICE MAINTENANCE AGREEMENT AND EASEMENT

This PRIVATE DETENTION BASIN / STORMWATER QUALITY BEST MANAGEMENT PRACTICE MAINTENANCE AGREEMENT AND EASEMENT (Agreement) is made by and between EL PASO COUNTY by and through THE BOARD OF COUNTY COMMISSIONERS OF EL PASO COUNTY, COLORADO (Board or County) and [Insert Lot Owner/Developer's name] (Owner or Developer). The above may occasionally be referred to herein singularly as "Party" and collectively as "Parties."

## Recitals

A. WHEREAS, Developer is the owner of certain real estate (the Property or Subdivision) in El Paso County, Colorado, which Property is legally described in Exhibit A attached hereto and incorporated herein by this reference; and

B. WHEREAS, Developer desires to plat and develop on the Property a subdivision/land use to be known as [Insert proposed subdivision/land use name]; and

C. WHEREAS, the development of this Property will substantially increase the volume of water runoff and will decrease the quality of the stormwater runoff from the Property, and, therefore, it is in the best interest of public health, safety and welfare for the County to condition approval of this subdivision/land use on Developer's promise to construct adequate drainage, water runoff control facilities, and stormwater quality structural Best Management Practices ("BMPs") for the subdivision/land use; and

D. WHEREAS, Chapter 8, Section 8.4.5 of the El Paso County Land Development Code, as periodically amended, promulgated pursuant to Section 30-28-133(1), Colorado Revised Statutes (C.R.S.), requires the County to condition approval of all subdivisions on a developer's promise to so construct adequate drainage, water runoff control facilities, and BMPs in subdivisions; and

E. WHEREAS, the Drainage Criteria Manual, Volume 2, as amended by Appendix I of the El Paso County Engineering Criteria Manual (ECM), as each may be periodically amended, promulgated pursuant to the County's Colorado Discharge Permit System General Permit (MS4 Permit) as required by Phase II of the National Pollutant Discharge Elimination System (NPDES), which MS4 Permit requires that the County take measures to protect the quality of stormwater from sediment and other contaminants, requires subdividers, developers, landowners, and owners of facilities located in the County's rights-of-way or easements to

provide adequate permanent stormwater quality BMPs with new development or significant redevelopment; and

F. WHEREAS, Section 2.9 of the El Paso County Drainage Criteria Manual provides for a developer's promise to maintain a subdivision's drainage facilities in the event the County does not assume such responsibility; and

G. WHEREAS, developers in El Paso County have historically chosen water runoff detention basins as a means to provide adequate drainage and water runoff control in subdivisions, which basins, while effective, are less expensive for developers to construct than other methods of providing drainage and water runoff control; and

H. WHEREAS, Developer desires to construct for the subdivision/land use [insert number of basins/BMPs] detention basin/stormwater quality BMP(s) ("detention basin/BMP(s)") as the means for providing adequate drainage and stormwater runoff control and to meet requirements of the County's MS4 Permit, and to operate, clean, maintain and repair such detention basin/BMP(s); and

I. WHEREAS, Developer desires to construct the detention basin/BMP(s) on property that is or will be platted as [Insert Lot or Tract identifier(s)], as indicated on the final plat of the subdivision, and as set forth on Exhibit B attached hereto; and

J. WHEREAS, Developer shall be charged with the duties of constructing, operating, maintaining and repairing the detention basin/BMP(s) on the Property described in Exhibit B; and

K. WHEREAS, it is the County's experience that subdivision developers and property owners historically have not properly cleaned and otherwise not properly maintained and repaired these detention basins/BMPs, and that these detention basins/BMPs, when not so properly cleaned, maintained, and repaired, threaten the public health, safety and welfare; and

L. WHEREAS, the County, in order to protect the public health, safety and welfare, has historically expended valuable and limited public resources to so properly clean, maintain, and repair these detention basins/BMPs when developers and property owners have failed in their responsibilities, and therefore, the County desires the means to recover its costs incurred in the event the burden falls on the County to so clean, maintain and repair the detention basin/BMP(s) serving this subdivision/land use due to the Developer/Owner's failure to meet its obligations to do the same; and

M. WHEREAS, the County conditions approval of this subdivision/land use on the Developer's promise to so construct the detention basin/BMP(s), and conditions approval on the Owner's promise to reimburse the County in the event the burden falls upon the County to so clean, maintain and/or repair the detention basin/BMP(s) serving this Subdivision; and

N. WHEREAS, the County could condition subdivision/land use approval on the Developer's promise to construct a different and more expensive drainage, water runoff control system and BMPs than those proposed herein, which more expensive system would not create the possibility of the burden of cleaning, maintenance and repair expenses falling on the County; however, the County is willing to forego such right upon the performance of Developer/Owner's promises contained herein; and

O. WHEREAS, the County, in order to secure performance of the promises contained herein, conditions approval of this subdivision/land use upon the Developer's grant herein of a perpetual Easement over a portion of the Property for the purpose of allowing the County to periodically access, inspect, and, when so necessary, to clean, maintain and/or repair the detention basin/BMP(s); and

## Agreement

NOW, THEREFORE, in consideration of the mutual Promises contained herein, the sufficiency of which are hereby acknowledged, the Parties agree as follows:

1. Incorporation of Recitals: The Parties incorporate the Recitals above into this Agreement.

2. Covenants Running with the Land: Developer/Owner agrees that this entire Agreement and the performance thereof shall become a covenant running with the land, which land is legally described in Exhibit A attached hereto, and that this entire Agreement and the performance thereof shall be binding upon itself, its successors and assigns.

3. Construction: Developer shall construct on that portion of the Property described in Exhibit B attached hereto and incorporated herein by this reference, [insert number of basins/BMPs] detention basin/BMP(s). Developer shall not commence construction of the detention basin/BMP(s) until the El Paso County Development Services Department (DSD) has approved in writing the plans and specifications for the detention basin/BMP(s) and this Agreement has been signed by all Parties and returned to the DSD. Developer shall complete construction of the detention basin/BMP(s) in substantial compliance with the County-approved plans and specifications for the detention basin/BMP(s). Failure to meet these requirements shall be a material breach of this Agreement, and shall entitle the County to pursue any remedies available to it at law or in equity to enforce the same. Construction of the detention basin/BMP(s) shall be substantially completed within one (1) year (defined as 365 days), which one year period will commence to run on the date the approved plat of this Subdivision is recorded in the records of the El Paso County Clerk and Recorder. In cases where a subdivision is not required, the one year period will commence to run on the date the Erosion and Stormwater Quality Control Permit (ESQCP) is issued. Rough grading of the detention

basin/BMP(s) must be completed and inspected by the El Paso County Development Services Department prior to commencing road construction.

In the event construction is not substantially completed within the one (1) year period, then the County may exercise its discretion to complete the project, and shall have the right to seek reimbursement from the Developer/Owner and its successors and assigns, for its actual costs and expenses incurred in the process of completing construction. The term actual costs and expenses shall be liberally construed in favor of the County, and shall include, but shall not be limited to, labor costs, tool and equipment costs, supply costs, and engineering and design costs, regardless of whether the County uses its own personnel, tools, equipment and supplies, etc. to correct the matter. In the event the County initiates any litigation or engages the services of legal counsel in order to enforce the Provisions arising herein, the County shall be entitled to its damages and costs, including reasonable attorney fees, regardless of whether the County contracts with outside legal counsel or utilizes in-house legal counsel for the same.

4. Maintenance: The Developer/Owner agrees for itself and its successors and assigns, that it will regularly and routinely inspect, clean and maintain the detention basin/BMP(s), and otherwise keep the same in good repair, all at its own cost and expense. No trees or shrubs that will impair the structural integrity of the detention basin/BMP(s) shall be planted or allowed to grow on the detention basin/BMP(s).

5. Creation of Easement: Developer/Owner hereby grants the County a non-exclusive perpetual easement upon and across that portion of the Property described in Exhibit B. The purpose of the easement is to allow the County to access, inspect, clean, repair and maintain the detention basin/BMP(s); however, the creation of the easement does not expressly or implicitly impose on the County a duty to so inspect, clean, repair or maintain the detention basin/BMP(s).

6. County's Rights and Obligations: Any time the County determines, in the sole exercise of its discretion, that the detention basin/BMP(s) is not properly cleaned, maintained and/or otherwise kept in good repair, the County shall give reasonable notice to the Developer/Owner and its successors and assigns, that the detention basin/BMP(s) needs to be cleaned, maintained and/or otherwise repaired. The notice shall provide a reasonable time to correct the problem(s). Should the responsible parties fail to correct the specified problem(s), the County may enter upon the Property to so correct the specified problem(s). Notice shall be effective to the above by the County's deposit of the same into the regular United States mail, postage pre-paid. Notwithstanding the foregoing, this Agreement does not expressly or implicitly impose on the County a duty to so inspect, clean, repair or maintain the detention basin/BMP(s).

7. Reimbursement of County's Costs / Covenant Running With the Land: The Developer/Owner agrees and covenants, for itself, its successors and assigns, that it will reimburse the County for its costs and expenses incurred in the process of completing construction of, cleaning, maintaining, and/or repairing the detention basin/BMP(s) pursuant to the provisions of this Agreement.

The term "actual costs and expenses" shall be liberally construed in favor of the County, and shall include, but shall not be limited to, labor costs, tools and equipment costs, supply costs, and engineering and design costs, regardless of whether the County uses its own personnel, tools, equipment and supplies, etc. to correct the matter. In the event the County initiates any litigation or engages the services of legal counsel in order to enforce the provisions arising herein, the County shall be entitled to its damages and costs, including reasonable attorney's fees, regardless of whether the County contracts with outside legal counsel or utilizes in-house legal counsel for the same.

8. Contingencies of Land Use/Land Disturbance Approval: Developer/Owner's execution of this Agreement is a condition of land use/land disturbance approval.

The County shall have the right, in the sole exercise of its discretion, to approve or disapprove any documentation submitted to it under the conditions of this Paragraph, including but not limited to, any separate agreement or amendment, if applicable, identifying any specific maintenance responsibilities not addressed herein. The County's rejection of any documentation submitted hereunder shall mean that the appropriate condition of this Agreement has not been fulfilled.

9. Agreement Monitored by El Paso County Development Services Department and/or El Paso County Public Services Department: Any and all actions and decisions to be made hereunder by the County shall be made by the Director of the El Paso County Development Services Department and/or the Director of the El Paso County Public Services Department. Accordingly, any and all documents, submissions, plan approvals, inspections, etc. shall be submitted to and shall be made by the Director of the Development Services Department and/or the Director of the El Paso County Public Services Department.

10. Indemnification and Hold Harmless: To the extent authorized by law, Developer/Owner agrees, for itself, its successors and assigns, that it will indemnify, defend, and hold the County harmless from any and all loss, costs, damage, injury, liability, claim, lien, demand, action and causes of action whatsoever, whether at law or in equity, arising from or related to its intentional or negligent acts, errors or omissions or that of its agents, officers, servants, employees, invitees and licensees in the construction, operation, inspection, cleaning (including analyzing and disposing of any solid or hazardous wastes as defined by State and/or Federal environmental laws and regulations), maintenance, and repair of the detention basin/BMP(s), and such obligation arising under this Paragraph shall be joint and several. Nothing in this Paragraph shall be deemed to waive or otherwise limit the defense available to the County pursuant to the Colorado Governmental Immunity Act, Sections 24-10-101, *et seq*. C.R.S., or as otherwise provided by law.

11. Severability: In the event any Court of competent jurisdiction declares any part of this Agreement to be unenforceable, such declaration shall not affect the enforceability of the remaining parts of this Agreement.

12. Third Parties: This Agreement does not and shall not be deemed to confer upon or grant to any third party any right to claim damages or to bring any lawsuit, action or other proceeding against either the County, the Developer/Owner, or their respective successors and assigns, because of any breach hereof or because of any terms, covenants, agreements or conditions contained herein.

13. Solid Waste or Hazardous Materials: Should any refuse from the detention basin/BMP(s) be suspected or identified as solid waste or petroleum products, hazardous substances or hazardous materials (collectively referred to herein as "hazardous materials"), the Developer/Owner shall take all necessary and proper steps to characterize the solid waste or hazardous materials and properly dispose of it in accordance with applicable State and/or Federal environmental laws and regulations, including, but not limited to, the following: Solid Wastes Disposal Sites and Facilities Acts, §§ 30-20-100.5 – 30-20-119, C.R.S., Colorado Regulations Pertaining to Solid Waste Disposal Sites and Facilities, 6 C.C.R. 1007-2, *et seq*., Solid Waste Disposal Act, 42 U.S.C. §§ 6901-6992k, and Federal Solid Waste Regulations 40 CFR Ch. I. The County shall not be responsible or liable for identifying, characterizing, cleaning up, or disposing of such solid waste or hazardous materials. Notwithstanding the previous sentence, should any refuse cleaned up and disposed of by the County be determined to be solid waste or hazardous materials, the Developer/Owner, but not the County, shall be responsible and liable as the owner, generator, and/or transporter of said solid waste or hazardous materials.

14. Applicable Law and Venue: The laws, rules, and regulations of the State of Colorado and El Paso County shall be applicable in the enforcement, interpretation, and execution of this Agreement, except that Federal law may be applicable regarding solid waste or hazardous materials. Venue shall be in the El Paso County District Court.

IN WITNESS WHEREOF, the Parties affix their signatures below.

Executed this _____ day of _____, 20___, by:

[Insert Developer's company name]

By: _____
[Insert name], [Insert title(President/Manager)]

The foregoing instrument was acknowledged before me this _____ day of _____, 20___, by [Insert name], [Insert title(President/Manager)], [Insert Developer's company name].

Witness my hand and official seal.

My commission expires: _____

_____

Notary Public

Executed this _____ day of _____, 20___, by:

BOARD OF COUNTY COMMISSIONERS
OF EL PASO COUNTY, COLORADO

By: _____

_____, Chair

Attest:

_____

County Clerk and Recorder

The foregoing instrument was acknowledged before me this _____ day of _____, 20___, by _____, Chair of the Board of County Commissioners of El Paso County, Colorado, as Attested to by _____, County Clerk and Recorder.

Witness my hand and official seal.

My commission expires: _____

_____

Notary Public

Approved as to Content and Form:

_____

Assistant County Attorney

# PRIVATE DETENTION BASIN / STORMWATER QUALITY BEST MANAGEMENT PRACTICE MAINTENANCE AGREEMENT AND EASEMENT

This PRIVATE DETENTION BASIN / STORMWATER QUALITY BEST MANAGEMENT PRACTICE MAINTENANCE AGREEMENT AND EASEMENT (Agreement) is made by and between EL PASO COUNTY by and through THE BOARD OF COUNTY COMMISSIONERS OF EL PASO COUNTY, COLORADO (Board or County) and [Insert Developer's company name] (Developer) and [Insert first part of Metro District name] METROPOLITAN DISTRICT (Metro District), a quasi-municipal corporation and political subdivision of the State of Colorado. The above may occasionally be referred to herein singularly as "Party" and collectively as "Parties."

## Recitals

A. WHEREAS, the District provides various municipal services to certain real property in El Paso County, Colorado referred to as [Insert development name]; and

B. WHEREAS, Developer is the owner of certain real estate (the Property or Subdivision) in El Paso County, Colorado, which Property is legally described in Exhibit A attached hereto and incorporated herein by this reference; and

C. WHEREAS, Developer desires to plat and develop on the Property a subdivision to be known as [Insert proposed subdivision name]; and

D. WHEREAS, the development of this Property will substantially increase the volume of water runoff and will decrease the quality of the stormwater runoff from the Property, and, therefore, it is in the best interest of public health, safety and welfare for the County to condition approval of this subdivision on Developer's promise to construct adequate drainage, water runoff control facilities, and stormwater quality structural Best Management Practices ("BMPs") for the subdivision; and

E. WHEREAS, Chapter 8, Section 8.4.5 of the El Paso County Land Development Code, as periodically amended, promulgated pursuant to Section 30-28-133(1), Colorado Revised Statutes (C.R.S.), requires the County to condition approval of all subdivisions on a developer's promise to so construct adequate drainage, water runoff control facilities, and BMPs in subdivisions; and

F. WHEREAS, the Drainage Criteria Manual, Volume 2, as amended by Appendix I of the El Paso County Engineering Criteria Manual (ECM), as each may be periodically amended, promulgated pursuant to the County's Colorado Discharge Permit System General

Permit (MS4 Permit) as required by Phase II of the National Pollutant Discharge Elimination System (NPDES), which MS4 Permit requires that the County take measures to protect the quality of stormwater from sediment and other contaminants, requires subdividers, developers, landowners, and owners of facilities located in the County's rights-of-way or easements to provide adequate permanent stormwater quality BMPs with new development or significant redevelopment; and

G. WHEREAS, Section 2.9 of the El Paso County Drainage Criteria Manual provides for a developer's promise to maintain a subdivision's drainage facilities in the event the County does not assume such responsibility; and

H. WHEREAS, developers in El Paso County have historically chosen water runoff detention basins as a means to provide adequate drainage and water runoff control in subdivisions, which basins, while effective, are less expensive for developers to construct than other methods of providing drainage and water runoff control; and

I. WHEREAS, Developer desires to construct for the subdivision [insert number of basins/BMPs] detention basin/stormwater quality BMP(s) ("detention basin/BMP(s)") as the means for providing adequate drainage and stormwater runoff control and to meet requirements of the County's MS4 Permit, and to provide for operating, cleaning, maintaining and repairing such detention basin/BMP(s); and

J. WHEREAS, Developer desires to construct the detention basin/BMP(s) on property that is or will be platted as [Insert Lot or Tract identifier(s)], as indicated on the final plat of the subdivision, and as set forth on Exhibit B attached hereto; and

K. WHEREAS, Developer shall be charged with the duty of constructing the detention basin/BMP(s) and the Metro District shall be charged with the duties of operating, maintaining and repairing the detention basin/BMP(s) on the Property described in Exhibit B; and

L. WHEREAS, it is the County's experience that subdivision developers and property owners historically have not properly cleaned and otherwise not properly maintained and repaired these detention basins/BMPs, and that these detention basins/BMPs, when not so properly cleaned, maintained, and repaired, threaten the public health, safety and welfare; and

M. WHEREAS, the County, in order to protect the public health, safety and welfare, has historically expended valuable and limited public resources to so properly clean, maintain, and repair these detention basins/BMPs when developers and property owners have failed in their responsibilities, and therefore, the County desires the means to recover its costs incurred in the event the burden falls on the County to so clean, maintain and repair the detention basin/BMP(s) serving this Subdivision due to the Developer's or the Metro District's failure to meet its obligations to do the same; and

N. WHEREAS, the County conditions approval of this Subdivision on the Developer's promise to so construct the detention basin/BMP(s), and further conditions approval on the Metro District's promise to reimburse the County in the event the burden falls upon the County to so clean, maintain and/or repair the detention basin/BMP(s) serving this Subdivision; and

O. WHEREAS, the County could condition subdivision approval on the Developer's promise to construct a different and more expensive drainage, water runoff control system and BMPs than those proposed herein, which more expensive system would not create the possibility of the burden of cleaning, maintenance and repair expenses falling on the County; however, the County is willing to forego such right upon the performance of Developer's and the Metro District's promises contained herein; and

P. WHEREAS, the County, in order to secure performance of the promises contained herein, conditions approval of this Subdivision upon the Developer's grant herein of a perpetual Easement over a portion of the Property for the purpose of allowing the County to periodically access, inspect, and, when so necessary, to clean, maintain and/or repair the detention basin/BMP(s); and

Q. WHEREAS, Pursuant to Colorado Constitution, Article XIV, Section 18(2) and Section 29-1-203, Colorado Revised Statutes, governmental entities may cooperate and contract with each other to provide any function, services, or facilities lawfully authorized to each.

## Agreement

NOW, THEREFORE, in consideration of the mutual Promises contained herein, the sufficiency of which are hereby acknowledged, the Parties agree as follows:

1. Incorporation of Recitals: The Parties incorporate the Recitals above into this Agreement.

2. Covenants Running with the Land: Developer and the Metro District agree that this entire Agreement and the performance thereof shall become a covenant running with the land, which land is legally described in Exhibit A attached hereto, and that this entire Agreement and the performance thereof shall be binding upon themselves, their respective successors and assigns.

3. Construction: Developer shall construct on that portion of the Property described in Exhibit B attached hereto and incorporated herein by this reference, [insert number of basins/BMPs] detention basin/BMP(s). Developer shall not commence construction of the

detention basin/BMP(s) until the El Paso County Development Services Department (DSD) has approved in writing the plans and specifications for the detention basin/BMP(s) and this Agreement has been signed by all Parties and returned to the DSD. Developer shall complete construction of the detention basin/BMP(s) in substantial compliance with the County-approved plans and specifications for the detention basin/BMP(s). Failure to meet these requirements shall be a material breach of this Agreement, and shall entitle the County to pursue any remedies available to it at law or in equity to enforce the same. Construction of the detention basin/BMP(s) shall be substantially completed within one (1) year (defined as 365 days), which one year period will commence to run on the date the approved plat of this Subdivision is recorded in the records of the El Paso County Clerk and Recorder. Rough grading of the detention basin/BMP(s) must be completed and inspected by the El Paso County Development Services Department prior to commencing road construction.

In the event construction is not substantially completed within the one (1) year period, then the County may exercise its discretion to complete the project, and shall have the right to seek reimbursement from the Developer and its respective successors and assigns, for its actual costs and expenses incurred in the process of completing construction. The term actual costs and expenses shall be liberally construed in favor of the County, and shall include, but shall not be limited to, labor costs, tool and equipment costs, supply costs, and engineering and design costs, regardless of whether the County uses its own personnel, tools, equipment and supplies, etc. to correct the matter. In the event the County initiates any litigation or engages the services of legal counsel in order to enforce the Provisions arising herein, the County shall be entitled to its damages and costs, including reasonable attorney fees, regardless of whether the County contracts with outside legal counsel or utilizes in-house legal counsel for the same.

4. Maintenance: The Metro District agrees for itself and its successors and assigns, that it will regularly and routinely inspect, clean and maintain the detention basin/BMP(s), and otherwise keep the same in good repair, all at its own cost and expense. No trees or shrubs that will impair the structural integrity of the detention basin/BMP(s) shall be planted or allowed to grow on the detention basin/BMP(s).

5. Creation of Easement: Developer hereby grants the County and the Metro District a non-exclusive perpetual easement upon and across that portion of the Property described in Exhibit B. The purpose of the easement is to allow the County and the Metro District to access, inspect, clean, repair and maintain the detention basin/BMP(s); however, the creation of the easement does not expressly or implicitly impose on the County a duty to so inspect, clean, repair or maintain the detention basin/BMP(s).

6. County's Rights and Obligations: Any time the County determines, in the sole exercise of its discretion, that the detention basin/BMP(s) is not properly cleaned, maintained and/or otherwise kept in good repair, the County shall give reasonable notice to the Developer, the Metro District and their respective successors and assigns, that the detention basin/BMP(s) needs to be cleaned, maintained and/or otherwise repaired. The notice shall provide a reasonable time to correct the problem(s). Should the responsible parties fail to correct the specified

problem(s), the County may enter upon the Property to so correct the specified problem(s). Notice shall be effective to the above by the County's deposit of the same into the regular United States mail, postage pre-paid. Notwithstanding the foregoing, this Agreement does not expressly or implicitly impose on the County a duty to so inspect, clean, repair or maintain the detention basin/BMP(s).

7. Reimbursement of County's Costs / Covenant Running With the Land: The Developer and the Metro District agree and covenant, for themselves, their respective successors and assigns, that they will reimburse the County for its costs and expenses incurred in the process of completing construction of, cleaning, maintaining, and/or repairing the detention basin/BMP(s) pursuant to the provisions of this Agreement.

The term "actual costs and expenses" shall be liberally construed in favor of the County, and shall include, but shall not be limited to, labor costs, tools and equipment costs, supply costs, and engineering and design costs, regardless of whether the County uses its own personnel, tools, equipment and supplies, etc. to correct the matter. In the event the County initiates any litigation or engages the services of legal counsel in order to enforce the provisions arising herein, the County shall be entitled to its damages and costs, including reasonable attorney's fees, regardless of whether the County contracts with outside legal counsel or utilizes in-house legal counsel for the same.

8. Contingencies of Subdivision Approval: Developer's and the Metro District's execution of this Agreement is a condition of subdivision approval. Additional conditions of this Agreement include, but are not limited to, the following:

a. Conveyance of [Insert Lot, Tract or easement identifier(s)], as indicated on the final plat of the subdivision, from Developer to the Metro District (which will include a reservation of easement in favor of the County for purposes of accessing, inspecting, cleaning, maintaining, and repairing the detention basin/BMP(s)), and recording of the Deed for the same; and

b. A copy of the Covenants of the Subdivision, if applicable, establishing that the Metro District is obligated to inspect, clean, maintain, and repair the detention basin/BMP(s).

The County shall have the right, in the sole exercise of its discretion, to approve or disapprove any documentation submitted to it under the conditions of this Paragraph, including but not limited to, any separate agreement or amendment, if applicable, identifying any specific maintenance responsibilities not addressed herein. The County's rejection of any documentation submitted hereunder shall mean that the appropriate condition of this Agreement has not been fulfilled.

9. Agreement Monitored by El Paso County Development Services Department and/or El Paso County Public Services Department: Any and all actions and decisions to be made hereunder by the County shall be made by the Director of the El Paso County Development Services Department and/or the Director of the El Paso County Public Services Department. Accordingly, any and all documents, submissions, plan approvals, inspections, etc. shall be submitted to and shall be made by the Director of the Development Services Department and/or the Director of the El Paso County Public Services Department.

10. Indemnification and Hold Harmless: To the extent authorized by law, Developer and the Metro District agree, for themselves, their respective successors and assigns, that they will indemnify, defend, and hold the County harmless from any and all loss, costs, damage, injury, liability, claim, lien, demand, action and causes of action whatsoever, whether at law or in equity, arising from or related to their respective intentional or negligent acts, errors or omissions or that of their agents, officers, servants, employees, invitees and licensees in the construction, operation, inspection, cleaning (including analyzing and disposing of any solid or hazardous wastes as defined by State and/or Federal environmental laws and regulations), maintenance, and repair of the detention basin/BMP(s), and such obligation arising under this Paragraph shall be joint and several. Nothing in this Paragraph shall be deemed to waive or otherwise limit the defense available to the County pursuant to the Colorado Governmental Immunity Act, Sections 24-10-101, *et seq*. C.R.S., or as otherwise provided by law.

11. Severability: In the event any Court of competent jurisdiction declares any part of this Agreement to be unenforceable, such declaration shall not affect the enforceability of the remaining parts of this Agreement.

12. Third Parties: This Agreement does not and shall not be deemed to confer upon or grant to any third party any right to claim damages or to bring any lawsuit, action or other proceeding against either the County, the Developer, the Metro District, or their respective successors and assigns, because of any breach hereof or because of any terms, covenants, agreements or conditions contained herein.

13. Solid Waste or Hazardous Materials: Should any refuse from the detention basin/BMP(s) be suspected or identified as solid waste or petroleum products, hazardous substances or hazardous materials (collectively referred to herein as “hazardous materials”), the Developer and the Metro District shall take all necessary and proper steps to characterize the solid waste or hazardous materials and properly dispose of it in accordance with applicable State and/or Federal environmental laws and regulations, including, but not limited to, the following: Solid Wastes Disposal Sites and Facilities Acts, §§ 30-20-100.5 – 30-20-119, C.R.S., Colorado Regulations Pertaining to Solid Waste Disposal Sites and Facilities, 6 C.C.R. 1007-2, *et seq*., Solid Waste Disposal Act, 42 U.S.C. §§ 6901-6992k, and Federal Solid Waste Regulations 40 CFR Ch. I. The County shall not be responsible or liable for identifying, characterizing, cleaning up, or disposing of such solid waste or hazardous materials. Notwithstanding the previous sentence, should any refuse cleaned up and disposed of by the County be determined to be solid waste or hazardous materials, the Developer and the Metro District, but not the County, shall be

responsible and liable as the owner, generator, and/or transporter of said solid waste or hazardous materials.

14. Applicable Law and Venue: The laws, rules, and regulations of the State of Colorado and El Paso County shall be applicable in the enforcement, interpretation, and execution of this Agreement, except that Federal law may be applicable regarding solid waste or hazardous materials. Venue shall be in the El Paso County District Court.

15. Limitation on Developer's Obligation and Liability: The obligation and liability of the Developer hereunder shall only continue until such time as the Final Plat as described in Paragraph Three (3) of the Recitals set forth above is recorded and the Developer completes the construction of the detention basin/BMP(s) and transfers all applicable maintenance and operation responsibilities to the Metro District. By execution of this agreement, the Metro District agrees to accept all responsibilities and to perform all duties assigned to it, including those of the Developer, as specified herein, upon transfer of [Insert Lot, Tract or easement identifier(s)] from Developer to the Metro District.

IN WITNESS WHEREOF, the Parties affix their signatures below.

Executed this _____ day of _____, 20___, by:

[Insert Developer's company name]

By: _____
[Insert name], [Insert title(President/Manager)]

The foregoing instrument was acknowledged before me this _____ day of _____, 20___, by [Insert name], [Insert title(President/Manager)], [Insert Developer's company name].

Witness my hand and official seal.

My commission expires: _____

_____
Notary Public

Executed this _____ day of _____, 20___, by:

[Insert first part of Metro District name] METROPOLITAN DISTRICT

By: _____
[Insert name], President

Attest:

By: _____
[Insert name], [Insert title]

The foregoing instrument was acknowledged before me this _____ day of _____,

20___, by [Insert name], President, and [Insert name], [Insert title], [Insert first part of Metro District name] METROPOLITAN DISTRICT

Witness my hand and official seal.

My commission expires: _____

_____
Notary Public

Executed this _____ day of _____, 20___, by:

BOARD OF COUNTY COMMISSIONERS
OF EL PASO COUNTY, COLORADO

By: _____

_____, Chair

Attest:

_____
County Clerk and Recorder

The foregoing instrument was acknowledged before me this _____ day of _____, 20___, by _____, Chair of the Board of County Commissioners of El Paso County, Colorado, as Attested to by _____, County Clerk and Recorder.

Witness my hand and official seal.

My commission expires: _____

_____

Notary Public

Approved as to Content and Form:

_____

Assistant County Attorney

# EL PASO COUNTY STORMWATER QUALITY POLICY AND PROCEDURES

# APPENDIX I STORMWATER QUALITY POLICY & PROCEDURES

## I.1 TITLE

This appendix is called the "El Paso County Addendum to the Colorado Springs Drainage Criteria Manual, Volume 2: Stormwater Quality Policies, Procedures and Best Management Practices (BMPs)" (DCM2) and shall be referred to throughout the text as the Addendum.

## I.2 OVERVIEW

As part of the National Pollutant Discharge Elimination System (NPDES)-Phase II program administered by the Colorado Department of Public Health and the Environment, El Paso County has a Colorado General Discharge Permit for Stormwater Discharges Associated with Municipal Separate Storm Sewer Systems (MS4 Permit). This Permit, made effective March 10, 2003, authorizes El Paso County to discharge stormwater associated with municipal separate storm sewers in its permitted area into waters of the State. As part of this permit, the County is required to take measures to protect the quality of stormwater from contaminants, including sediment.

The El Paso County Policy Plan, adopted January 20, 1998, includes several policies directly related to protecting the quality of surface water in the County, especially as it relates to stormwater runoff. Policy 2.1.1 commits the County to meeting the requirements of the Clean Water Act.

Directly related to the NPDES programs are:

- Policy 3.3.4 – Implement appropriate measures to protect and/or mitigate effects of point and non-point sources of pollution to surface water,
- Policy 3.3.5 – Regulate or restrict uses that are proven to contribute to contamination of water supplies,
- Policy 3.3.6 – Evaluate the consequences to surface water from new development including run off of natural soils, as well as chemical compounds that may result from the proposed uses,
- Policy 11.1.4 – Require development plans to effectively address both quantitative and qualitative impacts of drainage within the project site,
- Policy 11.3.3 – Fully evaluate the relative impact of proposed drainage improvements on the maintenance of water quality,
- Policy 11.3.4 – Promote the effective use of innovative short and long term strategies including sediment ponds, buffer strips, and constructed wetlands as a means of reducing peak flows and improving stormwater quality, and
- Policy 11.3.6 – Encourage the effective use of control measures to mitigate the short and long term erosion impacts of development.

The following Addendum, when combined with the City of Colorado Springs Drainage Criteria Manual Volume 2: Stormwater Quality Policies, Procedures and Best Management Practices, El Paso County Policy Plan, El Paso County Land Development Code, El Paso County Engineering Criteria Manual, and their successors, forms the basis for protecting surface water quality in the County by reducing exposure of stormwater runoff to contaminants.

Nothing contained herein relieves any person, corporation, firm or entity from the obligation to comply with any applicable state or federal laws or regulations relating to water quality or water quality standards or any other standards related to land disturbance activities.

## I.3 ADOPTION OF DRAINAGE CRITERIA MANUAL VOLUME 2 BY EL PASO COUNTY

In November of 2002, the City of Colorado Springs adopted Drainage Criteria Manual Volume 2: Stormwater Quality Policies, Procedures and Best Management Practices (BMPs). The goal of this document is to provide guidance and engineering criteria for water quality protection measures during construction and for permanent installations.

DCM2 is adopted as the County's stormwater quality design criteria with this Addendum that provides additions and revisions as applicable to the County in order to expand its scope to cover rural areas and other situations specific to the County. The goal has been to maintain consistency between criteria used in the County and the City of Colorado Springs.

To clarify applicability, "El Paso County" will be substituted for "City of Colorado Springs" or a County department or position analogous to one in the City will be used where appropriate unless otherwise specified in this Addendum. Table I-1 summarizes the most common or typical substitutions that shall be used in applying and interpreting DCM2. An example of a section where substitution would not be appropriate is the discussion of Colorado Springs' stormwater discharge permit in Section 2.3 which is different in history and requirements from that of the County.

***Table I-1. General Substitutions***

| Text in DCM2 | Substitution in DCM2 as Applied in El Paso County |
|---|---|
| City of Colorado Springs | El Paso County |
| City | County |
| City Engineer | County Engineer |
| City Engineering Inspector | County Inspector |
| City Inspections | County Inspections |
| Erosion and Stormwater Quality Control Plan | Stormwater Management Plan |
| **Other Changes** | |
| Hillside Overlay | Remove references to "Hillside Overlay" |

## I.4 EL PASO COUNTY EROSION AND STORMWATER QUALITY CONTROL PERMITS

An overview of the two types of erosion and stormwater quality permits issued by El Paso County is provided in section 5.6 of the ECM. The following section provides specific stormwater permit application requirements and permit holder responsibilities for construction activities that occur within the unincorporated areas of El Paso County.

### I.4.1 Erosion and Stormwater Quality Control Permit

An Erosion and Stormwater Quality Control Permit (ESQCP) is required for construction activities that result in land disturbance of greater than or equal to (≥) one acre. An ESQCP is required for construction of less than (<) one acre if the activity is part of a larger common plan of development or sale that would disturb one acre or more of ground surface. Refer to Table I-2 for additional criteria to determine applicability of an

ESQCP. Ground surface disturbing activities include, but are not limited to, clearing, grading, excavating, demolition, installation of new or improved haul roads, staging areas, stockpile and borrow areas. Measures to protect water quality are to be implemented when needed as determined by an El Paso County Inspector, even if a permit is not required. The ESQCP is the key part of protecting water quality in the County and provides for detailed and specific Best Management Practices (BMPs) during construction through final stabilization.

Storm Sewer Connections:

An ESQCP may be used as a storm sewer connection permit to allow for a connection to the El Paso County separate storm sewer system. Those cases are limited to entities that possess their own Colorado Discharge Permit System permit for stormwater discharges, the land disturbances is less than one acre and not part of a larger common plan of development or sale.

**A. Application**

Applications for ESQCPs generally are submitted to the El Paso County Development Services Department as part of a Land Use application. For projects not involved in the Land Use application process, an ESQCP application must be submitted to the Public Services Department at least ten (10) days prior to the anticipated start of construction. The owner or operator of the construction activity must submit an ESQCP application with all required material listed below to allow for review and approval of the permit.

No work shall begin until the ECM administrator, or his designee, issues a Notice to Proceed under an approved Land Use application. Typically the Notice to Proceed is issued as part of the preconstruction conference held by Development Services Department staff. For ESQCP issued by the Public Services Department, a separate written Notice to Proceed is provided with the approved ESQCP.

Applications for an ESQCP shall include a completed permit application form and any required attachments reasonably necessary to review and evaluate the application or complete the permit. Generally, an application for an ESQCP shall be accompanied by the following:

**1. Stormwater Management Plan (SWMP)**

The goal of a SWMP is to identify possible pollutant sources that may contribute to stormwater pollution, 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 prior to the time construction starts. The SWMP shall be submitted as a separate, stand-alone document from the engineering plan set submitted for review and approval.

El Paso County uses a checklist to perform a completeness review of the initially submitted SWMP. The SWMP is intended to be a dynamic

document and must be revised as construction proceeds to accurately reflect the current conditions and Best Management Practices in use at the site. A copy of the checklist can be found in Appendix E.

**2. Permit Fee**

Permit fees must be paid at the time of application for a permit. If the ESQCP and associated documents are reviewed as part of the Land Use application process, the ESQCP permit fee is included in the fee for plan review. If the ESQCP and associated documents are reviewed by the Public Services Department, a separate permit fee payment must be made. The permit fee shall be in a form acceptable to the ECM Administrator. Permit fees are non-refundable.

**3. Financial Surety**

Financial surety equal to the estimated cost of all construction Best Management Practices and permanent Best Management Practices as described in the SWMP shall be required with each ESQCP application. The El Paso County Surety Estimate form found in Appendix H of the Engineering Criteria Manual must be used to calculate the surety amount. The financial surety shall be in a form acceptable to the ECM Administrator. The following are exempt from ESQCP Financial Surety requirements: special districts, utilities governed by the State Public Utilities Commission and municipalities.

**4. Statement of Certification**

Signed statement from owner (applicant) certifying that the SWMP and other terms of the permit will be met.

**5. Operation and Maintenance Plan**

Submitted and approved Operation and Maintenance Manual for Permanent BMPs, if any to be located on site.

**6. Maintenance Agreement**

Submitted and signed Private Detention Basin / Stormwater Quality Best Management Practice Maintenance Agreement and Easement, if any Permanent Best Management Practices are to be located on site.

**7. Application Information**

- Property location and legal description
- Owner Name and Contact Information
- Contractor Name and Contact Information
- Project-related information such as: total acres, disturbed acres, brief description of project, and project schedule

- El Paso County Surety Estimate form that contains cost estimates of Construction and Maintenance of Control Measures for determination of Financial Surety

Because each permit and site is different with respect to the scope of work and location, additional requirements may be added to address specific concerns relative to the proposed work. Attached to each approved permit will be a list of Special Provisions, if any, which shall govern the work and set forth minimum requirements for disturbing land in the County.

**B. Permit Holder Responsibilities**

The permit holder shall be responsible for the work authorized under the permit. Should there be any defects or failures in the work that result in erosion or sediment releases, following preliminary acceptance, corrective work shall be performed immediately upon notification from the County Stormwater Staff or County Subdivision Inspector. Failure to respond in a reasonable time frame, as determined by the County Stormwater Staff, shall be just cause for the County Stormwater Staff to take the necessary action to have the defect corrected and to bill the permit holder or draw on the financial assurance for the cost to correct the defect.

The permit holder is responsible for subcontractors and others at the site meeting the provisions of the SWMP. The permit holder is responsible for determining the need for and obtaining other required permits. A State General Permit for Stormwater Discharges from Construction Activities may be required if criteria for an ESQCP is met.

Upon completion of the permitted project, the permit holder is responsible for contacting the County, in writing to request closure of the permit. Permit Closure will be granted when all of the following conditions are met:

- Construction is complete and final stabilization has been achieved. Final stabilization will be achieved when re-vegetation efforts result in at least 70% of pre-disturbance vegetative cover at the site or equivalent permanent structural erosion and sediment control methods have been employed;
- All temporary BMPs have been removed from the site;
- A copy of the Construction Stormwater Inactivation Notice submitted to the Colorado Department of Public Health and Environment is provided to the County.

**C. Transfer of Property and Permit Holder Responsibilities**

Each successive owner of a property through the land development and building process will obtain its own ESQCP and submit its own permit fees and financial surety until final stabilization is achieved. The new owner of a property that is under an open ESQCP must immediately obtain its own ESQCP. The SWMP

from the previous owner may be used, if the previous owner agrees, it covers the phases of work planned by the new owner and it remains relevant to the work to be done. If the new owner will be building single-family residences or duplexes, it may qualify for a BESQCP. The BESQCP is to be obtained immediately following purchase.

When a property is covered by an ESQCP, construction is complete, final stabilization has not occurred, and more than one lot of the covered property is sold to another party (e.g., a home builder or private investor) the previous owner (i.e., current permit holder) is responsible for installing all necessary temporary erosion and sediment control BMP's and informing the new property owner in writing of their responsibility to maintain the temporary BMP's until final stabilization (e.g., landscaping) has been installed. Upon closing of the sale, the previous owner will then be allowed to modify the ESQCP by notifying a county stormwater inspector in writing by providing them with a copy of the "Notice of Reassignment of Permit Coverage and General Permit Application Stormwater Discharges Associated with Construction Activities," which should be provided to the State of Colorado, when applicable. The Stormwater Management Plan must also be revised to account for the change in permit area coverage. Following the transfer and issuance of an ESQCP (or BESQCP as described below), the original owner may receive a partial release of the financial assurance proportional to the BMPs on the part of the property that was sold.

In situations where a BMP that provides protection for property that has been sold is located on the property that belongs to the original or other owner, the responsibility for the BMP rests with the owner of the property where it is located.

### I.4.2 Builder's Erosion and Stormwater Quality Control Permit

Builders of single family residences or duplexes may follow a simplified procedure by obtaining a Builder's Erosion and Stormwater Quality Control Permit (BESQCP) for each lot and structure with a separate address. A BESQCP is used to protect stormwater on individual building lots with < 1 acre of total disturbed area. A property must be covered by either an ESQCP or BESQCP in order to obtain a building permit.

If the lot has been disturbed previously by construction work but has been completely stabilized and any ESQCP on the property has been closed, the lot may be considered undisturbed. A builder that has acquired a single residential lot that is covered by an ESQCP and the property has not been stabilized nor the ESQCP closed, the builder must obtain a new BESQCP to cover the future construction activity of single residential lots or duplexes.

#### A. Application

Applications for a BESQCP shall include a completed permit application form and any required attachments reasonably necessary to review and evaluate the application or complete the permit, a signed statement from the owner (applicant) certifying the terms of the permit will be met, and a permit fee. Financial surety or

a SWMP are not required for a BESQCP. However, a site covered by a BESQCP is required to meet stormwater quality protection criteria of preventing pollutants, including sediment, from leaving the site. If a BESQCP is revoked, the applicant will obtain an ESQCP, including the submission of a SWMP and payment of permit fee and financial surety.

Table I-2 provides guidance on which permit is to be obtained for various situations.

***Table I-2. ESQCP and BESQCP Permit Guidance***

| ESQCP | BESQCP | Description |
|---|---|---|
| **For Developers** | | |
| X | | Disturbs >= 1 acre |
| X | | Disturbs < 1 acre, but part of larger project that disturbs >= 1 acre |
| X | | New ESQCP required when developer acquires disturbed land previously or currently covered by an ESQCP unless meets criteria for BESQCP. |
| **For Builders** | | |
| No | No | Single family residence or duplex building site disturbs < 1 acre that is not part of larger project and is not in a sensitive area[1]. |
| | X | Single family residence or duplex site that has < 1 acre of disturbed areas and the site is not currently covered by an ESQCP and site is not in sensitive area. |
| X | | Single family residence or duplex site that has < 1 acre of disturbed areas and the site is currently covered by an ESQCP and site is not in sensitive area. |
| X | | Single family residence or duplex building site that has <1 acre of disturbed area and the site has been covered by ESQCP in the past and is in sensitive area. |
| X | | Single family residence or duplex building site that disturbs ≥ 1 acre that has not previously been covered by an ESQCP. |
| X | | Commercial or multi-family building sites other than duplexes that disturbs ≥ 1 acre of land. |
| X | | Commercial building sites that disturbs < 1 acre of land that are located within a sensitive area, or have potential stormwater discharges of concern[2] to the ECM Administrator. |

NOTES:
1. Sensitive Areas are defined as those waters identified in Table I-5 of the ECM; and any other areas of concern identified by the ECM Administrator, such as endangered species habitat area, jurisdictional wetlands, flood plains or direct discharges to waters of the state.
2. "Potential stormwater discharges of concern," include possible discharges from commercial sources with ability to cause water quality violations or acutely toxic conditions in receiving waters. Examples of sources include, but are not limited to, auto salvage yards, auto repair facilities, industrial sources, restaurants.

**B. Permit Holder Responsibilities**

The builder permit holder (owner) is responsible for subcontractors and others at the site to meet the provisions requirements of the BESQCP. The permit owner is responsible for determining the need for and obtaining other required permits. A State General Permit for Stormwater Discharges Associated with Construction Activities may be required.

The BESQCP owner is responsible for closure of the BESQCP upon completion of the project. To close a BESQCP all the following requirements must be met:

- Notify a County Inspector in writing that all work under the Building Permit is complete and request closure of the BESQCP;
- The site is stabilized to prevent sediment transport off the lot;
- All temporary BMPs have been removed.

**C. Transfer of Property and Permit Holder Responsibilities**

If a single residential lot covered by a ESQCP is sold prior to completion of construction and final stabilization of the lot has not been achieved, the new owner must obtain a BESQCP and will become responsible for achieving final stabilization of the lot. Only when a new BESQCP is obtained by the new owner will the ESQCP holder be allowed to modify the ESQCP to remove the sold lot from permit coverage.

**D. Reassignment of Permit Coverage**

When a property is covered by a ESQCP, construction is complete, final stabilization has not occurred, and the property is sold to a private home owner the current permit holder is responsible for installing all necessary temporary erosion and sediment control BMP's and informing the new property owner, in writing, of their responsibility to maintain the temporary BMP's until final landscaping has been installed. Upon closing of the sale, the previous owner will then be allowed to remove the sold property from the ESQCP coverage by notifying a county stormwater inspector in writing.

## I.5 EL PASO COUNTY CONSTRUCTION SITE INSPECTIONS

[Replaces DCM2 Section 3.4]

Inspections of construction sites are conducted by the County Inspectors (Stormwater and Subdivision) to ensure compliance with the SWMP and associated county permits.

The focus of construction sites inspections is to ensure construction is in compliance with the approved plans and that BMPs are installed and maintained consistent with the onsite SWMP to prevent erosion, sediment transfer, spillage and leakage, improper sludge or waste disposal, and drainage from raw material storage from leaving the site creating negative public safety, property or stormwater quality impacts.

Inspections also serve as a means of educating owners/owner's representatives, developers, and contractors of the need to minimize negative stormwater quality impacts from the site operations and to assist in complying with the requirements of the County's Stormwater Program. As such County Inspectors will take a compliance assistance approach and will work with and assist the owner/owner's representative and contractor to maintain compliance with its approved plans and erosion and stormwater quality control requirements.

### I.5.1 County Engineering and Subdivision Inspections

County Engineering Inspections shall be accomplished by County Inspectors (Stormwater and Subdivision) for the purpose of assuring compliance with the County's General Permit for Stormwater Discharges Associated with Municipal Separate Storm Sewer Systems (MS4). Projects located in the unincorporated areas of El Paso County with an active ESQCP issued by the Public Services Department shall be inspected by County Stormwater Inspectors. Projects located within the unincorporated areas of El Paso County with an ESQCP associated with Land Use Permits or Construction Permits issued by Development Services Department will be inspected by County Subdivision Inspectors. County Stormwater Inspectors typically will perform Reconnaissance, Compliance, Complaint Response, and Follow up inspections.

County Subdivision Inspectors and County Stormwater Inspectors may share duties.

Inspections are not limited to new development and may be performed on any other land-disturbing activities except agriculture and mineral extraction that occur in unincorporated areas of the County.

County Subdivision Inspections of installed BMPs shall be accomplished by County Subdivision Inspectors. The types of inspections that County Subdivision Inspectors will perform are the Initial, Compliance, Follow-up, and Acceptance Inspections.

### I.5.2 Types of Inspections

The following are inspections that may be performed at the construction sites within the unincorporated areas of El Paso County. Not all inspection types will be performed at all sites.

#### A. Self-Monitoring Inspections

The permit holder or authorized agent shall conduct Self-Monitoring Inspections. The purpose of these Self-Monitoring inspections is to ensure that all BMPs are installed according to approved plans, the BMPs are being properly maintained and the SWMP is updated to reflect current conditions. The person performing the inspections must be a registered Professional Engineer in Colorado, a certified erosion control specialist, or certified in a regionally recognized inspection training program. The person performing inspections should be a person with authority to expend project dollars on erosion and stormwater quality control.

The self monitoring inspections are to be performed and documented at least once every 14 calendar days. In addition to the bi-weekly inspections the owner or representative shall perform inspections of all BMPs after any precipitation or snowmelt event that causes surface erosion to insure that the BMPs have operated as designed, to determine if maintenance is needed, and to locate and clean up any areas where materials have run off site. The owner or his representative will record the results of all inspections by completing a copy of the Field Inspection Report or similar inspection checklist included in the SWMP.

Completed inspection reports shall be kept on site and available to County Inspectors (Stormwater and Subdivision). The County may require the submission of these inspection reports on a site-specific basis. Self-monitoring inspections are required on all construction sites, even if an ESQCP or BESQCP is not required.

The owner or representative may request an alternative to the 14 day self monitoring inspection cycle discussed above. Self Monitoring Inspections of stormwater best management practices may be requested for at least once every month (i.e., 30 days) for permitted construction sites where all construction activity is completed except final stabilization because planted vegetative cover has not yet become established. Self Monitoring Inspections after precipitation events are not required during an approved 30 day inspection cycle.

**B. Initial Inspections for Sites Covered by ESQCPs**

Initial inspections are to confirm that the SWMP is being implemented prior to the start of construction. The Initial Inspection must be scheduled at least 48 hours in advance. At the time of the Initial Inspection, the Initial BMPs must have been implemented according to the SWMP. No other land disturbing activity shall occur prior to the Initial Inspection. This inspection also serves to establish contact between Inspectors and the site personnel responsible for implementing the approved plans. This is especially important for those sites that have a long construction period or the potential to have a significant impact. These inspections are documented on the Field Inspection Report.

For projects permitted through the Development Services Department, during the Preconstruction Conference a County Inspector will provide the permit owner with an overview of initial BMPs expected to be installed prior to construction as outlined in the grading, erosion, and sediment control plans and/or SWMP and a timeline for completion of installation will be determined. Typically, a Notice to Proceed with initial temporary BMP installation will be given to the permit holder during the Preconstruction meeting. Upon installation of initial BMPs the permit holder (owner) or representative shall request an Initial Inspection by a County Inspector. Following a satisfactory Initial Inspection and verification that all required permits have been obtained by the permit holder (owner), a written Notice to Proceed will be provided for construction within two county working days after completion of an acceptable Initial Inspection.

For projects permitted through the Public Services Division, upon approval of the ESQCP and after an Initial Inspection a written Notice to Proceed will be provided to the permit owner or owner's representative.

Failure to install initial BMPs, pass an Initial Inspection, or obtain a Notice to Proceed prior to beginning land disturbing activities may result in an immediate Stop Work Order.

Initial Inspections and Notices to Proceed are not required for sites with BESQCPs.

**C. Compliance Inspections**

Compliance Inspections are routine inspections conducted by County Inspectors (Stormwater and Subdivision) to ensure that the SWMP is being implemented. Compliance Inspections may occur during or immediately after a precipitation event.

During Compliance Inspections the County Inspectors (Stormwater and Subdivision) verify that the BMPs are installed and functioning according to design; only allowable discharges are occurring; the required Self Monitoring Inspections and associated documentation of activities are occurring; and the SWMP map is revised to reflect current site conditions. The County Inspectors will examine the SWMP, and Self Monitoring inspection reports and will evaluate installed BMPs to identify any installation, maintenance or effectiveness issues to determine compliance with the ESQCP.

Compliance Inspections are typically conducted for sites that require an ESQCP and are located within the urbanized areas of unincorporated El Paso County. The County uses the Field Inspection Report to document Compliance Inspections. A copy of the completed report will be provided to the permit holder (owner) typically within two County work days following the inspection.

**D. Reconnaissance Inspections**

Reconnaissance Inspections occur on a routine basis and are conducted for the general purpose of determining obvious compliance issues at the site. Particular attention is paid to determine if the site has contributed to offsite transfer of sediment or other pollutants to roads, drainage facilities, or surface water bodies and if any obvious BMP maintenance is needed.

Reconnaissance Inspections are generally performed from off-site on adjacent streets or property, and may occur during or immediately after a significant precipitation event. The Reconnaissance Inspection will be documented using the Field Inspection Report and a copy of the completed report will be provided to the permit owner.

A Reconnaissance inspection with cause could result in requiring a site that previously was not permitted, to submit a permit application and obtain an ESQCP or BESQCP.

**E. Complaint Response Inspections**

These Compliant Response Inspections will occur in response to either a citizen complaint or a complaint from another County agency. The County Inspectors (Stormwater and Subdivision) will inform the permit holder or authorized agent of the complaint, determine the validity of the complaint, and if necessary, advise on the necessary repair, maintenance or cleanup. The County Inspectors (Stormwater and Subdivision) may also require the implementation of specific measures or additional BMPs to prevent the recurrence of the problems that

gave rise to the complaint. All construction sites are subject to complaint response inspections. The Complaint Response Inspection will be documented using the Field Inspection Report.

**F. Follow-up Inspections**

Follow-up Inspections are conducted to ensure that measures or requirements from a previous inspection have been performed or complied with. These requirements may involve the cleanup of a discharge, implementing additional or revised BMPs, repairing, re-installing, or maintaining damaged or non-functioning BMPs. All construction sites are subject to Follow-up Inspections. The Follow-up Inspection will be documented using the Field Inspection Report.

Reconnaissance, Complaint and Follow-up Inspections will be used for construction sites with BESQCPs.

**G. Final Inspection**

At the completion of a project, when the ESQCP permit holder (owner) believes conditions in section I.4.3 are met and a request to close the ESQCP is received by the County, a County Inspector will perform a final inspection to verify the conditions required to close the permit are met. If so confirmed during the ESQCP Final Inspection, the County will provide the permit holder (owner) a written notice of permit closure using the Field Inspection Form.

During ESQCP Final Inspection, the following items will be evaluated in addition to the requirements listed in section I.4.3.

- The site has final stabilization equal to a uniform vegetative cover with a density of at least 70 percent compared to the pre-disturbance levels and such cover is capable of adequately controlling soil erosion, as determined by the County Inspectors (Stormwater and Subdivision), or equivalent permanent, structural erosion and sediment control methods have been employed.
- Any sediment or other pollutant that may have been transferred off-site has been removed.
- The site shall be free of noxious weeds or treated according to an approved Noxious Weed Control Plan.
- All approved permanent (post construction) BMPs have been maintained and are functioning in accordance with the design and with the Operation and Maintenance Manual.
- Streets, parking lots and other paved surfaces (on-site and off-site) are free of sediment and debris.
- Drainage structures such as pipes, inlets and channels are clean and in good service.
- The site is in compliance with required corrective action identified during previous Inspections.

Upon a satisfactory Final ESQCP Inspection the County will initiate the Surety Release process.

### I.5.3 Frequency and Types of Inspections of Construction Sites

The frequency and type of inspections conducted by County Inspectors (Stormwater and Subdivision) will depend on the characteristics of the site, the type or phase of construction and the potential for the site to impact stormwater quality and other areas of environmental concern. The level of construction activity throughout the County and availability of staff resources will also factor into the decision. Key factors involved in the decision that relate to construction and the site are:

- The size of the disturbed area.
- The length of time that the site will be left disturbed.
- The proximity of the construction site to areas of environmental concern.
- Past experiences with the permit holder.
- The phase of construction.
- Season of land disturbing activity.

## I.6 CONSTRUCTION STORMWATER ENFORCEMENT

[Replaces DCM2 Section 3.5]

As part of the effective stormwater protection and erosion control, a series of enforcement measures will be followed to ensure compliance with the County's stormwater program.

The County considers the owner of the land the ultimate responsible party for all construction activities. It is the responsibility of the owner to take all necessary measures to ensure that the site is in compliance with County resolutions and Construction Permit, Stormwater Management Plan and the Erosion and Stormwater Quality Control Permit or Builder's Erosion and Stormwater Quality Control Permit.

In addition to County requirements, the owner must meet State and Federal regulatory requirements for permits and BMPs. The County has tried to make its requirements consistent with State requirements for construction activities (CDPS General Permit – Stormwater Discharges Associated with Construction Activities). Should requirements conflict, it will be the responsibility of the owner to bring these conflicts to the County's attention and propose how to address them.

Whenever a Stop Work Order is issued, it will be the County's policy to stop any or all related work activities or further approvals relative to the site until the necessary measures are taken to address the concerns, as stipulated in the Stop Work Order.

In cases where the ECM Administrator deems it necessary to address a construction site with more aggressive action, the El Paso County Ordinance 07-01: Prohibiting Illicit Discharges to the County Storm Sewer System may be used, as appropriate, to address the site. Additional information on the County's Enforcement Procedures is discussed in Section I.6.2.

## I.6.1 Definitions

### A. Stop Work Order

A Stop Work Order is a written order to immediately cease construction activity at a site. The Stop Work Order may be issued by the ECM Administrator, or County Stormwater staff and Subdivision Inspectors to the permit holder or authorized agent of a construction site. An immediate Stop Work Order shall be issued when the property owner has failed to obtain an ESQCP, BESQCP, or a Notice to Proceed prior to land-disturbing activity. A Stop Work Order may also be issued if the site operator has demonstrated obvious non-compliance with the ESQCP or BESQCP after repeated attempts by the Inspector to bring the site into compliance. When the Stop Work Order is issued, it requires all work on the site to cease until the permit holder (owner) takes the measures necessary to bring the site into compliance. A written notice to resume construction activity will be provided in the Field Inspection Report, upon a Follow up Inspection by a County Inspector to verify satisfactory completion of required corrective actions identified in the Stop Work Order.

### B. Inspection

The term “inspection” refers to an evaluation of compliance with the SWMP, approved plans and permits for a construction site, which is performed by a County Inspector. (Stormwater or Subdivision). For the purposes of Appendix I, inspections performed by County Inspectors include, but are not limited to: Initial Inspections, Compliance Inspections, Reconnaissance Inspections, Complaint Response Inspections, Follow-Up Inspections, and ESQCP Final Inspections. Self Monitoring inspections are performed by the permit holder (owner) or authorized agent.

### C. Stormwater Management Plan

A Stormwater Management Plan (SWMP) is a plan developed in compliance with the content requirements in the “CDPS General Permit and El Paso County Stormwater Quality Policy and Procedures”. A copy of the SWMP Checklist can be found in Appendix E. The SWMP shall be a separate, stand alone document from the engineering plan set. The purpose of the SWMP is to develop and document a systematic approach 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 negative water quality impacts. The SWMP must be completed and implemented prior to beginning ground disturbing activities, and revised as construction proceeds to accurately reflect the conditions and practices at the site.

Revisions must be made to the SWMP before changes are made in the field. A map showing the current location, status and changes to the BMPs are required. The owner or his representative shall keep records of the BMPs as they are installed or removed according to the SWMP.

A current copy of the SWMP, which documents real-time conditions in the field must be maintained and kept on the site during all times of construction.

Given the dynamic nature of the SWMP, the following guidance is provided for making in-field modifications to BMPs based on Self Monitoring Inspections. Changes to BMPs identified in the SWMP may be completed in the field without approval from the County when:

- The BMP is a temporary BMP;
- The change results in a comparable BMP. Examples include but are not limited to, silt fence replaced with a wattle, rock check dam replaced with straw bale check, erosion control mat used in place of straw mulch, etc.,
- Prior to installation, the change is reflected in the on-site SWMP including a BMP detail for the new BMP.

Changes to permanent BMPs or any other BMP change that will affect the approved engineering design, hydraulics or hydrology must be approved by the ECM Administrator, or designee, through the established plan modification process.

**D. Erosion and Stormwater Quality Control Permit**

An Erosion and Stormwater Quality Control Permit (ESQCP) is a County permit developed to comply with the County's MS4 Permit. An ESQCP is issued typically for construction sites that disturb ≥ 1 acre of land. Application requirements and permit holder responsibilities are discussed in Section I.4.1. The permit authorizes the implementation of the approved erosion and stormwater quality control measures and allowable stormwater discharges from construction sites.

**E. Builder's Erosion and Stormwater Quality Control Permit**

A Builder's Erosion and Stormwater Quality Control Permit (BESQCP) is a County permit developed to address stormwater discharges associated with the construction of single family residential lots and duplexes with less than one acre of land disturbance. Application requirements and permit holder responsibilities are discussed in Section I.4.5.

**F. Notice to Proceed**

A Notice to Proceed is a written notice provided by the County after an ESQCP is approved. The notice allows for the implementation of initial BMPs and commencement of construction activities upon completion of an Initial Inspection. Construction is authorized only after issuance of a Notice to Proceed.

**G. Letter of Noncompliance**

A Letter of Noncompliance is a written notice provided by a County Inspector (Stormwater or Subdivision) to the permit holder (owner) and contractor to notify them that the permitted project is not in compliance with the SWMP, requirements of the ESQCP, or BESQCP are in noncompliance with the

requirements of County criteria, codes or ordinance relating to grading, erosion, and stormwater quality. The letter contains a description of the measures required to bring the site into compliance and a date by which these measures must be implemented.

**H. Performance or Contracting of Remedial Work**

If the permit holder does not successfully complete all required work or violates any requirement of the permit, the County may take corrective measures and charge the cost of such to the permit holder. Such costs shall include the actual cost of any work deemed necessary by the County plus reasonable administrative and inspection costs and penalties, as established by Resolution adopted by the Board of County Commissioners or by a fee schedule adopted by the ECM Administrator as authorized by the Board of County Commissioners. If the total of such costs exceeds the financial assurance, the permit holder shall be responsible for payment of the remaining balance within thirty calendar days of receipt of an accounting of such from the County.

### I.6.2 Enforcement Procedures

When the County performs inspections at construction sites, it notes those areas that need to be addressed to bring the site into compliance with its ESQCP. A time frame for addressing any noncompliance is included in the inspection report as a required follow-up action. Based on a review of the site, the inspector will list the actions that are needed. The Inspector will determine if a Follow-Up Inspection is needed or if submission of information that verifies that the necessary actions were taken is adequate. Subdivision Inspectors or County Engineering Stormwater Staff may initiate Letters of Non-compliance.

There are several situations where the County may determine that more aggressive action is necessary to get the site into compliance with its permit. The first situation is when there are impacts on public safety, property or water resources. This could include, but is not limited to, the deposition of sediment on a roadway that has the potential to cause accidents, the deposition of materials into water ways, the wash out of channels, spills of toxic materials, or deposition of sediment that causes or has the potential to cause property damage. The magnitude of the impacts will determine what action is appropriate.

Another instance that may result in more aggressive action is when the history of the permit holder or authorized agent suggests that a more formal action is necessary. Problems that may warrant such action include:

- Where the same problem is reoccurring at the site.
- Where the site appears to be having frequent minor problems.
- The individuals involved repeatedly fail to comply with required corrective measures.
- The individuals involved have a history of noncompliance.

There are several options for formal action that are available to the County. Table I-3 summarizes some of the more common options. The County may take other action as deemed appropriate. In cases where deemed appropriate by the ECM Administrator the El Paso County Ordinance 07-01: Prohibiting Illicit Discharges to the County Storm Sewer System may be used, as appropriate, to address compliance issues at a site meeting the criteria listed in this section.

It is expected that under normal conditions the progression of enforcement actions is a Letter of Noncompliance, then a Stop Work Order, then a revocation of the ESQCP or BESQCP. Once a permit has been revoked, it will be necessary to submit or resubmit a SWMP and permit application to the County. An El Paso County Court Summons may be issued for noncompliance with a Stop Work Order or other situations as outlined in DCM2 and ECM.

## I.7 NEW DEVELOPMENT STORMWATER MANAGEMENT

### I.7.1 New Development Planning

[Replaces DCM2 Section 4.1, pages 4-1 through “Other BMPs” continued on 4-5]

#### A. Overview

This chapter contains guidance and requirements for the selection and siting of structural BMPs for new development and significant redevelopment. Guidance is provided within the context of a flow chart and a four-step process to be followed for new site developments and significant redevelopments.

Detailed descriptions, sizing and design criteria, and design procedures for these BMPs are provided in the New Development BMP Factsheets. It is recommended that discussions and collaboration regarding proposed BMPs occur early in each project between the developer’s planner and engineer, County Stormwater and County Development Services Review staff. These Section 4.0 requirements shall be incorporated into existing ECM Administrator submittals for review and acceptance including Preliminary/Final Drainage Reports and construction plans, or as otherwise specified by the ECM Administrator.

#### B. BMPs for New Development or Significant Redevelopment

For the purpose of defining when permanent water quality BMPs are required, “New Development and Significant Redevelopment” are defined as:

- <u>All sites that include total development/redevelopment areas of one (1) acre or larger except developments with low density (rural) housing (2.5 acre or larger lots).</u> Water Quality Capture Volume (WQCV), as discussed later in DCM2, shall be provided for the total site or individual lots/parcels. Other permanent BMPs may also be required as appropriate.
- <u>Development/redevelopment areas of low density (rural) housing (2.5 acre or larger lots). WQCV is not required, but may be considered, in</u>

addressing stormwater protection in rural subdivisions. Sediment control BMPs for lots and roads must be provided. If a legal entity that will provide maintenance such as a Homeowners' Association is in place, a BMP serving several lots may be used. Otherwise, sediment control BMPs must be included on each lot. If a pollution source other than normal residential activities is present, stormwater quality protection measures such as spill control measures and WQCV-based BMPs must be implemented.

- All sites in any zone that include total development/redevelopment areas of one (1) acre or larger for which stormwater quantity detention is required, as specified in the approved Final Drainage Report. WQCV shall be incorporated into stormwater quantity detention basins as discussed later in this section. Retrofitting of existing stormwater quantity detention facilities may be possible. The method for feasibility analysis of retrofitting is referenced below and in DCM2. If retrofitting is not feasible, a new BMP(s) will be required. Other permanent BMPs may also be required as appropriate.

***Table I-3. Enforcement Options***

| Enforcement Option | Description | Typical Applications |
|---|---|---|
| Letter of Noncompliance | This is a letter written to the owner and contractor. It contains a description of the problem, the measures required to bring the site into compliance and a timeframe for completion of those measures. | (1) No immediate danger to the public safety, property or water resources.<br>(2) Compliance has not been achieved while working with the owner/representative or contractor.<br>(3) When the County wants to document ongoing problems and agreed upon follow-up. |
| Stop Work Order | This Stop Work Order requires the owner and contractor to stop all activity on the site except for the work necessary to bring the site into compliance with its ESQCP or BESQCP. Depending on the compliance problem and the County's past experience with the individuals involved, the County may impose the Order on only a portion of the site. | (1) Used when there is an immediate threat to the public safety, property or water resources.<br>(2) Used when the site has failed to comply with the Letter of Noncompliance.<br>(3) Used when land disturbance occurs before issuance of an approved Land Use Permit, Construction Permit, ESQCP or Notice to Proceed. |
| Permit Revocation | The County may revoke the ESQCP or BESQCP if the requirements of the SWMP are not implemented. Revocation of the permit has the same effect as a Stop Work Order, except that the owner will need to resubmit an adequate SWMP, a Grading Plan, if required, a new ESQCP application and ESQCP Fee. | (1) Used when the site has failed to comply with the Stop Work Order.<br>(2) Used when the current plan has been judged to be inadequate, and the owner and/or contractor have failed to take the necessary measures to improve the plan.<br>(3) Used when the owner and/or contractor repeatedly failed to comply with required corrective measures. |
| Performing Remedial Work | A County crew or a private contractor may be retained to perform remedial work. The cost of the work may be deducted from the Financial Assurance. | (1) Used when high risk situation is imminent.<br>(2) Used when permit holder is intransigent about non-compliance. |
| § 30-28-124, Colorado Revised Statutes | Misdemeanor criminal charge, with a maximum penalty of $100 and/or 10 days in jail, with each day the violation continues a separate offense. | Used when the site has failed to comply with the Stop Work Order. |
| § 30-28-124.5, Colorado Revised Statutes | Civil enforcement action, resulting in injunction, civil penalties between $500-1000, and daily penalties up to $100 per day. | Used when the site has failed to comply with the Stop Work Order. |

- All other sites that do not meet the above requirements may be required to provide permanent water quality BMPs, if significant water quality impacts are anticipated as a result of development/redevelopment of the site, as determined by County Stormwater staff. Sensitive and high risk sites are discussed below.

The intent of permanent BMPs is that they be placed prior to the stormwater runoff being discharged to State Waters. However, downstream BMPs (such as detention ponds or improved channels) may also be acceptable if there are minimal impacts to State Waters between the downstream BMP and the area of new development/redevelopment. At a minimum, grass buffer or swales or equivalent BMPs are required before stormwater reaches the State Waters. With increased impacts, other permanent BMPs may also be required on or adjacent to the site or in combination with new/retrofitted downstream BMPs. When determining the need for permanent BMPs for reaches of State Waters above downstream BMPs, consideration will be given to, but not limited to the following: overall assessment of water quality impacts/benefits (including looking at the intervening reach between the development site and any downstream BMP), other BMPs incorporated into the overall site, costs, and long-term maintenance viability.

Whenever practical, the County promotes permanent BMPs for all sites.

## I.7.2 BMP Selection

The selection of appropriate BMPs is based on the characteristics of the site and potential pollutants. The Four-Step Process provides a method of going through the selection process. Figure I.1 and Figure I.2 with annotations covers site-specific issues to be considered in selecting an effective BMP for each site.

### A. Four-Step Process

The following four-step process is recommended for selecting structural BMPs in newly developing and redeveloping urban areas:

**Step 1: Employ Runoff Reduction Practices**

To reduce runoff peaks and volumes from urbanizing areas, employ a practice generally termed “minimizing directly connected impervious areas” (MDCIA). The principal behind MDCIA is twofold -- to reduce impervious areas and to route runoff from impervious surfaces over grassy areas to slow down runoff and promote infiltration. The benefits are less runoff, less stormwater pollution, and less cost for drainage infrastructure. There are several approaches to reduce the effective imperviousness of a development site:

**Reduced Pavement Area**

Sometimes, creative site layout can reduce the extent of paved areas including parking, thereby saving on initial capital cost of pavement and then saving on pavement maintenance, repair, and replacement over time.

**Porous Pavement**

The use of modular block porous pavement or reinforced turf in low-traffic zones such as parking areas and low use service drives such as fire lanes can significantly reduce site imperviousness. This practice may reduce the extent and size of the downstream storm sewers and detention.

**Grass Buffers**

Draining impervious areas over grass buffers slows down runoff and encourages infiltration, in effect reducing the impact of the impervious area.

**Grass Swales**

The use of grass swales instead of storm sewers slows down runoff, promotes infiltration, and also reducing effective imperviousness. It also may reduce the size and cost of downstream storm sewers and detention.

Implementing these approaches on a new development site is discussed further in the DCM2 section titled Employing Runoff Reduction Techniques. This section provides a procedure for estimating a reduced imperviousness based on the use of grass buffers and swales. The latter three of the approaches for reducing imperviousness are structural BMPs and are described in detail in Section 4.2 of DCM2 (New Development BMP Factsheets):

- Grass Buffer.
- Grass Swale.
- Modular Block Porous Pavement (or Stabilized-Grass Porous Pavement).

**Step 2: Stabilize Drainageways**

Drainageway, natural and manmade, erosion can be a major source of sediment and associated constituents, such as phosphorus. Natural drainageways are often subject to bed and bank erosion when urbanizing areas increase the frequency, rate, and volume of runoff. Therefore, drainageways are required to be stabilized. One of three basic methods of stabilization may be selected.

**Constructed Grass, Riprap, or Concrete-Lined Channel**

These methods of channel stabilization have been in practice for some time. The water quality benefit associated with these channels is the reduction of severe bed and bank erosion that can occur in the absence of a stabilized channel. On the other hand, the hard-lined low flow channels that are often used do not offer much in the way of water quality enhancement or wetland habitat. The use of riprap or concrete lined flood conveyance channels is not recommended, unless hydraulic

or physical conditions require such an alternative. Rock lined low-flow channels in many cases may be a better alternative.

**Stabilized Natural Channel**

In practice, many natural drainageways in and adjacent to new developments are frequently left in an undisturbed condition. While this may be positive in terms of retaining desirable riparian vegetation and habitat, urban development may cause the channel to become destabilized. When degradation occurs in these drainageways, significant erosion, loss of riparian and aquatic habitat, and elevated levels of sediment and associated pollutants can result. Therefore, it is recommended that some level of stream stabilization always be considered. Small grade control structures sized for a 5-year or larger runoff event are often an effective means of establishing a mild slope for the baseflow channel and arresting stream degradation. Severe bends or cut banks may also need to be stabilized. Such efforts to stabilize a natural waterway also preserve and promote natural riparian vegetation which can provide paybacks in terms of enhanced aesthetics, habitat, and water quality.

One additional method of drainageway stabilization gives special attention to stormwater quality and is described in Section 4.2 (New Development BMP Factsheets):

- Constructed Wetland Channel.

**Step 3: Provide Water Quality Capture Volume (WQCV)**

All sites defined as "New Development and Significant Redevelopment" and all sites requiring stormwater quantity detention, as listed above in the Section I.7.1B, shall address stormwater quality by providing the WQCV. One or more of six types of water quality basins, each draining slowly to provide for long-term settling of sediment particles, may be selected. Information on selecting and configuring one or more of these WQCV facilities at a site is provided in the section providing Water Quality Capture Volume (WQCV). These six BMPs are also described in detail in the New Development BMP Factsheets:

- Porous Pavement Detention
- Porous Landscape Detention
- Extended Detention Basin
- Sand Filter Extended Detention Basin
- Constructed Wetland Basin
- Retention Pond

**Step 4: Consider Need for Industrial and Commercial BMPs**

If a new development or significant redevelopment activity is planned for an industrial or commercial site, the need for specialized BMPs must be considered. Two approaches are described in the New Development BMP Factsheets:

- Covering of Storage/Handling Areas
- Spill Containment and Control

Other Specialized BMPs may also be required

**B. Other Specialized BMPs**

The Technical Advisory Committee (TAC) selected the above structural BMPs after a comprehensive screening of known structural BMPs. The members of TAC included representatives from many city and County agencies and individuals from the development community. Final selection by TAC was based on the review of documentation on potential effectiveness in a semiarid climate, local applicability, maintenance considerations, and cost.

Development and evaluation of permanent BMPs are continuing processes. Better designs of the BMPs included in DCM2 and designs of new BMPs, including manufactured (proprietary) BMPs, will be developed and tested. To allow for this progress, additional BMPs will be considered on a case-by-case basis by County Stormwater Staff. Design and sizing details and results of independent testing of the BMP in conditions similar to those at the site will be submitted demonstrating that the BMP will meet or exceed the performance of approved BMPs for the site.

To promote improvement in stormwater protection, County Stormwater Staff may approve promising BMPs on an experimental basis. A performance monitoring program to be pre-approved by County Stormwater Staff and an agreement to replace the Experimental System with an approved system should it not function to the required level of performance, both at the owner's expense, will be required. Design of an experimental BMP is not to commence until after a meeting with County Stormwater Staff is held.

**C. Guidance for Selecting and Locating WQCV Facilities**

[The following section replaces DCM2 Section 4.1 pages 4-19 through 4-23]

Laying out WQCV facilities within a development site and watershed requires thought and planning. This planning and decision-making should occur during a master drainage planning process (Drainage Basin Planning Study or Master Development Drainage Plan) undertaken by local jurisdictions or a developer's engineer. Such plans, studies or other reports may depict a recommended approach for implementing WQCV on a watershed basis. Such reports may call for a few large regional WQCV facilities, smaller sub-regional facilities, or alternatively an onsite approach. It is always a good idea to find out if a master

planning study has been completed that addresses water quality and to attempt to follow the Plan's recommendations.

If the master drainage planning process addresses water quality, the following provides supplemental information on the BMPs. If the existing master drainage planning process has not addressed water quality, or if a new master drainage process is underway, this will direct the water quality evaluation.

**D. Permanent Best Management Practice Selection Process**

The BMP selection process is illustrated in Figure I-1 and Figure I-2. These two figures shall be used for all projects except those that are strictly highway/roadway projects; that is, projects with no plans for building pad sites. Projects that are strictly highway/roadway projects are discussed in a separate section below.

The following requirements pertain to sites that are not otherwise covered under NPDES permits for post-construction BMPs. For construction activity permitting, see other County and State requirements. Sites that are covered by an industrial NPDES permit do not need to meet these requirements if they adequately protect stormwater quality with onsite BMPs.

The following process references the use of the BMPs and other practices outlined in DCM2 and this Addendum. The use of DCM2 BMPs will promote consistency between the City and County. These BMPs are commonly found in manuals and other literature from municipalities across the country, and they are the accepted "state of the art" in stormwater quality control. As described below, other BMPs (which may be relatively new to the field of stormwater management) are acceptable if they can be shown to meet certain performance criteria.

The following items explain the decision points (i.e., the Boxes) in Figure I-1 and Figure I-2:

**Box 1:** For all sites, the possibility of incorporating runoff reduction practices must be investigated. Impervious area should be reduced to the maximum extent practicable, per DCM2. DCM2 also provides guidance for MDCIA by routing runoff to pervious areas. This is Step 1 in the Four-Step Process.

**Box 2:** All drainageways, ditches, and channels shall be stabilized with one of three methods included in Step 2, which include the use of appropriate methods for the type of drainageway as described in the DCM1.

Drainageways include:

- Tributaries to creeks that have been left in a relatively natural state,
- Tributaries, channels, and drainageways that are graded or regraded and may include drop or check structures, side slope stabilization, and low-flow channels.
- Roadside ditches that are completely man-made and should only be used to convey runoff from roads and roadway right-of-ways (ROWs).

**Box 3:** It must be determined if the development and/or redevelopment disturbs an area of land that is 1 acre or larger (or planned to be 1 acre or larger) when all phases are complete.

**Box 4:** Sites tributary to sensitive waters should consider specialized BMPs to address the parameter of concern as shown in Table I-5. At this time, no special BMPs are required until the County develops an overall strategy to address the parameters of concern, probably if and when a Total Maximum Daily Load (TMDL) is determined.

***Figure I-1. BMP Requirements Flowchart for New Development and Redevelopment Sites - For Selecting Post-Construction BMPs in Compliance with El Paso County's Stormwater NPDES Permit***

***Figure I-2. BMP Requirements Flowchart for New Development and Redevelopment Sites - For Selecting Post-Construction BMPs in Compliance with El Paso County's Stormwater NPDES Permit***

***Table I-4. Best Management Practices Abbreviations***

| Abbreviation | Best Management Practice |
|---|---|
| CWB | Constructed Wetlands Basin |
| CWC | Constructed Wetlands Channel – Sedimentation Facility |
| EDB | Extended Detention Basin – Sedimentation Facility |
| PLD | Porous Landscape Detention |
| RP | Retention Pond – Sedimentation Facility |
| SFB | Sand Filter Extended Detention Basin |
| WQCV | Water Quality Capture Volume |
| GB | Grass Buffer |
| GS | Grass Swale |
| MBP | Modular Block Porous Pavement |
| PPD | Porous Pavement Detention |

***Table I-5. El Paso County Sensitive[1] Waters***

| Stream and Segment | Parameter of Concern | Specialized BMPs Required |
|---|---|---|
| Fountain Creek and tributaries above Monument Creek | E. coli and Se | None at this time |
| Fountain Creek from Monument Creek to Highway 47 | E. coli | None at this time |
| Monument Creek from National Forest to Fountain Creek | Se | None at this time |
| Willow Springs Pond #1 and #2 | PCE | None at this time |
| [1]CDPHE 2006 303(d) list. Standard agreement forms for Private Detention Basins are in Appendix G. [This list may change in the future. The 303(d) list or equivalent in effect at the time of permitting will apply.] | | |

Potential high-risk sites must also incorporate specialized BMPs. High-risk sites are defined by two factors:

- Sites with land uses involving the potential for significant deposition of pollutants.
- Sites without practices to eliminate exposure of pollutants to stormwater.

Land uses involving the potential for significant deposition of pollutants include, but are not limited to:

- Vehicle maintenance facilities,
- Gas stations,
- Automobile salvage yards and junk yards,
- Commercial sites with high levels of “in and out” traffic such as fast-food restaurants and convenience stores,

Many industrial facilities are required to obtain coverage under an industrial stormwater permit; these facilities include automobile salvage yards. Practices to eliminate exposure of pollutants to stormwater may or may not be part of an industrial stormwater permit. These practices include coverage of material storage areas, berms around tanks, spill control plans, and other “good housekeeping” measures. For industrial sites where stormwater is not exposed to pollutants, structural BMPs, including detention ponds for water quality and other BMPs discussed below, may not be required.

Because stormwater pollutants are often transported with sediment, erosion protection and sediment control are necessary for stormwater quality protection. This is very important in the County because of the sandy soils in the region. In particular, discharges that may impact sensitive waters or that come from potentially high-risk sites should have a high level of sediment protection. Thus,

in addition to the specialized BMPs, sediment control practices such as revegetation, grading to prevent steep side slopes, check dams, slope drains, and sediment basins should be employed where practical.

**Box 5:** No BMPs are required other than stabilized drainageways and possibly MDCIA.

**Box 6:** Specialized BMPs are required and therefore proceed to Box 7 on Table I-1.

**Box 7:** BMPs that employ infiltration include porous landscape detention and sand filter basins without underdrains. Certain conditions preclude the use of these types of BMPs, including close proximity of groundwater or relatively impervious soils to the bottom of the facility. Groundwater levels should be characterized during the season with the highest levels (often late Spring or early Summer). Impervious soils include bedrock as well as soil types C and D. The term “close proximity” means 5 feet or less. If there is less than 5 feet, a study of the hydraulic conductivity of the soils must be conducted to show that excessive groundwater mounding or direct groundwater contamination will not result from the use of BMPs that employ infiltration.

**Box 8:** If groundwater or relatively impervious soils are not within 5 feet of the surface, implement porous landscape detention (PLD) or a sand filter basin (SFB) from DCM2. Alternative BMPs can be used if shown to be equally effective as PLD or SFB (see discussion below).

**Box 9:** Implement PLDs or SFBs with underdrains, or implement a BMP with removal rates equivalent to PLDs or SFBs, including qualifying manufactured BMPs. Qualifying manufactured BMPs are those that have undergone independent tests to verify that the installation, flow volumes, and removal rates will work for the site under consideration.

**Box 10:** If the site is larger than one acre and is low density residential, then no water quality capture volume is required, but the need for sediment basins must be evaluated, and the site must be categorized by the sensitive waters and high-risk criteria (return to Box 4). Low density (rural) subdivisions include lots with 2.5 acre or larger lots.

**Box 11:** Sediment is best controlled at the source. That is, rather than using structures to collect soil after it is suspended in stormwater, it is preferable to stabilize soil to prevent suspension from occurring. Sediment source controls must be implemented for all low-density developments and include (but are not limited to):

- Adequately established vegetation per DCM1 criteria,
- Side slopes that are 3 horizontal to 1 vertical or flatter or the use of benched side slopes when slopes are steeper than 3 horizontal to 1 vertical,
- The use of erosion control blankets to aid establishment of vegetation,

- Check dams,
- Slope drains.

Temporary irrigation and maintenance of vegetation until adequately established may be required.

**Box 12:** In low density (rural) subdivisions, a method for permanent sediment control must be provided. If a detention pond is used, the forebay is to be sized according to the criteria for Extended Detention Basins. If a detention pond/Extended Detention Pond is not required, a sediment basin as described in DCM2, page 3-32 may be used. It should be sized to collect 1,800 cubic feet per acre of disturbed area. Drainage area above a sediment basin can be reduced by use of vegetated swales, buffers, or contour berms.

**Box 13:** If there are no detention ponds, separate sediment basins must be located to catch all runoff leaving the disturbed area of the site.

**Box 14:** In cases where a detention pond is already required for controlling the volume of runoff, a sediment basin can take the form of a forebay to this pond.

**Box 15:** Regional ponds are often used to control the increase in runoff flow and volume due to development. If the site is not low density, and there is a regional downstream BMP that provides adequate WQCV for the site plus the other sites planning to use it, then proceed to Box 16.

**Box 16:** The site is required to direct all runoff through grass buffers and/or grass swales or provide a similar BMP. (Note that this is required in accordance with the CDPHE guidance manual to afford some protection to state waters in between the site and the downstream WQCV BMP.)

**Box 17:** Grass buffers require irrigation in almost all cases in the County; swales sometimes require irrigation.

**Box 18:** “Dry” alternatives may be used if they are shown to have equivalent removal rates as buffers and swales. All of the structural treatment BMPs in DCM2 (Section 4.2) have equivalent removal rates and may be used. The covering of storage/handling areas and spill containment and control are not structural treatment BMPs, and thus are not substitutes for grass buffers and swales.

**Box 19:** If there is no regional downstream BMP that provides WQCV, then WQCV must be provided for the site with one or a combination of the following BMPs in DCM2: Extended Detention Basin (EDB), Sand Filter Basin (SFB), Constructed Wetland Basin (CWB), or Retention Pond (RP). Chapter 4 in DCM2 (in particular, Figure ND-7) should be consulted for a selection process for the BMP with WQCV. For all ponds, issues related to dam construction and potential groundwater contamination must be considered. Retention Ponds must be considered in the context of additional issues including safety and health (e.g., drowning and mosquito/West Nile virus) and water rights. Surface water storage rights will be obtained before a retention pond can be proposed for a site.

**Box 20:** Sites tributary to sensitive waters must meet the requirements as outlined in Table I-5, and potential high-risk sites must have specialized BMPs.

**Box 21:** No additional BMPs are required other than WQCV-based BMPs. Also, as always, drainageways must be stabilized and runoff should be reduced as much as possible (Boxes 1 and 2).

**Box 22:** When specialized BMPs are required, proceed to Box 23 on Figure I-2.

**Box 23:** Two situations apply, one where conditions preclude the installation of BMPS that employ infiltration, and one where they do not. (See Box 7.) If conditions preclude the installation of BMPS that employ infiltration then proceed to Box 25; otherwise proceed to Box 24.

**Box 24:** Where soil and groundwater conditions are not prohibitive (that is, groundwater or relatively impervious soils are not within 5 feet of the surface), implement PLD or SFB from DCM2. Alternative BMPs can be used if shown to be equally effective as PLD or SFB (see discussion below).

**Box 25:** Constructed wetlands (either channels or basins) are an effective BMP for sites with drainage areas greater than 10 acres.

**Box 26:** Provide a BMP downstream of the pond with equivalent removal rates as a wetland channel; this could be a qualifying manufactured BMP or other BMP that meets the criteria below.

**Box 27:** If the catchment area is greater than 10 acres, provide a constructed wetland channel (CWC) downstream of pond or provide WQCV with CWB.

### E. Projects that are Strictly Roadway Construction

For projects that entail highway or other roadway construction, there are three basic questions for the applicant:

- Is the road urban or rural? That is, does the road have curb and gutter or does it utilize roadside ditches?
- For rural roads, do the ditches require “water turnouts?”
- Is the road a “hot spot” or does it discharge to sensitive waters?

For urban road construction, the applicant must follow the requirements in DCM1. Rural roads (which by definition have roadside ditches) must be stabilized with one of three methods included in DCM2 on pages 4-3 and 4-4. These methods are described in DCM1.

Rural roads, i.e. those roads which utilize roadside ditches for conveyance of runoff from the roadway, do not have sufficient capacity in the roadside ditches to convey much more runoff than that which runs off the road itself. “Water turnouts,” which function as spillways which direct flow out of the ditches onto property adjacent to the ROW, are frequently required as a result. Design for the “water turnout" should ensure the turnout discharges into a “suitable outfall” as described in DCM1 along the roadway such as a natural swale. A drainage easement for this runoff must be acquired at these locations. A possible

consequence of "water turnouts" is the loading of sediment onto private property. If "water turnouts" will be utilized for the ditches, sediment basins shall be used at these locations. However, there must be sufficient space in the ROW for both the structure itself and for maintenance access, or a specific drainage easement must be provided for the feature and access. Sediment basins can be designed in accordance with the guidelines in DCM2 in the section for construction BMPs. The basin shall be sized to collect 1,800 cubic feet of sediment per acre of drainage area of the roadway.

The term "high risk site" can be defined by traffic volume for a section of roadway. If the road will experience traffic volume of 30,000 average daily traffic (ADT) or more it is likely to contribute high levels of pollutants. For these situations, additional BMPs are required and selection must follow Boxes 6, 7, 8, and 9 in Figure 1b. Additional BMPs may also be required for discharge to sensitive waters. As described above for the general developments (with building pads), these additional requirements will depend on the TMDL process.

**F. Additional Guidelines for BMP Selection**

Additional Guidelines for selecting among the appropriate BMPs determined from Figure I-1 and Figure I-2. Figure I-3 (Figure ND-7 in DCM2) depicts a decision tree for selecting one of the six WQCV BMPs based on drainage catchment area and whether water is available to satisfy evapotranspiration requirements. Porous pavement and porous landscape detention are generally suited for small drainage areas (i.e. much less than 1.0 acres); however, larger subwatersheds can be subdivided into individual drainage sub-catchment areas meeting the criteria shown in Figure I-3 for these BMPs.

One of the questions involved in laying out WQCV facilities on a site is whether to locate a BMP onstream or offstream. Onstream refers to locating a BMP on a drainageway that traverses a site such that all of the runoff from the upstream watershed flows through the facility. A single onstream BMP can treat both site runoff and runoff generated in any upstream offsite catchment areas that are part of that watershed. Locating BMPs offstream requires that all onsite catchment areas flow though a BMP prior to entering the drainageway. Offstream BMPs do not provide treatment of runoff from any upstream drainage catchment areas.

Onstream WQCV facilities are only recommended if the offsite drainage catchment area tributary to the drainageway has less impervious area than the onsite drainage catchment's impervious area tributary to the same drainageway. Nevertheless, onstream WQCV facilities must be designed to serve the entire upstream watershed, including any catchment areas upstream of the development, based on future development conditions. This is true even if upstream developments have installed their own WQCV facilities.

The intent of WQCV facilities is they are located prior to the stormwater runoff being discharged to State Waters. However, see additional information in Section 4.1 of DCM2: Definition of New Development and Significant

Redevelopment/BMP Requirements regarding the acceptability of using downstream BMPs (including WQCV facilities) to serve as BMP controls for upstream development.

Figure I-4 (Figure ND-8 in DCM2) provides an illustration of selection and location options for WQCV facilities based on the principles discussed above. Figure I-6 (Table ND-1 in DCM2) indicates the BMP options for the four watershed areas shown in Figure I-4.

### I.7.3 Incorporating WQCV into Stormwater Quantity Detention Basins

Wherever possible, it is recommended that WQCV facilities be incorporated into stormwater quantity detention facilities. This is relatively straightforward for an extended detention basin, constructed wetland basin, and a retention pond. When combined, the 2, 5, 10, and 100-year detention levels are provided above the WQCV and the outlet structure is designed to control two or three different releases. Stormwater quantity detention could be provided above the WQCV for porous pavement and landscape detention provided the drain times for the larger events are kept short.

The following approaches are to be implemented when incorporating WQCV into stormwater quantity detention facilities:

1. **Water Quality**

   The full WQCV is to be provided according to the design procedures documented in the New Development BMP Factsheets.

2. **Minor Storm**

   The full WQCV plus the full minor storm quantity detention volume is to be provided.

3. **100-Year Storm**

   One-half the WQCV plus the full 100-year detention volume is to be provided.

At this time, water quality detention is not to be incorporated into underground detention facilities, such as installations of buried large-diameter pipe sections, stone trenches, underground “infiltrating” devices, etc. Any underground detention facilities proposed for use in the County must meet state requirements for Injection Wells and requirements for experimental systems, in addition to Operation and Maintenance Manuals and maintenance agreements.

### I.7.4 Separate Presedimentation Facilities

The design criteria shown in the New Development BMP Factsheets section shows presedimentation forebays at the upstream end of the extended detention basin, constructed wetland basin, and retention pond. The purpose of the forebay is to settle out coarse sediment and skim off floatables prior to the main body of the facility. An option to this approach is to install a separate facility upstream from the main WQCV facility. If this option is selected, the recommended size is at least 20 percent of the WQCV and the

recommended drain time is 1 hour for the presedimentation forebay volume only. Using this approach, the size of the main WQCV facility may be reduced by 10 percent, any requirement for sediment storage in the main facility may be reduced by one-half, and the forebay within the main facility may be eliminated.

It is extremely important that high sediment loading be controlled for porous pavement detention, porous landscape detention, and sand filter extended detention basins. These facilities are best suited to being brought on line at the end of the construction phase where disturbed ground has been established with pavement or vegetation.

***Figure I-3. Decision Tree for WQCV BMP Selection***

| | | | | | Suitable WQCV BMP |
|---|---|---|---|---|---|
| ○ | | | | | Porous Pavement Detention (PPD) with Underdrain |
| | ○ | | | | Porous Pavement Detention (PPD) with Infiltration |
| ○ | | | | | Porous Landscape Detention (PLD) with Underdrain |
| | ○ | | | | Porous Landscape Detention (PLD) with Infiltration |
| | | ○ | ○ | ○ | Extended Detention Basin (EDB) |
| | | ○ | | | Sand Filter Extended Detention Basin (SFB) |
| | | | | ○ | Construction Wetland Basin (CWB) |
| | | | | ○ | Retention Pond (RP) |

Note: Large drainage areas may be subdivided into areas <20 acres for use of SFB or <1 acre for use of PPD or PLD.

***Figure I-4. Illustration of Selection and Location Options for WQCV Facilities***

Note: For this example, sufficient make-up water exists for constructed wetlands and retention pond for the watershed areas >50 acres through irrigation return flows.

***Table I-7. Illustration of Selection and Location Options for WQCV Facilities for the Development Parcel on Figure I.4***

| Watershed Number | Onstream or Offstream | BMP Options | Minimum Number of BMP Installations | Average Drainage Area for Sizing each BMP, acre |
|---|---|---|---|---|
| 1 | Offstream | Porous Pavement Detention<br>Porous Landscape Detention | 1<br>1 | 0.8<br>0.8 |
| 2 | Offstream | Porous Pavement Detention<br>Porous Landscape Detention<br>Extended Detention Basin<br>Sand Filter Extended Detention Basin | 24<br>24<br>2<br>2 | 1<br>1<br>12<br>12 |
| 3 | Offstream | Porous Pavement Detention<br>Porous Landscape Detention<br>Extended Detention Basin<br>Sand Filter Extended Detention Basin | 49<br>49<br>2<br>3 | 1<br>1<br>24<br>16 |
| | Onstream | Extended Detention Basin<br>Constructed Wetland Basin<br>Retention Pond | 1<br>1<br>1 | 70<br>70<br>70 |
| 4 | Offstream | Porous Pavement Detention<br>Porous Landscape Detention<br>Extended Detention Basin<br>Sand Filter Extended Detention Basin | 6<br>6<br>1<br>1 | 1<br>1<br>6<br>6 |

### I.7.5 Structural BMP Effectiveness

Table I-7 (Table ND-2 in DCM2) indicates ranges of removal efficiencies reported in literature for a number of structural BMPs. Although combinations of nonstructural/structural BMPs can improve the overall water quality of the runoff, the effectiveness of several BMPs in their ability to reduce influent pollutant concentrations as a group are not directly additive. Table I-7 also shows a most probable range of removal efficiencies for structural BMPs recommended in the New Development BMP section.

### I.7.6 Separation Distances

To reduce potential for surface and ground water contamination, permanent water quality BMPs will be located away from wells and Individual Sewage Disposal Systems (ISDS). Rules for separation distances and grouting depths for wells and BMPs will be based on distances between wells and “sources of contamination” in Colorado's Rules and Regulations for Water Well Construction, Pump Installation, and Monitoring and Observation Hole/Well Construction. Permanent BMPs and ISDS will be separated by the

same distances specified between the components of the ISDS and "waterways" in the El Paso County ISDS regulations.

***Table I-8. BMP Pollutant Removal Ranges for Stormwater Runoff and Most Probable Range for BMPs***

| Type of BMP | (1) | TSS | TP | TN | TZ | TPb | BOD | Bacteria |
|---|---|---|---|---|---|---|---|---|
| Grass Buffer | LRR:<br>EPR | 10-50<br>10-20 | 0-30<br>0-10 | 0-10<br>0-10 | 0-10<br>0-10 | N/A<br>N/A | N/A<br>N/A | N/A<br>N/A |
| Grass Swale | LRR:<br>EPR | 20-60<br>20-40 | 0-40<br>0-15 | 0-30<br>0-15 | 0-40<br>0-20 | N/A<br>N/A | N/A<br>N/A | N/A<br>N/A |
| Modular Block Porous Pavement | LRR:<br>EPR | 80-95<br>70-90 | 65<br>40-55 | 75-85<br>10-20 | 98<br>40-80 | 80<br>60-70 | 80<br>N/A | N/A<br>N/A |
| Porous Pavement Detention | LRR:<br>EPR | 8-96<br>70-90 | 5-92<br>40-55 | -130-85<br>10-20 | 10-98<br>40-80 | 60-80<br>60-70 | 60-80<br>N/A | N/A<br>N/A |
| Porous Landscape Detention | LRR:<br>EPR | 8-96<br>70-90 | 5-92<br>40-55 | -100-85<br>20-55 | 10-98<br>50-80 | 60-90<br>60-80 | 60-80<br>N/A | N/A<br>N/A |
| Extended Detention Basin | LRR:<br>EPR | 50-70<br>55-75 | 10-20<br>45-55 | 10-20<br>10-20 | 30-60<br>30-60 | 75-90<br>55-80 | N/A<br>N/A | 50-90<br>N/A |
| Constructed Wetland Basin | LRR:<br>EPR | 40-94<br>50-60 | -4-90<br>40-80 | 21<br>20-50 | -29-82<br>30-60 | 27-94<br>40-80 | 18<br>N/A | N/A<br>N/A |
| Retention Pond | LRR:<br>EPR | 70-91<br>80-90 | 0-79<br>45-70 | 0-80<br>20-60 | 0-71<br>20-60 | 9-95<br>60-80 | 0-69<br>N/A | N/A<br>N/A |
| Sand Filter Extended Detention | LRR:<br>EPR | 8-96<br>80-90 | 5-92<br>45-55 | -129-84<br>35-55 | 10-98<br>50-80 | 60-80<br>60-80 | 60-80<br>60-80 | N/A<br>N/A |
| Constructed Wetland Channel* | LRR:<br>EPR | 20-60<br>30-50 | 0-40<br>20-40 | 0-30<br>10-30 | 0-40<br>20-40 | N/A<br>20-40 | N/A<br>N/A | N/A<br>N/A |

Ref: Bell et al. (1996), Colorado (1990), Harper & Herr (1992), Lakatos & McNemer (1987), Schueler (1987), Southwest (1995), Strecker et al. (1990), USGS (1986), US EPA (1983), Veenhuis et al. (1989), Whipple and Hunter (1981), Urbonas (1997.

(1)LRR Literature reported range, EPR—expected probable range of annual performance by DCM2 BMPs.
N/A Insufficient data to make an assessment.

*The EPR rates for a Constructed Wetland Channel assume the wetland surface area is equal or greater than 0.5% of the tributary total impervious area.

### I.7.7 Operation and Maintenance of Best Management Practices

#### A. Long-term Maintenance Agreements for BMPs

Per the Colorado Department of Public Health and Environment, Colorado's Phase II Guidance Document:

"All stormwater BMPs shall have an enforceable operation and maintenance agreement to ensure that the system functions as designed. This agreement will

include any and all maintenance easements required to access and inspect the BMP(s), and to perform routine maintenance as necessary to ensure proper functioning of the stormwater BMP. In addition, prior to the issuance of any permits for land development, legally binding documents shall be adopted and agreed to wherein the owners of the real property associated with the BMPs that benefit that property are held ultimately responsible for the proper maintenance of all BMPs, including a mechanism for the collection of the costs of the maintenance if it is not performed by the owners of the property."

The property owner shall be responsible for the maintenance of all permanent stormwater quality measures. All temporary stormwater quality control measures shall be removed after work on the site has been completed and the measures are no longer needed. Should any property owner fail to adequately maintain the permanent stormwater quality control measures or remove the temporary measures, the County may, after notifying the owner of the required maintenance and/or removal and the owner failing to perform such maintenance and/or removal, enter the affected property and perform or cause to be performed the required work and assess the charge for such work against the property owner

Prior to approval of a subdivision or issuance of a Certificate of Occupancy for a site that did not go through the subdivision review process that has permanent BMPs, a signed Private Maintenance Agreement for Permanent BMPs must be submitted to the County.

**B. Operation and Maintenance Manual**

A detailed Operation and Maintenance Manual covering inspections, operation and maintenance of permanent BMPs will be provided to the party who holds the Private Maintenance Agreement for Permanent BMPs. The Operation and Maintenance Manual will include specifics on frequency of inspections and maintenance; standards for vegetation or structures, such as species of vegetation, mowing height, revegetation of worn or eroded areas, cleaning methods; depth of sediment requiring removal; replacement frequencies; and other relevant topics.

## I.8 PROCEDURES FOR ASSESSMENT OF STRUCTURAL CONTROLS FOR RETROFITTING WATER QUALITY FEATURES

[Replaces DCM2 Section 4.4, page 4-133]

At some sites, there may be an existing structure for flood control and other water quantity control purposes. It may be possible to retrofit this structure for water quality in addition to the quantity functions. The following procedure will assist in evaluating the potential for retrofitting. In a new or major redevelopment project, new erosion and water quality control BMPs will be required, if retrofitting is not a reasonable option.

The purpose of this document is to outline the procedures for these evaluations. These procedures would then be utilized in conjunction with developing each new Drainage Basin Planning Study (DBPS) to determine the potential and feasibility for retrofitting existing structural controls (detention/retention basins).

The analysis of the structures involves three possible levels of review. The first is a qualitative review to determine if retrofitting of the structure is acceptable. The second element is quantitative to determine the pollutant removal effectiveness of the structure, both with and without water quality elements. Total Suspended Solids (TSS) will normally be the only constituent evaluated, unless other pollutants of concern are specified by the ECM Administrator, based on site-specific information such as draining to sensitive waters or high risk pollution sources. A third element of review involves developing a cost estimate for retrofitting to determine the economic feasibility.

A qualitative assessment evaluates the changes that would occur if the flood-control detention facility was modified for water quality purposes, and determines the extent to which the changes would affect these functions, and if these changes in function are acceptable. The detention pond must first be acceptable under the qualitative criteria, or the evaluation will conclude and not continue to the second level of review. A quantitative analysis involves a determination of whether the percent removal of TSS (or other specified constituent of concern) is significant. For purposes of this assessment, a significant change is defined as the percent removal of the constituent after retrofitting the detention pond is estimated to be at least 20 percent greater than the percent removal of the constituent for the detention pond without the water quality element incorporated. If a significant change is estimated, then the third element of analysis, a cost estimate of the economic feasibility, is conducted. If a significant change is not estimated, then the option to retrofit the detention pond is eliminated.

### I.8.1 Final Alternative Selection

The final alternative selection process for drainage improvement options in any new DBPS is based on the evaluation of many factors including costs, safety, environmental issues including water quality, public input, etc. If the selected alternative includes retrofitting structural controls to provide additional pollutant removal, responsibility for implementation would need to be outlined in the study. If the responsibility was determined to be a public (County) responsibility, consideration for funding any such drainage improvement project would be made by the Board of County Commissions during its annual budget approval process in conjunction with all other budget requests. If the responsibility was determined to be a private development responsibility, ECM Administration would decide when implementation would be required in conjunction with the timing of future developments.

## I.9 SUPPLEMENTAL INFORMATION A: NEW DEVELOPMENT DESIGN FORMS

[Replaces DCM2 Appendix A]

ATTENTION TO PERSONS USING THE URBAN DRAINAGE AND FLOOD CONTROL DISTRICT SUPPLIED DESIGN FORM WORKSHEETS

The Design Form Worksheets with the accompanying Visual Basic macros have been developed using a high standard of care, including professional review for identification of errors, bugs, and other problems related to the software. Minor modifications have been made by the City of Colorado Springs. However, as with any initial release of software driven products, it is likely that some nonconformities, defects, bugs, and errors with the software program will be discovered as

they become more widely used. The developers of these products welcome user feedback in helping to identify these potential problems so that improvements can be made to future releases of the Design Form Worksheets.

The Design Form Worksheets are intended to streamline the preliminary design process. Preparation of final design plans, addressing details of structural adequacy, public safety, hydraulic functionality, maintainability, and aesthetics, remain the sole responsibility of the designer.

BY THE INSTALLATION AND USE OF THE URBAN DRAINAGE AND FLOOD CONTROL DISTRICT SUPPLIED DESIGN FORM WORKSHEETS, AS MODIFIED BY THE CITY OF COLORADO SPRINGS, THE USER AGREES TO THE FOLLOWING:

NO LIABILITY FOR CONSEQUENTIAL DAMAGES

To the maximum extent permitted by applicable law, in no event shall the Urban Drainage and Flood Control District or the City of Colorado Springs or El Paso County, their contractors, advisors, reviewers, or their member governmental agencies, be liable for any incidental, special, punitive, exemplary, or consequential damages whatsoever (including, without limitation, damages for loss of business profits, business interruption, loss of business information or other pecuniary loss) arising out of the use or inability to use these products, even if the Urban Drainage and Flood Control District or the City of Colorado Springs or El Paso County, their contractors, advisors, reviewers, or their member governmental agencies have been advised of the possibility of such damages. In any event, the total liability of the Urban Drainage and Flood Control District or the City of Colorado Springs or El Paso County, their contractors, advisors, reviewers, or their member governmental agencies, and your exclusive remedy, shall not exceed the amount of fees paid by you to the Urban Drainage and Flood Control District for the Product.

NO WARRANTY

The Urban Drainage and Flood Control District or the City of Colorado Springs or El Paso County, their contractors, advisors, reviewers, or their member governmental agencies do not warrant that the Design Form Worksheets will meet your requirements, or that the use of this product will be uninterrupted or error free.

THIS PRODUCT IS PROVIDED “AS IS” AND THE URBAN DRAINAGE AND FLOOD CONTROL DISTRICT OR THE CITY OF COLORADO SPRINGS or EL PASO COUNTY, THEIR CONTRACTORS, ADVISORS, REVIEWERS, AND THEIR MEMBER GOVERNMENTAL AGENCIES DISCLAIM ALL WARRANTIES OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, PERFORMANCE LEVELS, COURSE OF DEALING OR USAGE IN TRADE.

# SURETY RELEASE REQUEST FORM

# SURETY ESTIMATE FORM

This Surety Estimate Form is located on the El Paso County website at
http://adm.elpasoco.com/Development%20Services/Pages/CollateralSuretyForms.aspx

The following pages contain typical wording for:

- Defect Surety
- Performance Surety
- Punchlist Inspection Form
- Schedule for Completion of Improvements
- Surety Release Inspection Request

# DEFECT SURETY (TYPICAL WORDING)

KNOW ALL MEN BY THESE PRESENTS: That (Owner or Contractor and Address) as Principal and the (Insurance Company) as a (Name of State) corporation authorized to execute an approved form of surety in the State of Colorado, and duly authorized to transact a general surety business in the State of Colorado, as Surety, are held and firmly bound unto County of El Paso, State of Colorado, in the sum of (20% of Contract Price) lawful money of the United States, for the payment of which, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH THAT: WHEREAS (The Principal) has _____,
and WHEREAS, the said (Principal) is required to give a form of surety in the amount of (20% Contract Price) to protect the said COUNTY OF EL PASO against the result of faulty materials or workmanship for a period of TWO YEARS from and after the date of completion and preliminary acceptance of said work;

NOW, THEREFORE, if the said (Principal) shall for a period of TWO YEARS from and after the date of completion and acceptance of said work, replace any and all defects arising in said work whether resulting from defective materials or defective workmanship, then the above obligation to be void; otherwise, to remain in full force and effect.

Signed and sealed this _____ day of _____, 20___.

# PERFORMANCE SURETY (TYPICAL WORDING)

**WHEREAS**, the County of El Paso, State of Colorado, and _____ (hereinafter designated as "Principal") have entered into an agreement whereby Principal agrees to install and complete certain designated public and development or subdivision improvements, which said agreement, dated _____ , and identified as Project _____ is hereby referred to and made a part hereof; and

**WHEREAS**, Principal is required under the terms of said agreement to furnish surety for the faithful performance of said agreement;

**NOW, THEREFORE,** we, the Principal and _____, as Surety, are held firmly bound unto the County of El Paso (hereinafter called "County") in the penal sum of _____ Dollars ($_____) of lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

The condition of this obligation is such that if the above Principal, his or its heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions and provisions in said agreement and any alteration thereof made as therein provided, on his or their part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and meaning, and shall indemnify and save harmless the County, its elected officials, officers, employees, agents, and volunteers, as therein stipulated, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect.

As a part of the obligation secured hereby and in addition to the face amount specified therefore, there shall be included costs and reasonable expenses and fees, including reasonable attorney's fees, incurred by County in successfully enforcing such obligation, all to be taxed as costs and included in any judgment rendered. The surety hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the agreement or to the work to be performed thereunder or the specifications accompanying the same shall in manner affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the agreement or to the work or to the specifications.

**IN WITNESS WHEREOF**, this instrument has been duly executed by the Principal and Surety above named on _____:

**APPROVED AS TO FORM:**

_____

COUNTY ATTORNEY

**ATTEST:**

_____

County Clerk (Seal)

**Name of Principal**

_____

By: _____

(Seal)

**Name of Surety**

_____

By: _____

(Seal) Attorney-in-Fact

# PUNCHLIST INSPECTION FORM

## 1.1 PURPOSE

The purpose of this form is to ensure the completion a preliminary or final acceptance punchlist inspection and provide a comprehensive list of needed corrections.

## 1.2 INSPECTION CODES

The following codes shall be used:

NA - not applicable, NI – not installed, WU – work underway

## 1.3 DRAINAGE CONDITIONS CONFORM TO PLANS AND ARE ACCEPTABLE:

_____ Permanent BMPs

_____ Culverts

_____ Storm Sewers

_____ Manholes (including risers, steps, and inverts)

_____ Inlets (including risers, steps, and inverts)

_____ Drainage Contained Within the Right-of-Way

_____ Platted Drainage Easement

_____ Construction BMPs Removed

## 1.4 ROADWAY CONDITIONS CONFORM TO PLANS AND ARE ACCEPTABLE:

_____ Paved Surface in Acceptable Condition (i.e. free of cracking and potholes)

_____ Pavement Crown & Super Elevation Acceptable

_____ Shoulders to Grade and Stabilized

_____ Roadside Ditches Acceptable

_____ Cut Slopes to Grade and Stabilized

_____ Fill Slopes to Grade and Stabilized

_____ Paved Surface Cleared of Loose Stone

## 1.5 RIGHT-OF-WAY:

_____ Clear of Vegetation

_____ Clear of Debris

_____ Curbing Acceptable

_____ Sidewalk Acceptable

_____ Driveway Entrances Properly Installed According to Road Plan or Site Plan

_____ Driveway Entrances and/or Commercial Entrances Located as shown on Plans

_____ Guardrail Installed in Correct Location(s)

_____ Guardrail Installed at Correct Distance from Edge of Pavement

_____ Proper Guardrail End Sections Installed in Approved Manner

_____ Grass on Shoulders & Ditches Has Been Mowed

_____ Dead Trees Removed That Might Fall in Right-Of-Way

_____ Shoulders and Ditches Free of Loose Stone

_____ Driveway Pipes Clean and Functioning Properly

## 1.6 INSPECTION RESULTS

An Inspection Report shall be completed with all items failing to adhere to the approved plans and ECM Standards and specifications. This handwritten punchlist is to be typed, proofed, and then given to the engineer. In addition, the completed Inspection Form shall be put in the project file.

# SCHEDULE FOR COMPLETION OF IMPROVEMENTS

## 1.1 PURPOSE

This form is intended to facilitate the completion of approved improvements in a timely manner by assuring the applicant has a schedule in place for the completion of the improvements, and by providing the County a means to assess the applicant's ability to meet the completion date stated in the approved agreement. The permit holder must provide an estimated completion date for each milestone listed below.

## 1.2 GENERAL INFORMATION

Date: _____

Applicant: _____

Phone: _____

Tax Map Parcel No.: _____

Project Name (Include phase, section, and other relevant information to clearly identify the project): _____

_____

_____

| Date | Milestone |
|---|---|
| | Start of construction. |
| | Temporary erosion control systems installed (Initial BMPs). |
| | Grading, subgrade, and stormwater management activities completed. |
| | Road base constructed to required grade. |
| | Asphalt, curb and gutter installation completed. |
| | End of construction. |
| **Office Use** | |
| | Road Improvements "Preliminary Acceptance Inspection" |
| | Road Improvements "Final Inspection" (private roads accepted at this point) |
| | Public Road "Preliminary Acceptance" notification received from BOCC. |

## 1.3 AUTHORIZATION OF REQUEST

Signature of Applicant

Print Applicant Name | Title (if appropriate)

# SURETY RELEASE INSPECTION REQUEST

## 1.1 PURPOSE

This is form is used to request that an inspection be scheduled to determine if the following performance sureties can be reduced or released (check below all that apply). Requests are required for either partial or full release of any construction surety. Requests for construction surety reduction will be subject to the following conditions based upon the percentage of work completed and approved by the County, or other authority or agency having jurisdiction over the improvement. The following conditions apply to surety reductions and inspection fees.

- No more than three inspections for surety reductions will be scheduled during any twelve-month period.
- A surety reduction inspection fee must accompany each request for reduction.
- Inspections will be scheduled within 30 days of receipt of the surety reduction inspection request form and applicable fee.
- Reductions will not occur until completion and approval of at least 30% of the proposed improvements.
- 20% of the original construction surety amount will be retained until final completion and preliminary acceptance of all improvements.

Inspections will be scheduled within thirty days of receipt of this request and the required fee.

Inspections must be requested by the permit holder.

## 1.2 GENERAL INFORMATION

Date: _____

Applicant: _____

Phone: _____

Tax Map Parcel No.: _____

Project Name (Include phase, section, and other relevant information to clearly identify the project): _____

_____

_____

## 1.3 SURETY RELEASE INFORMATION

☐ **Water Protection Performance Surety**

☐ ***Erosion & Sediment Control***

☐ ***Stormwater Management & Water Quality***

Identification No.:

_____

Description of Release Requested: _____

_____

_____

_____

Amount of Requested Release: _____

☐ **Subdivision/Public Improvement Performance Surety**

☐ ***Roads & Drainage (at least 30% of the work must be satisfactorily completed before requesting an inspection for reduction)***

☐ ***Water & Sewer (at least 30% of the work must be satisfactorily completed before requesting an inspection for reduction)***

☐ ***Other – list below (i.e. landscaping, pedestrian paths)***

_____

_____

Identification No.:

_____

Description of Release Requested: _____

_____

_____

_____

Amount of Requested Release: _____

☐ **Work in the Right-of-Way Performance Surety**

Identification No.:

_____

Description of Release Requested: _____

_____

_____

_____

Amount of Requested Release: _____

☐ **Site Development Performance Surety**

Identification No.:

_____

Description of Release Requested: _____

_____

_____

_____

Amount of Requested Release: _____

**1.4 FEE**

SUBMIT REQUIRED SURETY INSPECTION FEE - make check payable to the El Paso County and submit with request.

**1.5 AUTHORIZATION OF REQUEST**

Signature of Permit Holder

Print Permit Holder Name Title (if appropriate)

# ROADWAY INSPECTIONS AND TESTING

# APPENDIX J ROADWAY INSPECTIONS AND TESTING

## J.1 PURPOSE

This appendix presents general requirements for testing and inspecting roadways and ancillary facilities constructed within the County. This appendix presents the minimal standards the ECM Administrator will follow for project inspections and ultimately acceptance of completed improvements.

## J.2 GENERAL TESTING AND INSPECTION PROCEDURES

### J.2.1 Roadway Testing and Inspection Standards

CDOT Standard Specifications for Road and Bridge Construction, as amended, special provisions and revisions thereto and as amended by the ECM shall apply to roadway testing and inspection requirements.

### J.2.2 Submission of Tests

All tests and inspection results performed by the testing firm in the employment of the permit holder shall be submitted directly from the testing agency to ECM Administrator, at the time of field tests, and within 10 working days after the testing or retesting date of laboratory tests.

### J.2.3 Testing Required

Any work performed inside the County's RIGHT-OF-WAY or associated easements shall be tested by an approved materials testing firm who must employ a full-time registered professional engineer who directly supervises work of the firm. The costs of testing and associated reporting will be paid by the permit holder. All Material Testing Reports must be from an ECM Administrator-approved lab and must be certified by a Professional Engineer.

### J.2.4 Approved Testing Methods

The testing of all materials and construction shall be in conformance with the appropriate AASHTO, ASTM, A.C.I., or CDOT specifications. A partial list of approved testing methods is provided in Table J-1.

***Table J-1. Approved Testing Methods***

| Test Procedures | AASHTO | ASTM |
|---|---|---|
| Asphalt Core Densities | T 155 – 78 | |
| Atterberg Limits (LL & PL) | T 89 & T 90 | D 4318 |
| Gradation Analysis (except hydrometer) | T 27 | D 422 |
| CBR | 193 | |
| R-value (subgrade & base) | T 190 | D 2844 |
| Rt Value | T 246 | D 1560 |
| Compaction Curve (standard) | T 99 | D 698 |
| Compaction Curve (modified) | T 180 | D 1557 |
| Compaction Curve (CTAB) | T 134 | |
| Field Density Test (Sand Cone) | T 191 | D 1556 |
| Field Density Test (Nuclear) | T 238 / T 239 | D 2922 / D 3017 |
| Field Density Test (Balloon) | T 205 | D 2167 |
| Concrete Slump | T 119 | C 143 |
| Concrete Air Content | T 152 | C 231 |
| Concrete Compressive Strength | T 22 | C 39 |
| Concrete Sampling | T 141 | C 172 |
| Strength of Soil-Lime Mixtures | T 220 | ---- |
| Asphalt Flow | T 245 | D 1559 |
| Air Voids | T 245 | D 1559 |
| Profil-o-graph | Colo. Procedure 64-85 | |
| Swell Potential Evaluation | | D 4546-96 |

### J.2.5 Scheduling Inspections and Penalties

Any work performed in the County right-of-way must have a valid permit issued by the ECM Administrator. The permit holder must call the ECM Administrator at least 48 hours in advance of commencing work and schedule inspections. If for any reason work is not performed as scheduled, the permit holder must call and cancel the inspection as soon as possible. Failure to cancel the ECM Administrator inspection will result in a penalty fee. The privilege to work in the County's right-of-way may be revoked by the ECM Administrator for non-conformance with any permit or ECM condition or standard.

## J.3 ANCILLARY FACILITIES TESTING AND INSPECTION

### J.3.1 Utility Trenches Backfill Testing and Inspection

#### A. Field Moisture Density Testing

Field moisture-density testing shall be performed during backfill operations beginning 12 inches above the top of the pipe and extending to the finished subgrade elevation. A sufficient number of tests shall be taken at various depths to confirm backfill compaction and moisture content specifications are met. As a minimum, one test shall be taken within 12 inches of manholes, water valves, or other obstacles. Testing shall be done in accordance with Appendix K. Within the

roadway area, trench compaction shall be in accordance with AASHTO T-99 or T-180.

### J.3.2 Curb, Gutter, Sidewalk, and Minor Drainage Structures Testing and Inspection

#### A. Testing Frequency

Testing frequency for the subgrade shall be a minimum of each 6-inch lift on replacement materials with one test for every 500 linear feet of structure with more tests taken if necessary for control.

#### B. Slump, Air Content and Unit Weight Tests

The slump, air content, and unit weight tests for the delivered product shall be carried out on the first load or until compliance for the daily placement and all tests shall be taken at the end of the concrete chute, or, if a “pump truck” is used, at the end of the pump, and thereafter in conformance with Table J-2.

***Table J-2. Testing Frequency***

| Item | Testing Frequency[1] |
|---|---|
| Sidewalks, Crosspans, Curb Returns | 1 set of per class of concrete per project for every 100 cubic yard or fraction thereof of concrete placed |
| Curbing and Combination Curb, Gutter, and Walk | 1 set of per class of concrete per project for every 100 cubic yard or fraction thereof of concrete placed |
| Note: Testing shall include the slump (T 119), air entrainment (T 152), temperature of concrete at placement, yield and compressive strength of the cylinders (T 22).<br><br>[1]All work done by hand (non-extrusion) shall require a minimum of two (2) sets of tests per day. | |

#### C. Core Tests

At the discretion of the ECM Administrator, the contractor or permit holder will provide core test results of concrete at random intervals, not averaging less than one test in 500 feet, to verify that specified thickness of concrete was installed. If the ECM Administrator has not been give the opportunity to inspect the subgrade or concrete forms prior to placement of the concrete, the contractor or permit holder shall provide core tests.

#### D. Temperature Data and Tests

When the mean daily temperature is less than 40°F, in accordance with A.C.I. Specifications, or when concrete is placed with ambient temperatures below 40°F, it shall be the contractor or permit holder’s responsibility to provide testing lab certified proof that the temperature of the concrete has been maintained at not less than 50°F for a minimum of five (5) days or until at least seventy percent (70%) of the design strength has been attained.

## J.4 ROADWAY TESTING AND INSPECTION

### J.4.1 Roadway Subgrade Testing and Inspection

#### A. Field Moisture Density Tests

Field moisture-density tests using acceptance methods will be required at random locations at the rate of one for each 500 lineal feel, or portion thereof, of paving for each travel lane.

#### B. Final Proof Rolling Inspection Notification

The ECM Administrator shall be notified at least 24 hours before final proof-rolling.

#### C. Review and Approval of Tests

The results of field density tests and proof-rolling shall be submitted to and reviewed by the ECM Administrator. If testing indicates unsatisfactory work, the necessary reworking, compaction, or replacement will be required prior to continuation of the paving process. If all tests are acceptable, compaction will be approved for the placement of the paving course. The approval is valid for 24 hours. Changes in weather, such as freezing or precipitation, will require reapproval of the subgrade.

### J.4.2 Lime Treated Subgrade Testing and Inspection

#### A. Field Moisture Density Tests

Lime treated subgrade shall be observed and tested on a full-time basis. Field moisture-density tests shall be taken at the rate of one for each 500 lineal feet of travel lane for each lift. Field density shall be compared to the compaction curves (AASHTO T 220) each soil type for percentage compaction determinations. Field compacted 7-day strength and lime content (AASHTO T 232) determinations shall be required for each 500 tons of subgrade treated, with a minimum of one per project.

#### B. Review and Approval of Tests

The results of field density, lime content, and strength tests shall be submitted and reviewed by the ECM Administrator. Should these tests fail to meet project specifications, the strength reduction will be used to calculate increased pavement layer or overlay thickness required for the design section. If all tests are acceptable, compaction will be approved for the placement of the paving course.

### J.4.3 Aggregate Base Course Testing and Inspection

#### A. Verification of Materials Properties

The contractor or permit holder shall, upon request by the ECM Administrator, provide verification of material properties.

**B. Gradation and Atterberg Limits Materials Sample Tests**

At least one sample of aggregate base course for each 1,000 tons of materials placed shall be tested to determine gradation and Atterberg Limits. Should these tests indicate the material does not meet specifications, the material shall be removed and replaced.

**C. Field Moisture Density Tests**

During placement and compaction, compaction curves will be required for each material used. Field moisture-density tests shall be taken of each lift of material at random locations at approximate intervals of 500 feet in each travel lane. At least 20 percent of the tests shall be taken within 12 inches of manholes, valves, and curbs.

**D. Review and Approval of Tests**

The results of field density tests shall be submitted to and reviewed by the ECM Administrator. Should testing indicate unsatisfactory work, the necessary reworking, compaction, or replacement will be required prior to continuation of the paving process. If all tests are acceptable, compaction will be approved for the placement of the paving course.

### J.4.4 Cement Treated Aggregate Base Course Testing and Inspection

**A. Verification of Materials Properties**

The contractor or permit holder shall provide verification of material properties of the approved mix design.

**B. Approval of Subgrade**

Materials shall be placed on a subgrade that has been proof-rolled within the past 24 hours and found to be stable and non-yielding and has been approved by the ECM Administrator. Should weather conditions change, such as freezing, precipitation, etc., materials shall not be placed until the subgrade is re-approved by the ECM Administrator.

**C. Unconfined Compressive Strength, Gradation, and Atterberg Limits Material Test**

At least one sample of cement treated aggregate base course for each 1,000 tons of material placed shall be tested to determine gradation, and Atterberg Limits. Six field prepared proctor mold samples shall be taken for each 500 tons placed and tested at 7 and 28 days to determined unconfined compressive strength.

**D. Field Moisture Density Tests**

During placement and compaction, compaction curves will be required for each material used in accordance with AASHTO T 134. Field moisture-density test shall be taken of each lift of material at random locations at approximate intervals

of 500 feet in each travel lane. At least 20 percent of the tests shall be taken within 12 inches of manholes, valves, and curbs.

**E. Review and Approval of Tests**

The results of laboratory tests and field density tests shall be submitted to and reviewed by the ECM Administrator. Should testing indicate unsatisfactory work, necessary adjustments will be made to the pavement section to comply with original design strength requirements. If all tests are acceptable, compaction will be approved for the placement of the paving course.

### J.4.5 Hot Mix Asphalt (HMA) Testing and Inspection

Hot Mix Asphalt (HMA) materials shall be tested according to the latest edition of the Pikes Peak Region Asphalt Specification. The Pikes Peak Region Asphalt Specification can be obtained online at:
http://adm.elpasoco.com/publicservices/transportation/Pages/default.aspx.

### J.4.6 Portland Cement Concrete Testing and Inspection

**A. Portland Cement Concrete Requirements**

When the mean daily temperature is less than 40°F, in accordance with A.C.I. Specifications, or when concrete is placed with ambient temperatures below 40°F, it shall be the contractor or permit holder's responsibility to provide testing lab certified proof that the temperature of the concrete has been maintained at not less than 50°F for a minimum of five (5) days or until at least seventy percent (70%) of the design strength has been attained.

**B. Aggregate Samples**

During placement of Portland cement concrete pavement, observation and testing shall be on a full-time basis. For each day of production or every 400 cubic yards placed (or portion thereof), aggregate samples shall be obtained for gradation of both the coarse and fine aggregates.

**C. Slump, Air Content, Unit Weight, and Mix Temperature Testing**

Slump, air content, unit weight, and mix temperature shall be tested every 100 cubic yards of pavement placed. The first three loads shall be tested for slump and air content. If any one test fails to meet requirements, slump and air content tests shall continue until three consecutive loads meet requirements. Thereafter, slump and air shall be tested every fifth load.

**D. Compressive Strength Cylinder Testing**

Six compressive strength cylinders shall be fabricated for each 100 cubic yards placed. Cylinders shall be tested as follows: 1 at 7 days, 2 at 28 days, and 1 for backup, as required by the ECM Administrator. Testing interval may be increased to approximately 1/3 of the daily volume at the discretion of the ECM Administrator.

**E. Certificates of Compliance and Pre-Testing**

Portland cement and fly ash will be accepted on the basis of current certificates of compliance and pre-testing by CDOT. Reinforcing steel, dowels, and tie bars will be accepted by certificate of compliance and mill reports. Water, if not potable, shall be sampled and tested before use. Only CDOT-approved brands of air entraining agents, chemical admixtures, and curing materials may be used and must be documented.

**F. Surface Smoothness Tests**

Surface smoothness shall be tested and corrected as necessary according to Section 412.17 CDOT. The profil-o-graph index shall not be more than 14 inches per mile with a deviation of not more than 0.5 inches in 25 feet. Concrete tested with a 10-foot straight edge shall have a deviation of no more than 3/16 inch in 10 feet. This requirement is for all concrete mainline pavements. Surface smoothness shall be tested and corrected as necessary according to CDOT Section 412.16.

**G. Concrete Thickness Tests**

Concrete thickness shall be verified by coring after construction at random locations at intervals of approximately 500 feet in each travel lane as determined and marked by the ECM Administrator. The ECM Administrator must be present during actual core drilling or cores will not be accepted. Surface smoothness shall be tested and corrected as necessary according to CDOT Section 412.16.

**H. Profil-O-Graph Tests Submitted**

Profil-o-graph tests shall be submitted to, and accepted by, the ECM Administrator prior to beginning the 2-year warranty period.

**I. Onsite Test Location**

All on-site air tests shall be taken at the point of placement: at the end of the concrete chute, or, if a “pump truck” is used, at the end of the pump, etc.

**J. Review and Approval of Tests**

All test results shall be submitted to, and reviewed by, the ECM Administrator. Should testing indicate unsatisfactory work, removal and replacement or grinding will be required. If all tests are acceptable, the pavement will be accepted and the 2-year warranty period will begin.

### J.4.7 Asphalt Tack Coat Testing and Inspection

Asphalt tack coat materials shall be tested according to the latest edition of the Pikes Peak Region Asphalt Specification. The Pikes Peak Region Asphalt Specification can be obtained online at:
http://adm.elpasoco.com/publicservices/transportation/Pages/default.aspx.

### J.4.8 Cement Stabilized Subgrade Testing and Inspection

#### A. Verification of Materials Properties

The contractor or permit holder shall provide verification of material properties of the approved mix design.

#### B. Thickness of Stabilized Zone

Stabilized zone thickness shall be verified by the use of phenolphthalein and shall be performed at intervals of approximately 500 feet in each lane. When the measurement of the thickness is deficient by more than 1 inch from the plan thickness, two additional locations shall be measured randomly within the deficient area and used in determining the average thickness. When the average thickness is deficient by more than 1 inch, the entire area shall be reprocessed to meet the design parameters or the roadway design section must be re-evaluated.

#### C. Unconfined Compressive Strength, Gradation, and Atterberg Limits Material Test

At least one sample of cement stabilized subgrade for each 1,000 tons of material stabilized shall be tested to determine gradation and Atterberg Limits. The stabilized subgrade must develop a laboratory compressive strength that meets the design compressive strength. Samples shall be molded from stabilized soil within 1.5 hours of final mixing with the material compacted per ASTM D 558 or ASTM D 698, as specified in subgrade stabilization design, at the field moisture content.

#### D. Field Moisture Density Tests

During placement and compaction, compaction curves will be required for each material used in accordance with AASHTO T 134. Field moisture-density test shall be taken of each lift of material at random locations at approximate intervals of 500 feet in each travel lane. At least 20 percent of the tests shall be taken within 12 inches of manholes, valves, and curbs.

#### E. Review and Approval of Tests

The results of laboratory tests and field density tests shall be submitted to and reviewed by the ECM Administrator. Should testing indicate unsatisfactory work, necessary adjustments will be made to the pavement section to comply with original design strength requirements. If all tests are acceptable, compaction will be approved for the placement of the paving course.

## J.5 TESTING SUMMARY

Table J-3 summarize the testing requirements outlined in Appendix J.

***Table J-3. Summary Minimum Testing Requirements***

| No. | Item | Type Of Test | Minimum Frequency | Min. # | Act. # |
|---|---|---|---|---|---|
| 1 | Utilities: Water, Sewer, Gas, Electric, Phone and Cable Trenches | Moisture/Density | 1 per every 250 L.F. or fraction thereof, every 2' elevation. Each structure (manhole, valve, etc.) every 2' elevations. This requirement also applies to every service. | | |
| 2 | Storm Sewer Trench | Moisture/Density | Same as above. Each structure (manhole, inlet, etc.) every 2' elevations. | | |
| 3 | Inlets Concrete Testing | Air Slump | First load or until compliance. Minimum 1 per day. | | |
| | | Cylinders | 1 set (4) per project for every 100 C.Y. or fraction thereof. | | |
| | | Steel | Visual and Documentation | | |
| 4 | Curb and Gutter | Moisture/Density | 1 every 250 feet or a minimum of 3 tests, whichever is greater. | | |
| | | Proof-Roll | All final subgrade. | | |
| | | Air/Slump | First load or until compliance. Minimum 1 per every 2,000 L.F. or fraction thereof. | | |
| | | Cylinders | 1 set (4) per project every 2,000 L.F. or fraction thereof. | | |

***Table J-3. Summary of Minimum Testing Requirements Continued***

| No. | Item | Type of Test | Minimum Frequency | Min. # | Act. # |
|---|---|---|---|---|---|
| 5 | Sidewalk | Moisture/Density | 1 per every 250 L.F. or fraction thereof. | | |
| | | Air/Slump | First load or until compliance. Minimum 1 per every 1,000 S.Y. or fraction thereof. | | |
| | | Cylinders | 1 set (4) per project 1,000 S.Y. or fraction thereof. | | |
| 6 | Roadway Subgrade: Fills and Cuts | Moisture/Density | 1 per every 500 Lane Ft. or fraction thereof, every 2' elevation. Cuts to be scarified to a depth of 1', recondition as needed and recompact. | | |
| | | | All final subgrade. | | |
| 7 | Roadway (Concrete) | Air/Slump | First 3 loads or until compliance, then every 1,250 C.Y. or fraction thereof. | | |
| | | Cylinders | 1 set (4) per project for every 1,250 C.Y. or fraction thereof. | | |

***Table J-3. Summary of Minimum Testing Requirements Continued***

| No. | Item | Type of Test | Minimum Frequency | Min. # | Act. # |
|---|---|---|---|---|---|
| 8 | Roadways (Base Coarse) | Moisture/Density | 1 per 500 Lane Ft. or fraction thereof. | | |
| | | Gradation & Atterberg Limits | 1 per 2,000 Tons or fraction thereof. | | |
| | | Proof-Roll | Subgrade prior to Base Coarse placement. Base Coarse prior to placement of asphalt. | | |
| 9 | Roadways (Asphalt) | Density | 1 per 500 Lane Ft. or fraction thereof, per lift. | | |
| | | Extraction/Gradation | 1 per 1,000 Tons or fraction thereof. | | |
| 10 | Roadways (Asphalt & Concrete) | Cores | 1 per 1,000 Lane Ft. or fraction thereof. | | |
| | | Profil-O-Graph | Minor Arterial classification and above. | | |

# ROAD CUT, TRENCHING AND RESTORATION

# APPENDIX K ROAD CUT, TRENCHING AND RESTORATION

## K.1 ROAD CUTS

### K.1.1 General

Placement or repair of subsurface facilities (utilities, culverts, or foundations) within the County roadways shall follow the requirements outlined in the Chapters 3 and 4 and this Appendix. Modifications to these Standards require written approval from the ECM Administrator before beginning work. Emergency repairs for broken pipes, cables etc. is allowed on a case-by-case basis and requires immediate notification of the ECM Administrator. Applicable Trench Notes are provided in Section K.2.

### K.1.2 Pavement Cutting

#### A. No Cuts Permitted

No pavement cuts will be permitted in pavements less than three years old. In the event that a pavement cut is allowed through an approved deviation, restoration requirements may be more extensive than for older pavements. If the a permit holder makes a cut into a pavement less than three years old, which is not an emergency cut, the permit holder shall be liable for restoring the roadway to the satisfaction of ECM Administrator at the permit holder's expense.

#### B. Boring May be Required

Boring may be required for pipelines to cross roads, instead of trenching, as directed by the ECM Administrator. If sufficient right-of-way exists, the length of the bore shall extend a minimum of 4 feet from edge of pavement. Unused holes or abandoned casings shall be backfilled. Water boring under roadways shall not be permitted. Existing carriers and conduit installed under a roadway shall be physically located prior to boring.

#### C. Pavement Cut Standards

Pavement shall be cut so the joint line between existing and replacement pavement is straight and neat (i.e., within 5° of vertical and free from horizontal irregularities). All cuts shall be by saw or blade. The cut shall be full depth to allow the pavement to be removed without damage to the remaining pavement. The minimum allowable remaining pavement sections shall not be less than four feet (4’) (not including the curb and gutter or concrete pavement) unless it is part of monolithic concrete pavement section that shall be full panel (per existing control joint).

#### D. Removal and Disposal of Pavement

Removed pavement shall be hauled away and disposed of in a proper manner (recycle or waste facility).

**E. Base Course Storage and Reuse**

Base course material may be removed and stockpiled off of the road surface area for reuse during backfilling if it meets specifications. If not, it is to be hauled away from the right-of-way and disposed of in a proper manner.

**F. Subbase Material Storage and Reuse**

Sub-base material may be stockpiled parallel to the trench alignment; in such a manner that encroachment upon the non-disturbed portion of the roadway and pedestrian walkways is kept to a minimum. The storage of materials on the non-disturbed portion of the roadway shall not be allowed unless identified in the traffic control plan with appropriate protective measures. Unsuitable material is to be hauled away from the right-of-way, disposed of in a proper manner and replaced with select backfill.

**G. Storage of Construction Materials in Right-of-Way**

The temporary storage of construction material in the public right-of-way in connection with utility projects is permitted. Material storage shall meet the requirements outlined by the ECM Administrator. Parking of construction or personal vehicles on roadways shall be kept to a minimum.

**H. Safety Standards**

Safety standards relating to the shoring and stabilization of trench sidewalls should be maintained as prescribed by appropriate safety regulatory agencies (OSHA, State of Colorado). All barricades shall comply with Manual of Uniform Traffic Control Devices (MUTCD).

**I. Length of Open Trench Limited**

Trenches shall not be opened for a distance of more than one hundred (100) feet at any one time, unless specifically authorized by the ECM Administrator.

**J. Trench Width and Pavement Cut**

The trench width shall be confined to those minimum dimensions, which will permit proper installation and acceptable pipe loading, as established by current acceptable engineering practices and all OSHA requirements. In no case shall the trench width be less than equal to the diameter of the pipe plus a minimum of 12 inches on each side to ensure adequate compaction by mechanical means.

All asphalt pavement cuts shall be a minimum of 12 inches in each lateral dimension beyond edge of trench and full panel replacement on all concrete or curb and gutter cuts.

**K. Open Condition and Traffic Warnings**

No road cuts should be left in an open condition overnight, except for the portion necessary to commence work the following morning. Warning signs, barricades and lights, all in conformance with the MUTCD, shall be used in areas where trenching operations are in public roadways. All work shall have flashing lights

used with warning signs and barricades. All barricades, signs and warning devices shall be installed in accordance with the MUTCD.

**L. Trenching Across the Road and Traffic**

When trenching across the road, no more than one-half (1/2) of the roadway is to be closed to traffic at one time. A traffic signal or flaggers as required by MUTCD shall be provided. The trenched roadway shall be completely backfilled and paved before trenching the other half of the road.

**M. Road Closure**

Closure of any road, approach, or other access points shall be approved by the ECM Administrator. Upon trenching across facilities, steel running plates, planks or other safe methods shall be used to provide for traffic to enter or leave the road or adjacent property.

**N. Driveways Closures**

The use of driveways to adjacent properties shall be respected by the permit holder. Every effort shall be made minimize closures and to open and make serviceable those driveways that are closed in the shortest time possible. If closure of driveways is anticipated, the permit holder performing the work shall notify the owners in advance of closure and shall notify the owners of the anticipated time and period of closure. When open, safe access to private driveways shall be provided.

**O. Notice Before Beginning Work**

The ECM Administrator, applicable policing authority and emergency companies shall be informed by the permit holder at least 48 hours in advance of beginning work in the public right-of-way.

**P. Accidents**

If traffic accidents or pedestrian incidents occur due to installations or obstructions placed in the right-of-way, the occurrence must immediately be reported to the ECM Administrator and the applicable policing authority by the permit holder.

**Q. Access to Fire Hydrants**

Safe access must be maintained at all times to fire hydrants.

**R. Restoration of Property**

The permit holder shall take precautions to limit the removal of or damage to existing pavements, sidewalks, curbs, lawns, shrubbery, trees, hedges, walls, fences, buildings, other existing improvements, existing survey monumentation, pavement markings, and signage in the County right-of-way or easement areas to the least practicable amounts and shall replace or restore improvements to their original location and condition after the excavation has been backfilled and compacted.

**S. Private Easement Conditions**

The permit holder is responsible for understanding and complying with all specific conditions contained in private easements.

**T. Inspection Costs**

All inspection costs shall be borne by the permit holder.

**U. Notice of Completed Work**

The permit holder shall notify the ECM Administrator in writing upon completion of work accomplished under the provisions of the permit.

## K.1.3 Backfilling

**A. General**

Once the subsurface facility has been installed or repaired, backfill material shall be placed in accordance with these Standards.

**B. Backfilling Requirements**

**1. Preparation of Trench**

The bottom of the trench shall be prepared to provide a firm foundation for the facility in accordance with the bedding conditions specified by the Geotechnical Engineer for the type of facility to be installed. The subgrade of the trench shall be kept free of standing water. Where the trench subgrade material is found to be unsuitable and does not afford a solid foundation, the permit holder shall excavate to depth as necessary to construct a stable foundation. A stable foundation shall be constructed by placing crushed rock or other approved granular material to support the installed facility.

**2. No Deformation or Damage to Facility**

The facility, including backfill, shall be installed in a manner that ensures no deformation, displacement or damage to the facility likely to cause leakage or degradation to the structural integrity of the roadway.

**3. Trench Backfill**

The facility being placed will be properly bedded to at least one foot above the pipe with furnished sand or selected sandy soil free of humus, vegetable or other organic matter, frozen material, clods, sticks and debris. In addition, rock particles and hard earth clods larger than 3 inches will be removed. After the improvements are bedded, the previously removed and stockpiled material shall be replaced and properly compacted to an elevation which facilitates placing pavement. No fill material with a liquid limit greater than 40 and plasticity index greater than 20 percent shall be used within the top two feet of the trench without implementing proper mitigation techniques.

**4. Compaction Tests**

Compaction tests must be performed daily by a Geotechnical Engineer and shall be performed at a minimum of every 250 feet (250') or portion thereof along the trench and every 12 inches in elevation. Testing intervals may be increased at the discretion of the ECM Administrator.

**5. Compaction**

The subgrade shall conform to the lines, grades and cross-sections as shown on the approved plans. The backfill material shall be compacted in successive layers not to exceed eight inches (8") thick and shall be finished and maintained in a smooth compacted condition. The completed surface shall be free from rutting or other objectionable irregularities.

Within the roadway area, trench compaction shall be in accordance with the following, depending on the site conditions:

- Depths up to 15 feet and cohesive soils (per A.A.S.H.T.O.) - 95 percent of maximum Standard Proctor dry density at moisture contents within 2 percent of optimum (ASTM D698 or AASHTO T99)
- Depths up to 15 feet and non-cohesive soils (per A.A.S.H.T.O.) - 95 percent of maximum Modified Proctor dry density at moisture contents within 2 percent of optimum (ASTM D1557 or AASHTO T180)
- Depths over 15 feet and cohesive soils (per A.A.S.H.T.O.) - 98 percent of maximum Standard Proctor dry density at moisture contents within 2 percent of optimum (ASTM D698 or AASHTO T99)
- Depths over 15 feet and non-cohesive soils (per A.A.S.H.T.O.) - 95 percent of maximum Modified Proctor dry density at moisture contents within 2 percent of optimum (ASTM D1557 or AASHTO T180)

## K.1.4 Subbase Preparation

**A. General**

The term "subbase", for the purpose of trench backfill discussion shall refer to the CDOT Class 1 or Class 2 material that is part of a structural pavement design. There may or may not be a subbase in the pavement section. If there is none, the base course shall all CDOT Class 6.

**B. Subbase Placement Procedures**

**1. Subbase Grade and Cross Sections**

Subbase material shall conform to the lines, grades, cross sections and thickness shown on the approved plans and shall be finished and

maintained in an acceptable condition at lease one day's progress in advance of base construction.

**2. Subbase Material**

Subbase material shall be well mixed, free of organic matter and lumps or balls of clay, and shall consist of sound aggregate particles and suitable filler or binding materials which when placed and compacted will result in a firm, dense, unyielding foundation. Subbase material need not be crushed but may be of the pit run variety providing it is graded within the following limits.

***Table K-1. Gradation of Subbase Material***

| Standard Size of Sieve | Percentage of Weight Passing Sieve |
|---|---|
| 2 ½ inch | 100 |
| 2 inch | 95 – 100 |
| #4 | 30 – 60 |
| #200 | 5 - 15 |
| Liquid Limit | 35 maximum |
| Plastic Limit | 6 maximum |

**3. Subbase Placement**

Subbase shall be deposited and spread, without particle segregation in loose layers not to exceed 6 inches (6") in depth. Each layer shall be thoroughly and individually compacted to 96% proctor (AASHTO T99) density. Wetting or aerating and rolling the material shall be required when ordered by the ECM Administrator. Subbase shall not be placed on soft, spongy, or frozen subgrade or other subgrade, the stability of which, in the opinion of the ECM Administrator, is unsuitable.

## K.1.5 Foundation for Base Course

**A. General**

Foundation preparation shall be completed to ensure proper slopes, grades, shown of project plans are developed.

**B. Base Course Preparation Requirements**

**1. Base Course Grades and Cross Sections**

Base material shall conform to the lines, grades, cross-sections, and thickness shown on the approved plans and shall be finished and maintained in an acceptable condition at least one day's progress in advance of placing prime coat.

**2. Base Course Material**

Base material shall consist of hard, durable particles or fragments of stone or gravel crushed to the required size and an AP-filler of sand or other finely divided mineral matter. When produced from gravel, not less than 60% by weight of the aggregate retained on a No. 4 sieve shall consist of particles having at least one fractured face. Base material shall be free from vegetable matter and lumps or balls of clay and which when placed and compacted will result in a firm, dense, unyielding foundation. Base material shall meet the following grading requirements:

***Table K-2. Gradation Limits for Base Material***

| Standard Size of Sieve | Percentage of Weight Passing Sieve |
|---|---|
| ¾ inch | 100 |
| #4 | 0 – 65 |
| #10 | 25 – 55 |
| #200 | 3 – 12 |
| Liquid Limit | 25 maximum |
| Plastic Limit | 6 maximum |

**3. Base Course Placement**

Base material shall be deposited and spread without particle segregation in loose layers not to exceed 6 inches in depth. Each layer shall be thoroughly and individually compacted to 95% proctor (AASHTO T180) density. Wetting or aerating and rolling of the material shall be required as ordered by the ECM Administrator following review of all field test results. No base course shall be placed upon a soft, spongy or frozen subgrade or subbase or other subgrade, the stability of which, in the opinion of the ECM Administrator, is unsuitable.

**4. Material Deviations**

Deviation from the gradation limits may be permitted by the ECM Administrator on unpaved roads provided it can be unequivocally demonstrated that the subbase material is not conducive to rutting, raveling or forming a soft yielding surface in the presence of moisture.

**5. Compaction Equipment**

Compaction equipment must be on the job site before excavation is started. Compaction equipment must be capable of compacting within the trench width limits to avoid bridging the ditch.

**6. Existing Untreated Base Course**

If the existing base course is untreated, it shall normally be replaced with CDOT Class 6 aggregate base material and compacted in layers not to

exceed 6 inches. The resulting total compacted base thickness shall be 8 inches or to the thickness of the removed base plus 2 inches. A replacement 2 inch thick asphalt surface wearing course, or matching existing, whichever is greater, shall also be used when replacing asphalt treated aggregate.

### K.1.6 Trench Cover – Subgrade

#### A. General

Trench cover placement shall follow the requirements of these Standards. The objectives are to place the material to lines and grades shown on project plans and ensure the compaction requirements are met.

#### B. Trench Cover Placement Requirements

##### 1. Trench Cover Subgrade

After the backfill has been placed and compacted as specified, it shall be cut and trimmed to the required depth and cross section. Trench cover subgrade shall be free of all rock over 2 ½ inches in size. It shall have a compaction of 95 percent or more, by standard tests at the time of constructing curb, gutter, sidewalk, pavement and/or other permanent trench cover structure.

##### 2. Disposal and Restoration

All excess excavated material shall be removed and disposed of outside the legal limits of the right-of-way as the work progresses, unless the approval of the ECM Administrator is obtained for disposal of the material within the legal limits of the right-of-way. All parts of the roadway and various structures disturbed shall be restored to a condition equal to or better than that which existed before starting the work.

### K.1.7 Trench Cover – Paved Roads

#### A. General

Trench cover placement shall follow the requirements of these Standards. The objectives are to place the material to lines and grades shown on project plans for paved surfaces and ensure the compaction requirements are met.

#### B. Temporary Trench Cover Requirements

##### 1. Temporary Cover Required

All trenches across traffic lanes, where it becomes necessary to remove any existing surfacing or pavement, shall be provided with temporary trench cover.

**2. Temporary Patch Materials**

A temporary patch of cold-mix asphalt shall be placed on all pavement surface cuts immediately after backfilling has been completed and shall be removed at the time a permanent patch is made.

Minimum requirements for temporary trench cover shall be well compacted surfacing material conforming to “Road Mixed Asphalt Surfacing Material” of the CDOT Standard Specifications and shall match the existing asphalt or concrete thickness, or not less than 4 inches thick, whichever is greater. The mineral aggregate shall, with a tolerance of t percent, conform to the grading specified for 3/8-inch maximum aggregate. Bituminous binder to be mixed with the mineral aggregate shall be liquid asphalt, Grade MC-3000 and shall be between 5 ½% and 6% by weight of the dry mineral aggregate.

**3. Material Onsite**

Temporary trench cover surfacing material, other than cold-mix patch, shall be stockpiled on the job site and shall be placed within six hours after completion of trench backfill and compaction.

**4. Temporary Patch Maintenance**

Temporary trench cover shall be properly maintained until permanent trench cover is placed. The surface of the temporary repaving shall be smooth and at the same level as the adjacent undisturbed paved area.

**C. Permanent Trench Cover Requirements**

**1. Asphalt Replacement Depth**

In the areas where the wearing surface is asphalt concrete, replace the pavement with a full depth asphalt paving of a minimum thickness of 4 inches but in all cased to a thickness of the old surface plus base course plus 1 inch.

**2. PCC Replacement Depth**

In areas where the wearing surface Portland cement concrete, replace the pavement with concrete pavement shall conform to these Standards. Concrete pavement replacement shall be of the same depth as the original pavement, but not less than 6 inches thick on alleys or residential roads, nor less than 8t inches on roads classified as collectives and above.

**3. Other Material Replacement Depth**

In areas where the wearing surface is other than asphalt concrete or Portland cement concrete, replace the pavement and base in kind, or minimum ECM Administrator standards, whichever is greater.

**4. Asphalt Placement**

Where original surface was asphalt concrete, bituminous treatment or mix, or oil mat; Asphalt concrete shall be compacted in layers not to exceed 3 inched to a total compacted thickness of 4 inches or the thickness of the removed pavement plus 1 inch, whichever is greater. On oil mat surfaces or substandard asphalt surfaces, an overlay of Class "EX" asphalt pavement 1 ½ inches thick shall be placed across the entire traffic lane disturbed by the trench and shall be finished as set forth below.

- Immediately prior to placing the wearing surface, the abutting pavement edges shall be neatly cut.
- The existing pavement shall be cleaned, removing all loose material and coated with hot liquid asphalt (Grade AC-10) or asphalt emulsion applied cold (Grade CSS-1h) to ensure a bond with the new asphalt surfacing.
- The restored pavement shall be finished to a smooth riding surface and to the grade of the surrounding undisturbed pavement.
- Pavement replacement shall commence not more than 7 working days after backfilling, unless approved by the ECM Administrator.

**5. Trench Edges in the Wheel Travel Portion of Roadway**

In the event the trench edges fall in the wheel traveling portion of a traffic lane, existing or proposed, the applicant shall extend the finish surface paving to a point deemed satisfactory by the ECM Administrator. Finish surface paving shall be performed to provide a crown slope equal to that existing prior to excavation, with no ponding of run-off surface water either over the trench or at the joints between the new and original surfaces.

**6. Cuts Impacting More than One Traffic Lane**

When road surface damage involves more than one traffic lane, a full width paving lift may be required. Individual jobs may require negotiations with the ECM Administrator for partial participation in the cost of a full width overlay.

### K.1.8 Repair to Gravel Roads and Shoulder

**A. General**

The repair of disturbed gravel surfaces shall be completed in accordance with these Standards. Placement of the gravel shall be done to ensure a smooth surface is developed and proper compaction is achieved.

**B. Restoration of Unpaved Areas**

**1. Material and Placement**

Where the original surface was crushed rock or gravel for the wearing surface and foundation material, Class 6 aggregate base course shall be used as replacement material. It shall be placed to a compacted thickness minimum of 8 inches or the thickness of the removed material plus 2 inches, whichever is greater.

**2. Backfill**

In the area from the right-of-way line (fence line/property line) to a point 5 feet outside of the roadside ditch flowline, all trenches shall be backfilled with excavated material and compacted to 90% standard compaction, or to the density of the existing ground, whichever is greater.

In all other areas, including the gravel road, the shoulders and the roadside ditch to a point 5 feet outside of the flowline; all trench compaction shall be completed to a minimum of 90% standard compaction.

**3. Erosion Protection**

During construction and after the trench is backfilled and compacted, erosion protection shall be provided to minimize sediment transport.

## K.1.9 General Restoration Requirements

**A. Preservation, Restoration and Cleanup**

**1. Conform to Permit**

Where construction has impacted streams, wetlands, fish and wildlife habitat areas or their buffers, full restoration and mitigation shall be performed as required by permit. Restoration methods shall be in accordance with County codes, provisions of the applicable permit, and these Standards.

**2. Unsatisfactory Restoration**

Unsatisfactory restoration of the right-of-way, as determined by the ECM Administrator, shall be promptly corrected by the permit holder. If necessary, unsatisfactory restoration may be corrected by the County and billed to the permit holder.

**3. Protection of Existing Utilities and Facilities**

Reinforcement, protection and security of existing utilities and facilities under construction are the responsibility of the permit holder. In roadway restoration, the design shall consider the protection of existing utilities without sacrificing the geometrics of roadway design.

**B. Emergency Repairs**

If emergency repairs disturb the right-of-way, the right-of-way shall be restored immediately. Approval of the final restoration of the right-of-way shall be obtained from the ECM Administrator.

**C. Striping Replacement**

All traffic striping and walkway delineation removed during construction shall be replaced. Temporary striping shall be used on a limited basis and only as approved by the ECM Administrator. All permanent striping and channelization shall be installed by County forces at the expense of the permit holder. If County forces are unavailable to perform the striping installation within an appropriate timeframe, the permit holder shall contract for the striping installation.

**D. Final Cleanup**

**1. Roadways Swept**

Roadways shall be cleaned and swept both during and after utility work. Disturbed soils shall be final graded, seeded, and mulched after installation of the utility facilities or equipment. In limited areas, seeding and mulching by hand, or sod placement using approved methods, will be acceptable. Ditches lined with erodible soil and subject to rapid flows may require seeding, jute matting, netting, placement of sod, or rock lining to control erosion. Revegetated areas shall be weed free.

**2. Siltation**

Any silting of downstream drainage facilities, whether ditches, pipes or catchbasins, which results from the utility installation shall be cleaned out and restored to proper operation as part of the site cleanup.

**3. Storm Drainage Facilities**

Any existing storm drainage facilities or roadside features damaged during repair or restoration activities shall be replaced with new materials by the permit holder.

### K.1.10 Maintenance Period

For a period of two years following the backfilling of any trench in the County's right-of-way or the permanent patching of paved surfaces, the permit holder shall be responsible for the condition of the trench backfill, pavement patches, and adjacent revegetation areas. During that time the permit holder shall, at their own cost, upon request from the ECM Administrator, repair to the County’s satisfaction any of the patches that become settled, cracked, broken, or otherwise faulty. Settlement of the replaced road surface of 1/2 inch or more within a 6-foot straight edge shall constitute evidence of improperly compacted backfill material. If test results do not meet the standards for compaction as set forth in this specification, the permit holder shall be responsible for repairs or replacement to meet these standards. Settlement of 3/16 inch or greater with a 10-foot

straight edge will be cause for repair in the case of settlement or replacement in the case of unsatisfactory workmanship.

## K.2 TRENCHING DETAIL NOTES

- This trench patching detail specifies requirements in addition to those specified in the latest edition of the CDOT's Standard Specifications for Road and Bridge Construction.
- A construction traffic control plan shall be submitted to and approved by ECM Administrator prior to issuance of construction permits in the County right-of-way.
- Trench shall be braced or sheeted as necessary for the safety of the workers and protection of other utilities or structures in accordance with applicable local, state and federal safety regulations.
- The trench width shall be confined to those minimum dimensions, which will permit proper installation and acceptable pipe loading, as established by current local, state and federal safety regulations.
- At the discretion of the ECM Administrator, the pavement may be required to be saw-cut back to maintain a straight edge.
- Backfill compaction requirements: Minimum density will be determined in accordance with AASHTO T99 or T180 as defined by CDOT Standard Specifications Section 203.11 and CDOT 703.03. Except for CLSM.
- Fill depth asphalt can be used as an alternative to base course. A ratio of 3 inches (3") base course to 1 inch (1") of asphalt shall be used in the substitution.
- A temporary cold-mix asphalt patch, 4 inches (4") minimum depth will be required for all road cuts if a permanent hot-mix asphalt patch cannot be applied for any reason, after construction is completed.
- Pavement edges shall be saw-cut straight to within 5 degrees of vertical. Edges shall be tack coated prior to patching.
- If existing road is paved with fabric, a "TEE" trench shall be required. The Contractor shall carefully saw-cut and remove the layer of asphalt above the fabric a minimum of 12" back from the edge of the trench.
- Minimum cover for prefabricated pipe shall be 2 feet (2').
- Changes in design criteria will require compensating change in pipe design.
- When pipe sewer is to be extended or replaced with pipe of different material, the connections shall conform to the detail shown on plans or be approved.
- Spacing for multiple pipe sewer installations shall be ½" inside diameter or span, or 3" maximum.
- Trenches over 5 feet (5') in depth shall be either shared or the trench walls shall be sloped to the angle of repose. If sloped, the bottom of the slope shall be a minimum of 1 foot (1') above the bottom of the slope.
- Shoring will be required when the bottom of the slope is more than 3 feet (3') above the bottom of the trench. Shoring shall extend a minimum of 1 foot (') above the bottom of the slope.

- Timber Sheeting or shoring may be cut off 1 foot above the top of the pipe after backfilling is complete.
- Refer to the City/County DCM and CDOT “M” Standards.

# EROSION AND STORMWATER CONTROL PLANS

# PRE-DEVELOPMENT GRADING AND EROSION CONTROL PLAN
# WINSOME FILING NO 1

A TRACT OF LAND BEING A PORTION OF SECTION 24, TOWNSHIP 11 SOUTH, RANGE 65 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO

## PROJECT CONTACTS

OWNER:
WINSOME, LLC
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PLANNER/LANDSCAPE ARCHITECT:
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## GOVERNING AGENCIES

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WATER QUALITY CONTROL DIVISION
4300 CHERRY CREEK DRIVE SOUTH
DENVER, CO 80246
303.692.3500

## VICINITY MAP

0' 1000' 2000' 3000'
SCALE: 1" = 1000'

## LEGAL DESCRIPTION

COMMENCING AT THE WEST QUARTER CORNER OF SAID SECTION 24; THENCE S00°14'17"W, A DISTANCE OF 1,684.27 FEET TO THE POINT OF BEGINNING; THENCE S89°41'23"E, A DISTANCE OF 820.25 FEET; THENCE N29°41'56"E, A DISTANCE OF 768.98 FEET; THENCE S89°45'39"E, A DISTANCE OF 128.26 FEET; THENCE S69°47'19"E, A DISTANCE OF 306.30 FEET TO A POINT ON CURVE; THENCE ON THE ARC OF A CURVE TO THE LEFT WHOSE CENTER BEARS N69°47'19"W, HAVING A DELTA OF 2°06'42", A RADIUS OF 1,790.00 FEET, A DISTANCE OF 65.97 FEET TO A POINT A POINT OF TANGENT; THENCE N18°06'10"E, A DISTANCE OF 383.72 FEET; THENCE N19°13'35"E, A DISTANCE OF 60.00 FEET TO A POINT ON CURVE; THENCE ON THE ARC OF A CURVE TO THE LEFT WHOSE CENTER BEARS N19°13'35"E, HAVING A DELTA OF 50°01'50", A RADIUS OF 1,470.00 FEET, A DISTANCE OF 1,283.60 FEET TO A POINT ON CURVE; THENCE N30°48'16"W, A DISTANCE OF 58.07 FEET; THENCE N54°25'41"E, A DISTANCE OF 240.00 FEET; THENCE S40°33'13"E, A DISTANCE OF 117.62 FEET TO A POINT ON CURVE; THENCE ON THE ARC OF A CURVE TO THE LEFT WHOSE CENTER BEARS N40°33'13"W, HAVING A DELTA OF 7°37'13", A RADIUS OF 1,530.00 FEET A DISTANCE OF 203.49 FEET TO A POINT OF TANGENT; THENCE N41°49'33"E, A DISTANCE OF 100.05 FEET; THENCE S34°15'42"E, A DISTANCE OF 1,176.07 FEET TO A POINT ON CURVE; THENCE ON THE ARC OF A CURVE TO THE RIGHT WHOSE CENTER BEARS N38°44'46"W, HAVING A DELTA OF 3°31'19", A RADIUS OF 3,970.00 FEET, A DISTANCE OF 244.03 FEET TO A POINT OF TANGENT; THENCE S54°46'33"W, A DISTANCE OF 146.74 FEET; THENCE S35°13'27"E, A DISTANCE OF 60.00 FEET; THENCE N54°46'33"E, A DISTANCE OF 146.74 FEET TO A POINT OF CURVE; THENCE ON THE ARC OF A CURVE TO THE LEFT HAVING A DELTA OF 3°27'19", A RADIUS OF 4,030.00 FEET, A DISTANCE OF 243.03 FEET TO A POINT ON CURVE; THENCE S32°53'11"E, A DISTANCE OF 363.08 FEET; THENCE S21°16'12"E, A DISTANCE OF 333.95 FEET; THENCE S10°20'00"E, A DISTANCE OF 247.91 FEET; THENCE S00°29'45"E, A DISTANCE OF 484.81 FEET TO A POINT 30.00 FEET NORTH OF THE SOUTH LINE OF SECTION 24, TOWNSHIP 11 SOUTH, RANGE 65 WEST OF THE 6TH PRINCIPAL MERIDIAN; THENCE S89°30'15"W ON A LINE 30.00 FEET NORTH OF AND PARALLEL WITH THE SOUTH LINE OF SAID SECTION 24, A DISTANCE OF 4,535.40 FEET TO A POINT ON THE WEST LINE OF THE SOUTHWEST QUARTER OF SAID SECTION 24; THENCE N00°14'17"E ON THE WEST LINE OF THE SOUTHWEST QUARTER OF SAID SECTION 24, A DISTANCE OF 922.65 FEET TO THE POINT OF BEGINNING.

CONTAINING A CALCULATED AREA OF 7,161,246 SQUARE FEET OR 164.400 ACRES.

## BASIS OF BEARINGS

THE WEST LINE OF THE NORTHWEST QUARTER OF SECTION 24, TOWNSHIP 11 SOUTH, RANGE 65 WEST OF THE 6TH PRINCIPAL MERIDIAN BEING MONUMENTED ON THE SOUTHERLY END BY A 2-1/2" ALUMINUM CAP STAMPED "LS 28658" AND AT THE NORTHERLY END BY A 3-1/2" ALUMINUM CAP STAMPED "LS 12103" BEING ASSUMED TO BEAR N00°14'25"E A DISTANCE OF 2636.99 FEET AS SHOWN IN LAND SURVEY PLAT RECORDED UNDER RECEPTION 218900072 RECORDS OF EL PASO COUNTY, COLORADO.

## BENCHMARK

1. A 2.5" ALUMINUM CAP BEING A 30 FOOT WITNESS CORNER NORTH OF THE SOUTHWEST CORNER OF SECTION 24, TOWNSHIP 11 SOUTH, RANGE 65 WEST OF THE 6TH PRINCIPAL MERIDIAN.

   7384.87 NAVD88

## OWNER/DEVELOPER 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.

BY: _____ DATE: _____
JOSEPH W DESJARDIN
WINSOME, LLC
1864 WOODMORE DR, SUITE 100
MONUMENT, COLORADO 80132

## DESIGN ENGINEER 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.

BY: _____ DATE: _____
LANCE P VANDEMARK, PE
STATE OF COLORADO NO. 43911
THE VERTEX COMPANIES, INC

## EL PASO COUNTY:

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

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

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

BY: _____ DATE: _____
JENNIFER IRVINE, PE
COUNTY ENGINEER / ECM ADMINISTRATOR

EGP-20-001

## LEGEND

| | EXISTING | PROPOSED |
|---|---|---|
| PROPERTY BOUNDARY | | |
| EASEMENT | | |
| CONTOURS | 5540 | 5540 |
| SPOT ELEVATION | | 31.45 |
| SLOPE | | 2.0% |
| ELECTRIC LINE / LIGHT POLE | ELEC | |
| SWALE | | |
| MATCHLINE | | |

## BMP LEGEND

| | |
|---|---|
| SF | SILT FENCE (INITIAL PHASE - TEMPORARY BMP) |
| VTC | VEHICLE TRACKING CONTROL (INITIAL PHASE - TEMPORARY BMP) |
| SSA | STABILIZED STAGING AREA (INITIAL PHASE - TEMPORARY BMP) |
| SP | STOCK PILE (INITIAL PHASE - TEMPORARY BMP) |
| CSB | (AKA LIMITS OF CONSTRUCTION) CONSTRUCTION SITE BOUNDARY |
| CWA | CONCRETE WASHOUT AREA (INITIAL PHASE - TEMPORARY BMP) |
| ECB | EROSION CONTROL BLANKET (INTERIM PHASE - PERMANENT BMP) |
| SM | SEEDING AND MULCHING (INTERIM PHASE - PERMANENT BMP) |
| SB | SEDIMENT BASIN (INTERIM PHASE - TEMPORARY BMP) |
| RD | ROCK DAM (INTERIM PHASE - PERMANENT BMP) |
| RS | ROCK SOCK (INTERIM PHASE - PERMANENT BMP) |
| ST | SEDIMENT TRAP (INTERIM PHASE - PERMANENT BMP) |
| | FLOW ARROW |

## CIVIL ABBREVIATIONS

| | |
|---|---|
| ASSY | -ASSEMBLY |
| ECB | -EROSION CONTROL BLANKET |
| EG | -EXISTING GRADE |
| EL | -ELEVATION |
| EOA | -EDGE OF ASPHALT |
| ESMT | -EASEMENT |
| EX | -EXISTING |
| CSB | -CONSTRUCTION SITE BOUNDARY |
| CWA | -CONCRETE WASHOUT AREA |
| FG | -FINISHED GRADE |
| FL | -FLOWLINE |
| INV: | -INVERT |
| L | -LEFT |
| LF | -LINEAR FEET |
| ME | -MATCH EXISTING |
| PT | -POINT |
| PVC | -POLYVINYL CHLORIDE PIPE |
| R | -RIGHT |
| RAD | -RADIUS |
| RD | -ROCK DAM |
| RS | -ROCK SOCK |
| SF | -SILT FENCE |
| SM | -SEEDING AND MULCHING |
| SP | -STOCK PILE |
| SSA | -STABILIZED STAGING AREA |
| ST | -SEDIMENT TRAP |
| STA: | -STATION |
| TYP | -TYPICAL |
| VTC | -VEHICLE TRACKING CONTROL |
| W/ | -WITH |

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LANCE PATRICK VANDEMARK
5/4/20
43911
PROFESSIONAL ENGINEER

COVER SHEET
SITE: 17480 MERIDIAN ROAD
ELBERT, COLORADO 80106
FOR: WINSOME, LLC
1864 WOODMORE DR, SUITE 100
MONUMENT, COLORADO 80132

| NO. | REVISIONS |
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| 1 | SUBMITTAL 1 |
| 2 | 03.11.2020 REVISED PER COMMENTS |
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JOB #: 49388.01
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# PRE-DEVELOPMENT GRADING AND EROSION CONTROL PLAN
# WINSOME FILING NO 1

A TRACT OF LAND BEING A PORTION OF SECTION 24, TOWNSHIP 11 SOUTH, RANGE 65 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO

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

## GENERAL 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 PCD. 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 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 DOT AND MUTCD CRITERIA.

14. CONTRACTOR SHALL OBTAIN ANY PERMITS REQUIRED BY EL PASO COUNTY DOT, INCLUDING WORK WITHIN THE RIGHT-OF-WAY AND SPECIAL TRANSPORT PERMITS.

15. THE LIMITS OF CONSTRUCTION SHALL REMAIN WITHIN THE PROPERTY LINE UNLESS OTHERWISE NOTED. THE OWNER/DEVELOPER SHALL OBTAIN WRITTEN PERMISSION AND EASEMENTS, WHERE REQUIRED, FROM ADJOINING PROPERTY OWNER(S) PRIOR TO ANY OFF-SITE DISTURBANCE, GRADING, OR CONSTRUCTION.

16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONDITIONS AT AND ADJACENT TO THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL ADJACENT IMPROVEMENTS FROM DAMAGE DURING CONSTRUCTION. ALL DISTURBED AREAS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION UNLESS NOTED ON THE PLANS.

18. THE CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES. CONTRACTOR SHALL CONTACT UTILITY NOTIFICATION CENTER OF COLORADO (1-800-922-1987) FOR LOCATION OF UNDERGROUND UTILITIES AT LEAST 48 HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION.

19. CONSTRUCTION DEBRIS OR MUD TRACKING IN THE PUBLIC RIGHT OF WAY RESULTING FROM THIS DEVELOPMENT SHALL BE REMOVED IMMEDIATELY BY THE CONTRACTOR.

20. THE EXISTING CONDITIONS AND PROPOSED IMPROVEMENTS AS SHOWN ON THESE CONSTRUCTION DOCUMENTS ARE BASED ON:
   a) EXISTING TOPOGRAPHIC INFORMATION OBTAINED FROM EL PASO COUNTY LICENSED GIS DATA SERVICE. LIDAR DATA DATED 2011
   b) ADDITIONAL SURVEY INFORMATION COMPILED BY EDWARD JAMES SURVEYING 8/2018
   c) PRELIMINARY PLAN PREPARED BY NES DATED 5/10/2018
   d) SUBDIVISION PLAT PREPARED BY EDWARD JAMES SURVEYING DATED XX/XX/XXXX
   e) NATURAL FEATURES AND WETLAND REPORT PREPAIRED BY ECOSYSTEM SERVICES DATED 10/1/2018
   f) SOILS INVESTIGATION PREPARED BY ENTECH DATED 1/11/2019
   g) TRAFFIC IMPACT STUDY PREPARED BY KELLAR ENGINEERING DATED 1/9/2020

21. ONLY USE CONSTRUCTION PLANS THAT ARE APPROVED FOR CONSTRUCTION. THE APPROVED PLANS WILL BE SIGNED AND SEALED BY THE ENGINEER OF RECORD, THE WORDS "FOR CONSTRUCTION" WILL APPEAR IN THE REVISION BLOCK AND WILL BE SIGNED BY THE APPROPRIATE GOVERNING AGENCY.

22. BASED ON VISUAL INSPECTION, 90% OF THE GROUND IS COVERED AND STABILIZED BY EXISTING VEGETATION.

## 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 AFFECT 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 ENTECH DATED 1/11/2019, 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

## GRADING AND EROSION CONTROL PLANS

30. GRADING PLAN IS FOR ROUGH GRADING ONLY. CHANGES MAY BE NECESSARY TO BRING PLAN INTO CONFORMANCE WITH APPROVED FINAL DRAINAGE PLAN AND SITE PLAN.

31. ANY SETTLEMENT OR SOIL ACCUMULATIONS BEYOND THE PROPERTY LIMITS DUE TO GRADING OR EROSION SHALL BE REPAIRED IMMEDIATELY BY THE CONTRACTOR.

32. AREAS BEING DISTURBED BY THE GRADING SHALL BE RE-SEEDED WITH NATIVE VEGETATION OR AS APPROVED ON THE EROSION CONTROL PLAN.

33. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS AT AND ADJACENT TO THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE DUTY OF THE COUNTY TO CONDUCT CONSTRUCTION REVIEW OF THE CONTRACTOR'S PERFORMANCE IS NOT INTENDED TO INCLUDED REVIEW OF THE ADEQUACY OF THE CONTRACTOR'S SAFETY MEASURES IN, ON, OR NEAR THE CONSTRUCTION SITE.

34. DITCH SECTIONS WITH VELOCITIES OVER 4 CFS WILL BE LINED WITH EROSION CONTROL FABRIC. SEE TABLE BELOW FOR DETAILS.

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Main: 303.623.9116 | VERTEXENG.COM

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LARRY PATRICK VANDEN
5/4/20
43911
PROFESSIONAL ENGINEER

NOTES
SITE: 17480 MERIDIAN ROAD
ELBERT, COLORADO 80106
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DATE: 01.22.20
DRAWN BY: JCP
CHECKED BY: LPV
JOB #: 49388.01
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# PRE-DEVELOPMENT GRADING AND EROSION CONTROL PLAN

# WINSOME FILING NO 1

A TRACT OF LAND BEING A PORTION OF SECTION 24, TOWNSHIP 11 SOUTH, RANGE 65 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO

0' 300' 600' 900'

SCALE: 1" = 300'

EGP-20-001

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COLORADO LICENSED
LAWRENCE PATRICK VANDEWEGE
5/4/20
43911
PROFESSIONAL ENGINEER

SITE PLAN

SITE: 17480 MERIDIAN ROAD
ELBERT, COLORADO 80106

FOR: WINSOME, LLC
1864 WOODMORE DR, SUITE 100
MONUMENT, COLORADO 80132

| NO. | REVISIONS |
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| CHECKED BY: LPV | |
| JOB #: 49388.01 | |

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PRE-DEVELOPMENT GRADING AND EROSION CONTROL PLAN

# WINSOME FILING NO 1

A TRACT OF LAND BEING A PORTION OF SECTION 24, TOWNSHIP 11 SOUTH, RANGE 65 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO

## EARTH WORK QUANTITIES

| | |
|---|---|
| CLEAR AND GRUB | 6,800 SY |
| RAW CUT | 51,000 CY |
| RAW FILL | 49,000 CY |
| 10% COMPACTION | 5,000 CY |
| IMPORT | 3,000 CY |

## KEY

CUT

FILL

0' 300' 600' 900'

SCALE: 1" = 300'

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CUT FILL PLAN

SITE: 17480 MERIDIAN ROAD
ELBERT, COLORADO 80106

FOR: WINSOME, LLC
1864 WOODMORE DR, SUITE 100
MONUMENT, COLORADO 80132

| NO. | REVISIONS |
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CHECKED BY: LPV
JOB #: 49388.01

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# PRE-DEVELOPMENT GRADING AND EROSION CONTROL PLAN

# WINSOME FILING NO 1

A TRACT OF LAND BEING A PORTION OF SECTION 24, TOWNSHIP 11 SOUTH, RANGE 65 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO

STANDARD EPC RURAL LOCAL ROADWAY CROSS SECTION

N.T.S.

NOTES:

1. EXISTING FLOODPLAIN AS SHOWN BASED ON FIRM MAP #08041C0350G PANEL 350 REVISED 12/7/2018.
2. REPLANT ALL DISTURBED AREAS WITH COUNTY APPROVED SEED MIX.

0' 300' 600' 900'

SCALE: 1" = 300'

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OVERALL GRADING PLAN

SITE: 17480 MERIDIAN ROAD
ELBERT, COLORADO 80106

FOR: WINSOME, LLC
1864 WOODMORE DR, SUITE 100
MONUMENT, COLORADO 80132

| NO. | REVISIONS |
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| DRAWN BY:JCP | |
| CHECKED BY: LPV | |
| JOB #: 49388.01 | |

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# PRE-DEVELOPMENT GRADING AND EROSION CONTROL PLAN

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OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO

TYPICAL ROADWAY CROSS SECTION
N.T.S

MATCHLINE - 8 - DETAIL GRADING PLAN - B1

MATCHLINE - 7 - DETAIL GRADING PLAN - A2

0' 100' 200' 300'
SCALE: 1" = 100'

KEY MAP
1"= 2000'

EGP-20-001


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DETAIL GRADING PLAN - A1

SITE: 17480 MERIDIAN ROAD
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FOR: WINSOME, LLC
1864 WOODMORE DR, SUITE 100
MONUMENT, COLORADO 80132

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OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO

TYPICAL ROADWAY CROSS SECTION
N.T.S

MATCHLINE - 9 - DETAIL GRADING PLAN - B2

MATCHLINE - 6 - DETAIL GRADING PLAN - A1

0' 100' 200' 300'
SCALE: 1" = 100'

KEY MAP
1"= 2000'

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DETAIL GRADING PLAN - A2

SITE: 17480 MERIDIAN ROAD
ELBERT, COLORADO 80106

FOR: WINSOME, LLC
1864 WOODMORE DR, SUITE 100
MONUMENT, COLORADO 80132

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TYPICAL ROADWAY CROSS SECTION
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# PRE-DEVELOPMENT GRADING AND EROSION CONTROL PLAN
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A TRACT OF LAND BEING A PORTION OF SECTION 24, TOWNSHIP 11 SOUTH, RANGE 65 WEST, OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO

MATCHLINE - 6 - DETAIL GRADING PLAN - A1

MATCHLINE - 9 - DETAIL GRADING PLAN - B2

0' 100' 200' 300'
SCALE: 1" = 100'

KEY MAP
1"= 2000'

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DETAIL GRADING PLAN - B1

SITE: 17480 MERIDIAN ROAD
ELBERT, COLORADO 80106

FOR: WINSOME, LLC
1864 WOODMORE DR, SUITE 100
MONUMENT, COLORADO 80132

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TYPICAL ROADWAY CROSS SECTION
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# PRE-DEVELOPMENT GRADING AND EROSION CONTROL PLAN
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A TRACT OF LAND BEING A PORTION OF SECTION 24, TOWNSHIP 11 SOUTH, RANGE 65 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO

MATCHLINE - 8 - DETAIL GRADING PLAN - B1

EFFECTIVE 100-YEAR FLOODPLAIN
PROPOSED 100-YEAR FLOODPLAIN LINE APPROVED FEMA CLOMR
TEMPORARY SEDIMENT BASIN
ALAMAR WAY
BISON MEADOWS CT
LOT 47
LOT 46
LOT 31
LOT 32
LOT 45
LOT 28
FUTURE FILING
AT NATURAL DRAINAGE INSTALL TEMPORARY SWALE WHERE PROPOSED CULVERT WILL BE PLACED.

MATCHLINE - 7 - DETAIL GRADING PLAN - A2

0' 100' 200' 300'
SCALE: 1" = 100'

KEY MAP
1"= 2000'

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DETAIL GRADING PLAN - B2

SITE: 17480 MERIDIAN ROAD
ELBERT, COLORADO 80106

FOR: WINSOME, LLC
1864 WOODMORE DR, SUITE 100
MONUMENT, COLORADO 80132

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DATE: 01.22.20
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CHECKED BY: LPV
JOB #: 49388.01

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TYPICAL ROADWAY CROSS SECTION
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# PRE-DEVELOPMENT GRADING AND EROSION CONTROL PLAN
# WINSOME FILING NO 1

A TRACT OF LAND BEING A PORTION OF SECTION 24, TOWNSHIP 11 SOUTH, RANGE 65 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO

Know what's below. Call before you dig.

MATCHLINE - 9 - DETAIL GRADING PLAN - B2

0' 100' 200' 300'
SCALE: 1" = 100'

KEY MAP
1"= 2000'

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DETAIL GRADING PLAN - C2

SITE: 17480 MERIDIAN ROAD
ELBERT, COLORADO 80106

FOR: WINSOME, LLC
1864 WOODMORE DR, SUITE 100
MONUMENT, COLORADO 80132

| NO. | REVISIONS |
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# PRE-DEVELOPMENT GRADING AND EROSION CONTROL PLAN

# WINSOME FILING NO 1

A TRACT OF LAND BEING A PORTION OF SECTION 24, TOWNSHIP 11 SOUTH, RANGE 65 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO

MATCHLINE - 13 - INITIAL EROSION CONTROL PLAN B1

MATCHLINE - 12 - INITIAL EROSION CONTROL PLAN A2

## NOTE:

1. ALL BMPS ARE REPRESENTED GRAPHICALLY AND ARE INTENDED TO GENERALLY DEPICT APPLICABLE LOCATIONS. IT IS EXPECTED THAT SITE CONDITIONS AND DEVELOPMENT PHASING WILL DETERMINE BEST LOCATIONS OF ACTUAL BMPS WHILE CONFORMING TO INTENDED LOCATIONS PER THIS PLAN.
2. SEED MIX MUST BE EL PASO COUNTY APPROVED.

0' 100' 200' 300'

SCALE: 1" = 100'

KEY MAP
1"= 2000'

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5/4/20
43911
PROFESSIONAL ENGINEER

EROSION CONTROL A1

SITE: 17480 MERIDIAN ROAD
ELBERT, COLORADO 80106

FOR: WINSOME, LLC
1864 WOODMORE DR, SUITE 100
MONUMENT, COLORADO 80132

| NO. | REVISIONS |
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# PRE-DEVELOPMENT GRADING AND EROSION CONTROL PLAN
# WINSOME FILING NO 1

A TRACT OF LAND BEING A PORTION OF SECTION 24, TOWNSHIP 11 SOUTH, RANGE 65 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO

MATCHLINE - 14 - INITIAL EROSION CONTROL PLAN B2

MATCHLINE - 11 - INITIAL EROSION CONTROL PLAN A1

## NOTE:

1. ALL BMPS ARE REPRESENTED GRAPHICALLY AND ARE INTENDED TO GENERALLY DEPICT APPLICABLE LOCATIONS. IT IS EXPECTED THAT SITE CONDITIONS AND DEVELOPMENT PHASING WILL DETERMINE BEST LOCATIONS OF ACTUAL BMPS WHILE CONFORMING TO INTENDED LOCATIONS PER THIS PLAN.
2. SEED MIX MUST BE EL PASO COUNTY APPROVED.

0' 100' 200' 300'
SCALE: 1" = 100'

KEY MAP
1"= 2000'

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5/4/20
43911
PROFESSIONAL ENGINEER

EROSION CONTROL A2

SITE: 17480 MERIDIAN ROAD
ELBERT, COLORADO 80106

FOR: WINSOME, LLC
1864 WOODMORE DR, SUITE 100
MONUMENT, COLORADO 80132

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# PRE-DEVELOPMENT GRADING AND EROSION CONTROL PLAN

# WINSOME FILING NO 1

A TRACT OF LAND BEING A PORTION OF SECTION 24, TOWNSHIP 11 SOUTH, RANGE 65 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO

Know what's below. Call before you dig.

MATCHLINE - 14 - INITIAL EROSION CONTROL PLAN B2

MATCHLINE - 11 - INITIAL EROSION CONTROL PLAN A1

## NOTE:

1. ALL BMPS ARE REPRESENTED GRAPHICALLY AND ARE INTENDED TO GENERALLY DEPICT APPLICABLE LOCATIONS. IT IS EXPECTED THAT SITE CONDITIONS AND DEVELOPMENT PHASING WILL DETERMINE BEST LOCATIONS OF ACTUAL BMPS WHILE CONFORMING TO INTENDED LOCATIONS PER THIS PLAN.
2. SEED MIX MUST BE EL PASO COUNTY APPROVED.

0' 100' 200' 300'

SCALE: 1" = 100'

KEY MAP
1"= 2000'

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LAWRENCE PATRICK VANDEN BERG
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43911
PROFESSIONAL ENGINEER

EROSION CONTROL B1

SITE: 17480 MERIDIAN ROAD
ELBERT, COLORADO 80106

FOR: WINSOME, LLC
1864 WOODMORE DR, SUITE 100
MONUMENT, COLORADO 80132

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# PRE-DEVELOPMENT GRADING AND EROSION CONTROL PLAN
# WINSOME FILING NO 1

A TRACT OF LAND BEING A PORTION OF SECTION 24, TOWNSHIP 11 SOUTH, RANGE 65 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO

MATCHLINE - 13 - INITIAL EROSION CONTROL PLAN B1

MATCHLINE - 15 - INITIAL EROSION CONTROL PLAN C2

MATCHLINE - 12 - INITIAL EROSION CONTROL PLAN A2

## NOTE:

1. ALL BMPS ARE REPRESENTED GRAPHICALLY AND ARE INTENDED TO GENERALLY DEPICT APPLICABLE LOCATIONS. IT IS EXPECTED THAT SITE CONDITIONS AND DEVELOPMENT PHASING WILL DETERMINE BEST LOCATIONS OF ACTUAL BMPS WHILE CONFORMING TO INTENDED LOCATIONS PER THIS PLAN.
2. SEED MIX MUST BE EL PASO COUNTY APPROVED.

0' 100' 200' 300'

SCALE: 1" = 100'

KEY MAP
1"= 2000'

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5/4/20
43911
PROFESSIONAL ENGINEER

EROSION CONTROL B2

SITE: 17480 MERIDIAN ROAD
ELBERT, COLORADO 80106

FOR: WINSOME, LLC
1864 WOODMORE DR, SUITE 100
MONUMENT, COLORADO 80132

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# PRE-DEVELOPMENT GRADING AND EROSION CONTROL PLAN
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OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO

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## NOTE:

1. ALL BMPS ARE REPRESENTED GRAPHICALLY AND ARE INTENDED TO GENERALLY DEPICT APPLICABLE LOCATIONS. IT IS EXPECTED THAT SITE CONDITIONS AND DEVELOPMENT PHASING WILL DETERMINE BEST LOCATIONS OF ACTUAL BMPS WHILE CONFORMING TO INTENDED LOCATIONS PER THIS PLAN.
2. SEED MIX MUST BE EL PASO COUNTY APPROVED.

0' 100' 200' 300'
SCALE: 1" = 100'

KEY MAP
1"= 2000'

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MATCHLINE - 14 - INITIAL EROSION CONTROL PLAN B2


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PROFESSIONAL ENGINEER

EROSION CONTROL C2

SITE: 17480 MERIDIAN ROAD
ELBERT, COLORADO 80106

FOR: WINSOME, LLC
1864 WOODMORE DR, SUITE 100
MONUMENT, COLORADO 80132

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JOB #: 49388.01

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# PRE-DEVELOPMENT GRADING AND EROSION CONTROL PLAN
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A TRACT OF LAND BEING A PORTION OF SECTION 24, TOWNSHIP 11 SOUTH, RANGE 65 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO

Know what's below. Call before you dig.

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 (SB) — SC-7

SEDIMENT BASIN RISER PIPE DETAIL
(NTS)

### SEDIMENT BASIN B
DISTURBED AREA = 3.97 AC X 1800 = 7150 $FT^3$ MIN VOLUME
PROPOSED VOLUME = 10,200 $FT^3$ 0.23 AC-FT
STAND PIPE: 3' HIGH, 0.30 $IN^2$ REQUIRED HOLE AREA
2 COLUMNS OF (5) - 7/16" DIA HOLES

### SEDIMENT BASIN C
DISTURBED AREA = 7.64 AC X 1800 = 13,750 $FT^3$ MIN VOLUME
PROPOSED VOLUME = 23,600 $FT^3$ 0.54 AC-FT
STAND PIPE: 4' HIGH, 0.61 $IN^2$ REQUIRED HOLE AREA
2 COLUMNS OF (5) - 5/8" DIA HOLES

### SEDIMENT BASIN D
DISTURBED AREA = 5.52 AC X 1800 = 9,950 $FT^3$ MIN VOLUME
PROPOSED VOLUME = 62,800 $FT^3$ 1.44 AC-FT
STAND PIPE: 4' HIGH, 1.01 $IN^2$ REQUIRED HOLE AREA
3 COLUMNS OF (5) - 11/16" DIA HOLES

### SEDIMENT BASIN 3
DISTURBED AREA = 3.72 AC X 1800 = 6,700 $FT^3$ MIN VOLUME (0.15 AC-FT)
PROPOSED VOLUME = 320,000 $FT^3$ 7.35 AC-FT
STAND PIPE: 4.5' HIGH, 0.17 $IN^2$ REQUIRED HOLE AREA
1 COLUMN OF (5) - 1/2" DIA HOLES
* SB3 VOLUME IS SIZED FOR OVER DETENTION, STAND PIPE SIZED FOR ASSOCIATED DISTURBED AREA.

**ROADSIDE DITCH Q 100Y VALUES**

| DITCH SECTION DESIGNATOR | START STATION | END STATION | LENGTH | GRADE | WATER SHED FROM ROAD | FRACTION OF BASIN FLOW | BASIN DESIGNATOR | BASIN 100Y Q | DITCH RECEIVING FRACTION OF Q | DITCH 100Y Q FROM BASIN | ROAD WATERSHED 100Y Q | CONNECTING DITCH 100Y Q | TOTAL 100Y Q IN DITCH SECTION | AVERAGE VELCITY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (FT) | (FT) | (FT) | % | | | | (CFS) | % | (CFS) | (CFS) | (CFS) | (CFS) | (FPS) |
| WINSOME WAY | | | | | | | | | | | | | | |
| B2-3 | +32 | 5+14 | 482' | 4.83% | X | | B2 | | | - | 0.00 | | 0.00 | 3.00 |
| B4-3.1 | 5+14 | 6+60 | 146' | 3.85% | X | | B4 | | | - | 0.00 | | 0.00 | 3.52 |
| B4-3.2 | 6+60 | 9+50 | 290' | 7.89% | X | | B5 | | | - | 0.00 | 0.00 | 0.00 | 3.51 |
| B4-3.3 | 9+50 | 18+00 | 850' | 3.22% | X | | B6 | | | - | 0.00 | 0.00 | 0.00 | 3.29 |
| B4-4 | 18+00 | 20+96 | 296' | 1.00% | X | | B4 | | | - | 0.00 | | 0.00 | 1.47 |
| C2-1.1 | +32 | 6+10 | 578' | 3.85% | X | | C2 | | | - | 0.00 | | 0.00 | 2.65 |
| C2-1.2 | 6+10 | 10+17 | 407' | 7.89% | X | | C2 | | | - | 0.00 | 0.00 | 0.00 | 4.30 |
| C3-3 | 10+17 | 18+00 | 783' | 3.22% | X | | C3 | | | - | 0.00 | 1.19 | 1.19 | 3.93 |
| C3-4 | 18+00 | 20+96 | 296' | 1.00% | X | | C4 | | | - | 0.00 | | 0.00 | 1.47 |
| ALAMAR WAY | | | | | | | | | | | | | | |
| D2-1 | 70+52 | 78+93 | 841' | 1.43% | X | X | C3 | 22.1 | 10% | 2.21 | 0.00 | | 2.21 | 2.42 |
| D2-2 | 78+93 | 84+31 | 538' | 3.72% | X | X | D2 | 81.3 | 2% | 1.63 | 0.00 | | 1.63 | 3.39 |
| D5-1 | 70+52 | 78+93 | 841' | 1.43% | X | | - | | | - | 0.00 | | 0.00 | 2.21 |
| D5-2 | 78+93 | 84+31 | 538' | 3.72% | X | | - | | | - | 0.00 | | 0.00 | 2.79 |
| BISON MEADOWS COURT | | | | | | | | | | | | | | |
| D2-3.1 | +8 | 6+00 | 592' | 1.37% | X | X | | 81.3 | 1% | 0.81 | 0.00 | 0.81 | 1.63 | 2.92 |
| D2-3.2 | 5+50 | 24+02 | 1852' | 3.47% | X | X | | 81.3 | 1% | 0.81 | 0.00 | | 0.81 | 3.82 |
| D3.4.6-1.1 | 5+50 | 24+02 | 1852' | 3.47% | X | | | | | - | 0.00 | | 0.00 | 3.71 |
| D3.4.6-2.2 | +8 | 6+00 | 592' | 1.37% | X | | | | | - | 0.00 | 0.00 | 0.00 | 2.79 |
| CLOVE HITCH COURT | | | | | | | | | | | | | | |
| B2-1 | +14 | 5+80 | 566' | 5.34% | | | B2 | 19.9 | 10% | 1.99 | 0.00 | | 1.99 | 3.85 |
| B2-2 | 5+80 | 7+82 | 202' | 1.13% | | | B2 | 19.9 | 20% | 3.98 | 0.00 | | 3.98 | 2.37 |
| B4-1 | 5+80 | 7+82 | 202' | 1.13% | | | B4 | 53.1 | | - | 0.00 | | 0.00 | 1.48 |
| B4-2 | +14 | 5+80 | 566' | 5.34% | | | B4 | 53.1 | | - | 0.00 | | 0.00 | 3.24 |
| MOSEY TRAIL | | | | | | | | | | | | | | |
| C2-2.1 | +14 | 2+74 | 260' | 1.43% | X | X | C2 | 23.7 | 5% | 1.19 | 0.00 | | 1.19 | 2.00 |
| C2-2.2 | 2+74 | 5+25 | 251' | 1.03% | X | X | C2 | 23.7 | 10% | 2.37 | 0.00 | | 2.37 | 2.16 |
| C2-3 | 5+25 | 14+54 | 929' | 7.03% | X | X | C2 | 23.7 | 40% | 9.48 | 0.00 | | 9.48 | 5.72 |
| C3-1 | 5+25 | 14+54 | 929' | 7.03% | X | | C3 | 22.1 | | - | 0.00 | | 0.00 | 2.38 |
| C3-2.1 | 2+74 | 5+25 | 251' | 1.03% | X | | C3 | 22.1 | | - | 0.00 | | 0.00 | 1.56 |
| C3-2.2 | +14 | 2+74 | 260' | 1.43% | X | | C3 | 22.1 | | - | 0.00 | | 0.00 | 2.26 |
| | | | | | | | | | | | | | | |
| Q PER FOOT FOR 1' X 20' (HALF OF ROAD SECTION TO DITCH X 1' WIDE) = 0.003 | | | | | | | | | | | | | | CFS |

## SC-8 — Sediment Trap (ST)

ST-1. SEDIMENT TRAP



## Sediment Trap (ST) — SC-8

SEDIMENT TRAP INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   —LOCATION, LENGTH AND WIDTH OF SEDIMENT TRAP.
2. ONLY USE FOR DRAINAGE AREAS LESS THAN 1 ACRE.
3. SEDIMENT TRAPS SHALL BE INSTALLED PRIOR TO ANY UPGRADIENT LAND-DISTURBING ACTIVITIES.
4. SEDIMENT TRAP BERM SHALL BE CONSTRUCTED FROM MATERIAL FROM EXCAVATION. THE BERM SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY IN ACCORDANCE WITH ASTM D698.
5. SEDIMENT TRAP OUTLET TO BE CONSTRUCTED OF RIPRAP, TYPE M (D50=12") TYP.SMALLER ROCK SIZE MAY BE ALLOWABLE FOR SMALLER TRAPS IF APPROVED BY LOCAL JURISDICTION.
6. THE TOP OF THE EARTHEN BERM SHALL BE A MINIMUM OF 6" HIGHER THAN THE TOP OF THE RIPRAP OUTLET STRUCTURE.
7. THE ENDS OF THE RIPRAP OUTLET STRUCTURE SHALL BE A MINIMUM OF 6" HIGHER THAN THE CENTER OF THE OUTLET STRUCTURE.

SEDIMENT TRAP 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. REMOVE SEDIMENT ACCUMULATED IN TRAP AS NEEDED TO MAINTAIN THE FUNCTIONALITY OF THE BMP, TYPICALLY WHEN THE SEDIMENT DEPTH REACHES ½ THE HEIGHT OF THE RIPRAP OUTLET.
5. SEDIMENT TRAPS SHALL REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.
6. WHEN SEDIMENT TRAPS ARE REMOVED, THE DISTURBED AREA SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO, NOT AVAILABLE IN AUTOCAD)

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





Required Area per Row ($in^2$)

| Design Volume (acre-ft) | Depth at Outlet (ft) 1.0 | 1.5 | 2.0 | 2.5 | 3.0 | 3.5 | 4.0 | 4.5 |
|---|---|---|---|---|---|---|---|---|
| 2 | 15.04 | 7.71 | 5.10 | 3.76 | 2.95 | 2.41 | 2.02 | 1.73 |
| 1 | 7.52 | 3.86 | 2.55 | 1.88 | 1.48 | 1.21 | 1.01 | 0.87 |
| 0.6 | 4.51 | 2.31 | 1.53 | 1.13 | 0.89 | 0.72 | 0.61 | 0.52 |
| 0.4 | 3.01 | 1.54 | 1.02 | 0.75 | 0.59 | 0.48 | 0.40 | 0.35 |
| 0.2 | 1.50 | 0.77 | 0.51 | 0.38 | 0.30 | 0.24 | 0.20 | 0.17 |
| 0.1 | 0.75 | 0.39 | 0.26 | 0.19 | 0.15 | 0.12 | 0.10 | 0.09 |
| 0.06 | 0.45 | 0.23 | 0.15 | 0.11 | 0.09 | 0.07 | 0.06 | 0.05 |
| 0.04 | 0.30 | 0.15 | 0.10 | 0.08 | 0.06 | 0.05 | 0.04 | 0.03 |
| 0.02 | 0.15 | 0.08 | 0.05 | 0.04 | 0.03 | 0.02 | 0.02 | 0.02 |
| 0.01 | 0.08 | 0.04 | 0.03 | 0.02 | 0.01 | 0.01 | 0.01 | 0.01 |

TABLE SB-1

Circular Perforation Sizing

| Hole Diameter (in) | Hole Diameter (in) | Area per Row ($in^2$) n = 1 | n = 2 | n = 3 |
|---|---|---|---|---|
| 1/4 | 0.250 | 0.05 | 0.10 | 0.15 |
| 5/16 | 0.313 | 0.08 | 0.15 | 0.23 |
| 3/8 | 0.375 | 0.11 | 0.22 | 0.33 |
| 7/16 | 0.438 | 0.15 | 0.30 | 0.45 |
| 1/2 | 0.500 | 0.20 | 0.39 | 0.59 |
| 9/16 | 0.563 | 0.25 | 0.50 | 0.75 |
| 5/8 | 0.625 | 0.31 | 0.61 | 0.92 |
| 11/16 | 0.688 | 0.37 | 0.74 | 1.11 |
| 3/4 | 0.750 | 0.44 | 0.88 | 1.33 |
| 7/8 | 0.875 | 0.60 | 1.20 | 1.80 |
| 1 | 1.000 | 0.79 | 1.57 | 2.36 |
| 1 1/8 | 1.125 | 0.99 | 1.99 | 2.98 |
| 1 1/4 | 1.250 | 1.23 | 2.45 | 3.68 |
| 1 3/8 | 1.375 | 1.48 | 2.97 | 4.45 |
| 1 1/2 | 1.500 | 1.77 | 3.53 | 5.30 |
| 1 5/8 | 1.625 | 2.07 | 4.15 | 6.22 |
| 1 3/4 | 1.750 | 2.41 | 4.81 | 7.22 |
| 1 7/8 | 1.875 | 2.76 | 5.52 | 8.28 |
| 2 | 2.000 | 3.14 | 6.28 | 9.42 |
| n = Number of columns of perforations | | | | |
| Minimum steel plate thickness | | 1/4" | 5/16" | 3/8" |

TABLE SB-2

| City of Colorado Springs Stormwater Quality | Figure SB-2 Outlet Sizing Application Techniques and Maintenance Requirements |
|---|---|

3-33

EGP-20-001

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COLORADO LICENSED LANCE PATRICK VANDER 5/4/20 43911 PROFESSIONAL ENGINEER

EROSION CONTROL DETAILS
SITE: 17480 MERIDIAN ROAD ELBERT, COLORADO 80106
FOR: WINSOME, LLC 1864 WOODMORE DR, SUITE 100 MONUMENT, COLORADO 80132

| NO. | REVISIONS |
|---|---|
| 1 | SUBMITTAL 1 |
| 2 | 03.11.2020 REVISED PER COMMENTS |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |
| 10 | |

DATE: 01.22.20
DRAWN BY: JCP
CHECKED BY: LPV
JOB #: 49388.01



Z:\Shared\Projects\49000-49999\49300-49399\49388.McCune Ranch\06-Engineering\Vertex Drawings\Early Grading\Filing 1\49388-GEC_F1_ErosionControl.dwg Monday, May 4, 2020 1:09:18 PM
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# PRE-DEVELOPMENT GRADING AND EROSION CONTROL PLAN
# WINSOME FILING NO 1

A TRACT OF LAND BEING A PORTION OF SECTION 24, TOWNSHIP 11 SOUTH, RANGE 65 WEST, OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO

## Rock Sock (RS) SC-5

### Description

**Photograph RS-1.** Rock socks placed at regular intervals in a curb line can help reduce sediment loading to storm sewer inlets. Rock socks can also be used as perimeter controls.

A rock sock is constructed of gravel that has been wrapped by wire mesh or a geotextile to form an elongated cylindrical filter. Rock socks are typically used either as a perimeter control or as part of inlet protection. When placed at angles in the curb line, rock socks are typically referred to as curb socks. Rock socks are intended to trap sediment from stormwater runoff that flows onto roadways as a result of construction activities.

### Appropriate Uses

Rock socks can be used at the perimeter of a disturbed area to control localized sediment loading. A benefit of rock socks as opposed to other perimeter controls is that they do not have to be trenched or staked into the ground; therefore, they are often used on roadway construction projects where paved surfaces are present.

Use rock socks in inlet protection applications when the construction of a roadway is substantially complete and the roadway has been directly connected to a receiving storm system.

### Design and Installation

When rock socks are used as perimeter controls, the maximum recommended tributary drainage area per 100 lineal feet of rock socks is approximately 0.25 acres with disturbed slope length of up to 150 feet and a tributary slope gradient no steeper than 3:1. A rock sock design detail and notes are provided in Detail RS-1. Also see the Inlet Protection Fact Sheet for design and installation guidance when rock socks are used for inlet protection and in the curb line.

When placed in the gutter adjacent to a curb, rock socks should protrude no more than two feet from the curb in order for traffic to pass safely. If located in a high traffic area, place construction markers to alert drivers and street maintenance workers of their presence.

### Maintenance and Removal

Rock socks are susceptible to displacement and breaking due to vehicle traffic. Inspect rock socks for damage and repair or replace as necessary. Remove sediment by sweeping or vacuuming as needed to maintain the functionality of the BMP, typically when sediment has accumulated behind the rock sock to one-half of the sock's height.

Once upstream stabilization is complete, rock socks and accumulated sediment should be removed and properly disposed.

| Rock Sock | |
|---|---|
| **Functions** | |
| Erosion Control | No |
| Sediment Control | Yes |
| Site/Material Management | No |



## SC-5 Rock Sock (RS)

GRADATION TABLE

| SIEVE SIZE | MASS PERCENT PASSING SQUARE MESH SIEVES |
|---|---|
| | NO. 4 |
| 2" | 100 |
| 1½" | 90 – 100 |
| 1" | 20 – 55 |
| ¾" | 0 – 15 |
| ⅜" | 0 – 5 |
| MATCHES SPECIFICATIONS FOR NO. 4 COARSE AGGREGATE FOR CONCRETE PER AASHTO M43. ALL ROCK SHALL BE FRACTURED FACE, ALL SIDES. | |

ROCK SOCK INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION(S) OF ROCK SOCKS.
2. CRUSHED ROCK SHALL BE 1½" (MINUS) IN SIZE WITH A FRACTURED FACE (ALL SIDES) AND SHALL COMPLY WITH GRADATION SHOWN ON THIS SHEET (1½" MINUS).
3. WIRE MESH SHALL BE FABRICATED OF 10 GAGE POULTRY MESH, OR EQUIVALENT, WITH A MAXIMUM OPENING OF ¼". RECOMMENDED MINIMUM ROLL WIDTH OF 48"
4. WIRE MESH SHALL BE SECURED USING "HOG RINGS" OR WIRE TIES AT 6" CENTERS ALONG ALL JOINTS AND AT 2" CENTERS ON ENDS OF SOCKS.
5. SOME MUNICIPALITIES MAY ALLOW THE USE OF FILTER FABRIC AS AN ALTERNATIVE TO WIRE MESH FOR THE ROCK ENCLOSURE.

RS–1. ROCK SOCK PERIMETER CONTROL



## Rock Sock (RS) SC-5

ROCK SOCK MAINTENANCE NOTES

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

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

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

4. ROCK SOCKS SHALL BE REPLACED IF THEY BECOME HEAVILY SOILED, OR DAMAGED BEYOND REPAIR.

5. SEDIMENT ACCUMULATED UPSTREAM OF ROCK SOCKS SHALL BE REMOVED AS NEEDED TO MAINTAIN FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY ½ OF THE HEIGHT OF THE ROCK SOCK.

6. ROCK SOCKS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.

7. WHEN ROCK SOCKS ARE REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

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

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

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

VEHICLE TRACKING
NTS

### VEHICLE TRACKING NOTES

#### INSTALLATION REQUIREMENTS

1. ALL ENTRANCES TO THE CONSTRUCTION SITE ARE TO BE STABILIZED PRIOR TO CONSTRUCTION BEGINNING.

2. CONSTRUCTION ENTRANCES ARE TO BE BUILT WITH AN APRON TO ALLOW FOR TURNING TRAFFIC, BUT SHOULD NOT BE BUILT OVER EXISTING PAVEMENT EXCEPT FOR A SLIGHT OVERLAP.

3. AREAS TO BE STABILIZED ARE TO BE PROPERLY GRADED AND COMPACTED PRIOR TO LAYING DOWN GEOTEXTILE AND STONE.

4. CONSTRUCTION ROADS, PARKING AREAS, LOADING/UNLOADING ZONES, STORAGE AREAS, AND STAGING AREAS ARE TO BE STABILIZED.

5. CONSTRUCTION ROADS ARE TO BE BUILT TO CONFORM TO SITE GRADES, BUT SHOULD NOT HAVE SIDE SLOPES OR ROAD GRADES THAT ARE EXCESSIVELY STEEP.

#### MAINTENANCE REQUIREMENTS

1. REGULAR INSPECTIONS ARE TO BE MADE OF ALL STABILIZED AREAS, ESPECIALLY AFTER STORM EVENTS.

2. STONES ARE TO BE REAPPLIED PERIODICALLY AND WHEN REPAIR IS NECESSARY.

3. SEDIMENT TRACKED ONTO PAVED ROADS IS TO BE REMOVED DAILY BY SHOVELING OR SWEEPING. SEDIMENT IS NOT TO BE WASHED DOWN STORM SEWER DRAINS.

4. STORM SEWER INLET PROTECTION IS TO BE IN PLACE, INSPECTED, AND CLEANED IF NECESSARY.

5. OTHER ASSOCIATED SEDIMENT CONTROL MEASURES ARE TO BE INSPECTED TO ENSURE GOOD WORKING CONDITION.

| City of Colorado Springs Stormwater Quality | Figure VT-2 Vehicle Tracking Application Examples |
|---|---|

3-54

## Concrete Washout Area (CWA) MM-1

### Description

**Photograph CWA-1.** Example of concrete washout area. Note gravel tracking pad for access and sign.

Concrete waste management involves designating and properly managing a specific area of the construction site as a concrete washout area. A concrete washout area can be created using one of several approaches designed to receive wash water from washing of tools and concrete mixer chutes, liquid concrete waste from dump trucks, mobile batch mixers, or pump trucks. Three basic approaches are available: excavation of a pit in the ground, use of an above ground storage area, or use of prefabricated haul-away concrete washout containers. Surface discharges of concrete washout water from construction sites are prohibited.

### Appropriate Uses

Concrete washout areas must be designated on all sites that will generate concrete wash water or liquid concrete waste from onsite concrete mixing or concrete delivery.

Because pH is a pollutant of concern for washout activities, when unlined pits are used for concrete washout, the soil must have adequate buffering capacity to result in protection of state groundwater standards; otherwise, a liner/containment must be used. The following management practices are recommended to prevent an impact from unlined pits to groundwater:

- The use of the washout site should be temporary (less than 1 year), and
- The washout site should be not be located in an area where shallow groundwater may be present, such as near natural drainages, springs, or wetlands.

### Design and Installation

Concrete washout activities must be conducted in a manner that does not contribute pollutants to surface waters or stormwater runoff. Concrete washout areas may be lined or unlined excavated pits in the ground, commercially manufactured prefabricated washout containers, or aboveground holding areas constructed of berms, sandbags or straw bales with a plastic liner.

Although unlined washout areas may be used, lined pits may be required to protect groundwater under certain conditions.

**Do not locate an unlined washout area within 400 feet of any natural drainage pathway or waterbody or within 1,000 feet of any wells or drinking water sources.** Even for lined concrete washouts, it is advisable to locate the facility away from waterbodies and drainage paths. If site constraints make these

| Concrete Washout Area | |
|---|---|
| **Functions** | |
| Erosion Control | No |
| Sediment Control | No |
| Site/Material Management | Yes |



## MM-1 Concrete Washout Area (CWA)

setbacks infeasible or if highly permeable soils exist in the area, then the pit must be installed with an impermeable liner (16 mil minimum thickness) or surface storage alternatives using prefabricated concrete washout devices or a lined aboveground storage area should be used.

Design details with notes are provided in Detail CWA-1 for pits and CWA-2 for aboveground storage areas. Pre-fabricated concrete washout container information can be obtained from vendors.

### Maintenance and Removal

A key consideration for concrete washout areas is to ensure that adequate signage is in place identifying the location of the washout area. Part of inspecting and maintaining washout areas is ensuring that adequate signage is provided and in good repair and that the washout area is being used, as opposed to washout in non-designated areas of the site.

Remove concrete waste in the washout area, as needed to maintain BMP function (typically when filled to about two-thirds of its capacity). Collect concrete waste and deliver offsite to a designated disposal location.

Upon termination of use of the washout site, accumulated solid waste, including concrete waste and any contaminated soils, must be removed from the site to prevent on-site disposal of solid waste. If the wash water is allowed to evaporate and the concrete hardens, it may be recycled.

**Photograph CWA-2.** Prefabricated concrete washout. Photo courtesy of CDOT.

**Photograph CWA-3.** Earthen concrete washout. Photo courtesy of CDOT.



## Concrete Washout Area (CWA) MM-1

CWA–1. CONCRETE WASHOUT AREA

CWA INSTALLATION NOTES

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



## MM-1 Concrete Washout Area (CWA)

CWA MAINTENANCE NOTES

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

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

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

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

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

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

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

(DETAIL ADAPTED FROM DOUGLAS COUNTY, COLORADO AND THE CITY OF PARKER, COLORADO, NOT AVAILABLE IN AUTOCAD).

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



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COLORADO LICENSED LAWRENCE PATRICK VANDEN BERG 5/4/20 43911 PROFESSIONAL ENGINEER

EROSION CONTROL DETAILS
SITE: 17480 MERIDIAN ROAD ELBERT, COLORADO 80106
FOR: WINSOME, LLC 1864 WOODMORE DR, SUITE 100 MONUMENT, COLORADO 80132

| NO. | REVISIONS |
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| 1 | SUBMITTAL 1 |
| 2 | 03.11.2020 REVISED PER COMMENTS |
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# PRE-DEVELOPMENT GRADING AND EROSION CONTROL PLAN

# WINSOME FILING NO 1

## A TRACT OF LAND BEING A PORTION OF SECTION 24, TOWNSHIP 11 SOUTH, RANGE 65 WEST, OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO

City of Colorado Springs
Storm Water Quality

Figure ECB-1
Erosion Control Blanket
Application Examples

DEN/M153722.CS.CB/FigECB-1/9-99

3-22

City of Colorado Springs
Storm Water Quality

Figure ECB-2
Erosion Control Blanket
Installation Requirements

DEN/M153722.CS.CB/FigECB-2/9-99

3-23

American Excelsior Company®
Earth Science Division

Proud Participant in NTPEP and Proud Member of:

Product Participant of:

**PRODUCT DATA SHEET**
**CURLEX® ENFORCER®**

**DESCRIPTION**

Curlex Enforcer a biocomposite Turf Reinforcement Mat (TRM) that consists of a specific cut of naturally seed free Great Lakes Aspen curled wood excelsior with 80% six-inch fibers or greater fiber length. It is of consistent thickness with fibers evenly distributed throughout the entire area of the blanket. The top and bottom of each blanket is covered with extra heavy duty black net. Curlex Enforcer is also available as QuickGRASS® (Dyed Green). Curlex Enforcer shall be manufactured in the U.S.A.

Curlex Enforcer has a design soil loss ratio (event-based RUSLE C factor) of .022 and is typically suitable for slopes up to .5H:1V. Curlex Enforcer is rated for channel flows up to 11 ft/s (3.4 m/s); 3.25 lb/ft$^2$ (156 Pa) shear stress unvegetated or 17 ft/s (5.2 m/s); 10.0 lb/ft$^2$ (480 Pa) shear stress vegetated.

**PHYSICAL PROPERTIES**

Curlex Enforcer measurements at time of manufacturing:

| | |
|---|---|
| **Width** | 8.0 ft (2.4 m) |
| **Length** | 67.5 ft (20.6 m) |
| **Area** | 60.0 yd$^2$ (50.2 m$^2$) |
| **Weight**[1] | 75.0 lb (34.1 kg) |
| **Fiber Count** | ≈12,000 per yd$^2$ (≈14,400 per m$^2$) |
| **Fiber Length (80% min.)** | ≥6.0 in (≥15.2 cm) |
| **Mass per Unit Area (± 10%)** | 1.25 lb/yd$^2$ (0.68 kg/m$^2$) |
| **Net Openings** | 0.75 in x 1.0 in (19.1 mm x 25.4 mm) |

**TYPICAL INDEX VALUES**

| Index Property | Test Method | Value |
|---|---|---|
| Thickness | ASTM D 6525 | 0.415 in (10.64 mm) |
| Light Penetration | ASTM D 6567 | 12.7% |
| Resiliency | ASTM D 1777/ECTC | 55% |
| Mass per Unit Area | ASTM D 6475 | 0.98 lb/yd$^2$ (532 g/m$^2$) |
| MD-Tensile Strength Max. | ASTM D 6818 | 612.0 lb/ft (8.96 kN/m) |
| TD-Tensile Strength Max. | ASTM D 6818 | 460.8 lb/ft (6.75 kN/m) |
| MD-Elongation | ASTM D 6818 | 19.5% |
| TD-Elongation | ASTM D 6818 | 27.3% |
| Swell | ECTC Procedure | 33% |
| Water Absorption | ASTM D 1117/ECTC | 170% |
| UV Stability | ASTM D 4355 (1,000 hr) | 90% minimum |
| Bench-Scale Rain Splash | ASTM D 7101 | SLR = 10.24 @ 2 in/hr [2,3] |
| Bench-Scale Rain Splash | ASTM D 7101 | SLR = 10.51 @ 4 in/hr [2,3] |
| Bench-Scale Rain Splash | ASTM D 7101 | SLR = 10.86 @ 6 in/hr [2,3] |
| Bench-Scale Shear | ASTM D 7207 | 3.55 lb/ft$^2$ @ 0.5 in soil loss [3] |
| Germination Improvement | ASTM D 7322 | 486% |

[1] Weight is based on a dry fiber weight basis at time of manufacture. Baseline moisture content of Great Lakes Aspen excelsior is 22%.

[2] SLR is the Soil Loss Ratio, as reported by NTPEP/AASHTO. [3] Bench-scale index values should not be used for design purposes.

MADE IN THE U.S.A.

850 Avenue H East | Arlington, Texas 76011
Phone 1-800-777-SOIL | Fax 817-385-3585 | www.Curlex.com

W0911R0315

SILT FENCE

### SILT FENCE NOTES

#### 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

3-36

City of Colorado Springs
Stormwater Quality

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

3-37

EROSION CONTROL BLANKET DETAIL
(NTS)

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PROFESSIONAL ENGINEER

EROSION CONTROL DETAILS

SITE: 17480 MERIDIAN ROAD
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