

**STORMWATER BEST MANAGEMENT PRACTICE
MAINTENANCE AGREEMENT**

This Stormwater Best Management Practice Maintenance Agreement (“Agreement”) is entered into this 26th day of September, 2017 by and between the El Paso County Planning and Community Development Department on behalf of El Paso County (the “County”) and the owner, Hammer’s Construction Inc (the “Developer”). The County and Developer may be referred to herein individually as “Party” and collectively as “Parties.”

RECITALS

- A. Developer seeks approval from El Paso County of a Site Development Plan for a parcel of property legally described in Exhibit A, attached hereto and incorporated herein by reference.
- B. As part of the approval process, Developer is required to make provision for the installation of stormwater best management practices (BMPs) on the site, in accordance with the El Paso County Land Development Code, the El Paso County Engineering Criteria Manual, and the El Paso County Drainage Criteria Manual, Volume 2.
- C. Developer wishes to install, and the County wishes to permit the installation of, a specialized BMP subject to the terms and conditions herein.

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 above Recitals into this Agreement.
- 2. Covenants Running with the Land. Developer agrees that this Agreement and the performance thereof shall be come a covenant running with the land, which land is legally described in Exhibit A, and that this entire Agreement and the performance thereof shall be binding upon itself and its successors and assigns.
- 3. Construction and Maintenance. Developer shall construct and install the BMP approved by the County and depicted in Exhibit B, attached hereto and incorporated herein by this reference. Developer shall further comply with the Inspection and Maintenance Plan attached hereto as Exhibit C and incorporated herein by this reference.
- 4. Replacement. Should the County determine, in its sole discretion, that the BMP is not functioning at the required level of performance, Developer shall replace the BMP with an alternative approved BMP or stormwater system at its sole cost and expense. Developer shall submit an application to the El Paso County Planning and Community Development Department for an amendment to the approved Site Development Plan for review of the proposed replacement BMP or system. Developer shall not commence construction of the replacement

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El Paso County, CO



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PPR-17-026

BMP or system until the County Engineer has approved the new design and the amended Site Development Plan has been approved.


5. Approval of Site Development Plan. Approval of the Site Development Plan for the property described in Exhibit A is contingent upon Developer's compliance with this Agreement.

6. 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 the County, the Developer, or their respective successors and assigns, because of any breach hereof or because of any terms, covenants, agreements or conditions contained herein.

7. 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. Venue shall be in the El Paso County District Court.

In witness whereof, the Parties affix their signatures below.

EL PASO COUNTY:



Craig Dossey, Director
El Paso County Planning and
Community Development Department



Jennifer Irvine
El Paso County Engineer

HAMMER'S CONSTRUCTION INC

By:  _____

Printed Name: Steve Hammers

Its: Pres _____

Approved as to form:

Hori L. Seago

County Attorney's Office



20 Boulder Crescent, STE 110
Colorado Springs, CO 80903
Mail to: PO Box 1360
Colorado Springs, CO 80901
719.955.5485

"EXHIBIT A"

M&S Job No. 44-026
June 9, 2017

LOT 12 AS PLATTED IN CLAREMONT BUSINESS PARK FILING NO. 2, RECORDED JANUARY
4, 2007 UNDER RECEPTION NO. 207712506 OF THE RECORDS OF THE EL PASO COUNTY
CLERK AND RECORDER.

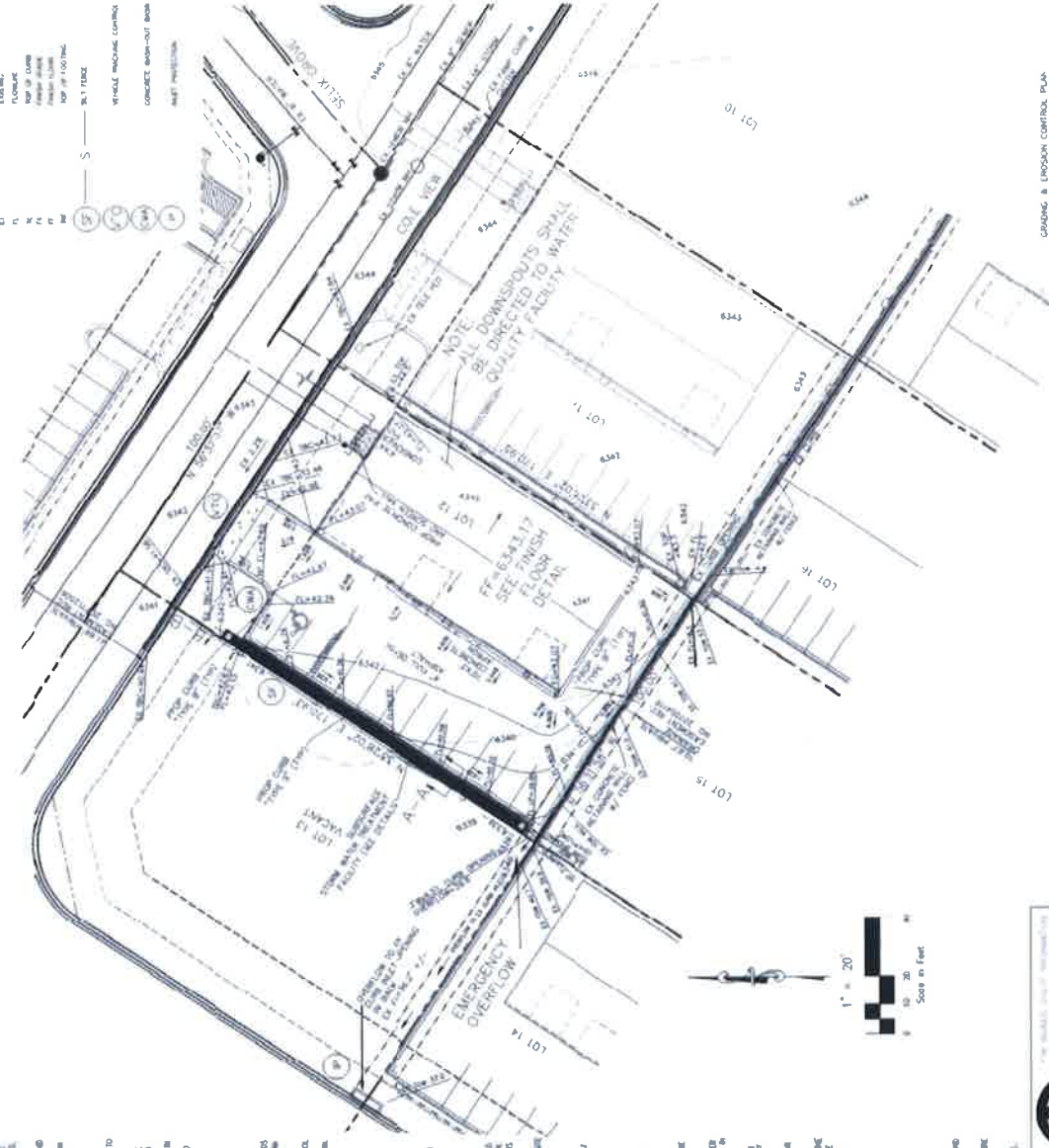
GRADING AND EROSION CONTROL NOTES:

1. CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE STATE AND FEDERAL REGULATIONS AND ORDINANCES.
2. ALL EROSION CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED THROUGHOUT CONSTRUCTION AND THROUGHOUT THE LIFE OF THE PROJECT.
3. EROSION CONTROL MEASURES SHALL BE DESIGNED TO PREVENT SOIL EROSION AND TO STABILIZE EXPOSED SOILS.
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1000, LLC EL PASO COUNTY, STATE OF COLORADO GRADING & EROSION CONTROL PLAN LOT 12 OF CLAREMONT BUSINESS PARK FIL. NO. 2

LEGEND

- 1. 1/4" = 10' HORIZONTAL SCALE
- 2. 1/4" = 10' VERTICAL SCALE
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- 29. 1/4" = 10' HORIZONTAL SCALE
- 30. 1/4" = 10' VERTICAL SCALE



DESIGN ENGINEER'S STATEMENT
I, the undersigned, a duly licensed Professional Engineer in the State of Colorado, have prepared the Grading and Erosion Control Plan for the above project. I am a duly licensed Professional Engineer in the State of Colorado, License No. 12345. I have prepared this plan in accordance with the requirements of the State of Colorado, and I am not aware of any facts or circumstances which would render this plan inaccurate or misleading. I have prepared this plan in accordance with the requirements of the State of Colorado, and I am not aware of any facts or circumstances which would render this plan inaccurate or misleading.

OWNER/DEVELOPER'S STATEMENT
I, the undersigned, the owner/developer of the above project, have approved the Grading and Erosion Control Plan for the above project. I am not aware of any facts or circumstances which would render this plan inaccurate or misleading. I have approved this plan in accordance with the requirements of the State of Colorado, and I am not aware of any facts or circumstances which would render this plan inaccurate or misleading.

EL PASO COUNTY
COUNTY ENGINEER
I, the undersigned, the County Engineer of El Paso County, Colorado, have approved the Grading and Erosion Control Plan for the above project. I am not aware of any facts or circumstances which would render this plan inaccurate or misleading. I have approved this plan in accordance with the requirements of the State of Colorado, and I am not aware of any facts or circumstances which would render this plan inaccurate or misleading.

CONTRACTOR'S STATEMENT
I, the undersigned, the contractor for the above project, have approved the Grading and Erosion Control Plan for the above project. I am not aware of any facts or circumstances which would render this plan inaccurate or misleading. I have approved this plan in accordance with the requirements of the State of Colorado, and I am not aware of any facts or circumstances which would render this plan inaccurate or misleading.

CONTRACTOR'S STATEMENT
I, the undersigned, the contractor for the above project, have approved the Grading and Erosion Control Plan for the above project. I am not aware of any facts or circumstances which would render this plan inaccurate or misleading. I have approved this plan in accordance with the requirements of the State of Colorado, and I am not aware of any facts or circumstances which would render this plan inaccurate or misleading.

EMERGENCY OVERFLOW	124' x 277' 9 1/2" = 34,334 SF
SEMENTY STORAGE REQUIREMENT*	93 CF
SEMENTY STORAGE PROVIDED = 124' x 277' 9 1/2" x 4.5' = 31,116 SF	31,116 SF / 2,065 SF = 15.1
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BUILDING FINISH FLOOR DETAIL



EROSION CONTROL SOLUTIONS
408 W. 44th Street, Suite 100
Denver, CO 80202
TEL: 303.733.1100
WWW.EROSIONCONTROL.COM

EXHIBIT B

48 HRS BEFORE YOU DIG
CALL 1-800-922-1987



GRADING & EROSION CONTROL PLAN
408 W. 44th Street, Suite 100
Denver, CO 80202
TEL: 303.733.1100
WWW.EROSIONCONTROL.COM



EXHIBIT "C"

Stormwater Management Facility Operation and Maintenance (O&M) Manual

for:

Lot 12, Claremont Business Park Filing No. 2

Located at:

***7190 Cole View
Colorado Springs, CO 80915***

Prepared for:

***Hammer's Construction, LLC
1411 Woolsey Heights
Colorado Springs, CO 809015
719-570-1599***

Prepared by:

***M&S Civil Consultants, inc.
20 Boulder Crescent, Suite 110
Colorado Springs, CO 80903***

Reference:

***This manual is adapted from Town of Parker, Colorado, STORMWATER
PERMANENT BEST MANAGEMENT PRACTICES (PBMP) LONG-TERM OPERATION
AND MAINTENANCE MANUAL, October 2004***

**Stormwater Management Facility
Operation and Maintenance (O&M) Manual**

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Stormwater Management Facility Operation and Maintenance (O&M) Manual

I. Compliance with Stormwater Facility Maintenance Requirements

All property owners are responsible for ensuring that stormwater facilities installed on their property are properly maintained and that they function as designed. In some cases, this maintenance responsibility may be assigned to others through special agreements. The maintenance responsibility for a stormwater facility may be designated on the subdivision plat, the site development plan, and/or within a maintenance agreement for the property. Property owners should be aware of their responsibilities regarding stormwater facility maintenance. Maintenance agreement(s) associated with this property are provided in Appendix A.

In some cases, the Southeast Metro Stormwater Authority (SEMSWA) may agree to provide the required inspection and maintenance for some or all private stormwater facilities. In these cases, a SEMSWA maintenance agreement will be included in Appendix A for those facilities that are agreed to be included in the SEMSWA routine maintenance program.

II. Inspection & Maintenance – Annual Reporting

Requirements for the inspection and maintenance of stormwater facilities, as well as reporting requirements are included in this Stormwater Management Facility Operation and Maintenance (O&M) Manual.

Verification that the Stormwater facilities have been properly inspected and maintained; submittal of the required Inspection and Maintenance Forms and Inspector qualifications shall be provided to SEMSWA on an annual basis. The annual reporting form shall be provided to SEMSWA prior to May 31st of each year.

Copies of the Inspection and Maintenance forms for each of the stormwater facilities are located in Appendix D and E. A standard annual reporting form is provided in Appendix F. Each form shall be reviewed and submitted by the property owner or property manager to SEMSWA.

Property owners are not required to provide Inspection and Maintenance Reports for stormwater facilities that have been agreed to be maintained by SEMSWA. These reports will be generated through SEMSWA's inspection & maintenance program.

III. Preventative Measures to Reduce Maintenance Costs

The most effective way to maintain your water quality facility is to prevent the pollutants from entering the facility in the first place. Common pollutants include sediment, trash & debris, chemicals, dog wastes, runoff from stored materials, illicit discharges into the storm drainage system and many others.

A thoughtful maintenance program will include measures to address these potential contaminants, and will save money and time in the long run. Key points to consider in your maintenance program include:

- Educate property owners/residents to be aware of how their actions affect water quality, and how they can help reduce maintenance costs.
- Keep properties, streets and gutters, and parking lots free of trash, debris, and lawn clippings.
- Ensure the proper disposal of hazardous wastes and chemicals.
- Plan lawn care to minimize the use of chemicals and pesticides.
- Sweep paved surfaces and put the sweepings back on the lawn.
- Be aware of automobiles leaking fluids. Use absorbents such as cat litter to soak up drippings – dispose of properly.
- Re-vegetate disturbed and bare areas to maintain vegetative stabilization.
- Clean out the upstream components of the storm drainage system, including inlets, storm sewers and outfalls.
- Do not store materials outdoors (including landscaping materials) unless properly protected from runoff.

IV. Access and Easements

All stormwater management facilities located on the site have both a designated access location as well as a maintenance easement. Refer to the Stormwater Facilities Map located in Appendix G for access and easement locations.

V. Safety

Keep safety considerations at the forefront of inspection procedures at all times. Likely hazards should be anticipated and avoided. Never enter a confined space (outlet structure, manhole, etc) without proper training or equipment. A confined space should never be entered without at least one additional person present.

If a toxic or flammable substance is discovered, leave the immediate area and contact the local Sheriff at 911.

Potentially dangerous (e.g., fuel, chemicals, hazardous materials) substances found in the areas must be referred to the local Sheriff's Office immediately for response by the Hazardous Materials Unit. The emergency contact number is 911.

Vertical drops may be encountered in areas located within and around the facility. Avoid walking on top of retaining walls or other structures that have a significant vertical drop. If a vertical drop is identified within the pond that is greater than 48" in height, make the appropriate note/comment on the maintenance inspection form.

If any hazard is found within the facility area that poses an immediate threat to public safety, contact the local Sheriff's Office immediately.

VI. Field Inspection Equipment

It is imperative that the appropriate equipment is taken to the field with the inspector(s). This is to ensure the safety of the inspector and allow the inspections to be performed as efficiently as possible. Below is a list of the equipment that may be necessary to perform the inspections of all Stormwater Management Facilities:

- Protective clothing and boots.
- Safety equipment (vest, hard hat, confined space entry equipment).
- Communication equipment.
- Operation and Maintenance Manual for the site including stormwater management facility location maps.
- Clipboard.
- Stormwater Facility Maintenance Inspection Forms (See Appendix D).
- Manhole Lid Remover
- Shovel.

Some of the items identified above need not be carried by the inspector (manhole lid remover, shovel, and confined space entry equipment). However, this equipment should be available in the vehicle driven to the site.

VII. Inspecting Stormwater Management Facilities

The quality of stormwater entering the waters of the state relies heavily on the proper operation and maintenance of permanent best management practices. Stormwater management facilities must be periodically inspected to ensure that they function as designed. The inspection will determine the appropriate maintenance that is required for the facility.

A. Inspection Procedures

All stormwater management facilities are required to be inspected by a qualified individual at a minimum of once per year. Inspections should follow the inspection guidance found in the SOP for the specific type of facility. (Appendix C of this manual).

B. Inspection Report

The person(s) conducting the inspection activities shall complete the appropriate inspection report for the specific facility. Inspection reports are located in Appendix D.

The following information explains how to fill out the Inspection Forms:

General Information

This section identifies the facility location, person conducting the inspection, the date and time the facility was inspected, and approximate days since the last rainfall. Property classification is identified as single-family residential, multi-family residential, commercial, or other.

The reason for the inspection is also identified on the form depending on the nature of the inspection. All facilities should be inspected on an annual basis at a minimum. In addition, all facilities should be inspected after a significant precipitation event to ensure the facility is draining appropriately and to identify any damage that occurred as a result of the increased runoff.

Inspection Scoring

For each inspection item, a score must be given to identify the urgency of required maintenance. The scoring is as follows:

- 0 = No deficiencies identified.
- 1 = Monitor – Although maintenance may not be required at this time, a potential problem exists that will most likely need to be addressed in the future. This can include items like minor erosion, concrete cracks/spalling, or minor sediment accumulation. This item should be revisited at the next inspection.
- 2 = Routine Maintenance Required – Some inspection items can be addressed through the routine maintenance program (See SOP in appendix A). This can include items like vegetation management or debris/trash removal.
- 3 = Immediate Repair Necessary – This item needs immediate attention because failure is imminent or has already occurred. This could include items such as structural failure of a feature (outlet works, forebay, etc), significant erosion, or significant sediment accumulation. This score should be given to an item that can significantly affect the function of the facility.
- N/A This is checked by an item that may not exist in a facility. Not all facilities have all of the features identified on the form (forebay, micro-pool, etc.).

Inspection Summary/Additional Comments

Additional explanations to inspection items, and observations about the facility not covered by the form, are recorded in this section.

Overall Facility Rating

An overall rating must be given for each facility inspected. The overall facility rating should correspond with the highest score (0, 1, 2, 3) given to any feature on the inspection form.

C. Verification of Inspection and Form Submittal

The Stormwater Management Facility Inspection Form provides a record of inspection of the facility. Inspection Forms for each facility type are provided in Appendix D. Verification of the inspection of the stormwater facilities, the facility inspection form(s), and Inspector Qualifications shall be provided to SEMSWA on an annual basis. The verification and the inspection form(s) shall be reviewed and submitted by the property owner or property manager.

Refer to Section II of this Manual regarding the annual reporting of inspections.

VIII. Maintaining Stormwater Management Facilities

Stormwater management facilities must be properly maintained to ensure that they operate correctly and provide the water quality treatment for which they were designed. Routine maintenance performed on a frequently scheduled basis, can help avoid more costly rehabilitative maintenance that results when facilities are not adequately maintained.

A. Maintenance Categories

Stormwater management facility maintenance programs are separated into three broad categories of work. These categories are based largely on the Urban Drainage and Flood Control District's Maintenance Program for regional drainage facilities. The categories are separated based upon the magnitude and type of the maintenance activities performed. A description of each category follows:

Routine Work

The majority of this work consists of scheduled mowings and trash and debris pickups for stormwater management facilities during the growing season. This includes items such as the removal of debris/material that may be clogging the outlet structure well screens and trash racks. It also includes activities such as weed control, mosquito treatment, and algae treatment. These activities normally will be performed numerous times during the year. These items can be completed without any prior

correspondence with SEMSWA; however, completed inspection and maintenance forms shall be submitted to SEMSWA for each inspection and maintenance activity.

Restoration Work

This work consists of a variety of isolated or small-scale maintenance and work needed to address operational problems. Most of this work can be completed by a small crew, with minor tools, and small equipment. These items require prior correspondence with SEMSWA and require that completed maintenance forms be submitted to SEMSWA for each maintenance activity.

Rehabilitation Work

This work consists of large-scale maintenance and major improvements needed to address failures within the stormwater management facilities. This work requires consultation with SEMSWA and may require an engineering design with construction plans to be prepared for review and approval. This work may also require more specialized maintenance equipment, surveying, construction permits or assistance through private contractors and consultants. These items require prior correspondence with SEMSWA and require that completed maintenance forms be submitted to SEMSWA for each maintenance activity.

B. Maintenance Personnel

Maintenance personnel must be qualified to properly maintain stormwater management facilities. Inadequately trained personnel can cause additional problems resulting in additional maintenance costs.

C. Maintenance Forms

The Stormwater Management Facility Maintenance Form provides a record of maintenance activities. Maintenance Forms for each facility type are provided in Appendix E. Maintenance Forms shall be completed by the contractor completing the required maintenance items. The form shall then be reviewed by the property owner or an authorized agent of the property owner and submitted on an annual basis to the Southeast Metro Stormwater Authority.

Refer to Section II of this Manual regarding the annual reporting of inspections and maintenance activities performed.

APPENDIX A

STORMWATER BEST MANAGEMENT PRACTICE MAINTENANCE AGREEMENT

This Stormwater Best Management Practice Maintenance Agreement (“Agreement”) is entered into this 26th day of September, 2017 by and between the El Paso County Planning and Community Development Department on behalf of El Paso County (the “County”) and Hammer’s Construction, LLC (the “Developer”). The County and Developer may be referred to herein individually as “Party” and collectively as “Parties.”

RECITALS

- A. Developer seeks approval from El Paso County of a Site Development Plan for a parcel of property legally described in Exhibit A, attached hereto and incorporated herein by reference.
- B. As part of the approval process, Developer is required to make provision for the installation of stormwater best management practices (BMPs) on the site, in accordance with the El Paso County Land Development Code, the El Paso County Engineering Criteria Manual, and the El Paso County Drainage Criteria Manual, Volume 2.
- C. Developer wishes to install, and the County wishes to permit the installation of, a specialized BMP subject to the terms and conditions herein.

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 above Recitals into this Agreement.
2. Covenants Running with the Land. Developer agrees that this Agreement and the performance thereof shall be come a covenant running with the land, which land is legally described in Exhibit A, and that this entire Agreement and the performance thereof shall be binding upon itself and its successors and assigns.
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BMP or system until the County Engineer has approved the new design and the amended Site Development Plan has been approved.

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7. 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. Venue shall be in the El Paso County District Court.

In witness whereof, the Parties affix their signatures below.

EL PASO COUNTY:

Craig Dossey, Director
El Paso County Planning and
Community Development Department

Jennifer Irvine
El Paso County Engineer

HAMMER'S CONSTRUCTION, LLC

By: _____

Printed Name: _____

Its: _____



20 Boulder Crescent, STE 110
Colorado Springs, CO 80903
Mail to: PO Box 1360
Colorado Springs, CO 80901
719.955.5485

"EXHIBIT A"

M&S Job No. 44-026
June 9, 2017

LOT 12 AS PLATTED IN CLAREMONT BUSINESS PARK FILING NO. 2, RECORDED JANUARY
4, 2007 UNDER RECEPTION NO. 207712506 OF THE RECORDS OF THE EL PASO COUNTY
CLERK AND RECORDER.

APPENDIX B

Appendix B

General Location and Description of Stormwater Management Facilities

A. General Site Description

The Stormwater Best Management Plan submittal covers the property platted as Lot 12 of the Claremont Business Park Filing No. 2 and addressed at 7190 Cole View. The project site is located in the SE ¼ of Section 5, Township 14 South, Range 65 West of the 6th Principal Meridian within unincorporated El Paso County. The site is bound to the northeast by the existing road Cole View, and then to the Southeast and Southwest by commercial lots, and then to the Northwest by the vacant Lot 13. The site is currently vacant land with a relatively new roadway infrastructure and associated utilities with slopes ranging between 0-4 % from Northeast to Southwest.

The site is contained within the Sand Creek Drainage Basin.

B. General Stormwater Management Description

The Lot 12 on-site runoff shall be directed to a subsurface Water Quality Facility as detailed within the grading plans. Flows released from the subsurface Water Facility and any additional overflow shall outfall to a 3' wide curb opening at the southwest corner of the site. Then continue along the north side of the existing retaining wall on the southern border of the property line of Lot 13 and then eventually outfall to an existing storm sewer collection system at the Southwest corner of Lot 13 and ultimately discharges to the East Fork Sand Creek.

C. Stormwater Facilities Site Plan

Inspection or maintenance personnel may utilize the attached site plan for locating the stormwater facilities within this development.

D. On-Site Stormwater Management Facilities

Volume Reduction Facilities

The Lot 12 of the Claremont Business Park Filing No. 2 does not contain any volume reduction facilities.

Storage Facilities (Detention)

The Lot 12 of the Claremont Business Park Filing No. 2 does not contain any storage detention.

Water Quality Facilities

The Lot 12 on-site WQCV shall be directed to a subsurface Water Quality Facility as detailed within the grading plans. (See Grading plan included within this report). Flows released from the subsurface Water Facility and any additional overflow shall outfall to a 3' wide curb opening at the southwest corner of the site. Then continue along the north side of the existing retaining wall on the southern border of the property line of Lot 13 and then eventually outfall to an existing storm sewer collection system at the Southwest corner of Lot 13 and ultimately discharges to the East Fork Sand Creek.

The privately owned and maintained subsurface Water Treatment Facility shall utilized the Inspection and Maintenance recommendations as outlined within the O&M Manual by StormTech® (included within this report). A Maintenance Agreement and Easement shall be granted to the property owner and El Paso County to allow for access and maintenance of the private WQCV facility. A private maintenance agreement and easement document shall depict the details of the access easement, maintenance, and drainage easement conditions.

Proposed construction BMP's (silt fence) will capture any silt caused by construction before it can make it into the existing channel.

Source Control Best Management Practices

A Performance Monitoring and Evaluation Program shall be required for the subsurface Water Treatment Facility as detailed within the attached grading plan. The proposed Water Quality Facility is an experimental system per ECM Section 1.7.2. It shall be required that the experimental system will be replaced at the owner's expense should the WQ Facility not function to the required level of performance.

The Performance Evaluation's purpose is to measure the effectiveness of the alternatively designed BMP in relation to other approved stormwater quality BMP's and how well it meets its goals for treatment in which it is designed for.

The program shall occur for a period of two years from the time of the installation of the subsurface Water Treatment Facility and shall be performed with the following criteria.

1. The subsurface water quality facility shall be performed every six (6) months.
2. A inspection shall be performed within 12 hours after a storm event and

then 24 hours after the initial inspection of the storm event.

3. Each required inspection shall be accompanied by the PCD Inspections Manager. It shall be the owner's responsibility to coordinate with the Inspection Manager (Paul Wiggs, 719-520-6819).

4. Upon completion of each required inspection the owner shall provide the attending PCD Inspections Manager a copy of each inspection / maintenance log.

APPENDIX C



StormTech®

Detention • Retention • Water Quality

A division of  ADS

Save Valuable Land and Protect Water Resources



Isolator® Row O&M Manual

StormTech® Chamber System for Stormwater Management

1.0 The Isolator[®] Row

1.1 INTRODUCTION

An important component of any Stormwater Pollution Prevention Plan is inspection and maintenance. The StormTech Isolator Row is a patented technique to inexpensively enhance Total Suspended Solids (TSS) removal and provide easy access for inspection and maintenance.



Looking down the Isolator Row from the manhole opening, woven geotextile is shown between the chamber and stone base.

1.2 THE ISOLATOR ROW

The Isolator Row is a row of StormTech chambers, either SC-310, SC-310-3, SC-740, DC-780, MC-3500 or MC-4500 models, that is surrounded with filter fabric and connected to a closely located manhole for easy access. The fabric-wrapped chambers provide for settling and filtration of sediment as storm water rises in the Isolator Row and ultimately passes through the filter fabric. The open bottom chambers and perforated sidewalls (SC-310, SC-310-3 and SC-740 models) allow storm water to flow both vertically and horizontally out of the chambers. Sediments are captured in the Isolator Row protecting the storage areas of the adjacent stone and chambers from sediment accumulation.

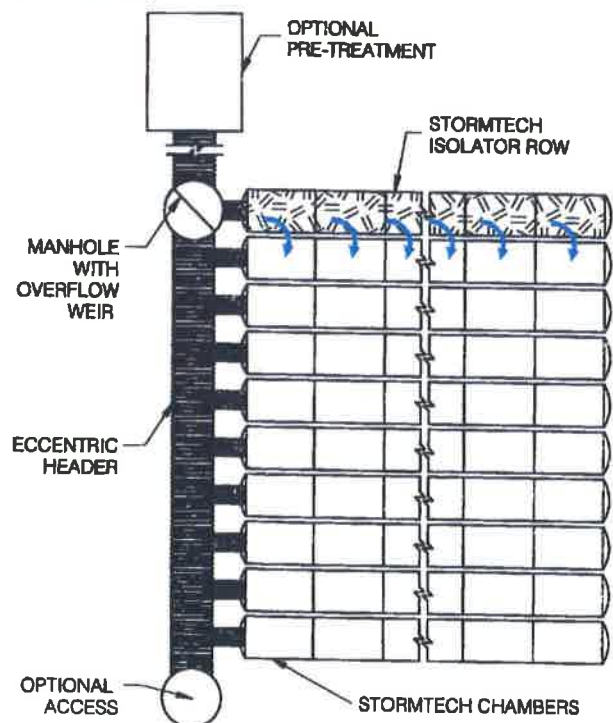
Two different fabrics are used for the Isolator Row. A woven geotextile fabric is placed between the stone and the Isolator Row chambers. The tough geotextile provides a media for storm water filtration and provides a durable surface for maintenance operations. It is also designed to prevent scour of the underlying stone and remain intact during high pressure jetting. A non-woven fabric is placed over the chambers to provide a filter media for flows passing through the perforations in the sidewall of the chamber. The non-woven fabric is not required over the DC-780, MC-3500 or MC-4500 models as these chambers do not have perforated side walls.

The Isolator Row is typically designed to capture the "first flush" and offers the versatility to be sized on a volume basis or flow rate basis. An upstream manhole not only provides access to the Isolator Row but typically includes a high flow weir such that storm water flow rates or volumes that exceed the capacity of the Isolator Row overtop the over flow weir and discharge through a manifold to the other chambers.

The Isolator Row may also be part of a treatment train. By treating storm water prior to entry into the chamber system, the service life can be extended and pollutants such as hydrocarbons can be captured. Pre-treatment best management practices can be as simple as deep sump catch basins, oil-water separators or can be innovative storm water treatment devices. The design of the treatment train and selection of pretreatment devices by the design engineer is often driven by regulatory requirements. Whether pretreatment is used or not, the Isolator Row is recommended by StormTech as an effective means to minimize maintenance requirements and maintenance costs.

Note: See the StormTech Design Manual for detailed information on designing inlets for a StormTech system, including the Isolator Row.

StormTech Isolator Row with Overflow Spillway
(not to scale)



2.0 Isolator Row Inspection/Maintenance



2.1 INSPECTION

The frequency of Inspection and Maintenance varies by location. A routine inspection schedule needs to be established for each individual location based upon site specific variables. The type of land use (i.e. industrial, commercial, residential), anticipated pollutant load, percent imperviousness, climate, etc. all play a critical role in determining the actual frequency of inspection and maintenance practices.

At a minimum, StormTech recommends annual inspections. Initially, the Isolator Row should be inspected every 6 months for the first year of operation. For subsequent years, the inspection should be adjusted based upon previous observation of sediment deposition.

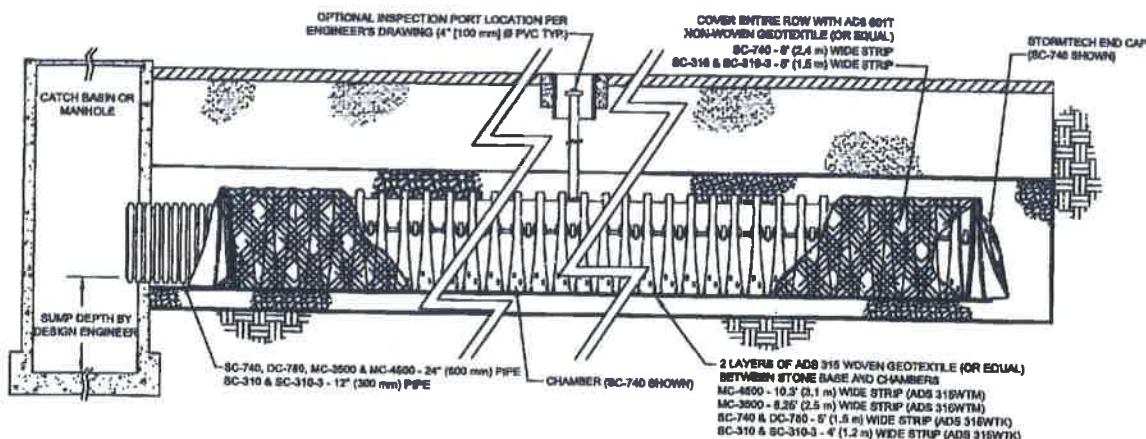
The Isolator Row incorporates a combination of standard manhole(s) and strategically located inspection ports (as needed). The inspection ports allow for easy access to the system from the surface, eliminating the need to perform a confined space entry for inspection purposes.

If upon visual inspection it is found that sediment has accumulated, a stadia rod should be inserted to determine the depth of sediment. When the average depth of sediment exceeds 3 inches throughout the length of the Isolator Row, clean-out should be performed.

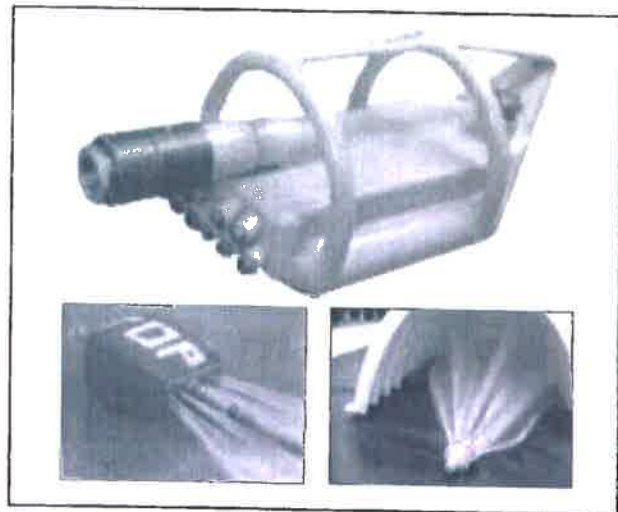
2.2 MAINTENANCE

The Isolator Row was designed to reduce the cost of periodic maintenance. By "isolating" sediments to just one row, costs are dramatically reduced by eliminating the need to clean out each row of the entire storage bed. If inspection indicates the potential need for maintenance, access is provided via a manhole(s) located on the end(s) of the row for cleanout. If entry into the manhole is required, please follow local and OSHA rules for a confined space entries.

StormTech Isolator Row (not to scale)



NOTE: NON-WOVEN FABRIC IS ONLY REQUIRED OVER THE INLET PIPE CONNECTION INTO THE END CAP FOR DC-780, MC-3500 AND MC-4500 CHAMBER MODELS AND IS NOT REQUIRED OVER THE ENTIRE ISOLATOR ROW.



Examples of culvert cleaning nozzles appropriate for Isolator Row maintenance. (These are not StormTech products.)

Maintenance is accomplished with the JetVac process. The JetVac process utilizes a high pressure water nozzle to propel itself down the Isolator Row while scouring and suspending sediments. As the nozzle is retrieved, the captured pollutants are flushed back into the manhole for vacuuming. Most sewer and pipe maintenance companies have vacuum/JetVac combination vehicles. Selection of an appropriate JetVac nozzle will improve maintenance efficiency. Fixed nozzles designed for culverts or large diameter pipe cleaning are preferable. Rear facing jets with an effective spread of at least 45° are best. Most JetVac reels have 400 feet of hose allowing maintenance of an Isolator Row up to 50 chambers long. **The JetVac process shall only be performed on StormTech Isolator Rows that have AASHTO class 1 woven geotextile (as specified by StormTech) over their angular base stone.**

3.0 Isolator Row Step By Step Maintenance Procedures

Step 1) Inspect Isolator Row for sediment

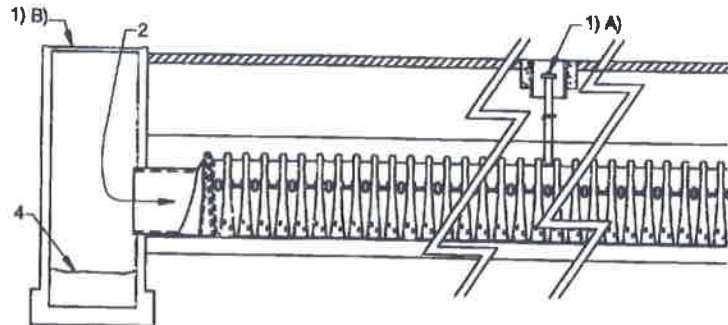
A) Inspection ports (if present)

- i. Remove lid from floor box frame
- ii. Remove cap from inspection riser
- iii. Using a flashlight and stadia rod, measure depth of sediment and record results on maintenance log.
- iv. If sediment is at, or above, 3 inch depth proceed to Step 2. If not proceed to step 3.

B) All Isolator Rows

- i. Remove cover from manhole at upstream end of Isolator Row
- ii. Using a flashlight, inspect down Isolator Row through outlet pipe
 1. Mirrors on poles or cameras may be used to avoid a confined space entry
 2. Follow OSHA regulations for confined space entry if entering manhole
- iii. If sediment is at or above the lower row of sidewall holes (approximately 3 inches) proceed to Step 2. If not proceed to Step 3.

StormTech Isolator Row (not to scale)



Step 2) Clean out Isolator Row using the JetVac process

- A) A fixed culvert cleaning nozzle with rear facing nozzle spread of 45 inches or more is preferable
- B) Apply multiple passes of JetVac until backflush water is clean
- C) Vacuum manhole sump as required

Step 3) Replace all caps, lids and covers, record observations and actions

Step 4) Inspect & clean catch basins and manholes upstream of the StormTech system

Sample Maintenance Log

Date	Stadia Rod Readings		Sediment Depth (1) - (2)	Observations/Actions	Inspector
	Fixed point to chamber bottom (1)	Fixed point to top of sediment (2)			
3/15/01	6.3 ft.	none		New installation. Fixed point is CI frame at grade	djm
9/24/01		6.2	0.1 ft.	Some grit felt	sm
6/20/03		5.8	0.5 ft.	Mucky feel, debris visible in manhole and in Isolator row, maintenance due	rv
7/7/03	6.3 ft.		0	System jetted and vacuumed	djm


StormTech
 Detention • Retention • Water Quality

A division of 

70 Inwood Road, Suite 3 | Rocky Hill | Connecticut | 06067
 860.529.8188 | 888.892.2694 | fax 866.328.8401 | www.stormtech.com

ADS "Terms and Conditions of Sale" are available on the ADS website, www.ads-pipe.com
 Advanced Drainage Systems, the ADS logo, and the green stripe are registered trademarks of Advanced Drainage Systems.
 Stormtech® and the Isolator® Row are registered trademarks of StormTech, Inc.
 Green Building Council Member logo is a registered trademark of the U.S. Green Building Council.
 #11011 03/16

APPENDIX D

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APPENDIX E

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APPENDIX F



Annual Inspection and Maintenance Reporting Form
for
Stormwater Facilities

(This form to be submitted to SEMSWA prior to May 31 of each year)

Date: _____

**To: Southeast Metro Stormwater Authority
Attn: Stormwater Facility Operations and Maintenance Program
7437 South Fairplay Street
Centennial, CO 80112**

Re: Certification of Inspection and Maintenance; Submittal of forms

Property/Subdivision Name: _____

Property Address: _____

Contact Name: _____

I verify that the required stormwater facility inspections and required maintenance have been completed in accordance with the Stormwater Facilities Maintenance Agreement and the Operations and Maintenance Manual associated with the above referenced property.

The required Stormwater Facility Inspection and Maintenance forms are hereby provided.

Name of Party Responsible for Inspection
& Maintenance

Property Owner

Authorized Signature

Signature

APPENDIX G

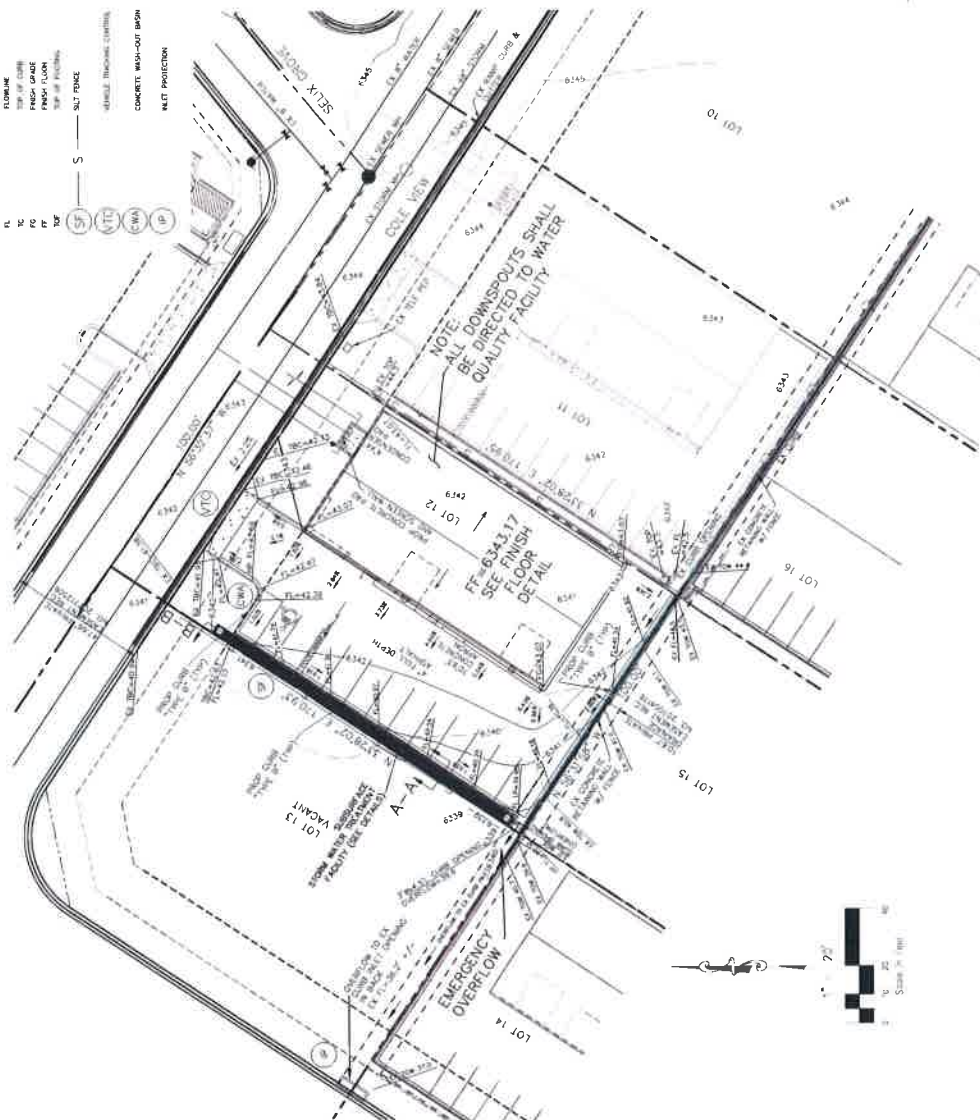
1000, LLC

EL PASO COUNTY, STATE OF COLORADO GRADING & EROSION CONTROL PLAN

10119 OF CHARLIVONT BUSINESS PARK BLVD NO. 2

LEGEND

SP	SPUR	ASPHALT DRIVEWAY
BP	BANK	CONCRETE
SL	SOIL	GRAVEL
FL	FLOWLINE	GRAVEL
FC	TOP OF CURB	GRAVEL
FD	PAVED DRIVE	GRAVEL
TP	TOP OF FINISH	GRAVEL
SP	SPUR	GRAVEL
SV	SOIL VENEER	GRAVEL
SV	SOIL VENEER	GRAVEL
SV	SOIL VENEER	GRAVEL
SV	SOIL VENEER	GRAVEL



DESIGN ENGINEER'S STATEMENT

I, the undersigned, being duly licensed as a Professional Engineer in the State of Colorado, do hereby certify that I am the author of the design and calculation of the above-described project, and that I am a duly licensed Professional Engineer in the State of Colorado, and that I am duly licensed in accordance with the laws of the State of Colorado, and that I am duly licensed in accordance with the laws of the State of Colorado, and that I am duly licensed in accordance with the laws of the State of Colorado.

OWNER/DEVELOPER'S STATEMENT

I, the undersigned, being duly licensed as a Professional Engineer in the State of Colorado, do hereby certify that I am the owner/developer of the above-described project, and that I am a duly licensed Professional Engineer in the State of Colorado, and that I am duly licensed in accordance with the laws of the State of Colorado, and that I am duly licensed in accordance with the laws of the State of Colorado, and that I am duly licensed in accordance with the laws of the State of Colorado.

EL PASO COUNTY

COURTY PLAN REVIEW IS PROVIDED ONLY FOR GENERAL COMPLIANCE WITH THE EL PASO COUNTY ORDINANCES AND DOES NOT CONSTITUTE A GUARANTEE OF THE ACCURACY OF THE DESIGN, CALCULATION, AND/OR ELEVATIONS WHICH SHALL BE THE RESPONSIBILITY OF THE DESIGNER. THE COUNTY ENGINEER'S REVIEW IS LIMITED TO THE TECHNICAL ASPECTS OF THE PROJECT AND DOES NOT CONSTITUTE A GUARANTEE OF THE ACCURACY OF THE DESIGN, CALCULATION, AND/OR ELEVATIONS WHICH SHALL BE THE RESPONSIBILITY OF THE DESIGNER. THE COUNTY ENGINEER'S REVIEW IS LIMITED TO THE TECHNICAL ASPECTS OF THE PROJECT AND DOES NOT CONSTITUTE A GUARANTEE OF THE ACCURACY OF THE DESIGN, CALCULATION, AND/OR ELEVATIONS WHICH SHALL BE THE RESPONSIBILITY OF THE DESIGNER.

WQVF REQUIRED = 338 CF
WQVF PROVIDED = 124' x 2.77 SF/UF = 343.4 CF
SEDIMENT STORAGE REQUIREMENT
SEDIMENT STORAGE REQUIRED = 124' X 2' X 3' = 93 CF
SEDIMENT STORAGE PROVIDED = 124' X 2' X 3' = 93 CF
93 CF / 7.045 SF = 13.16
13.16' / 4 TIMES = 3.29 (TO BE CLEARED 4 TIMES PER EVENT)

BUILDING FINISH FLOOR DETAIL



BRUNNEN & ASSOCIATES, INC.
10000 CRENSHAW BLVD
DALLAS, TEXAS 75243
PHONE 772-8346



GRADING AND EROSION CONTROL NOTES:

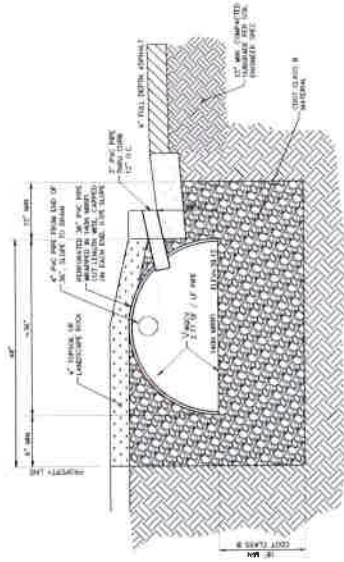
- CONSTRUCTION SHALL BE CONDUCTED WITH A CONSTRUCTION STORM DRAINAGE CONTROL PLAN AND A CONSTRUCTION EROSION CONTROL PLAN. THE CONSTRUCTION EROSION CONTROL PLAN SHALL INCLUDE PROVISIONS TO PREVENT POLLUTION, CONTAMINATION, OR DEGRADATION OF STATE WATERS. ALL WATER AND OTHER POLLUTION SHALL BE COLLECTED IN A CONTAINMENT SYSTEM LOCATED OFF-SITE OR TREATED ON-SITE. ALL WATERSHEDS, INCLUDING WETLANDS, WETLANDS, AND OTHER SENSITIVE AREAS, SHALL BE IDENTIFIED AND PROTECTED. ANY DAMAGE TO WETLANDS, WETLANDS, AND OTHER SENSITIVE AREAS SHALL BE REPAIRED TO ORIGINAL OR BETTER CONDITION. THE CONSTRUCTION EROSION CONTROL PLAN SHALL INCLUDE PROVISIONS TO PREVENT POLLUTION, CONTAMINATION, OR DEGRADATION OF STATE WATERS. ALL WATER AND OTHER POLLUTION SHALL BE COLLECTED IN A CONTAINMENT SYSTEM LOCATED OFF-SITE OR TREATED ON-SITE. ALL WATERSHEDS, INCLUDING WETLANDS, WETLANDS, AND OTHER SENSITIVE AREAS, SHALL BE IDENTIFIED AND PROTECTED. ANY DAMAGE TO WETLANDS, WETLANDS, AND OTHER SENSITIVE AREAS SHALL BE REPAIRED TO ORIGINAL OR BETTER CONDITION.
- ALL TEMPORARY EROSION CONTROL FACILITIES INCLUDING BMPs AND ALL PERMANENT FACILITIES INSTALLED TO CONTROL EROSION OF ANY EARTH DISTURBANCE OPERATIONS SHALL BE INSTALLED AS SPECIFIED IN THE APPROVED PLANS. THE EROSION CONTROL PLAN SHALL INCLUDE PROVISIONS TO PREVENT POLLUTION, CONTAMINATION, OR DEGRADATION OF STATE WATERS. ALL WATER AND OTHER POLLUTION SHALL BE COLLECTED IN A CONTAINMENT SYSTEM LOCATED OFF-SITE OR TREATED ON-SITE. ALL WATERSHEDS, INCLUDING WETLANDS, WETLANDS, AND OTHER SENSITIVE AREAS, SHALL BE IDENTIFIED AND PROTECTED. ANY DAMAGE TO WETLANDS, WETLANDS, AND OTHER SENSITIVE AREAS SHALL BE REPAIRED TO ORIGINAL OR BETTER CONDITION.
- ALL EROSION CONTROL FACILITIES SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE EL PASO COUNTY EROSION CONTROL MANUAL, VOLUME 1, AND THE EL PASO COUNTY EROSION CONTROL MANUAL, VOLUME 2. ANY DEVIATIONS TO REGULATIONS AND STANDARDS MUST BE IDENTIFIED AND APPROVED IN WRITING.
- A SEPARATE STORMWATER MANAGEMENT PLAN (SWMP) FOR THIS PROJECT SHALL BE COMPLETED AND AN EROSION AND SEDIMENT CONTROL PLAN (ESCP) SHALL BE COMPLETED AND APPROVED BY THE EL PASO COUNTY ENGINEER. THE SWMP AND ESCP SHALL BE KEPT UP TO DATE WITH WORK PROGRESS AND CHANGES IN THE FIELD.
- ONCE THE GRADING HAS BEEN BEGUN, THE CONTRACTOR MAY INSTALL THE EROSION CONTROL FACILITIES AND EROSION CONTROL FACILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF THE EROSION CONTROL FACILITIES THROUGHOUT THE CONSTRUCTION PERIOD.
- THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL EXISTING UTILITIES AND FACILITIES. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL EXISTING UTILITIES AND FACILITIES. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL EXISTING UTILITIES AND FACILITIES. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL EXISTING UTILITIES AND FACILITIES.
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- ALL PERSONNEL CHARGED WITH ENFORCEMENT SHALL BE PROVIDED WITH THE EROSION CONTROL MANUAL, VOLUME 1, AND THE EROSION CONTROL MANUAL, VOLUME 2. ANY DEVIATIONS TO REGULATIONS AND STANDARDS MUST BE IDENTIFIED AND APPROVED IN WRITING.
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- NO PERSON SHALL CAUSE THE IMPROVEMENT OF STORMWATER FLOW IN THE FLOW LINE OF THE CURB AND GUTTER OR IN THE DITCHLINE.
- ALL MATERIALS STORED ON THE PROJECT SITE SHALL BE LIMITED TO THE MINIMUM AMOUNT REQUIRED TO MAINTAIN THE PROJECT. ALL EXCESS MATERIALS SHALL BE STORED IN A NEAT, ORDERLY MANNER WITH ORIGINAL MANUFACTURER'S LABELS. ALL CHEMICALS ARE TO BE USED BY THE CONTRACTOR WHICH HAVE THE POTENTIAL TO BE RELEASED IN STORMWATER. UNLESS OTHERWISE SPECIFIED, ALL CHEMICALS SHALL BE STORED IN WRITING BY THE ERM ADMINISTRATOR. THE USE OF SUCH CHEMICALS, SPECIAL CONTRACTORS, AND OPERATIONS ARE TO BE REGULATED BY THE ERM ADMINISTRATOR. SO AS TO CONTROL ALL SOILS AND PREVENT ANY SOILED MATERIAL FROM ENTERING STATE WATERS, INCLUDING ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR FACILITIES.
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GRADING & EROSION CONTROL PLAN
JAE HILL 84-0201
DATE REVISED: AUGUST 7, 2017

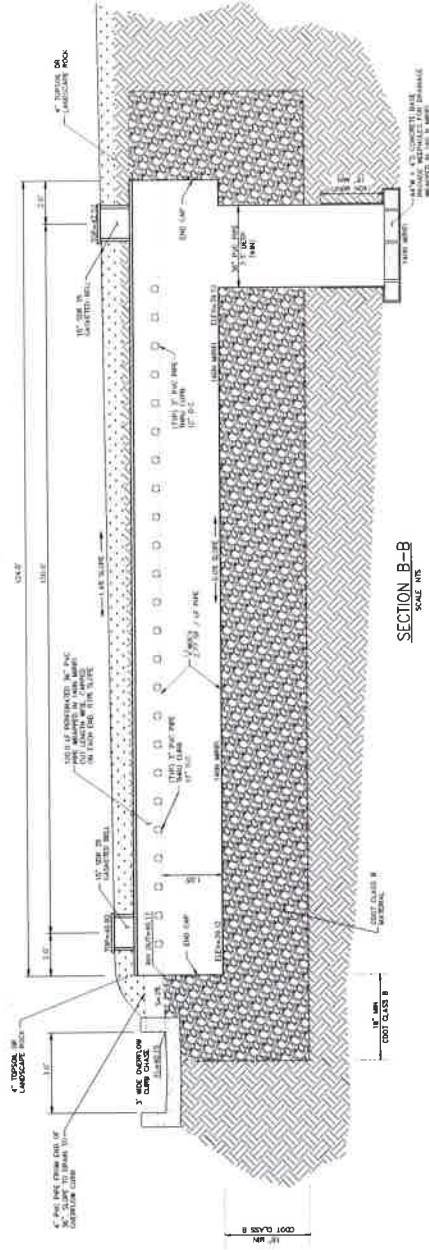
NOCV SUMMARY	
NOCV REQUIRED	= 338 CF
NOCV PROVIDED	= 124' x 2.77 SF/1' = 343.4 CF
SEDIMENT STORAGE REQUIREMENT	
SEDIMENT STORAGE REQUIRED	= 124.0 x 3' x 3" = 9.3 CF
SEDIMENT STORAGE PROVIDED	= $\pi (0.5')^2 \times 1.16' = 0.93 \text{ CF}$
	13.6' / 4 TIMES = 3.40' (TO BE CLEANED 4 TIMES PER EVENT)

FILTRATION TEST RESULTS BY GEOTECH, LLC*	
INFILTRATION RATE	= 17.3 MINUTES PER INCH
SURFACE AREA	124' x 3' = 372 SF
VOLUME	343.4 CF
1.05' = 12.6"	
17.3 MIN/IN x 12.6" = 218 MINS	
218 MIN x 1 HRS = 3.63 HRS	
60 MIN	3.63 HRS
✓ GOOD: LESS THAN 12. HRS	



SECTION A-A
SCALE: 1/8" = 1'-0"

WATER QUALITY STORAGE DETAILS



SECTION B-B
SCALE: 1/8" = 1'-0"

GRADING & EROSION CONTROL PLAN DETAILS
 10000 LLC
 10000 N. W. 100TH AVE.
 DATE PREPARED: JUNE 9, 2017
 DATE REVISED: AUGUST 7, 2017
 EL PASO COUNTY FILE NO. PPR 17-026

20 KILGUS CREEK DRIVE
 COLOMBO SPRING, CO 80501
 PHONE: 719.558.8888

