

## Section 3. Plan & Report Submittal Requirements

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### Overview of Section 3

### 3.0

Section 3 summarizes the GESC Plan Drawing and Report Requirements:

Sections 3.1 and 3.2, **Standard GESC Drawing Requirements and Report Requirements** list detailed information to include on the various GESC documents. A checklist of requirements can be found in Appendix D.

#### **Section Highlight – Example GESC Drawings**

Several example sets of GESC Drawings have been prepared to illustrate the selection and depiction of erosion and sediment control BMPs.

Section 3.3, **Engineer's GESC Cost Estimate**, describes the cost estimate associated with the installation and maintenance of BMPs .

Section 3.4, **Variations**, provides guidance for requesting variations to the criteria presented in the GESC Manual.

## Section 3. Plan & Report Submittal Requirements

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### **Standard GESC Plan Drawing Requirements**

#### **3.1**

The following GESC Drawing requirements shall be adhered to when preparing a Standard GESC Drawing. Specific requirements vary based on the three types of Standard GESC Drawings described in Section 2.8.

Drawing requirements for a Staged GESC Permit (separate drawings for the Initial, Interim, and Final Stages) are discussed in the following paragraphs. Requirements for Utility GESC Drawings and Staged and Phased GESC Drawings are described in Sections 3.1.8 and 3.1.9, respectively. Submittal requirements for the Temporary Batch Plant GESC Drawings are described in Section 11.

A summary is located in Appendix E which summarizes the drawing requirements in a checklist format. This checklist must be filled out and signed by the Design Engineer, and submitted with the GESC Drawing to ensure that each of the requirements is addressed.

All GESC Drawings, which are also required for off-site borrow or disposal areas, shall be prepared on 24" by 36" sheets at a scale of 1-inch to 20-feet up to 1-inch to 200-feet, as appropriate, to clearly show sufficient detail for review. An example set of GESC Drawings for Staged/ Phased permits is provided in Appendix C.

As discussed in Section 2.6, GESC Drawings shall be signed and stamped by the Design Engineer.

**3.1.1 GESC Drawing Cover Sheet.** Arapahoe County requires that all GESC submittals are independent of other Construction Drawings, and therefore a cover sheet will be required with the submittal. The cover sheet shall include the following information:

1. Project name.
2. Project address (if applicable).
3. Owner address.
4. Design firm's name and address.
5. Plan sheet index.
6. Design Engineer's Signature Block.
7. Case number in the lower left hand corner.
8. The following note:

THE **GRADING, EROSION AND SEDIMENT CONTROL PLAN** INCLUDED HEREIN HAS BEEN PLACED IN THE ARAPAHOE COUNTY FILE FOR THIS PROJECT AND APPEARS TO FULFILL APPLICABLE ARAPAHOE COUNTY GRADING, EROSION AND SEDIMENT CONTROL CRITERIA, AS AMENDED. ADDITIONAL GRADING, EROSION AND SEDIMENT CONTROL MEASURES MAY BE REQUIRED OF THE PERMITTEE(S) DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE SUBMITTED GESC PLAN DOES NOT FUNCTION AS INTENDED. THE REQUIREMENTS OF THIS GESC PLAN SHALL RUN WITH THE LAND AND BE THE OBLIGATION

## Section 3. Plan & Report Submittal Requirements

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### **Standard GESC Plan Drawing Requirements, continued**

OF THE PERMITTEE(S) UNTIL SUCH TIME AS THE GESC PLAN IS PROPERLY COMPLETED, MODIFIED OR VOIDED.

8. GESC Drawing Design Engineer's signature block with name, date, and Professional Engineer registration number. Signature block shall include the following note:

THE **GRADING, EROSION AND SEDIMENT CONTROL PLAN** INCLUDED HEREIN HAS BEEN PREPARED UNDER MY DIRECT SUPERVISION IN ACCORDANCE WITH THE REQUIREMENTS OF THE *GRADING, EROSION, AND SEDIMENT CONTROL (GESC) CRITERIA MANUAL* OF ARAPAHOE COUNTY, AS AMENDED.

9. GESC Drawing Design Engineer's signature block with name, date, and Professional Engineer registration number. Signature block shall include the following certification statement:

"I hereby attest that the attached Grading, Erosion, and Sediment Control (GESC) Plan for (Name of Subdivision/Development) has been prepared by me or under my direct supervision, and to the best of my knowledge and ability has been prepared in accordance with the latest version of the Arapahoe County GESC Manual. The signature and stamp affixed hereon certifies that the GESC Plan was prepared in accordance with the required regulations and criteria; however, the stamp and signature does not certify or guarantee future performance of the execution of the plan by the Contractor. The Contractor is responsible for executing the construction work according to the information set forth in the plan and in accordance with all applicable requirements."

Registered professional Engineer \_\_\_\_\_

State of Colorado No. \_\_\_\_\_

Affix Seal

10. Arapahoe County GESC Approval Block (see Appendix H).
11. General Location Map at a Scale of 1-inch to 1000- feet to 8000-feet indicating:
  - General vicinity of the site location.
  - Major roadway names.
  - North arrow and scale.

**3.1.2 GESC Drawing Index Sheet.** For projects that require multiple plan-view sheets to adequately show the project area (based on the specified scale ranges), a single plan-view sheet shall be provided at a scale appropriate to show the entire site on one sheet. Areas of coverage of the multiple blow-up sheets are to be indicated as rectangles on the index sheet.

**3.1.3 Initial GESC Drawing.** This plan sheet shall provide grading, erosion and sediment controls for the initial clearing, grubbing and grading of a project. At a minimum, it shall contain:

1. Property Lines.
2. Existing and proposed easements.
3. Existing topography at one- or two-foot contour intervals, extending a

## Section 3. Plan & Report Submittal Requirements

### *Standard GESC Plan Drawing Requirements, continued*

- minimum of 100 feet beyond the property line, as appropriate.
4. Location of any existing structures or hydrologic features within the mapping limits.
5. USGS Benchmark used for project.
6. Limits of construction encompassing all areas of work, access points, storage and staging areas, borrow areas, stockpiles, and utility tie-in locations in on-site and off-site locations. Stream corridors and other resource areas to be preserved and all other areas outside the limits of construction shall be lightly shaded to clearly show area not to be disturbed.
7. Location of stockpiles, including topsoil, imported aggregates, and excess material.
8. Location of storage and staging areas for equipment, fuel, lubricant, chemicals (and other materials) and waste storage.
9. Location of borrow or disposal areas.
10. Location of temporary roads, including haul roads.
11. Location, map symbol, and letter callouts of all initial erosion and sediment control BMPs.
12. Information to be specified for each BMP, such as type and dimensions, as called for in the Standard Notes and Details.
13. The following note:  
SEE COVER SHEET OF ARAPAHOE COUNTY STANDARD NOTES AND DETAILS (SHEET 1 OF 3) FOR LEGEND OF BMP NAMES AND SYMBOLS.
14. Other information as may be reasonably required by Arapahoe County.

**3.1.4 Interim GESC Drawing.** This plan sheet shows BMPs to control grading, erosion and sediment during the initial overlot grading, site construction and site revegetation process. At a minimum, it shall contain the following information:

The Interim GESC Drawing shall show all the information included on the Initial GESC Drawing, as noted below:

1. Existing topography at one- or two-foot contour intervals extending a minimum of one hundred (100) feet beyond the property line, as shown on Initial GESC Drawing. **These contours shall be screened.**
2. Location of all existing erosion and sediment control measures on site, as shown on the **Initial GESC Drawing Sheet. These control measures shall be screened. Dimension information for initial stage BMPs shall not be shown.**
3. Items 1, 2, and 4 through 10 from the Initial GESC Drawing (see Section 3.1.3).

In addition, the Interim GESC Drawing shall include the following:

4. Proposed topography at one- or two-foot contour intervals, showing elevations, dimensions, locations, and slope of all proposed grading.

## Section 3. Plan & Report Submittal Requirements

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### **Standard GESC Plan Drawing Requirements, continued**

5. Outlines of cut and fill areas.
6. Location of all interim erosion and sediment controls, designed in conjunction with the proposed site topography, but also considering the controls designed in the Initial GESC Drawing.
7. Location of all buildings, drainage features and facilities, paved areas, retaining walls, cribbing, water quality facilities, or other permanent features to be constructed in connection with, or as a part of, the proposed work, per approved plat or land use plan, Site Improvement Plan (SIP), Rural Site Plan (RSP), or other improvement plan.
8. The following notes:
  - SEE COVER SHEET OF ARAPAHOE COUNTY STANDARD NOTES AND DETAILS (SHEET 1 OF 3) FOR LEGEND OF BMP NAMES AND SYMBOLS.
  - SHADED BMPS WERE INSTALLED IN INITIAL STAGE AND SHALL BE LEFT IN PLACE IN INTERIM STAGE UNLESS OTHERWISE NOTED.
  - ALL INTERIM BMPS, INCLUDING SEEDING AND MULCHING OF DISTURBED AREAS, MUST BE COMPLETED WITHIN 14 DAYS IF THE AREAS WILL REMAIN UNDISTURBED FOR A PERIOD GREATER THAN 30 DAYS AND PRIOR TO ISSUANCE OF ANY CURB AND GUTTER PERMITS.
  - ALL PROPOSED SLOPES ON THIS PLAN HAVE A MAXIMUM SLOPE OF 4:1. ANY SLOPES BETWEEN 3:1 AND 4:1 WILL REQUIRE THE USE OF EROSION CONTROL BLANKETS OR FLEXIBLE GROWTH MEDIUM.
  - SEE CONSTRUCTION PLANS FOR DETAILS OF PERMANENT DRAINAGE FACILITIES SUCH AS DETENTION FACILITIES, WATER QUALITY FACILITIES, CULVERTS, STORM DRAINS, AND OUTLET PROTECTION.
9. Summary of cut and fill volumes showing how earthwork balance is attempted on site.
10. Design Engineer sign-off block.

**3.1.5 Final GESC Drawing.** This plan sheet shows controls for final completion of the site. At a minimum, this plan sheet shall contain the indicated information:

The Final GESC Drawing shall include all information shown on the Initial and Interim Plans, as noted below:

1. Existing topography in areas of proposed contours need not be shown.
2. Existing Initial and Interim BMPs shall be shown (**screened**). Dimension information shall not be shown.

In addition, the following information shall be shown:

3. Directional flow arrows on all drainage features.
4. Any Initial or Interim BMPs that are to be removed and any resulting

## Section 3. Plan & Report Submittal Requirements

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### **Standard GESC Plan Drawing Requirements, continued**

- disturbed area to be stabilized.
5. Location of all Final erosion and sediment control BMPs, permanent landscaping, and measures necessary to minimize the movement of sediment off site until permanent vegetation can be established.
  6. Show area of buildings, pavement, sod, and permanent landscaping (define types) per approved plat or land use plan, SIP, RSP, or other improvement plan.
  7. Show seeding (SE) and mulching (MU) everywhere except buildings, pavement areas and permanent landscaping areas.
  8. Show other BMPs considered by the Design Engineer to be appropriate.
  9. Show the following BMPs to be removed at the end of construction:
    - Dewatering (DW)
    - Temporary stream crossings (SC)
    - Stabilized staging area (SSA)
    - Street inlet protection (IP)
    - Vehicle tracking control (VTC)
    - Construction fence (CF)
  10. Include the following notes:
    - SEE COVER SHEET OF ARAPAHOE COUNTY STANDARD NOTES AND DETAILS (SHEET 1 OF 3) FOR LEGEND OF BMP NAMES AND SYMBOLS.
    - SHADED BMPS WERE INSTALLED IN INITIAL STAGE AND SHALL BE LEFT IN PLACE IN INTERIM STAGE.
    - ALL INTERIM BMPS, INCLUDING SEEDING AND MULCHING OF DISTURBED AREAS, MUST BE COMPLETED WITHIN 14 DAYS IF THE AREAS WILL REMAIN UNDISTURBED FOR A PERIOD GREATER THAN 30 DAYS AND PRIOR TO ISSUANCE OF ANY CURB AND GUTTER PERMITS.
    - ALL PROPOSED SLOPES ON THIS PLAN HAVE A MAXIMUM SLOPE OF 4:1. ANY SLOPES BETWEEN 3:1 AND 4:1 WILL REQUIRE THE USE OF EROSION CONTROL BLANKETS OR FLEXIBLE GROWTH MEDIUM.
    - SEE CONSTRUCTION PLANS FOR DETAILS OF PERMANENT DRAINAGE FACILITIES SUCH AS DETENTION FACILITIES, CULVERTS, STORM DRAINS, AND OUTLET PROTECTION.
  11. Other information as may be reasonably required by Arapahoe County.

**3.1.6 GESC Plan Standard Notes and Details.** A copy of the GESC Drawing Standard Notes and Details (included in Appendix B) shall be provided with each set of GESC Drawings.

**3.1.7 GESC Drawing and Report Checklist.** A copy of a GESC Drawing and Report Checklist is provided in Appendix E. It must be completely filled out and signed by the PE, and submitted with the GESC Drawing.

**3.1.8 Drawing Requirements for Utility GESC Drawings.** These Drawing requirements are the same as for GESC Staged/Phased Per-

## Section 3. Plan & Report Submittal Requirements

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### *Standard GESC Report Requirements, continued*

mit, although the erosion and sediment controls for the Initial, Interim, and Final Stages of construction may be shown on a single drawing, as long as this can be accomplished clearly.

**3.1.9 Drawing Requirements for Staged and Phased GESC Drawings.** GESC Drawing requirements for Staged and Phased GESC Drawings are the same as for Staged Plans, except that each phase of construction (less than 40 acres of disturbance, or 70 acres for over excavation projects) shall be shown separately (with Initial, Interim, and Final stages shown on individual sheets).

**3.1.10 Submittal Requirements for Related Plans.** GESC Drawing requirements for Temporary Batch Plant GESC Drawings are described in Section 11. Requirements for Low Impact GESC Drawings are described in Section 8.

### **3.2**

Information relating to grading, erosion and sediment control shall be included in a separate GESC Report. The following information shall be provided for a Standard GESC Report.

### *Standard GESC Report Requirements*

1. Name, address, telephone number of the applicant, and the County case number – The name, address, the County case number, and telephone number of the Design Engineer preparing the GESC Plan shall also be included, if different from the applicant.
2. Project description – A brief description of the nature and purpose of the land-disturbing activity, the total area of the site, the area of disturbance involved, related project reference, and project location including township, range, section and quarter-section.
3. Existing site conditions – A description of the existing topography, vegetation, and drainage; a description of any wetlands on the site; and any other unique features of the property.
4. Adjacent areas – A description of neighboring areas such as streams, lakes, residential areas, roads, etc., which might be affected by the land disturbance.
5. Soils – A brief description of the soils on the site including information on soil type and names, mapping unit, erodibility, permeability, hydrologic soil group, depth, texture, and soil structure. (This information may be obtained from the soil report for the site, for adjacent sites if acceptable to the County, or the applicable Soil Survey prepared by the Natural Resources Conservation Service (NRCS)).
6. Areas and Volumes – An estimate of the quantity (in cubic yards) of excavation and fill involved (attempting to achieve an earthwork balance), haul road information, and the surface area (in acres) of the proposed disturbance.

### Section 3. Plan & Report Submittal Requirements

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#### **Standard GESC Report Requirements, continued**

7. Erosion and sediment control measures – A description of the methods presented in this *GESC Manual* that will be used to control erosion and sediment on the site.
8. Timing/Phasing schedule – A schedule indicating the anticipated starting and completion time periods of the site grading and/or construction sequence, including the installation and removal of erosion and sediment control BMPs. Indicate the anticipated starting and completion time periods of individual project phases.
9. Permanent stabilization – A brief description, including applicable specifications, of how the site will be stabilized after construction is completed.
10. Stormwater management considerations – Explain how stormwater runoff from and through the site will be handled during construction.
11. Maintenance – Any special maintenance requirements over and above what is identified in the standard notes and details.
12. Calculations – Any calculations made for the design of such items as sediment basins or erosion control matting selection.
13. Other information or data – As may be reasonably required by Arapahoe County.
14. The following note – “THIS GRADING, EROSION AND SEDIMENT CONTROL PLAN HAS BEEN PLACED IN THE ARAPAHOE COUNTY FILE FOR THIS PROJECT AND APPEARS TO FULFILL THE APPLICABLE ARAPAHOE COUNTY GRADING, EROSION AND SEDIMENT CONTROL CRITERIA. ADDITIONAL GRADING, EROSION AND SEDIMENT CONTROL MEASURES MAY BE REQUIRED OF THE OWNER OR HIS/HER AGENTS, DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE SUBMITTED PLAN DOES NOT FUNCTION AS INTENDED. THE REQUIREMENTS OF THIS PLAN SHALL RUN WITH THE LAND AND BE THE OBLIGATION OF THE LAND OWNER, OR HIS/HER DESIGNATED REPRESENTATIVE(S) UNTIL SUCH TIME AS THE PLAN IS PROPERLY COMPLETED, MODIFIED OR VOIDED.”
15. Signature Page For landowner/authorized agent acknowledging the review and acceptance of responsibility as follows:

“I hereby certify that the GESC measures for (*Name of Subdivision/Development/address*) shall be constructed according to the design presented in this report. I understand that additional erosion control, sediment control and water quality enhancing measures may be required of the owner and his or her agents due to unforeseen pollutant discharges or if the submitted plan does not function as intended. The requirements of the plan shall be the obligation of the land owner and/or his successors or heirs; until such time as the plan is properly completed, modified or voided.”

## Section 3. Plan & Report Submittal Requirements

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### *Engineer's Cost Estimate*

Owner or Authorized Agent \_\_\_\_\_

Authorized Signature \_\_\_\_\_

### **3.3**

Costs associated with grading, erosion, and sediment control BMPs include the following:

1. Installation and maintenance of the BMPs indicated on the Initial, Interim, and Final GESC Drawings according to the number, types, dimensions, and quantities called for. (Maintenance costs will vary based on many factors, including the magnitude and number of storm events occurring during the project.)
2. Installation of additional BMPs that the Permittee(s) think are appropriate or that are called for by the County Inspector to address actual site conditions. (The Permittee(s) are responsible for adapting the original GESC Drawing as necessary to effectively reduce erosion and sediment, and must comply with any modifications to the plan required by the County Inspector.)

**3.3.1 Engineer's GESC Cost Estimate.** As a stand alone document, applicants are required to provide an engineer's GESC cost estimate for erosion and sediment control including anticipated maintenance during the construction phase associated with implementing the GESC drawings. Examples of the Cost Estimate Spreadsheets are provided in Appendices F and G and they provide Unit cost information that shall be used to generate the cost estimate. The costs provided are not necessarily the costs that the applicant would incur, but reflect an opinion of the costs the County would incur in the event that the applicant does not perform as required. It is anticipated that the costs will be updated as needed, and therefore the applicant should check with the County to ensure that the most recent cost data is used.

Two cost estimate spreadsheets are required. The first is for the combined Initial and Interim costs associated with the Initial and Interim GESC drawings. The second spreadsheet is for the Final BMP costs associated with the Final GESC drawing. Each spreadsheet requires signature of acceptance and approval by applicant/developer, engineer, and case engineer. The Engineer's GESC cost estimate will be reviewed by County staff and used as a basis for collateral (discussed in Section 2-16 of this GESC Manual) .

Since the Initial and Interim GESC BMPs are completed prior to the Final GESC BMPs, the costs are not cumulative. Therefore only the greater of the two cost estimate spreadsheets will be the amount that is required to be guaranteed with collateral .

In most cases, the greater costs will be the combined Initial and Interim BMP costs, and this will be the amount that is required to be guaranteed. At the Initial Close-Out, the Final BMPs will be in effect, and as applicable, the collateral will be reduced to the Final BMP cost estimate amount .

**Engineer's Cost Estimate, continued**

**Variations**

**Important!** Variations requested after the work has been completed shall not be considered.

As applicable, the collateral required for the Final BMPs will be held by the County until the Final Close-Out Acceptance.

**3.3.2 Phased Projects.** For projects that will be phased, the Engineer's GESC Cost Estimate spreadsheets must be separated and sub-totaled for each phase, for both the Initial and Interim BMPs and Final BMPs Cost Estimate spreadsheets.

Initial and Final Close-Out may be processed individually for each of the phases, provided public improvements are completed and specific close-out requirements are met.

**3.4**

Arapahoe County may consider waiving or modifying criteria that are deemed inappropriate or too restrictive for site conditions. Variations may be granted at the time of plan submission or request for plan revision prior to the work being completed in the field. Variations requested after the work has been completed shall not be considered.

**3.4.1 Variance Submittal Requirements.** Any request for a variance shall be in a separate letter addressed to the Director. The letter shall define:

- The criteria from which the applicant seeks a variance.
- The justification for not complying with the criteria.
- Alternate criteria or standard measures to be used in lieu of these criteria. The criteria and practices specified within this section of the *GESC Manual* relate to the application of specific erosion and sediment control practices. Other practices or modifications to specified practices may be used if approved by Arapahoe County prior to installation. Such practices must be thoroughly described and detailed.

**3.4.2 Staff vs. Administrative Variations.** Some variations may be minor in nature; these staff variations may be granted by the Arapahoe County Engineering Services Division Development Review Engineer and Development Review Manager. A minimum amount of supporting documentation will be required for such variations. More complicated variations will require a more extensive review. These administrative variations shall be reviewed by the Director.

**3.4.3 Comprehensive Grading Plan.** The County recognizes that, on large-scale projects, where there are long term continual earthwork operations, certain criteria within the GESC requirements may need to be adjusted in order to allow the grading operations to progress in an efficient, cost effective manner. The overall goal of completing grading operations with minimal disruption and impact may best be achieved by preparing a site-specific grading plan, which addresses the grading and erosion control measures necessary to reflect the intended construction sequence and schedule.

For these types of projects, the County has included a provision to allow

## Section 3. Plan & Report Submittal Requirements

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### *Variations, continued*

for a Comprehensive Grading Plan (CGP). The CGP will be considered for sites in which the applicant demonstrates a need to waive certain specific GESC requirements in order to perform the grading operations in an efficient manner. See Appendix I for additional information, applicable projects, and requirements for completing a Comprehensive Grading Plan.

**3.4.4 Permitting Requirements.** The County recognizes the need for flexibility in the permitting requirements of the GESC program. In some cases, it may not be feasible, or practical to require the original Developer of a project to maintain the responsibility for the original GESC permit (as a whole) throughout the life of the project. The County, therefore, agrees to consider projects on a case by case basis to allow for alternative permitting scenarios. Projects which seek consideration of a variance of the standard permitting requirements outlined in Section 2 must demonstrate that the standard permit requirements are not feasible and must provide appropriate justification to warrant consideration.

Requests for a variance of the County's Standard Permitting requirements must be submitted as early in the development review process as possible. GESC permits will not be approved for any of the property within the Development, until an alternative permitting scenario for the entire project has been approved by the County.

The intent of the permitting requirements, specifically that one entity is assigned specific responsibility for common areas of the project will be required to be addressed in the alternate permitting scenario(s).