

APPENDIX X
GRADING AND EXCAVATION

SECTION X101

GENERAL

X101.1 Purpose

The purpose of these regulations is to:

1. Protect public safety, health, and welfare by regulating grading & excavation on private property;
2. Reduce increases in erosion and sedimentation over pre-development conditions; and
3. Ensure reclamation of disturbed land.

X101.2 Scope

This chapter sets forth standards and regulations to control excavation, grading, and earthwork, including fills, embankments, and retaining walls; establishes the administrative procedure for issuance of permits; and provides for approval of plans and inspection of grading & excavation construction.

X101.3 Authority

Clear Creek County is authorized by Colorado State Statutes to plan for and regulate the use of land so as to provide planned and orderly use of land and protection of the environment in a manner consistent with constitutional rights [C.R.S. § 29-20-101(1)(h)]; plan for and regulate the uses of land for trade, industry, recreation, or other purposes (C.R.S. § 30-28-111); and to provide for enforcement through necessary guarantees, alterations, maintenance or use of property (C.R.S. §§ 30-28-114, 30-28-124, and 30-28-137).

SECTION X102

GRADING AND EXCAVATION PERMITS

X102.1 General

Grading and Excavation Permits (grading permits) are intended to cover all earth disturbing activity located within a project site such as road construction, site work, and installation of utilities.

X102.2 Grading and Excavation Permit Requirement

Grading permits must be obtained whenever a property owner, developer, contractor, or other individual proposes to conduct earth-disturbing activity of more than 800 square feet of surface area and/or more than 10 cubic yards of earth material; construct a driveway; and/or construct a retaining wall over 4 feet in height, except as exempted in Section X104.

X102.3 Types of Grading Permits Single-Family or Duplex

1. Driveway Permit - Driveway permits must be obtained whenever an individual proposes to construct, modify and/or connect a driveway to an existing public or private roadway in unincorporated Clear Creek County. All work undertaken to construct or improve driveways shall conform to the design and construction standards contained in the *Roadway Design and Construction Manual*.
2. Minor Grading & Excavation Permit - Minor grading permits are required for projects with proposed earth disturbance of more than 800 square feet of surface area or 10 cubic yards of cut/fill volume, and are intended for use on developed single-family or duplex residential lots for building additions and accessory structures (excluding garages) with a footprint of more than 400 square feet and less than 800 square feet and minor grading projects that do not involve structures.
3. Major Grading & Excavation Permit - Major grading permits are intended for use on projects involving the construction of single-family and duplex residences, garage additions of any size; and building additions with a footprint of more than 800 square feet. All projects that require a major grading permit shall have a driveway that is compliant with current driveway standards or shall be required to obtain a Driveway Permit to construct or improve access in order to meet current driveway standards.

Multi Family, Commercial, Industrial

All earth disturbing activities involving earth disturbance of more than 800 square feet of surface area and/or create/modify a connection to a public or private roadway in unincorporated Clear Creek County for multi-family, commercial, recreational, institutional, and/or industrial land uses require a Driveway/Grading & Excavation Permit and shall conform to the design and construction standards contained in the *Roadway Design and Construction Manual* and grading & excavation standards.

Retaining Wall Permit

All retaining walls over 4 feet in total height, whether in a single line or multiple tiers, require a Retaining Wall Permit and shall be engineered and certified by an engineer prior to final approval. Total retaining wall height is measured from the ground surface at the toe of the lowest tier of the retaining wall system to the top of highest tier of retaining wall system. In order for retaining walls to be considered separate and act independently of each other, the retaining walls shall be separated by a horizontal distance of more than twice the height of the taller of either retaining wall.

X102.4 Grading Permit Procedures

Applications for grading permits must be submitted 15 calendar days prior to commencement of earth disturbing activity, unless the activity is exempt from permit requirements per Section X104. The Site Development Department is responsible for review and action on grading permits.

Approval shall be granted only if the proposed activity meets the standards and regulations in these regulations, the required fee has been paid, and if required, a financial guarantee has been provided in accordance with Section X102.4.4. Approval of a grading permit may be accompanied by conditions deemed reasonable by the Site Development Department to ensure protection of public health, safety, and welfare and compliance with these regulations. A grading permit must be signed by the County Engineer for it to be approved.

This section states procedures and requirements associated with grading permits for the following:

1. Submittal and review of applications;
2. Expiration of applications;
3. Expiration of permits;
4. Performance Guarantees; 5. Supervision of work; and
6. Inspections.

X102.4.1 Submittal Requirements for Grading Permits

The plans and specifications shall be prepared and signed by a Professional Engineer licensed by the State of Colorado to prepare such plans or specifications. Plans shall be drawn to scale and shall be of sufficient clarity to indicate the nature and extent of the work proposed and show in detail that they will conform to the provisions of this code and all relevant laws, ordinances, rules and regulations.

The following information shall be submitted with any application for a Grading and Excavation Permit, unless specifically waived by the County Engineer. Applications that do not include the information and material below shall be deemed incomplete and may not be accepted by the Site Development Department.

1. Permit fees as required by resolution of the Board of County Commissioners.
2. Written Material:
 - A. Application Form
 - B. Zoning Verification Form
 - C. Construction Site Sanitation Agreement
 - D. Landowner Authorization Form (if applicable)
 - E. Proof of Legal Access (if applicable)
 - i. If the driveway crosses neighboring properties then legal, recorded easements are required to be submitted.
 - ii. If access is within an easement or shown on a plat, identify and verify proposed access is within the recorded easement.
 - iii. If an un-platted common driveway is proposed, submit an easement signed by all affected property owners.
3. Plans and Specifications
 - A. Legal description (i.e. subdivision name, lot, block, filing)
 - B. Locations of all existing and proposed improvements

- i. Include a statistical inventory showing what is existing and what is proposed of the site coverage (impervious and building), open space, snow storage, etc.
 - C. Property boundaries, lot dimensions, easements, and compliance with all plat notes
 - D. Setbacks – Clearly show setbacks from all property lines. If there is a building envelope and/or disturbance envelope, then show and ensure that the structure(s) is within those designated areas.
 - E. Limits of Disturbance
 - i. Clearly show area of proposed disturbance
 - ii. Include any temporary construction access
 - iii. Include the total square footage of proposed disturbance
 - iv. Estimate the quantities of excavation and fill, including quantities to be moved off and on site.
 - F. Utilities – Show existing and proposed location of all utilities and connections including utility boxes/poles for electric, gas, cable, telephone, sewer and water, including On-site Wastewater Treatment Systems and wells
 - G. Precise Grading Plans
 - i. Engineering scale of 1:10 or 1:20
 - ii. Show existing and proposed topography at 2-foot contour intervals in accordance with standard drafting practices.
 - iii. If the topography of the proposed disturbance area(s) has a greater than 10% slope, a topographic survey prepared and stamped by a registered land surveyor shall be submitted.
 - iv. Areas with slopes greater than 30% intended to be used for roads, driveways or structures shall be approved for use by a geologist or engineer in a soils report.
 - H. Grading and Construction Specifications
 - i. Maximum 1½:1 slope allowed on all finished contours or retain.
 - ii. Retaining wall maximum = 4 feet without an engineered design (submit cross-section diagram for all proposed retaining walls).
 - iii. Retaining walls > 4 feet in height require design and certification by a Professional Engineer licensed in the State of Colorado.
 - I. Subsurface and Surface Drainage Plans
 - i. Show foundation drain location and daylight.
 - ii. Show all existing and proposed culverts with invert elevations and other drainage details.
 - J. Streams, intermittent streams and drainage ditches
 - K. Trail(s)
 - L. Significant natural or historical features
 - M. Water Quality Control Plan as required to show compliance with Section X103.5.2
 - N. Revegetation Plan as detailed in Section X103.5.3
- 4. Supporting Material

- A. Boundary and Topographical Survey
- B. Geotechnical Engineering or Engineering Geology Report

Professionals Responsible for Preparation of Plans and Reports

The qualified professionals responsible for the preparation of grading, drainage, geotechnical, erosion, and water quality control plans and specifications shall have the following responsibilities.

Civil Engineer

Grading plans and specifications shall be prepared and signed by a Professional Engineer licensed in the State of Colorado having knowledge and experience in civil engineering. It is the responsibility of the civil engineer or other qualified professional to incorporate all recommendations from the geotechnical report into the grading, drainage, erosion, and water quality control plans and specifications.

Surveyor

Surveys shall be prepared and signed by a Professional Land Surveyor licensed in the State of Colorado.

Survey Requirements

A boundary and topographic survey completed within 5 years of the permit application with the following minimum information shall be submitted with all grading permit applications in which disturbance of slopes greater than 10% is proposed.

1. The minimum scale of the survey shall be 1 inch to 60 feet or larger. Enough sheets shall be used to accomplish this end. Acceptable larger scales are 1 inch to 10 feet, 20 feet, 30 feet, 40 feet, or 50 feet. Scales of 1 inch to 100 feet or 1 inch to 200 feet may be allowed by the Site Development Department for survey documents with large lots and tracts if it is legible.
2. The survey shall include the date of the survey, north arrow, and written and graphic scale on each sheet.
3. Existing topography at 2-foot contour intervals shall be shown in areas of all proposed disturbance.
4. The width shall be shown for all public rights-of-way.
5. The traveled surface of each existing street/road shall be shown.
6. All easements shall be clearly labeled, identified, dimensioned and tied to reference points within the site and shown by fine short dashed lines. Overlapping or crossing easements shall vary the dash length slightly to improve readability. Existing easements shall bear notation of dedication of conveyance by recordation information. If existing easement bearings are rotated due to a change in basis of bearing, a note shall be added to the survey indicating such. If any easement already of record cannot be definitely located, a statement of the existence, the nature thereof and its recorded reference shall be placed in the note section. Easement shall be designated, and the disposition thereof indicated in the note section.

7. Existing improvements including building structures, fences, above-ground utilities, drainage improvements, well, and septic systems shall be shown.
8. All property boundaries with distances and bearings shall be shown.

Geotechnical Engineer or Professional Geologist

The geotechnical engineer's or the professional geologist's area of responsibility shall include, but need not be limited to, preparation of geotechnical reports analyzing soil and geological conditions on site and recommending how ground is to be prepared to receive fills, how fill slopes are to be designed and compacted and the design of buttress fills and cut slopes to be allowed with respect to these conditions. The geotechnical engineer or engineering geologist shall also include hydrological conditions of the site in this report and the design of subdrains or other groundwater drainage device, if needed, and how surface drainage is to be controlled.

Geotechnical Engineering Report

If slopes in excess of 3:1 (33.3%) are proposed to be disturbed, then a geotechnical engineering report for slope stability, prepared by a Professional Engineer licensed in the State of Colorado or a professional geologist with experience in geotechnical engineering, is required unless this requirement is waived by the County Engineer. Roadway embankment slopes shall be included in the slope analysis of a property, and disturbance of roadway embankments may be grounds for the requirement of a slope stability report, depending on the extent and severity of the proposed impacts.

The geotechnical engineering report shall include an adequate description of the geology of the site, conclusions and recommendations regarding the effect of geologic conditions on the proposed development, and opinion on the adequacy for the intended use of sites to be developed by the proposed excavation/grading, as affected by geologic factors. The geotechnical engineering report for slope stability shall also include recommendations and information necessary to protect the area from construction induced instability, including limiting erosion potential, stabilizing fill placement, identifying lateral earth pressures (active, passive, and equivalent fluid pressure) for use in the design of foundations and retaining walls, controlling runoff, and methods of anchoring structures proposed on the property. The slope stability report shall reflect all proposed improvements. Any changes to the proposed plans may necessitate follow-up reviews and amendments to the report by the geotechnical engineer.

In circumstances where slopes of 3:1 or greater exist but there is little to no likelihood of slope instability being induced by development, the County Engineer may waive the requirement for a geotechnical engineering report. If the County Engineer chooses not to waive this requirement, then permit review will be ceased until the report is provided.

The submittal of any proposal involving development of a lot with steep slopes shall include a slope analysis plan sheet, graphically depicting the location of steep slopes and those slopes proposed to be disturbed.

X102.4.2 Expiration of Applications

Applications received in which no permit has been issued within 180 days of the date of application shall expire. Any plans submitted for review may thereafter be returned to the applicant or destroyed by the Site Development Department.

The Site Development Department may extend the time for action by the applicant for a period not to exceed 180 calendar days upon written request by the applicant if circumstances beyond the applicant's control have prevented action on the grading permit application from being taken.

X102.4.3 Expiration of Permits

Each grading permit shall be valid for one year from the date issued. If satisfactory evidence that unusual difficulties have prevented the work from being completed within one year, the Site Development Department may grant extensions of time necessary to complete the work.

If a Building Permit associated with the work to be completed by a grading permit is issued for the same site, the expiration of the grading permit may be tied to the Building Permit expiration date.

X102.4.4 Performance Guarantees

The Site Development Department may require performance guarantees in such form and amounts as may be deemed necessary to ensure that the work, if not completed in accordance with the approved plans and specifications, will be corrected to eliminate hazardous conditions, drainage and erosion devices will be constructed, disturbed areas will be revegetated and any adverse impacts of such work is mitigated.

All performance guarantees shall include an executed Security Agreement approved by the Clear Creek County Board of County Commissioners and shall be either:

1. In cash, or
2. By Letter of Credit issued by a bank located and physically doing business in the State of Colorado.

The performance guarantees shall be in the amount of 125% of the estimated cost of the proposed scope of work.

The work will be deemed complete for purposes of starting the warranty period upon final inspection approval by the Site Development Inspector and delivery of an acceptable as-built drawing to the Site Development Department.

A letter of credit performance guarantee will be drawn on if the conditions for its release are not satisfied within ten (10) business days before its expiration, unless prior to that time a replacement letter of credit or extension is delivered to the Site Development Department.

X102.4.5 Supervision of Grading and Excavation Work

Grading and excavation work shall be completed under the supervision of the permit holder. During construction, the permit holder must exercise adequate control over grading and excavation work to ensure the work conforms to the approved plans and specifications, and to any required geotechnical report. In performing this responsibility, the permit holder may retain and consult with qualified professionals. The responsibilities of these qualified professional are stated below.

If, in the course of fulfilling these responsibilities the contractor or qualified professional of record is changed, the permit holder must notify the Site Development Department of the change in the responsible professional.

Professional Responsible for Supervision of Field Work

The permit holder has primary responsibility for supervision of grading and excavation work in the field to ensure that such work is in conformance with approved plans and specifications. Qualified professionals retained by the permit holder shall observe work as it is performed and make recommendations as follows.

Civil Engineer

1. The civil engineer or other qualified professional who prepares the grading, drainage, and/or water quality control plans and specifications shall observe the establishment of line, grade, and drainage of the graded area and shall recommend to the permit holder whether or not such work conforms to the approved plans and specifications.
2. Upon completion of field work, the qualified professional shall issue a written statement of substantial completion and compliance with approved plans and specifications. Alternately, the qualified professional may submit revised as-built plans and a written statement of compliance with the original design intent.

Geotechnical Engineer or Professional Geologist

The geotechnical engineer or professional geologist shall conduct field tests for required compaction and field observations of subdrain and surface drainage installations and shall recommend to the permit holder whether or not such work conforms to the approved geotechnical report and grading plans. The responsibility for conducting field tests for compaction may be assigned to an engineering firm having experience in soils testing where compaction tests will be conducted under the supervision of a licensed engineer. **X102.4.6 Inspection of Grading and Excavation Work**

1. Initial Site Inspection

- A. Before a grading permit is issued, an approved inspection of initial site conditions and temporary erosion controls must be completed by the Site

Development Department. An Initial Site Inspection may be requested at the time of permit submittal or after review and approval of the plans and specifications by the Site Development Department. If revisions are required by the Site Development Department during the review process that require a change to the improvement locations after an Initial Site Inspection has been completed, the location of the staked improvements at the site must be moved to the revised locations and re-inspection of the site by the Site Development Department requested. Prior to requesting an Initial Site Inspection, the permit applicant shall:

- i. Have a Professional Surveyor licensed in the State of Colorado pin the corners of each lot where structures or improvements are proposed.
The pins shall carry caps denoting the surveyor's license number; ii.
Flag the property lines between pins;
 - iii. Stake improvement locations of the proposed driveway centerline, excavation site and/or building footprint in accordance with the plans; and
 - iv. Install temporary erosion controls in accordance with the Water Quality Control Plan and the *Best Management Practices Manual*.
- B. During the staking of improvement locations and site grading and excavation work, the permit holder shall exercise adequate control over the work and conduct inspections as necessary to ensure that location and grade elevations of roads, driveways, parking areas, drainage improvements, building pads, foundations, erosion controls and other site improvements conform to the approved plans and specifications, plat conditions, and applicable zoning regulations. The permit holder may contract with qualified professionals to conduct field observations, but the ultimate responsibility for quality control shall rest with the permit holder.
- C. The Site Development Department shall supply a copy of the approved grading permit and approved plans to the permit holder. The permit holder is responsible for the posting the permit and plans at the construction site so it is visible from the road and available for use by the Site Development Department for noting results of inspections.
- D. After issuance of an approved grading permit by the Site Development Department, the permit holder may apply to obtain a Building Permit from the Building Department. No Foundation Inspection by the Building Department shall be conducted until the Site Development Department has approved a Rough-In Inspection of the driveway as required in Section X102.4.6.2. It is recommended that this inspection be requested prior to setting foundation forms to minimize the cost of relocating site improvements if the inspection reveals that the site improvements have not been located according to the approved plans and applicable zoning regulations.

2. Rough-In Inspection

- A. Before a Concrete Pre-Placement Inspection can be called in for a Building Permit, the driveway must be constructed with the proper width, grade, and

approach to the access road in accordance with the approved plans and specifications. The permit holder is responsible for calling the Site Development Department for a Rough-In Inspection.

- B. If there is a Building Permit associated with the grading permit and the Rough-In Inspection of the site work reveals that the location and grade of the site improvements conform to the approved plans and applicable zoning regulations, the Site Development Department shall notify the Building Department.
- C. Construction Period: The permit holder shall exercise adequate control over the grading and excavation work and conduct inspections as necessary to ensure that location and grade elevations of roads, driveways, parking areas, drainage improvements, building pads, foundations, erosion controls and other site improvements conform to the approved plans and specification, plat conditions, and applicable zoning regulations. The permit holder may contract with qualified professionals to conduct field observations, but the ultimate responsibility for quality control shall rest with the permit holder. The Site Development Department may inspect the project site at periodic intervals to verify that the permit holder is fulfilling their responsibilities and that grading and excavation work is in compliance with approved plans and specifications. Any work that does not conform shall be brought to the attention of the permit holder, both verbally and in writing, and the permit holder shall make corrections as needed. If corrections are not made, further project construction shall be stopped.
- D. A construction survey may be required if the Site Development Department has reason to believe that a problem exists with the location and/or elevation of site improvements that cannot be verified or resolved.
- E. If the permit holder finds it necessary to make field changes during construction, they shall contact the Site Development Department prior to implementing the changes. The Site Development Department will determine if amended plans need to be submitted and approved prior to work proceeding. The Site Development Department may require that as-built plans showing approved changes.

3. Final Inspection

- A. At the conclusion of grading and excavation work and prior to the issuance of occupancy certificates for completed structures, the permit holder shall request a Final Inspection from the Site Development Department. All required written approvals, reports, and as-built surveys and drawings shall be submitted to the Site Development Department prior to requesting a Final Inspection. All grading and excavation work including drainage facilities and water quality controls must be constructed in accordance with the County's grading and excavation regulations and approved plans and specifications. All construction materials, temporary sanitation facilities, trash and debris shall be removed from the site and all disturbed areas revegetated. Locations of structures must comply

with all plat, site plan conditions, and the County's applicable zoning regulations. The Site Development Department may require the permit holder to submit an Improvement Location Certificate, prepared by a Professional Surveyor licensed in the State of Colorado.

- B. No occupancy permits shall be issued and no use of a graded site shall commence until the County Engineer has inspected and approved the final grading and location of structures.
- C. If any grading inspection reveals work which does not conform to approved plans and specifications or to the County's grading standards, the permit holder shall be responsible, at his expense, for all corrective work necessary to bring work into conformance. If the permit holder fails to perform such work, the County shall use the permit holder's financial guarantee to eliminate hazardous situations, complete drainage and erosion control devices and revegetate disturbed areas.
- D. If site conditions do not allow for grading and excavation work to be completed and/or inspected due to circumstances outside the control of the permit holder such as seasonal snow coverage, occupancy permits may be issued if the Site Development Department determines that unfinished grading work does not pose a hazard to public health, safety, and welfare and the permit holder posts a performance guarantee with the County in an amount sufficient to complete the grading and excavation work in accordance with the approved plans and specifications as required by Section X102.3.4.

SECTION X103

GRADING AND EXCAVATION STANDARDS

Grading plans and specifications submitted for the purpose of obtaining a Grading and Excavation Permit and any earth-disturbing activity done on site must comply with the standards found in these regulations.

Where any development is proposed, finished grades shall be shown clearly on the plans. Where finished grades exceed 3:1 (33.3%), means of temporary stabilization will be required, along with additional temporary erosion and sediment control measures as deemed necessary and appropriate. The maximum slope of un-retained finished grades will be 1½:1 (66.7%) unless a geotechnical report justifying a steeper slope is provided.

X103.1 Setbacks

Cut and fill slopes shall be set back a minimum of 5 feet from property boundaries and structures unless substantiating data is submitted justifying reduced setbacks. Minor grading may be permitted within the setback with finished grades not to exceed 3:1 (33.3%). Roads and driveways

are exempt from setback requirements if it is adequately demonstrated that the grading will not adversely impact properties or structures.

X103.2 Cut Slopes

The slopes of cut surfaces shall be no steeper than is safe for the intended use, and shall be no steeper than 1½:1 (66.7%) unless a geotechnical report justifying a steeper slope is provided.

Exception: A cut surface in bedrock shall be permitted to be at a slope of 1:1 (100%).

X103.3 Fill Slopes

Unless otherwise recommended in a geotechnical report, fills shall comply with the provisions of this section.

1. Surface Preparation

The ground surface shall be prepared to receive fill by removing vegetation, topsoil and other unsuitable materials, and scarifying the ground to provide a bond with the fill material.

2. Benching

Where the existing grade is at a slope steeper than 5:1 (20%) and the depth of fill exceeds 5 feet, benching shall be provided and a key shall be provided that is at least 10 feet in width and 2 feet in depth.

3. Fill Material

Fill material shall not include organic, frozen or other deleterious materials. No rock or similar irreducible material greater than 12 inches in any dimension shall be included in fills.

4. Compaction

All fill material shall be compacted to 90 percent of maximum density as determined by ASTM D 1557, Modified Proctor, in lifts not to exceed 12 inches in depth.

5. Maximum Slope

The slope of fill surfaces shall be no steeper than is safe for the intended use, and shall be no steeper than 1½:1 (66.7%).

X103.4 Retaining Walls

Retaining walls shall be constructed in accordance with engineering practices and the design provided. Retaining walls over 4 feet in total height shall be designed, inspected and certified by a Professional Engineer licensed in the State of Colorado. Inspections must be performed as required by the engineer. In the event that a wall exceeds 4 feet in height but was not engineered, a certification letter or as-built prepared by a Professional Engineer licensed in the State of Colorado shall be provided. If the engineer has not observed the wall construction as needed then the wall must be dismantled and reconstructed with observations as required.

1. Engineering Requirements

- a. Construction plans must indicate how the proposed wall height will vary along its length.
- b. Details must have elevations showing top (TOW) and bottom of wall (BOW) for critical points along each wall length.
- c. Supporting calculations must demonstrate an adequate factor of safety with respect to:
 - Bearing capacity
 - Overturning
 - Sliding
 - Internal stability
 - Global stability may be required dependent upon site conditions **Note:** Surcharge loads due to sloping backfill, adjacent vehicles and structures must be taken into account

The design parameters used for retaining wall analysis may require consultation from a geotechnical engineer. Sites with steep slopes, vehicles or structures near the walls and/or walls exceeding 8 feet in height may require a specific geotechnical study.

2. Setbacks

Setbacks for retaining walls shall be at least 5 feet from property boundaries and 25 feet from off-site occupied structures. The Site Development Department may waive setback requirements provided the applicant can adequately demonstrate that activities occurring within the setback will not adversely affect adjacent properties. Retaining walls associated with roads and driveways are exempt from setback requirements if it is adequately demonstrated that the retaining walls will not adversely impact properties or structures.

3. Drainage

When surface drainage is discharged onto any adjoining property, it shall be discharged in such a manner that it will not cause an increased hazard to the stability of any cut and fill slope or any building or structure. Runoff shall not be discharged from the site in quantities or at velocities substantially above those which occurred before grading except into drainage facilities such as roadside ditches or drainage easements where appropriate energy dissipation devices have been installed.

4. Tiered Walls

If a series of retaining walls is desired, the required horizontal distance between walls, as measured from the back of the lower wall to the face of the upper wall, is a minimum of 4 feet and a minimum of 6 feet if either retaining wall exceeds 8 feet in height. No individual wall may exceed 12 feet.

5. Grading

If the construction of a retaining wall will result in grading/disturbance of more than 800 square feet of area and/or a cut/fill volume of more than 10 cubic yards, a grading permit will be required.

6. Easements

Encroachment into utility easements requires approval by all agencies with interest in the easement. Encroachment into drainage easements requires approval from the Site Development Department.

X103.5 Consistency with Approved Plans

1. Where a final plat has been approved for a site for which grading permits are requested, the grading plans submitted shall be in substantial compliance with any improvement plans approved with the plat. The location and design of roads, trails, sidewalks, pathways, drainage improvements and utility lines shall be consistent with the improvement plans, unless allowance is made by the County Engineer for changes based on additional information on field conditions. Changes to improvement plans must meet County design standards (*Roadway Design and Construction Manual*), unless a deviation from these standards is granted. Changes to plans for utility lines must also be approved by the affected utility.
2. Where a site plan, special use permit, deviation or other development review having a site plan has been approved for a project for which grading permits are requested, the location of building pads, parking areas, driveways, roadways, trails, sidewalks, pathways, drainage improvements, berms and other site work shown on the grading plans shall be in substantial compliance with the approved plans. If a developer proposes a grading plan that differs from the approved site plan, the grading plan shall be referred to the Planning Department for a determination whether or not a revision or modification is needed. If a revision or modification is needed, approval shall be obtained prior to issuance of any grading permit.

X103.6 Conformance with *Roadway Design and Construction Manual*

Clear Creek County has adopted road and bridge design and construction standards that appear in the *Roadway Design and Construction Manual*. These standards specify requirements for the following:

1. General Design Elements (Section 2.4.2)
2. Specific Design Elements (Section 2.4.3)
3. Standards for Parking Areas (Section 2.8.2)
4. Landscaping and Erosion Control (Section 2.9)
5. Construction of Roads (Sections 3.3.2 thru 3.3.9)
6. Standards for Driveway Design (Section 4.7.3)

Grading and excavation plans submitted in compliance with these regulations and earth disturbing activities subject to these regulations must conform to the standards in the *Roadway Design and Construction Manual*.

X103.7 Consistency with Geotechnical Report

Persons applying for a grading permit shall be required to submit a geotechnical report unless this requirement is waived by the County Engineer. Where a report is required, it is the responsibility of the civil engineer or other qualified professional who prepares the grading plans and specifications to incorporate the recommendations contained in the geotechnical report into these plans and specifications.

X103.8 Stormwater Quality and Erosion Control Standards

These stormwater quality and erosion control standards are created to prevent pollution of surface waters, prevent sedimentation of wetlands, protect creeks and streams and their associated floodplains, control and manage increased runoff due to local development and to limit civil disputes arising from unlawful trespasses in the form of erosion and sedimentation, as well as to avoid overwhelming roadway drainage systems, culverts, and other stormwater conveyances that may exist in the County.

The Mile High Flood District's *Urban Storm Drainage Criteria Manual*, Clear Creek County's *Managing Stormwater to Protect Water Resources in Mountainous Regions of Colorado* and/or *Best Management Practices Manual* shall be applied to address stormwater quality management and erosion control for all proposed projects and developments. All stormwater reports and plans shall include necessary analyses, mitigation measures, and improvements needed to meet these stormwater quality and erosion control standards.

1. Plan Requirements

Prior to approval of a proposed subdivision, site plan or issuance of any building or grading permit, plans that meet the following standards shall be submitted to and approved by the Site Development Department:

- A. Prevention of soil loss from the development site by promoting infiltration of storm events to the water quality volume represented by the average 90th percentile cumulative frequency annual rainfall event (0.60 inches). This standard shall be met both during and after construction.
- B. Prevention of any increase in the historic rate of run-off from the development site produced by the 10-year and 100-year design storms. This standard shall be met both during and after construction.
- C. Prevention of any direct discharge of storm water to a lake, stream or intermittent stream.
- D. Provision for adequately sized detention facilities where dewatering of excavations is needed or construction site water management is required. E. Diversion of run-off from snow storage areas into detention facilities.

2. Water Quality Control Plan

A water quality control plan for the site that meets the standards set forth in Sections X103.5.1.A through X103.5.1.E shall be prepared by a Professional Engineer licensed in the State of Colorado having knowledge and experience in civil engineering and hydrology.

Construction of single-family residential units shall be exempt from the requirement to provide a specific water quality control plan if:

- A. The entire subdivision is provided with central erosion and run-off controls such as a community desilting pond for all drainage from the subdivision; or
- B. The Site Development Department determines that exempting construction will not have a significant impact on water quality.

The Site Development Department retains the authority to apply these standards when water quality impacts are likely to be significant, such as, but not limited to, construction on slopes greater than 3:1 (33.3%), construction within 25 feet of a lake, stream or river or if wetland disturbance will result.

3. Revegetation Plan

A revegetation plan shall be prepared by an individual having a degree in landscape architecture or comparable expertise, and sufficient experience in landscaping installation and maintenance to ensure the success of the plans they propose.

Revegetation plans shall provide for site coverage of disturbed areas after development equal to or better than vegetative coverage prior to development, where such areas are not intended to be used for roads, driveways or parking areas. Vegetated site coverage shall be native species, or alternatively, other hard species provided with an irrigation system.

In all cases, disturbed areas to be revegetated shall meet the following minimum standards:

- A. Slopes constructed at less than 3:1 can be hand seeded and mulched.
- B. Slopes constructed at 3:1 to 2:1 shall be hydro seeded/hydro mulched.
- C. Slopes constructed at 2:1 to 1½:1 shall be hydro seeded/hydro mulched and have slope netting/erosion control blankets installed (or equivalent erosion control measure with the approval of the County Engineer).

In areas where it has been determined that the native soil or site fill is not capable of fostering seed growth, soil amendments will be required.

X103.9 Conformance with Zoning Regulations

All earth-disturbing activity subject to grading and excavation regulations shall also meet the requirements in the County's zoning regulations.

X103.10 Compliance with Applicable 404 Permit Requirements

If the site contains areas deemed a jurisdictional wetland by the U.S. Army Corps of Engineers, the applicant must either present evidence of compliance with Section 404 of the Federal Clean Water Act, or present evidence that work will be done under the auspices of the Colorado Department of Wildlife nationwide 404 permit. Documentation and compliance with all potential Section 404 matters shall remain the sole and ongoing responsibility of the project proponent, and any failure to maintain such compliance may lead to suspension or revocation of any approvals provided under this Code.

X103.11 Hazards

Whenever the County Engineer determines that any existing excavation, fill or embankment on private or public property has become a hazardous condition to life and limb, endangers property, or adversely affects the safety, use or stability of a public way or drainage channel, the owner of the property upon which the excavation or fill is located, or other person or agent in control of said property, upon receipt of notice in writing from the County Engineer, shall within the period specified therein repair or eliminate such excavation or embankment to eliminate the hazard and to be in conformance with the requirements of this Code.

SECTION X104

EXEMPTIONS TO GRADING AND EXCAVATION PERMIT REQUIREMENT

The following activities shall be exempt from requirements to obtain grading permits:

1. Earth-disturbing activities for agricultural operations.
2. Routine road maintenance such as snow removal, grading of gravel roads, and cleaning of drainage ditches.
3. Any earth-disturbing activity involving less than 800 square feet of surface area; however, if the Site Development Department has determined an activity of this type will result in hazardous conditions or water quality impacts, the requirement for obtaining a grading permit shall be met.
4. Any earth-disturbing activity necessary for the installation or renovation of landscaping associated with a developed single-family or duplex unit. Grading or excavation work with a volume in excess of 50 cubic yards is beyond the scope of this exemption and requires grading permits.
5. Any activity specifically covered by an approved right-of-way permit issued by the Clear Creek County Road & Bridge Department.
6. Any activity specifically covered by an approved OWTS permit issued by the Clear Creek County Environmental Health Department.
7. Mining, quarrying, processing or stockpiling of rock or soil where established and provided for by law and controlled by other regulations, provided such operations do not affect the

lateral support or increase the stresses in or pressure upon any adjacent or contiguous property.

These exemptions do not alter any obligation to comply with other regulations contained within these regulations.

SECTION X105

DEVIATIONS

X105.1 Exceptions to Design and Construction Standards

Exceptions from the design criteria and construction specifications contained in, or relied on by reference by, this Appendix Chapter X may be granted by the County Engineer, at their discretion, under the following circumstances:

1. Where, by reason of exceptional topographic or physical conditions or other extraordinary and exceptional situations or conditions, the strict application of these regulations would result in peculiar and exceptional practical difficulties to, or exceptional and undue hardship upon, an individual proposing to construct a driveway provided the conditions, practical difficulties or hardship are not self-imposed.
2. Where an individual is proposing to construct an improvement governed by this Chapter and the strict application of these regulations would result, in the opinion of the County Engineer, in excessive cut and fill slopes, visual scarring, or other environmental damage, deviations from road design standards may be granted if granting the lesser standard will result in reduced environmental damage and the intent of the specific standards in question are being preserved.

X105.2 Consideration for Decisions on Deviation Requests

In reviewing deviation requests, the following criteria shall be considered to the extent applicable:

1. The effect of using a lesser standard on public health and safety including the ability of emergency vehicles to gain access, using road(s), bridge(s) or driveway(s) built to a lesser standard.
2. The existence of alternative design options that could accomplish the same objectives with less damage and/or less departure from the standards.
3. The severity of the terrain.
4. The availability of alternative alignments where the same or more stringent road standards could be met with the same or less environmental damage.
5. The length of road segments which will be built to a lesser standard.
6. The amount of snowfall anticipated and degree of exposure of the road surface to sun.

7. Comment from the appropriate public safety and other interested agencies received during the referral period, if applicable.
8. If a referral is made to a public safety agency that determines that granting the deviation is reasonably expected to impair the agency's ability to provide public safety service on the property or nearby properties, the application must be denied, unless the impairment can be mitigated, in which case the application may be approved on the condition that acceptable mitigation techniques are present or constructed and maintained.

X105.3 Submittal Requirements

The Site Development Department will determine the required submittal information based on the type of deviation being requested, surrounding circumstances and above criteria to be considered. Typical submittal requirements include:

1. An application form as provided by the Site Development Department;
2. A narrative and/or supplemental material which address the circumstances in Section X105.1 and the criteria of Section X105.2 to include;
 - a. The hardship imposed by the standard and why the proposed improvement cannot reasonably comply with the standard,
 - b. How the deviation request will not confer a personal convenience, profit or special privilege to the owner/applicant, and
 - c. How the hardship has not been self-imposed by the owner/applicant.
3. The appropriate fee as established on the Fee Schedule; and
4. Other information deemed reasonable by the Site Development Department.

X105.4 Appeals

The Board of County Commissioners shall be responsible for hearing appeals from determinations on deviation applications. Appeals may only be filed by persons who are determined to be materially and adversely affected by the decision of the County Engineer.

X105.4.1 Process for Appeal

X105.4.1.1 An appeal must be filed with the Site Development Department within sixty calendar days following the issuance of the decision being appealed. If an appeal submittal is deemed incomplete by the Department, the applicant will be given thirty calendar days within which to complete it.

X105.4.1.2 The applicant shall provide the Site Development Department with a written appeal addressing the circumstances in Section X105.1 and criteria of Section X105.2 as they relate to the proposed deviation.

X105.4.1.3 The submittal shall be reviewed in a timely manner for completeness by the Department. The applicant shall be notified of any missing or incomplete documentation. An incomplete submittal shall not be processed.

X105.4.1.4 The Department will notify property owners whose boundaries are within 300 feet of the subject parcel and any referral agencies that may be affected by the proposed deviation. The applicable agencies shall be determined per case and based upon the property development considerations.

X105.4.1.5 Adjacent property owners and referral agencies shall be given twenty-one calendar days to submit written comments to the Department.

X105.4.1.6 Based upon the submittal documentation, property development consideration, and comments received, the Department will prepare a staff report and provide a recommendation to the BOCC for the public hearing, a copy of which will be provided at the same time to the applicant and any person or agency which submitted comments.

X105.4.1.7 During the public hearing, the BOCC shall evaluate the submittals, referral comments, staff report, and public testimony, and make a decision to approve, approve with conditions, or deny the appeal.

X105.4.1.8 Following the BOCC decision, the Department shall notify the applicant of what is required to finalize the decision, prepare the final resolution and obtain the BOCC Chairperson's signature. The fully executed resolution and all applicable attachments shall be filed with the County Clerk and Recorder's Office.

SECTION X106

DEFINITIONS

The following definitions are provided herein for the sole purpose of interpreting, administering and implementing the County's Grading and Excavation Regulations. For the purposes of these Grading and Excavation Regulations only, the definitions set forth herein shall control and take precedence over any other definitions.

Agricultural Operations – Operations associated with the growing of timber or crops (with the exception of retail marijuana cultivation facilities and medical marijuana optional premises cultivation operations), and raising of livestock including but not limited to such activities as plowing, planting, scarifying soils, construction and clearing of irrigation ditches, burning fields or irrigation ditches, construction of roads, buildings and stock ponds within farm or ranch operations.

Approved Plans – Current grading, drainage, water quality control and/or revegetation plans that have been approved by the County Engineer.

Bench – A relatively level step excavated into earth material on which fill may be placed.

Civil Engineer – A Professional Engineer licensed in the State of Colorado having knowledge and experience in the field of engineering.

Civil Engineering – The application of the knowledge of the forces of nature, principles of mechanics and properties of materials for the evaluation, design and construction of civil work for the beneficial use of mankind.

County Engineer – The director of the Clear Creek County Site Development Department or his authorized representative.

Driveway – An accessway for vehicles providing a connection from a public or private roadway to either individual single-family residences or to a parking area serving multi-family residences; commercial business; recreational, institutional, or industrial land uses.

Earth-Disturbing Activity – Mechanical removal of any rock, natural soil, fill or any combination thereof, the placement or stockpiling of fill or the clearing of trees and vegetation for the purpose of constructing roads, site improvements or structures, installing utility lines or making use of the land in other than its natural state.

Erosion Controls – Desilting facilities and erosion protection, including diversion of upland drainage, use of downgradient perimeter berms or stormwater fencing during construction and prior to site stabilization, appropriately sized culverts, use of energy dissipation devices in steep or transitional areas, and effective planting, to protect property, watercourses, public and private facilities and receiving waters from abnormal deposition of sediment or dust.

Excavation – The mechanical removal of earth material.

Fill – A deposit of earth material placed by artificial means.

Geotechnical Engineer – A Professional Engineer licensed in the State of Colorado having knowledge and experience in the field of Geotechnical Engineering.

Geotechnical Engineering – The application of geologic, soils and hydrologic knowledge and principles in the investigation and evaluation of naturally occurring rock, soil, ground and surface water for use in the design of civil works.

Grade – The number of feet of horizontal distance traveled for every one (1) foot of vertical rise in the ground surface expressed as a ratio (e.g. a 3:1 grade means three (3) feet of horizontal distance is traveled for every one (1) foot of vertical rise in the ground surface).

Grade, Existing – The ground surface prior to grading.

Grade, Finish – The final grade of a site that conforms to the approved plan and provides final site drainage.

Grade, Natural – The ground surface unaltered by artificial means.

Hazardous Condition – A condition when the state of any natural ground, natural slope, excavation, fill or drainage device, which exists on private or public property, is a menace to life or limb, a danger to public safety or endangers or adversely affects the safety, usability or stability of adjacent property, structures, or public or private facilities.

Professional Geologist – A person who is a graduate of an institution of higher education which is accredited by a regional or national accrediting agency, with a minimum of thirty semester (forty-five quarter) hours of undergraduate or graduate work in a field of geology and whose post baccalaureate training has been in the field of geology with a specific record of an additional five years of geological experience to include no more than two years of graduate work.

Roadway – A public or private accessway for vehicles which serves more than five individual single-family residences; provides connections between residences, businesses, community facilities and other lands uses; and/or otherwise provides vehicular access across and through Clear Creek County.

Structure – A wall and roofed building which is principally above ground, as well as a manufactured home.