

CASTLE PINES GESC MANUAL





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ACKNOWLEDGEMENTS

The *Castle Pines Grading, Erosion and Sediment Control (GESC) Manual* was built upon the foundation provided by Mile High Flood District (MHFD) and Douglas County (DC). The MHFD's *Urban Storm Drainage Criteria Manual*, as amended, and the DC GESC Manual are incorporated in this Manual by reference, and in some cases, materials are used directly from those publications.

The City is committed to protecting water resources and regulating future development in an environmentally sound manner. To accomplish these goals, the City will:

- Safeguard water quality within the City by requiring permanent stormwater control measures (SCMs) for all applicable development sites;
- Enforce compliance with current stormwater regulations during construction; and
- Provide healthy and diverse natural habitats for flora and fauna and waterways in City-owned spaces and through partnerships with watershed groups, Cooperative for Local Environmental Awareness & Responsibility (CLEAR, <http://www.onethingisclear.org/>), MHFD, and Cherry Creek Basin Water Quality Association (CCBWQA <https://www.cherrycreekbasin.org/>).

The *Castle Pines GESC Manual (GESC Manual)* has been adopted by the City and shaped by these goals.

ACRONYMS

BMP	Best Management Practice (also known as Control Measure in context of construction or Stormwater Control Measure in context of permanent controls)
CB	Compost Blanket
CCBWQA	Cherry Creek Basin Water Quality Authority
CD	Check Dam
CDOT	Colorado Department of Transportation
CDPHE	Colorado Department of Public Health and Environment
CDPS	Colorado Discharge Permit System
CF	Construction Fence



CFB	Compost Filter Berm
CLEAR	Cooperative for Local Environmental Awareness and Responsibility
CM	Construction Marker
CM	Control Measure (associated with construction)
CP	Castle Pines
CPNMD	Castle Pines North Metro District
CS	Curb Sock
CWA	Clean Water Act
CWA	Concrete Washout Area
CY	Cubic Yard
DC	Douglas County
DD	Diversion Ditch
DE	Design Engineer
DW	Dewatering
DESC	Drainage, Erosion, and Sediment Control
ECB	Erosion Control Blanket
EDB	Extended Detention Basin
EPA	U.S. Environmental Protection Agency
EURV	Excess Urban Runoff Volume
FEMA	Federal Emergency Management Agency
GESC	Grading, Erosion, and Sediment Control
IP	Inlet Protection
LOC	Letter of Credit
MHFD	Mile High Flood District
MS4	Municipal Separate Storm Sewer System
MU	Mulching
NDRD	New Development and Redevelopment
NPDES	National Pollutant Discharge Elimination System
O&M	Operation and Maintenance
PE	Professional Engineer
PW	Castle Pines Public Works Department



QSM	Qualified Stormwater Manager
RCD	Reinforced Check Dam
Regulation 72	Cherry Creek Reservoir Control Regulation 5 CCR 1002-72
ROW	Right-of-Way
RRB	Rock Reinforced Berm
RRC	Rock Reinforced Berm for Culvert Protection
SB	Sediment Basin
SCL	Sediment Control Log
SCM	Stormwater Control Measure (associated with permanent/developed conditions)
SCP	CDPS General Permit for Stormwater Discharges Associated with Construction Activities
SE	Seeding
SF	Silt Fence
SIP	Site Improvement Plan
SM	Seeding and Mulching
SR	Surface Roughening
SS	Street Sweeping
SSA	Stabilized Staging Area
ST	Sediment Trap
SWMP	Stormwater Management Plan
TER	Terracing
TMDL	Total Maximum Daily Load
TRM	Turf Reinforced Mat
TSC	Temporary Stream Crossing
TSD	Temporary Slope Drain
TSD	Treatment, Storage, and Disposal
USACE	U.S. Army Corps of Engineers
USDCM	Urban Storm Drainage Criteria Manual
VTC	Vehicle Tracking Control
WQCD	Water Quality Control Division
WQCV	Water Quality Capture Volume



DEFINITIONS

Applicable development sites outside Cherry Creek Reservoir Watershed are those development sites that result in land disturbance of greater than or equal to one (1) acre, including sites less than one (1) acre that are part of a larger common plan of development or sale, unless excluded. Applicable development sites include all new development and redevelopment sites for which permanent stormwater quality control measures (SCMs) are required in accordance with an Municipal Separate Storm Sewer System (MS4) Permit and are located outside of the Cherry Creek Reservoir Watershed.

Applicable development sites within Cherry Creek Reservoir Watershed are all land disturbances associated with new development and redevelopment projects unless excluded inside the Cherry Creek Reservoir Watershed. Applicable development sites inside the Cherry Creek Reservoir Watershed must develop, implement, and enforce a program that ensures that a combination of structural and/or nonstructural controls are in place that will prevent or minimize water quality impacts to the MS4 and Cherry Creek Reservoir from new development and redevelopment projects. These requirements are specified in Regulation 72 and are based on the tier that applies to the project as well as applicable MS4 Permit requirements.

Cherry Creek Watershed consists of all lands that drain into the following: (a) the mainstem of Cherry Creek, from the source of East and West Cherry Creek to the inlet of Cherry Creek Reservoir (Segment 1), including alluvial groundwater; (b) Cherry Creek Reservoir (Segment 2), including alluvial groundwater; (c) all tributaries to Cherry Creek, including wetlands and alluvial groundwater, from the sources of East and West Cherry Creeks (parts of Segment 4); and all lakes and reservoirs in the Cherry Creek Reservoir watershed (Segment 5, in part) as described in the Classifications and Numeric Standards - South Platte River Watershed, Regulation #38 (5 CCR 1002-38).

A **common plan of development or sale** is a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules, but remain related. The Water Quality Control Division (WQCD) has determined that “contiguous” means construction activities located in close proximity to each other (within ¼ mile).

Construction activity refers to ground surface disturbance and associated activities (land disturbance), which include, but are not limited to, clearing, grading, excavation, demolition, installation of new or improved haul roads and access roads, staging areas,



stockpiling of fill materials, and borrow areas. Activities that include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of the facility are not considered construction activities. Activities to conduct repairs that are not part of regular maintenance and activities that are for replacement are considered construction activities and are not considered routine maintenance. Repaving activities where underlying or surrounding soil is cleared, graded, or excavated as part of the repaving operation are construction activities unless considered routine maintenance.

Control measures (CMs) are any best management practice (BMP) or other method used to prevent or reduce the discharge of pollutants to Castle Pines's separate storm systems and to Waters of the State. For this *GESC Manual*, CMs refer to stormwater control measures (CMs) associated with construction. Control measures include, but are not limited to BMPs such as erosion controls, sediment controls, materials handling and management, phasing, sequencing, and other similar measures. Control measures must be selected, designed, installed, implemented, and maintained in accordance with good engineering, hydrologic, and pollution control practices. The following situations will be identified during construction site inspections by Castle Pines:

- **Inadequate CMs:** Any CM shall be considered an "inadequate CM" if it is not properly designed, implemented, or operating.
- **Failure to Implement CM:** A CM is not implemented in the field that is required per the approved plans or due to field conditions.
- **CM Requiring Routine Maintenance:** Any CM shall be considered a "CM requiring routine maintenance" if it is still operating in accordance with its design and the requirements of this permit, but requires maintenance to prevent associated potential for failure during a runoff event.

Design Engineer is a Professional Engineer, who shall be registered in the State of Colorado.

Discharge of a pollutant means the introduction or addition of a pollutant into State Waters (see 25-8-103[3] C.R.S.).

Disturbed area means any site, area, or lands where a land disturbance has commenced but has not been permanently stabilized and/or revegetated.

Full spectrum detention is a design method for water quality and detention facilities that incorporates the water quality capture volume (WQCV), the excess urban runoff



volume (EURV), and the 100-year detention storage volume (as defined by MHFD) in an integrated facility that detains peak flow rates and provides water quality treatment over the full spectrum of events from the frequent WQCV event to the infrequent 100-year event.

GESC Manager is the contact person for matters pertaining to the project-specific GESC Plan, Report, and Permit. The GESC Manager may be an employee of the Owner or Contractor, and shall have the authority to act on behalf of the Permittee to direct work ensuring that the site remains in compliance with the GESC Permit. The GESC Manager may also be a Qualified Stormwater Manager (QSM) or alternatively may have staff or subcontractors that fill this role that they supervise.

Good engineering, hydrologic, and pollution control practices: Methods, procedures, and practices that:

- A. Are based on basic scientific fact(s).
- B. Reflect best industry practices and standards.
- C. Are appropriate for the conditions and pollutant sources.
- D. Provide appropriate solutions to meet the associated permit requirements, including practice-based and numeric effluent limits.

Illicit discharges are any discharges to an MS4 that are not composed entirely of stormwater, except discharges specifically authorized or exempted by a Colorado Discharge Permit System (CDPS) or National Pollutant Discharge Elimination System (NPDES) Permit and discharges resulting from emergency firefighting activities.

Individual home construction is any land disturbance or development for a single home, not including land disturbances for roads, road gutters, or road improvements, that disturbs less than one (1) acre of land and where the Owner of the single home holds a permit for construction of only one dwelling within the subdivision, if any, containing the single home.

Land disturbing activity is any activity that results in a change in the existing land (both vegetative and non-vegetative). Land disturbing activities include, but are not limited to, clearing, grading, excavation, demolition, installation of new or improved haul roads and access roads, staging areas, stockpiling of fill materials, and borrow areas. Compaction that is associated with stabilization of structures and road construction must also be considered a land disturbing activity.



Large-lot single-family development for the purpose of construction under Regulation 72, means a land disturbance greater than one (1) acre on a single-family residential lot with an area equal or greater than two and-one-half (2.5) acres in size and having a total site imperviousness, including, but not limited to roadways, building footprints, and driveways, less than 10% gross area.

Municipal Separate Storm Sewer System (MS4) is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) that is:

- A. Owned or operated by a state, city, town, county, district, association, or other public body (created by or pursuant to state law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under state law such as a sewer district, flood control district or drainage district, or similar entity, or a designated and approved management agency under section 208 of the Clean Water Act (CWA) that discharges to State Waters;
- B. Designed or used for collecting or conveying stormwater. For the purposes of this *GESC Manual*, stormwater conveyances also include conveyances that are owned or operated by the Permittee through agreement, contract, direct ownership, easement, or right-of-way and are for the purpose of managing floodplains, stream banks, and channels for conveyance of stormwater flows in order for the discharges to be authorized by the MS4 Permit;
- C. Which is not a combined sewer; and
- D. Which is not part of a publicly owned treatment works (see 5 CCR 1002-61.2[62]).

New development and redevelopment (NDRD): “New Development” means land disturbing activities; structural development, including construction or installation of a building or structure; creation of impervious surfaces; and land subdivision for a site that does not meet the definition of redevelopment. “Redevelopment” includes a site that is already substantially developed with 35% or more of existing imperviousness; with the creation or addition of impervious area (including removal and/or replacement), to include the expansion of a building footprint or addition or replacement of a structure; with structural development including construction or replacement of impervious area that is not part of a routine maintenance activity; and land disturbing activities.

Permittee is defined as any person who is issued a GESC Permit by the City of Castle Pines.

Pollutants are dredged spoil, dirt, slurry, solid waste, incinerator residue, sewage, sewage sludge, garbage, trash, chemical waste, biological nutrient, biological material,



radioactive material, heat, wrecked or discarded equipment, rock, sand, or any industrial, municipal, or agricultural waste as defined in 5 CCR 1002-61.2(76).

Qualified Stormwater Manager (QSM) is an individual knowledgeable in the principles and practices of erosion and sediment control and pollution prevention, and with the skills to assess conditions at construction sites that could impact stormwater quality and to assess the effectiveness of stormwater controls implemented to meet the requirements of the GESC Permit. Typically, the QSM is the GESC Manager.

Stormwater means all runoff from precipitation including rainfall runoff, snow melt runoff, surface runoff, and drainage.

Tier 1 development and redevelopment for the purpose of Regulation 72, means any land disturbance less than one (1) acre that is developed independently of a larger common plan of development or sale, and which results in less than 500 square feet of imperviousness for new development or 500 square feet of increased imperviousness for redevelopment.

Tier 2 development and redevelopment for the purpose of Regulation 72, means any land disturbance less than one (1) acre that is developed independently of a larger common plan of development or sale, and which results in more than 500 square feet but less than 5,000 square feet of imperviousness for new development, or more than 500 square feet but less than 5,000 square feet of increased imperviousness for redevelopment, including disturbances of existing impervious areas.

Tier 3 development and redevelopment for the purpose of Regulation 72, means any land disturbance greater than one (1) acre, or which results in more than 5,000 square feet of imperviousness for new development or 5,000 square feet of increased imperviousness for redevelopment, including disturbances of existing impervious areas.

Waters of the State of Colorado (State Waters) are any and all surface and subsurface waters that are contained in or flow in or through this State, but not including water in sewage systems, water in treatment works of disposal systems, water in potable water distribution systems, and all water withdrawn for use until use and treatment have been completed. This definition can include water courses that are usually dry.

Water quality capture volume (WQCV) means the runoff storage capacity of a permanent SCM that is designed to capture and treat, at a minimum, the 80th percentile runoff event from an entire site (i.e., 80% of the most frequently occurring storms are fully captured and treated and larger events are partially treated).

1.0 CASTLE PINES GESC PERMIT PROGRAM OVERVIEW

Protecting water quality is important to the City of Castle Pines (the City) and is required as part of the City's Municipal Separate Storm Sewer System (MS4) Permit. The goal of the Castle Pines stormwater program is to control and reduce pollutants in stormwater in order to protect water quality and meet the water quality requirements of the **Colorado Water Quality Control Act (25-8-101 et seq., C.R.S.), Cherry Creek Reservoir Control Regulation 5 CCR 1002-72 (Regulation 72), Chatfield Reservoir Control Regulation 5 CCR 1002-73 (Regulation 73), Colorado Discharge Permit System Regulations 5 CCR 1002-61 (Regulation 61) , and Nutrient Management Control Regulation 5 CCR 1002-85 (Regulation 85).**

The City controls and reduces pollutants in stormwater during construction by requiring construction sites to obtain coverage under a Grading, Erosion and Sediment Control (GESC) Permit. This *GESC Manual* describes the minimum requirements for obtaining a GESC Permit, compliance during construction, the City's enforcement policies, and how to close out a GESC Permit.

The City has a long history of using the Douglas County (DC) GESC Manual. *The Castle Pines GESC Manual (GESC Manual)* builds on those requirements, as well as Mile High Flood District's (MHFD's) Urban Storm Drainage Criteria Manual (USDCM), to formulate the stormwater programs, requirements, and policies contained within this *GESC Manual*. Background information on the importance of water quality, minimizing pollutant sources during construction, and various types of CMs for construction, and permanent stormwater control measures (SCMs) for post-construction water quality treatment may be found in the DC GESC Manual and MHFD USCDM, referenced herein.





2.0 GESC PERMIT BACKGROUND

A GESC Permit will be required for most construction sites within the City. Permits must be obtained prior to starting construction unless the project is exempt from such requirements (**Section 2.4**).

2.1 PROJECTS REQUIRING A GESC PERMIT

A GESC Permit is required prior to construction starting for most construction activities, including but not limited to, the following within the City limits:

- New development and redevelopment (regardless of size, unless excluded).
- Any land disturbance that involves more than 50 cubic yards of material not otherwise exempted by this *GESC Manual* (**Section 2.4**), including such land disturbances that are part of a larger common plan of disturbance.
- Construction of sidewalks or driveways (may request an authorized exclusion in most cases if less than one (1) acre of disturbance).
- New public and private roadway construction.
- Any clearing, grubbing, grading, or filling operations that have the potential to adversely impact drainage patterns or result in sedimentation in the storm sewer system or drainageway.
- Drilling, utilities, and operations that move more than 50 cubic yards not otherwise exempted by this *GESC Manual*.
- Any project that the Castle Pines Public Works (PW) Department or Director determine to have an adverse impact on the public right-of-way, public infrastructure, or adjacent property, with respect to grading, erosion, and sediment control.

Forms and guidance documents pertaining to stormwater requirements and submittals may be found at Castle Pines's Stormwater website, www.castlepinesco.gov/city-services/city-departments/public-works/stormwater-management/.

2.2 STANDARD GESC PERMIT

Projects that disturb one (1) acre or more of land or are part of a common plan of development that disturbs one (1) acre or more, need to utilize a Standard GESC Permit.



2.3 LOW IMPACT GESC PERMIT

Projects that pose a low risk to water quality may utilize a Low Impact GESC Permit to satisfy the GESC Permit and Regulation 72 requirements. The Low Impact GESC Permit is typically utilized for projects that have:

- Less than one (1) acre of land disturbance and not part of a common plan of development disturbing one (1) acre or more.
- Low potential to adversely impact drainage patterns or impact water quality.
- Move more than 50 cubic yards of material.

The City must approve projects using the Low Impact GESC Permit. Requests to the City should be directed to the PW Department, PWRequests@castlepinesco.gov and should be made early in the permit process prior to officially submitting materials through the City portal. **Figure 2-1** illustrates the GESC Permit determination process.

For projects that move less than 50 cubic yards of materials, the City regulates stormwater compliance through the City's Right-of Way (ROW) permits, contractor outreach, and the illicit discharge detection and elimination (IDDE) program.

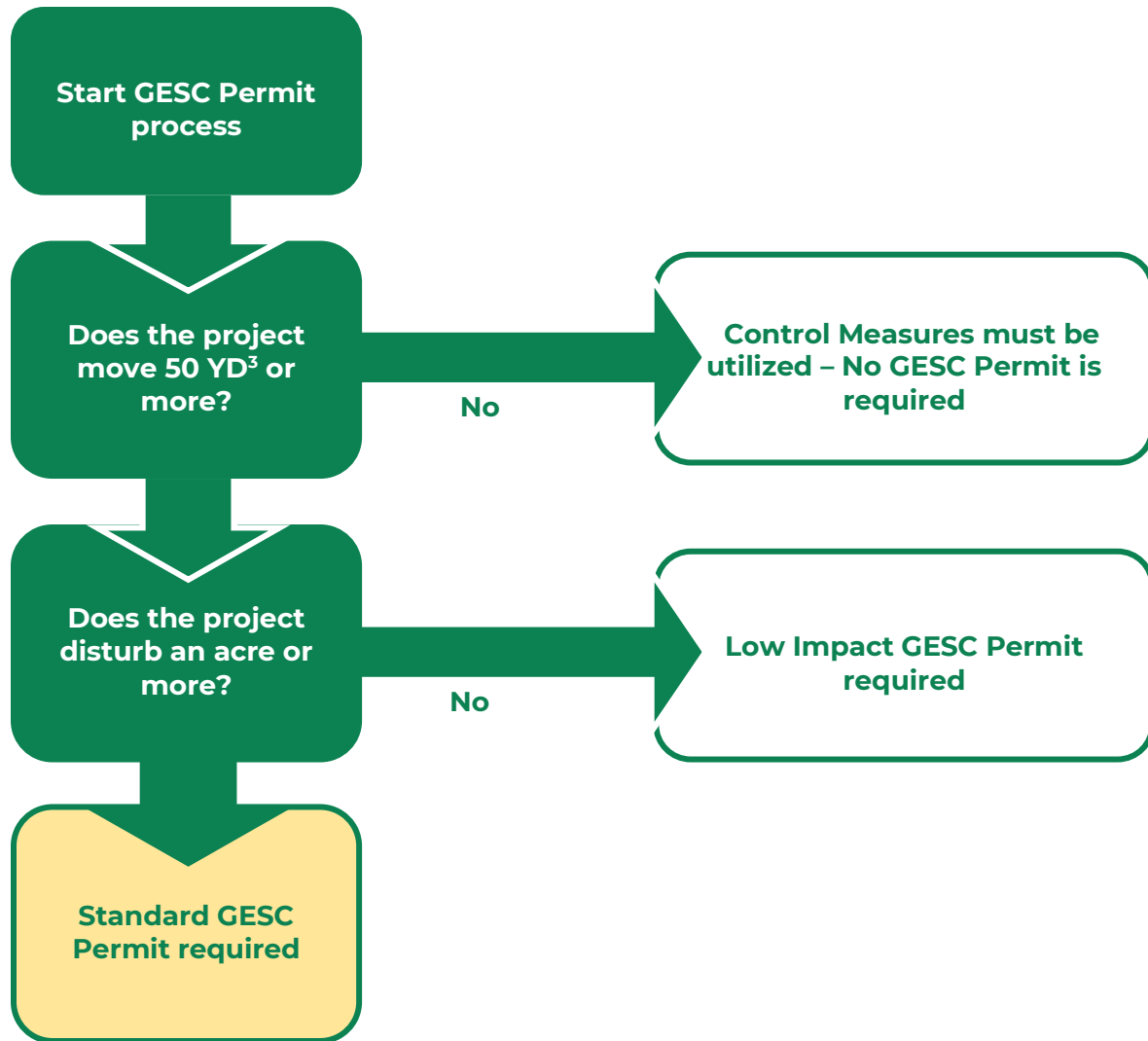


Figure 2-1 GESD Determination Flow Chart



2.4 GESC PERMIT EXEMPTIONS

Some types of projects, listed below, are automatically exempt from the GESC Permit Program.

- Agricultural activities, including but not limited to tilling, conservation terracing planting, harvesting, livestock operations, or the installation or maintenance of agricultural-related underground utilities and irrigation systems located on private property. *Note: Pole barns or other such types of structure are not typically exempt from GESC permitting.*
- Land disturbance with less than 50 cubic yards of fill or movement of material. *Note: Appropriate temporary stormwater control measures (CMs) are required to be installed to control potential pollutant sources; however, a GESC Permit is not typically required unless the work is located within 100 feet from waterway or wetland and poses a large risk to that feature. Permitting requirements for land disturbances near a waterway or wetland should be verified with the Castle Pines PW Department, PWRequests@castlepinesco.gov. Requests for permit determinations need to be made prior to starting any land disturbance.*
- Routine maintenance of existing public and private roadways. *Note: Appropriate CMs are required to be installed to control potential pollutant sources. ROW permits will be required for maintenance in public roadways. Maintenance must meet the definition provided in the **Definitions Section** in this GESC Manual. New public and private roadway construction activities are not considered maintenance and are subject to GESC permitting and are subject to the requirements contained in the City's Roadway Design and Construction Standards.*
- Routine municipal operations such as mowing, landscaping, weed control, and minor excavations (moving less than 50 cubic yards of material). CMs are required for these activities; however, they are regulated under the ROW permits, contractor and mun
- Cemetery grave construction or any items related to routine operations of cemeteries.
- Irrigation and associated activities, including operation, maintenance, and construction of irrigation facilities, ditch maintenance, and pumping; maintenance, operation, and construction of diversions and head gate structures; and irrigation work in the ROW).



- Small utility and excavations with less than 50 cubic yards of material. CMs are required for these activities; however, they are regulated under the ROW permits, contractor outreach, and the City's IDDE program.
- Exploratory excavations or drilling (potholing) as part of a pre-development or existing utility site assessment under the direction of soil geotechnical engineers or engineering geologists. *Note: ROW permits and requirements will apply if in public ROW.*
- Other routine maintenance activities that are performed to maintain the original line and grade, hydraulic capacity, or original purpose of roads, utilities, constructed ditches, constructed channels and constructed ponds.
- Activities that are covered by other Colorado Discharge Permit System (CDPS) permits.
- Colorado Department of Transportation (CDOT) projects located entirely within CDOT's ROW.
- Activities on lands where the City does not have jurisdictional control such as State-owned facilities unless a written agreement is in place.

Exempt projects that do not require a GESC Permit are not free from the obligation to control erosion, sediment, and construction materials including waste. CMs shall be required in accordance with the standard details associated with this *GESC Manual* (Appendix A).

2.5 OVERLAPPING MUNICIPAL BOUNDARIES

For projects that cross multiple municipalities or non-standard municipal boundaries, a letter of jurisdiction may be used at the discretion of the City to allow one municipality to take jurisdictional control of stormwater during construction or post-construction for new development or redevelopment (NDRD).

2.6 OTHER APPLICABLE PERMITS

The State of Colorado requires CDPS Permits for stormwater discharges associated with construction activities separately and in addition to permitting requirements of the City. The Applicant or the Design Engineer (DE) for a project may contact the State Water Quality Control Division (WQCD) for State permitting information for a specific project. Approval of the GESC Permit does not alleviate the Applicant from obtaining all other local, state, and federal permits applicable to the project.

3.0 GESC PERMIT APPLICANTS

GESC Permit applications are typically signed by the Project Owner and the Contractor. If the Project Owner has control of day-to-day stormwater and construction operations then they may sign as both the Project Owner and the Contractor. However, the Contractor shall to be licensed to work in the City and must provide documentation to this effect.

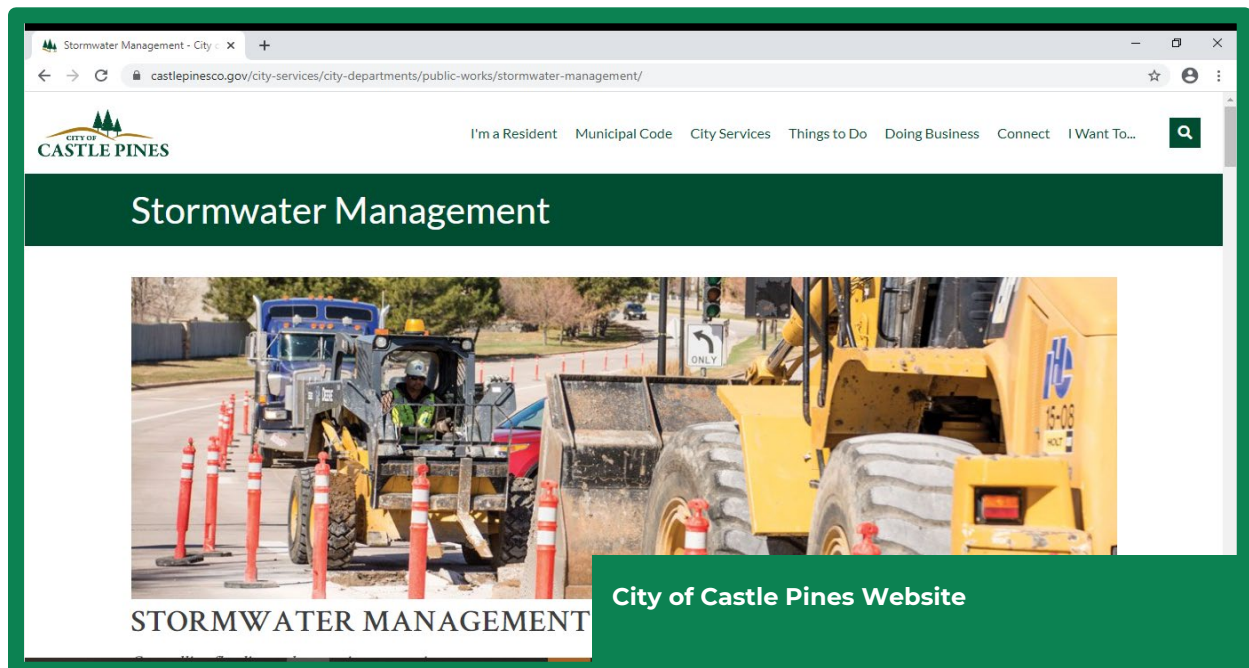
The Application shall be signed by personnel who are legally authorized to sign on behalf of the company, corporation, entity, or organization. Prior to issuance of a GESC Permit, the Owner and the Contractor are referred to as “Applicants.” After the Permit is issued, both are considered the “Permittee.” The Permittee shall be legally responsible for compliance with the GESC Permit.

There are two types of GESC Applications:

1. Standard GESC (one [1] acre or more of disturbance).
2. Low Impact GESC (less than one [1] acre of disturbance).

The GESC Permit Applications are found on the City’s website

(www.castlepinesco.gov/city-services/city-departments/public-works/stormwater-management/).





In addition to the Project Owner and Contractor, a GESC Manager shall be identified prior to construction and prior to the issuance of the GESC Permit. The GESC Manager is responsible for assisting the Project Owner and Contractor with ensuring compliance with the GESC Permit. This person should also be knowledgeable in stormwater compliance associated with construction and meet the definition of a Qualified Stormwater Manager (QSM) as defined in the **Definitions Section** of this *GESC Manual*. The QSM may also be a sub-contractor for the GESC Manager.

4.0 GESC PERMIT PROCESS

The Permittee is responsible for developing a GESC submittal to address **CURRENT** requirements to effectively reduce the potential for pollutants to impact water quality. The City evaluates grading and drainage as part of the GESC submittal and, as such, requires that GESC Plans be prepared by or under the responsible charge of, and be signed and stamped by, a Professional Engineer (PE) registered in the State of Colorado.

The GESC submittal requirements may change over time with changes to the City's Municipal Separate Storm Sewer System (MS4) Permit or changes to other Colorado Discharge Permit System (CDPS) permits and requirements. Changes will be listed on the City's stormwater website if revised policies differ from the process and requirements described in this *GESC Manual* until such time that the GESC Manual is updated.

It is recommended that the Applicant contact Castle Pines Public Works (PW) prior to starting work on a GESC submittal to clarify GESC Permit requirements and to help interpret which GESC Permit, if any, applies to a particular project. Questions may be emailed to PW at PWRequests@castlepinesco.gov. Consult the City's stormwater website (www.castlepinesco.gov/city-services/city-departments/public-works/stormwater-management/) to find additional information associated with GESC applications, forms, contacts, and links to the City's permit tracking software and portal.

4.1 STANDARD GESC PERMIT SUBMITTALS (ONE ACRE OR MORE OF DISTURBANCE)

The Design Engineer (DE) is responsible for preparing the GESC submittal in accordance with the requirements of this *GESC Manual* and following good engineering, hydrological, and pollution prevention control practices.



Standard GESC Permit submittals include the following:

- GESC Application (latest version on City's stormwater website).
- GESC Checklist (latest version on City's stormwater website).
- GESC Cost Estimate (Appendix E).
- GESC Report (meeting requirements outline in the GESC checklist and *this GESC Manual*). *Note: A Stormwater Management Plan (SWMP) that contains the elements outlined in the GESC Checklist may be substituted for a GESC Report.*
- GESC Plans (meeting the requirements outlined in the GESC checklist and *this GESC Manual*) that include plans for Initial, Interim and Final Phases, unless otherwise approved by the City. The Final Phase shall include any permanent landscaping planned for the site and be consistent with landscaping plans.
- Castle Pines Standard Notes and Details (Appendix A). *Note: Standard Notes and Details are typically included as part of the GESC Plan set and can be found on the City's stormwater website.*
- Copy of the CDPS General Permit for Stormwater Discharges Associated with Construction Activities (SCP). *Note: A copy of the CDPS certification does not need to be provided with the initial submittal, but does need to be submitted to the City prior to starting work.*
- Post-Construction Checklist (latest version on the City's stormwater website).
- Operation and Maintenance (O&M) Plan (example in Appendix G) , drainage easements and maintenance agreements (template in Appendix J), as applicable (guidance on the City's stormwater website).
- Phase III Drainage Report or a Drainage Letter (a drainage letter may apply to some smaller projects with relatively small footprints and limited impervious areas with approval from PW). If the GESC is associated with an active Community Development Planning (Planning) case then the Phase III Report should be the same report used for planning purposes. Note that the Phase III Report will typically be approved through the Planning process and not the GESC process unless the area has already gone through such a process or is not subject to the Planning process (e.g., utilities, roadways, trails, Capital Improvement Plans, and overlot grading lots sold to individual builders).
- Construction Drawings for reference only. If the GESC is associated with an active Planning case then the Construction Drawings should be the same. *Note that the*



Construction Drawings will typically be approved through the Planning process and not the GESC process.

- These materials are submitted to the City using the City's permitting portal. To obtain access to the portal click on the portal button on the City's stormwater website (www.castlepinesco.gov/city-services/city-departments/public-works/stormwater-management/). For questions on the portal or submittals, contact PW.

The Standard GESC Permit process is outlined on **Figure 4-1**. Timelines for review are provided in Section 6.0.

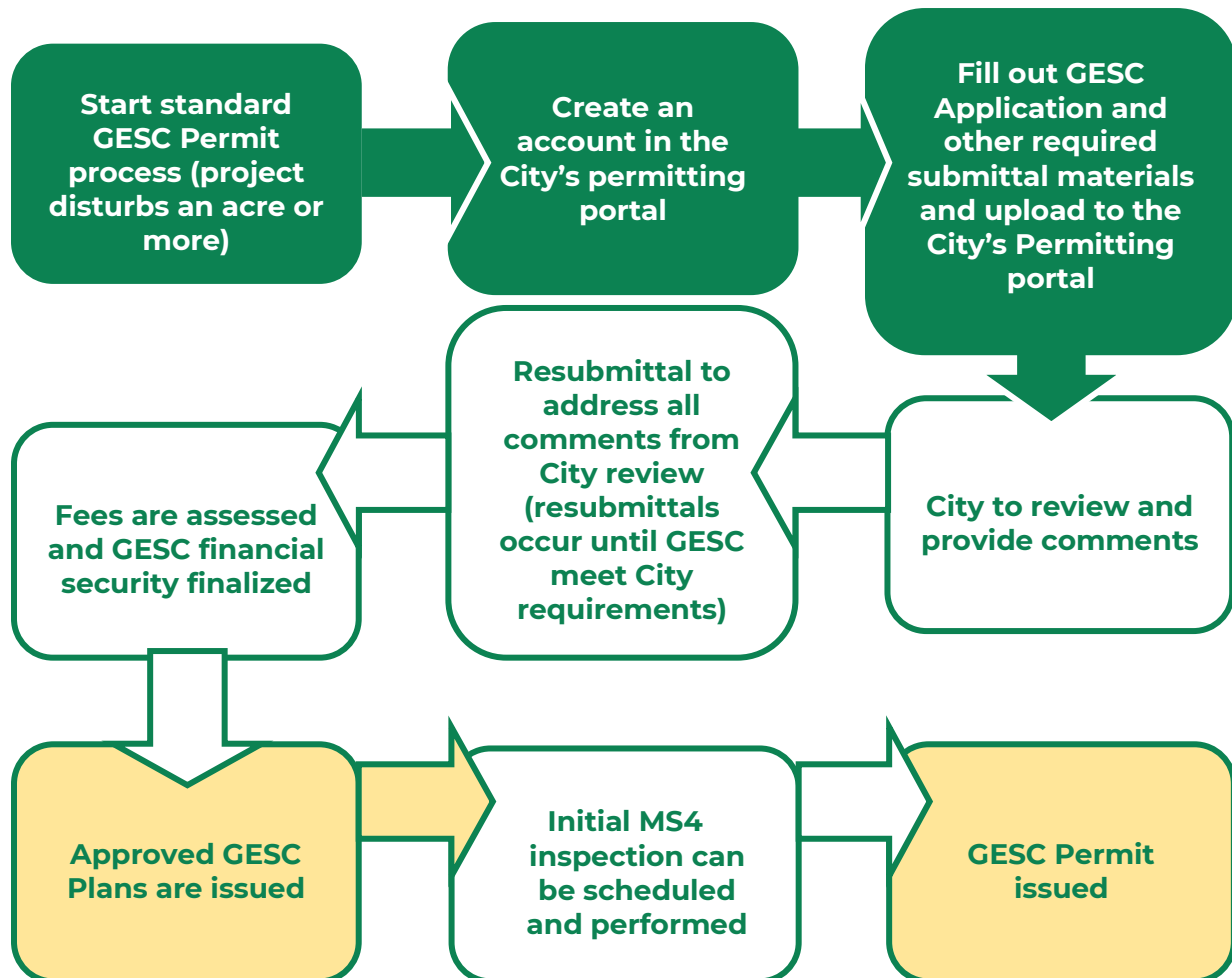


Figure 4-1 Standard GESC Permit Process Flow Chart



4.2 LOW IMPACT GESC PERMIT SUBMITTALS (LESS THAN ONE ACRE OF DISTURBANCE)

Low Impact GESC submittals follow a similar process as the Standard GESC; however, these submittals typically are less detailed and do not require a GESC Report or the same number of construction phases for the GESC Plans. Generally, Low Impact GESC Plans may illustrate Initial and Interim Phases on one plan and may even include Initial, Interim, and Final Phases on one plan set if this can be shown in a clear manner.

Low Impact GESC Permit submittals include the following:

- Low Impact GESC Application (latest version on the City stormwater website).
- Low Impact GESC Checklist (latest version on the City stormwater website).
- GESC Cost Estimate (Appendix E).
- Low Impact GESC Plans (meeting the requirements outlined in the checklist). These plans should include any permanent landscaping to be installed.
- Castle Pines Standard Notes and Details (Appendix A). *Note: typically included as part of a GESC Plan.*
- Post-construction Checklist (latest version on the City stormwater website).
- Drainage Letter (following all applicable requirements per Regulation 72).
- Construction Drawings for reference only. If the GESC is associated with an active planning case then the Phase III Report should be the same report. *Note: The Construction Drawings will typically be approved through the Planning process and not the GESC process.*

Submittals are made through the City's permitting portal discussed in **Section 4.1.** and generally, follow the GESC process outlined on **Figure 4-1.**

4.3 GESC AT RISK GRADING AND OVERLOT GRADING ONLY PERMITS

Overlot Grading Only Permits are for grading only and do not include vertical construction, placement of sidewalks, or the addition of any impervious surface. At Risk Grading Permits are also for grading but are issued prior to a full review and approval of Construction Drawings, Drainage Reports, or other technical documents. Grading performed under an At-Risk Grading Permit requires the Permittee to sign a hold harmless letter (Appendix I) that states that the Permittee is subject to implementing any changes required by the City after a review of the completed documents such as the final Construction Drawings, Drainage Report, or other technical documents.



Overlot Grading Only Permits do not include the construction of infrastructure, utilities, or the creation of impervious area. The addition of construction activities not clearly stated in the Overlot Grading Only GESC submittals shall not be authorized under Overlot Grading Only GESC Permits unless a modification or new GESC submittal is made and approved by the City. Unauthorized construction activities are subject to the City's enforcement program.

Overlot Grading Only submittals must still meet all GESC submittal requirements and must include:

- GESC Application indicating overlot grading permit only.
- GESC Checklist.
- GESC Cost Estimate.
- GESC Report.
- GESC Plans.
- City Standard Notes and Details.
- CDPS Certification.



4.4 CONDITIONS THAT REQUIRE VARIANCES OR MODIFICATIONS

The City may consider variances to GESC requirements and criteria when:

- A proposed alternative with an equivalent effect is available, and
- The Applicant feels that the variance is justified due to **project scope, duration, or site conditions.**

Variances may be granted at the time of plan submission or during construction but need to be approved prior to the change being implemented in the field. Variances requested after the work has been completed are not allowed and will be considered for enforcement. Variances that would cause non-compliance with the City's MS4 Permit requirements will not be granted.

To submit a variance request, a letter with the following information must be submitted to PW through the City's permitting portal or via email through an MS4 Inspector:

- The criteria from which the Applicant seeks a variance.
- The justification for varying with the criteria.
- Alternate criteria or measures to be used in lieu of the criteria outlined in this *GESC Manual*.

The City recognizes on large-scale projects, where there are long-term continual earthwork operations, certain criteria within the GESC requirements may require a variance. There are two types of variances: major and minor.

Major Variances include, but are not limited to:

- Allowing more than forty (40) acres to be disturbed at a time without phasing each phase to be less than forty (40) acres.
- Not balancing earthwork material onsite.
- Not meeting the GESC requirements outlined in this *GESC Manual* or using an alternative approach or schedule.

Regulation 72 requires that areas of disturbance over forty (40) acres must not be exposed for more than thirty (30) consecutive days without temporary or permanent stabilization, unless otherwise authorized as an exemption. If over-excavation, stockpiling, and replacement of soils necessary for mitigating expansive soils or



addressing similar soil management issues result in needing to **exceed the forty (40)-acre requirement**, a variance must be submitted documenting why it is impracticable physically and/or financially to meet this requirement along with GESC Plans showing:

- Phasing Plan showing cut and fill volumes and location for each phase and project totals on their own sheets.
- Earthwork quantity plan showing cut and fill volumes and location for each phase and project totals on their own sheets.
- Erosion Control Plan showing specific erosion and sediment controls for each phase.

The City encourages each area over forty (40) acres to be seeded before starting work on the next phase of the project but does recognize the potential for a variance to deviate from this requirement due to improved costs and shorter duration of overall construction activities. This variance request must be submitted with the GESC submittal. Variance requests for areas subject to Regulation 72 will be sent to Cherry Creek Basin Water Quality Authority (CCBWQA) for review and approval.

For sites where it is impractical to **balance earthwork quantities**, the following is required to be included in the variance request:

- Reason for variance.
- Amount of material to be imported or exported.
- Location of disposal site if export or source site if import.
- GESC Permit numbers for disposal or source sites (if within the City).
- Detailed haul route plan and traffic control plan for haul route.
- Type of truck and number of round trips required to complete import or export.

Significant changes that occur after approved GESC Plans are issued shall be submitted to PW for review as a modification. Modification fees must be paid prior to final approval and are in addition to original GESC review and permit fees.

Major modifications shall be submitted, reviewed, and approved before the deviation from the approved GESC Plan occurs. Examples of situations that would require a major modification include, but are not limited to, the following:

- Significant changes to the limits of disturbance or construction limits.



- Changes to environmental impacts.
- Changes in construction activities and pollutant sources.
- Changes in drainage and grading that differ from the approved plans.

Contact the City to determine what documents are required to be submitted for modifications (pwrequests@castlepinesco.gov). Submittal requirements depend on the nature of the modification. Major modifications require additional permit fees.

Minor variances are minor changes from the City's Standards including, but not limited to:

- Using a control measure (CM) not in the City's Standard Notes and Details.
- Requesting an alternative seeding methodology, seed mix, or cover type from the City Standards.

Minor modifications are minor changes to the design, disturbance limits, or control measures. Examples include, but are not limited to:

- Changes to an approved CM from one type of CM in the City's Standard Details for another type in the City's Standard Details. For example, installing sediment control log instead of silt fence.
- Minor changes in the GESD Plans such as minor change in access or slight increase in disturbance that do not affect the tier classification, if the project is within areas subject to Regulation 72.

Minor variances and modifications do not require a formal written request; however, the changes need supporting documentation such as manufacturer details for proprietary products. Minor variances and modifications may be approved by the MS4 Inspector and are documented in the notes section of the MS4 inspection or through an email correspondence with the Permittee. Minor variances or modifications approvals may be documented once and apply to the duration of the project except in cases where the MS4 Inspector approval is limited to site-specific locations.

Adequate vehicle tracking controls are required. Tracking controls such as mud mats® need approval as a minor variance and are only allowed for low traffic areas.

4.5 DRAINAGE REPORT

A Phase III Drainage Report, prepared in accordance with Douglas County's Storm Drainage Design and Technical Criteria Manual (Drainage Manual) and the Mile High Flood District (MHFD) Urban Storm Drainage Criteria Manual (USDCM), as amended, is required for standard GESC

Permits. The SCMs shown in the GESC Plans and Report should follow the recommended design outlined in the Phase III Report. A Low Impact GESC Plan only requires a Drainage Letter that follows the requirements of Regulation 72 and not a Phase III Drainage Report. At a minimum, the Drainage Report/Letter shall be submitted, reviewed, and approved by the City before a GESC Permit is issued. The

Douglas County Drainage, Erosion, and Sediment Control (DESC) Permit process does not apply in Castle Pines. Individual lot grading and drainage design shall follow the City's building code and are not evaluated as part of the GESC Permit.

Castle Pines does not allow back-of-curb cuts except with approved minor variance for site-specific locations within a project



All construction activities not otherwise excluded must be covered under unique GESC Reports and Plans specific to the project that describe all of the types of construction activities and drainage features associated with the project. The post-construction checklist must be completed and submitted as part of the GESC Permit process to ensure all requirements for drainage and permanent SCMs are met. Guidance on the City's website and in Appendix G provides information on permanent SCM requirements for applicable development projects.

4.6 OTHER CITY PLANS AND PERMITS

Other permits outside of a GESC Permit may be required for a project. These permits and application include but are not limited to: a development application, site improvement plan (SIP), ROW permit, floodplain development permit, CDPS Permit, and 404 Nationwide or Individual Permit. The GESC Application documents should be submitted separately from other permits and the planning submittals. The GESC Permit approval does not indicate approval of other City processes such as reviews for



Construction Drawings, a Phase III Drainage Report, or other required City permits or programs, nor does GESC approval negate the need for other applicable local, state, or federal permits or requirements.

5.0 GESC REVIEW CRITERIA

The GESC materials may be submitted concurrently with the construction plans for a proposed development, when applicable. The GESC must be submitted separately but will be reviewed for consistency with other development review documents, conformance with this *GESC Manual*, Urban Storm Drainage Criteria Manual (UDSCM) criteria, and concepts presented in the *Douglas County (DC) GESC Manual* (updated July 2019).

The goal of the GESC is to identify pollutants sources, temporary stormwater control measures (CMs) and permanent stormwater control measures (SCMs) for all construction activities. The City reviews the GESC submittal based on the criteria outlined in this *GESC Manual* and current City and State stormwater permit requirements. Approved GESC Plans and Reports must be followed as written or modified (with appropriate approvals) throughout construction. Changes in design, CMs, SCMs, or construction activities must be approved through the variance or modification process. Construction activities not described in the approved GESC Plans and Reports are not authorized by the GESC Permit and are subject to the City's enforcement program.

The following subsections of **Section 5** of this *GESC Manual* describe important concepts and requirements that must be incorporated into the GESC in order to meet the City's review criteria. These subsections are based on the *DC GESC Manual* (updated July 2019) and have been added with permission and altered in some places to meet the City's review criteria.



5.1 CONTROL MEASURES ASSOCIATED WITH CONSTRUCTION ACTIVITIES

This *GESC Manual* describes a number of CMs acceptable for use on construction sites to reduce erosion, minimize sediment transport, manage waste and material, and address other construction site pollutants. Design parameters such as dimensions (lengths), or type if more than one configuration of a CM exists, shall be specified in the GESC Plans and Report for each CM selected based on the City's Standard Notes and Details unless a variance (for alternative CMs) is approved by the City. The GESC Plan Standard Notes and Details (Appendix A) identify correct installation and maintenance procedures for the City's standard CMs and, as such, are to be included as part of the GESC submittal. Frequently, the City GESC Standard Notes and Details are incorporated at the end of the GESC Plans. Standard Notes and Details allow the design engineer (DE) and Permittees to become familiar with one set of CMs, which improves the consistency of installation and maintenance. The DC GESC Manual describes each CM in detail and should be reviewed as a reference to define the design and sizing criteria for the City's CMs unless otherwise specified in this *GESC Manual*.

Castle Pines Standard Notes and Details provide permittees with comprehensive installation and maintenance information for control measures.

TYPES OF CMS

Three general types of CMs are shown on GESC Plans:

- **Construction CMs.** These CMs are related to construction access, material handling, waste management, spill prevention and response, stockpiling, and staging.
- **Erosion CMs.** These CMs are used to limit the amount and extent of erosion.
- **Sediment CMs.** Sediment control CMs are designed to capture eroded sediments prior to conveyance offsite or into drainageways.



PHASE OF CONSTRUCTION

CMs shall be indicated in the GESC Plans and correspond with the Initial, Interim, or Final Phases of construction. CMs are phased with the construction.

Initial Phase. These CMs shall be installed prior to construction and before the Initial Municipal Separate Storm Sewer System (MS4) inspection and any other land-disturbing activities. Initial CMs are installed on existing grades but may account for proposed grades as well as existing ones.

Interim Phase. These CMs shall be based on proposed grades and drainage features and are installed after initial site grading. For some CMs such as Inlet Protection on new inlets, CMs are installed after the construction of the infrastructure or feature. CMs should be phased with construction. Additional Interim Phase CMs that were not illustrated on approved plans may be added in the field to address field conditions, changing grades, or drainage or if required as a result of an MS4 or self-performed stormwater inspection.

Final Phase. These CMs shall be based on the final surfacing, topography, drainage and infrastructure. These CMs are installed after construction has been completed. The City encourages phasing of projects and installing final stabilization measures including vegetative covers as early as possible even if that may mean multiple mobilizations. The cost of multiple mobilizations may counter the cost of temporary CM maintenance and inspections and will help minimize the duration of GESC Permit coverage and renewal fees.

Designating the construction phase that the CM is anticipated to be used for helps clarify when each CM is anticipated to be installed in the field. **Table 5-1** indicates types of CMs and the phases of construction when they are typically installed. The City also allows for alternative CMs and proprietary products with approval through the variance process.



Table 5-1. Common Erosion and Sediment Control Measures (CM)				Typical Phase of Construction		
No.	Control Measure (CM)	ID	Type of CM	Initial Phase	Interim Phase	Final Phase
1	Check Dam	CD	Erosion Sediment		X	X (Permanent CDs)
2	Compost Blanket	CB	Erosion		X	X
3	Compost Filter Berm	CFB	Sediment		X	
4	Concrete Washout Area	CWA	Construction		X	
5	Construction Fence	CF	Construction	X	X	
6	Construction Markers	CM	Construction	X	X	
7	Curb Sock	CS	Sediment	X	X	X
8	Dewatering	DW	Construction		X	
9	Diversion Ditch	DD	Erosion		X	
10	Erosion Control Blanket	ECB	Erosion			X
11	Inlet Protection	IP	Sediment	X	X	X ¹
12	Reinforced Check Dam	RCD	Sediment		X	
13	Reinforced Rock Berm	RRB	Sediment	X	X	
14	RRB for Culvert Protection	RRC	Sediment	X	X	
15	Sediment Basin	SB	Sediment		X	
16	Sediment Control Log	SCL	Sediment	X	X	X ¹
17	Sediment Trap	ST	Sediment		X	
18	Seeding	SE	Erosion			X
19	Mulching	MU	Erosion			X
20	Silt Fence	SF	Sediment	X	X	X ¹
21	Stabilized Staging Area	SSA	Construction	X	X	
22	Surface Roughening	SR	Erosion		X	
23	Temporary Slope Drain	TSD	Erosion		X	
24	Temporary Stream Crossing	TSC	Erosion		X	
25	Terracing	TER	Erosion		X	
26	Vehicle Tracking Control	VTC	Construction	X	X	

¹To be removed after upgradient construction has been completed and final stabilization achieved.

5.2 PREPARING AN EFFECTIVE GES C PLAN

This section describes a systematic approach to controlling pollutant sources and minimizing erosion on a construction site using ten elements as shown on **Figure 5-1**. The ten elements are designed to reduce the amount and duration of erosion and trap most sediments that do erode prior to leaving the site. The City requires that each of these elements be addressed in a GES C Plan.



Seeding and Mulching (SM) reduces erosion and is an example of an erosion control measure

TEN ELEMENTS OF AN EFFECTIVE GESC PLAN

1. Preserve and Stabilize Drainageways
2. Avoid the Clearing and Grading of Sensitive Areas
3. Balance Earthwork On Site
4. Limit the Size of Grading Phases to Reduce Soil Exposure
5. Stabilize Exposed Soils in a Timely Manner
6. Implement Effective Control Measures
7. Use Sediment Basins for Areas Exceeding 1.0 Acre.
8. Protect Steep Slopes
9. Protect Inlets, Storm Sewers, and Culverts
10. Provide Access, Construction Limits, and General Construction Controls

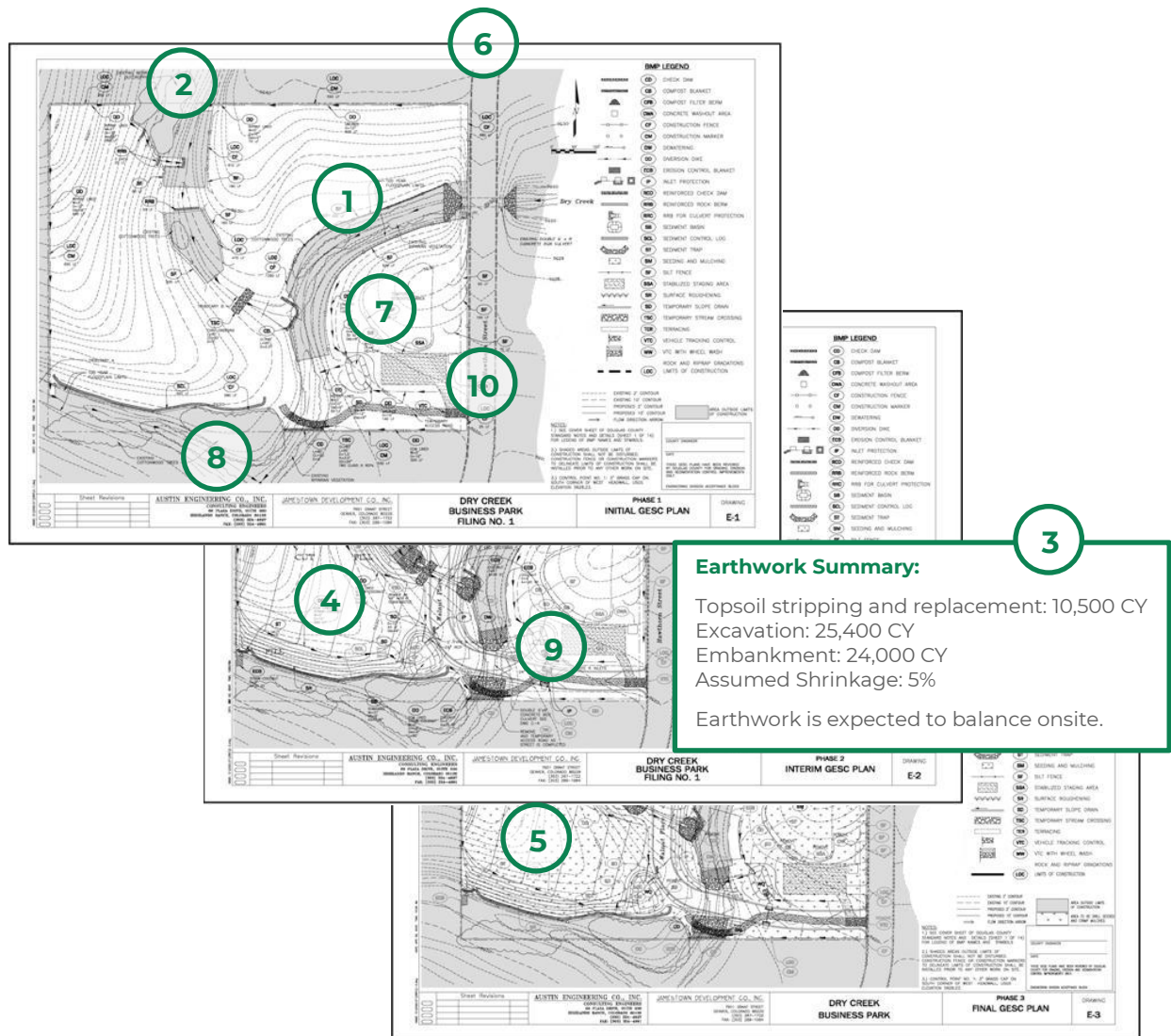


Figure 5-1 Ten Elements Related to Features on Example GESC Plans

ELEMENT 1. PRESERVE AND STABILIZE DRAINAGEWAYS

Work in drainageways requires special care and attention. It is critical to design construction activities to reduce adverse impacts to drainageways and to obtain all appropriate permits.

Drainageways Shall Not be Filled, Regraded, or Realigned. Existing drainageways shall not be filled within the limits of the 100-year floodplain or the existing top of banks of incised channels, whichever is more restrictive, without the approval of the City. If riparian vegetation, wetlands, or other stream resources exist beyond the limits of the 100-year floodplain, consideration shall be given to avoiding impacts to those areas as well as obtaining appropriate permits and approvals. Existing drainageways shall not be re-graded or realigned without the approval of the City. Physical barriers, such as fencing, shall be required to limit access into stream corridors and to protect stream corridors from upland work and work must be constructed in dry conditions when feasible. Working in dry conditions may include providing temporary diversions per the temporary diversion criteria of the Mile High Flood District (MHFD).



Existing major drainageways on the project shall be delineated on GESC Plans to the limit of their 100-year floodplains based on future development peak discharges. In many cases simplified methods can be used if the floodplain is being avoided such as StreamStats or MHFD master plans for hydrology and normal depth or simplified hydraulic analysis to show an approximate flood zone boundary. For unmapped major drainageways, the DE may show an approximate floodplain (akin to Federal Emergency Management Agency [FEMA] Zone A). For projects that encroach on the regulated floodplain, more extensive modeling will be required. Limits of construction and disturbance shall be clearly shown on GESC Plans to indicate the exact limits of grading adjacent to a drainageway and to delineate the limits of the undisturbed riparian corridor and any wetlands within the project construction limits. Grading within 25 feet



of a waterway is discouraged and requires approval unless construction involves work within the waterway. The City may also require delineations of wetlands in close proximity to the project.

Vegetation within 50 feet of an existing waterway should be protected to the extent feasible to provide a buffer between construction activities and the waterway.

Existing Drainageway Impacts Shall be Minimized and Drainageways Shall be Stabilized. It may be impossible, or undesirable, to avoid all construction in an existing drainageway. Examples include bridges and culverts for road crossings, utility crossings, storm sewer outfalls, stream restoration projects, and temporary stream crossings for construction access. The GESC Report shall indicate how impacts to the existing drainageway will be minimized and how unavoidable impacts will be mitigated.



Corresponding CMs shall be shown and also described in the GESC Plans.



Any work in drainageways must carefully evaluate how water will be managed. It is critical that construction disturbance within drainageways be minimized and quickly restored. A Water Management Plan will be required for all instream work. This plan must include the following at a minimum:

- Anticipated peak flow rate calculations.
- Approximate duration of instream work.
- Description or plans demonstrating how work will occur in dry conditions if feasible.
- References to MHFD Temporary Diversion fact sheet (also known as clear water diversions) and Castle Pines Temporary Stream Crossing in the Standard Details (as applicable). If not using the MHFD, provide an alternative approach and details for approval.
- Illustrate all CMs on GESC Plans and provide basis of design for temporary diversions, stream crossings, or other work in waterways in the Water Management Plan.

Temporary Stream Crossing (TSC) consists of rock layer placed temporarily in a stream to allow construction equipment to cross. A TSC may include culverts or in some locations a low-water crossing. Crossing drainages with equipment requires a TSC.

For channel improvements, designs shall follow the USDCM, as amended. **Under no circumstances shall broken concrete or asphalt be used for bank stabilization, nor can recycled concrete be used in place of rip rap.**

ELEMENT 2. PROTECT SENSITIVE AREAS ONSITE

In addition to drainageways, other sensitive resources may exist on a site. These could include, but are not limited to:

- Protected habitat for threatened or endangered species.
- Wetlands.
- Nesting bird habitat.
- Riparian corridors.
- Forested areas.
- Mature cottonwood stands.

- Bedrock outcroppings.
- Steep slopes.
- Potential stormwater infiltration areas.
- Historic, cultural, or archaeological resources.
- Areas of unique or pristine vegetation, habitat, or landform.

A resource inventory should be conducted for the site and include any sensitive areas such as those listed above, some of which were also described in **Element 1, Drainages**. The location, aerial extent, and type of resource, including stream floodplains and wetlands as discussed in **Element 1, Drainages**, shall be shown on the Initial GESC Plan.

Disturbance to sensitive resource areas shall be avoided or minimized. Destroying or disturbing wetlands, nesting bird habitat, and protected habitat for threatened or endangered species is sharply restricted; these restrictions shall be addressed through the appropriate federal or state agency permitting process.

A DE can achieve many benefits for a site during construction and over the long-term by preserving natural resources and reducing the overall extent and duration of site disturbance. The technique of mapping out areas of the site that can be left undisturbed, termed “fingerprinting,” can reduce grading costs and contribute to the ultimate value of the development. The GESC Plans shall clearly show limits of construction and shall call out Construction Fence (CF) or other approved means to protect resources that are to be preserved.



Example Earthwork Summary:

Topsoil stripping and replacement:
10,500 CY
Excavation: 25,400 CY
Embankment: 24,000 CY
Assumed Shrinkage: 5%
Earthwork is expected to balance

Construction Fence (CF) consists of orange plastic fencing material, or other approved material, attached to support posts and used to limit access to the construction site. A Water Management Plan is required to be submitted and approved for instream work



ELEMENT 3. BALANCE EARTHWORK ONSITE

A common design task for almost all construction projects is the development of a proposed grading plan. Proposed contours shall be shown to provide for new roadways, building sites, and drainage features on the Interim and Final GESC Plans. To reduce impacts on City roadways, it is recommended that development projects balance earthwork quantities onsite (projects that do not balance onsite must request a variance). This takes effort on the part of the DE to develop a grading plan, check earthwork quantities, and raise or lower portions of the site as necessary to achieve a balance between cut and fill material. This process will generally require several iterations, each time refining critical site slopes and design grades.

ELEMENT 4. LIMIT THE SIZE OF GRADING TO MINIMIZE SOIL EXPOSURE

For sites where the total disturbed area will exceed 40 acres, grading operations shall not take place all at one time unless otherwise approved through a variance. Instead, the site shall be divided into separate grading phases each disturbing 40 acres or less.

Design Requirements for Phased Grading

- 1.** Determine if the site exceeds the threshold size of 40 acres (if more than 40 acres is under construction at one time, an earthwork variance must be submitted).
- 2.** Provide a phasing plan clearly showing cut and fill volumes and locations for CMs for each phase.
- 3.** Balance earthwork within each phase, if possible (if not possible, an earthwork variance must be submitted).
- 4.** Carefully locate temporary stockpiles and staging areas in each phase to prevent additional soil disturbance and provide appropriate CMs for these areas.
- 5.** Accommodate water/sewer and other utility construction and connections within each phase.
- 6.** Incorporate road segments, temporary turn-arounds, and emergency access within each phase.
- 7.** Provide a separate temporary construction access in each phase separate from access used by permanent residents if feasible.
- 8.** Show both the temporary and permanent stormwater CMs in each phase.
- 9.** Develop Initial, Interim, and Final GESC Plans.
- 10.** Ensure that the GESC Plan for later upstream phases addresses potential impacts to already completed downstream phases of the construction site.

Projects need to delineate their disturbance limits on their GESC Plans as well as in the field. Construction Markers (CM) or CF shall be indicated on the GESC Plans and used in the field to indicate the allowable limits of disturbance.

ELEMENT 5. STABILIZE SOILS IN A TIMELY MANNER

All areas disturbed by construction and soil stockpiles shall be stabilized as soon as possible to reduce the duration of soil exposure and the potential amount of erosion. Disturbed areas that are inactive for fourteen (14) days or more must implement stabilization CMs. Reworking the disturbed area for the sole purpose of avoiding the requirement to stabilize the exposed area shall not be considered an acceptable practice.



Acceptable stabilization techniques are described below.

For temporary stabilization (i.e., areas that will be reworked), the City requires one of the following:

- **Surface roughening (SR)** – May be utilized if disturbed area is inactive for less than thirty (30) days.
- **Mulching (MU)** - may include hydromulching for temporary stabilization. Hydromulching for permanent stabilization requires approval from the City and will not be allowed in areas of concentrated flow.
- **Seeding and Mulching (SM)** – This type of stabilization is acceptable if area will remain dormant for more than fourteen (14) days using Castle Pines (CP) temporary seed mix. Typically used for areas that will be inactive for long durations.
- **Erosion Control Blanket (ECB)** – typically associated with permanent seeding and final stabilization but may be used for temporary stabilization.

Temporary stabilization measures must be installed and maintained in accordance with the requirements for the measure as described in this *GESC Manual* and may need to be reapplied if no longer effective.



Permanent stabilization (i.e., final grading is completed) for vegetated areas typically consists of SM. If the time of year does not allow for seeding operations to be effective, the Permittee may be granted an extension on the seeding requirement; however, mulching of the area will be required and must be implemented within fourteen (14) days of completing construction. For areas given an extension on implementing permanent stabilization due to weather requirements, the Permittee will be required to SM the disturbed area as soon as feasible as determined by the City and the MS4 Inspectors. Seed mixes must be from the approved CP Seed Mixes or must be approved as part of the landscaping plan. GESC Final Plans should be consistent with Landscape Plans.

Additional SM requirements include the following:

- Existing topsoil shall be stripped to a depth of 6 inches (unless otherwise approved) from areas to be disturbed. The stripped topsoil shall be stockpiled during grading operations, and then replaced to a depth of at least 6 inches in all areas to be seeded. If quantities of onsite topsoil are inadequate to provide a replaced depth of 6 inches, the Permittee(s) will have to import topsoil or condition the soil as approved by the City. All disturbed areas are to be ripped prior to placing topsoil. Topsoil shall be thoroughly loosened prior to seeding to a depth of at least 6 inches. The DE and Landscape Architect should follow the MHFD's Topsoil Guidance (<https://mhfd.org/wp-content/uploads/2020/03/MHFD-Topsoil-Guidance-2020lr.pdf>).
- All seeding shall be accomplished using a drill seeder at a depth of seeding not less than $\frac{1}{4}$ inch and not more than $\frac{3}{4}$ inch and at the rates specified in the GESC Standard Notes and Details. In small areas that are impossible to drill seed, the Permittee(s), with the City's prior approval, may hand broadcast seed at twice the drilled rate, lightly rake to cover the seed, and crimp mulch or apply ECB.
- Straw mulch shall be applied at a minimum rate of two (2) tons per acre and mechanically crimped into the soil. Revegetation is considered complete when the site is covered by an average of three (3) plants per square foot with a minimum height of 3 inches of the variety and species found in the City-approved mix. If this is not feasible due to location or landscaping requirements, the vegetative cover will be at least 70% of what would have been provided by native vegetation in a local, undisturbed area or adequate reference site. For blue-grass or equivalent turf areas, the required coverage shall be at least 70% cover of the

The City requires an inspection of the topsoil after it is placed prior to seeding for the initial seeding operations.

species planted. There shall be no bare areas larger than 4 square feet (2 feet by 2 feet or equivalent). The site shall be free of eroded areas and infestation of noxious weeds in accordance with **Section 13.2**. The GESC Manager is responsible for inspections (monthly), and reseeding operations are required twice per year after a complete growing season until a satisfactory stand of grass as denoted above is achieved. *Note: Spray-on products may be used with an approved variance that includes identifying the spray-on product and providing manufacturer details about the product.*

- Copies of seed tickets may be requested by the City.



Seeding and Mulching (SM) is typically associated with permanent seeding and final stabilization; however, temporary seeding may be used for areas that will remain inactive for long periods



ELEMENT 6. IMPLEMENT EFFECTIVE EROSION AND SEDIMENT CONTROL MEASURES

The City encourages the use of erosion, sediment, and construction CMs that include waste management, material handling, and administrative controls such as phasing, training, avoidance, and minimizing disturbances. Treatment trains using multiple types of CMs in a layered approach provide the most effective means of stormwater management on a construction site.

Off-site stormwater, also referred to as run-on, should be identified and addressed in the GESC Plans and Report. If feasible, the offsite run-on should be conveyed around or through the site away from the construction activities to avoid contact with the construction pollutant sources. A Diversion Ditch (DD) and temporary pipes may achieve this goal. Off-site run-on may enter the site via sheet flow and be captured in a DD concentrating the flow and directing it around the construction activity to the downgradient conveyance system. Diversion Ditches that have mild slopes may be unlined, whereas steeper ditches and rundowns must be lined with ECB (for moderate slopes), Turf Reinforced Mats (TRM) for steeper slopes, plastic (temporary installations only), or riprap. Diversion Ditches should be sized appropriately based on duration of diversion and anticipated flows and include velocity dissipation as needed. Diversion Ditches may also be used within a project area to divert anticipated runoff into temporary sediment basins or away from sensitive areas. Diversion Ditches within a project area are required to utilize Check Dams (CDs) and may also use Reinforced Check Dams (RCDs) depending on upgradient drainage area and slope.

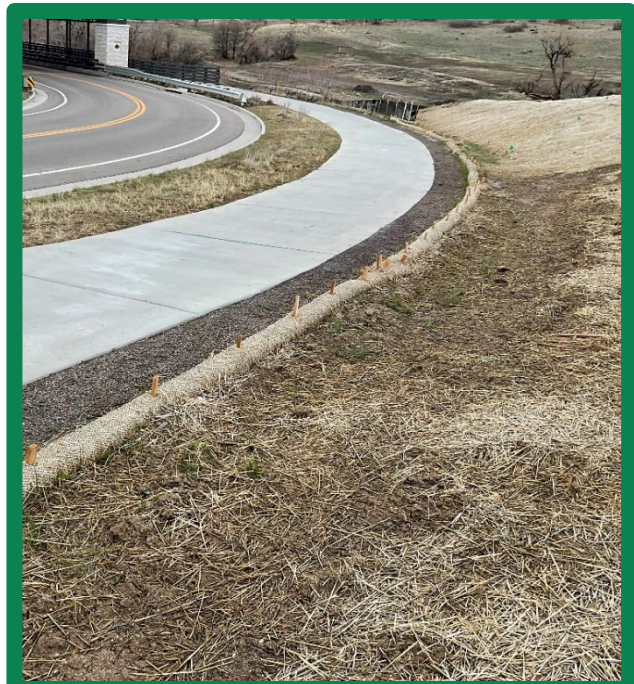
Perimeter CMs apply to the downslope boundaries of a site, site perimeters along drainageways, and downslope perimeters adjacent to other areas to be left undisturbed within a site. Sediment controls shall be located as close to the source of erosion as possible, on the downslope side of a slope, disturbed area, or stockpile.

For areas that drain over one (1) acre of disturbed area and have concentrated flow, a DD shall be required to convey stormwater to the required sediment basin.

If the upstream disturbed drainage area is less than one (1) acre, one of the following CMs may be used:

- **Reinforced Rock Berm (RRB)** consists of a linear mass of gravel enclosed in wire mesh to form a porous filter, able to withstand overtopping. The berm is heavy and stable and promotes sediment deposition on its upstream side. *Note: Geotextile Rock Socks may be submitted as a variance.*

- **Sediment Control Log (SCL)** consists of a cylindrical bundle of wood, coconut, compost, excelsior, or straw fiber designed to form a semi-porous filter, able to withstand overtopping. The log can be staked into the ground and promotes sediment deposition on its upstream side. *Note: SCL must be trenched in per detail.*
- **Silt Fence (SF)** is a temporary sediment barrier constructed of woven fabric stretched across supporting posts. The bottom edge of the fabric is placed in an anchor trench that is backfilled with compacted soil. *Note: Silt fence must be installed along contours and not in concentrated flows.*
- **Sediment Trap (ST)** consists of a riprap berm with a small upstream basin that acts to trap coarse sediment particles. It can be used for upstream disturbed areas less than one (1) acre. Disturbed areas greater than one (1) acre require a Sediment Basin. ST dimensions shall be specified to provide a storage volume equal to 1,800 cubic feet per upstream acre.



Sediment Control Log (SCL) used for perimeter control



Sediment Trap (ST) used for drainage areas less than one acre

ELEMENT 7. USE SEDIMENT BASINS FOR AREAS EXCEEDING 1.0 ACRE

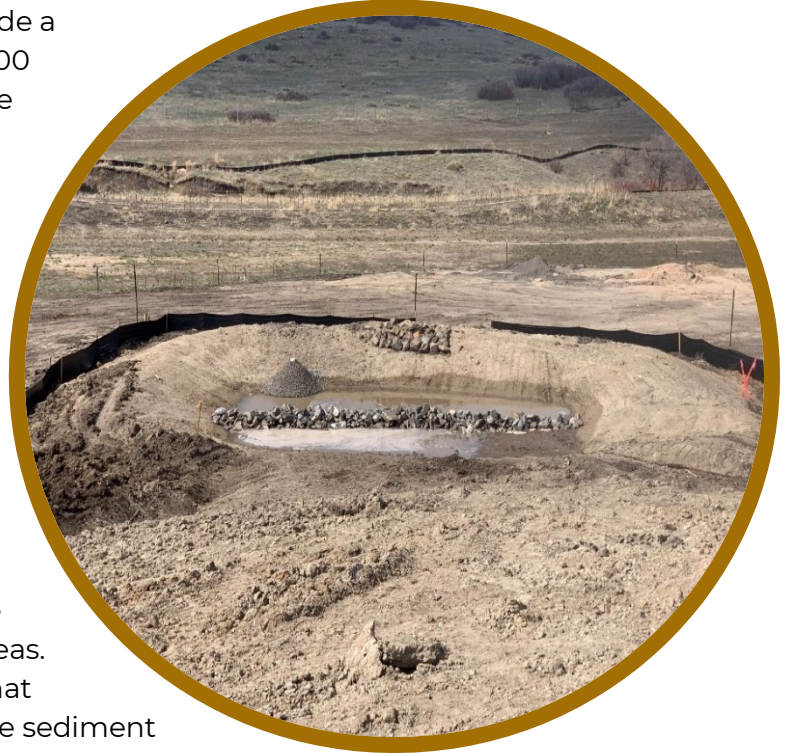
A Sediment Basin (SB) is an impoundment that captures sediment-laden runoff and releases it slowly, providing prolonged settling times to capture coarse and fine-grained soil particles. Runoff from disturbed drainage areas exceeding one (1) acre but no more than fifteen (15) acres shall be treated in a SB designed based on Castle Pines Standard Notes and Details (Appendix A). Runoff from disturbed areas less than one (1) acre may be treated in an ST. For areas that have more than fifteen (15) acres of upgradient disturbed areas, SBs are not recommended, and if they are used, they must be individually engineered and submitted for approval as a variance. A better strategy is to use multiple smaller SBs for drainage areas with less than fifteen (15) acres of disturbance rather than fewer, larger SBs. The City reserves the right to require submittal and approval of engineering plans for SBs with less than fifteen (15) acres of disturbance if the overall tributary drainage area exceeds fifteen (15) acres.

Sediment Basins shall be constructed as early in the development process as possible. If site planning has identified easements for permanent detention facilities, the DE should make every effort to locate SBs in these locations even if permanent SCMs are not planned until later in the development.

Sizing information for the SB design for the City follows MHFD criteria. Based on the MHFD Sediment Basin Fact Sheet, design procedures for an SB include these steps:

- **Basin Storage Volume:** Provide a storage volume of at least 3,600 cubic feet per acre of drainage area. To the extent practical, undisturbed and/or offsite areas should be diverted around SBs to prevent “clean” runoff from mixing with runoff from disturbed areas. For undisturbed areas (both onsite and offsite) that cannot be diverted around the SB, provide a minimum of 500 ft³/acre of storage for undeveloped (but stable) offsite areas in addition to the 3,600 ft³/acre for disturbed areas. For stable, developed areas that cannot be diverted around the sediment basin, storage volume requirements are summarized in Table SB-1.
- **Basin Geometry:** Design the basin with a minimum length-to-width ratio of 2:1 (L:W). If this cannot be achieved because of site space constraints, baffling may be required to extend the effective distance between the inflow point(s) and the outlet to minimize short-circuiting.
- **Dam Embankment:** It is recommended that embankment slopes be 4:1 (H:V) or flatter and no steeper than 3:1 (H:V) in any location.
- **Inflow Structure:** For concentrated flow entering the basin, provide energy dissipation at the point of inflow.
- **Outlet Works:** The outlet pipe shall extend through the embankment at a minimum slope of 0.5%. Outlet works can be designed using one of the following approaches:

 - **Perforated Riser/Plate:** Follow the design criteria for Full Spectrum Detention outlets in the MHFD Volume 3 for sizing of outlet perforations with an emptying time of approximately 72 hours. In lieu of the well-screen



trash rack, pack uniformly sized 1½- to 2-inch gravel in front of the plate. This gravel will need to be cleaned out frequently during the construction period as sediment accumulates within it. The gravel pack will need to be removed and disposed of following construction to reclaim the basin for use as a permanent detention facility. If the basin will be used as a permanent extended detention basin for the site, a well-screen trash rack will need to be installed once contributing drainage areas have been stabilized and the gravel pack and accumulated sediment have been removed.

- **Floating Skimmer:** If a floating skimmer is used, install it using manufacturer's recommendations. Illustration SB-1 provides an illustration of a Faircloth Skimmer Floating Outlet™, one of the more commonly used floating skimmer outlets. A skimmer should be designed to release the design volume in no less than 48 hours. The use of a floating skimmer outlet can increase the sediment capture efficiency of a basin significantly. A floating outlet continually decants cleanest water off the surface of the pond and releases cleaner water than would discharge from a perforated riser pipe or plate.
- **Outlet Protection:** Outlet protection should be provided where the velocity of flow will exceed the maximum permissible velocity of the material of the waterway into which discharge occurs. This may require the use of a riprap apron at the outlet location and/or other measures to keep the waterway from eroding.
- **Emergency Spillway:** Provide a stabilized emergency overflow spillway for rainstorms that exceed the capacity of the sediment basin volume and its outlet. Protect basin embankments from erosion and overtopping. If the sediment basin will be converted to a permanent detention basin, design and construct the emergency spillway(s) as required for the permanent facility. If the sediment basin will not become a permanent detention basin, it may be possible to substitute a heavy polyvinyl membrane or properly bedded rock cover to line the spillway and downstream embankment, depending on the height, slope, and width of the embankments.



Table 5-2 provides the additional volume requirements for undisturbed and developed tributary areas draining through SBs, while **Table 5-3** provides standard sizing for SBs.

Table 5-2 Additional Volume Requirements for Undisturbed and Developed Tributary Areas Draining through Sediment Basins	
Imperviousness (%)	Additional Storage Volume (ft³) Per Acre of Tributary Area
Undeveloped	500
10	800
20	1230
30	1600
40	2030
50	2470
60	2980
70	3560
80	4360
90	5300
100	6460

Maintenance activities include the following:

- Dredge sediment from the basin, as needed to maintain CM effectiveness, typically when the design storage volume is no more than $\frac{1}{3}$ filled with sediment.
- Inspect the sediment basin embankments for stability and seepage.
- Inspect the inlet and outlet of the basin, repair damage, and remove debris. Remove, clean, and replace the gravel around the outlet on a regular basis to remove the accumulated sediment within it and keep the outlet functioning.
- Be aware that removal of an SB may require dewatering and associated permit requirements.
- Do not remove an SB until the upstream area has been stabilized with vegetation.

Final disposition of the SB depends on whether the basin will be converted to a permanent post-construction stormwater basin or whether the basin area will be returned to grade. For basins being converted to permanent detention basins, remove accumulated sediment, and reconfigure the basin and outlet to meet

Table 5-3 Sizing Information for Standard Sediment Basin

<i>Upstream Drainage Area (rounded to nearest acre), (ac)</i>	<i>Basin Bottom Width (W), (ft)</i>	<i>Spillway Crest Length (CL), (ft)</i>	<i>Hole Diameter (HD), (in)</i>
1	12 ½	2	9/32
2	21	3	13/16
3	28	5	1/2
4	33 ½	6	9/16
5	38 ½	8	21/32
6	43	9	21/32
7	47 ½	11	25/32
8	51	12	27/32
9	55	13	7/8
10	58 ¾	15	15/16
11	61	16	31/32
12	64	18	1
13	67 ½	19	1 1/16
14	70 ½	21	1 1/8
15	73 ¾	22	1 3/16

the requirements of the final design for the detention facility. If the SB is not to be used as a permanent detention facility, fill the excavated area with soil and stabilize with vegetation.

- The following requirements will also apply to SBs in areas that will ultimately be Extended Detention Basins (EDBs). Outlet facilities for EDBs that provide a drain time of 40 hours may be used as the SB outlet as long as at least half of the SB volume is provided below the lowest orifice of the permanent outlet works and appropriate outlet control measures are in place.
- Sediment and debris must be removed after construction to ensure the final elevations match the EDB design. This will be part of the EDB acceptance and certification requirements.



Final grading, trickle channel, and micropool should not be installed until after significant upgradient construction is completed and not before streets have been paved.

- Sediment released into storm sewer lines shall be removed at the Permittee's expense.



- Gravel with a temporary riser pipe must be used in front of the outlet structure or an alternative may be proposed subject to City approval.

ELEMENT 8. PROTECT STEEP SLOPES

Steep slopes may either be comprised of steep existing slopes that are to be preserved, or cut or fill slopes created during the grading process. In either case, the CMs in this section shall be taken to protect these slopes against erosion. For the purposes of definition, a slope is considered steep if it is steeper than 4 (horizontal) to 1 (vertical) also known as 4:1.

- **Proposed Slopes Shall be No Steeper than 3(H):1(V).** Slopes steeper than 3:1 are difficult to vegetate and maintain. Long-term rill and gully erosion are likely on such slopes. Retaining walls or terracing may be necessary to control grades on a site with slopes steeper than 3:1. Retaining walls must be designed by a structural engineer with supporting geotechnical data that is submitted and approved by the City.
- **Slopes steeper than 4:1** shall be protected with ECB unless otherwise approved with a variance. Disturbance must be minimized on steep slopes and the slopes should be stabilized within seven (7) days of final grades unless weather does not allow such timelines.

Run-on Shall be Diverted Away from Steep Slopes.

A permanent or temporary DD shall be depicted above all steep slopes on the site that may receive concentrated or sheet flows. Where steep cut slopes are planned near the site perimeters, a minimum of 6 feet between the property line and the top of the cut slope shall be reserved for the DD, unless otherwise accepted by the City.



- **Terracing Shall be Incorporated into the Grading of Permanent Steep Slopes.** Terracing (TER) shall be used on all permanent slopes between 3:1 and 4:1 that are greater than 15 feet in height. Benches shall be at least 8 feet wide and shall occur at vertical spacing of not more than 15 feet on all permanent slopes. Terracing will break up the flow of runoff and reduce the development of rill and gully erosion.



- **Temporary Slope Drain (TSD)** may be used to convey runoff down steep slopes. TSDs consist of pipe, plastic, Turf Reinforced Mats (TRMs), or riprap, and shall be required to convey diverted water from the DD down the steep slope or channel bank during construction.

ELEMENT 9. PROTECT INLETS, STORM SEWER OUTFALLS, AND CULVERTS

The entrance to storm sewer inlets shall be protected using one of the following approved CMs to reduce the inflow of sediment. Likewise, storm sewer outfalls and culvert outlets shall be protected against scour and erosion.

All storm sewer inlets on a site shall be provided with **Inlet Protection (IP)**. The type of IP is based on type of inlet (area, sump, or continuous grade inlet). The half Y-shaped continuous grade inlet protection is intended to trap sediment upstream of an inlet on a continuous grade street without causing any bypass of flow around the inlet. Sump and area inlet protection is also designed to maintain inlet capacity after runoff flows over the wire-enclosed rock. For paving operations, inlets may be temporarily blocked and then protected with standard types of IP when paving operations are complete.

Storm sewer outfalls and culvert outlets shall be permanently protected against erosion with a riprap apron or other approved means in accordance with the USDCM, as amended. Riprap shall be installed at the same time as construction of the storm sewer outfall or culvert.

ELEMENT 10. PROVIDE TEMPORARY ACCESS, DEFINED LIMITS OF CONSTRUCTION, AND GENERAL CONSTRUCTION CONTROL MEASURES

Limits of construction shall be shown on GESC Plans and shall include all utility tie-ins whenever possible and known. The DE shall be careful to delineate limits of construction that provide adequate room for the necessary work, including vehicular and temporary storage of equipment and materials, while at the same time limiting the disturbed area to the minimum necessary. Other CMs will follow DC GESC Manual requirements unless otherwise noted below.

- **Temporary Access Roads.** All temporary access roads shall be shown on the GESC Plans.
- **Stabilized Staging Area (SSA).** An SAA is achieved by stripping topsoil and spreading a minimum of a 3-inch layer of gravel or other aggregate with a minimum of a 1 ½-inch diameter in the area to be used for trailers, parking,

storage, unloading, and loading. An SSA reduces the likelihood that the vehicles most frequently entering and exiting a site are going to come in contact with sediment. An SSA shall be provided near the main access point and connected to the vehicle tracking control.



- **Vehicle Tracking Control (VTC).** Vehicle Tracking Control consists of a 3-to-6-inch angular rock pad that is a minimum of 12 inches thick at all entrance/exit points for a site, which is intended to help strip sediment from tires prior to vehicles leaving the construction site. The number of access points shall be minimized to the extent feasible. A location shall be selected that accounts for the safety of the traveling public and avoids disturbance of trees, desirable vegetation, and low, wet areas. Steep grades (greater than 8%) shall be avoided. A VTC may require a City Right-of-Way (ROW) Use Permit if any portion is installed within the public ROW.
- **Street Sweeping (SS).** Street sweeping consists of cleaning mud, sediment, and other debris that is tracked onto the roadway from a construction site. Removing tracked mud from the streets reduces or eliminates sediment transport to downstream structures. Street sweeping alone is not an adequate CM and must be used in conjunction with VTC.
- **Stockpile Areas.** All stockpile areas shall be shown on the GESC Drawing. Topsoil stripping, stockpiling, and re-spreading in areas to be vegetated shall be a



mandatory practice called for in all GESC Drawings. Adequate “footprints” for topsoil stockpiles, stockpiles of excess excavated material, and stockpiles for imported materials shall be shown and be consistent with cut/fill information. Stockpile slopes shall not be steeper than 3:1. Stockpiles shall not be shown outside the limits of construction and must meet stabilization requirements. Stockpiles of excavated materials associated with utility installation shall be placed within the limits of construction and on the uphill side of the trench where feasible. GESC Permits will not be closed with stockpiles onsite, even if vegetated.

- **Dewatering (DW).** Dewatering (DW) controls consist of a gravel filter provided on the suction end of a pump to reduce the pumping of sediment as well as a DW filter bag and often a combination of either gravel filter or SCL downgradient of the DW filter bag. Dewatering operations shall use CMs to reduce scour from the discharge and to remove sediment. If sediment cannot be minimized with the typical CMs, an active treatment system may be required. A Colorado Discharge Permit System (CDPS) Permit for Construction Dewatering Discharges is generally required for dewatering operations that do not infiltrate onsite. The GESC Manager shall obtain a Construction Dewatering Discharge Permit from the Colorado Department of Public Health and Environment (CDPHE) prior to any dewatering operations, if required. All dewatering shall be in accordance with the requirements of the discharge permit and shall be coordinated with the Castle Pines MS4 Inspector.
- **Material Handling Requirements.** The GESC Report must describe handling procedures of all CMs implemented at the site to minimize impacts from handling materials that could contribute pollutants to runoff.
- **Properly Store, Handle, Apply, and Dispose of Pesticides.** Pesticide storage areas on construction sites should be protected from the elements. Warning signs should be placed in areas recently sprayed or treated. Persons mixing and applying these chemicals should wear suitable protective clothing in accordance with the law.
- **Application rates shall conform to registered label directions.** Disposal of excess pesticides and pesticide-related wastes shall conform to registered label directions for the proper disposal and storage of pesticides and pesticide containers set forth in applicable federal, state, and local regulations that govern their usage, handling, storage, and disposal. Pesticides and herbicides shall be used only in conjunction with Integrated Pest Management Plans. Pesticides should be the tool of last resort; methods that are the least disruptive to the environment and human health should be used first.



- **Pesticides shall be disposed of through either a licensed waste management firm or a permitted treatment, storage, and disposal (TSD) facility.** Containers should be triple-rinsed before disposal, and rinse waters should be reused as product. Other practices include setting aside a properly labeled, locked storage area, tightly closing lids, storing in a cool, dry place, checking containers periodically for leaks or deterioration, maintaining a list of products in storage, using plastic sheeting to line the storage area, and notifying neighboring property owners prior to spraying.
- **Properly Store, Handle, Use, and Dispose of Petroleum Products.** When storing petroleum products, follow these guidelines:
 - Provide secondary containment for containers 55 gallons and larger.
 - Secondary containment may include but is not limited to lining a bulk storage area with a double layer of 60 mil plastic sheeting or similar material and installing a compacted, impermeable berm around the perimeter with a capacity of at least 110% of the larger container.
 - Clearly label all products.
 - Create a clear, non-cluttered space around the storage area.
 - Keep tanks elevated off the ground if feasible.
 - Keep lids securely fastened.
 - Locate a clearly labeled spill kit nearby.

Oil and oily wastes such as crankcase oil, cans, rags, and paper dropped into oils and lubricants should be disposed of in proper receptacles or recycled. Used oil for recycling shall not be mixed with degreasers, solvents, antifreeze, or brake fluid. Fueling and vehicle maintenance operations should take place in the SSAs unless infeasible.

- **Sanitary Facilities.** Sanitary facilities shall be provided for construction workers. Sanitary facilities shall be located in the SSA away from drainageways. Sanitary facilities shall never be placed near storm sewer inlets. Sanitary facilities shall always be appropriately secured by stakes or other means to prevent tipping.
- **Other Construction Site Pollutants and Spill Plans.** Store, cover, and isolate construction materials, including topsoil and chemicals, to prevent runoff of pollutants and contamination of groundwater. Develop and



Sanitary Facilities secured to a trailer to prevent tipping

implement a spill prevention and control plan. Agencies, Contractors, and other commercial entities that store, handle, or transport fuel, oil, or hazardous materials should develop a spill response plan. Post spill response procedure information in a conspicuous place(s) and have persons trained in spill handling onsite and/or on call at all times. Materials for cleaning up spills should be kept onsite and made easily available. Spills should be cleaned up immediately and the contaminated material properly disposed. Spill control plans should explain procedures and methods to:

- Identify and stop the source of the spill.
- Contain any spilled liquid.
- Contain the spill and properly dispose of it. Typically, absorbent materials such as kitty litter or sawdust may be used to contain spills on impervious surfaces. Dispose of the used absorbent properly.
- Provide notifications to State and local agencies as applicable.

Washing of equipment and machinery shall not be allowed onsite.

Adequate disposal facilities shall be utilized for solid waste, including excess asphalt, concrete, wood, rebar, and other construction wastes produced during construction.



- **Spill Response.** All chemical or hazardous material spills which enter Waters of the State, including, but are not limited to, surface water, groundwater, and dry gullies or storm sewers leading to surface water, shall be immediately reported to the CDPHE as required by Section 25-8-601, C.R.S., and to the City. Releases of petroleum products and certain hazardous substances listed under the Federal Clean Water Act (40 CFR Part 116) must be reported to the National Response Center as well as CDPHE. Contact information for CDHPE, the City, and the National Response Center can be found in Appendix H. Spills that pose an immediate risk to human life shall be reported to 911. Failure to report and clean up any spill may result in issuance of a Stop Work Order, among other consequences including financial and legal penalties.

Incorporating construction CMs, good housekeeping practices, and adequate pollution prevention practices for material handling and spill prevention and response into GESC Report and Plans are requirements for the City's GESC program.

6.0 GESC REVIEW PROCESS

Processing of the GESC submittal documents first includes reviewing the GESC submittal to determine if it is complete. The GESC review will not start until the submittal is complete. For projects that are subject to the Colorado Discharge Permit System (CDPS) General Permit for Stormwater Discharges Associated with Construction Activities (SCP), a request by the Applicant may be made to submit SCP documentation after the initial Castle Pines GESC review. The SCP documentation must be submitted prior to the GESC Permit being issued.

Castle Pines PW will review the GESC Plan, Report, Cost Estimate, Checklists, and Applications for consistency with the requirements set forth herein, and provide review comments to the Applicant. When the review comments are significant or extensive, the City may recommend a meeting with the Applicant to go over the comments with the Applicant's Design Engineer (DE) to ensure that the City GESC requirements are understood to avoid a lengthy review process. GESC review comments shall be addressed by the Applicant, and the revised GESC Plan and Report must be resubmitted to the City for a follow-up review along with a comment and response letter so that the City's reviewers can quickly assess whether the comments have been addressed adequately. Timelines for GESC reviews are provided in **Table 6-1**.



Table 6-1 GESC Review Timeline

GESC Submittal*	Castle Pines Review Timeline
Complete 1st submittal	3 weeks
2nd submittal	3 weeks
Subsequent submittals	3 weeks
Signature set	1 week
Modifications	1 to 3 weeks depending on extent of changes

**Projects located in the Cherry Creek Reservoir Basin may have longer review times depending on referrals to Cherry Creek Basin Water Quality Authority (CCBWQA).*

The timeline is also dependent on how quickly the Applicant can turn around the City's comments and if the submittal needs an outside agency review (CCBWQA, Mile High Flood District, or Colorado Department of Transportation).

7.0 ACCEPTANCE OF GESC SUBMITTAL

When all GESC comments are addressed, the GESC submittal will be preliminarily accepted, and the Applicant will be notified that final copies of the GESC documents shall be submitted as a signature set with all required signatures and Professional Engineer (PE) stamps. The City will approve the GESC signature set and provide the Applicant with an invoice of the review fees. Once the review fees have been paid, the City will notify the Applicant that the GESC Plans, Report, Application and any variances that may have been included are ready for retrieval. The next step in the process is to provide the City with the associated GESC financial security, install the initial CMs, and schedule an initial inspection with the Municipal Separate Storm Sewer System (MS4) Inspector assigned to the project. See **Sections 12.2 and 12.3** for more details on these steps and the issuance of the GESC Permit.

Projects must start construction within two (2) years of the signature date for the GESC Plans to be valid for use to finish the GESC Permit process. After this time, GESC Plans and Reports will need to be resubmitted to the City for re-review and the determination whether any other documents need to be revised and resubmitted.



8.0 PERMIT FEES

Permit Fees shall be paid prior to the approval of the signature set GESC Plan and Report Fees include:

- A review fee based on the City's Engineer Review time plus a 10% overhead fee. The City's Engineering Review may be provided by City consultants
- Municipal Separate Storm Sewer System (MS4) inspection fee based on time required for one (1) year of inspections.
- Disturbance fee based on acreage disturbed.

These fees are collected to help offset costs of administering the GESC Program and are charged and invoiced through the City's permitting portal. A current copy of the Castle Pines Fee Schedule may be found at www.castlepinesco.gov/wp-content/uploads/2021/03/2021-CASTLE-PINES-FEE-SCHEDULE.pdf.

9.0 POSTING FINANCIAL SECURITY

The City requires that all private projects requiring a Standard GESC Permit post financial security to address the need for the City to perform the installation or maintenance for control measures (CMs) including final stabilization prior to the Contractor completing the project in the event that the Permittee fails to do so. Public projects and Low Impact GESCs do not require financial securities.

The GESC financial security is held separately from other collateral relating to the project including infrastructure or development collateral. GESC financial security will be released when all GESC requirements have been successfully met and the final construction is accepted by the City. If the Permittee does not successfully complete all required work or violates any requirement of the GESC Permit or City Municipal Code (Code), the City may take corrective measures and charge the cost of such measures to the Permittee. Such costs shall include the actual cost of any work deemed necessary by the City, plus reasonable administrative and inspection costs and penalties. If the total of such costs exceeds the security, the Permittee shall be responsible for payment of the remaining balance within thirty (30) calendar days of receipt of an accounting of such from the City.



9.1 AMOUNT OF FINANCIAL SECURITY

The amount of financial security for a GESC Permit is based on the cost estimates of installing and maintaining the GESC CMs required on a site as shown on the GESC Plans plus a 15% maintenance fee. A copy of the worksheets to be used for preparing cost estimates for erosion and sediment control is available in Appendix E and on the City's stormwater website. Applicants are responsible for confirming that they are using the most current version of the worksheet by checking the City's stormwater website.

The GESC Cost Estimate worksheet shall be completely filled out and will be reviewed for acceptance by the City during the GESC review process.

9.2 FORMS OF FINANCIAL SECURITY

The City accepts the following forms of financial security:

1. Irrevocable Letter of Credit (LOC) from a financial institution in a form acceptable to the City (an example format for a LOC that is acceptable to the City is in Appendix F and is on the City's stormwater website), or
2. Other performance guarantee acceptable to the Public Works (PW) Director.

The financial security, held as collateral, shall be held by the City for a minimum of **two (2) years or such time that the GESC Permit is open**. If the construction of the project and/or re-vegetation process takes longer than two (2) years, the Permittee shall extend the posted letter of credit or other form of financial security a minimum of thirty (30) days prior to the expiration date. Failure to extend the financial security, for a minimum of one (1) additional year, prior to the thirty (30) day deadline may result in the City drawing upon the collateral. The City may also draw from the financial security for outstanding corrective action items that were identified to the Permittee and not addressed in a timely manner. Use of the financial security may be part of the City's enforcement program or to stabilize a site that has not followed City stabilization requirements.

Information regarding the release of the financial security is provided in **Section 13.3**.



10.0 DURATION OF GESC PERMITS

A GESC Permit is valid for one (1) year from the date the permit is approved and signed. The GESC Application becomes the GESC Permit once it is signed by the Municipal Separate Storm Sewer System (MS4) Inspector, Development Review Engineer, and Public Works (PW) Official. GESC Permits shall be renewed prior to their expiration and may require multiple renewals prior to meeting the GESC Permit Final Close Out Acceptance requirements. The Permittees shall contact the City to start the renewal process at least thirty (30) days prior to the original GESC Permit's expiration date. Failure to renew the GESC Permit prior to its expiration may result in enforcement. Renewal fees for the GESC Permit shall be in accordance with the current City Fee Schedule.

Permittee(s) shall have a valid GESC Permit until Final Close Out Acceptance (after re-vegetation is established) for all projects.

10.1 TRANSFER OF GESC PERMITS

If a project is sold (in whole) to a new Owner, the GESC Permit shall be transferred to the new Owner using the Castle Pines Transfer Form (found on the Castle Pines Stormwater website). Failure to transfer the GESC Permit if the Owner changes may result in enforcement per **Section 14**.

For portion(s) of a project that are sold off to new owner(s), the new owner(s) will be required to obtain the appropriate GESC Permit for their respective projects, and the original owner will be required to modify their original GESC using the Modification Form on the Castle Pines stormwater website to remove the portion(s) that have been covered under a new GESC.

If the Contractor that is identified on the GESC Permit is replaced by a different Contractor, a GESC Transfer form or written letter shall be submitted to the City stating the new Contractor's name, company, contact information, and signed statement that the GESC Plan Permit is granted with the explicit understanding that it is the Permittee's responsibility to:

1. Allow the City of Castle Pines unrestricted access to the site to conduct regular site inspections;
2. Comply with all requirements of the *GESC Manual*, accepted GESC Plan, and GESC Permit;
3. Immediately cease land-disturbing activities upon receipt of a written Stop Work Order from an authorized representative of the City. A Stop Work Order shall be



issued and this Permit revoked if the Permittees are not in compliance with the GESC Permit, GESC Plan, and/or *GESC Manual*, or the Permittees fail to take corrective action within the time specified on the written notification of such non-compliance;

4. Understand that in addition to other remedies, a violation of this GESC Permit shall constitute a violation of Section 11 of the City of Castle Pines Illicit Discharges and Stormwater Quality Requirements Ordinance; and
5. Understand any approval obtained from the City does not obviate the Permittee's need to comply with the requirements of the State of Colorado Department of Public Health and Environment, Colorado Discharge Permit System, General Permit, and Sections 7 and 9 of the Endangered Species Act of 1973, 16 U.S.C. 1531, et seq., as amended, or with any other applicable federal, state, local laws, or regulations.



The transfer form and all other City Forms are on the City's Stormwater website, www.castlepinesco.gov/city-services/city-departments/public-works/stormwater-management/.



11.0 GUIDANCE FOR SPECIFIC CONSTRUCTION ACTIVITIES

There are certain types of construction that warrant additional details in this *GESC Manual* given their unique construction durations, methodologies, and contractual obligations.

11.1 SINGLE-FAMILY RESIDENTIAL CONSTRUCTION

Multi-lot single-family development projects typically involve the transfer of ownership of portions of the property during the life of the project, and they often include common areas, which may serve or be impacted by multiple owners. It is important to ensure that the GESC requirements are maintained on all portions of the original development throughout the life of the project.

Common area may include the streets and Rights-of-Way (ROW), the common open space areas, drainage tracts and easements, stormwater detention and water quality facilities, and other areas which are not associated with individual lots. These common areas are affected by all development within the project, regardless of ownership. In addition, these areas are most impacted if adequate GESC control measures (CMs) are not being implemented. Therefore, it is necessary that all parties involved cooperate and be held to certain requirements throughout the life of the project.

The Developer's GESC Permit may be adjusted throughout the life of the project to reflect only those improvements that are needed for the common areas of the project, and those properties that the Developer owns. These adjustments maybe done through transfers (when sold to other builders) or by modifications (when sold to private home buyers). The cost estimate and financial security can be reduced accordingly throughout the project; however, it is preferred for changes to be done with multiple lots at one time





versus one lot at a time. GESC Plans may require revisions to reflect the appropriate GESC CMs. The Permittee is responsible for ensuring that project personnel uphold all GESC requirements including subcontractors, utility providers and trades within the permitted areas. When individual lots are sold from a Permittee to a homeowner, the Permittee is responsible for notifying the new Owner of the residential lot of the need to provide permanent stabilization in a timely fashion and the need to maintain temporary erosion and sediment CMs onsite until permanent stabilization has been implemented and achieved.

Lot details for single-family residential have been developed to assist in the general layout and CM requirements for construction. Standard Lot Details are provided in Appendix C and may also be found on the City's stormwater website. Multiple single-family lots must obtain a Standard GESC Permit or have a GESC Permit that describes the vertical construction.

There may also be single-family construction not related to the development of a subdivision. This type of construction may be permitted under a Low Impact GESC if it is not related to other nearby construction and disturbs less than one (1) acre.

11.2 LINEAR PROJECT REQUIREMENTS

The GESC Plan requirements for linear projects that disturb one (1) acre or more or are part of a common plan of development that disturbs one (1) acre or more may vary from the Standard GESC Checklist Plan requirements depending on the nature of construction. The GESC Report requirements do not change for linear projects. Examples of linear projects include

- Roadways
- Sidewalks
- Trails
- Utilities





Linear project Permittees should contact the City to discuss GESC Plan requirements. Small projects in the ROW that do not move more than fifty (50) cubic yards will not require a GESC Permit or Low Impact GESC Permit; however, CMs must be utilized. The City has Standard Utility Details (Appendix B) that shall be utilized for utility projects unless infeasible due to activity or site configuration and then an alternative detail must be followed. The City Standard Utility Detail is also on the City's stormwater website. Additionally, the use of a temporary sediment basin for disturbances of one (1) acre or more typically does not apply to linear projects due to the linear nature of construction.

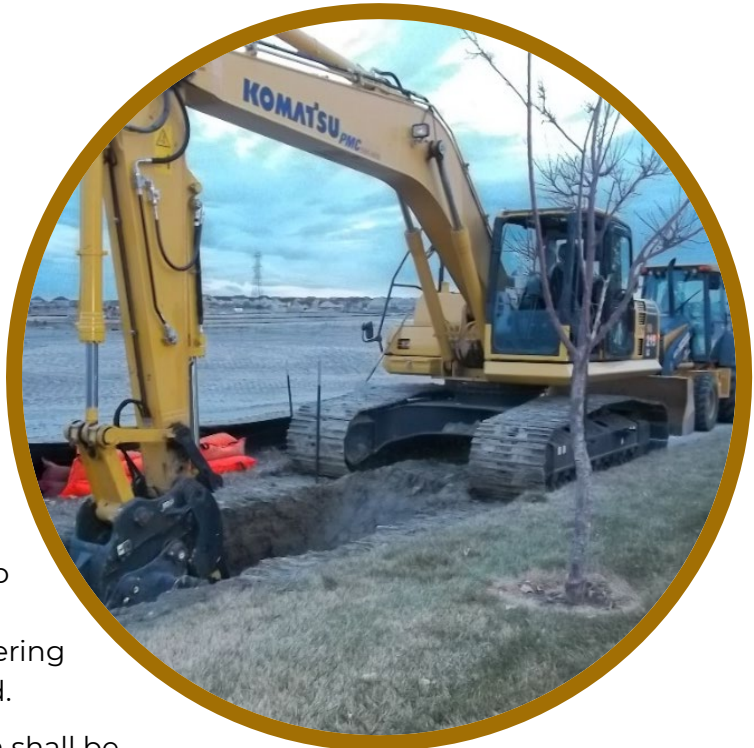
11.3 UTILITIES PROJECT REQUIREMENTS

As the City grows, so does the demand for installation of new underground utility lines and upgrade and maintenance of existing utility lines. Although the work is generally short lived, construction of utilities has the potential to add pollutants to stormwater runoff.

The following requirements are designed to reduce the pollution of stormwater runoff from the installation and maintenance of underground activities. Utility line installation shall comply with the following:

- All utility work within a City ROW must obtain a City Right-of-Way Use Permit in accordance with the appropriate standards.
- Adequate erosion and sediment controls must be provided (see City Utility Details for typical CMs).
- Where consistent with safety and space considerations, excavated material must be placed on the uphill side of trenches.
- Excavated material shall be placed away from inlets, waterways, or gutters. If materials with the potential to interact with stormwater are placed on the street, sidewalk, or within the ROW, they must be covered if left over night and have appropriate control measures. Debris, trash, or concrete waste are NOT allowed to be stored in the footprint of the public street or sidewalk without City approval. It is unlawful to deposit materials in such a manner or location as to substantially increase the probability of an illicit discharge.

- Trench dewatering devices must discharge in a manner that will not affect streams, wetlands, drainage systems, or offsite property. Discharge from the trench shall be free of any sediment and appropriate CMs must be utilized. If the discharge has a groundwater component and does not infiltrate onsite and enters a waterway or inlet, a Colorado Discharge Permit System (CDPS) Construction Dewatering Discharge Permit is required.
- Storm sewer inlet protection shall be provided whenever soil erosion from the excavated area has the potential of entering the storm drainage system.
- All disturbed areas shall be restored either using hard surfaces such as asphalt or concrete or be restored with vegetation or landscaping.



Utilities that disturb less than fifty (50) cubic yards are not required to obtain coverage under a GESC Permit. Projects that disturb over fifty (50) cubic yards and have less than one (1) acre of disturbance may apply for a Low Impact GESC. All other projects must obtain a standard GESC.

12.0 GESC IMPLEMENTATION

The GESC Plan and Report must be implemented in the field as written or approved from initial construction until final stabilization is achieved. The process of using the approved GESC Plans and Reports to obtain the GESC Permit and follow GESC requirements is illustrated on **Figure 12-1**.

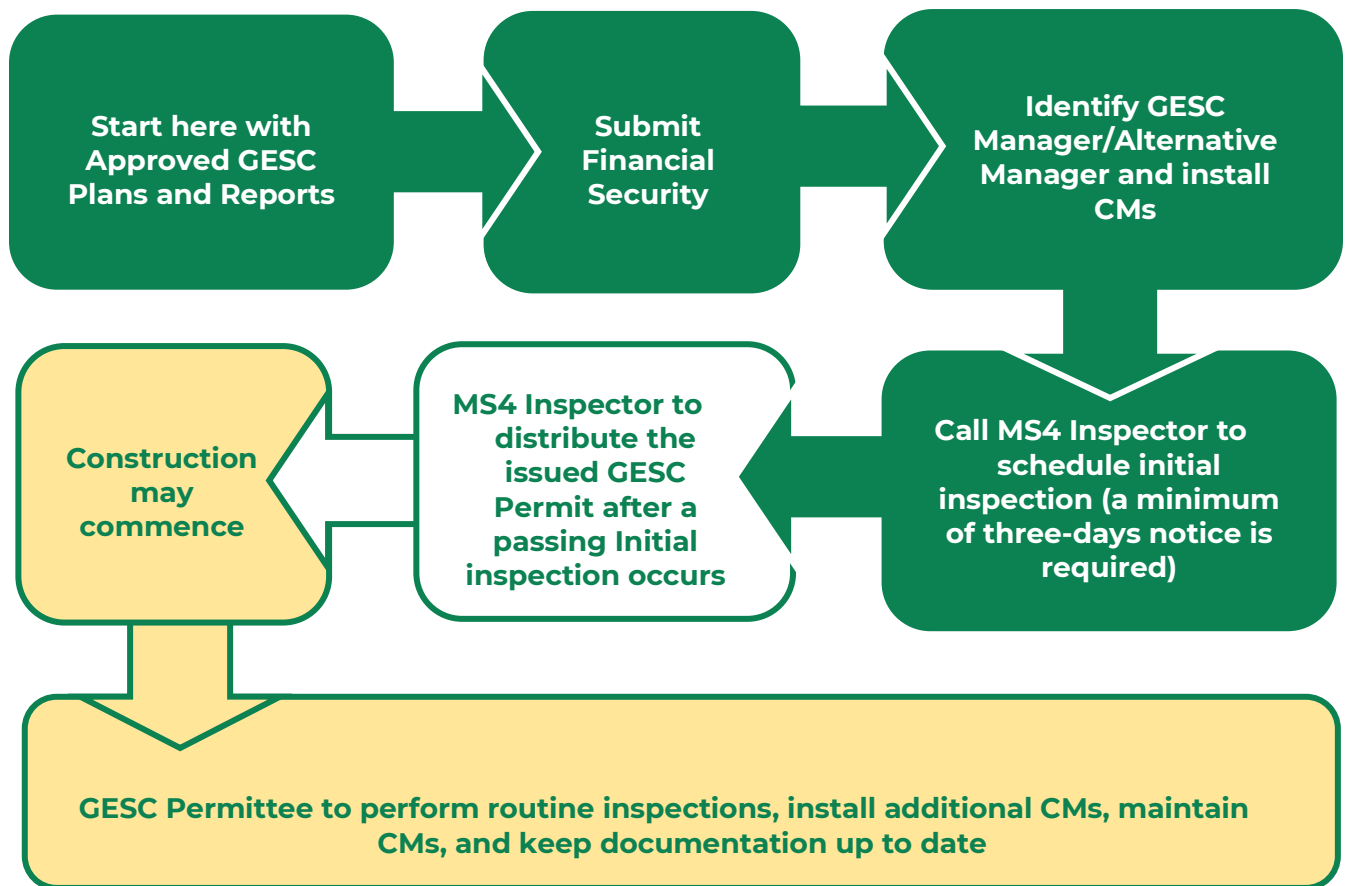


Figure 12-1 GESC Implementation



12.1 GESC MANAGER

As the project's focus shifts from preparing the GESC Plans and applying for the GESC Permit to constructing the project, the first task is to select a GESC Manager. The GESC Manager is the Permittee(s)' contact person with the City for all matters pertaining to the GESC Plan and Permit. The GESC Manager may be an employee of the Owner or Contractor, and shall have the authority to act on behalf of the Permittee to ensure that the site remains in compliance with the GESC Permit; however, the Permittee shall remain the legally responsible party. The GESC Manager shall respond to requests made by City staff and the Municipal Separate Storm Sewer System (MS4) Inspector and must have the authority to direct work. The GESC Manager may have a staff member or third-party perform inspections under their authority and together the GESC Manager and the staff performing inspections on behalf of the permittee may act as the Qualified Stormwater Manager (QSM).

The GESC Manager shall be onsite as necessary to ensure the GESC requirements are being implemented, and (along with the Alternate GESC Manager) shall provide the City with a 24-hour emergency contact number. In the event the GESC Manager (or Alternate GESC Manager) cannot be reached within 24 hours, a violation may be issued.

The GESC Manager shall be named at the onsite Initial MS4 meeting.

ALTERNATE GESC MANAGER

An Alternate GESC Manager who is able to serve in the same capacity as the GESC Manager shall also be selected. The Alternate shall be the contact person if the GESC Manager is not available. The GESC Manager shall inform the Alternate GESC Manager of any absences, communicate with the Alternate on the status of the GESC Plan implementation, and ensure that the Alternate GESC Manager assumes the GESC Manager's responsibilities during any absences.

CHANGING THE GESC MANAGER OR ALTERNATE

Notification shall be provided to the City if the GESC Manager or Alternate changes. A field meeting with the MS4 Inspector and new GESC Manager or Alternate shall be scheduled to discuss site conditions and responsibilities of the GESC Manager.



12.2 PREPARATION FOR INITIAL MS4 INSPECTION

Prior to the Initial MS4 Inspection Meeting, the GESC Manager shall thoroughly review the GESC Report and Plans, Standard Notes and Details, and related plans and permits for the project. A review of the 10 Elements of an Effective GESC Plan in **Section 5** of this *GESC Manual* and control measure (CM) details provides additional valuable insight. It is the GESC Manager's responsibility to understand all of the requirements of the GESC Permit Process as laid out in these documents. In addition, it is the GESC Manager's responsibility to ensure that other field personnel are aware of the GESC requirements.

The City welcomes calls or emails from Permittee(s) during this process to answer any questions that the GESC Manager or other Permittee staff may have regarding the GESC Permit Process.



Stamped and approved GESC Plans and Reports, Standard Notes and Details, approved variances, and any project permits shall remain on the site or be available electronically onsite at all times.

INSTALLATION OF INITIAL CMS

The Initial CMS shown on the GESC Drawings shall be installed prior to the onsite Initial MS4 Inspection.

As soon as the Applicant receives approved GESC Plans, the Initial CMS specified in the plans may be installed and the Initial MS4 Inspection may be scheduled. The MS4 inspector assigned to the project will be identified within the email notification that the plans have been approved and are available for download from the City's permitting portal.

If the Permittee(s) needs to modify the Initial CMS shown on the GESC Plans, then a modification must be submitted through City's permitting portal. Modifications can also be submitted through the City MS4 Inspector if the change is for minor field modifications following the procedures outlined in **Section 4.4**. Modifications should be made and approved by the City prior to installing any alternative details or CMS in the field.



CONSTRUCTION SHALL NOT START

Other than the installation of the Initial CMS shown on the GESC Plan, no stripping operations, haul road grading, or other construction shall occur prior to the Initial MS4 inspection.

SCHEDULING THE INITIAL MS4 INSPECTION

The Permittee(s) shall contact the City to schedule the onsite Initial MS4 Inspection if the MS4 Inspector is unknown, otherwise the Permittee shall contact the MS4 Inspector directly. At least three (3) days notice (business days, not including Saturdays and Sundays) shall be provided to schedule the meeting.

12.3 INITIAL MS4 INSPECTION

The onsite Initial MS4 Inspection is a critical milestone prior to the start of construction. A visual inspection of all of the Initial CMs that have been installed will take place. The MS4 Inspector will confirm whether any corrections are required and confirm the limits of disturbance and topsoil stripping. If the Initial CMs are accepted by the MS4 Inspector as is or with minor corrections, the MS4 Inspector will inform the Permittee(s) of a passing Initial inspection, sign the GESC Permit Application, and submit the GESC Permit Application to the City for processing as the GESC Permit. **Construction shall not start until an executed GESC Permit is obtained.**



12.4 EXECUTED GESC PERMIT

The City will execute the GESC Permit generally within twenty-four (24) hours of acceptance of the Initial CMs, receipt of the permit fees and surety. The executed permit will be sent out by the MS4 Inspector, and construction can start once it has been received.

12.5 START OF CONSTRUCTION

It is the responsibility of the GESC Manager to ensure that appropriate CMs are installed at the earliest opportunity that grading or construction of new facilities allows. Some CMs have specific time requirements for installation that are identified on the GESC Plan Standard Notes and Details; these time requirements shall be adhered to (for example, temporary and area Inlet Protection shall be installed within 48 hours of constructing an inlet and stabilization is required for all disturbed areas that are inactive for more than fourteen [14] days).



For CMs for which a specific timeframe is not given, the CMs shall be phased with construction and meet the requirements of good engineering, hydrological, and pollution prevention control practices.

12.6 GESC MANAGER INSPECTIONS

The construction site should be routinely checked for proper CMs, installation, and function in accordance with the GESC Plans and Report. Any CMs with loss of integrity, function, or design shall be repaired immediately to reduce the potential for stormwater to transport sediment or other pollutants offsite or into waterways, inlets, or other drainage conveyances. Good housekeeping practices such as proper waste handling, material storage and waste disposal, spill protection, street sweeping, and effective vehicle tracking controls reduce the potential for pollutants to enter waterways, inlets, or other drainage systems.

The GESC Manager or their subcontractor shall perform a documented inspection of erosion, sediment, and waste controls on the project following the requirements and timeframes for inspections outlined in the SCP and Regulation 72. The documented self-inspections must be made available to the City when requested. Failure to perform required inspections could result in enforcement as discussed in **Section 14**. Additionally, the City recommends routine visual inspections to assist with compliance by proactively identifying required maintenance and changes in field conditions that warrant changes in CMs.

12.7 CITY MS4 INSPECTIONS

During the construction phase, a City MS4 Inspector will perform oversight inspections on projects, to evaluate pollutant sources and CMs regularly. The MS4 Inspector will consider the overall effectiveness of the controls for reducing erosion and trapping sediment on the site and will check for proper installation and maintenance of the controls, as well as identify the failure to implement CMs, and identify any unauthorized discharges of pollutants. The MS4 Inspector will coordinate with the GESC Manager, whose responsibility it is to ensure that the site remains in compliance with all GESC requirements. The MS4 Inspector will typically conduct their inspections at least every month; however, the frequency is dependent on project stormwater compliance and other factors. The MS4 Inspections **DO NOT** count as the required GESC inspections required by the Permittee per the SCP since the scope and frequency is based on the City's MS4 Permit and not the SCP.

13.0 FINAL STABILIZATION AND VEGETATIVE COVERAGE

Achieving final stabilization is crucial for project close out. Providing a non-erosive surface for all disturbed areas minimizes long-term erosion and sediment transport. The City GESC Permit Close Out process starts with Initial GESC Close Out Inspections for all projects with vegetation as illustrated on **Figure 13-1**.

Initial Close Out may be requested when all construction has been completed and disturbed areas are final landscaped, drill seeded, crimp mulched, hard surfaced, or otherwise stabilized.

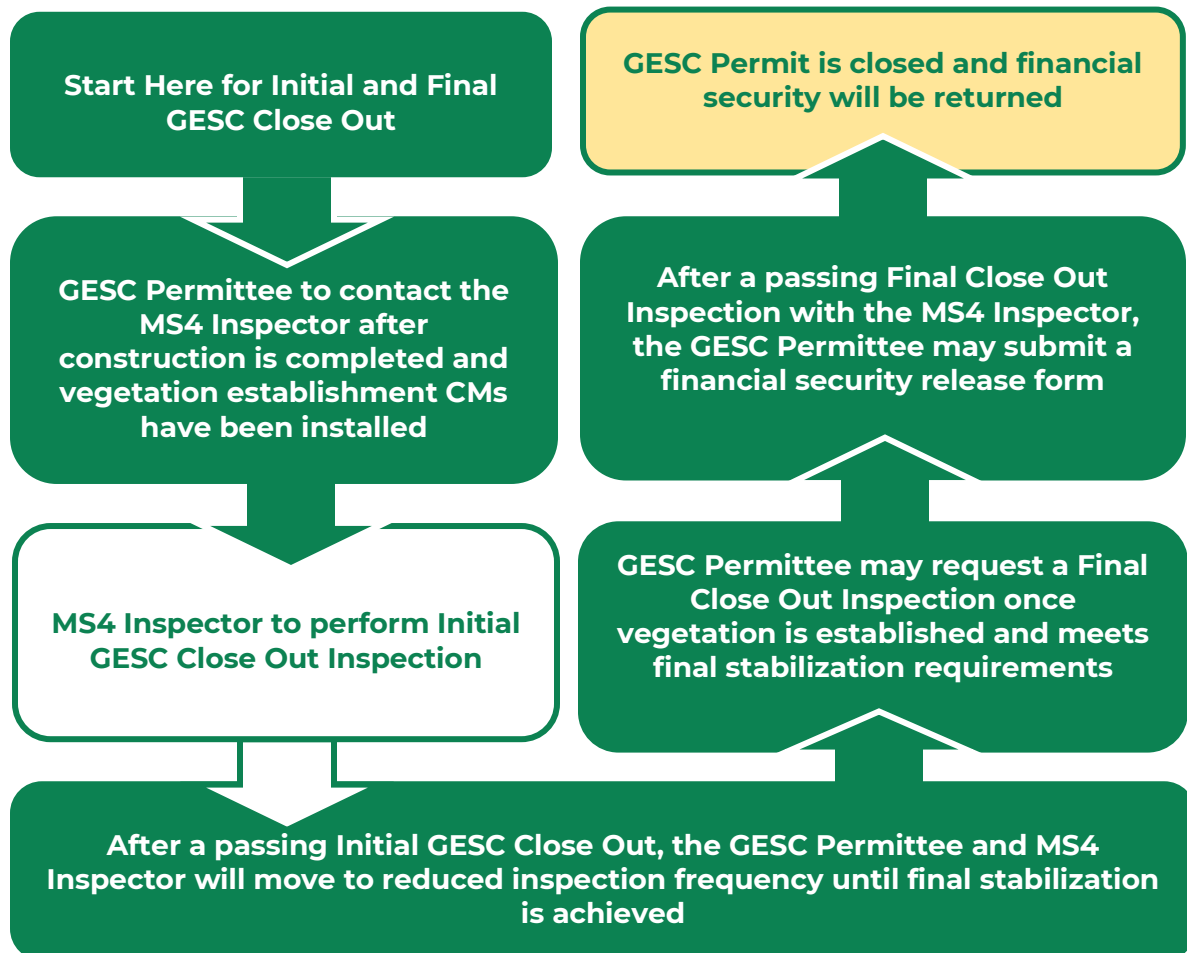


Figure 13-1 GESC Close Out



At the Initial Close Out, the surfaces and final features shown on the Final GESC Plan should be implemented. Any significant changes necessary to the Final GESC Plan, either at the direction of the City, MS4 Inspector, or at the request of the Permittee, should be shown on a revised plan and receive appropriate approvals.

PREPARING FOR INITIAL CLOSE OUT MS4 INSPECTION

In preparation for the Initial GESC Acceptance Inspection prior to the Permittee(s) leaving the site, the GESC Manager shall undertake the following:

1. Clean all streets, sidewalks, and flowlines of sediment with a street sweeper. **Washing of streets, sidewalks, and flowlines is in direct violation of City criteria.** Clean and remove sediment from all inlets, trickle channels, and all other drainage features to design capacity.
2. Remove temporary control measures (CMs) (if directed by approved GESC Plan or MS4 Inspector) and install/maintain erosion and sediment CMs per the City-approved Final GESC Plan.
3. Ensure all disturbed areas are drill seeded and crimp mulched, blanketed, hard surfaced, or otherwise stabilized, per City's criteria. The City uses seed mixes listed in Appendix D or other approved City landscape plan plantings and mixes. The Landscape Plan must not conflict with the GESC Final Plan.

SCHEDULING THE MS4 INSPECTION

Once all items are completed, the GESC Manager shall contact the MS4 Inspector and schedule an Initial GESC Close Out Inspection.

INITIAL GESC CLOSE OUT ACCEPTANCE

The following items are addressed at the Initial Close Out Inspection:

- **Inspection of Final CMs.** All final CMs are inspected, including topsoil spreading, soil preparation, amendments (as needed), and drill seeding and crimp mulching.
- **Inspection of Site Cleanup.** Cleanup of the site and adjoining streets is checked.
- **Discussion of Vegetation Requirements.** The reduced inspection schedules and standards to be attained by vegetation prior to permit close out will be discussed.
- **Inspection of any applicable SCMs.** SCMs will be inspected as part of the GESC process during construction and must meet initial and final acceptance through the Public Works (PW) initial and final infrastructure acceptance process.



CORRECTIONS TO SITE

The Permittee(s) shall make any corrections to the site as requested by the MS4 Inspector. When completed, a reinspection shall be scheduled with the City.



13.2 ESTABLISHMENT OF VEGETATION

REQUIRED INSPECTIONS AND MAINTENANCE

The Permittee(s) shall undertake the following inspections and maintenance operations:

- Seeded and mulched areas shall be inspected as necessary to ensure growth of vegetation by the Permittee(s) until final vegetation coverage requirements are met. Repairs and reseeding and mulching shall be undertaken as necessary or as requested by the MS4 Inspector for any areas failing to meet the required coverage. Failure to do so may result in enforcement.
- Noxious weeds shall be controlled.

REQUIRED VEGETATION COVERAGE FOR FINAL STABILIZATION

Required coverage for areas revegetated using the Castle Pines Permanent or Low-Growth Drill Seed Mix shall be defined as follows:

- At least three (3) plants per square foot with a minimum height of 3 inches. The three (3) plants per square foot shall be of the variety and species found in the Castle Pines approved mix. If three (3) plants per square foot is not feasible (e.g., due to landscape plans with shrubs, trees, etc.), the City requires the vegetation to match the surrounding vegetation and have at least 70% of the vegetative cover that would be expected in a native, undisturbed area at this location or reference site.
- No bare areas larger than 4 square feet, 2 feet x 2 feet or equivalent.
- Free of eroded areas.
- Free from infestation of noxious weeds in accordance with the City weed ordinance.

Required coverage for turf grass areas shall be defined as follows:

- At least 70% vegetative cover of grass species planted.
- Free from infestation of noxious weeds in accordance with the City's weed ordinance.
- No bare areas larger than 4 square feet, 2 feet x 2 feet or equivalent.
- Free of eroded areas.

RESIDENTIAL LOT REQUIREMENTS FOR REMOVAL OF GESC PERMIT COVERAGE

Residential lots sold to homeowners may be removed from GESC Permit coverage if they meet the following requirements:

- The residential lot has been sold to the homeowner(s) for private residential use;
- A certificate of occupancy, or equivalent, is maintained onsite and is available during regulatory inspections;
- The lot is less than one (1) acre of disturbance;
- All construction activity conducted on the lot by the Permittee is complete;
- The Permittee is not responsible for final stabilization of the lot; and
- The GESC was modified to indicate the lot is no longer part of the GESC Permit.

A modification should be used to remove lots from a GESC Permit, and it is preferred if several lots are removed at a time to reduce City review time.

VEGETATION ACCEPTANCE INSPECTION

Once vegetation has reached the required coverage as defined in **Section 13.2**, the Permittee(s) shall call the MS4 Inspector to schedule a Vegetation Acceptance Inspection.



Yellow Flowered Leafy Spurge (Source Douglas County GESC Manual)

Castle Pines follows Douglas County's designated noxious weed designations:

Leafy spurge
Diffused knapweed
Russian knapweed
Spotted knapweed
Musk thistle
Canada thistle
Scotch thistle
Hoary cress
Perennial pepperweed
Yellow toadflax
Dalmation toadflax

WRITTEN ACCEPTANCE

The City MS4 Inspector will confirm that vegetation has met the required coverage, noxious weeds have been controlled according to the City's weed ordinance, and temporary CMs have been removed. Any SCMs will also need to meet final acceptance requirements before the MS4 Inspector can perform the final MS4 inspection and close out the GESC Permit. As part of the final acceptance, the Design Engineer (DE) will be required to certify that any SCMs were built as approved and meet the City's Permanent Stormwater Control Measures Criteria ([Section 16](#)). If the required vegetative coverage and other requirements have been met, the MS4 Inspector will issue a written Final MS4 Inspection Report. If the required coverage is not met, repairs or corrections will have to be made by the Permittee(s) and a follow-up Vegetation Acceptance Inspection must be scheduled once the vegetation meets the required coverage.



13.3 GESC PERMIT CLOSE OUT

Once the Final MS4 Inspection has been completed and all requirements have been met, the GESC Permit will be closed by the MS4 Inspector and a financial security release form will be sent to the Permittee. The form must be completed to allow the release of the financial security.



14.0 VIOLATIONS AND ENFORCEMENT

Failure to comply with any term, condition, limit, deadline, or other provision of this *GESC Manual*, a GESC Permit, or failure to obtain a GESC Permit when one is required, shall constitute a violation of City Code, as amended. Any person who pleads guilty, enters a plea of no-contest, or who after trial is found guilty of violating any term, condition, limit, deadline, or other provision of this *GESC Manual*, a GESC Permit, or fails to obtain a GESC Permit, may be punished by a fine not to exceed \$2,650.00 for each day the violation exists, imprisonment for a period not to exceed one (1) year, or both fine and imprisonment. Each violation shall constitute a separate offense for each and every day during which such violation exists or continues.

Violations may also constitute a violation of the Federal Clean Water Act and the Colorado Water Quality Control Act, Section 25-8-101, et seq., C.R.S. ("Act"). The City may, in addition to enforcement and prosecution in accordance with this Manual, refer violations to state or federal agencies for enforcement and prosecution. Importantly, pursuant to Section 25-8-609 C.R.S., any person who recklessly, knowingly, intentionally, or with criminal negligence discharges any pollutant into any State Waters commits criminal pollution if such discharge is made in violation of any permit issued under the Act. If the violation is committed with negligence or recklessness, the maximum fine shall be \$25,000 per day. If the violation is committed knowingly or intentionally, the maximum fine shall be \$50,000 per day.

In addition to any other legal or equitable remedies that the City may have for GESC violations, the City may abate the violation (at the owner's expense), issue a stop work order, withhold issuance or extensions of permits, certificates, approvals, or other authorizations granted by the City (such as but not limited to building permits or certificates of occupancy), refuse to perform any building inspections, refuse to approve any building inspections or Right-of-Way inspections, or to issue any other necessary approvals until such violation has been corrected and the Permittee has taken the necessary action to ensure compliance with the GESC Permit and *GESC Manual* requirements.



14.1 VIOLATIONS

The City classifies violations in two tiers, depending on the severity of the violation and has different enforcement actions for each category.

LEVEL I VIOLATIONS

Level I Violations are viewed by the City to pose potential immediate serious risk to the health, safety, or welfare of people and/or the environment. Level I Violations include, but shall not be limited to the following:

- Clearing, grubbing, grading, or filling without a GESC Permit where a GESC Permit is required.
- Disturbing land or filling within a floodplain or sensitive area without proper approvals.
- Failure to correct Level II violations per the directives of the Municipal Separate Storm Sewer System (MS4) Inspector within the specified amount of time.
- History of recalcitrant or chronic Level II violations.
- Discharge of pollutants that endanger water quality or public health.

Level I Violations may result in the immediate issuance of a Stop Work Order or a Notice of Violation (NOV), depending upon the impact and severity of the violation. If a Stop Work Order is issued, all work onsite must stop until the GESC Permit is issued or reinstated. Failure to pay reinspection fees is also considered a Level I Violation.

LEVEL II VIOLATIONS

Level II Violations are viewed by the City to pose a moderate risk to health, safety, or welfare of people and/or the environment; however, if not immediately corrected, will pose a serious risk.

Level II Violations include, but shall not be limited to the following:

- Tracking of material onto roadways and adjacent properties.
- Failure to make required plan revisions.
- Failure to implement approved plan.
- Failure to perform control measure (CM) corrective action items as directed by the MS4 Inspector.



- Failure to provide adequate CMs for erosion, sediment, site and waste management/construction control measures.
- Failure to install CMs.
- Failure to provide protection of drainageways.
- Failure to provide sediment basin or permanent stormwater control measure (SCM) maintenance during construction.
- Failure to implement stabilization.
- Failure to have approved GESC Permit and GESC Drawings onsite.
- Failure to address inspection concerns within allotted timeframe.
- Working outside approved limits or inability to install approved CMs.

Remediation for Level II Violations shall commence immediately after the Permittee is notified of the violation. Notification can either be verbal instruction from the MS4 Inspector to the GESC Manager, included on an inspection report as a deficiency, or communicated through email. Level II Violations shall be corrected immediately, and documentation shall be submitted within forty-eight (48) hours of receiving the MS4 inspection report or directive unless otherwise specified in writing by the MS4 Inspector. A reinspection will be completed by the MS4 Inspector if adequate documentation is not received and a reinspection fee shall be charged to the Permittee. If corrections have not been completed satisfactorily, and additional inspections are needed, additional reinspection fees will be applied for subsequent inspections. Corrections not made in full after additional inspections and subsequent inspections fees will result in the issuance of a NOV and possible Stop Work Order.

14.2 REINSPECTION FEE

To offset the cost of additional inspections on non-compliant sites, the City will require reinspection fees. Reinspection fees may be applied if the site does not submit requested documentation demonstrating deficiencies have been addressed and may also be reassessed if non-compliance continues after the first reinspection. The reinspection fees must be paid through the City's permitting portal. The City may refuse to provide other required City inspections (for example, but and not limited to: inspections for a public improvement certification, GESC requirements, or other inspections) until reinspection fees are paid. Failure to pay reinspection fees may also result in the Issuance of a NOV and/or a Stop Work Order.



14.3 NOTICE OF VIOLATION

Failure to meet the GESC requirements may result in the issuance of a Notice of Non-Compliance or NOV. A Notice of Non-Compliance is typically issued prior to a NOV. If the Violation is not remedied within the time allotted, a Stop Work Order may be issued.

14.4 STOP WORK ORDERS

The Public Works (PW) Director, or their designated representative, is authorized to order work to be stopped on any project that disturbs the land and which is not in compliance with the requirements of the *GESC Manual* or GESC Permit. The PW Director can order the activity stopped upon service of written notice upon the responsible Owner or Operator. The Owner or Operator shall immediately stop all activity until authorized in writing by the City to proceed. If the Owner or Operator cannot be located, the Stop Work Order shall be posted in a conspicuous place upon the premises where the activity is occurring and shall state the nature of the violation. It shall be unlawful for any Owner or Operator to fail to comply with a Stop Work Order. Safety-related items (e.g., backfilling of holes and trenches) as well as corrective actions may be completed; however, the Permittee(s) shall inform the MS4 Inspector of any such activities.

The Permittee(s) shall do the following to reinstate a GESC Permit and resume work on the site:

1. Correct the deficient practices that precipitated the Stop Work Order.
2. Apply for a reinstatement of the GESC Permit and pay the reinstatement fee at the City office.
3. Call City to schedule a site inspection.
4. Obtain a Release of Stop Work Form after approval of the corrected work from the MS4 Inspector or PW personnel.

A posted Stop Work Order shall not be removed from the site except by the City. The MS4 Inspector or PW Department Representative is the only authorized agent to remove a posted Stop Work Order.

Failure to comply with a Stop Work Order or to provide the necessary remedies to meet the GESC requirements is a violation of the City's GESC Regulation.



14.5 COST OF ABATEMENT OF THE VIOLATION

If the City abates any violation of the *GESC Manual* or City Code, then, within ten (10) days after abatement of the violation, the Owner of the premises will be notified of the cost of abatement. The cost may include administrative costs and the notification will be provided by personal delivery or by certified mail to the last known address of the Owner of the premises as shown in the records of the County Assessor. The notice shall be effective upon the date of mailing or personal delivery. The Owner of the premises may file a written protest objecting to the amount of the assessment within ten (10) days of the effective date of the notice.

If no protest is filed, then the charges shall become due and payable on the date set forth in the notice, which date shall be after the expiration of the time in which to file an appeal, and such charges shall become a special assessment against the property and shall constitute a lien on the property for the amount of the assessment.

In the event a protest is filed, a hearing on such protest shall be held before the PW Director within fifteen (15) days from the date of receipt of the written protest. If any charges are upheld upon completion of such hearing, then such charges shall become due and payable ten (10) days after the issuance of the order upon such protest and, if not timely paid, such charges shall become a special assessment against the property and shall constitute a lien on the property for the amount of the assessment.

If the amount due is not paid within ten (10) days of the decision of the PW Director or the expiration of the time in which to file an appeal under this Section, the charges shall become a special assessment against the property and shall constitute a lien on the property for the amount of the assessment. The assessment shall be certified by the City Manager or his or her designee to the office of the County Treasurer for collection in the same manner as the collection of general property taxes.

15.0 REVOCATION OF FINANCIAL SECURITY

15.1 DEFAULT BY THE PERMITTEE

In the event there is a default or violation by the Permittee(s) of any of the requirements of the GESC Permit, GESC Plan, and/or *GESC Manual*, remedies will be available to the City in accordance with the remedies identified in this *GESC Manual*, in any City Resolution(s) containing provisions for providing remedies for enforcement against defaults or violations, remedies listed in any applicable Subdivision Improvements Agreement, and any other remedies provided by law. A default by Permittee(s) shall be based on conditions including, but not limited to, the following:

- Permittee(s) fails to construct the improvements in substantial compliance with the GESC Plan and the other requirements of the GESC Permit.
- Permittee(s) fails to cure any noncompliance specified in any written notice of non-compliance within the timeframe specified in the Notice of Violation.
- Permittee(s) otherwise breaches or fails to comply with any obligation of the GESC Permit.
- Permittee(s) become insolvent, files a voluntary petition of bankruptcy, is adjudicated as bankrupt pursuant to an involuntary petition in bankruptcy, or a receiver is appointed for the Permittee.
- Permittee(s) fails to maintain in full force and effect a letter of credit in the amounts specified above or in the GESC Permit. Notice of defaults as to any phase of the GESC improvements must be given prior to expiration of the warranty period for such phase of the Subdivision improvements as hereinafter provided.

15.2 NOTICE OF DEFAULT

If the City Manager, or representative of the City Manager, gives notice that a Default by Permittee(s) exists, and if the Permittee(s) fails to cure such default within the time specified by the City Manager, the City shall be entitled to make a draw on the letter of credit for the amount reasonably determined by the City to be necessary to cure the default in a manner consistent with the approved GESC Plan up to the face amount of the letter of credit. If the total of such costs exceeds the security, the permittee shall be responsible for payment of the remaining balance within thirty (30) calendar days of receipt of an accounting of such from the City. Should the permittee fail to timely pay the balance within the thirty (30) day period, the City has the right to sue the Permittee(s) for recovery of such amount.



15.3 CASTLE PINES RIGHT TO COMPLETE GESC REQUIREMENTS

Castle Pines shall have the right to complete the GESC requirements, in substantial accordance with the GESC Plan, the Engineer's Cost Estimate, and other requirements of this *GESC Manual*, either itself or by contract with a third party or by assignment of its rights to a successor who has acquired the subdivision/project by purchase, foreclosure, or otherwise. The City, any Contractor under contract with the City, or any such successor Permittee(s), their agents, subcontractors, and employees shall have the non-exclusive right to enter upon the subject property for the purpose of completing the GESC Improvements.

15.4 USE OF FUNDS BY CASTLE PINES

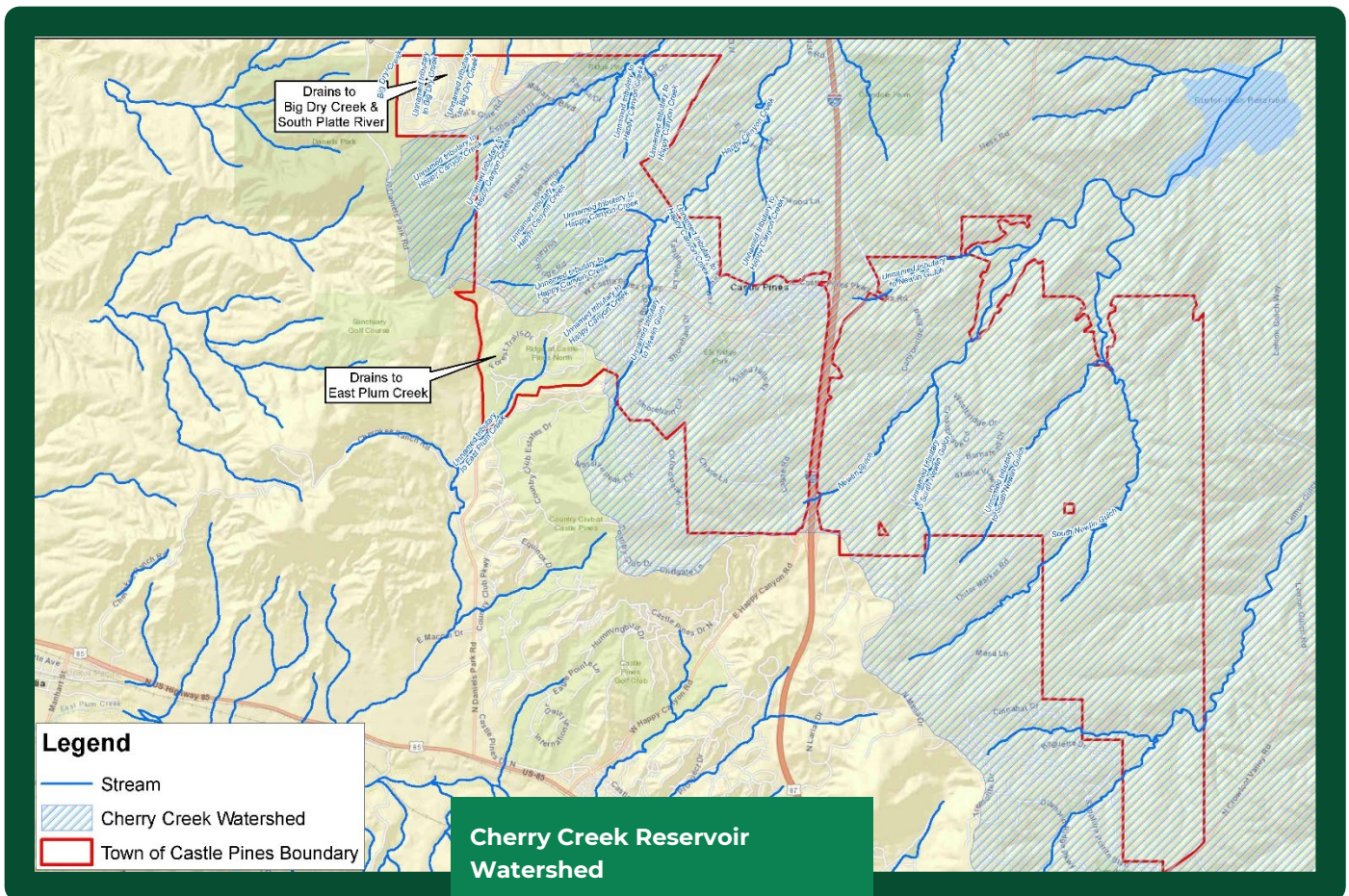
Any funds obtained by the City under a letter of credit, or recovered by the City from the Permittee(s) by suit or otherwise, will be used by the City to pay the costs of completion of the GESC Improvements substantially in accordance with the GESC Plan and the other requirements of this *GESC Manual* and to pay the reasonable costs and expenses of the City in connection with the Default by Permittee(s), including reasonable attorneys' fees, with the surplus, if any, to be returned to the Permittee(s).

16.0 PERMANENT STORMWATER CONTROL MEASURES

New Development and Redevelopment (NDRD) projects require permanent stormwater control measures (SCMs) unless the activity is exempt from the requirements (see **Sections 13.2 and 13.4**). The City follows design criteria from the Urban Storm Drainage Criteria Manual (USDCM), and generally follows the Douglas County Storm Drainage Design and Technical Criteria, as amended. This section clarifies The City's requirements and exclusions that are directly from the City's MS4 Permit and Regulation 72. Although SCMs are associated primarily with the drainage report, they are discussed in this *GESC Manual* to clearly define the requirements not already outlined in the USDCM.

16.1 SCMS OUTSIDE CHERRY CREEK RESERVOIR WATERSHED

Projects outside the Cherry Creek Reservoir Watershed meeting the definition of an applicable development site will be required to implement permanent SCMs meeting full spectrum detention requirements as described in the USDCM unless the type of project is excluded from permanent SCM requirements (see **Section 13.2**) or alternative SCMs can be utilized to address the excess runoff volume by infiltration.



16.2 SCM-EXCLUDED PROJECTS OUTSIDE OF CHERRY CREEK RESERVOIR WATERSHED

The following activities may be excluded from the requirements of an applicable development site:

(A) **“Pavement Management Sites:”** Sites, or portions of sites, for the rehabilitation, maintenance, and reconstruction of roadway pavement, which includes roadway resurfacing, mill and overlay, white topping, black topping, curb and gutter replacement, concrete panel replacement, and pothole repair. The purpose of the site must be to provide additional years of service life and optimize service and safety. The site also must be limited to the repair and replacement of pavement in a manner that does not result



in an increased impervious area and the infrastructure must not substantially change. The types of sites covered under this exclusion include day-to-day maintenance activities, rehabilitation, and reconstruction of pavement. "Roadways" include roads and bridges that are improved, designed, or ordinarily used for vehicular travel and contiguous areas improved, designed, or ordinarily used for pedestrian or bicycle traffic, drainage for the roadway, and/or parking along the roadway. Areas primarily used for parking or access to parking are not roadways.

(B) **Excluded Roadway Redevelopment:** Redevelopment sites for existing roadways, when one of the following criteria is met:

1. The site adds less than one (1) acre of paved area per mile of roadway to an existing roadway, or
2. The site does not add more than 8.25 feet of paved width at any location to the existing roadway.

(C) **Excluded Existing Roadway Areas:** For redevelopment sites for existing roadways, only the area of the existing roadway is excluded from the requirements of an applicable development site when the site does not increase the width by two (2) times or more, on average, of the original roadway area. The entire site is not excluded from being considered an applicable development site for this exclusion. The area of the site that is part of the added new roadway area is still an applicable development site.

(D) **Aboveground and Underground Utilities:** These are activities for installation or maintenance of underground utilities or infrastructure that do not permanently alter the terrain, ground cover, or drainage patterns from those present prior to the construction activity. This exclusion includes, but is not limited to, activities to install, replace, or maintain utilities under roadways or other paved areas that return the surface to the same condition.

(E) **Large Lot Single-family Sites:** These sites are a single-family residential lot, or agricultural zoned lands, greater than or equal to two-and-one-half (2.5) acres in size per dwelling and having a total lot impervious area of less than 10%. A total lot imperviousness greater than 10% is allowed when a study specific to the watershed and/or Municipal Separate Storm Sewer System (MS4) shows that expected soil and vegetation conditions are suitable for infiltration/filtration of the water quality capture volume (WQCV) for a typical site, and the Permittee accepts such study as applicable within its MS4 boundaries. The maximum total lot impervious covered under this exclusion shall be 20%.



(F) **Non-Residential and Non-Commercial Infiltration Conditions:** This exclusion does not apply to residential or commercial sites for buildings. This exclusion applies to applicable development sites for which post-development surface conditions do not result in concentrated stormwater flow during the 80th percentile stormwater runoff event. In addition, post-development surface conditions must not be projected to result in a surface water discharge from the 80th percentile stormwater runoff events. Specifically, the 80th percentile event must be infiltrated and not discharged as concentrated flow. For this exclusion to apply, a study specific to the site, watershed, and/or MS4 must be conducted. The study must show rainfall and soil conditions present within the permitted area; must include allowable slopes, surface conditions, and ratios of impervious area to pervious area; and the Permittee must accept such study as applicable within its MS4 boundaries.

(G) **Sites with Land Disturbance to Undeveloped Land that will Remain Undeveloped:** Permittees may exclude sites with land disturbance to undeveloped land (land with no human-made structures such as buildings or pavement) that will remain undeveloped after construction is complete.

(H) **Stream Stabilization Sites:** Permittees may exclude stream stabilization sites.

(I) **Trails:** Permittees may exclude bike and pedestrian trails. Bike lanes for roadways are not included in this exclusion, unless attached to a roadway that qualifies under another exclusion in this section.

16.3 PROJECTS WITHIN CHERRY CREEK RESERVOIR WATERSHED

New Development and Redevelopment projects must have post-construction SCMs that will prevent or minimize water quality impacts unless activities are excluded from such requirements (see **Section 13.4**). The type of post-construction or permanent SCMs will depend on the disturbance and amount of imperviousness (see definitions for various tiers and Regulation 72 for requirements). The City requires full spectrum detention for sites that disturb one (1) acre or more and that are not excluded or have portions that are excluded unless an approved alternative SCM can be utilized to address the excess runoff volume by infiltration.

16.4 SCM EXCLUDED PROJECTS INSIDE OF CHERRY CREEK RESERVOIR WATERSHED

The following activities are excluded from requirements in **Section 13.3**:

(A) Agricultural Activities; (i.e., agricultural and silvicultural activities generating nonpoint source discharges, including runoff from orchards, cultivated crops, pastures, range lands, and forest lands, but not concentrated animal feeding operations. This exclusion does not extend to the construction of facilities or other activities generating stormwater runoff associated with industrial construction activity).

(B) Emergency and routine repair and maintenance operations for all underground utilities.

(C) Land disturbances at residential or commercial subdivisions that already have adequate Post Construction SCMs installed and operating for the entire subdivision, approved in compliance with this regulation, and with adequate capacity to treat any additional discharges.

(D) Routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

(E) Emergency operations related to flood, fire, or other force majeure that maintain the original line and grade, hydraulic capacity, or original purpose of the facility.





(F) Land disturbance to undeveloped land that will remain undeveloped following disturbance and will be reclaimed in accordance with subsection 72.7.2(b)(5)(ii)(B).

(G) Excluded Roadway Projects.

(H) Large lot single-family development using runoff reduction practices, where the Permittee implements a set of requirements and/or standards for such practices with the intent of meeting WQCV requirements for typical sites and expected conditions, which may be used either in place of or in combination with the site-specific calculations and analysis otherwise required by 72.7.2(c)(6)(ii)(K) for runoff reduction practice CMs.

(I) Underground utility construction, provided that stormwater runoff and erosion from soil and material stockpiles are confined and will not enter the drainage system.

Additionally, the following types of projects are exempted **if requested** and granted exemptions:

- Construction of a sidewalk or driveway.
- Rural road construction and maintenance, provided that the Permittee requires post-construction CMs specific to this activity.
- Trails construction provided that Permittee requires post-construction CMs specific to this activity.

16.5 OTHER PERMANENT SCM DOCUMENTS REQUIRED AS PART OF THE GESC SUBMITTAL

A Post-Construction Checklist shall be submitted for development and redevelopment sites that are subject to the requirements in this *GESC Manual*. The latest version of the Post-Construction Checklist may be found on the City's stormwater website and includes but is not limited to:

- Associated drainage report or letter if less than one (1) acre or there is an existing regional facility.
- Permanent SCM plans meeting USDCM requirements and Regulation 72 where applicable. The City requires full spectrum detention for all Tier 3 or applicable development sites as defined by this Manual.
- Operation and Maintenance (O&M) Plan describing O&M procedures to ensure long-term observation, maintenance, and operation of the SCM. The



documentation shall include frequencies for routine inspections and maintenance activities.

- Documentation of easement or other legal means for accessing SCM for the City access for inspections and oversight.

Permittees are required to submit stormwater detention and infiltration (SDI) spreadsheets to the State Engineers Office to demonstrate there are no impacts to water rights from permanent SCMs. These SDI spreadsheets should be provided to the City as well.

After Permanent SCMs are constructed and ready for City acceptance, a SCM certification letter and as-builts are required to be submitted and approved by the City. Guidance on SCMs and appropriate forms are on the City's stormwater website.

Once the GESC permit is closed and the permanent SCM has been accepted, SCMs are entered into the City's Stormwater Asset Program. Permanent stormwater management is vital to keeping the long-term stormwater impacts from development from impairing water quality in the City. Continued inspections and oversight for SCM is conducted as part of the City's post-construction/ long-term stormwater management program. Information on this dynamic program may be found on the City's stormwater website or are available upon request.































APPENDIX A


GESC Standard Notes and Details

GRADING, EROSION, AND SEDIMENT CONTROL (GESC) GENERAL NOTES

- THE CASTLE PINES OR THEIR REPRESENTATIVES SIGNATURE AFFIXED TO THE GESC PLANS INDICATES THE CASTLE PINES PUBLIC WORKS HAS REVIEWED THE DOCUMENT AND FOUND IT IN GENERAL COMPLIANCE WITH THE CASTLE PINES (CP) GRADING, EROSION AND SEDIMENT CONTROL (GESC) CRITERIA MANUAL. CASTLE PINES, THROUGH ACCEPTANCE OF THIS DOCUMENT, ASSUMES NO RESPONSIBILITY (OTHER THAN AS STATED ABOVE) FOR THE COMPLETENESS AND/OR ACCURACY OF THESE DOCUMENTS.
- THE ADEQUACY OF THIS GESC PLAN LIES WITH THE ORIGINAL DESIGN ENGINEER.
- THE GESC PERMIT SHALL BE CONSIDERED VALID FOR ONE (1) YEARS FROM THE DATE OF ISSUANCE BY CASTLE PINES, AFTER WHICH TIME THE PLAN SHALL BE VOID AND WILL BE SUBJECT TO RENEWAL.
- ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION BY THE CASTLE PINES PUBLIC WORKS OR THEIR REPRESENTATIVES. THE CITY OF CASTLE PINES RESERVES THE RIGHT TO ACCEPT OR REJECT ANY SUCH MATERIALS AND WORKMANSHIP THAT DOES NOT CONFORM TO THE GESC MANUAL, GESC PLAN OR GESC PERMIT.
- THE PLACEMENT OF EROSION AND SEDIMENT CONTROL MEASURES (CMs) SHALL BE IN ACCORDANCE WITH THE CASTLE PINES ACCEPTED GESC PLAN AND THE CP GESC MANUAL, AS AMENDED OR TO CASTLE PINES PROGRAM DOCUMENTS.
- ANY VARIATION IN MATERIAL, TYPE OR LOCATION OF EROSION AND SEDIMENT CONTROL CMs FROM THE CASTLE PINES ACCEPTED GESC PLAN WILL REQUIRE APPROVAL FROM AN ACCOUNTABLE REPRESENTATIVE OF THE CASTLE PINES PUBLIC WORKS.
- AFTER THE GESC PLAN HAS BEEN ACCEPTED, THE GESC PERMIT APPLIED FOR, FEES AND FINANCIAL SECURITY SUBMITTED TO THE CITY, AND THE GESC FIELD MANUAL OBTAINED AND REVIEWED, THE CONTRACTOR MAY INSTALL THE INITIAL-STAGE EROSION AND SEDIMENT CMs INDICATED ON THE ACCEPTED GESC PLAN.
- THE FIRST CM TO BE INSTALLED ON THE SITE SHALL BE CONSTRUCTION FENCE, MARKERS, OR OTHER APPROVED MEANS OF DEFINING THE LIMITS OF CONSTRUCTION, INCLUDING CONSTRUCTION LIMITS ADJACENT TO STREAM CORRIDORS AND OTHER AREAS TO BE PRESERVED.
- AFTER INSTALLATION OF THE OTHER INITIAL-STAGE EROSION AND SEDIMENT CMs, THE PERMITTEE SHALL EMAIL PW REQUESTS TO CASTLEPINESCO.GOV OR CALL CASTLE PINES AT 303-779-3034 TO SCHEDULE AN INITIAL INSPECTION MEETING AT THE PROJECT SITE. THE REQUEST SHALL BE MADE A MINIMUM OF THREE BUSINESS DAYS PRIOR TO THE REQUESTED MEETING TIME. NO CONSTRUCTION ACTIVITIES SHALL BE PLANNED WITHIN 24 HOURS AFTER THE INITIAL INSPECTION MEETING UNLESS OTHERWISE APPROVED.
- THE OWNER OR OWNER'S REPRESENTATIVE, THE GESC MANAGER, THE GENERAL CONTRACTOR, AND THE GRADING SUBCONTRACTOR, IF DIFFERENT FROM THE GENERAL CONTRACTOR, MUST ATTEND THE INITIAL INSPECTION MEETING. IF ANY OF THE REQUIRED PARTICIPANTS FAIL TO ATTEND THE INITIAL INSPECTION MEETING, OR IF THE INSTALLATION OF THE INITIAL CMs ARE NOT APPROVED BY THE CASTLE PINES MS4 INSPECTOR, THE APPLICANT WILL HAVE TO PAY A REINSPECTION FEE, ADDRESS ANY PROBLEMS WITH CM INSTALLATION, AND CALL TO RESCHEDULE THE MEETING, WITH A CORRESPONDING DELAY IN THE START OF CONSTRUCTION.
- CONSTRUCTION SHALL NOT BEGIN UNTIL THE CASTLE PINES EROSION MS4 INSPECTOR APPROVES THE INSTALLATION OF THE INITIAL CMs AND THE APPROVED GESC PERMIT IS ISSUED AND IS IN-HAND ON THE SITE. THE COMPLETED PERMIT WILL BE AVAILABLE WITHIN 24-HOURS AFTER THE INSTALLATION OF THE INITIAL CMs ARE APPROVED. ASSUMING THE FINANCIAL SECURITY AND FEES HAVE BEEN PAID.
- THE GESC MANAGER SHALL STRICTLY ADHERE TO THE CASTLE PINES-APPROVED LIMITS OF CONSTRUCTION AND LIMITS OF DISTURBANCE AT ALL TIMES. THE CASTLE PINES PUBLIC WORKS MUST APPROVE ANY CHANGES TO THE LIMITS OF CONSTRUCTION OR DISTURBANCE AND, AT THE DISCRETION OF THE ENGINEERING DIVISION, ADDITIONAL EROSION/SEDIMENT CONTROLS MAY BE REQUIRED IN ANY ADDITIONAL AREAS OF CONSTRUCTION.
- THE MAXIMUM AREA OF CONSTRUCTION SHALL BE LIMITED TO 40 ACRES (70 ACRES IF APPROVED FOR SOIL MITIGATION OPERATIONS) TO REDUCE THE AMOUNT OF LAND DISTURBED AT ANY ONE TIME UNLESS AN EXEMPTION IS APPROVED FOLLOWING CHERRY CREEK RESERVOIR CONTROL REGULATION 72. LARGER SITES SHALL BE DIVIDED INTO PHASES THAT ARE EACH 40 (OR 70) ACRES OR LESS IN SIZE. THESE PROJECTS SHALL CONDUCT GRADING ACTIVITIES IN ACCORDANCE WITH THE ACCEPTED GESC PLAN. CM INSTALLATION AND APPROVAL BY CASTLE PINES AT THE START AND COMPLETION OF EACH PHASE SHALL BE CONDUCTED IN ACCORDANCE WITH THE PROCEDURES OUTLINED IN THE GESC MANUAL AND/OR GESC FIELD MANUAL.
- PRIOR TO ANY CONSTRUCTION ACTIVITY, THE PERMITTEE SHALL VERIFY THE LOCATION OF EXISTING UTILITIES. FOR INFORMATION, CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO (UNCC) AT 811, 1-800-922-1987, OR WWW.COLORADO811.ORG.
- NATURAL VEGETATION SHALL BE RETAINED AND PROTECTED WHEREVER POSSIBLE. EXPOSURE OF SOIL TO EROSION BY REMOVAL OR DISTURBANCE OF VEGETATION SHALL BE LIMITED TO THE AREA REQUIRED FOR IMMEDIATE CONSTRUCTION OPERATIONS.
- A COPY OF THE GESC PERMIT, ACCEPTED GESC PLANS AND THE GESC REPORT SHALL BE ON SITE AT ALL TIMES AND FOLLOWED AS WRITTEN OR AMENDED FROM INITIAL CONSTRUCTION TO FINAL STABILIZATION.
- THE GESC MANAGER SHALL BE RESPONSIBLE FOR ENSURING THAT THE SITE REMAINS IN COMPLIANCE WITH THE GESC PERMIT AND SHALL BE THE PERMITTEE'S CONTACT PERSON WITH THE CITY FOR ALL MATTERS PERTAINING TO THE GESC PERMIT. THE GESC MANAGER SHALL BE PRESENT AT THE SITE THE MAJORITY OF THE TIME AND SHALL BE AVAILABLE THROUGH A 24-HOUR CONTACT NUMBER. IN THE EVENT THAT THE CONTRACTOR'S GESC MANAGER IS NOT ON SITE AND CANNOT BE REACHED DURING A VIOLATION, THE ALTERNATE GESC MANAGER SHALL BE CONTACTED. IF NEITHER THE GESC MANAGER NOR ALTERNATE GESC MANAGER CAN BE CONTACTED DURING ANY VIOLATION, A STOP WORK ORDER MAY BE ISSUED.
- ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THE SITE THROUGH THE CASTLE PINES-APPROVED ACCESS POINT. A VEHICLE TRACKING CONTROL PAD IS REQUIRED AT ALL ACCESS POINTS ON THE SITE. ADDITIONAL STABILIZED CONSTRUCTION ENTRANCES MAY BE ADDED WITH AUTHORIZATION FROM THE CASTLE PINES PUBLIC WORKS.
- THE GESC MANAGER IS RESPONSIBLE FOR CLEANUP OF SEDIMENT OR CONSTRUCTION DEBRIS TRACKED ONTO ADJACENT PAVED AREAS. PAVED AREAS INCLUDING STREETS ARE TO BE KEPT CLEAN THROUGHOUT BUILD-OUT AND SHALL BE CLEANED, WITH A STREET SWEEPER OR SIMILAR DEVICE, AT FIRST NOTICE OF ACCIDENTAL TRACKING OR AT THE DISCRETION OF THE CASTLE PINES EROSION CONTROL INSPECTOR. STREET WASHING IS NOT ALLOWED. CASTLE PINES RESERVES THE RIGHT TO REQUIRE ADDITIONAL MEASURES TO ENSURE AREA STREETS ARE KEPT FREE OF SEDIMENT AND/OR CONSTRUCTION DEBRIS.
- APPROVED EROSION AND SEDIMENT CMs SHALL BE MAINTAINED AND KEPT IN GOOD REPAIR FOR THE DURATION OF THIS PROJECT. AT A MINIMUM, THE GESC MANAGER OR THEIR DESIGNEE SHALL INSPECT ALL CMs IN ACCORDANCE WITH THE ACCEPTED GESC PLAN AND GESC MANUAL. NON-COMPLIANT ITEMS SHALL BE CORRECTED IMMEDIATELY AFTER THE PERMITTEE(S) NOTICE THE VIOLATION(S) OR ARE NOTIFIED OF THE VIOLATION(S). GENERALLY CASTLE PINES WILL REINSPECT FOR COMPLIANCE WITHIN 48 HOURS OF NOTIFICATION OF NON-COMPLIANCE OR ALLOW THE CONTRACTOR TO SUBMIT AN OPERATOR COMPLIANCE FORM. IF NON-COMPLIANT ITEMS CANNOT BE ADDRESSED WITHIN THE 48 HOUR TIME FRAME, THE CONTRACTOR SHALL PROVIDE TEMPORARY CONTROL MEASURES AN ALTERNATIVE SCHEDULE FOR MS4 INSPECTOR APPROVAL.

- STRAW BALES ARE NOT A CASTLE PINES ACCEPTED SEDIMENT CONTROL MEASURE.
- TOPSOIL SHALL BE STRIPPED AND STOCKPILED IN THE LOCATION SHOWN ON THE ACCEPTED GESC PLAN. THE GESC MANAGER SHALL SCHEDULE AN INSPECTION WITH THE CASTLE PINES EROSION CONTROL INSPECTOR AS SOON AS TOPSOIL STRIPPING IS COMPLETED. FAILURE TO SCHEDULE SUCH INSPECTION OR FAILURE TO STOCKPILE TOPSOIL SHALL RESULT IN ISSUANCE OF A STOP WORK ORDER. THE STOP WORK ORDER SHALL REMAIN IN PLACE UNTIL TOPSOIL IS STOCKPILED ON SITE OR APPROPRIATE SOIL AMENDMENTS ARE STOCKPILED ON SITE.
- BACK OF CURB CUTS/ GRADING DIFFERENTIALS ARE ONLY ALLOWED WITH LOCATION SPECIFIC CITY APPROVAL.
- THE ACCEPTED GESC PLAN MAY REQUIRE CHANGES OR ALTERATIONS AFTER APPROVAL TO MEET CHANGING SITE OR PROJECT CONDITIONS OR TO ADDRESS INEFFICIENCIES IN DESIGN OR INSTALLATION. THE GESC MANAGER SHALL OBTAIN PRIOR APPROVAL FROM THE DESIGN ENGINEER AND CASTLE PINES PUBLIC WORKS OR THEIR REPRESENTATIVES FOR ANY PROPOSED CHANGES.
- LINING OF TEMPORARY SWALES AND DITCHES SHALL BE IN ACCORDANCE WITH THE CP GESC CRITERIA MANUAL.
- NO PERMANENT EARTH SLOPES GREATER THAN 3:1 SHALL BE ALLOWED WITHOUT APPROVAL. ALL SLOPES GREATER THAN 4:1 REQUIRE ECB.
- ANY SETTLEMENT OR SOIL ACCUMULATIONS BEYOND THE LIMITS OF CONSTRUCTION DUE TO GRADING OR EROSION SHALL BE REPAIRED IMMEDIATELY BY THE GESC MANAGER. THE GESC MANAGER SHALL BE HELD RESPONSIBLE FOR OBTAINING ACCESS RIGHTS TO ADJACENT PROPERTY, IF NEEDED, AND REMEDIATING ANY ADVERSE IMPACTS TO ADJACENT WATERWAYS, WETLANDS, PROPERTIES, ETC. RESULTING FROM WORK DONE AS PART OF THIS PROJECT.
- A WATER SOURCE SHALL BE AVAILABLE ON SITE DURING EARTHWORK OPERATIONS AND UTILIZED AS REQUIRED TO MINIMIZE DUST FROM EARTHWORK EQUIPMENT AND WIND.
- SOILS THAT WILL BE STOCKPILED FOR MORE THAN THIRTY (30) DAYS SHALL BE SEEDED AND MULCHED WITHIN FOURTEEN (14) DAYS OF STOCKPILE CONSTRUCTION. NO STOCKPILES SHALL BE PLACED WITHIN ONE HUNDRED (100) FEET OF A DRAINAGE WAY UNLESS APPROVED BY THE CASTLE PINES PUBLIC WORKS.
- ALL CHEMICAL OR HAZARDOUS MATERIAL SPILLS WHICH MAY ENTER WATERS OF THE STATE OF COLORADO, WHICH INCLUDE BUT ARE NOT LIMITED TO, SURFACE WATER, GROUND WATER AND DRY GULLIES OR STORM SEWER LEADING TO SURFACE WATER, SHALL BE IMMEDIATELY REPORTED TO THE CDPHE PER CRS 25-8-601, AND CASTLE PINES. RELEASES OF PETROLEUM PRODUCTS AND CERTAIN HAZARDOUS SUBSTANCES LISTED UNDER THE FEDERAL CLEAN WATER ACT (40 CFR PART 116) MUST BE REPORTED TO THE NATIONAL RESPONSE CENTER AS WELL AS THE CDPHE. CONTACT INFORMATION FOR CDPHE, CASTLE PINES AND THE NATIONAL RESPONSE CENTER CAN BE FOUND IN APPENDIX H OF THE GESC MANUAL, AS AMENDED. SPILLS THAT POSE AN IMMEDIATE RISK TO HUMAN LIFE SHALL BE REPORTED TO 911. FAILURE TO REPORT AND CLEAN UP ANY SPILL MAY RESULT IN ISSUANCE OF A STOP WORK ORDER.
- ALL WORK ON SITE SHALL STAY A MINIMUM OF ONE HUNDRED (100) FEET AWAY FROM ANY DRAINAGEWAY, WETLAND, ETC. UNLESS OTHERWISE NOTED ON AN ACCEPTED GESC PLAN. WHERE FEASIBLE PRE-EXISTING VEGETATION WITHIN FIFTY (50) FEET OF A RECEIVING WATER WILL BE PROTECTED.
- ALL PROJECTS SHALL BALANCE EARTHWORK QUANTITIES ON SITE. IN THE EVENT A VARIANCE IS GRANTED BY THE CITY OF CASTLE PINES TO ALLOW IMPORT OR EXPORT OF MATERIAL, THE PERMITTEE SHALL HAVE A GESC PERMIT IN HAND FOR THE IMPORT OR EXPORT SITE PRIOR TO ANY TRANSPORTING OF EARTHEN MATERIAL. THE GESC MANAGER SHALL NOTIFY THE CASTLE PINES MS4 INSPECTOR OF THE LOCATION AND PERMIT NUMBERS OF BOTH THE EXPORTING AND IMPORTING SITES PRIOR TO ANY IMPORT/EXPORT OPERATIONS.
- THE USE OF REBAR, STEEL STAKES OR STEEL FENCE POSTS FOR STAKING OR SUPPORT OF ANY EROSION OR SEDIMENT CM IS PROHIBITED (EXCEPT STEEL TEE-POSTS FOR USE IN SUPPORTING CONSTRUCTION FENCE AND STAKING FOR PORTABLE TOILETS).
- THE CLEANING OF CONCRETE DELIVERY TRUCK CHUTES IS RESTRICTED TO APPROVED CONCRETE WASH OUT LOCATIONS ON THE JOB SITE. THE DISCHARGE OF WATER CONTAINING WASTE CONCRETE TO THE STORM SEWER SYSTEM IS PROHIBITED. ALL CONCRETE WASTE SHALL BE PROPERLY CLEANED UP AND DISPOSED AT AN APPROPRIATE LOCATION.
- ALL DEWATERING ON SITE SHALL BE COORDINATED WITH A CASTLE PINES MS4 INSPECTOR AND BE FREE OF SEDIMENT IN ACCORDANCE WITH THE GESC MANUAL.
- ALL PERMANENT INSTALLATIONS OF PIPES FOR STORM SEWERS, SLOPE DRAINS, AND CULVERTS, TOGETHER WITH RIPRAP APRONS OR OTHER INLET AND OUTLET PROTECTION, REQUIRE INSPECTION BY CASTLE PINES PUBLIC WORKS REPRESENTATIVE (SEPARATE FROM GESC INSPECTIONS).
- ALL DISTURBED AREAS SHALL BE DRILL SEEDED AND CRIMP MULCHED IN ACCORDANCE WITH THE GESC CRITERIA MANUAL WITHIN THIRTY (30) DAYS OF INITIAL EXPOSURE OR WITHIN FOURTEEN (14) DAYS OF SUBSTANTIAL COMPLETION (AS DEFINED BY CASTLE PINES) OF AN AREA, WHICHEVER IS LESS. THIS MAY REQUIRE MULTIPLE MOBILIZATIONS FOR SEEDING AND MULCHING. STABILIZATION (TEMPORARY OR PERMANENT) IS REQUIRED FOR AREAS THAT ARE INACTIVE FOR 14 DAYS OR LONGER.
- ALL SLOPES STEEPER THEN 4:1 REQUIRE EROSION CONTROL BLANKETING.
- HYDRAULIC SEEDING AND HYDRAULIC MULCHING ARE NOT AN ACCEPTABLE METHOD OF SEEDING OR MULCHING FOR PERMANENT STABILIZATION IN CASTLE PINES WITHOUT APPROVAL.
- A MS4 INSPECTION SHALL BE CONDUCTED IN CONJUNCTION WITH INITIAL ACCEPTANCE.
- GESC MANAGER SHALL PROVIDE AND MAINTAIN ANCHORED PORTABLE TOILETS AND TRASH DUMPSTERS THAT ARE REGULARLY SERVICED FOR THE PROJECT.

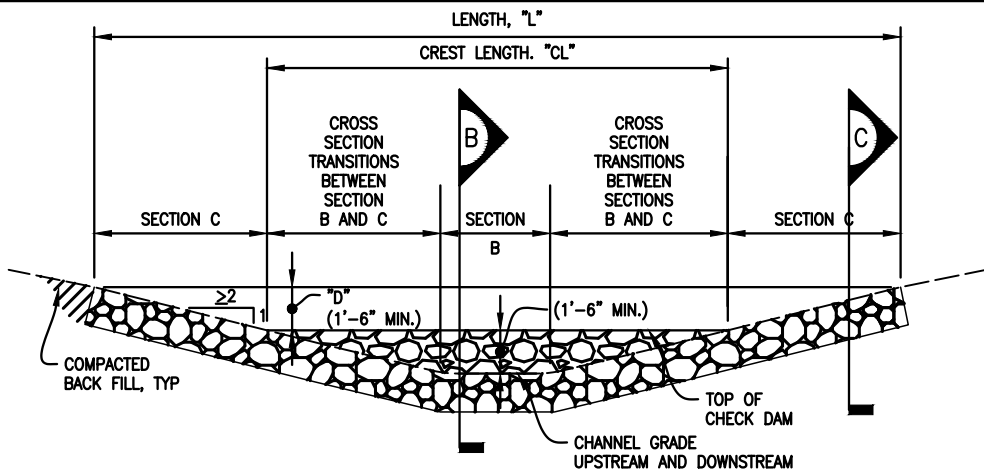
DETAIL NO.	SHEET NO.		CM LEGEND
1	2		CD CHECK DAM
2	2		CB COMPOST BLANKET
3	2		CFB COMPOST FILTER BERM
4	3		CWA CONCRETE WASHOUT AREA
5	3		CF CONSTRUCTION FENCE
6	3		CM CONSTRUCTION MARKER
7	3		CS CURB SOCK
8	4		DW DEWATERING
9	4		DD DIVERSION DITCH
10	5		ECB EROSION CONTROL BLANKET
11	6		IP INLET PROTECTION
12	7		RCD REINFORCED CHECK DAM
13	7		RRB REINFORCED ROCK BERM
14	7		RRC RRB FOR CULVERT PROTECTION
15	8		SB SEDIMENT BASIN
16	9		SCL SEDIMENT CONTROL LOG
17	9		ST SEDIMENT TRAP
18	10		SM SEEDING AND MULCHING
19	11		SF SILT FENCE
20	11		SSA STABILIZED STAGING AREA
21	11		SR SURFACE ROUGHENING
22	12		TSD TEMPORARY SLOPE DRAIN
23	12		TSC TEMPORARY STREAM CROSSING
24	13		TER TERRACING
25	13		VTC VEHICLE TRACKING CONTROL
26	13		WW VTC WITH WHEEL WASH
	14		ROCK AND RIPRAP GRADATIONS
			LOC LIMITS OF CONSTRUCTION

Sheet Revisions				NOTE: SCALES SHOWN ARE FOR 22"x34" SHEETS; ADJUST ACCORDINGLY FOR 11"x17" SHEETS.	 CITY OF CASTLE PINES • 360 VILLAGE SQUARE LANE, SUITE B • CASTLE PINES, CO 80108
<input type="checkbox"/>	1	CASTLE PINES REISSUE	12/19		
<input type="checkbox"/>	2	CASTLE PINES REISSUE	06/20		
<input type="checkbox"/>	3	CASTLE PINES REISSUE FOR CP GESC	06/21		
<input type="checkbox"/>					

GRADING, EROSION, AND SEDIMENT CONTROL

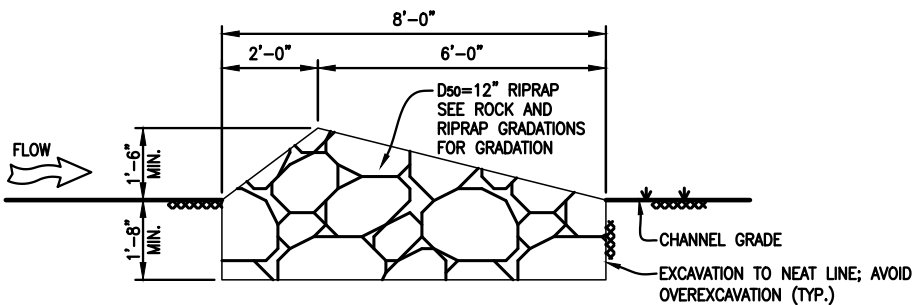
GESC PLAN STANDARD NOTES AND DETAILS

SHEET 1 OF 14



ELEVATION

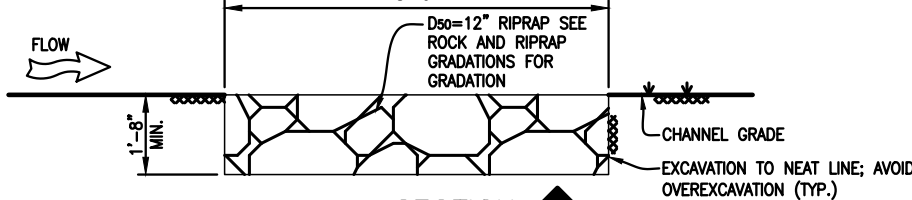
SCALE: 1" = 5'-0"



SECTION B

SCALE: 1/2" = 1'-0"

8'-0"



SECTION C

SCALE: 1/2" = 1'-0"

8'-0"

CHECK DAM INSTALLATION NOTES

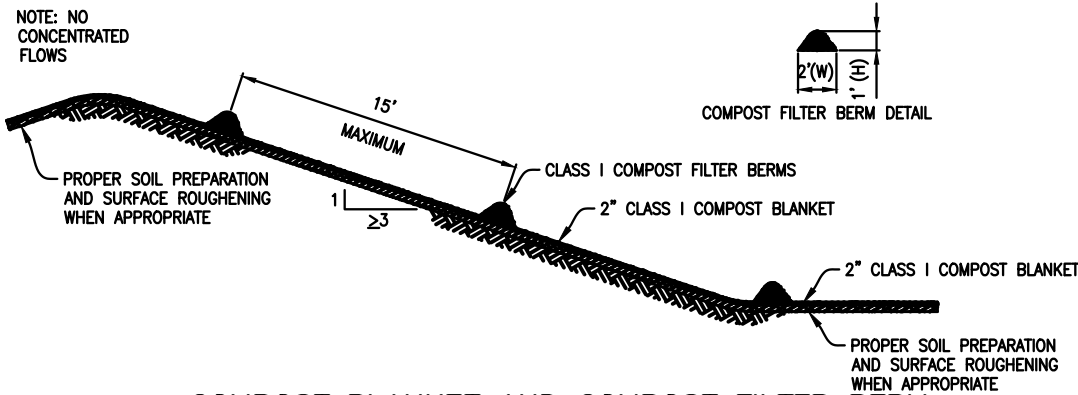
- SEE PLAN VIEW FOR:
 - LOCATIONS OF CHECK DAMS.
 - CHECK DAM TYPE (CHECK DAM OR REINFORCED CHECK DAM).
 - LENGTH, "L", CREST LENGTH, "CL", AND DEPTH, "D".
- CHECK DAMS INDICATED ON INITIAL GESC PLAN SHALL BE INSTALLED AFTER CONSTRUCTION FENCE, BUT PRIOR TO ANY UPSTREAM LAND-DISTURBING ACTIVITIES.
- RIPRAP UTILIZED FOR CHECK DAMS SHALL HAVE A D₅₀ MEDIAN STONE SIZE OF 12".
- RIPRAP PAD SHALL BE TRENCHED INTO THE GROUND A MINIMUM OF 1'-8".
- THE ENDS OF THE CHECK DAM SHALL BE A MINIMUM OF 1'-6" HIGHER THAN THE CENTER OF THE CHECK DAM.

CHECK DAM MAINTENANCE NOTES

- THE RECOMMENDED INSPECTION FREQUENCY FOR CHECK DAMS IS WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT AS NECESSARY.
- SEDIMENT ACCUMULATED UPSTREAM OF CHECK DAMS SHALL BE REMOVED WHEN THE SEDIMENT DEPTH UPSTREAM OF CHECK DAM IS WITHIN 1/2 OF THE HEIGHT OF THE CREST.
- CHECK DAMS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND VEGETATED COVER IS APPROVED BY THE CITY.
- WHEN CHECK DAMS ARE REMOVED, EXCAVATIONS SHALL BE FILLED WITH SUITABLE COMPACTED BACKFILL. ANY DISTURBED AREA SHALL BE SEEDED AND MULCHED AND COVERED WITH EROSION CONTROL BLANKET OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE CITY.

CD CHECK DAM

1



COMPOST BLANKET AND COMPOST FILTER BERM

SCALE: 1" = 5'-0"

COMPOST BLANKET NOTES:

- SEE PLAN VIEW FOR AREA OF COMPOST BLANKET.
- MAY BE USED IN PLACE OF STRAW MULCH OR EROSION CONTROL BLANKET IN AREAS WHERE ACCESS IS DIFFICULT DUE TO LANDSCAPING OR OTHER OBJECTS OR IN AREAS WHERE A SMOOTH TURF GRASS FINISH IS DESIRED.
- SHALL ONLY BE UTILIZED IN AREAS WHERE SHEET FLOW CONDITIONS PREVAIL; SHALL BE PROHIBITED IN AREAS OF POSSIBLE CONCENTRATED FLOW.
- SOIL PREPARATION SHALL BE COMPLETE PER THE SPECIFICATIONS OUTLINED IN THESE CRITERIA PRIOR TO APPLICATION.
- WHEN TURF GRASS FINISH IS NOT DESIRED, SURFACE ROUGHENING ON SLOPES SHALL TAKE PLACE PRIOR TO APPLICATION.
- SHALL BE EVENLY APPLIED AT A DEPTH OF 2 INCH.
- MAYBE APPLIED UTILIZING PNEUMATIC BLOWER, OR BY HAND.
- SEEDING SHALL BE DRILLED PRIOR TO THE APPLICATION OF COMPOST OR SEED MAY BE COMBINED AND BLOWN WITH THE PNEUMATIC BLOWER.
- COMPOST FILTER BERM SHALL BE UTILIZED ON SLOPES WITH A MAXIMUM SPACING OF 15 FEET PER THE REQUIREMENTS FOUND IN THE COMPOST FILTER BERM SECTION.
- THE RECOMMENDED INSPECTION FREQUENCY IS WEEKLY, DURING AND AFTER ANY STORM EVENT.
- COMPOST USED IN THE APPLICATION OF THE COMPOST BLANKET SHALL BE A CLASS I COMPOST AS DEFINED BY THE FOLLOWING PHYSICAL, CHEMICAL, AND BIOLOGICAL PARAMETERS:

PARAMETERS	CLASS I COMPOST FOR COMPOST BLANKET
MINIMUM STABILITY INDICATOR	STABLE TO VERY STABLE
SOLUBLE SALTS	MAXIMUM 5mmhos/cm
PH	6.0 - 8.0
AG INDEX	> 10
MATURITY INDICATOR EXPRESSED AS PERCENTAGE OF GERMINATION/VIGOR	80+/80+
MATURITY INDICATOR EXPRESSED AS AMMONIA N/ NITRATE N RATIO	< 4
MATURITY INDICATOR EXPRESSED AS CARBON TO NITROGEN RATIO	20:1
TESTED FOR CLOPYRALID	YES/NEGATIVE RESULT
MOISTURE CONTENT	30-60 %
ORGANIC MATTER CONTENT	25-45 % OF DRY WEIGHT
PARTICLE SIZE DISTRIBUTION	3" (75mm) 100% PASSING 1" (25mm) 95% TO 100% PASSING 3/4" (19mm) 85% TO 90% PASSING 3/8" (9.5mm) 50% TO 60% PASSING #4 20 TO 35% PASSING
PRIMARY, SECONDARY NUTRIENTS; TRACE ELEMENT	MUST BE REPORTED
TESTING AND TEST REPORT SUBMITTAL REQUIREMENTS	STA + CLOPYRALID
ORGANIC MATTER PER CUBIC YARD	MUST REPORT
CHEMICAL CONTAMINANTS	MEET OR EXCEED US EPA CLASS A STANDARD, 40 CFR 503.1 TABLES 1 & 3 LEVELS
MINIMUM MANUFACTURING/PRODUCTION REQUIREMENT	FULLY PERMITTED UNDER COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, HAZARDOUS MATERIALS AND WASTE MANAGEMENT DIVISION
RISK FACTOR RELATING TO PLANT GERMINATION AND HEALTH	LOW

NOTE: CLOPYRALID IS THE COMMON NAME OF A HERBICIDE THAT KILLS BROAD-LEAVED WEEDS SUCH AS DANDELIONS, CLOVER AND THISTLE.

CB COMPOST BLANKET

2

COMPOST FILTER BERM NOTES:

- SEE PLAN VIEW FOR LENGTH OF COMPOST FILTER BERM.
- SHALL BE APPLIED TO ALL SLOPES RECEIVING A COMPOST BLANKET AT 15' INCREMENTS.
- FILTER BERMS SHALL RUN PARALLEL TO THE CONTOUR.
- FILTER BERMS SHALL BE A MINIMUM OF 1' H x 2' W.
- FILTER BERMS SHALL BE APPLIED UTILIZING PNEUMATIC BLOWER, OR BY HAND.
- SHALL ONLY BE UTILIZED IN AREAS WHERE SHEET FLOW CONDITIONS PREVAIL; SHALL BE PROHIBITED IN AREAS OF POSSIBLE CONCENTRATED FLOW.
- SOIL PREPARATION SHALL BE COMPLETE PER THE SPECIFICATIONS OUTLINED IN THESE CRITERIA PRIOR TO APPLICATION.
- WHEN TURF GRASS FINISH IS NOT DESIRED, SURFACE ROUGHENING ON SLOPES SHALL TAKE PLACE PRIOR TO APPLICATION.
- SEEDING SHALL BE DRILLED BEFORE THE APPLICATION OF COMPOST OR SEED MAY BE COMBINED AND BLOWN WITH THE PNEUMATIC BLOWER.
- THE RECOMMENDED INSPECTION FREQUENCY IS WEEKLY, DURING AND AFTER ANY STORM EVENT.
- COMPOST USED IN THE APPLICATION OF THE COMPOST BLANKET SHALL BE A CLASS I COMPOST AS DEFINED BY THE FOLLOWING PHYSICAL, CHEMICAL, AND BIOLOGICAL PARAMETERS:

PARAMETERS	CLASS I COMPOST FOR COMPOST FILTER BERM
MINIMUM STABILITY INDICATOR	STABLE TO VERY STABLE
SOLUBLE SALTS	MAXIMUM 5mmhos/cm
PH	6.0 - 8.0
AG INDEX	> 10
MATURITY INDICATOR EXPRESSED AS PERCENTAGE OF GERMINATION/VIGOR	80+/80+
MATURITY INDICATOR EXPRESSED AS AMMONIA N/ NITRATE N RATIO	< 4
MATURITY INDICATOR EXPRESSED AS CARBON TO NITROGEN RATIO	20:1
TESTED FOR CLOPYRALID	YES/NEGATIVE RESULT
MOISTURE CONTENT	30-60 %
ORGANIC MATTER CONTENT	25-45 % OF DRY WEIGHT
PARTICLE SIZE DISTRIBUTION	3" (75mm) 100% PASSING 1" (25mm) 95% TO 100% PASSING 3/4" (19mm) 85% TO 90% PASSING 3/8" (9.5mm) 50% TO 60% PASSING #4 20 TO 35% PASSING
PRIMARY, SECONDARY NUTRIENTS; TRACE ELEMENT	MUST BE REPORTED
TESTING AND TEST REPORT SUBMITTAL REQUIREMENTS	STA + CLOPYRALID
ORGANIC MATTER PER CUBIC YARD	MUST REPORT
CHEMICAL CONTAMINANTS	MEET OR EXCEED US EPA CLASS A STANDARD, 40 CFR 503.1 TABLES 1 & 3 LEVELS
MINIMUM MANUFACTURING/PRODUCTION REQUIREMENT	FULLY PERMITTED UNDER COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, HAZARDOUS MATERIALS AND WASTE MANAGEMENT DIVISION
RISK FACTOR RELATING TO PLANT GERMINATION AND HEALTH	LOW

NOTE: IF A BIOSOLID COMPOST IS TO BE UTILIZED IT SHALL BE PRODUCED BY A FACILITY IN POSSESSION OF A VALID NOTICE OF AUTHORIZATION (NOA) FOR THE UNRESTRICTED USE AND DISTRIBUTION BY THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT. THE NOA SHALL BE PROVIDED UPON REQUEST TO CASTLE PINES.

NOTE: A LAB TEST DETAILING THE CHEMICAL, PHYSICAL, AND BIOLOGICAL PARAMETERS SHALL BE PROVIDED UPON REQUEST BY CASTLE PINES.

CFB COMPOST FILTER BERM

3

Sheet Revisions			
<input type="checkbox"/>	1	CASTLE PINES REISSUE	12/19
<input type="checkbox"/>	2	CASTLE PINES REISSUE	06/20
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<input type="checkbox"/>			

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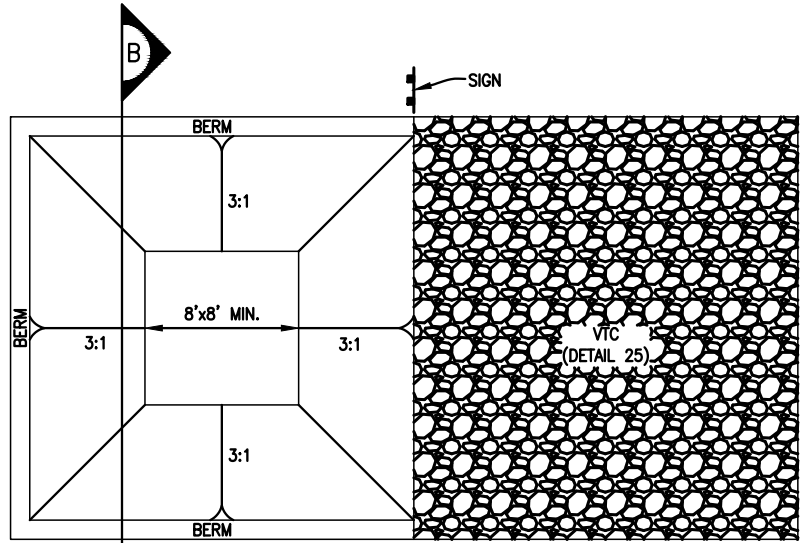


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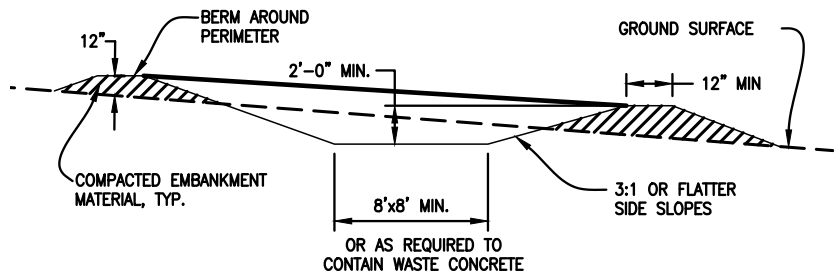
GRADING, EROSION, AND
SEDIMENT CONTROL

GESC PLAN
STANDARD NOTES
AND DETAILS

SHEET
2 OF 14



PLAN
SCALE: 1" = 5'-0"



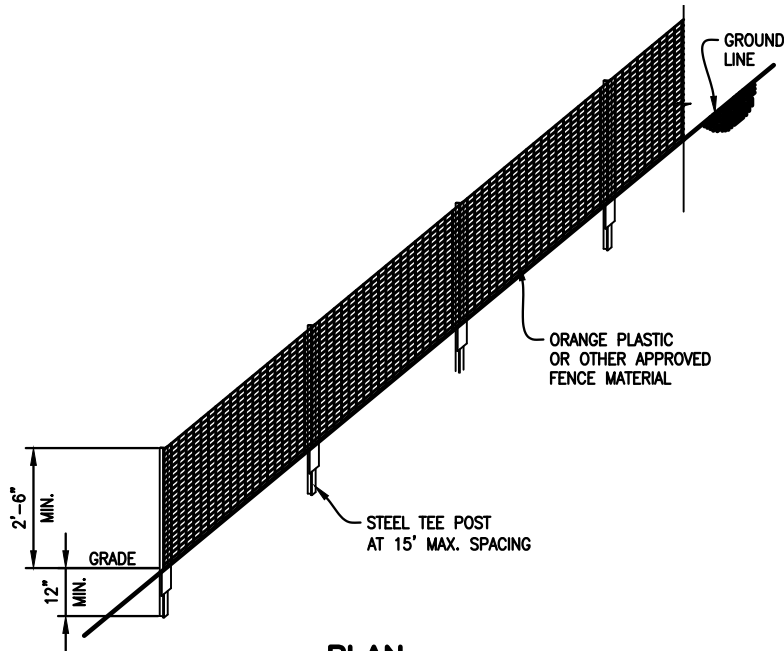
SECTION B
SCALE: 1" = 5'-0"

CONCRETE WASHOUT AREA INSTALLATION NOTES

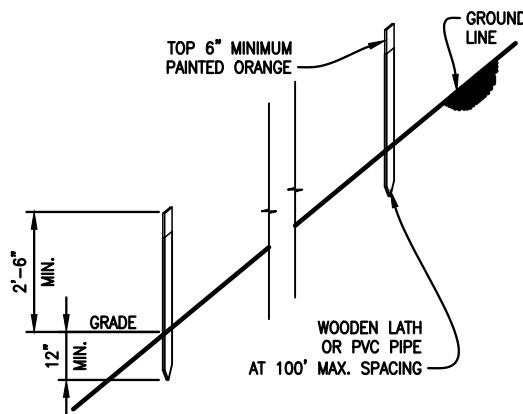
1. SEE PLAN VIEW FOR:
 - LOCATIONS OF CONCRETE WASHOUT AREA.
2. THE CONCRETE WASHOUT AREA SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT ON SITE.
3. VEHICLE TRACKING CONTROL (DETAIL 25) IS REQUIRED AT THE ACCESS POINT.
4. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE WASHOUT AREA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CONCRETE WASHOUT AREA TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS.
5. EXCAVATED MATERIAL SHALL BE UTILIZED IN PERIMETER BERM CONSTRUCTION.
6. DURABLE PORTABLE CONCRETE WASHOUT BASINS OR TUBS MAY BE USED WITH THE APPROVAL OF THE EROSION CONTROL INSPECTOR.

CONCRETE WASHOUT AREA MAINTENANCE NOTES

1. THE CONCRETE WASHOUT AREA SHALL BE REPAIRED AND ENLARGED OR CLEANED OUT AS NECESSARY TO MAINTAIN CAPACITY FOR WASTED CONCRETE.
2. AT THE END OF CONSTRUCTION, ALL CONCRETE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF AT AN APPROVED WASTE SITE.
3. WHEN THE CONCRETE WASHOUT AREA IS REMOVED, THE DISTURBED AREA SHALL BE DRILL SEEDED AND CRIMP MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE CITY.
4. RECOMMENDED INSPECTION FREQUENCY IS WEEKLY, DURING AND AFTER ANY STORM EVENT.



PLAN
SCALE: 1/2" = 1'-0"



(ALTERNATIVE TO CONSTRUCTION FENCE)
SCALE: 1/2" = 1'-0"

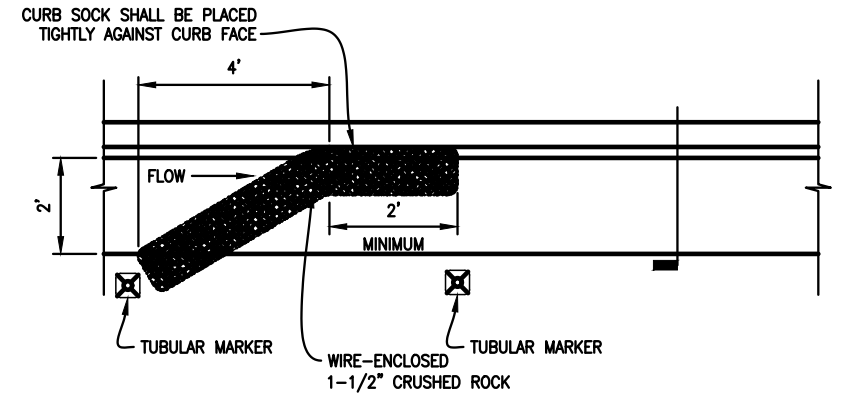


CONSTRUCTION FENCE INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
 - TYPE OF CONSTRUCTION LIMIT INDICATOR (FENCE OR MARKERS).
 - LOCATION AND LENGTH OF FENCE OR LINE OF MARKERS.
2. CONSTRUCTION FENCE OR MARKERS INDICATED ON INITIAL GESC PLAN SHALL BE INSTALLED PRIOR TO OTHER CMs AND ANY LAND-DISTURBING ACTIVITIES.
3. STEEL TEE POSTS SHALL BE UTILIZED FOR SUPPORT OF CONSTRUCTION FENCE. MAXIMUM SPACING FOR TEE POSTS SHALL BE 15'.

CONSTRUCTION FENCE MAINTENANCE NOTES

1. ANY DAMAGED FENCE OR MARKERS SHALL BE REPAIRED ON A DAILY BASIS.
2. FENCE OR MARKERS SHALL BE REMOVED AT THE END OF CONSTRUCTION. IF ANY DISTURBED AREA EXISTS AFTER FENCE REMOVAL, IT SHALL BE DRILL SEEDED AND CRIMP MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE CITY.



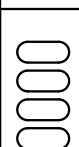
MAXIMUM SPACING ALONG STREET GRADE	
STREET SLOPE	CURB SOCK SPACING (FT.)
0.5%	100
1.0%	100
2.0%	75
3.0%	50
4.0%	50
5.0%	50
6.0%	25
7.0%	25
8.0%	25

CURB SOCK INSTALLATION NOTES

1. SEE PLAN VIEW FOR LOCATION OF CURB SOCK.
2. CURB SOCKS INDICATED ON THE GESC PLAN SHALL BE INSTALLED PRIOR TO ANY UPSTREAM LAND DISTURBING ACTIVITIES.
3. CRUSHED ROCK SHALL BE FRACTURED FACE (ALL SIDES) AND SHALL COMPLY WITH THE GRADATION SHOWN ON SHEET 1 (1 1/2').
4. WIRE MESH SHALL BE FABRICATED OF 20 GAUGE WIRE TWISTED INTO A MESH WITH A MAXIMUM OPENING OF 1.0 INCH (COMMONLY TERMED "CHICKEN WIRE"). ROLL WIDTH SHALL BE 48 INCHES.
5. WIRE MESH SHALL BE SECURED USING "HOG RINGS" OR WIRE TIES AT 6-INCH CENTERS ALONG ALL JOINTS AND 2-INCH CENTERS ON THE ENDS.
6. TUBULAR MARKERS SHALL MEET REQUIREMENTS OF MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), AS AMENDED.
7. THE TOP OF THE CURB SOCK SHALL BE 1/2" TO 1" BELOW TOP OF CURB.
8. CURB SOCK SHALL BE CONSTRUCTED IN ONE PIECE.

CURB SOCK MAINTENANCE NOTES

1. THE RECOMMENDED INSPECTION FREQUENCY FOR CURB SOCKS IS WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT AS NECESSARY.
2. SEDIMENT ACCUMULATED UPSTREAM OF CURB SOCK SHALL BE REMOVED WHEN THE SEDIMENT DEPTH UPSTREAM OF THE CURB SOCK IS WITHIN 2 1/2" OF THE CREST.
3. CURB SOCKS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND GRASS COVER IS APPROVED, UNLESS THE CITY APPROVES EARLIER REMOVAL OF CURB SOCKS IN STREETS.



Sheet Revisions

1	CASTLE PINES REISSUE	12/19
2	CASTLE PINES REISSUE	06/20
3	CASTLE PINES REISSUE FOR CP GESC	06/21

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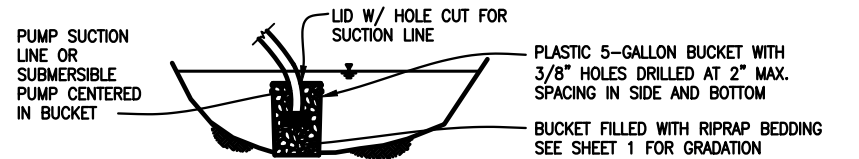


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GRADING, EROSION, AND
SEDIMENT CONTROL

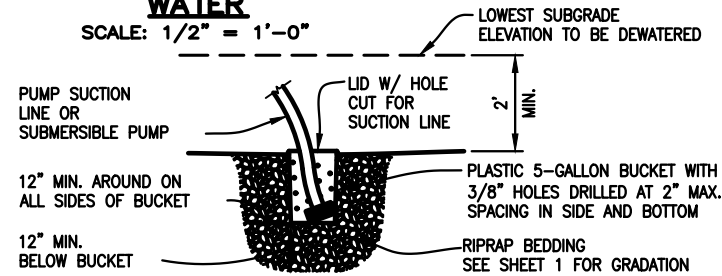
GESC PLAN
STANDARD NOTES
AND DETAILS

SHEET
3 OF 14



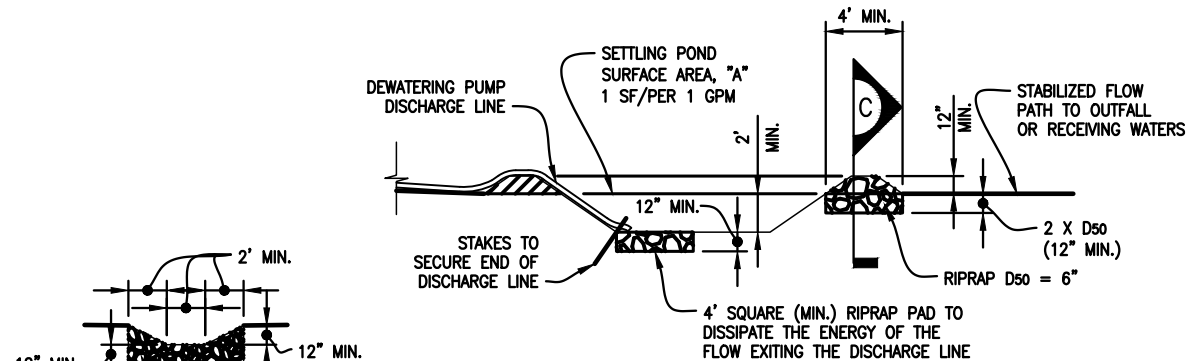
ALTERNATIVE FOR DRAINING POND ALREADY FILLED WITH WATER

SCALE: 1/2" = 1'-0"



DEWATERING SUMP FOR SUBMERSIBLE PUMP

SCALE: 1/2" = 1'-0"



SUMP DISCHARGE SETTLING BASIN

SCALE: 1" = 5'-0"

BASIN OUTLET - SECTION C

SCALE: 1" = 5'-0"

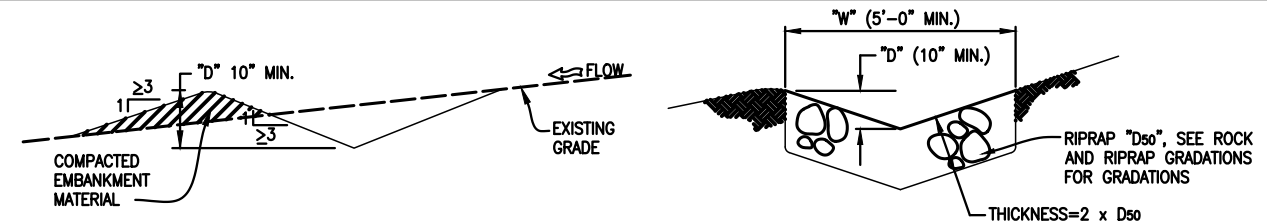
DEWATERING INSTALLATION NOTES

1. THE PERMITTEE(S) SHALL SCHEDULE AN ONSITE INSPECTION WITH THE EROSION CONTROL INSPECTOR PRIOR TO ANY SITE DEWATERING OPERATIONS BEGIN.
2. THE GESC MANAGER SHALL OBTAIN A CONSTRUCTION DEWATERING PERMIT (DEWATERING PERMIT) FROM THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE) PRIOR TO ANY DEWATERING OPERATIONS THAT REQUIRE A DEWATERING PERMIT.
3. AT A MINIMUM, THE DEWATERING CMs SHALL CONSIST OF THE FOLLOWING:
PRE-FILTER ON THE SUCTION END OF THE PUMP/HOSE.
FILTER BMP PRIOR TO FINAL DISCHARGE, AND
ENERGY DISSIPATING CM AT THE DISCHARGE END OF THE HOSE/PUMP.
4. THE TYPE AND PLACEMENT OF DEWATERING CONTROLS SHALL BE COORDINATED WITH, AND APPROVED BY, THE EROSION CONTROL INSPECTOR PRIOR TO THE DISCHARGE OF ANY WATER.

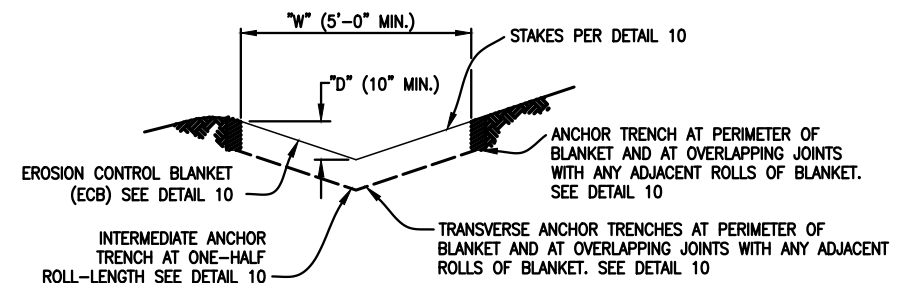
DEWATERING MAINTENANCE NOTES

1. THE RECOMMENDED INSPECTION FREQUENCY IS HOURLY FOR DEWATERING SYSTEMS AND PERFORM ANY NECESSARY REPAIRS OR MAINTENANCE.
2. TEMPORARY SETTLING BASINS SHALL BE REMOVED WHEN NO LONGER NEEDED FOR DEWATERING OPERATIONS. ANY DISTURBED AREA SHALL BE DRILL SEEDED AND CRIMP MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY CASTLE PINES.

DW DEWATERING **8**

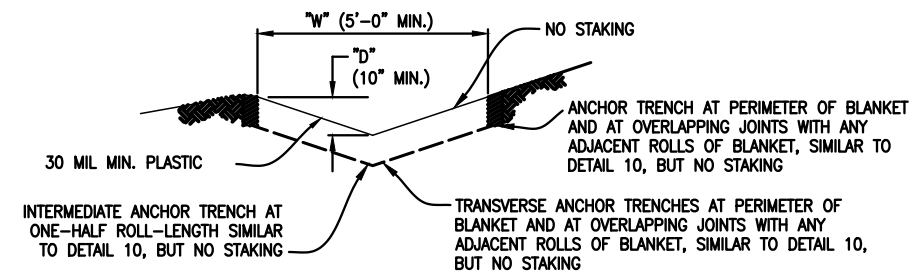


UNLINED
LONGITUDINAL SLOPE $\leq 0.5\%$
SCALE: 1/2" = 1'-0"



EROSION CONTROL BLANKET (ECB) LINED

LONGITUDINAL SLOPE 0.5% TO 3%
SCALE: 1/2" = 1'-0"



PLASTIC LINED

LONGITUDINAL SLOPE 3% TO 33%
SCALE: 1/2" = 1'-0"


DIVERSION DITCH INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
- LOCATION OF DIVERSION DITCH.
- TYPE OF DITCH (UNLINED, ECB LINED, PLASTIC LINED OR RIPRAP LINED).
- LENGTH OF EACH TYPE OF DITCH.
- DEPTH, "D", AND WIDTH, "W" DIMENSIONS.
- FOR ECB LINED DITCH, EROSION CONTROL BLANKET TYPE (SEE DETAIL 10).
- FOR RIPRAP LINED DITCH, SIZE OF RIPRAP, "D50".
2. SEE DRAINAGE PLANS FOR DETAILS OF ANY PERMANENT CONVEYANCE FACILITIES OR DIVERSION DITCHES EXCEEDING A 2-YEAR FLOW RATE OF 10 CFS.
3. DIVERSION DITCHES INDICATED ON INITIAL GESC PLAN SHALL BE INSTALLED PRIOR TO ANY LAND-DISTURBING ACTIVITIES.
4. FOR ECB LINED DITCHES, INSTALLATION OF EROSION CONTROL BLANKET SHALL CONFORM TO THE REQUIREMENTS OF DETAIL 10.
5. IN LOCATIONS WHERE CONSTRUCTION TRAFFIC MUST CROSS A DIVERSION DITCH, THE PERMITTEES SHALL INSTALL A TEMPORARY CULVERT WITH A MINIMUM DIAMETER OF 12-INCHES.

DIVERSION DITCH MAINTENANCE NOTES

1. THE RECOMMENDED INSPECTION FREQUENCY FOR DIVERSION DITCHES IS WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT AS NECESSARY.
2. DIVERSION DITCHES ARE TO REMAIN IN PLACE UNTIL THE END OF CONSTRUCTION, OR, IF APPROVED BY THE CITY, LEFT IN PLACE.
3. IF DIVERSION DITCHES ARE REMOVED, THE DISTURBED AREA SHALL BE DRILL SEEDED AND CRIMP MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE CITY.

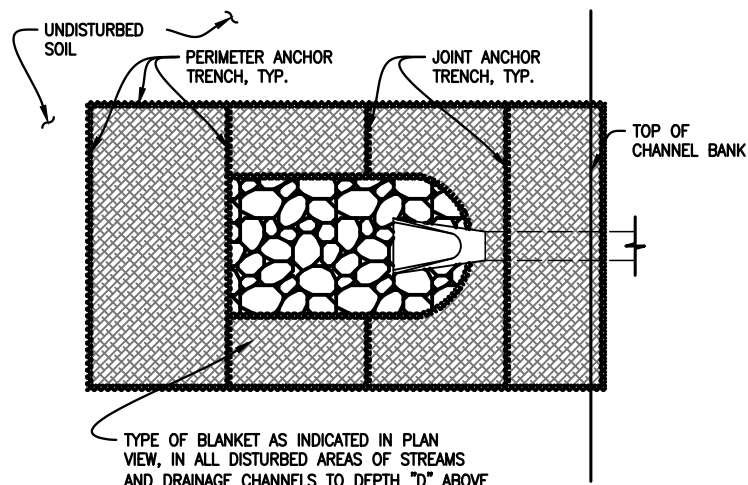
DD DIVERSION DITCH **9**

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<input type="checkbox"/>	1	CASTLE PINES REISSUE	12/19		
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<input type="checkbox"/>					

GRADING, EROSION, AND
SEDIMENT CONTROL

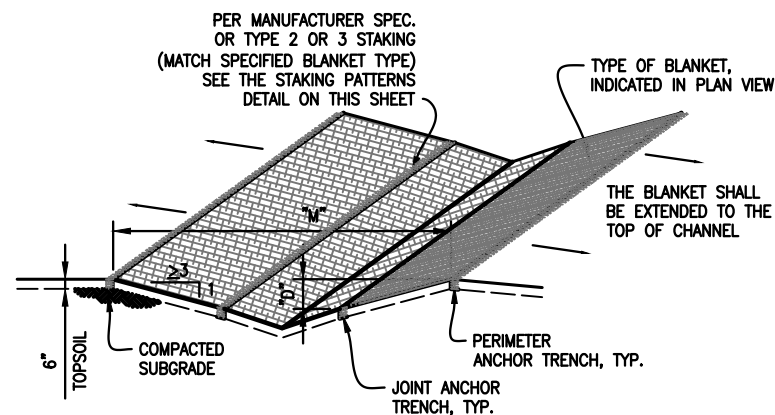
GESC PLAN
STANDARD NOTES
AND DETAILS

SHEET
4 OF 14



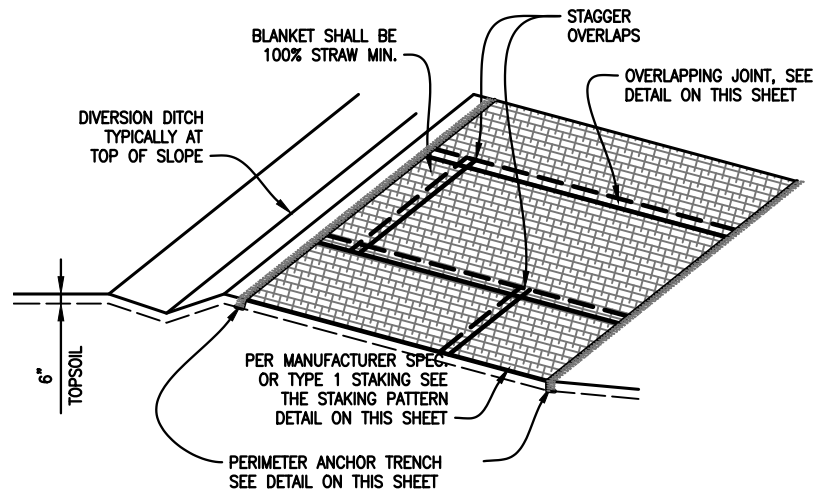
IN DISTURBED AREAS OF STREAMS AND DRAINAGE CHANNELS

SCALE: 1" = 5'-0"



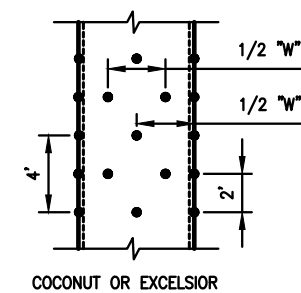
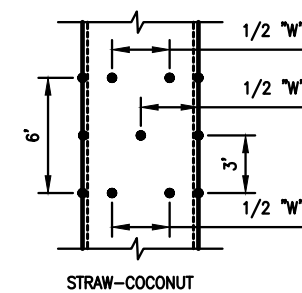
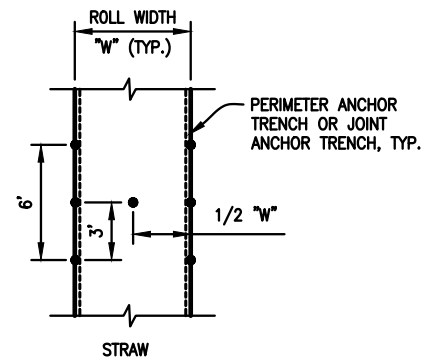
IN DIVERSION DITCH OR SMALL DITCH DRAINAGEWAY

SCALE: 1" = 5'-0"



OUTSIDE OF STREAMS AND DRAINAGE CHANNELS

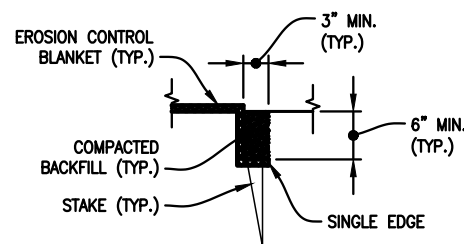
SCALE: 1" = 5'-0"



STAKING PATTERNS

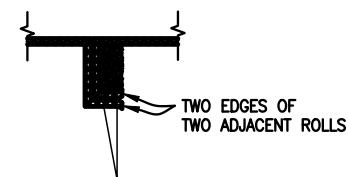
SCALE: 1" = 5'-0"

SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATION. IF NO MANUFACTURER'S SPECIFICATION IS AVAILABLE USE THE ACCEPTABLE STAKING PATTERN (AS SHOWN ABOVE),

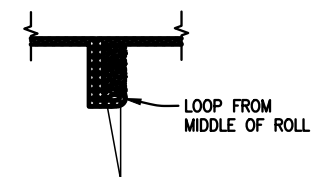


PERIMETER ANCHOR TRENCH JOINT ANCHOR TRENCH

SCALE: 1" = 1'-0"

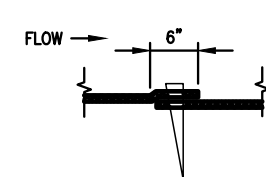


SCALE: 1" = 1'-0"



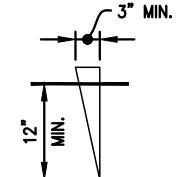
INTERMEDIATE ANCHOR TRENCH

SCALE: 1" = 5'-0"



OVERLAPPING JOINT

SCALE: 1" = 1'-0"



WOOD STAKE DETAIL

SCALE: 1" = 1'-0"
MINIMUM THICKNESS 1/2"

EROSION CONTROL BLANKET INSTALLATION NOTES

- SEE PLAN VIEW FOR:
 - LOCATION OF PERIMETER OF EROSION CONTROL BLANKET.
 - TYPE OF BLANKET (STRAW, STRAW-COCONUT, COCONUT, OR EXCELSIOR).
 - AREA "A" IN SQUARE YARDS OF EACH TYPE OF BLANKET.
- ALL EROSION CONTROL BLANKETS AND NETTING SHALL BE MADE OF 100% NATURAL AND BIODEGRADABLE MATERIAL; NO PLASTIC OR OTHER SYNTHETIC MATERIAL, EVEN IF PHOTO DEGRADABLE, SHALL BE ALLOWED.
- IN AREAS WHERE EROSION CONTROL BLANKET IS SHOWN ON THE PLANS, THE PERMITTEE SHALL PLACE TOPSOIL AND PERFORM FINAL GRADING, SURFACE PREPARATION, AND SEEDING BELOW THE BLANKET IN ACCORDANCE WITH THE REQUIREMENTS OF DETAIL 12, SEEDING AND MULCHING. SUBGRADE SHALL BE SMOOTH AND MOIST PRIOR TO BLANKET INSTALLATION AND THE BLANKET SHALL BE IN FULL CONTACT WITH SUBGRADE, NO GAPS OR VOIDS SHALL EXIST UNDER THE BLANKET.
- PERIMETER ANCHOR TRENCH SHALL BE USED AT OUTSIDE PERIMETER OF ALL BLANKET AREAS.
- JOINT ANCHOR TRENCH SHALL BE USED TO JOIN ROLLS OF BLANKETS TOGETHER (LONGITUDINALLY AND TRANSVERSELY) FOR ALL BLANKET INSTALLATIONS IN A DRAINAGEWAY EXCEPT STRAW, WHICH MAY USE AN OVERLAPPING JOINT.
- INTERMEDIATE ANCHOR TRENCH SHALL BE USED AT SPACING OF ONE-HALF THE ROLL LENGTH FOR COCONUT AND EXCELSIOR BLANKETS.
- THE OVERLAPPING JOINT DETAIL SHALL BE USED TO JOIN ROLLS OF BLANKETS TOGETHER FOR BLANKETS ON SLOPES.
- MATERIAL SPECIFICATIONS OF EROSION CONTROL BLANKET SHALL CONFORM TO TABLE 7.1.

EROSION CONTROL BLANKET INSTALLATION NOTES - CONTINUED

- ANY AREAS OF SEEDING AND MULCHING DISTURBED IN THE PROCESS OF INSTALLING EROSION CONTROL BLANKET SHALL BE RESEED AND MULCHED IN ACCORDANCE WITH DETAIL 18.
- SEE DRAINAGE DESIGN PLANS FOR MAJOR DRAINAGEWAY STABILIZATION MEASURES THAT MAY EXCEED THE DESIGN CONDITIONS ASSOCIATED WITH THE DETAILS ABOVE.
- METAL STAKES OR STAPLES MAY BE USED FOR EROSION CONTROL BLANKET INSTALLATIONS OUTSIDE OF DRAINAGE CHANNELS.

TABLE 7.1 - EROSION CONTROL BLANKET TYPE				
TYPE	COCONUT CONTENT	STRAW CONTENT	EXCELSIOR CONTENT	NETTING MIN.
STRAW*	-	100%	-	DOUBLE/NATURAL
STRAW-COCONUT	30% MIN.	70% MAX.	-	DOUBLE/NATURAL
COCONUT	100%	-	-	DOUBLE/NATURAL
EXCELSIOR	-	-	100%	DOUBLE/NATURAL

* FOR OUTSIDE OF STREAMS AND DRAINAGE CHANNELS

EROSION CONTROL BLANKET MAINTENANCE NOTES

- THE RECOMMENDED INSPECTION FREQUENCY FOR EROSION CONTROL BLANKETS IS WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS AS NECESSARY.
- EROSION CONTROL BLANKET IS TO BE LEFT IN PLACE UNLESS REQUESTED TO BE REMOVED BY THE CITY.
- ANY EROSION CONTROL BLANKET PULLED OUT, TORN, OR OTHERWISE DAMAGED SHALL BE RE-INSTALLED. ANY SUBGRADE AREAS BELOW THE BLANKET THAT HAVE ERODED TO CREATE A VOID UNDER THE BLANKET, OR THAT REMAIN DEVOID OF GRASS SHALL BE REPAIRED, RESEED AND MULCHED AND THE EROSION CONTROL BLANKET REINSTALLED.



ECB

EROSION CONTROL BLANKET 10

Sheet Revisions			
1	CASTLE PINES REISSUE	12/19	
2	CASTLE PINES REISSUE	06/20	
3	CASTLE PINES REISSUE FOR CP GESC	06/21	

NOTE: SCALES SHOWN ARE FOR 22"x34" SHEETS; ADJUST ACCORDINGLY FOR 11"x17" SHEETS.

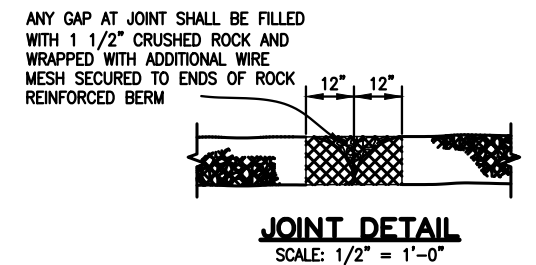
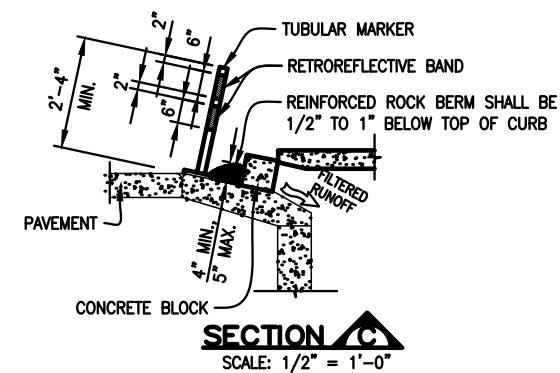
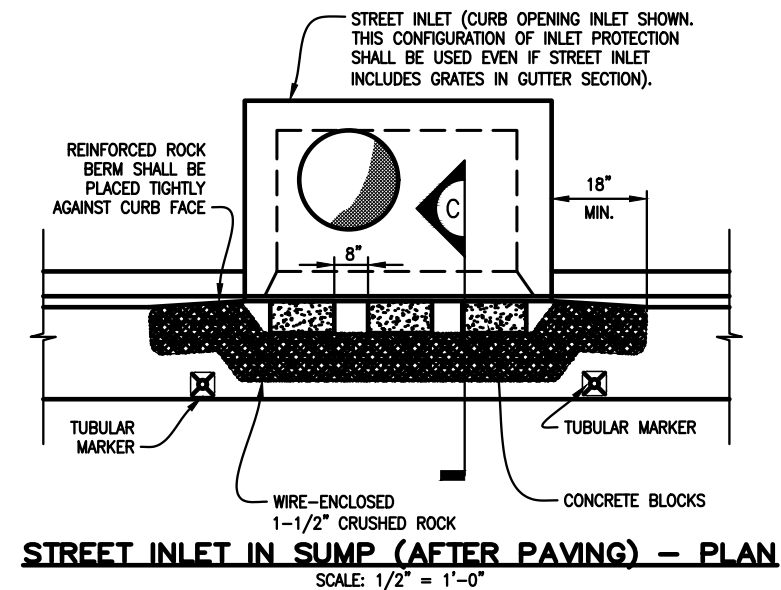
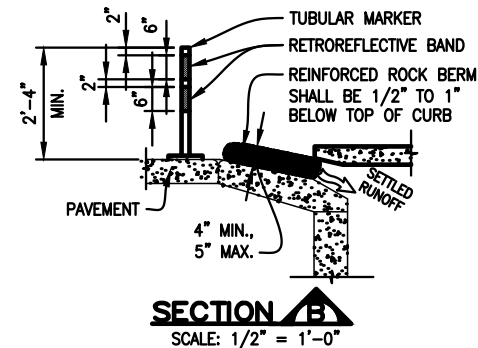
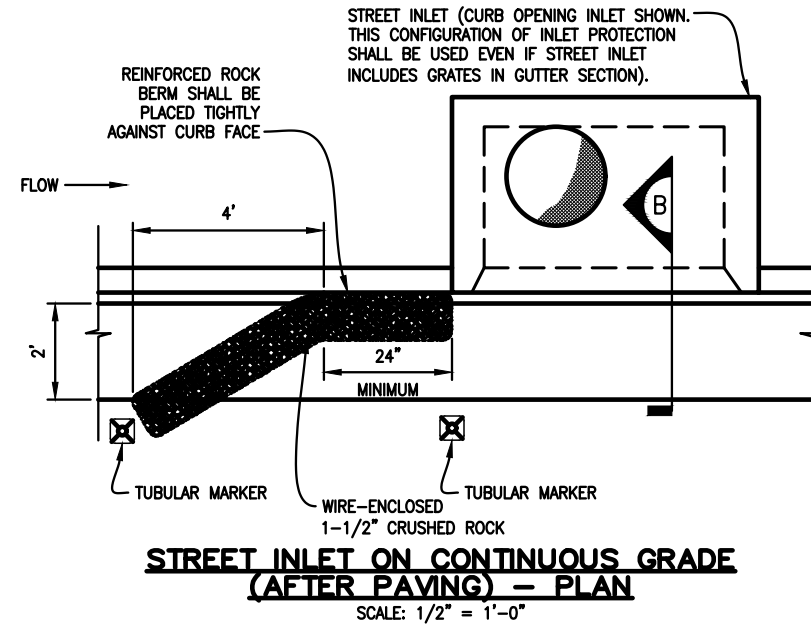
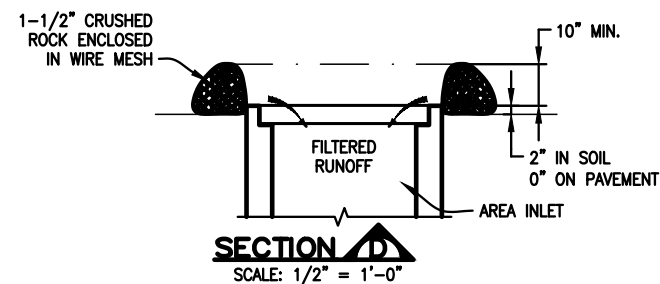
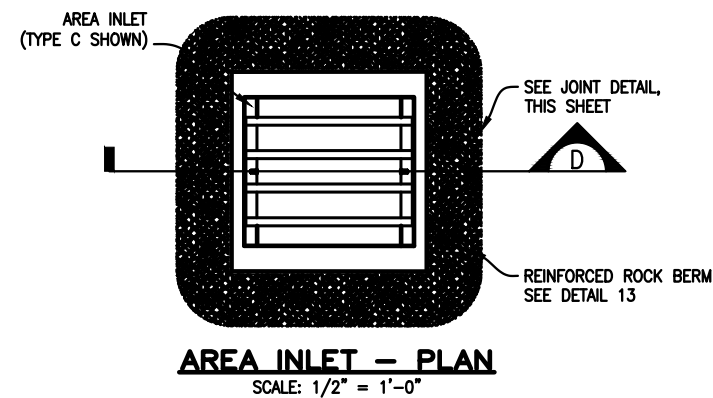
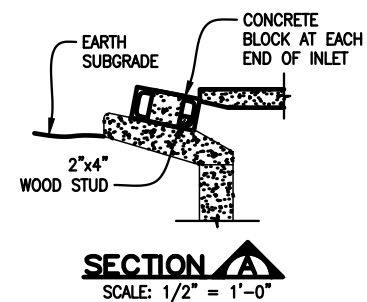
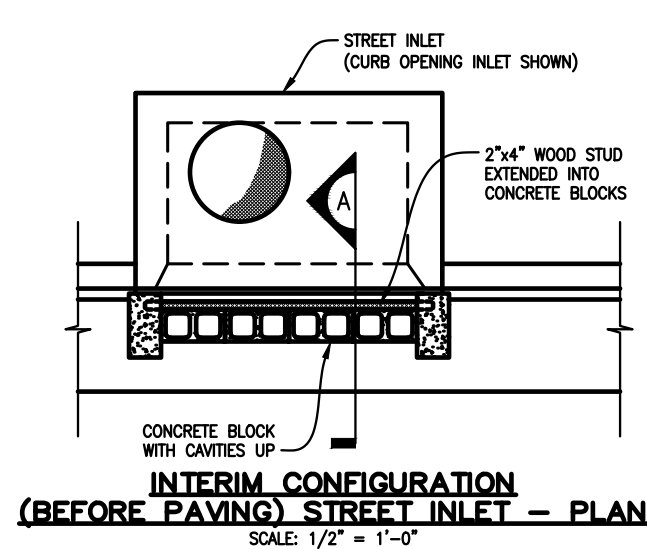


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GRADING, EROSION, AND SEDIMENT CONTROL

GESC PLAN STANDARD NOTES AND DETAILS

SHEET 5 OF 14

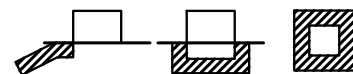


INLET PROTECTION INSTALLATION NOTES

1. INTERIM CONFIGURATION OF INLET PROTECTION IN STREETS SHALL BE INSTALLED WITHIN 48-HOURS OF POURING INLET. INLET PROTECTION (AFTER PAVEMENT) SHALL BE INSTALLED WITHIN 48 HOURS AFTER PAVING IS PLACED.
2. INLET PROTECTION AT AREA INLETS SHALL BE INSTALLED WITHIN 48-HOURS OF POURING INLET.
3. CRUSHED ROCK SHALL BE FRACTURED FACE (ALL SIDES) AND SHALL COMPLY WITH GRADATION SHOWN ON ROCK AND RIPRAP GRADATIONS (1-1/2").
4. WIRE MESH SHALL BE FABRICATED OF 20 GAUGE WIRE TWISTED INTO A MESH WITH A MAXIMUM OPENING OF 1.0 INCH (COMMONLY TERMED "CHICKEN WIRE"). ROLL WIDTH SHALL BE 48-INCHES.
5. WIRE MESH SHALL BE SECURED USING "HOG RINGS" OR WIRE TIES AT 6-INCH CENTERS ALONG ALL JOINTS AND AT 2-INCH CENTERS ON ENDS OF BERM.
6. REINFORCED ROCK BERM SHALL BE CONSTRUCTED IN ONE PIECE OR SHALL BE CONSTRUCTED USING JOINT DETAIL.
7. TUBULAR MARKERS SHALL MEET REQUIREMENTS OF MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), AS AMENDED.
8. THE TOP OF REINFORCED ROCK BERM SHALL BE 1/2"-1" BELOW TOP OF CURB.

INLET PROTECTION MAINTENANCE NOTES

1. THE RECOMMENDED INSPECTION FREQUENCY FOR INLET PROTECTION IS WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT AS NECESSARY. MORE FREQUENT INSPECTIONS AND REPAIRS MAY BE REQUIRED DURING WINTER CONDITIONS DUE TO FREEZE/THAW PROBLEMS.
2. SEDIMENT ACCUMULATED UPSTREAM OF INLET PROTECTION SHALL BE REMOVED WHEN THE SEDIMENT DEPTH UPSTREAM OF ROCK BERM IS WITHIN 2-1/2 INCHES OF THE CREST.
3. INLET PROTECTION IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND GRASS COVER IS APPROVED, UNLESS THE CITY APPROVES EARLIER REMOVAL OF INLET PROTECTION IN STREETS.
4. WHEN INLET PROTECTION AT AREA INLETS ARE REMOVED, THE DISTURBED AREA SHALL BE DRILL SEEDED AND CRIMP MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE CITY.



IP INLET PROTECTION 11

Sheet Revisions			
1	CASTLE PINES REISSUE	12/19	
2	CASTLE PINES REISSUE	06/20	
3	CASTLE PINES REISSUE FOR CP GESC	06/21	

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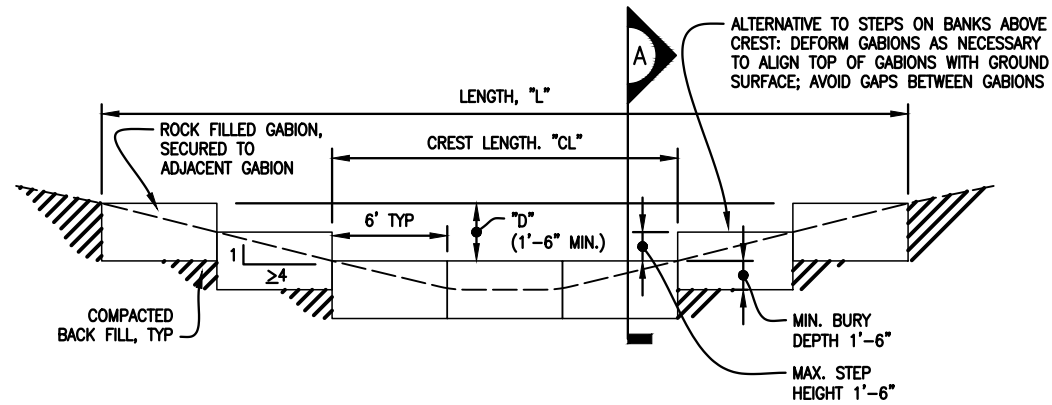


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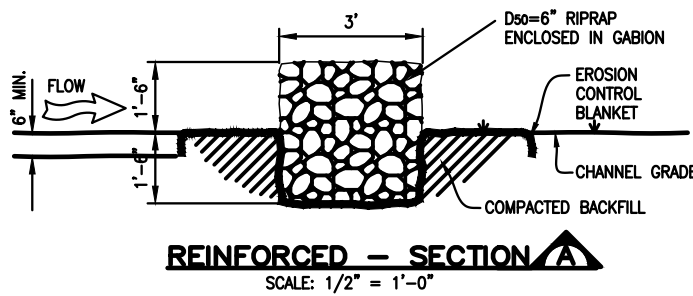
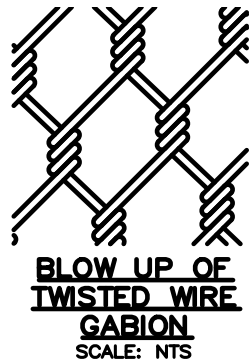
GRADING, EROSION, AND SEDIMENT CONTROL

GESC PLAN STANDARD NOTES AND DETAILS

SHEET 6 OF 14



REINFORCED – ELEVATION
SCALE: 1" = 5'-0"



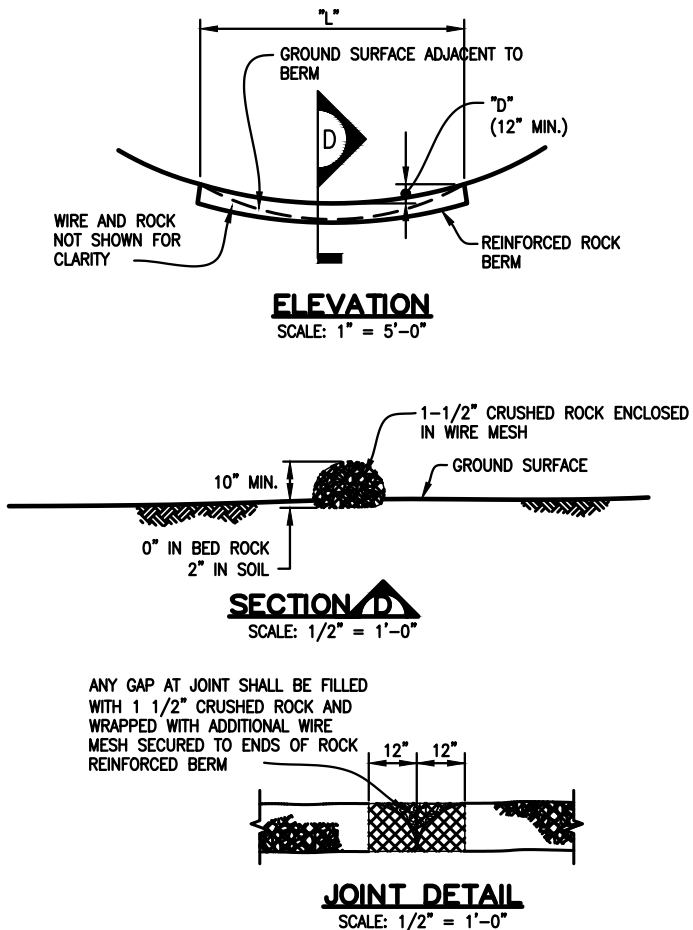
REINFORCED – SECTION A
SCALE: 1/2" = 1'-0"

REINFORCED CHECK DAM INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
 - LOCATIONS OF CHECK DAMS.
 - CHECK DAM TYPE (CHECK DAM OR REINFORCED CHECK DAM).
 - LENGTH, "L", CREST LENGTH, "CL", AND DEPTH, "D".
2. CHECK DAMS INDICATED ON INITIAL GESC PLAN SHALL BE INSTALLED AFTER CONSTRUCTION FENCE, BUT PRIOR TO ANY UPSTREAM LAND-DISTURBING ACTIVITIES.
3. REINFORCED CHECK DAMS, GABIONS SHALL HAVE GALVANIZED TWISTED WIRE NETTING WITH A MAXIMUM OPENING DIMENSION OF 4-1/2" AND A MINIMUM WIRE THICKNESS OF 0.10". WIRE "HOG RINGS" AT 4" SPACING OR OTHER APPROVED MEANS SHALL BE USED AT ALL GABION SEAMS AND TO SECURE THE GABION TO THE ADJACENT GABION.
4. THE CHECK DAM SHALL BE TRENCHED INTO THE GROUND A MINIMUM OF 1'-6".
5. EROSION BLANKET SHALL BE PLACED IN THE REINFORCED CHECK DAM TRENCH EXTENDING A MINIMUM OF 1'-6" ON BOTH THE UPSTREAM AND DOWNSTREAM SIDES OF THE REINFORCED CHECK DAM.

REINFORCED CHECK DAM MAINTENANCE NOTES

1. THE RECOMMENDED INSPECTION FREQUENCY FOR CHECK DAMS IS WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT AS NECESSARY.
2. SEDIMENT ACCUMULATED UPSTREAM OF CHECK DAMS SHALL BE REMOVED WHEN THE SEDIMENT DEPTH UPSTREAM OF CHECK DAM IS WITHIN 1/2 OF THE HEIGHT OF THE CREST.
3. CHECK DAMS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND GRASS COVER IS APPROVED BY THE CITY.
4. WHEN CHECK DAMS ARE REMOVED, EXCAVATIONS SHALL BE FILLED WITH SUITABLE COMPACTED BACK FILL. ANY DISTURBED AREA SHALL BE DRILL SEEDED AND CRIMP MULCHED AND COVERED WITH EROSION CONTROL BLANKET OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE CITY.

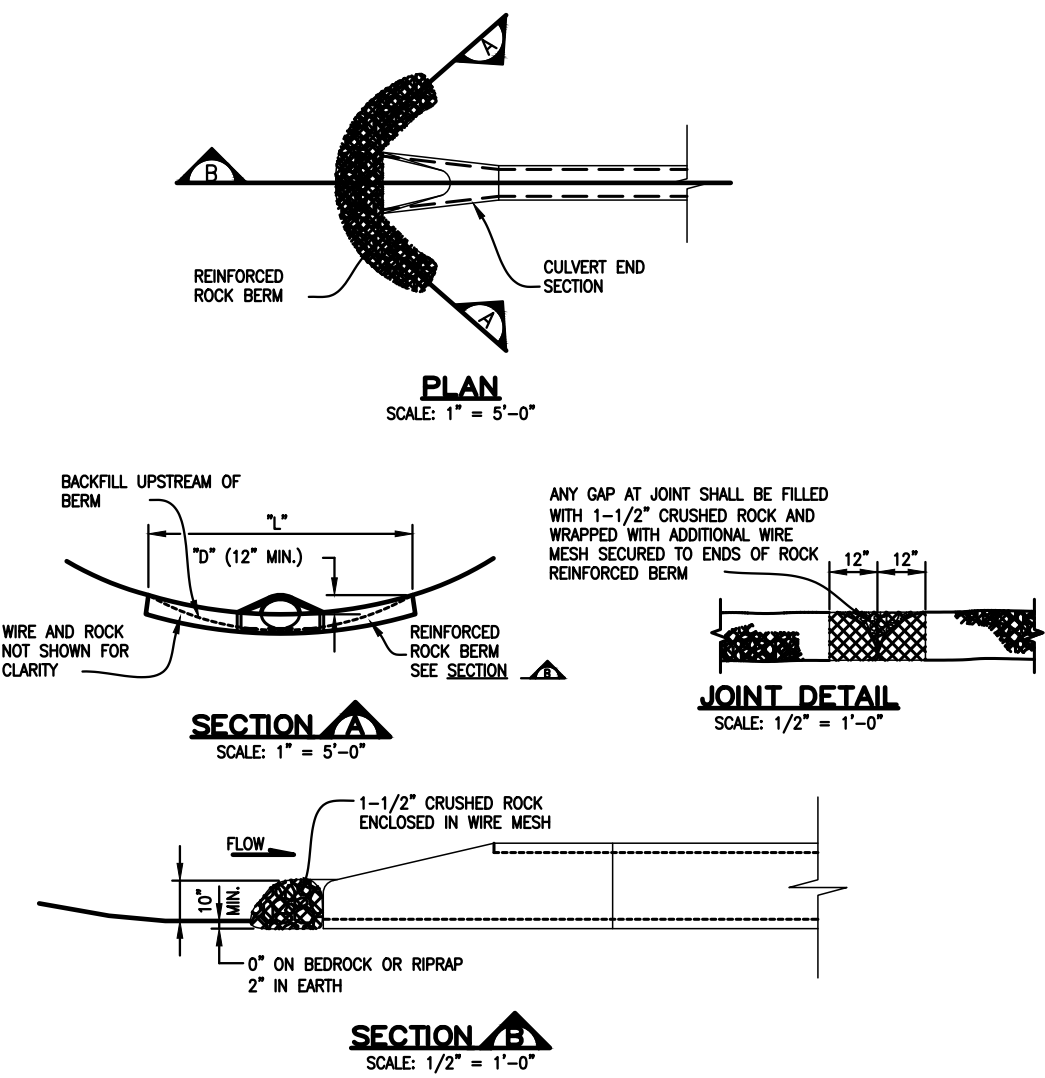


REINFORCED ROCK BERM INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
 - LOCATIONS OF REINFORCED ROCK BERMS.
 - LENGTH, "L", AND DEPTH, "D" DIMENSIONS.
2. REINFORCED ROCK BERM SECTION APPLIES TO CULVERT INLET FILTER AND INLET PROTECTION.
3. CRUSHED ROCK SHALL BE FRACTURED FACE (ALL SIDES) AND SHALL COMPLY WITH GRADATION SHOWN ON ROCK AND RIPRAP GRADATIONS (1-1/2").
4. WIRE MESH SHALL BE FABRICATED OF 20 GAUGE WIRE TWISTED INTO A MESH WITH A MAXIMUM OPENING OF 1.0 INCH (COMMONLY TERMED "CHICKEN WIRE"). ROLL WIDTH SHALL BE 48-INCHES.
5. WIRE MESH SHALL BE SECURED USING "HOG RINGS" OR WIRE TIES AT 6-INCH CENTERS ALONG ALL JOINTS AND AT 2-INCH CENTERS ON ENDS OF BERM.
6. FOR CONCENTRATED FLOW AREAS THE ENDS OF THE REINFORCED ROCK BERM SHALL BE 12" HIGHER THAN THE CENTER OF THE BERM.

REINFORCED ROCK BERM MAINTENANCE NOTES

1. THE RECOMMENDED INSPECTION FREQUENCY FOR REINFORCED ROCK BERM IS WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT AS NECESSARY.
2. SEDIMENT ACCUMULATED UPSTREAM OF REINFORCED ROCK BERM SHALL BE REMOVED WHEN THE SEDIMENT DEPTH UPSTREAM OF FILTER IS WITHIN 5 INCHES OF THE CREST.
3. REINFORCED ROCK BERMS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND GRASS COVER IS APPROVED.
4. WHEN REINFORCED ROCK BERMS ARE REMOVED, ANY DISTURBED AREA SHALL BE DRILL SEEDED AND CRIMP MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE CITY.



INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
 - LOCATIONS OF CULVERT INLET FILTERS.
 - LENGTH, "L", AND DEPTH, "D".
2. CRUSHED ROCK SHALL BE FRACTURED FACE (ALL SIDES) AND SHALL COMPLY WITH GRADATION SHOWN ON ROCK AND RIPRAP GRADATIONS (1-1/2").
3. WIRE MESH SHALL BE FABRICATED OF 20 GAUGE WIRE TWISTED INTO A MESH WITH A MAXIMUM OPENING OF 1.0 INCH (COMMONLY TERMED "CHICKEN WIRE"). ROLL WIDTH SHALL BE 48-INCHES.
4. WIRE MESH SHALL BE SECURED USING "HOG RINGS" OR WIRE TIES AT 6-INCH CENTERS ALONG ALL JOINTS AND AT 2-INCH CENTERS ON ENDS OF BERM.
5. THE ENDS OF THE REINFORCED ROCK BERM SHALL BE 12" HIGHER THAN THE CENTER OF THE BERM.


MAINTENANCE NOTES

1. THE RECOMMENDED INSPECTION FREQUENCY FOR RRB FOR CULVERT PROTECTION IS WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT AS NECESSARY.
2. SEDIMENT ACCUMULATED UPSTREAM OF RRB FOR CULVERT PROTECTION SHALL BE REMOVED WHEN THE SEDIMENT DEPTH UPSTREAM OF FILTER IS 1/2 THE HEIGHT OF THE REINFORCED ROCK BERM.
3. RRB FOR CULVERT PROTECTION ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND GRASS COVER IS APPROVED BY THE CITY.
4. WHEN RRB FOR CULVERT PROTECTION ARE REMOVED, ANY DISTURBED AREA SHALL BE DRILL SEEDED AND CRIMP MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE CITY.

 **REINFORCED CHECK DAM** 

 **REINFORCED ROCK BERM** 

 **RRB FOR CULVERT PROTECTION** 

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<input type="checkbox"/>	1	CASTLE PINES REISSUE	12/19				
<input type="checkbox"/>	2	CASTLE PINES REISSUE	06/20				
<input type="checkbox"/>	3	CASTLE PINES REISSUE FOR CP GESC	06/21				

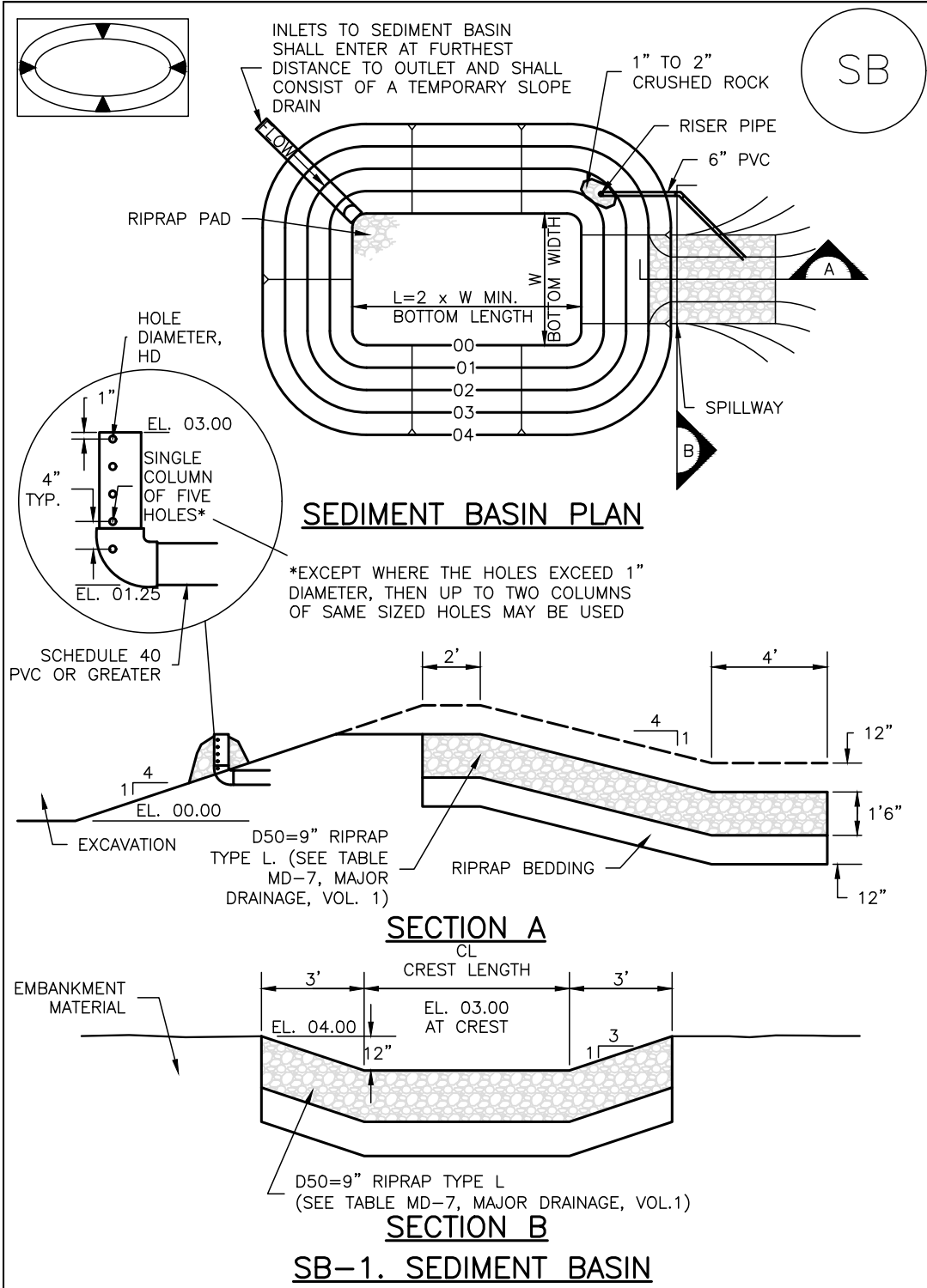


TABLE SB-1. SIZING INFORMATION FOR STANDARD SEDIMENT BASIN			
Upstream Drainage Area (rounded to nearest acre), (ac)	Basin Bottom Width (W), (ft)	Spillway Crest Length (CL), (ft)	Hole Diameter (HD), (in)
1	12 1/2	2	9/32
2	21	3	13/16
3	28	5	1/2
4	33 1/2	6	9/16
5	38 1/2	8	2 1/32
6	43	9	2 1/32
7	47 1/4	11	2 5/32
8	51	12	2 7/32
9	55	13	7/8
10	58 1/4	15	1 5/16
11	61	16	3 1/32
12	64	18	1
13	67 1/2	19	1 1/16
14	70 1/2	21	1 7/8
15	73 1/4	22	1 3/16

SEDIMENT BASIN INSTALLATION NOTES

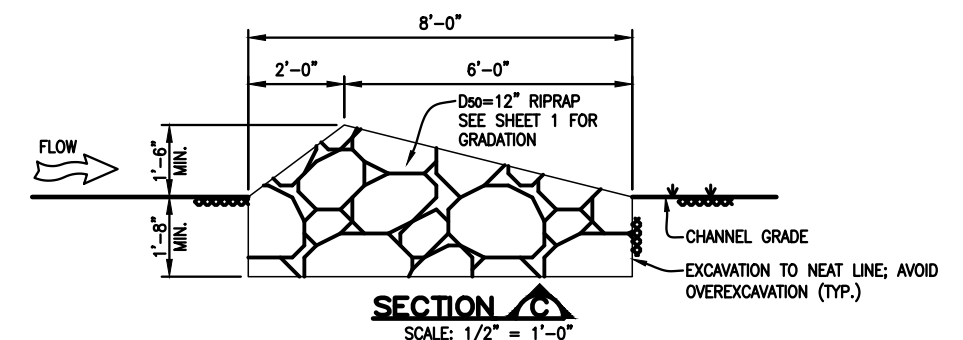
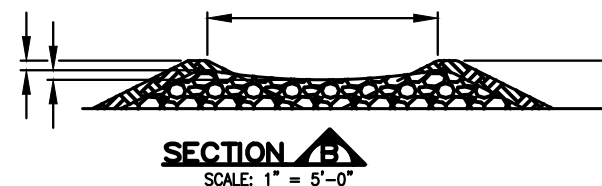
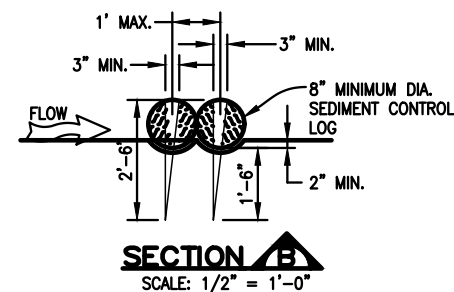
- SEE PLAN VIEW FOR:
 - LOCATION OF SEDIMENT BASIN.
 - TYPE OF BASIN (STANDARD BASIN OR NONSTANDARD BASIN).
 - FOR STANDARD BASIN, BOTTOM WIDTH W, CREST LENGTH CL, AND HOLE DIAMETER, HD.
 - FOR NONSTANDARD BASIN, SEE CONSTRUCTION DRAWINGS FOR DESIGN OF BASIN INCLUDING RISER HEIGHT H, NUMBER OF COLUMNS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

SEDIMENT BASIN MAINTENANCE NOTES

- INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
- FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
- WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
- SEDIMENT ACCUMULATED IN BASIN SHALL BE REMOVED WHEN SEDIMENT DEPTH REACHES ONE FOOT (I.E., TWO FEET BELOW THE SPILLWAY CREST).
- SEDIMENT BASINS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND GRASS COVER IS ACCEPTED BY THE LOCAL JURISDICTION.
- WHEN SEDIMENT BASINS ARE REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.


(DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO)

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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GRADING, EROSION, AND SEDIMENT CONTROL

GESC PLAN STANDARD NOTES AND DETAILS

SHEET
9 OF 14

SEEDING AND MULCHING INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
- AREA OF SEEDING AND MULCHING.
- TYPE OF SEED MIX (PERMANENT, TEMPORARY, OR LOW-GROWTH).
2. ALL BRANDS FURNISHED SHALL BE FREE FROM SUCH NOXIOUS SEEDS AS RUSSIAN OR CANADIAN THISTLE, COARSE FESCUE, EUROPEAN BINDWEED, JOHNSON GRASS, Knap WEED AND LEAFY SPURGE.
3. THE SEEDER SHALL FURNISH TO THE CONTRACTOR A SIGNED STATEMENT CERTIFYING THAT THE SEED FURNISHED IS FROM A LOT THAT HAS BEEN TESTED BY A RECOGNIZED LABORATORY. SEED WHICH HAS BECOME WET, MOLDY, OR OTHERWISE DAMAGED IN TRANSIT OR IN STORAGE WILL NOT BE ACCEPTABLE. SEED TICKETS SHALL BE PROVIDED TO CASTLE PINES UPON REQUEST.
4. DRILL SEEDING MIX SHALL CONFORM TO THE TABLE ON THE RIGHT:
5. IF THE SEED AVAILABLE ON THE MARKET DOES NOT MEET THE MINIMUM PURITY AND GERMINATION PERCENTAGES SPECIFIED, THE SUBCONTRACTOR MUST COMPENSATE FOR A LESSER PERCENTAGE OF PURITY OR GERMINATION BY FURNISHING SUFFICIENT ADDITIONAL SEED TO EQUAL THE SPECIFIED PRODUCT. THE TAGS FROM THE SEED MIXES MUST BE SUPPLIED TO THE CONTRACTOR AND FORWARDED TO THE CASTLE PINES EROSION CONTROL INSPECTOR.
6. THE FORMULA USED FOR DETERMINING THE QUANTITY OF PURE LIVE SEED (PLS) SHALL BE (POUNDS OF SEED) X (PURITY) X (GERMINATION) = POUNDS OF PURE LIVE SEED (PLS).
7. PERMANENT SEED MIX SHALL BE USED UNLESS OTHERWISE APPROVED BY THE CITY.
8. ALL AREAS TO BE SEEDED AND MULCHED SHALL HAVE NATIVE TOPSOIL OR APPROVED SOIL AMENDMENTS SPREAD TO A DEPTH OF AT LEAST 6 INCHES (LOOSE DEPTH). HAUL ROADS AND OTHER COMPACTED AREAS SHALL BE LOOSENED TO A DEPTH OF 6 INCHES PRIOR TO SPREADING TOPSOIL.
9. SOIL IS TO BE THOROUGHLY LOOSENED (TILLED) TO A DEPTH OF AT LEAST 6 INCHES PRIOR TO SEEDING. THE TOP 6 INCHES OF THE SEED BED SHALL BE FREE OF ROCKS GREATER THAN 4 INCHES AND SOIL CLOUDS GREATER THAN 2 INCHES. SEEDING OVER ANY COMPACTED AREAS THAT HAVEN'T BEEN THOROUGHLY LOOSENED SHALL BE REJECTED.
10. SEED IS TO BE APPLIED USING A MECHANICAL DRILL TO A DEPTH NOT LESS THAN 1/4 INCH AND NOT MORE THAN 3/4 INCH. ROW SPACING SHALL BE NO MORE THAN 6 INCHES. MATERIAL USED FOR MULCH SHALL CONSIST OF LONG-STEMMED STRAW. AT LEAST 50 PERCENT OF THE MULCH, BY WEIGHT, SHALL BE 10 INCHES OR MORE IN LENGTH. MULCH SHALL BE APPLIED AND MECHANICALLY ANCHORED TO A DEPTH OF AT LEAST 2 INCHES. MULCH SHALL BE APPLIED AT A RATE OF 4000 LB. OF STRAW PER ACRE.
11. IF THE PERMITTEE DEMONSTRATES TO THE CITY THAT IT IS NOT POSSIBLE TO DRILL SEED, SEED IS TO BE UNIFORMLY BROADCAST AT TWO TIMES THE DRILLED RATE, THEN LIGHTLY HARROWED TO PROVIDE A SEED DEPTH OF APPROXIMATELY 1/4 INCH, THEN ROLLED TO COMPACT, THEN MULCHED AS SPECIFIED ABOVE.
12. SEEDING AND MULCHING SHALL BE COMPLETED WITHIN 30 DAYS OF INITIAL EXPOSURE OR 14 DAYS AFTER GRADING IS SUBSTANTIALLY COMPLETE IN A GIVEN AREA (AS DEFINED BY THE COUNTY). THIS MAY REQUIRE MULTIPLE MOBILIZATIONS FOR SEEDING AND MULCHING.
13. MULCH SHALL BE APPLIED WITHIN 24-HOURS OF SEEDING.
14. TACKIFIER SHOULD BE UTILIZED TO HELP PREVENT STRAW DISPLACEMENT.

SEEDING AND MULCHING MAINTENANCE NOTES

1. SEEDED AND MULCHED AREAS SHALL BE INSPECTED FOR REQUIRED COVERAGE MONTHLY FOR A PERIOD OF TWO YEARS FOLLOWING INITIAL SEEDING. REPAIRS AND RE-SEEDING AND MULCHING SHALL BE UNDERTAKEN AFTER THE FIRST GROWING SEASON FOR ANY AREAS FAILING TO MEET THE REQUIRED COVERAGE.
2. REQUIRED COVERAGE FOR STANDARD, OPEN SPACE AND LOW GROWTH SEED MIXES SHALL BE DEFINED AS FOLLOWS:

1. THREE (3) PLANTS PER SQUARE FOOT WITH A MINIMUM HEIGHT OF 3 INCHES. THE 3 PLANTS PER SQUARE FOOT SHALL BE OF THE VARIETY AND SPECIES FOUND IN THE CASTLE PINES-APPROVED MIX.

2. NO BARE AREAS LARGER THAN 4 SQUARE FEET (TWO- FEET BY TWO- FEET OR EQUIVALENT). FREE OF ERODED AREAS.

3. FREE FROM INFESTATION OF NOXIOUS WEEDS IN ACCORDANCE WITH SECTION 6.4 OF THE GESC

4. MANUAL.
3. REQUIRED COVERAGE FOR TURF GRASS AREAS SHALL BE DEFINED AS FOLLOWS:

1. AT LEAST 80% VEGETATIVE COVER OF GRASS SPECIES PLANTED.

2. NO BARE AREAS LARGER THAN 4 SQUARE FEET (TWO- FEET BY TWO- FEET OR EQUIVALENT). FREE OF ERODED AREAS.

3. FREE FROM INFESTATION OF NOXIOUS WEEDS IN ACCORDANCE WITH SECTION 6.4 OF THE GESC

4. MANUAL.
4. RILL AND GULLY EROSION SHALL BE FILLED WITH TOPSOIL PRIOR TO RESEEDING. THE RESEEDING METHOD SHALL BE APPROVED BY THE CITY.

CASTLE PINES PERMANENT DRILL SEEDING MIX

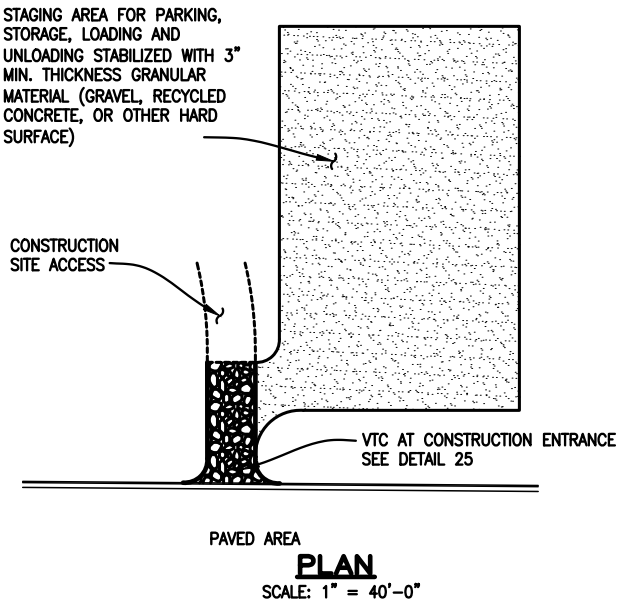
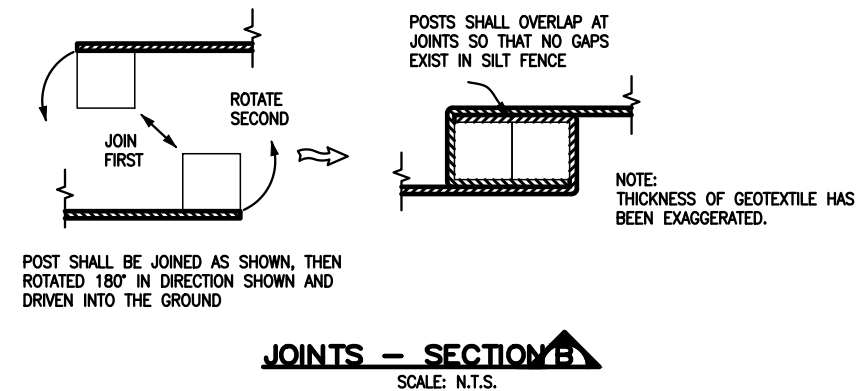
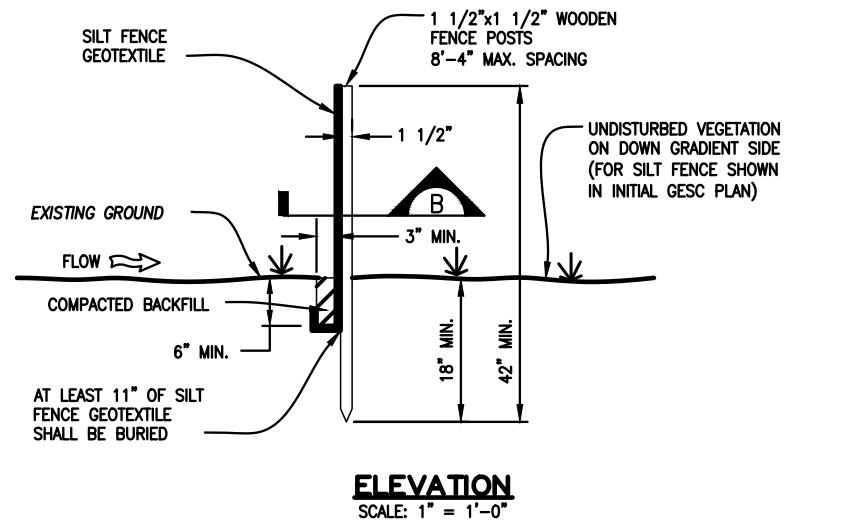
SPECIES	VARIETY	NOTES	% IN MIX	POUNDS OF PLS PER ACRE
BIG BLUESTEM	KAW	PNWS	10	1.1
YELLOW INDIANGRASS	CHEYENNE	PNWS	10	1
SWITCHGRASS	BLACKWELL	PNWS	10	0.4
SIDEOATS GRAMA	VAUGHN	PNWB	10	0.9
WESTERN WHEATGRASS	ARRIBA	PNCS	10	1.6
BLUE GRAMA	HACHITA	PNWB	10	0.3
THICKSPIKE WHEATGRASS	CRITANA	PNCS	10	1
PRAIRIE SANDREED	GOSHEN	PNWS	10	0.7
GREEN NEEDLEGRASS	LODORM	PNCB	10	1
SLENDER WHEATGRASS	PRYOR	PNCB	5	0.6
STREAMBANK WHEATGRASS	SODAR	PNCS	5	0.6
			TOTAL	9.2

CASTLE PINES TEMPORARY DRILL SEEDING MIX

SPECIES	VARIETY	NOTES	% IN MIX	POUNDS OF PLS PER ACRE
SMOOTH BROMEGRASS	LINCOLN	PICS	30	3.9
INTERMEDIATE WHEATGRASS	OAHE	PICS	30	4.5
PUBESCENT WHEATGRASS	LUNA	PICS	30	4.2
ANNUAL RYEGRASS	N/A	AICB	10	0.8
			TOTAL	13.4

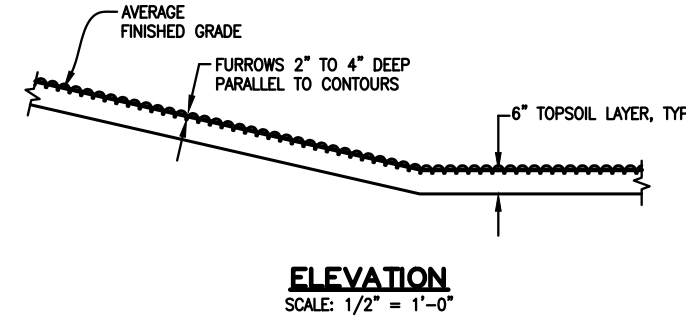
CASTLE PINES LOW-GROWTH DRILL SEEDING MIX

SPECIES	VARIETY	NOTES	% IN MIX	POUNDS OF PLS PER ACRE
BUFFALOGRASS	TEXOKA	PNWS	20	3.2
BLUE GRAMA	HACHITA	PNWB	20	0.6
WESTERN WHEATGRASS	ARRIBA	PNCS	20	3.2
SIDEOATS GRAMA	VAUGHN	PNWB	20	1.8
THICKSPIKE WHEATGRASS	CRITANA	PNCS	10	1
STREAMBANK WHEATGRASS	SODAR	PNCS	10	1.2
			TOTAL	11.0



- STABILIZED STAGING AREA INSTALLATION NOTES**
1. SEE PLAN VIEW FOR GENERAL LOCATION OF STAGING AREA. CONTRACTOR MAY MODIFY LOCATION AND SIZE OF STABILIZED STAGING AREA WITH CITY APPROVAL.
 2. STABILIZED STAGING AREA SHALL BE LARGE ENOUGH TO FULLY CONTAIN PARKING, STORAGE, AND UNLOADING AND LOADING OPERATIONS.
 3. IF REQUIRED BY THE CITY, SITE ACCESS ROADS SHALL BE STABILIZED IN THE SAME MANNER AS THE STAGING AREA.
 4. STAGING AREA SHALL BE STABILIZED PRIOR TO ANY OTHER OPERATIONS ON THE SITE.
 5. THE STABILIZED STAGING AREA SHALL CONSIST OF A MINIMUM OF 3" GRANULAR MATERIAL (GRAVEL OR RECYCLED CONCRETE), 3" MINIMUM THICKNESS PAVEMENT, OR OTHER APPROVED MATERIAL. AGGREGATE MATERIAL MUST BE A MINIMUM OF 1 1/2" DIAMETER AGGREGATE.

- STABILIZED STAGING AREA MAINTENANCE NOTES**
1. THE RECOMMENDED INSPECTION FREQUENCY FOR THE STABILIZED STAGING AREA IS WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT UPSTREAM SEDIMENT AS NECESSARY.
 2. GESC MANAGER SHALL PROVIDE ADDITIONAL THICKNESS OF GRANULAR MATERIAL OR PAVEMENT IF ANY RUTTING OCCURS OR UNDERLYING SUBGRADE BECOMES EXPOSED.
 3. STABILIZED STAGING AREA SHALL BE ENLARGED IF NECESSARY TO CONTAIN PARKING, STORAGE, AND UNLOADING AND LOADING OPERATIONS.
 4. ANY ACCUMULATED DIRT OR MUD SHALL BE REMOVED FROM THE SURFACE OF THE STABILIZED STAGING AREA.
 5. THE STABILIZED STAGING AREA SHALL BE REMOVED AT THE END OF CONSTRUCTION UNLESS PERMANENT PAVEMENT IS USED. THE GRANULAR MATERIAL SHALL BE REMOVED OR, IF APPROVED BY THE CITY, USED ON SITE, AND THE AREA TOPSOILED, DRILL SEEDED AND CRIMP MULCHED OR OTHERWISE STABILIZED.



- SURFACE ROUGHENING INSTALLATION NOTES**
1. SURFACE ROUGHENING SHALL BE PROVIDED ON ALL FINISHED GRADES (SLOPES AND "FLAT" AREAS) WITHIN 2 DAYS OF COMPLETION OF FINISHED GRADE (FOR AREAS NOT RECEIVING TOPSOIL) OR WITHIN 2 DAYS OF TOPSOIL PLACEMENT.
 2. AREAS WHERE BUILDING FOUNDATIONS, PAVEMENT, OR SOD IS TO BE PLACED WITHIN 7-DAYS OF FINISHED GRADING DO NOT NEED TO BE SURFACE ROUGHENED.
 3. DISTURBED SURFACES SHALL BE ROUGHENED USING RIPPING OR TILLING EQUIPMENT ON THE CONTOUR OR TRACKING UP AND DOWN A SLOPE USING EQUIPMENT TREADS.

- SURFACE ROUGHENING MAINTENANCE NOTES**
1. THE RECOMMENDED INSPECTION FREQUENCY FOR SURFACE ROUGHENING IS WEEKLY, DURING AND AFTER ANY STORM EVENT, AND MAKE REPAIRS.
 2. VEHICLES AND EQUIPMENT SHALL GENERALLY BE CONFINED TO ACCESS DRIVES AND SHALL NOT BE DRIVEN OVER AREAS THAT HAVE BEEN SURFACE ROUGHENED.
 3. IN NON-TURF GRASS FINISHED AREAS, SEEDING AND MULCHING SHALL TAKE PLACE DIRECTLY OVER SURFACE ROUGHENED AREAS WITHOUT FIRST SMOOTHING OUT THE SURFACE.
 4. IN AREAS NOT SEEDED AND MULCHED AFTER SURFACE ROUGHENING, SURFACES SHALL BE RE-ROUGHENED AS NECESSARY TO MAINTAIN GROOVE DEPTH AND SMOOTH OVER ANY RILL EROSION.

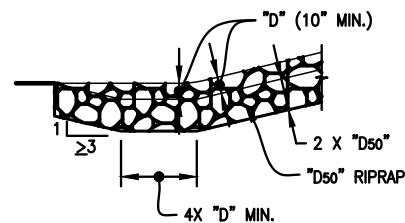
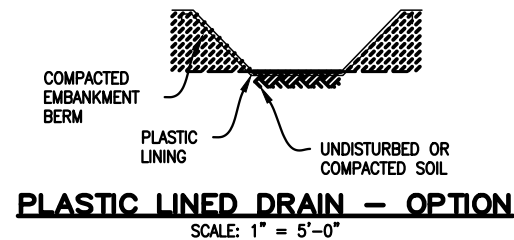
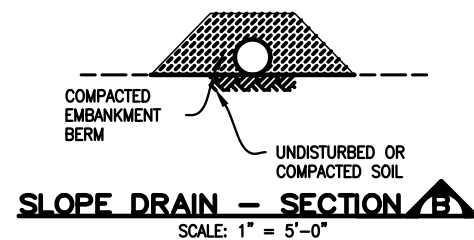
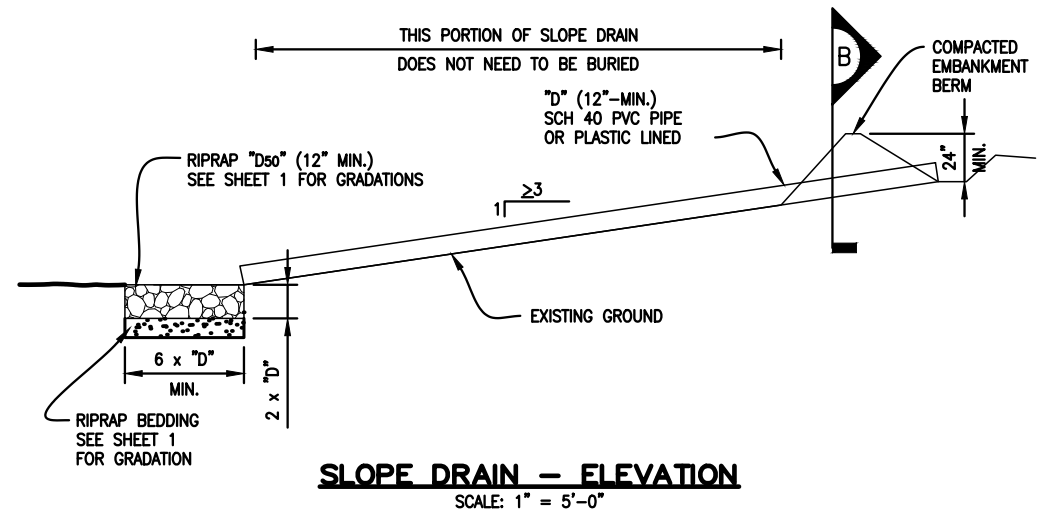
- SILT FENCE INSTALLATION NOTES**
1. SEE PLAN VIEW FOR:
 - LOCATION AND LENGTH OF FENCE.
 2. ANCHOR TRENCH SHALL BE EXCAVATED WITH TRENCHER, OR WITH SILT FENCE INSTALLATION MACHINE; NO ROAD GRADERS, BACKHOES, ETC. SHALL BE USED. TRENCH SHALL BE COMPACTED BY HAND, WITH "JUMPING JACK", OR BY WHEEL ROLLING. COMPACTION SHALL BE SUCH THAT SILT FENCE RESISTS BEING PULLED OUT OF ANCHOR TRENCH BY HAND.
 3. SILT FENCE GEOTEXTILE SHALL MEET THE FOLLOWING REQUIREMENTS:
 - 6-TO 12-GALLONS PER MINUTE PER SQUARE FOOT FLOW CAPACITY.
 - 90 LB. TENSILE STRENGTH PER ASTM D4622.
 - UV DESIGN AT 500 HRS MIN. 70% STRENGTH RETAINED PER ASTM D4355.
 4. SILT FENCE INDICATED ON INITIAL GESC PLAN SHALL BE INSTALLED PRIOR TO ANY LAND-DISTURBING ACTIVITIES.

- SILT FENCE MAINTENANCE NOTES**
1. THE RECOMMENDED INSPECTION FREQUENCY FOR SILT FENCE IS DAILY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT UPSTREAM SEDIMENT AS NECESSARY.
 2. SEDIMENT ACCUMULATED UPSTREAM OF SILT FENCE SHALL BE REMOVED WHEN THE UPSTREAM SEDIMENT REACHES A DEPTH OF 6-INCHES.
 3. SILT FENCE SHALL BE REMOVED WHEN THE UPSTREAM DISTURBED AREA IS STABILIZED AND GRASS COVER IS APPROVED BY THE CITY. IF ANY DISTURBED AREA EXISTS AFTER REMOVAL, IT SHALL BE SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE CITY.

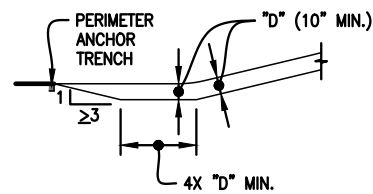
SF SILT FENCE **19**

SSA STABILIZED STAGING AREA **20**

SR SURFACE ROUGHENING **21**



TERMINATION OF RIPRAP LINED SLOPE DRAIN
SCALE: 1" = 5'-0"



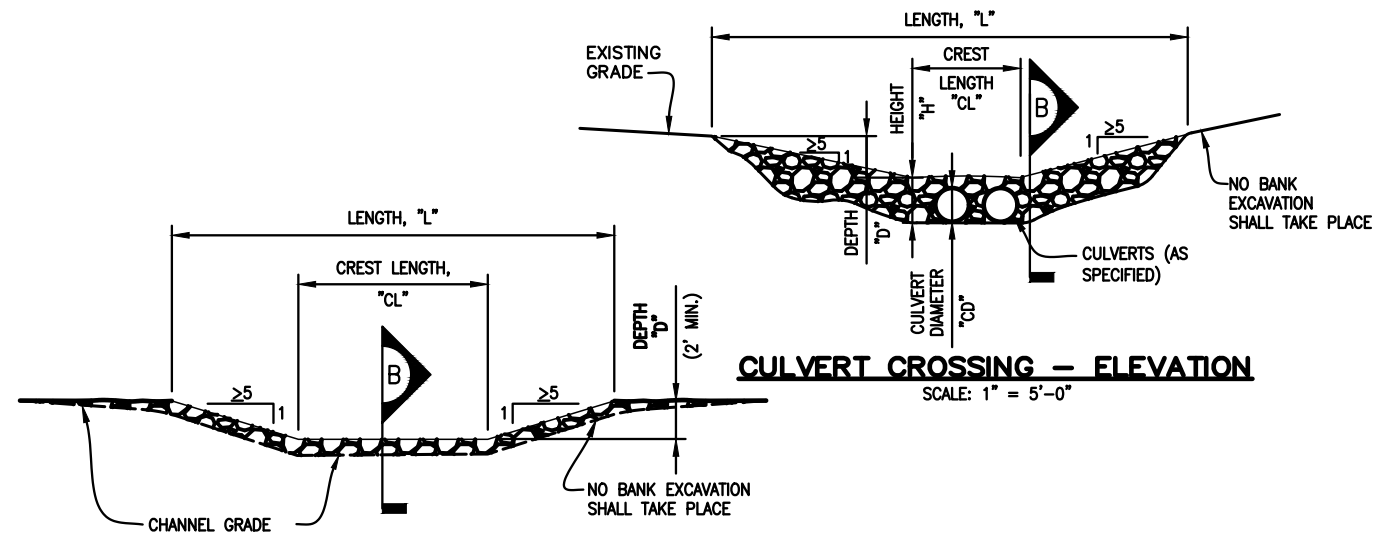
TERMINATION OF PLASTIC LINED SLOPE DRAIN
SCALE: 1" = 5'-0"

SLOPE DRAIN INSTALLATION NOTES

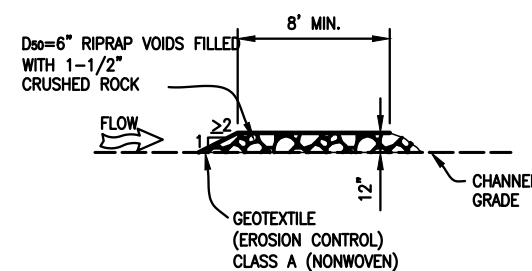
1. SEE PLAN VIEW FOR:
- LOCATION AND LENGTH OF SLOPE DRAIN.
- PIPE DIAMETER, "D", AND RIPRAP SIZE, "D₅₀".
2. SLOPE DRAIN DIMENSIONS SHALL BE CONSIDERED MINIMUM DIMENSIONS; CONTRACTOR MAY ELECT TO INSTALL LARGER FACILITIES. ANY DAMAGE TO SLOPE OR SLOPE DRAIN DURING RUNOFF EVENTS SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
3. SLOPE DRAINS INDICATED ON INITIAL GESC PLAN SHALL BE INSTALLED PRIOR TO ANY UPSTREAM LAND-DISTURBING ACTIVITIES.
4. FOR TEMPORARY SLOPE DRAINS, PIPE MAY BE INSTALLED ON TOP OF SLOPE; HOWEVER, 12" MIN. COVER AT TOP OF SLOPE SHALL BE PROVIDED.
5. A RIPRAP PAD SHALL BE PLACED AT THE OUTFALL OF THE SLOPE DRAIN.

SLOPE DRAIN MAINTENANCE NOTES

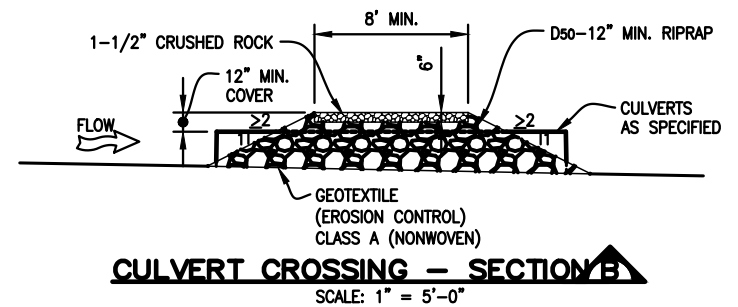
1. THE RECOMMENDED INSPECTION FREQUENCY FOR SLOPE DRAINS IS WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS AS NECESSARY.
2. TEMPORARY SLOPE DRAINS ARE TO REMAIN IN PLACE UNTIL NO LONGER NEEDED, BUT SHALL BE REMOVED PRIOR TO THE END OF CONSTRUCTION. WHEN SLOPE DRAINS ARE REMOVED, THE DISTURBED AREA SHALL BE DRILL SEEDED AND CRIMP MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE COUNTY.



FORD CROSSING - ELEVATION
SCALE: 1" = 5'-0"



FORD CROSSING - SECTION B
SCALE: 1" = 5'-0"




TEMPORARY STREAM CROSSING INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
- LOCATIONS OF TEMPORARY STREAM CROSSING.
- STREAM CROSSING TYPE (FORD OR CULVERT).
- FOR FORD CROSSING: LENGTH, "L", CREST LENGTH, "CL", AND DEPTH, "D".
- FOR CULVERT CROSSING : LENGTH, "L", CREST LENGTH, "CL", CROSSING HEIGHT, "H", DEPTH, "D", CULVERT DIAMETER, "CD", AND NUMBER, TYPE AND CLASS OR GAUGE OF CULVERTS.
2. TEMPORARY STREAM CROSSING DIMENSIONS, D50, AND NUMBER OF CULVERTS INDICATED (FOR CULVERT CROSSING) SHALL BE CONSIDERED MINIMUM DIMENSIONS; ENGINEER MAY ELECT TO INSTALL LARGER FACILITIES. ANY DAMAGE TO STREAM CROSSING OR EXISTING STREAM CHANNEL DURING BASEFLOW OR FLOOD EVENTS SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
3. SEE ROCK AND RIPRAP GRADATIONS FOR RIPRAP AND 1-1/2" CRUSHED ROCK GRADATIONS.
4. FOR A TEMPORARY STREAM CROSSING THAT WILL CARRY LOADS, THE TEMPORARY STREAM CROSSING MUST BE DESIGNED BY THE DESIGN ENGINEER.

TEMPORARY STREAM CROSSING MAINTENANCE NOTES

1. THE RECOMMENDED INSPECTION FREQUENCY FOR TEMPORARY STREAM CROSSINGS IS WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT UPSTREAM SEDIMENT AS NECESSARY.
2. SEDIMENT ACCUMULATED UPSTREAM OF TEMPORARY STREAM CROSSINGS SHALL BE REMOVED WHEN THE SEDIMENT DEPTH UPSTREAM OF CROSSING IS WITHIN 6-INCHES OF THE CREST (FORD CROSSING) OR GREATER THAN AN AVERAGE DEPTH OF 12-INCHES (CULVERT CROSSING).
3. TEMPORARY STREAM CROSSINGS ARE TO REMAIN IN PLACE UNTIL NO LONGER NEEDED, BUT SHALL BE REMOVED PRIOR TO THE END OF CONSTRUCTION.
4. WHEN TEMPORARY STREAM CROSSINGS ARE REMOVED, THE DISTURBED AREA SHALL BE DRILL SEEDED AND CRIMP MULCHED AND COVERED WITH EROSION CONTROL BLANKET OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE CITY.

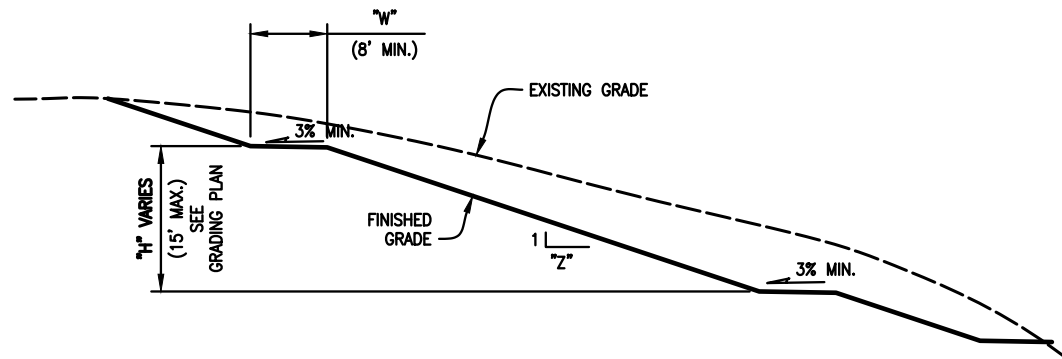


Sheet Revisions				NOTE: SCALES SHOWN ARE FOR 22"x34" SHEETS; ADJUST ACCORDINGLY FOR 11"x17" SHEETS.	 CITY OF CASTLE PINES • 360 VILLAGE SQUARE LANE, SUITE B • CASTLE PINES, CO 80108
<input type="checkbox"/>	1	CASTLE PINES REISSUE	12/19		
<input type="checkbox"/>	2	CASTLE PINES REISSUE	06/20		
<input type="checkbox"/>	3	CASTLE PINES REISSUE FOR CP GESC	06/21		
<input type="checkbox"/>					

GRADING, EROSION, AND SEDIMENT CONTROL

GESC PLAN
STANDARD NOTES
AND DETAILS

SHEET
12 OF 14



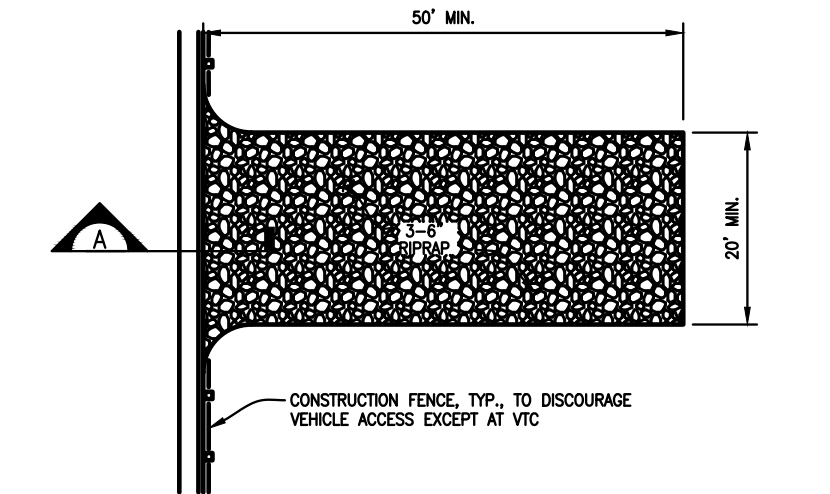
ELEVATION
SCALE: 1/2" = 1'-0"

TERRACING INSTALLATION NOTES

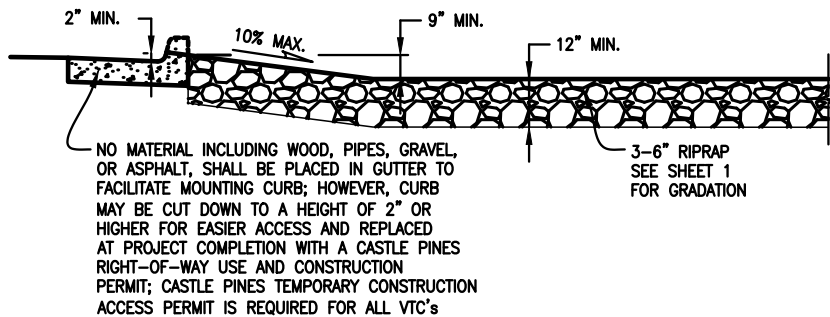
1. SEE PLAN VIEW FOR:
- WIDTH, "W", AND SLOPE, "Z".
2. TERRACING IS NOT REQUIRED FOR SLOPES OF 4 TO 1 OR FLATTER.
3. EARTH (VEGETATED) SLOPES STEEPER THAN 3 TO 1 ARE NOT ALLOWED ON THE SITE.

TERRACING MAINTENANCE NOTES

1. THE RECOMMENDED INSPECTION FREQUENCY FOR TERRACING IS WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT UPSTREAM SEDIMENT AS NECESSARY.
2. ANY RILL EROSION OCCURRING ON SLOPES SHALL BE REPAIRED AND RESEEDED AND MULCHED IN ACCORDANCE WITH DETAIL 18.



PLAN
SCALE: 1" = 10'-0"



SECTION A-A
SCALE: 1/2" = 1'-0"

VEHICLE TRACKING CONTROL INSTALLATION NOTES

1. VEHICLE TRACKING CONTROL PADS SHALL BE INSTALLED AT EVERY ACCESS POINT TO SITE.
2. VEHICLE TRACKING CONTROL PADS SHALL CONSIST OF HARD, DENSE, DURABLE STONE, ANGULAR IN SHAPE AND RESISTANT TO WEATHERING. ROUNDED STONE OR BOULDERS WILL NOT BE ACCEPTABLE. THE STONES SHALL BE 3" WITH A MAXIMUM SIZE OF 6". THE STONE SHALL HAVE A SPECIFIC GRAVITY OF AT LEAST 2.6. CONTROL OF GRADATION WILL BE BY VISUAL INSPECTIONS.
3. ANY CRACKED OR DAMAGED CURB AND GUTTER AND SIDEWALK SHALL BE REPLACED BY PERMITTEE.
4. A CASTLE PINES TEMPORARY CONSTRUCTION ACCESS PERMIT IS REQUIRED FOR EACH NEW ACCESS POINT ONTO EITHER CITY OF CASTLE PINES R.O.W. OR DOUGLAS COUNTY R.O.W.

VEHICLE TRACKING CONTROL MAINTENANCE NOTES

1. THE RECOMMENDED INSPECTION FREQUENCY FOR VEHICLE TRACKING CONTROL IS DAILY. GRAVEL SURFACE SHALL BE CLEAN AND LOOSE ENOUGH TO RUT SLIGHTLY UNDER WHEEL LOADS AND CAUSE LOOSE GRAVEL TO DISLodge MUD FROM TIRES. WHEN GRAVEL BECOMES COMPACTED OR FILLED WITH SEDIMENT SO THAT THE EFFECTIVENESS OF THE PAD IS DIMINISHED, CONTRACTOR SHALL RIP, TURN OVER, OR OTHERWISE LOOSEN GRAVEL, PLACE ADDITIONAL NEW GRAVEL, OR REPLACE WITH NEW GRAVEL AS NECESSARY TO RESTORE EFFECTIVENESS.
2. VEHICLE TRACKING CONTROL SHALL BE REMOVED AT THE END OF CONSTRUCTION, THE GRAVEL MATERIAL REMOVED OR, IF APPROVED BY THE CITY, USED ON SITE, AND THE AREA TOPSOILED, DRILL SEEDED AND CRIMP MULCHED OR OTHERWISE STABILIZED.

 **TER** TERRACING **24**

 **VTC** VEHICLE TRACKING CONTROL **25**

Sheet Revisions				 CITY OF CASTLE PINES • 360 VILLAGE SQUARE LANE, SUITE B • CASTLE PINES, CO 80108	GRADING, EROSION, AND SEDIMENT CONTROL	GESC PLAN STANDARD NOTES AND DETAILS	SHEET 13 OF 14
<input type="checkbox"/>	1	CASTLE PINES REISSUE	12/19				
<input type="checkbox"/>	2	CASTLE PINES REISSUE	06/20				
<input type="checkbox"/>	3	CASTLE PINES REISSUE FOR CP GESC	06/21				
<input type="checkbox"/>							
NOTE: SCALES SHOWN ARE FOR 22"x34" SHEETS; ADJUST ACCORDINGLY FOR 11"x17" SHEETS.							

TABLE 1. RIPRAP GRADATIONS

TABLE 1. RIPRAP GRADATIONS

RIPRAP TYPE	D50 MEDIAN STONE SIZE (INCHES)	% OF MATERIAL SMALLER THAN TYPICAL STONE	TYPICAL STONE EQUIVALENT DIAMETER (INCHES)	TYPICAL STONE WEIGHT (POUNDS)
VL	6	70 – 100	12	85
		50 – 70	9	35
		35 – 50	6	10
		2 – 10	2	0.4
L	9	70 – 100	15	160
		50 – 70	12	85
		35 – 50	9	35
		2 – 10	3	1.3
M	12	70 – 100	21	440
		50 – 70	18	275
		35 – 50	12	85
		2 – 10	4	3
H	18	100	30	1280
		50 – 70	24	650
		35 – 50	18	275
		2 – 10	6	10
VH	24	100	42	3500
		50 – 70	33	1700
		35 – 50	24	650
		2 – 10	9	35

TABLE 2. RIPRAP BEDDING

SIEVE SIZE	MASS PERCENT PASSING SQUARE MESH SIEVES
	CLASS A
3"	100
1 1/2"	20 – 90
NO. 4	0 – 20
NO. 200	0 – 3
MATCHES SPECIFICATIONS FOR CDOT CLASS A FILTER MATERIAL AND UDFCD TYPE 1 BEDDING. ALL ROCK SHALL BE FRACTURED FACE, ALL SIDES.	

TABLE 3. 1 1/2" CRUSHED ROCK

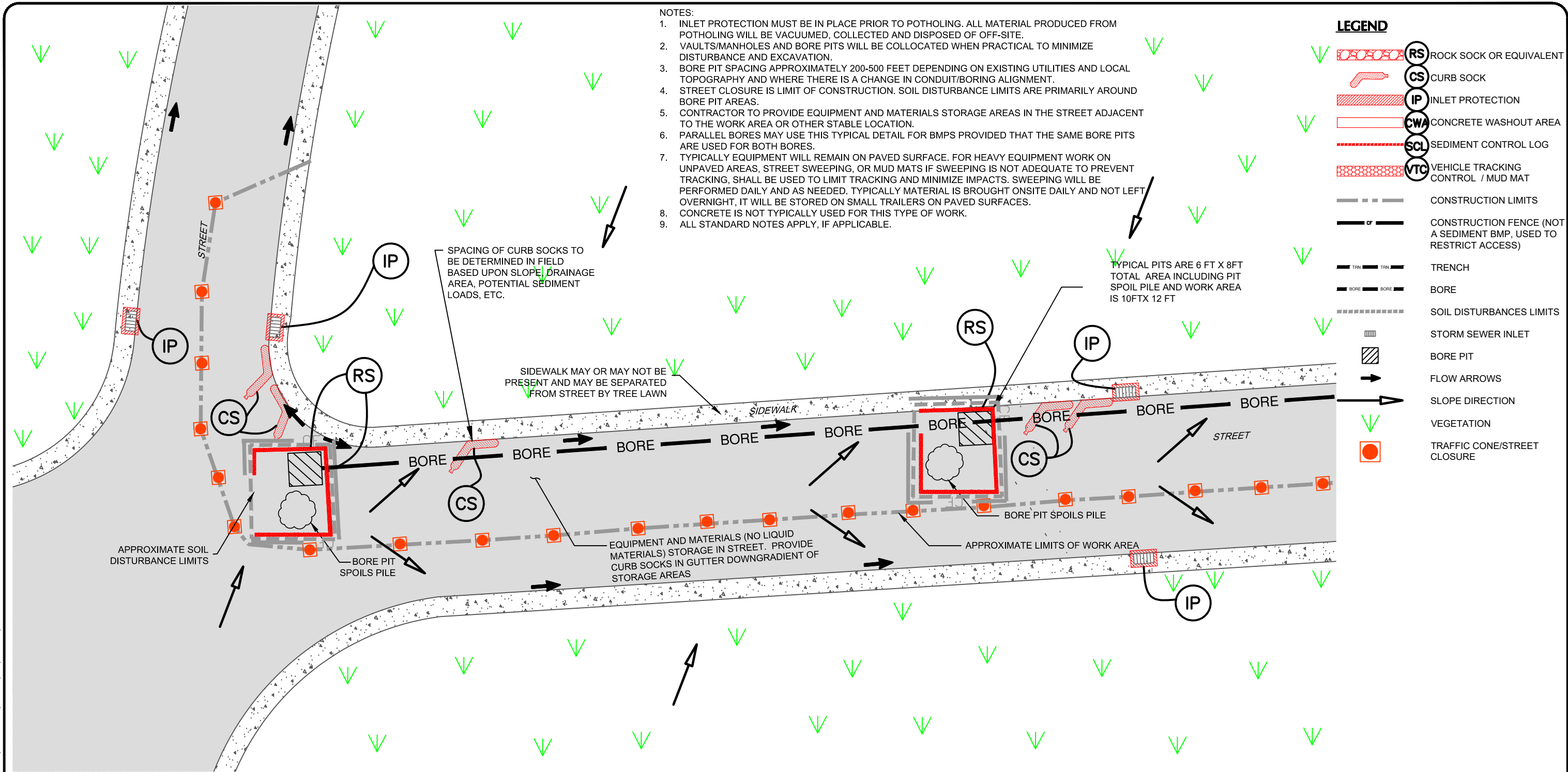
SIEVE SIZE	MASS PERCENT PASSING SQUARE MESH SIEVES
	NO. 4
2"	100
1 1/2"	90 – 100
1"	20 – 55
3/4"	0 – 15
3/8"	0 – 5
MATCHES SPECIFICATIONS FOR NO. 4 COARSE AGGREGATE FOR CONCRETE PER AASHTO M43. ALL ROCK SHALL BE FRACTURED FACE, ALL SIDES.	

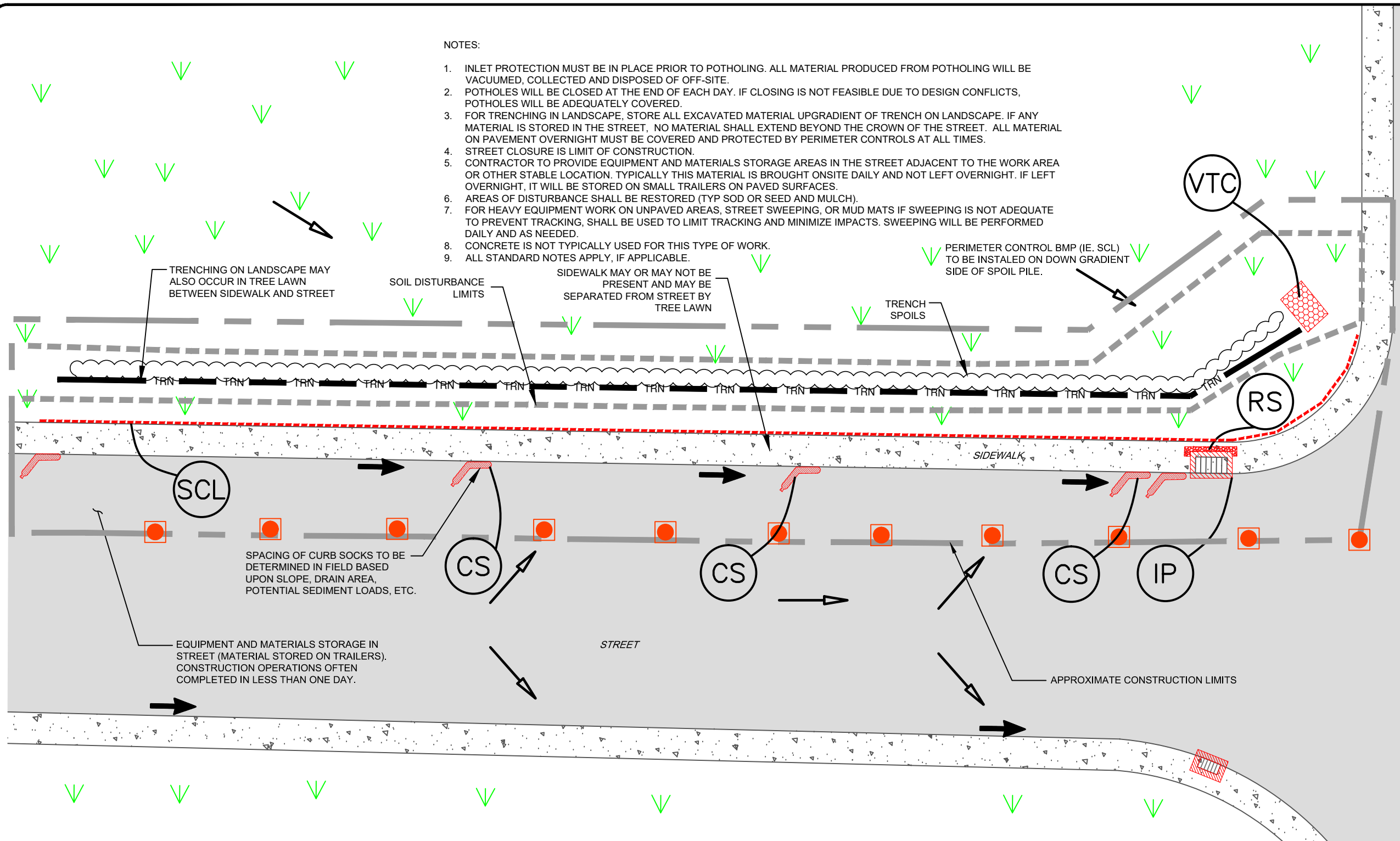


APPENDIX B

Utility Standard Details

Plot Date/Time: 08/16/2021, 03:56:09 PM; Z:\PROJECT FILES\171\171-046\171-046.030\CAD-GIS\CAD\01_DWG\XCEL GENERAL TYPICAL BMP DETAILS.DWG-3 BORING IN PAVEMENT





- NOTES:

1. INLET PROTECTION MUST BE IN PLACE PRIOR TO POTHOLING. ALL MATERIAL PRODUCED FROM POTHOLING WILL BE VACUUMED, COLLECTED AND DISPOSED OF OFF-SITE.
2. POTHOLES WILL BE CLOSED AT THE END OF EACH DAY. IF CLOSING IS NOT FEASIBLE DUE TO DESIGN CONFLICTS, POTHOLES WILL BE ADEQUATELY COVERED.
3. FOR TRENCHING IN LANDSCAPE, STORE ALL EXCAVATED MATERIAL UPGRADIENT OF TRENCH ON LANDSCAPE. IF ANY MATERIAL IS STORED IN THE STREET, NO MATERIAL SHALL EXTEND BEYOND THE CROWN OF THE STREET. ALL MATERIAL ON PAVEMENT OVERNIGHT MUST BE COVERED AND PROTECTED BY PERIMETER CONTROLS AT ALL TIMES.
4. STREET CLOSURE IS LIMIT OF CONSTRUCTION.
5. CONTRACTOR TO PROVIDE EQUIPMENT AND MATERIALS STORAGE AREAS IN THE STREET ADJACENT TO THE WORK AREA OR OTHER STABLE LOCATION. TYPICALLY THIS MATERIAL IS BROUGHT ONSITE DAILY AND NOT LEFT OVERNIGHT. IF LEFT OVERNIGHT, IT WILL BE STORED ON SMALL TRAILERS ON PAVED SURFACES.
6. AREAS OF DISTURBANCE SHALL BE RESTORED (TYP SOD OR SEED AND MULCH).
7. FOR HEAVY EQUIPMENT WORK ON UNPAVED AREAS, STREET SWEEPING, OR MUD MATS IF SWEEPING IS NOT ADEQUATE TO PREVENT TRACKING, SHALL BE USED TO LIMIT TRACKING AND MINIMIZE IMPACTS. SWEEPING WILL BE PERFORMED DAILY AND AS NEEDED.
8. CONCRETE IS NOT TYPICALLY USED FOR THIS TYPE OF WORK.
9. ALL STANDARD NOTES APPLY, IF APPLICABLE.

— TRENCHING ON LANDSCAPE MAY ALSO OCCUR IN TREE LAWN BETWEEN SIDEWALK AND STREET

SOIL DISTURBANCE

SIDEWALK MAY OR MAY NOT BE
PRESENT AND MAY BE
SEPARATED FROM STREET BY
TREE LAWN

TRENCH

PERIMETER CONTROL BMP (IE. SCL)
TO BE INSTALED ON DOWN GRADIENT
SIDE OF SPOIL PILE.

SPACING OF CURB SOCKS TO BE –
DETERMINED IN FIELD BASED
UPON SLOPE, DRAIN AREA,
POTENTIAL SEDIMENT LOADS, ETC.

— EQUIPMENT AND MATERIALS STORAGE IN STREET (MATERIAL STORED ON TRAILERS). CONSTRUCTION OPERATIONS OFTEN COMPLETED IN LESS THAN ONE DAY.

— APPROXIMATE CONSTRUCTION LIMITS

LEGEND

- | | | |
|------|------------|--|
| | RS | ROCK SOCK OR EQUIVALENT |
| | CS | CURB SOCK |
| | IP | INLET PROTECTION |
| | CWA | CONCRETE WASHOUT AREA |
| | SCL | SEDIMENT CONTROL LOG |
| | VTC | VEHICLE TRACKING CONTROL / MUD MAT |
|
 | | |
| | | CONSTRUCTION LIMITS |
| | | CONSTRUCTION FENCE (NOT A SEDIMENT BMP, USED TO RESTRICT ACCESS) |
|
 | | |
| | | TRENCH |
|
 | | |
| | | BORE |
|
 | | |
| | | SOIL DISTURBANCES LIMITS |
|
 | | |
| | | STORM SEWER INLET |
|
 | | |
| | | BORE PIT |
|
 | | |
| | | FLOW ARROWS |
|
 | | |
| | | SLOPE DIRECTION |
|
 | | |
| | | VEGETATION |
|
 | | |
| | | TRAFFIC CONE / STREET CLOSURE |

Plot Date/Time: 08/16/2021, 03:56:17 PM; Z:\PROJECT FILES\171\171-046\171-046.030\CAD-GIS\CAD\01_DWG\GENERAL BMP DETAILS.DWG-1 TRENCH IN PAVEMENT

NOTES:

1. INLET PROTECTION MUST BE IN PLACE PRIOR TO POTHOLING. ALL MATERIAL PRODUCED FROM POTHOLING WILL BE VACUUMED, COLLECTED AND DISPOSED OF OFF-SITE.
2. VAULT SPACING IS APPROXIMATELY EVERY 900 FEET ALONG PRIMARY TRENCHING PATH FOR PROJECTS WITH VAULTS.
3. FOR TRENCHING IN PAVEMENT, STORE ALL EXCAVATED MATERIAL ON THE OPPOSITE SIDE OF THE TRENCH FROM THE NEAREST GUTTER. NO MATERIAL SHALL EXTEND BEYOND THE CROWN OF THE STREET. ALL MATERIAL ON PAVEMENT OVERNIGHT MUST BE COVERED AND PROTECTED BY PERIMETER CONTROLS AT ALL TIMES.
4. STREET CLOSURE IS LIMIT OF CONSTRUCTION.
5. CONTRACTOR TO PROVIDE EQUIPMENT AND MATERIALS STORAGE AREAS IN THE STREET ADJACENT TO THE WORK AREA OR OTHER STABLE LOCATION. TYPICALLY MATERIAL IS BROUGHT ON SITE DAILY AND NOT LEFT OVERNIGHT. IF MATERIAL IS LEFT OVERNIGHT, IT WILL BE STORED ON SMALL TRAILERS ON PAVED SURFACES.
6. AREAS OF DISTURBANCE TO BE RESTORED WITH PAVEMENT.
7. TYPICALLY EQUIPMENT WILL REMAIN ON PAVED SURFACE. FOR HEAVY EQUIPMENT WORK ON UNPAVED AREAS, STREET SWEEPING, OR MUD MATS IF SWEEPING IS NOT ADEQUATE TO PREVENT TRACKING, SHALL BE USED TO LIMIT TRACKING AND MINIMIZE IMPACTS. SWEEPING WILL BE PERFORMED DAILY AND AS NEEDED.
8. CONCRETE IS NOT TYPICALLY USED FOR THIS TYPE OF WORK.
9. ALL STANDARD NOTES APPLY, IF APPLICABLE.

TYPICAL SOIL
DISTURBANCE LIMITS

SPACING OF CURB SOCKS TO BE
DETERMINED IN FIELD BASED
UPON SLOPE, DRAINAGE AREA,
POTENTIAL SEDIMENT LOADS, ETC.

TRENCH
SPOILS

SIDEWALK MAY OR MAY NOT BE
PRESENT AND MAY BE
SEPARATED FROM STREET BY
TREE LAWN

SIDEWALK

EQUIPMENT AND MATERIALS STORAGE IN
STREET (MATERIAL STORED ON TRAILERS).
CONSTRUCTION OPERATIONS OFTEN
COMPLETED IN LESS THAN ONE DAY.

STREET

APPROXIMATE CONSTRUCTION LIMITS

LEGEND

- RS ROCK SOCK OR EQUIVALENT
- CS CURB SOCK
- IP INLET PROTECTION
- CWA CONCRETE WASHOUT AREA
- SCL SEDIMENT CONTROL LOG
- VTG VEHICLE TRACKING CONTROL / MUD MAT
- CONSTRUCTION LIMITS
- CONSTRUCTION FENCE (NOT A SEDIMENT BMP, USED TO RESTRICT ACCESS)
- TRN TRENCH
- BORE BORE
- SOIL DISTURBANCES LIMITS
- STORM SEWER INLET
- BORE PIT
- FLOW ARROWS
- SLOPE DIRECTION
- VEGETATION
- TRAFFIC CONE/STREET CLOSURE



TRENCHING IN PAVEMENT
STANDARD CONTROL
MEASURE DETAIL

Date: 8/13/21

Designed By: JK/TAE

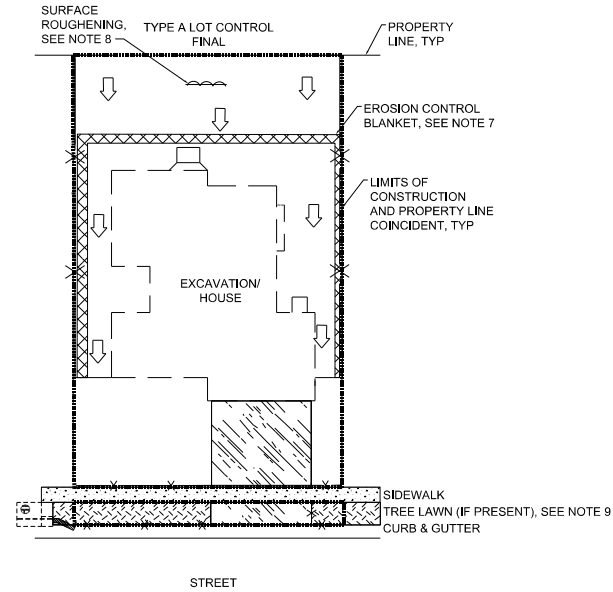
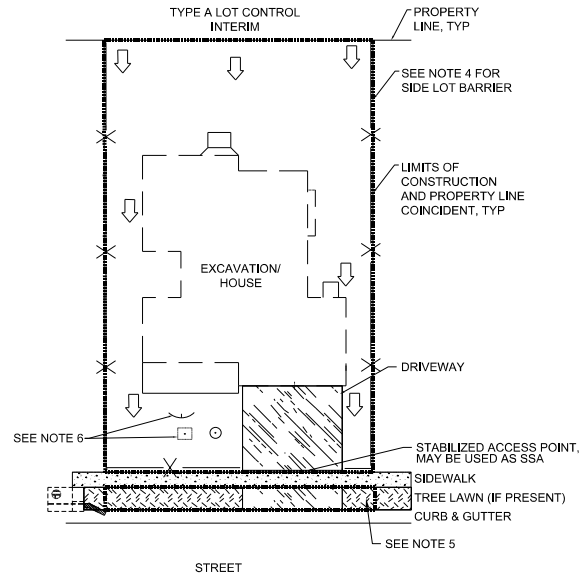
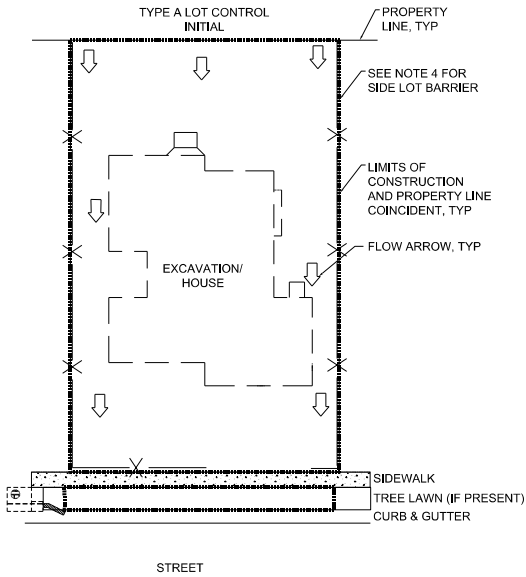
Drawing No.

4 OF 4



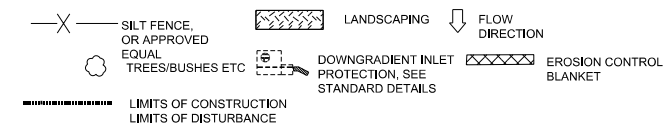
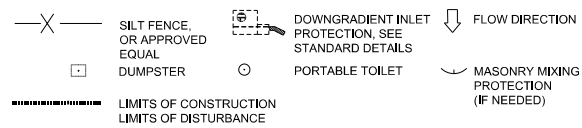
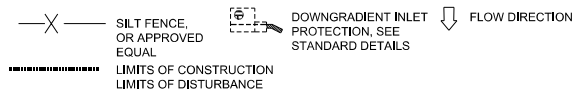
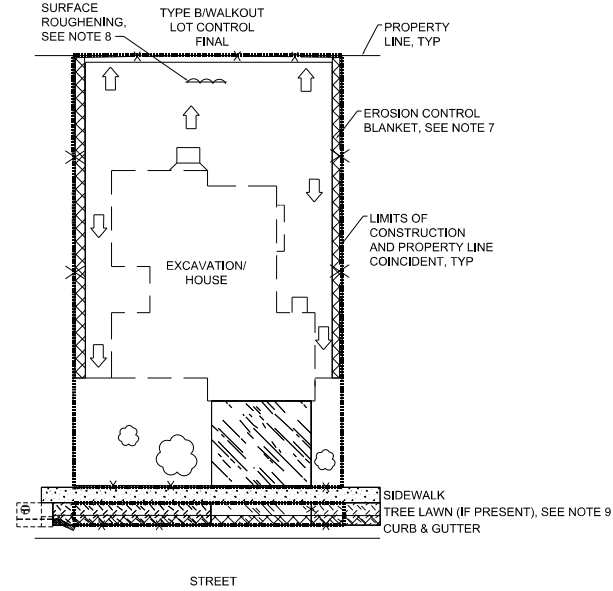
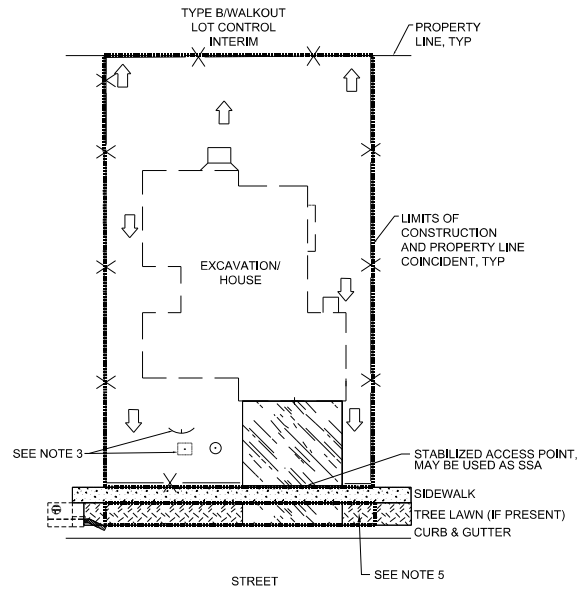
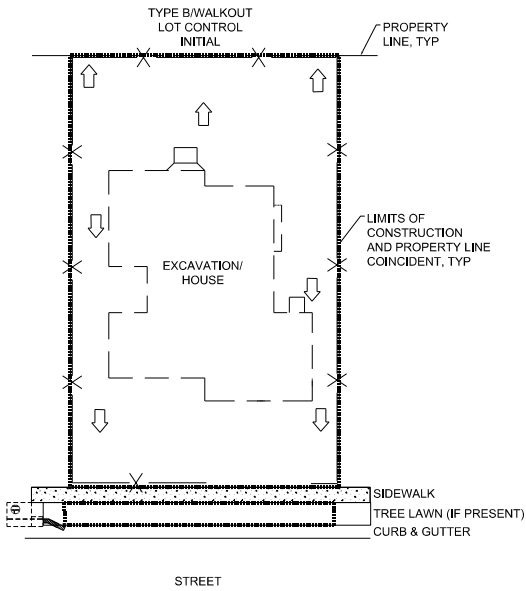
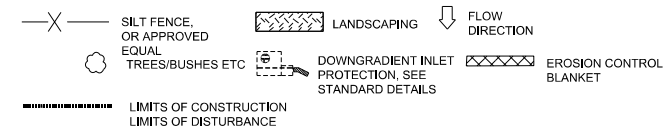
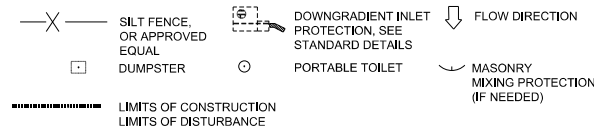
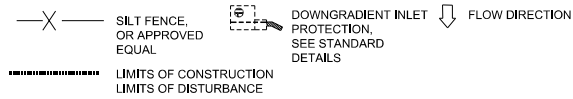
APPENDIX C

Single-Family Lot Details



CASTLE PINES NOTES

- SEE COVER SHEET OF THE CITY OF CASTLE PINES GESC STANDARD NOTES AND DETAILS (SHEET 1) FOR ADDITIOANL LEGEND OF CONTROL MEASURE NAMES AND SYMBOLS.
- SHADED CONTROL MEASURES WERE INSTALLED IN INITIAL OR INTERIM GESC DRAWING AND , UNLESS OTHERWISE INDICATED, SHALL BE LEFT IN PLACE UNTIL REVEGETATION ESTABLISHMENT IS APPROVED BY THE CITY. FINAL CONTROL MEASURES (CMS) MUST BE INSTALLED AND LEFT IN PLACE UNTIL REVEGETATION IS ESTABLISHED.
- SEE CONSTRUCTION PLANS FOR DETAILS OF PERMANENT DRAINAGE FACILITIES, CULVERTS, STORM DRAINAS AND OUTLET PROTECTION.
- IMPLEMENT SIDE LOT CONTROLS IF TOPOGRAPHY FLOWS TO ADJACENT PROPERTY WHICH ARE LANDSCAPED, NO LONGER IN OPEARTIONAL CONTROL OF PERMITTEE, OPEN SPACE, OR ROADWAY, IF MULTIPLE ADJACENT LOTS ARE IN DEVELOPMENT AT THE SAME TIME INDIVIDUAL SIDE LOT CONTROLS MAY NOT BE REQUIRED.
- FOR TREE LAWN, IF PRESENT, UTILIZE SILT FENCE, SEDIMENT CONTROL LOG, EROSION CONTROL BLANKET OR OTHER CITY OF CASTLE PINES APPROVED SEDIMENT BARRIER. SEDIMENT BARRIER TO EXTEND A SHORT DISTANCE ALONG DRIVE WAY OR PATH TOWARDS HOUSE.
- PROVIDE CMS AND DOWN GRADIENT CONTROLS FOR DUMPSTERS, PORTABLE TOILETS AND MASONRY MIXING EQUIPMENT, IF INSTALLED ON LOT.
- EROSION CONTROL BLANKET PERIMETER CONTROLS TO BE INSTALLED A MINIMUM OF 4' WIDE; SEDIMENT CONTROL LOGS INSTALLED ON TO POF THE EROSION CONTROL BALNKETS ON THE DOWN GRADIENT SIDE OF THE LOT ONLY, ADDITIONAL EROSION CONTROL BLANKET TO BE APPLIED BENEATH GUTTER DOWNSPOUTS.
- SURFACE ROUGHENING AND SEEDING AND MULCHING OR OTHER CITY OF CASTLE PINES APPROVED TEMPORARY STABILIZATION SHOULD BE USED IN ALL OTHER DISTURBED AREAS WHEN INSTALLATION OF PERMANENT LANDSCAPING NEEDS TO BE DELAYED DUE TO WEATHER OR OTHER CONDITIONS. COORDINATE WITH MS4 INSPECTOR.
- IF TREE LAWN IS PRESENT INSTALL EROSION CONTROL BLANKET BETWEEN BACK OF CURB AND SIDEWALK WHERE SURFACE ROUGHENING IS NOT POSSIBLE.



Sheet Revisions			

NOTE: SCALES SHOWN ARE FOR 22"x34" SHEETS; ADJUST ACCORDINGLY FOR 11"x17" SHEETS.



GRADING, EROSION, AND
SEDIMENT CONTROL

GESC PLAN
INDIVIDUAL LOT
CONTROLS

SHEET
1 OF 1



APPENDIX D

Castle Pines Seed Mixes

CASTLE PINES SEED MIX INFORMATION

(Based on Douglas County)

Castle Pines Permanent Drill Seed Mix					
Common Name	Botanical Name	Variety	Notes	% in Mix	Pounds of PLS Per Acre
BIG BLUESTEM	<i>Andropogon gerardi</i>	KAW	PNWS	10	1.1
YELLOW INDIANGRASS	<i>Sorghastrum nutans</i>	CHEYENNE	PNWS	10	1
SWITCHGRASS	<i>Panicum virgatum</i>	BLACKWELL	PNWS	10	0.4
SIDEOATS GRAMA	<i>Bouteloua curtipendula</i>	VAUGHN	PNWB	10	0.9
WESTERN WHEATGRASS	<i>Pascopyrum smithii</i>	ARRIBA	PNCS	10	1.6
BLUE GRAMA	<i>Bouteloua gracilis</i>	HACHITA	PNWB	10	0.3
THICKSPIKE WHEATGRASS	<i>Elymus lanceolatus ssp. dasystachyum</i>	CRITANA	PNCS	10	1
PRAIRIE SANDREED	<i>Calamovilfa longifolia</i>	GOSHEN	PNWS	10	0.7
GREEN NEEDLEGRASS	<i>Stipa viridula</i>	LODORM	PNCB	10	1
SLENDER WHEATGRASS	<i>Elymus trachycaulus ssp. trachycaulus</i>	PRYOR	PNCB	5	0.6
STREAMBANK WHEATGRASS	<i>Elymus lanceolatus ssp. riparium</i>	SODAR	PNCS	5	0.6

Castle Pines Temporary Drill Seeding Mix					
Common Name	Botanical Name	Variety	Notes	% in Mix	Pounds of PLS Per Acre
SMOOTH BROMEGRASS	<i>Bromus inermis</i>	LINCOLN	PICS	30	3.9
INTERMEDIATE WHEATGRASS	<i>Elytrigia intermedia ssp. intermedia</i>	OAHE	PICS	30	4.5
PUBESCENT WHEATGRASS	<i>Elytrigia intermedia ssp. trichophorum</i>	LUNA	PICS	30	4.2
ANNUAL RYEGRASS	<i>Lolium multiflorum</i>	N/A	AICB	10	0.8

Castle Pines Low Growth Drill Seed Mix					
Common Name	Botanical Name	Variety	Notes	% in Mix	Pounds of PLS Per Acre
BUFFALOGRASS	<i>Buchloe dactyloides</i>	TEXOKA	PNWS	20	3.2
BLUE GRAMA	<i>Bouteloua gracilis</i>	HACHITA	PNWB	20	0.6
WESTERN WHEATGRASS	<i>Pascopyrum smithii</i>	ARRIBA	PNCS	20	3.2
SIDEOATS GRAMA	<i>Bouteloua curtipendula</i>	VAUGHN	PNWB	20	1.8
THICKSPIKE WHEATGRASS	<i>Elymus lanceolatus ssp. dasystachyum</i>	CRITANA	PNCS	10	1
STREAMBANK WHEATGRASS	<i>Elymus lanceolatus ssp. riparium</i>	SODAR	PNCS	10	1.2

Notes: P = Perennial, A = Annual, N = Native, I = Introduced, W = Warm Season, C = Cool Season, S = Sod Former, B = Bunchgrass



APPENDIX E

GESC Cost Estimate Form

Castle Pines GESC Permit

Cost Estimate Spreadsheet

V 1.2 6-21

CM No.	CM	ID	Unit	Installation Unit Cost	Quantity	Cost
1	Check Dam	CD	LF	\$ 24.00		\$
2	Compost Blanket	CB	SF	\$0.36		\$
3	Compost Filter Berm	CFB	LF	\$ 2.00		\$
4	Concrete Washout Area	CWA	EA	\$ 100.00		\$
5	Construction Fence	CF	LF	\$ 2.00		\$
6	Construction Markers	CM	LF	\$ 0.20		\$
7	Dewatering	DW	EA	\$ 600.00		\$
8	Diversion Ditch	DD	LF	\$ 1.60		\$
9	Erosion Control Blanket	ECB	SY	\$ 5.00		\$
10	Inlet Protection	IP	LF	\$ 20.00		\$
11	Reinforced Check Dam	RCD	LF	\$ 36.00		\$
12	Reinforced Rock Berm	RRB	LF	\$ 9.00		\$
13	RRB for Culvert Protection	RRC	LF	\$ 9.00		\$
14	Sediment Basin	SB	AC	\$ 1,100.00		\$
15	Sediment Control Log	SCL	LF	\$ 2.00		\$
16	Sediment Trap	ST	EA	\$ 600.00		\$
17	Seeding and Mulching	SM	AC	\$ 2,500.00		\$
18	Silt Fence	SF	LF	\$ 2.00		\$
19	Stabilized Staging Area	SSA	SY	\$ 2.00		\$
20	Surface Roughening	SR	AC	\$ 600.00		\$
21	Temporary Slope Drain	TSD	LF	\$ 30.00		\$
22	Temporary Stream Crossing	TSC	EA	\$1,000.00		\$
23	Terracing	TER		\$ -		\$
24	Vehicle Tracking Control	VTC	EA	\$1,000.00		\$
25	VTC with Wheel Wash	WW		\$ -		\$
26	Temporary Batch Plant Restoration		AC	\$5,000.00		\$
SUBTOTAL						\$
15% contingency						\$
TOTAL						\$



APPENDIX F

Letter of Credit Template

IRREVOCABLE STANDBY LETTER OF CREDIT

DATE: _____, 201__

IRREVOCABLE LETTER OF CREDIT NO. [REDACTED]

BANK NAME AND ADDRESS:

ATTN: _____

BENEFICIARY:

CITY OF CASTLE PINES
360 VILLAGE SQUARE LANE, SUITE B
CASTLE PINES, CO 80108
ATTN: PUBLIC WORKS DIRECTOR

CUSTOMER:

[Insert Name and Address]

EXPIRATION DATE: _____, 201__ (no less than one year from date of LOC)

RE: _____ [insert name of development/plat reference] – TO SECURE PERFORMANCE OF GRADING, EROSION CONTROL, AND SEDIMENT CONTROL (GESC) REQUIREMENTS

DEAR SIR OR MADAM:

[REDACTED] ("BANK") HEREBY ESTABLISHES IN FAVOR OF THE CITY OF CASTLE PINES, COLORADO ("BENEFICIARY"), AT THE REQUEST OF _____ ("CUSTOMER"), AN IRREVOCABLE LETTER OF CREDIT IN THE AMOUNT OF [REDACTED] U.S. DOLLARS (\$ [REDACTED].00) AVAILABLE BY IMMEDIATE PAYMENT UPON PRESENTATION AT BANK'S OFFICE AT [REDACTED] ATTN: [REDACTED] OF BENEFICIARY'S SIGHT DRAFT(S) IN AN AMOUNT NOT EXCEEDING THE AVAILABLE AMOUNT, AND EACH SIGHT DRAFT MUST BEAR THE REFERENCE: "DRAWN ON [REDACTED] [INSERT BANK NAME]. IRREVOCABLE LETTER OF CREDIT NO. [REDACTED], DATED [REDACTED]."

IN ADDITION, BENEFICIARY'S SIGHT DRAFT(S) MUST BE ACCOMPANIED BY A COPY OF THIS IRREVOCABLE LETTER OF CREDIT, CERTIFIED BY THE CITY CLERK OR DEPUTY CITY CLERK TO BE A TRUE AND COMPLETE COPY OF THIS LETTER OF CREDIT AND AN AFFIDAVIT OF CERTIFICATION IN THE FORM ATTACHED HERETO AS EXHIBIT 1 (THE "AFFIDAVIT"). THE AFFIDAVIT SHALL REFERENCE THE CITY'S GESC MANUAL, ACCEPTED GESC PLAN AND THE GESC PERMIT ISSUED TO CUSTOMER FOR THE _____ [insert name of development/plat reference], PERMIT NO. _____ (COLLECTIVELY, THE "GESC REQUIREMENTS"). UPON PRESENTATION OF SUCH AFFIDAVIT IN COMPLIANCE WITH THE TERMS CONTAINED HEREIN, BANK SHALL HONOR

THE ACCOMPANYING SIGHT DRAFT(S) AND SHALL NOT BE REQUIRED TO DETERMINE QUESTIONS OF FACT OR LAW BETWEEN BENEFICIARY AND CUSTOMER.

THIS IRREVOCABLE LETTER OF CREDIT SETS FORTH THE FULL UNDERSTANDING OF THE PARTIES HERETO AND BANK HEREBY PROMISES TO BENEFICIARY THAT ANY DRAFTS DRAWN UNDER AND IN COMPLIANCE WITH THE TERMS OF THIS IRREVOCABLE LETTER OF CREDIT WILL BE DULY HONORED IF PRESENTED TO BANK ON OR BEFORE _____, 201__ (THE "EXPIRATION DATE"), OR ANY AUTOMATICALLY EXTENDED EXPIRATION DATE.

THIS IRREVOCABLE LETTER OF CREDIT IS NONTRANSFERABLE.

PARTIAL AND MULTIPLE DRAWINGS ARE PERMITTED UNDER THIS LETTER OF CREDIT.

IT IS A CONDITION OF THIS LETTER OF CREDIT THAT IT SHALL BE AUTOMATICALLY EXTENDED WITHOUT AMENDMENT FOR ADDITIONAL PERIODS OF ONE YEAR FROM THE PRESENT OR ANY AUTOMATICALLY EXTENDED EXPIRATION DATE THEREOF, UNLESS AT LEAST THIRTY (30) DAYS PRIOR TO ANY SUCH DATE WE SHALL SEND NOTICE OF YOU BY REGISTERED MAIL OR COURIER OR HAND DELIVERED NOTIFICATION AT THE ABOVE ADDRESS THAT WE ELECT NOT TO CONSIDER THIS LETTER OF CREDIT EXTENDED FOR ANY SUCH ADDITIONAL PERIOD.

UPON RECEIPT BY YOU OF SUCH NOTICE OF NON-EXTENSION, YOU MAY DRAW ON US AT SIGHT FOR AN AMOUNT NOT TO EXCEED THE THEN AVAILABLE AMOUNT UNDER THE LETTER OF CREDIT WITHIN THE THEN-APPLICABLE EXPIRATION DATE, BY PRESENTATION OF YOUR SIGHT DRAFT ACCOMPANIED BY A COPY OF THIS IRREVOCABLE LETTER OF CREDIT, CERTIFIED BY THE CITY CLERK OR DEPUTY CITY CLERK TO BE A TRUE AND COMPLETE COPY OF THIS LETTER OF CREDIT AND AN AFFIDAVIT OF CERTIFICATION SIGNED BY AN AUTHORIZED OFFICER OF BENEFICIARY READING AS FOLLOWS:

"THE AMOUNT OF THIS DRAWING USD _____ UNDER _____ [INSERT BANK NAME] LETTER OF CREDIT NUMBER _____ REPRESENTS FUNDS DUE US AS WE HAVE RECEIVED NOTICE FROM _____ [INSERT BANK NAME] OF ITS DECISION NOT TO AUTOMATICALLY EXTEND LETTER OF CREDIT NUMBER _____ AND THE UNDERLYING OBLIGATION OF CUSTOMER TO BENEFICIARY UNDER THE GESC REQUIREMENTS IS STILL OUTSTANDING."

DEMANDS FOR PAYMENT BY THE BENEFICIARY UNDER THIS LETTER OF CREDIT SHALL BE DEEMED TIMELY MADE IF PRESENTED BY EXPRESS, CERTIFIED OR REGISTERED MAIL OR COURIER, TO THE BANK AT THE BANK'S ADDRESS SET FORTH ABOVE, OR BY HAND DELIVERY TO BANK AT OUR ABOVE ADDRESS ON OR BEFORE THE EXPIRATION DATE.

THIS IRREVOCABLE LETTER OF CREDIT IS GOVERNED BY THE LAWS OF THE STATE OF COLORADO AND THE UNIFORM CUSTOMS AND PRACTICE FOR DOCUMENTARY CREDITS OF THE INTERNATIONAL CHAMBER OF COMMERCE (PUBLICATION 600) (2007 REVISION) AND, IN THE EVENT OF ANY CONFLICT, THE LAWS OF THE STATE OF COLORADO WILL CONTROL.

THE EXCLUSIVE VENUE FOR ALL DISPUTES REGARDING THIS IRREVOCABLE LETTER OF CREDIT
SHALL BE THE DISTRICT COURT FOR THE COUNTY OF DOUGLAS, STATE OF COLORADO.

VERY TRULY YOURS,

_____ [INSERT BANK NAME]

TITLE

EXAMPLE

EXHIBIT 1 TO IRREVOCABLE LETTER OF CREDIT

DRAWN ON _____ [INSERT BANK NAME] IRREVOCABLE LETTER OF CREDIT NO. _____
DATED _____

AFFIDAVIT OF CERTIFICATION

STATE OF COLORADO)
) SS.
COUNTY OF DOUGLAS)

I, _____, BEING DULY SWORN, STATE AS FOLLOWS:

TITLE AND AUTHORITY OF AFFIANT. I AM _____ FOR THE CITY OF CASTLE PINES, COLORADO AND AM AUTHORIZED TO ACT ON BEHALF OF THE CITY OF CASTLE PINES, COLORADO IN THIS MATTER.

CERTIFICATION. UNDER PENALTY OF LAW, I HEREBY CERTIFY THAT THE CUSTOMER HAS FAILED TO COMPLY WITH ALL REQUIREMENTS OF THE CITY'S GESC MANUAL, ACCEPTED GESC PLAN AND THE GESC PERMIT ISSUED TO CUSTOMER FOR THE _____ [insert name of development/plat reference], AND THE CITY OF CASTLE PINES IS ENTITLED TO DRAW ON THIS IRREVOCABLE LETTER OF CREDIT.

CITY OF CASTLE PINES

BY: _____
NAME: _____
TITLE: _____

SUBSCRIBED AND SWORN TO BEFORE ME THIS ____ DAY OF _____, 20____, BY
_____.

WITNESS MY HAND AND OFFICIAL SEAL.

MY COMMISSION EXPIRES: _____.

NOTARY PUBLIC

[SEAL]



APPENDIX G

Permanent Stormwater Control Measure Requirements

Example Operation & Maintenance (O&M) Plan
Requirements

Land Development Classification	Wetland and Floodplain Requirements	Flood Attenuation Requirements	MS4 Post-Construction Stormwater Quality Requirements	
			Outside of Cherry Creek Basin ¹	Cherry Creek Basin ¹
Tier 1 Development & Redevelopment (<500 sq. ft. imperviousness added)	Wetlands No net loss of wetland functions and values. Appropriate USACE permitting required. Floodplain Development restricted in Special Flood Hazard Area (SFHA) and permit required for development or temporary impacts in or under the 100 year floodplain.	Flood attenuation not required.	Post-construction water quality not required.	Post-construction water quality not required.
Tier 2 Development & Redevelopment (<1 -acre disturbance with impervious area increase > 500 sq. ft. and $<5,000$ sq. ft.)		Implement flood attenuation using USDCM runoff reduction practices and/or full spectrum detention for: 1) existing development to achieve release rates equal to discharge rates based on 1998 impervious area and 2) new development to achieve 90% of historic discharge rate.	Post-construction water quality control <u>is not</u> required for residential lots if they are not associated with a subdivision with active construction. Post-construction water quality control <u>is</u> required for commercial lots.	Implement water control measure that meets one or more of the following criteria: <ul style="list-style-type: none"> • WQCV does not leave the site • Sheet flow over grass buffer area • Grass swale & minimize directly connected impervious area (MDCIA) • Constructed wetland channel • Grass buffer meeting certain criteria • Hydrologic analysis showing adequate water quality protection • Alternative best management practices (BMPs) with comparable or better nutrient removal characteristics
Tier 3 Development & Redevelopment (<1 -acre disturbance with impervious area increase $> 5,000$ sq. ft.)			Implement water quality control measures to meet one of the following base design standards: <ul style="list-style-type: none"> • Treat and or infiltrate the Water Quality Capture Volume (WQCV) (CASTLE PINES REQUIRES FULL SPECTRUM DETENTION FOR MOST PROJECTS) • Treat the 80th percentile storm event to remove pollutants • Infiltrate 60% of the WQCV to reduce runoff • Provide regional WQCV control measure • Provide a regional WQCV facility 	Implement water quality control measure to provide the WQCV to treat, at a minimum, the 80 th percentile storm event. CASTLE PINES REQUIRES FULL SPECTRUM DETENTION FOR MOST PROJECTS <u>Approved BMPs:</u> <ul style="list-style-type: none"> • Extended Detention Basin (EDB) • Retention Pond (RP) • Constructed Wetland Basin (CWB) • Porous Pavement Detention (PPD) • Bioretention (BR) • Sand Filter Extended Detention Basin (SFB) • Runoff Reduction practices (MDCIA/LID) • Constructed wetland channel plus EDB, RP, CWB, PPD, BR or SFB, • Grass swales plus PPD or BR • Constructed wetland channel preceded by modular block pavement • MDCIA plus EDB, RP, BR, SFB
Tier 3 Development & Redevelopment (≥ 1 -acre disturbance)				<u>WQCV Alternatives:</u> Other SCMs that do not use the WQCV or are in combination with WQCV with better or comparable nutrient reduction capabilities.

¹See GESC manual for exclusions

Project Information - Pond A

1.0 General Information

A. Property Owner

ADD CONTACT INFORMATION

B. Design Engineer

ADD CONTACT INFORMATION

C. Project Completion Date

Phase 1 completed 2005 (included detention ponds)

Phase 2 completed December-2019

1.1 Hydraulic Information

A. Flow Rates-

CONTROL	INFLOW (CFS)	RELEASE (CFS)
WQCV	N/A	40-hour
10-YEAR	20.78	3.14
100-YEAR	54.04	21.50

B. Pond Description- Extended Detention Basin, earthen with concrete outlet structure and buried Rip Rap emergency overflow. There is no forbay or Micropool.

C. Outlet Specifications

DESCRIPTION	TYPE	VOLUME (AF)	WSEL
INVERT	N/A	0	5141.18
WQCV	ORIFICE PLATE	0.156	5142.30
10-YEAR	REC. ORIFICE	0.173	5143.20
100-YEAR	WEIR	0.324	5144.00

1.2 Miscellaneous Information

A. Project Survey Information- Survey control information shown on drawing.

B. Seed Mix- XXXXXXXXXX for specifications see:

Common Name	Species Name	Variety	%of Mix	lb/acre
Side Oats	Grama Bouteloua curtipendula	Vaughn	15%	2.74
Blue Grama	Bouteloua gracilis	Native, Alma, or Hachita	20%	0.84
Buffalograss	Buchloe dactyloides	Native	15%	9.33
WesternWheatgrass	Pascopyrum smithii	Arriba	12.5%	3.96
WesternWheatgrass	Pascopyrum smithii	Native	12.5%	3.96
Little Bluestem	Schizachyrium scoparium	Cimarron	13%	1.74
Green Needlegrass	Stipa viridula	Lodorm or Pastura	12%	2.31
Totals:			100%	24.88

C. Mow Area= 0.2 acres

Section 2 - Project Notes

2.0 General Facility Description-

Runoff generated from a portion of the subdivision is routed to roadside ditches and storm culverts to the pond. The water quality ponds and outlet structures are designed to detain a water quality volume, 10-year flood control volume and 100-year flood control volume. The ponds will have release rates for the WQCV, and the 10-year and 100-year rates controlled by an outlet structure.

2.1 Maintenance Notes

A. Maintenance Frequency

Routine Maintenance typically consists of regularly scheduled mowing and trash and debris pickups for 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. These activities normally will be performed numerous times during the year and following significant rainfall events.

B. Equipment and Special Tools Required (Routine Maintenance)

Rake or Broom
Mower
Weed eater
Shovel

Must include at least general frequencies for routine inspections and maintenance activities in the Maintenance Notes or procedures

2.2 Maintenance Procedure

A. Dewatering-should not be required at this facility.

B. Sediment Removal- Major sediment removal (if required) consists of removal of large quantities of sediment or removal of sediment from vegetated areas. When removing large quantities of sediment typically deposited in vegetated areas. The volume of sediment removed should return the pond to design volumes and grades. The removed sediment shall be transported and disposed of.

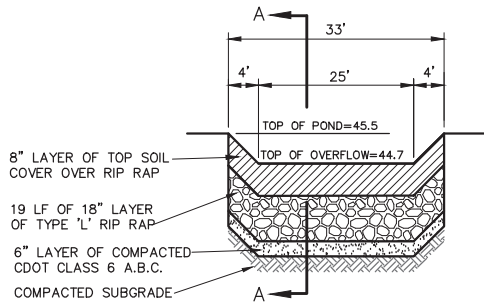
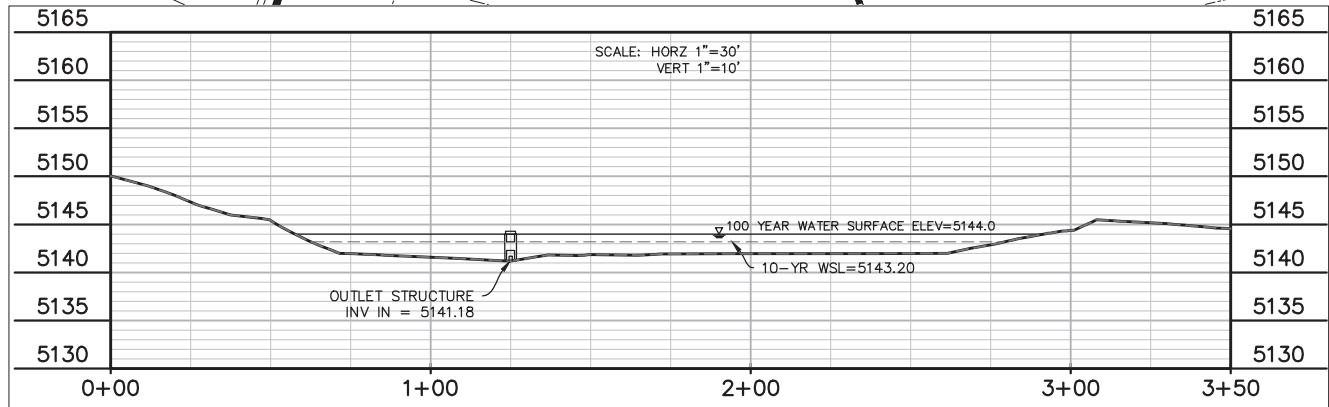
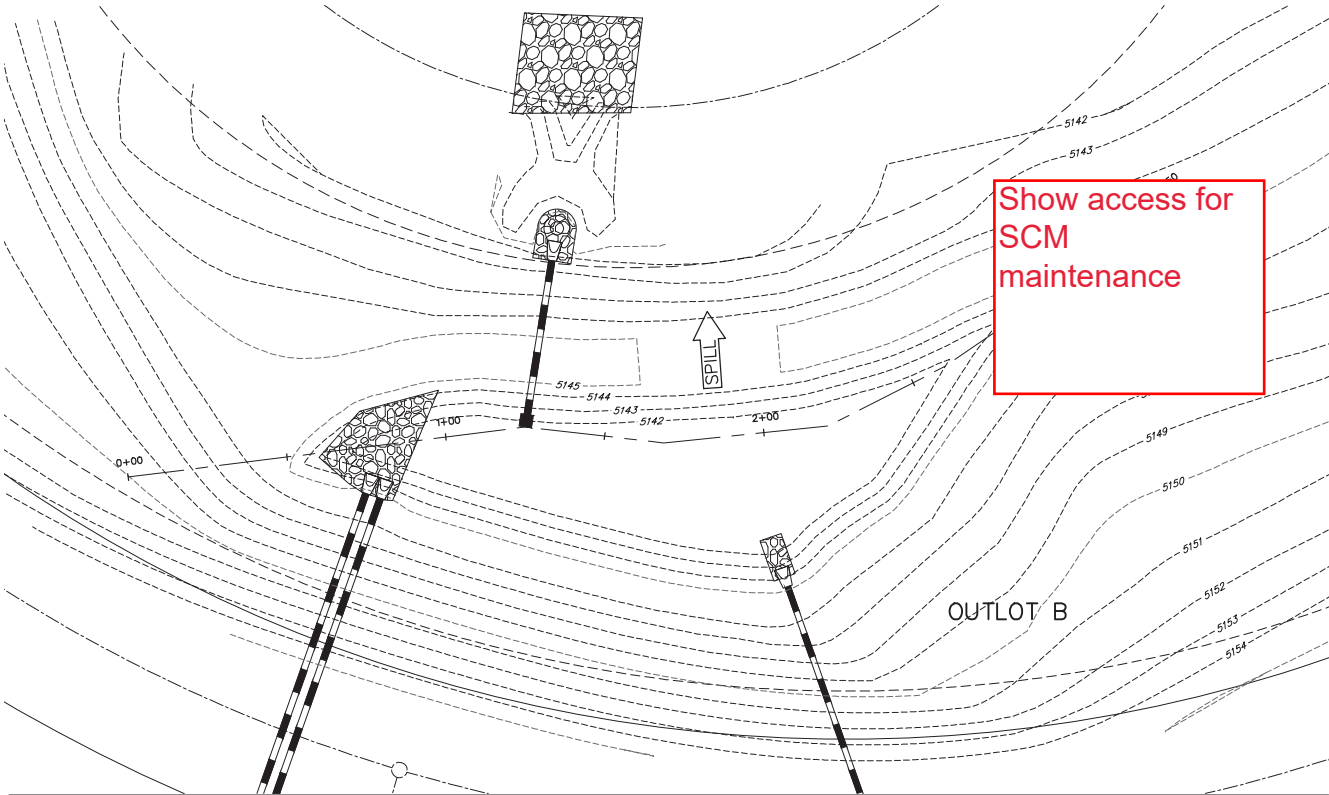
C. Debris Removal - Debris and other materials can clog the outlet work's well screen, orifice plate(s) and trash rack. This activity must be performed anytime other maintenance activities are conducted to ensure proper operation.

D. Site Inspection- The facility should be inspected on an annual basis to evaluated the need for additional maintenance such as sediment removal, erosion control, riprap maintenance and structural repairs.

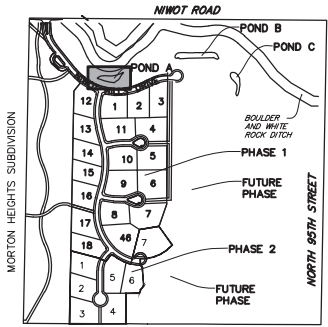
E. Post-Maintenance Considerations- After sediment removal or repairs, the disturbed area may require re-vegetation.

F. Access to detention ponds shall be from the XXXXXXXXXX across open space, within Outlot B, and down the 4:1 slope of the pond. No access roads are provided directly to the pond. Access shall be by the least disruptive method available for required inspection or maintenance .

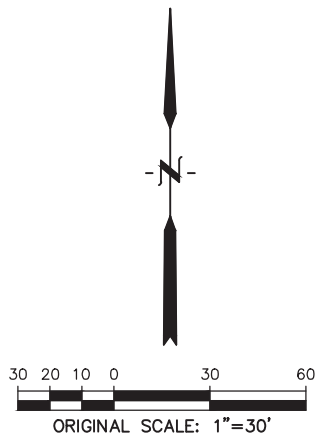
O&M Plan is to be site-specific - example language only



DETENTION POND EMERGENCY OVERFLOW
NO SCALE



KEY MAP
NOT TO SCALE



BASIS OF BEARINGS

BEARINGS ARE REFERRED TO THE WEST LINE OF THE NE 1/4 OF SECTION 32 AS BEARING S01°08'30" W PER THE RECORDED PLAT OF THIRD ADDITION TO MORTON HEIGHTS SUBDIVISION (ASSUMED MERIDIAN).

BENCHMARK

3-1/4" ALUMINUM CAP AT THE NORTHWEST CORNER OF SECTION 32, T2N, R69W OF THE 6TH P.M.
ELEVATION=5119.30 NGVD 1929 DATUM.

PREPARED BY:

ADD DESIGN FIRM LOGO/ INFORMATION ETC.

OWNER/CLIENT:

ADD OWNER/ CLIENT INFORMATION AND/OR LOGOS

Operation & MAINTENANCE SITE PLAN FOR:

ADD NAME OF PROJECT

ISSUE	DATE
O & M	1/29/2019
DESIGNED BY:	CWK
DRAWN BY:	CWK
CHECKED BY:	MDM
FILE NAME:	MSP01

DRAWING SCALE:
HORIZONTAL: 1"=30'
VERTICAL: 1"=10'

ADD NAME AS APPROPRIATE FOR TITLE BLOCK

PROJECT:20598-02BLCV
DRAWING NO.

A

EXAMPLE O&M PLAN FOR REFERENCE ONLY



APPENDIX H

Spill Notification Contact Information



CITY OF CASTLE PINES • 360 VILLAGE SQUARE LANE, SUITE B • CASTLE PINES, CO 80108

General Spill Responses and Notifications Requirements

Upon detection of any spill, the first action to be taken is to ensure personal safety. All possible ignition sources including running engines should be immediately turned off or removed from the area. The extent of the spill and nature of the spilled material should be evaluated to determine if remedial actions could result in any health hazards, or increase the volume of spilled materials. All spill response and notifications should be followed per the Contractor and Project Owner spill programs and policies. Additionally, the following notifications are required:

Spills into/or Threatens State Waters: Immediate notification is required for releases that occur beneath the surface of the land or impact or threaten waters of the State of threaten the public health and welfare. Notifications shall be made within 24 hours of the release with the following information:

a. For any substance, regardless of quantity, contact **CDPHE** at 1-877-518-5608 with the following information:

- a) The name and contact information for the person reporting the information
- b) Location of spill (name of city)
- c) Describe the nature of the spill, type of products, and estimate size of spill
- d) Describe type of action taken thus far, type of assistance or equipment needed

Typically, CDPHE will also require a follow up written report within 5 days of the spill.

b. For any quantity of oil or other hazardous fluids, call the **National Response Center** at 1-800-424-8802 and provide the same type of information.

c. Notify Castle Pines Public Works, PWRequests@castlepinesco.gov, 303 746 0974

Reportable Quantity Spill on Land Surface: Immediate notification is required of a release upon the land surface of an oil in quantity that exceeds 25 gallons, or of a hazardous substance that equals or exceeds 10 pounds or its reportable quantity under Section 101(14) of the Comprehensive Environmental Response, Compensation Liability Act (CERCLA) of 1980 as amended (40 CFR Part 302) and Section 329 (3) of the Emergency Planning and Community Right to Know Act of 1986 (40 CFR Part 355) whichever is less. This requirement does apply to quantities below the reportable limits. Common substances are listed Table A below.

TABLE A. Substances Requiring Notification

SUBSTANCE	REPORTABLE QUANTITY
Motor Oil	25 Gallons or more
Hydraulic Oil	25 Gallons or more
Gasoline/Diesel Fuel	25 Gallons or more



CITY OF CASTLE PINES • 360 VILLAGE SQUARE LANE, SUITE B • CASTLE PINES, CO 80108

Contact for spills on land surfaces are provided in Table B. Not all entities will be required to be notified for all spills. **For emergencies call 911.**

Agency	Contact Information
Castle Pines Public Works	303 746 0974
Tri-County Health	https://www.tchd.org/FormCenter/Environmental-Health-5/Report-a-Public-Health-Problem-52 , 303-663-7650
CDPHE Spill Reporting	1-877-518-5608
For Spills involving Hazardous Materials – National Response Center	1-800-424-8802
Emergencies	911

Notification is not required for release of oil or petroleum products upon the land surface that are less than 25 gallons and do not constitute a threat to public health and welfare, or the environmental and have not entered waters of the State.



APPENDIX I

Example of Hold Harmless Letter for At-Risk Grading
GESC Permits



GESC Permit Program

HOLD HARMLESS LETTER; AT RISK EARLY GRADING PERMIT

Larry Nimmo, Public Works Director
360 Village Square Lane, Suite B
Castle Pines, CO 80108

Subject: At Risk Early Grading Permit for:

Project No: _____

☐ Community Development Director

Project Name: _____

☐ Public Works Director Approval

To Whom It May Concern,

The undersigned ("Owner") has submitted a Site Improvement Plan application ("SIP") to the City of Castle Pines, Colorado ("City") for the above-named project ("Project") and is the owner of the property described therein. Or The Owner has submitted all of the required documents for a GESC as found in (please provide accurate reference), relating to a Preliminary Plan approved by the City. The Owner is requesting an early start on implementing the Grading, Erosion and Sediment Control ("GESC") Plan(s) for the Project prior to the City's approval of the SIP and associated documents including the construction drawings and Phase III drainage report. In order to start early overlot grading, the Owner understands that the work is limited only to the overlot grading and shall not include infrastructure, utilities, vertical construction, or any creation of impervious area. Preliminary Overlot GESC Plan(s) must be complete, submitted to City for review, and approved by City prior to commencement of work pursuant to the At Risk Early Grading Permit.

COLLATERAL

Prior to commencement of overlot grading, the Owner shall post collateral for revegetation/stabilization of the Project site and/or all of the erosion and sediment control measures that are required to be installed. The City may require additional collateral on subsequent GESC submittals and permit modifications or new permit issuances related to the Project. Collateral shall be in the form required by the City.

ALL WORK AT OWNER'S RISK

Owner understands that any work that occurs pursuant to the At Risk Early Grading Permit will be at the sole risk of the Owner. Owner is solely responsible for any changes that may be required by the City under the additional GESC Plan(s) submitted after construction drawings, reports including the drainage report, and permanent water quality designs and/or GESC permit for activities other than overlot grading are approved. Additionally, any construction activity not fully described in the GESC report and plans including vertical construction will require a new GESC permit or modification to an existing GESC permit addressing such additional construction activities. All construction activities covered under the GESC permit must be described and detailed in GESC plans and reports.

Owner shall hold the City of Castle Pines harmless from any and all actions of any kind, which result

from the issuance of this At Risk Early Grading Permit. Owner expressly understands and acknowledges that the City is not obligated or bound whatsoever to provide any approvals in relation to Project applications and a denial of any or all of the applications submitted, or modifications or revisions to any such applications or associated materials, or subsequently-required final versions thereof are possible as the result of the City's development review process and discretionary authority. Nothing herein shall constitute the City's approval of a site specific development plan to which vested property rights would attach under Article 68, Title 24 of the Colorado Revised Statutes or common law.

Sincerely,

Owner:

Name: _____, as ☐ an individual, or ☐ as
_____ of _____ [insert
name of owner entity], a _____ [insert type of entity], organized
under the laws of the State of _____.

Date: _____

STATE OF COLORADO)
) ss.
COUNTY OF _____)

The foregoing instrument was acknowledged before me this _____ day of
_____, 20____, by _____ as
_____ of _____, a _____.

Witness my hand and official seal.

(SEAL)

Notary Public

My commission expires: _____

Approved:

Public Works Director

Date: _____



APPENDIX J

Permanent SCM Maintenance Agreement

PERMANENT STORMWATER CONTROL MEASURES

MAINTENANCE AGREEMENT

**BETWEEN CITY OF CASTLE PINES AND _____ AND ITS
HEIRS, SUCCESSORS, OR ASSIGNS**

THIS AGREEMENT ("Agreement"), is made and entered into this _____ day of _____, 20__, by and between _____, for itself, its heirs, successors and assigns, hereinafter collectively called the "Owner", and the City of Castle Pines, Colorado, acting by and through its City Council (the "City") (each individually a "Party" and collectively the "Parties").

RECITALS

WHEREAS, pursuant to authority granted by law, the City has enacted a comprehensive set of permanent water quality regulations which are set forth in Article 6, Chapter 11 (hereinafter "MS4") of the Castle Pines Municipal Code, as amended from time to time (hereinafter "Illicit Discharges and Stormwater Quality Requirements"), and the Castle Pines Grading, Erosion, and Sediment Control ("GESC") Manual; and

WHEREAS, pursuant to Section 11-6-40 of the Castle Pines Municipal Code and Section 16 of the GESC Manual, the Public Works Director, or his or her designee, has the authority to administer, implement, and enforce the provisions of Article 6, Chapter 11, which includes the authority to require maintenance agreements for permanent stormwater management facilities; and

WHEREAS, the Owner owns the real property legally described in **Attachment A**, attached hereto and incorporated herein by this reference, (hereinafter the "Property"), located within the City of Castle Pines, State of Colorado; and

WHEREAS, pursuant to the Stormwater Quality Requirements, the Castle Pines GESC Manual, a City-approved final drainage plan, and/or other City requirements, permanent Stormwater Control Measures (hereinafter "SCMs"), as shown in **Attachment B**, attached hereto and incorporated herein by this reference, have been constructed on the Property that provide water quality treatment for _____; and

WHEREAS, the City and the Owner agree that maintenance of the SCM is essential to the protection of water quality, the City municipal separate storm sewer system, as defined in the MS4), and the public health and safety of the City's residents; and

WHEREAS, this Agreement sets forth the parties' understandings with respect to inspection and maintenance of the SCMs; and

WHEREAS, the SCMs are the private property of the Owner and will be maintained and replaced solely by the Owner in perpetuity to ensure they function as designed in accordance with the terms of this Agreement.

NOW, THEREFORE, in consideration of the foregoing promises, the mutual covenants contained herein, and the following terms and conditions, the parties hereto agree as follows:

Section 1 Maintenance

The Owner, at its sole expense, shall maintain the SCMs to ensure that they function properly under the conditions for which they were designed. This obligation includes, without limitation, maintenance of all pipes and channels built to convey stormwater, as well as all structures, improvements, and vegetation provided to control the quantity and quality of stormwater. "Adequate maintenance" is defined as actions that ensure the SCMs function as designed, as determined by the City in its reasonable discretion. All maintenance activities will comply with the Stormwater Quality Requirements, Castle Pines GESC Manual, City-approved Operation and Maintenance Plan, set forth in **Attachment C**, attached hereto and incorporated herein by this reference, (the O&M Plan) and all other applicable local, state, and federal laws and regulations, including those pertaining to confined space and waste disposal methods.

Section 2 Inspections

The Owner, at its sole expense, shall inspect the SCMs to ensure that they function properly under the conditions for which they were designed. Inspections shall be performed at least annually and shall cover all components of the SCMs. Inspections of SCMs shall be conducted and documented consistent with the O&M Plan. The Owner shall furnish to the City, upon request, copies of documented inspections and maintenance actions. The City shall conduct oversight inspections once every 5-year MS4 Permit term, at a minimum, to confirm consistency with O & M Plan, identify any inadequate SCMs, and identify SCMs requiring maintenance.

Section 3 Right of Entry

The Owner hereby grants permission to the City, its authorized agents, and employees the right to enter the Property to inspect the SCMs. The City, its authorized agents, and employees are granted permission to enter the Property for periodic oversight inspections and for inspections at any other time the City has reason to believe that conditions likely exist which violate this Agreement or the Stormwater Quality Requirements. The City may issue compliance directives at the time of inspection, requiring the Owners to implement actions that would correct any deficiencies of the SCMs or violations of the Stormwater Quality Requirements.

As provide for in Section 11-6-60(d) of the Castle Pines Municipal Code, in the event of an emergency or the occurrence of special or unusual circumstances or situations which present an immediate threat of damage to persons or property or an immediate risk to public health, safety

or welfare or the MS4, the City may enter the Property to inspect and perform necessary maintenance and repairs, and the Owner shall, upon demand, reimburse the City the actual costs incurred for such work.

Section 4 Enforcement

The Owner acknowledges the City's right, where warranted, to issue notices of violation and implement enforcement actions to ensure protection of the MS4 and public health and safety in accordance with the Stormwater Quality Requirements and this Agreement.

Section 5 Failure to Maintain Facilities

As provided for in Section 11-6-60 of the Castle Pines Municipal Code, in the event the Owner fails to maintain the SCMs so that they function as designed, the City may enter the Property and take whatever steps it deems necessary to return the SCM to a properly functioning state. It is expressly understood and agreed that the City is under no obligation to maintain or repair the SCMs and in no event shall this Agreement be construed to impose any such obligation on the City.

Section 6 Reimbursement to the City

In the event the City, pursuant to this Agreement or the Stormwater Quality Requirements, or both, performs work of any nature to ensure proper functioning of the SCMs, or expends any funds in performance of said work, the Owner shall reimburse the City in accordance with Section 11-6-60 of the Castle Pines Municipal Code.

Section 7 Facility Modification

Owner may not perform any alterations or modifications to the SCMs without having first obtained written permission from the City.

Section 8 Provision Invalidation

Invalidation of any one of the provisions of this Agreement shall in no way effect any other provisions and all other provisions shall remain in full force and effect.

Section 9 Recording and Binding Effect

Once the Agreement, including all attachments, is executed, it may be recorded by the City in the real property records of the office of the Clerk and Recorder, County of Douglas, State of Colorado. This Agreement shall be binding on the Owner and Owner's heirs, legal representatives, executors, successors, and assigns in perpetuity. The Property shall be held, conveyed, encumbered, and occupied subject to the provisions of this Agreement, which provisions are intended to and shall constitute both equitable servitudes and covenants running with the Property. Any buyer or transferee of any portion of the Property, by acceptance of a deed therefor, shall be deemed to have consented to and accepted the obligations set forth herein, whether or not there is any express reference to this Agreement in any deed.

Section 10
Transfer of Ownership

The Owner or Owner's successor in interest shall notify the City, in writing, within 30 days after transfer of ownership of fee title to any portion of the Property.

Section 11
Notice

Whenever notice is required to be given hereunder, it shall be in writing and may be delivered to the party entitled thereto or mailed to the party entitled thereto, by registered or certified mail, return receipt requested. If delivered or sent by facsimile, said notice shall be effective and complete upon delivery or transmission of the facsimile. If mailed, said notice shall be effective and complete as of the date of mailing. Until changed by notice in writing, notice shall be given as follows:

IF TO CITY:

IF TO OWNER:

City of Castle Pines, Public Works
RE: Permanent Stormwater Control Measures
360 Village Square Lane, Suite B
Castle Pines, CO 80108

Section 12
Counterparts

This Agreement may be executed in counterparts, each of which shall be deemed an original, but all of which shall constitute one and the same instrument. The parties approve the use of electronic signatures for execution of this Agreement. Only the following two forms of electronic signatures shall be permitted to bind the Parties to this Contract: (1) Electronic or facsimile delivery of a fully executed copy of a signature page; (2) The image of the signature of an authorized signer inserted onto PDF format documents. All use of electronic signatures shall be governed by the Uniform Electronic Transactions Act, C.R.S. §§ 24-71.3-101 to 121.

Agreed to this _____ day of _____, 20____.

CORPORATE OWNER

BY:

[signature]

[print name]

[corporate seal]

STATE OF COLORADO

CITY OF CASTLE PINES, to witness:

I, _____, a Notary Public for said Castle Pines,
the State of Colorado, do hereby certify that

_____ whose name(s) is/are signed to the
foregoing Permanent Stormwater Control Measure Maintenance Agreement, bearing date of
_____, 20____, have acknowledged the same before me in my County aforesaid.

My commission as Notary Expires _____

Given under my hand this _____ day of _____, 20____.

THE CITY OF CASTLE PINES

By: _____

Printed Name: _____

Title: _____

Date of execution: _____, 20

ATTEST:

City Clerk

- Attachments: A. _____
 B. Permanent Stormwater Control Measures (List of Specific Facilities)
 C. Operation and Maintenance (O&M) Plan

ATTACHMENT A
PLAT/LEGAL DESCRIPTION
(include map indicating locations and types of Facilities)

ATTACHMENT B

PERMANENT STORMWATER CONTROL MEASURES

List of specific Facilities identified on the O&M Plan (Attachment C)

ATTACHMENT C
OPERATION AND MAINTENANCE PLAN