Chapter 3: During & Post-Construction Requirements

Contents

Chapter 3: During & Post-Construction Requirements

1.0 Overview

The previous Chapter provided information on the development review process and submittal requirements for the entitlement of a project site from the very beginning of the design process through to the final approval of the Utility Plans and reports. This Chapter outlines standard procedures during the construction phase for Erosion Control Measure installations, inspections, and ongoing maintenance; outlines drainage certification requirements at or near the end of construction that enables the contractor or development team to receive building permits and/or certificates of occupancy (CO); and provides a process for calculating and submitting a Drainage Certification Escrow if building permits or CO is desired prior to the drainage certification being accepted by FCU.

2.0 Erosion Control Inspections and Field Requirements

The Owner(s) and Operator(s) of a construction site are responsible for all activities on the site related to erosion and stormwater, including, but not limited to, associated environmental impacts.

Routine and post-storm inspections of Control Measures are essential to identify maintenance that might be necessary for the Control Measures to remain in effective operating condition. The frequency of inspections is typically influenced by multiple factors including the weather, the phase of construction, activities on site, and the types of Control Measures. Checklists and other forms of inspection documentation are also important to meet the requirements of the CDPS General Permit Stormwater Discharges Associated with Construction Activity and are required by the City.

It is highly recommended that any persons working on the construction site undergo training for their roles and responsibilities regarding the control of potential site pollutant sources. They should be made aware how their work practices and implementation of various Control Measures on site help prevent those potential pollutant sources from leaving the site and entering the storm drains. Potential pollutant sources left uncontrolled can directly impact the water quality of the creeks, rivers, and streams.

Appointing a knowledgeable person to perform inspections with the authority to correct site issues is a key to a successful project and ensures that a project will be at minimal risk for compliance issues and enforcement actions.

2.1 Construction Activity and Escrow Control Escrow

Construction Activity subject to this Erosion Control Criteria is not permitted to commence or applicable permit able to be signed off, until all Erosion Control Materials have been reviewed.

All Construction Activity subject to the Erosion Control Criteria shall furnish an Erosion Control Escrow (as set forth in this Manual in Section 6.1.5 of Chapter 2 (Development Submittal Requirements)) prior to the installation of Construction Control Measures, the release of any construction permitting, and before any operations commence on the project. Refer to the process charts in Section 6.4 of Chapter 2: Development Submittal Requirements, to better understand the order of transition from development to construction based upon project review type.

The City reserves the right to enter upon the land and take whatever actions are necessary to stabilize and revegetate all disturbed areas, or to have Control Measures constructed and to make repairs as necessary.

In addition, the City shall have the option to pursue any other legal remedy available to it under any Development Agreement or otherwise as it deems necessary in order to ensure that the required Control Measures are installed, implemented, and preventing potential off site pollutant discharge, in accordance with City Municipal Code, §26-498 and other applicable laws.

For further discussion of the Erosion Control Escrow, please refer to Section 6.1.5 of Chapter 2.

2.2 Developer Inspections

All Construction Activities subject to provide an Erosion Control Report as shown in Table 6.1-1 in Chapter 2 shall be required to conduct self-inspections by the Developer**.**

All Construction Activities that were not subject to provide an Erosion Control Report as shown in Table 6.1-1 in Chapter 2 should be conducting self-inspections by the Developer. If site conditions are found in non-compliance the Developer more than once, FCU shall have the discretion to require to self-inspections by the Developer.

2.2.1 Frequency

Table 2.2.1-1: Inspection Frequencies

Project's Current Activity Level	Routine Inspection Intervals	After Storm Event
During Construction	14 days	24 hours
Temporary Idle Site	14 days	72 hours
Revegetation (post-construction)	30 days	None

Documented inspections by the Developer shall be conducted at least once every fourteen (14) calendar days and within twenty-four (24) hours of a storm event during construction.

Documented inspections by the Developer shall be conducted at least once every fourteen (14) calendar days and within seventy-two (72) hours of a storm event while a site is temporarily idle where no construction activities will occur.

Documented inspections by the Developer shall be conducted at least once every thirty (30) calendar days after construction is completed and the site is waiting for reseeding to reach final stabilization. The Project should not have any Construction Activities occurring and only be waiting for grass to grow to full maturity.

All changes from one inspection frequency to another inspection frequency shall document the change in site condition through photos or other justification to the change the frequency in accordance with relevant permit requirements from the State prior to reducing the inspection schedule.

Where construction activities have stopped and snow cover (over 12 inches) exists over the entire site and for an extended period (longer than 14 days), inspections are not always feasible. This condition shall be documented and an after-storm event inspection shall be conducted within twenty-four (24) hours of melting conditions or regaining access to the site.

All deficiencies discovered during an inspection are required to have the deficiency corrected and follow up inspection completed as soon as possible to document when the item was corrected.

The City recommends checking Control Measures every workday. This is typically reasonable to achieve and can help to ensure Control Measures remain in good working condition. For example, vehicle tracking of sediment onto the roadway is a common problem that often requires maintenance more frequently than weekly. Curb socks, inlet protection, and silt fence are other BMPs that are prone to damage and displacement, also benefiting from more frequent inspections, the recommended frequency of inspection is at least once every week). When the site or portions of the site are awaiting final stabilization (e.g., vegetative cover), where construction is essentially complete, the recommended frequency of inspection is at least once every month.

2.2.2 Inspection Records

Always check the requirements of all permits for required documentation of specific inspection items.

The inspection records shall contain at a minimum:

1) Date and time of inspection

2) Personnel conducting the inspection

3) Project name and location

4) Reason for inspection (Ex. after installation, routine inspection, after precipitation, weekly etc.)

5) Include last stormwater event and amount of precipitation

6) Date of when melting conditions occur (if applicable)

7) Evaluation of all potential pollutant sources

8) Evaluation of all Control Measures implemented on site

9) An area to note Control Measures failures

10) Observed deviations from the Erosion Control Materials/SWMP

11) Necessary future planned repairs or corrective measure

12) Corrective actions taken and when

13) Any identified any spills (This includes small oil drips to larger spills)

14) General observations

Records of inspections must be kept available by the Developer and submitted to the Erosion Control Inspector upon request.

All inspection records shall be kept in order or easily referenced and retrieved by the Developer for all inspecting parties.

Refer to Section 7.8.1 of Appendix D for further direction and clarification.

2.2.3 Erosion Control Administrator

For further guidance please see Section 7.8.2 of Appendix D.

The Erosion Control Administrator shall be responsible to keep Erosion Control Materials and inspection records (Section 2.2.2 of this Chapter) up to date and reflect the current field conditions.

The Erosion Control Plan should, at all times, be drawn, amended, noted, or otherwise rendered to reflect the exact current field conditions.

Minimizing disturbance where possible, phasing a project, preserving vegetation as long as possible, and not storing material with exposure to stormwater where able are all preventative administrative measures that should always be at the forethought of a good administrator's mind.

An Erosion Control Administrator shall be accountable to ensure:

- The inspection process is documented
- A schedule is developed describing the required frequency of inspections
- Regular inspections occur at the prescribed frequency
- The Control Measures are kept up and maintained
- A schedule of inspections that did take place is kept
- Access to all inspection records and Erosion Control Materials in their dynamic construction state is available

2.2.4 Developer Inspector Qualifications

The City recommends all Developer inspectors have knowledge or understanding of potential pollutant sources and experience with methods for controlling those potential pollutants from the source.

At this time, there are no City requirements to have a minimal level of training or certification to oversee and manage a construction site for Erosion Control Management, inspection, and maintenance purposes.

While there is no minimum level of knowledge or understanding of erosion control procedures or concepts, the City highly recommends everyone have erosion control training, as the regulations continue to become more scrutinized on construction sites. Added levels of scrutiny will occur, not just at the City level, but also by the State and Federal level. Ignorance of the regulations and/or rules is not an excuse to allow potential pollutant, or cause pollutant, discharges into the environment. All government entities can enforce on these violations to the extent of their own authority.

2.3 Initial Inspection Requests

Any project that is subject to the Erosion Control Criteria shall sequentially follow the relevant section below when requesting an initial inspection for the particular permitting process.

Development Construction Permits:

1) Deposit Erosion Control Escrow
2) Development Construction Permit (DCP) issued
3) Install Control Measures
4) Initial municipal inspection and acceptance by the FCU Staff
5) Start Construction Activities

Building Permit associated with a larger common development:

1) Deposit Erosion Control Escrow for the lot (or provide documentation regarding a substitution for the Erosion Control Escrow for the lot, if applicable)
2) Install individual lot protection
3) Initial municipal inspection and acceptance by the FCU Staff
4) Building Permit Issued
5) Start Building Activities

Building Permit not associated with a larger common development:

1) Ensure Erosion Control Materials meet Criteria
2) Deposit Erosion Control Escrow
3) Install Control Measures (even individual lots require lot level compliance)
4) Initial municipal inspection and acceptance by the FCU Staff
5) Building Permit Issued
6) Start Building Activities

Any other Permit Process that meet the Erosion Control Materials thresholds in Table 6.1-1 of Chapter 2:

1) Ensure Erosion Control Materials meet requirements of this Manual
2) Deposit Erosion Control Escrow (if applicable)
3) Install Control Measures
4) Initial municipal inspection and acceptance by the FCU Staff

5) Start Construction Activities

All requests for a municipal initial inspection should be sent at least twenty-four (24) hours prior to the start of any construction activities by email to erosion@fcgov.com all requests will be fulfilled within two (2) business days of receiving the request.

Please include the following information:

- Name
- Phone number
- Site Address
- Any building permits associated with the site, if known
- Date of installation (or anticipated date of installation) of the Control Measures, for verification

If there are any issues with the site Control Measures, the requesting party will be contacted to have those corrected.

If no issues were found at a development site (or another similar permit process) the Developer, or contractor, will receive an initial inspection report from noreply@mypermitrack.com the site has passed inspection and construction can commence.

If no issues were found at a building site the site will be signed off at the building department. The permit's release can be observed at the Citizen Access Portal http://www.fcgov.com/building/

2.4 Maintenance

The Developer shall, at all times, maintain Control Measures so that they function as intended to minimize the potential discharge of pollutants from the source.

All deficiencies in application, maintenance, and removal of Control Measures shall be corrected as soon as practical (typically immediately). "A specific timeline for implementing maintenance procedures is not included in this permit because BMP (*Construction Control Measures*) maintenance is expected to be proactive, not responsive" as in accordance with Section D.7 of the CDPS General Permit Stormwater Discharges Associated with Construction Activity.

Proactive maintenance is fundamental to effective Control Measure performance. Rather than maintaining the Control Measure in a reactive manner following failure, provide proactive maintenance that may help to reduce the likelihood of failure. The types and frequencies of maintenance are Control Measure specific. The Control Measure fact sheets in Section 6.0 of Chapter 4 describe the maintenance needs for various Control Measures, with some controls requiring more attention.

The Developer shall maintain Control Measures so that they function as intended, to minimize potential the discharge of pollutants from the source. Maintenance shall include:

- Proper installation of Control Measures as per design
- Identifying needed maintenance activities during site inspections or during general observations of site conditions
- Removing accumulated sediment before it limits the effectiveness of the Control Measure up to and including the removal of the Control Measure
- Where Control Measures have failed or approach failure, shall include repairs or changes should be initiated as soon as practical.

Where the Control Measures specified in the Erosion Control Material are not functioning effectively at the site, modifications must be made that may include different or additional layers of Control Measures. When new Control Measures are installed or Control Measures are replaced, check the permit for documentation requirements about the site plans matching the site conditions. This may require communication with the Owner and/or engineer and, at a minimum, should be documented in the inspection and maintenance records.

2.5 Removal and Disposal of Temporary Measures

All temporary Control Measures shall be removed by the Owner within thirty (30) days after confirmation by the FCU that the site has reached final stabilization.

Trapped sediment (including in pipes) shall be removed and disposed of, by the Owner, in accordance with proper disposal practices and if necessary disturbed soil areas resulting from the disposal of temporary measures shall be returned to final plan grades and permanently stabilized to prevent further soil erosion.

All permanent Control Measures used for temporary Control Measures during construction shall return to a condition identical to the details specified in the final site development plans as prepared by the Design Engineer.

Refer to Section 7.9 of Appendix D for further guidance.

2.6 Final Stabilization and Established Vegetation Criteria

Final Stabilization shall be reached when:

- All construction activities have been completed
- All construction related potential pollutant sources have been removed from the site
- All site grades are final
- All soil beds have been prepped to meet City Code, Section 12-160 through 12-162
- All areas of ground surface disturbances have a permanent established vegetation or equivalent permanent physical erosion reduction method
- The site matches the final condition on all final design documents

Physical evidence of established vegetation shall include no larger than one (1) square foot of bare spots between grass and a minimum of seventy percent (70%) uniform vegetative cover (or grass density) as observed from about 5 feet above the vegetation looking down onto the area directly below. The seventy percent (70%) shall neither be a measure of area on a project nor the measure of horizontal density observation.

Temporary vegetation, annual crop, or cover crop shall not be considered permanent established vegetation.

Sod installation for permanent established vegetation purposes is considered a hundred percent (100%) uniformed vegetative cover. Bare soil for permanent established vegetation purposes is considered a zero percent (0%) uniformed vegetative cover.

Seeding applications for permanent established vegetation purposes require evaluation to determine if it is considered seventy percent (70%) uniformed vegetative cover.

Seeding and Planting

- Seed mixtures shall be sown at the proper time of year specified for the mixture

- Recommended seeding rates specified as "pounds pure live seed per acre" (lbs. PLS/acre) as called out on the landscape plan shall be used. If no landscape plan was required or approved as part of this construction, the City Natural Areas "Dry Land Seed Mix" should be used

- Seed shall be drill seeded, whenever possible. Native seeding should use a rangeland style drill to place seed at the proper depth add proper germination
- Broadcast seeding or hydro-seeding may be substituted on slopes steeper than 3(H):1(V) or on other areas not practical to drill seed

- Seeding rates shall be doubled for broadcast seeding or increased by 50% if using a Brillion drill or hydro-seeding

- Broadcast seed shall be lightly hand raked into the soil

- Seed depth shall typically be ¼ to ½ inch for most mixtures and the appropriate and optimum depth shall be determined based upon seed species

- All seeded areas shall be mulched within 24 hours of seeding, and the mulch shall either be adequately crimped and or tackified

- If hydro-seeding is conducted, mulching or tackifier shall be conducted as a secondary and entirely separate application

- The seed shall not contain any Colorado noxious weeds as defined by the Colorado Department of Agriculture.

Mulching

All planted areas must be mulched within twenty-four (24) hours after planting. Mulch conserves water and reduces erosion. The most common type of mulch used is hay or grass that is crimped into the soil to hold it. However, crimping may not be practical on slopes steeper than three to one (3H: 1V).

The following guidelines shall be followed with mulching:

- Only weed-free and seed-free straw mulch may be used. Mulch shall be applied by recommended manufacture's installation details. In the absence of manufacturer's instructions, mulch shall be applied evenly at a rate of 2 tons per acre and 50 percent of the straw by weight should be 10 inches or more in length.

- Crimping shall be applied on appropriate slopes of three to one (3H : 1V) or flatter. Mechanical crimpers must be capable of tucking the long mulch fibers into the soil to a depth of 3 inches without cutting them.

- Tackifier or netting and blankets anchored with staples shall be used on slopes steeper than (3H:1V).

- Hydraulic mulching may also be used on steep slopes or where access is limited. In these circumstances, wood cellulose fibers or similar organic tackifier materials, mixed with water at the ratio prescribed by the manufacture may be applied. This must be applied with a hydraulic mulcher.

- Wood chip mulch should be applied to planted trees and shrubs.

Maintenance

- Sites shall be routinely inspected following planting to implement follow-up measures to increase success. Immediate attention to a problem (e.g., weed infestation, failure of seed to germinate) can prevent total failure later.

- Areas that have been planted or seeded shall be monitored at least one spring and one fall season to ensure that physical evidence growth has been adequately established. If these minimums are not attained after one fall and one spring season, planted areas shall be re-seeded appropriately as soon as practical.

- Access to and grazing on recently revegetated areas should be limited with temporary fencing and signage while plants are becoming established (normally the first year).

- Weed infestations should be managed using appropriate physical, chemical, or biological methods as soon as possible.

- Stakes and guy wires for trees should be maintained and dead or damaged growth should be pruned.

- Mulch should be maintained by adding additional mulch and redistributing mulch, as necessary by site conditions.

- Areas of excessive erosion shall be repaired and stabilized.

Equivalent permanent physical reduction method shall be such things as buildings, structures, roads, sidewalks, rock landscaping, wood mulch, or the like that will eliminate rainfall impact on disturbed soil and creates a long term non-erosive cover to a project area.

2.7 Municipal Inspections

The City reserves its right to inspect and prevent potential pollutants from leaving a project and being introduced into the City's Stormwater Infrastructure pursuant to City Code, Section 26-498 and other legal authority.

The FCU will conduct a municipal inspection used to verify if Construction Activities (which are identified as being at a higher risk of violating this section of municipal code) are preventing materials from being introduced into the MS4.

These municipal inspections in no way fulfill the Developer's obligations to inspect a site, per the requirements of this Manual, for the CDPS General Permit Stormwater Discharges Associated with Construction Activity. Those Developer inspections and requirements under that permit are to be conducted by the Developer.

These municipal inspections are to fulfill the City's obligations under the State's general permit for stormwater discharges associated with Municipal Separate Storm Sewer Systems (MS4).

2.7.1 Initial Municipal Inspections

All requests for an initial inspection received by email to erosion@fcgov.com. Each request will be fulfilled within two (2) business days of receiving the request.

Upon verification of the petitioning party preventing the risk of potential pollutant discharge from the project all appropriate permits will be signed off.

The project will then start routine inspections or be inspected as part of the larger site's routine inspections.

2.7.2 Routine Municipal Inspections

After an initial municipal inspection, the project will continue to be inspected based upon site conditions and complaints until the project has reached final stabilization and all Control Measures have been removed.

2.7.3 Complaint-Driven Inspection

Upon receiving a complaint, a City Erosion Control Inspector will visit the site of the complaint to investigate the issue(s) identified in the complaint and will conduct a site-wide inspection.

Where substantiated, the responsible party will be informed of the violation and a written inspection record (per PermiTrack email) will be provided to the Owner and/or the site contact. The responsible parties will be required to bring the site into compliance. If further escalation of enforcement is warranted, the City's Enforcement Response Plan will be consulted.

2.8 Enforcement

Preventing potential pollution from Construction Activities sources is a requirement of Developer in the Erosion Control Criteria which is a part of City Code, Section 26-500.

FCU has the authority and obligation to ensure that any project is held in accordance with the Erosion Control Criteria before construction.

Preventing potential pollutant sources from leaving the site is mandatory of the Developer in order not to violate City Code, Section 26-498.

The City reserves the right to enter upon the land and take whatever actions are necessary to stabilize and re-vegetate all disturbed areas, or to have the Control Measures constructed and to make repairs as necessary at the cost of the Developer.

Construction Activity subject to this Stormwater Criteria Manual (Table 6.1-1 of Chapter 2) shall begin only after:

- Erosion Control Materials have been accepted
- Submission of an acceptable security based upon Erosion Control Escrow
- An initial inspection of the site confirms the site is protected from risk

All Erosion Control Measures shall be installed when they are necessary as indicated by the approved Erosion Control Materials and maintained in accordance with these Criteria.

In order to ensure that all required Measures have been correctly installed and are in proper order and repair, no building permit will be issued on any project until an inspection of the site and its required Erosion Control Measures has been made and deemed acceptable by the City.

The Erosion Control Inspector understands that inspections are a "point in time inspection" and there is the expectation that all identified issues provided in the Municipal Inspections Section 2.9 of this Chapter will be addressed as soon as possible once identified. All simple corrections should be handled immediately and larger Control Measure issues that may take more time should be placed on an accelerated process to be corrected as soon as possible.

FCU has the authority and obligation to ensure that any project subject to the Erosion Control Criteria is held in compliance during construction and until final stabilization.

FCU has the and authority so that if, at any time during Construction Activities, the Developer fails to adhere to the accepted Erosion Control Materials, the construction phase, the construction sequence, any of the Erosion Control Criteria and/or any site conditions that would or could violate City Code, Section 26-498, the City representative, may employ any, all, or none of the following as deemed necessary to ensure that the project will return to an acceptable condition to prevent potential pollutant sources to discharges from the site:

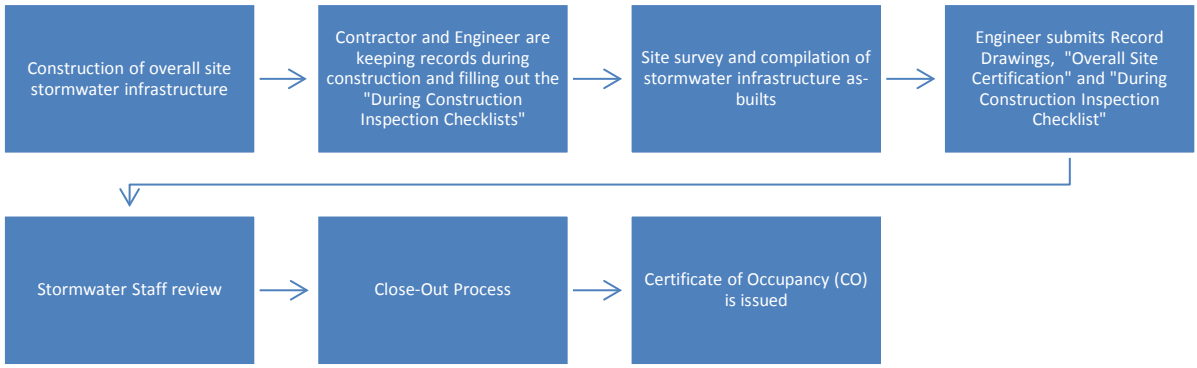
- Letters of warning
- Require the routine response and proof of correction to future municipal Inspections
- Require the routine submittal of future Developer inspection reports
- Required trainings of the Developer to ensure knowledge and application of Control Measures
- Provide and sign a corrective action plan to prevent future recalcitrant behavior
- Notices of violation
- Withhold permits (Building, Development, or other City Permits)
- Withhold certificates of occupancy
- Stop all or any part of the work on the project
- Exercise the City's rights to the erosion Control Escrow
- Issue summons and or fines

The City does not have the authority to give any permission to a Developer to be out of compliance with State and Federal law. The City will thus not give deadlines for compliance because, among other things, any such deadlines could be construed as purporting to give permission to the Developer to allow a time frame to be out of compliance with the Clean Water Act and the Colorado Water Quality Control Act. As per direction of State and Federal authorities, all Control Measures are to be corrected as soon as practical, and in many case, immediately.

Refer to Section 7.10 of Appendix D for more information on enforcement actions.

3.0 Drainage Certification

Figure 3.0 Drainage Certification Process



All developments are required to submit drainage certifications following construction, as discussed in this Chapter and as required by the Utility Plans and Development Agreement. Developers must acquire FCU acceptance of all such certifications. Specific additional requirements for overall site and individual lot certifications are set forth below.

3.1 Drainage Certification and Acceptance Process

During construction and prior to the drainage certification process, onsite inspections by a City Inspector is required for all permanent water quality improvements (including LID systems) associated with the development project. Inspection is performed to verify the proper installation of said improvements at specified stages of construction as indicated the During Construction Inspection checklists (discussed below).

CITY INSPECTION

REQUIRED AT SPECIFIED MILESTONES FOR ALL PERMANENT WATER QUALITY SYSTEMS (INCLUDING LID). CONTACT STORMWATERINSPECTION@FCGOV.COM TO SCHEDULE INSPECTIONS.

The submission for the Drainage Certifications shall include the following:

- Construction as-builts that have been formally submitted as Record Drawings and have been certified by both a registered Professional Land Surveyor and a registered Professional Engineer in the State of Colorado.

- Statement of compliance with the requirements of this Manual from the Professional Engineer on the project.

- The Overall Site and Drainage Certification checklist and accompanying documentation, and the During Construction Inspection checklist and accompanying documentation (if applicable).

- The Certification of Lot Grading forms (if applicable) for individual lots. The certification must show the designed and "as-built" conditions of the lot grading, including corner lot elevations, high points, side lot swales, drainage patterns, minimum building opening elevations and any other signification points on the site.

- All Floodplain certifications required by the City's Floodplain Administrator must also be included. These may include FEMA Elevation or Flood-Proofing Certifications and No-Rise Certifications and or other documents as specified.

FOR COMMERCIAL AND MULTI-FAMILY PROJECTS

OVERALL SITE AND DRAINAGE CERTIFICATION MUST BE ACCEPTED BY FCU BEFORE THE RELEASE OF THE FIRST CO.

FOR SINGLE-FAMILY RESIDENTIAL PROJECTS

25% OF THE OVERALL NUMBER OF BUILDING PERMITS MAY BE ISSUED PRIOR TO ACCEPTANCE OF THE OVERALL SITE AND DRAINAGE CERTIFICATION

A certification will only be accepted by FCU if:

- The as-built information demonstrates that the construction complies with the approved Utility Plans. Any discrepancies between the original drainage plan and the constructed system need to be discussed with the FCU and shown to function within the criteria set forth in this Manual. If the construction does not comply with the criteria, the Professional Engineer on the project must redesign the drainage facilities and revise the Utility Plan mylars to correct the deficiencies. Alternatively, a variance request may be submitted and approved pursuant to Section 8.0 of Chapter 2: Development Submittal Requirements of this Manual.

Reference: Floodplain certification document requirements are as specified in Chapter 10 of the City Code and can be found on the City website.

3.2 Overall Site and Drainage Certifications for Commercial Properties, Multi-Family Properties and Single-Family Residential Subdivisions

The Overall Site and Drainage Certification must include certification of the drainage facilities shown on the approved Utility Plans. This includes drainage facilities such as:

- Water quality and quantity detention basin (volume, grading and elevation certification)
- Channels or swales
- Storm pipes and inlets
- Subdrain pipes
- Curb cuts, concrete pans, sidewalk culverts
- Site grading
- Erosion control installations
- Post-construction site cleanup

Reference: Refer to the "Overall Site and Drainage Certification" and "During Construction Inspection" checklists.

The Utility Plans, together with the Development Agreement, identify when and what facilities must be certified and how many building permits and/or COs are allowed prior to submitting the Overall Site and Drainage Certification.

For commercial and multi-family building projects, the Overall Site and Drainage Certification must be accepted before the release of the first CO. Twenty-five percent (25%) of the building permits in a single-family residential project can be issued prior to acceptance of the Overall Site and Drainage Certification, unless otherwise agreed to in the Development Agreement. The Overall Site and Drainage Certification must be submitted and approved by the FCU before the release of any remaining building permits is allowed.

3.3 Individual Lot Certifications

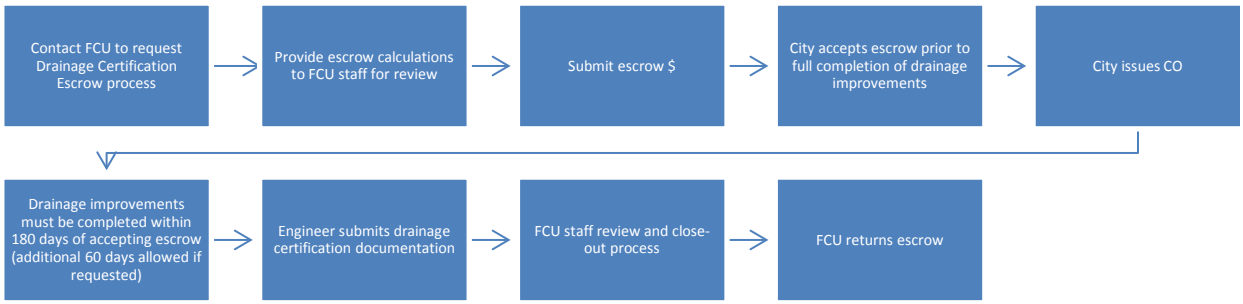
Certification of Lot Grading, by a Professional Engineer, is required as specified in the applicable Development Agreement, for individual lots to ensure lot grading was completed according to the approved grading plan.

Reference: Refer to the "Certification of Lot Grading" checklist.

4.0 Drainage Certification Escrow

City Code Section 26-544(b) provides for the use of escrow (referred to in this Manual as the "Drainage Certification Escrow") in order to obtain a certificate of occupancy (CO) for property prior to construction, certification, and acceptance of stormwater facilities. (Note that the "Drainage Certification Escrow" is separate from the "Erosion Control Escrow", which is addressed in this Manual in Section 6.1.5 of Chapter 2: Development Submittal Requirements). The Drainage Certification Escrow may be collected to assure construction, installation, and certification of the facilities in accordance with final development plan documents, such as a Development Agreement. Consistent with City Code Section 26-544(b), the following sets forth how the Drainage Certification Escrow shall be calculated, collected, managed, and returned or retained (as appropriate).

Figure 4.0 Drainage Certification Escrow Process Steps



4.1 Formal Request to Use Drainage Certification Escrow

A formal request must be made to FCU for utilizing a Drainage Certification Escrow. This request may be discussed informally but must also be submitted in writing (including via email) in a formal request letter for recordkeeping purposes. Section 4.3 below discusses requirements of the formal request letter.

4.2 Calculating the Drainage Certification Escrow

- A non-refundable administrative fee of **$200** per escrow to process and track the escrow will be applied to all projects seeking to utilize the Drainage Certification Escrow.

- For commercial or multi-family buildings and lots requesting CO, that can show completed construction, a Drainage Certification Escrow in the amount of **$3,000** per lot may be provided to the FCU for the issuance of any CO prior to submitting and processing the Drainage Certification.

- For single family residential lots requesting CO, that can show completed construction, a Drainage Certification Escrow in the amount of **$1500** per lot may be provided to the FCU for the issuance of the CO prior to submitting and processing the Drainage Certification for the lot.

4.2.1 Commercial or Multi-Family Site Drainage Certification Escrow

All sites requiring drainage and grading certification per the Land Use Code (see Land Use Code Division 3.3.2.E.1.e) must complete the certification in accordance with the associated site Development Agreement. If a CO is requested prior to site construction being completed or the drainage certification being processed, the following information must be provided prior to issuance of a CO.

1) Engineer's Cost Estimate: A complete and accurate itemized list and estimated costs of drainage and/or grading improvements yet to be completed. This estimate is to be prepared, stamped, signed, and dated by a Professional Engineer licensed in the State of Colorado.

2) Commercial or Multi-Family Site Drainage Certification Escrow is calculated as shown in the following **Table 4.2.1-1**. This calculation is to be provided along with the Engineer's Cost Estimate for review.

Table 4.2.1-1: Commercial or Multi-Family Site Drainage Certification Escrow

1. Engineer's cost estimate: Engineer's cost estimate x 150% =	$_____ (1)
2. Certification cost: _____ # of site acres x $50 =	$_____ (2a)
If site does not include stormwater facilities: _____ building sq. ft. x $0.05 =	$_____ (2b)
If site includes stormwater facilities: _____ building sq. ft. x $0.10 =	$_____ (2c)
Total of (2a) + (2b) + (2c) =	$_____ (2d)**
If (2d) exceeds $15,000, the amount shall be adjusted with the following formula:* ($15,000 + 50% x (amount over $15,000) = $_____	
****If (2d) equals or exceeds $25,000, the Water Engineering and Field Services Manager shall have the ability to reduce the amount.*	
Greater of (2d) or $3,000 =	$_____ (2)

3. Non-refundable administrative fee:	$ 200 (3)
Total Escrow = (1) + (2) + (3) =	$_____

This table is also available in spreadsheet format upon request.

4.2.2 Single Family Residential Site Drainage Certification Escrow

All sites requiring drainage and grading certification per the Land Use Code (see Land Use Code Division 3.3.2.E.1.e) must complete the certification in accordance with the associated site Development Agreement which will stipulate a maximum number of building permits allowed prior to requiring the drainage certification. If additional building permits are requested prior to the site being certified, the owner may obtain additional building permits under the following conditions:

1) Engineer's Cost Estimate: An itemized list and estimated costs of remaining drainage and/or grading improvements per the Project Development Plans. This estimate is to be prepared, stamped, signed, and dated by a Professional Engineer licensed in the State of Colorado.

2) Single Family Residential Site Drainage Certification Escrow is calculated as shown in the following **Table 4.2.2-2**. This calculation is to be provided along with the Engineer's Cost Estimate for review.

Table 4.2.2-2: Single Family Residential Site Drainage Certification Escrow

1. Engineer's cost estimate: Engineer's cost estimate x 150% =	$_____ (1)
2. Certification cost: # of lots x $75 = # of site acres x $50 = Total of (2a) + (2b) = ***If (2c) exceeds $15,000, the amount shall be adjusted with the following formula:* ($15,000 + 50% x (amount over $15,000) = $_____***	$_____ (2a) $_____ (2b) $_____ (2c)**

****If (2c) equals or exceeds $25,000, the Water Engineering and Field Services Manager shall have the ability to reduce the amount at their discretion.* Greater of (2c) or $3,000 =	$_____ (2)
4. Non-refundable administrative fee:	$ 200 (3)
Total Escrow = (1) + (2) + (3) =	$_____

This table is also available in spreadsheet format upon request.

4.3 Submittal and Review of the Drainage Certification Escrow

1) The Developer/owner or Design Engineer shall submit a formal request letter in writing requesting the Drainage Certification Escrow, the Engineer's Cost Estimate, and the Drainage Certification Escrow calculation table to FCU.

   The formal request letter shall include the following:

   - A description of the status of the stormwater and drainage infrastructure construction at the site, including completed items and incomplete items. (Note that FCU will not allow for escrow to be applied to stormwater or drainage infrastructure that might otherwise pose a risk to health, safety, or welfare of building occupants if not installed prior to the release of CO, as determined in FCU's discretion.)

   - A list of incomplete items and cost to construct or complete the items

   - Inclusion of Table 4.2.1-1 or Table 4.2.2-2 showing calculations

   - Professional Engineer stamp, signature, and date

2) The provided information will be reviewed within 10 business days for accuracy and completeness. FCU retains the right to make or require corrections to any submitted calculations or information.

3) Once reviewed, FCU will contact the Developer/owner or Design Engineer to confirm acceptance and will then provide an escrow payment form to be filled out and submitted with the escrow payment in a format that is currently accepted by the City.

4.4 Guarantee

The Developer/owner shall guarantee (with the Drainage Certification Escrow as an assurance) that the stormwater facilities, and grading and drainage improvements, as shown on the approved plans are properly constructed and are free from defective materials and/or workmanship. The Developer/owner has 180 days to complete these improvements per the approved plans and certify their completion according to the Development Agreement.

Any acceptance of stormwater infrastructure or returning of the Drainage Certification Escrow shall not be construed to relieve the Developer/owner of the duty to maintain the stormwater infrastructure or as stipulated in the Development Agreement.

4.5 Return of the Drainage Certification Escrow

Once the grading and/or drainage improvements for the lot and/or building are constructed and a certification is submitted and approved by the FCU in accordance with the Development Plan Documents, the escrowed funds will be released to the Developer/owner. The escrow funds will be released within four weeks after a request to release these funds has been received by the FCU.

If all or portions of a Drainage Certification Escrow is not used by the City as described in Section 4.6 below and is otherwise incapable of being returned to the Developer/owner, the City retains the right to seek that all or portions of the Drainage Certification Escrow are or have been abandoned and forfeited, to seek rights to the Drainage Certification Escrow following any procedures required by law. *See* City Code Sections 23-131 through 23-138 (Intangible Personal Property).

Nothing herein shall be deemed to preclude the City from taking any other action with respect to the improvements and matters associated therewith.

4.5.1 Party the Drainage Certification Escrow Will Be Returned To

FCU shall return the Drainage Certification Escrow, or portions thereof, to the person or entity that paid the Drainage Certification Escrow unless and until a notarized assignment of the rights to the Drainage Certification Escrow is delivered to and approved by FCU identifying the new party that is entitled to all or portions of the Drainage Certification Escrow. It is thus the responsibility of the other parties to arrange for the transfer of rights to the Drainage Certification Escrow, or to replace certain Drainage Certification Escrow of one party with those of another.

In the event the Developer/owner sells the property or a lot within the property for which a Drainage Certification Escrow has been delivered to FCU, the determination of who should take ownership of the rights to the Drainage Certification Escrow shall be resolved entirely by the Developer/owner and the new

party; this shall not be the City's responsibility to calculate, evaluate, or phase a project and substitution of the Drainage Certification Escrow.

4.6 FCU Use of the Escrow

If the subject improvements are not completed within 180 days, the City will notify the Developer/owner in writing that the improvements must be completed and certified within 60 days of the notice date. If, at that time, completion and certification have not been performed, the escrowed funds will be forfeited and the City may use the funds to address the drainage and grading requirements of the property, including complete the improvements, perform the certification, and/or to complete that portion of the improvements possible with the available escrow balance. The City will notify the owner when these actions have been completed, their associated costs (which include administration costs to do the corrective work), and whether any surplus funds remain available for the owner to claim.

5.0 Close-Out Process

The Close-Out Process is set forth in this section and is required for all development sites. The Close-Out Process typically incorporates an Initial Close-Out Inspection and meeting and a Final Close-Out Inspection.

For small project sites where the drainage facilities are completely constructed and fully landscaped by the time a construction project is completed, the Initial Close-Out Inspection and Final Close-Out Inspection may be combined into a single inspection event. However, more commonly, construction sequencing on project sites involves the installation and completion of the drainage facilities first, followed by landscape installations and final stabilizations later. As such, the Final Close-Out Process has been split up into two distinct inspection phases to allow for Developers to more easily meet the requirements for receipt of their building Certificate of Occupancy (CO).

The purpose of the Initial Close-Out Inspection meeting is to verify that the final grades on the site and the stormwater infrastructure have been completely installed and meets the approved design so that the Developer can receive their building CO. This inspection should occur at or near the end of all construction activities. Landscape materials may be installed or partially installed at this stage and typically, final stabilization has not yet occurred. There may be some final detailing of the site grading and/or some smaller components of the stormwater infrastructure that are identified in this initial inspection that will need to be addressed by the contractor. As such, a punch list of these items will be formulated with the contractor that will need to be completed by the time of Final Close-Out Inspection.

The purpose of the Final Close-Out Inspection is to verify that the final grades on the site and the stormwater infrastructure have been completely installed per design and all remaining punch list items have been completely addressed. In addition, all landscaping and reseeding activities have been completed so that final stabilization has been achieved.

5.1 Initial Close-Out Inspection Process

1) Overall Site and Drainage Certification documentation has been submitted to the FCU for review, a minimum of two weeks in advance of the Initial Close-Out Inspection meeting.

2) A minimum of two weeks in advance, Developer shall schedule the Initial Close-Out Inspection meeting. Attendees at the meeting shall include:

   a. FCU staff representatives from development review, erosion control/construction inspections, and post-construction inspections (3 representatives).

   b. Current/future owner or Developer that is identified in the Development Agreement with the City.

   c. Site contractor or general contractor that holds the construction contract with the Developer and who will be responsible for the warranty of the drainage system.

   d. Current/future maintenance contractor (if known) that will be providing site stabilization and ensuring long-term maintenance of the site.

   e. Design Engineer who provided the original design of the site and/or who provide the drainage certification documentation.

3) Prior to the Initial Close-Out Inspection meeting, the contractor shall clear all debris and sediment from the inspected areas. This includes the entire stormwater infrastructure (i.e. curb and gutter, swales, trickle channels, sediment traps, detention basins, pipes and inlets). Pertinent temporary BMPs shall be in good working condition and remain in place until the Final Close-Out inspection.

4) Initial Close-Out Inspection meeting will generally consist of the following:

   a. Walking the site: conducting a group inspection of the stormwater facilities and final grades. This meeting should take place on a day when the entire site can be accessed, all site structures can be clearly viewed and there are no obstacles or snow pack that might limit the inspection process.

   b. Review of the Standard Operating Procedures (SOPs): On-going and long-term SOPs, including site specific SOPs will be provided in the Development Agreement and a copy of that agreement will need to be brought to the meeting. Items typically discussed will include the location and maintenance of all onsite stormwater facilities such as inlets, outlets, detention basins and LID systems.

c. Reviewing status of the vegetation establishment and long-term vegetation maintenance.

d. Post-construction inspection information handouts will be provided by the FCU to the owner. These handouts explain what the FCU looks for when inspecting detention basins, underground detention chambers and LID systems such as permeable pavers and rain gardens.

e. Share contact information: The property owner to provide owner entity name, contact phone number, mailing address, email and any other relevant contact information to the FCU for post-construction inspection coordination or correspondence as needed. The FCU to share pertinent contact information with the owner.

5) Prepare a punch list of any remaining items that the contractor is to address prior to the Final Close-Out Inspection. (If there are no punch list items and the only remaining item is complete establishment of the vegetation, then this initial meeting can count as the Final Close-Out Inspection and no further meetings would be required. The erosion escrow would be returned when vegetation is deemed established.

5.2 Final Close-Out Inspection Process

1) Overall Site and Drainage Certification documentation or updates to the originally submitted certification forms are to be submitted to the FCU for review, a minimum of two weeks in advance of the Final Close-Out Inspection. The FCU will approve the final drainage certifications if there are no outstanding items to address.

2) Owner submits soil amendment certifications and receipts to FCU, including those in the common areas or tracts. Soil Certifications for all areas will need to be accepted by FCU Erosion Control. Email address is erosion@fcgov.com.

3) Site vegetation is fully established (refer to Section 2.6 of this Chapter for final stabilization and established vegetation criteria).

4) The owner shall coordinate and schedule the Final Close-Out Inspection.

5) Prior to the Final Close-Out Inspection, the contractor shall clear all debris and sediment from the inspected areas. This includes all stormwater infrastructures (i.e. curb and gutter, swales, trickle channels, sediment traps, detention basins, pipes and inlets).

6) Final Close-Out Inspection will include follow-up field verification that all stormwater facilities, water quality and LID systems are in good working order and that revegetation measures have been completed.

7) Owner is to remove all remaining temporary BMP control measures from the site.

8) FCU is to return any remaining escrows.