CLEAR CREEK BOARD OF COUNTY COMMISSIONERS
RESOLUTION

RESOLUTION FOR ADOPTION OF THE ~~2021~~2024 INTERNATIONAL CODE SERIES TO INCLUDE THE BUILDING, RESIDENTIAL, PLUMBING, MECHANICAL, ENERGY CONSERVATION, FUEL GAS, EXISTING BUILDING, FIRE~~, WILDLAND-URBAN INTERFACE~~, AND SWIMMING POOL AND SPA CODES, AND FOR THE ADOPTION OF THE 2025 COLORADO WILDFIRE RESILIENCY CODE~~S~~ EFFECTIVE IN~~FOR~~ THE UNINCORPORATED AREA OF CLEAR CREEK COUNTY

~~2021~~2024- CLEAR CREEK COUNTY INTERNATIONAL CODE SERIES AND 2025 OLORADO WILDFIRE RESILIENCY CODE AMENDMENTS

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EXHIBITS

Exhibit 1 – Special Wind Region Map for Clear Creek County (See page ~~50~~51)

Exhibit 2 –Clear Creek County Roadway Design and Construction Manual Chapter 4 (attached)

Exhibit 3 – Clear Creek County Best Management Practices Manual (attached)

~~2021~~2024~~-~~ INTERNATIONAL RESIDENTIAL CODE

CHAPTER 1 ADMINISTRATION

SECTION R101 – TITLE, SCOPE AND PURPOSE

Delete section 101.1 Title and replace with the following:

R101.1 Title. These provisions shall be known as the Residential Code for One- and Two-Family Dwellings of Clear Creek County, Colorado, and shall be cited as such and will be referred to herein as "this code".

SECTION R102 – APPLICABILITY

Add the following section:

~~**R102.4.3 Referenced Codes and Standards.** All references to the ICC Electrical Code shall be deleted in this code except sections E3405 and E3609, the subject matter of which shall be permitted and regulated by the State Electrical Department.~~

R102.4.~~4~~ 3 All references to the International Property Maintenance Code in this code shall be deleted.

SECTION R103 – DEPARTMENT OF BUILDING SAFETY

Delete R103.1 in its entirety and replace with the following:

Commented [DD1]: Deleting the removal of the electrical code. The state only performs electrical inspections and does not perform a plan review. There may be a case where the County would desire electrical details and the code would be enforceable.

Commented [KP2R1]: I agree whole-heartedly.

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R103.1 Creation of Enforcement Agency. The Building Department is hereby created and the official in charge thereof shall be known as the building official. The function of the agency shall be the implementation, administration and enforcement of the provisions of this code.

SECTION R105 – PERMITS

Add section R105.1.2 License Required:

105.1.~~3~~ 2 License Required. All persons undertaking work which requires a permit as provided in Section 105, or seeking to obtain that permit from the County, are required to have a currently valid contractor's license issued from Clear Creek County Planning and Building Services Department. That license shall have been issued by the County in accordance with the provisions of the Clear Creek County Contractors Licensing Requirements and the Contractor Licensing Regulations adopted by the Board of County Commissioners, and any regulations subsequently adopted by the Board of County Commissioners, as said resolution and regulations may be amended from time to time by said Board.

Exceptions:

1. The owner of a single-family dwelling shall be allowed to secure a permit to construct, alter, or repair said home provided the following conditions are met:

   A. The homeowner currently occupies the dwelling or will occupy the residence once the construction has been completed.

   B. The homeowner undertakes the work themselves.

2. The Building Official may waive the provisions of this section where it can be established that no license exists for the installation, alteration, or repair of a certain type of work requiring a permit, or due to other unique circumstances.

Delete Number 1 under "Building" and replace with the following:

R105.2 Work Exempt from Permit

1. One-story detached accessory structures used as tool and storage sheds, playhouses and similar uses, provided the floor area does not exceed 120 square feet (11.15m^2) and the structure is located more than 50 feet (15240 mm) from the nearest adjacent structure.

Add new Numbers 11 & 12 under "Building" as follows:

11. Non-permanent coverings consisting of pole and fabric.

Commented [KP3]: What is the purpose of (1)(A) (just out of curiosity)?

Commented [DD4R3]: A couple of reasons: prevents owners from working on their rentals without licensure and prevents flippers from operating commercially without licensure. The exemption is targeted for owner-occupants.

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12. All pre-manufactured single unit detached shipping containers used for storage only which have not been modified.

Add the following as end of **R105.3.1**:

The building official is authorized to deny a permit to an applicant or property not meeting the provisions of this code, to any person who has an outstanding failure to appear in court pertaining to a county related violation, a person or property with associated outstanding permit(s) or fees related to any county application or permit, or to any person or property not in compliance with any other county regulations. Permits may be issued once conditions set by the building official are satisfied.

Commented [KP5]: We also should add this to the ZR!

Commented [DD6R5]: Agreed.

Delete Section R105.5 in its entirety and replace with following:

R105.5 Expiration. Every permit issued by the building official under the provisions of this code shall expire by limitation and become null and void if more than 180 days pass before an initial inspection or 180 days pass between inspections after the issuance of such permit. Work must be pursued and completed in good faith to complete construction in a timely manner as determined by the building official.

R105.5.1 Renewal Permit. A renewal for a permit may be applied for when a permit has expired and a full fee will be assessed unless the permit has received approvals from the building official through all of the rough inspections and provided no changes have been made to the original plans and specification, then a 50% fee will be charged. The rough inspections include all framing, mechanical and plumbing. The renewal will be subject to the provisions of the currently adopted code unless technically infeasible. Permits may only be renewed if not more than 1 year has elapsed since permit expiration.

R105.5.2 Permit Extension. Any permittee holding an unexpired permit may apply for an extension of the time to complete the work and inspections under that permit when the permittee is unable to complete the work within the time required by Section R.105.5 due to circumstances beyond the control of the permittee. The extension shall be requested in writing prior to the expiration of the permit and justifiable cause for the extension shall be demonstrated. The building official is authorized to grant an extension of time for a period of 180 days.

Add the following Sections;

R105.10 Transfer of Permits. An unexpired permit may be transferred from one party to another upon written application to the building official by the new owner of the property or his/her authorized agent, provided there is no change in the plans and specifications. Documentation of the change in ownership must be provided by the new owner. No change shall be made in the

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expiration date of the original permit. A fee is required to transfer the permit, please refer to the building permit fee schedule.

R105.10.1 Owner assuming Role as Contractor. The building official may allow the property owner to assume the role of contractor at any time on an active permit by providing the building official with a letter listing the permit number, the address of the project and stating that the original contractor is no longer in the employment of the owner, provided that no change of ownership has occurred since the permit was issued. This change may be done at no charge. No change shall be made in the expiration date of the original permit.

SECTION R106 – CONSTRUCTION DOCUMENTS

Delete R106.1 and replace with the following:

R106.1 Submittal documents.
Submittal documents consisting of *construction documents*, and other data shall be submitted in two or more sets, or in a digital format where allowed by the *building official*, with each application for a *permit.* The *construction documents* shall be prepared by a *registered design professional*. Where special conditions exist, the *building official* is authorized to require additional *construction documents* to be prepared by a *registered design professional*.

Exceptions:

1. The *building official* is authorized to waive the submission of *construction documents* and other data not required to be prepared by a *registered design professional* if it is found that the nature of the work applied for is such that reviewing of *construction documents* is not necessary to obtain compliance with this code.
2. Construction documents are not required to be prepared by a *registered design professional* where the *building official* has determined that the scope and nature of the proposed work does not warrant such preparation.

SECTION R108 – FEES

~~**R108.1.1 Payment of Fees.**~~ Add the following sentence to **R108.1 Payment of Fees**:
Any reduction or waiver of a building permit fee must be approved by the Board of County Commissioners.

Add the following at the end of **R108.2 Schedule of Permit Fees**~~sections~~:
~~**R108.2.1 Schedule of Permit Fees.**~~ The~~A~~ fee for each permit shall be paid to the Building Department as set forth in the building permit fee schedule. ~~The determination of valuation under any of the provisions of this code shall be made by the building official.~~

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Add the following at the end of **R108.3 Building permit valuations**:
The determination of valuation under any of the provisions of this code shall be made by the building official.

Add the following sections:

R108.3.1 Building Permit Valuations.

Valuation may be based on the annual average cost of construction as published in the Building Safety Journal or the cost of construction provided, whichever is higher. No adjustment will be made by the regional modifier.

~~Add the following sections:~~

~~**R108.4.1 Investigation Fee.** In addition to the required permit fee, any person who commences work on a building, structure, gas, mechanical or plumbing system before obtaining the necessary permits shall be subject to an Investigation Fee in an amount equal to the permit fee~~.

R108.4.~~2~~ 1 Temporary Certificate of Occupancy. There shall be a fee for a Temporary Certificate of Occupancy as set forth in the building permit fee schedule.

R108.4.~~3~~ 2 Reinspection. A Reinspection Fee may be assessed for each inspection or reinspection when the portion of work for which inspection is called for is not complete or when corrections called for are not made. Reinspection Fees may be assessed when the inspection record card is not posted or otherwise available on the work site, the approved plans are not readily available to the inspector, for failure to provide access on the date for which inspection is requested, or for deviating from the plans requiring the approval of the building official. A reinspection fee may be assessed for failure to post a readily visible address. To obtain a reinspection, the applicant shall pay the reinspection fee in accordance with the building permit fee schedule. In instances where reinspection fees have been assessed, no additional inspection of the work shall be performed until the required fees have been paid.

Add the following sentence:

R108.5 Refunds.

The building official may authorize refunding of any fee paid hereunder which was erroneously paid or collected. The building official may authorize refunding of not more than 80 percent of the permit fee paid when no work has been done under a permit issued in accordance with this code. The building official shall not authorize refunding of any fee paid except on written application filed by the original permittee not later than 180 days after the date of fee payment.

Delete 108.6 and replace with:

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Commented [KP7]: Is this numbering now incorrect (if we are deleting our R108.4.1, as above)?

Commented [DD8R7]: Good catch

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R108.6 Work commencing before permit issuance: In addition to the required permit fee, any person who commences work on a building, structure, gas, mechanical or plumbing system before obtaining the necessary permits shall be subject to an Investigation Fee in an amount equal to the permit fee.

SECTION 109 – INSPECTIONS

Add the following to R109.1.2:

The following tests are required.

-Gas line, hydronic piping, and fire-sprinkler test shall be observed by the building official to ensure compliance with this code.

-Backflow prevention devices where required shall be tested by a qualified individual who shall submit a test report to the building official.

-Building sewer, drain waste vent, ducts, shower pan, and water distribution lines shall be tested in accordance with this code by the installer, observation by the building official nor a test report shall be required.

SECTION R110 – CERTIFICATE OF OCCUPANCY

~~Delete section R110.1 and replace with:~~

~~**R110.4 Temporary Occupancy.** The building official is authorized to issue a temporary certificate of occupancy before the completion of the entire work covered by the permit, provided that such portion or portions shall be occupied safely.~~

Add sections:

R110.43.1 Conditions.

A Temporary Certificate of Occupancy may be issued when, but not limited to, the following components of a project are complete and approved by the building official:

1. Kitchen operative;
2. One full bathroom with toilet, sink and tub or shower is operative as per the approved plans;
3. All smoke alarms and carbon monoxide detectors installed per code and passed final inspection;
4. The following items are complete:
    a) Address number(s) posted;
    b) Handrails at stairways;
    c) Guards (guardrails);
    d) Decks/landings where required for compliant exit;

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Commented [DD9]: Modified inspection requirements for required tests

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e) Separations between the garage and house complete, with an approved door per IRC;

5. Heat source for dwelling is operable;
6. Final electrical approval;
7. Final OWTS or confirmation of connection to public sanitation system;
8. Final on all Site Development permits or approval by the Site Development Inspector.
9. All construction or other measures required for Wildfire Hazard Mitigation. See the building permit fee schedule for Temporary Certificate of Occupancy fee.

R110.4.2 Validity. Temporary certificate of occupancy shall be valid for 30 days. Extensions may be granted as allowed by the building official. Fees shall apply as set forth building permit fee schedule. If the TCO expires prior to certificate of occupancy being issued, temporary certificate of occupancy fees will be due for the period of time up to the certificate of occupancy issue date.

~~Delete Section R112.3 Qualifications.~~

CHAPTER 2 DEFINITIONS

SECTION R202 - DEFINITIONS

~~Add the following sentence:~~

~~**HABITABLE SPACE.** All areas with minimum ceiling height are considered to be habitable space.~~

Add the following definition:

SLEEPING ROOM. "Sleeping Room" (Bedroom) Any enclosed habitable space within a dwelling unit, which complies with the minimum room dimension requirements of IRC Sections ~~R304~~ R312 and ~~R305~~ R313 and contains a closet, an area that is useable as a closet, or an area that is readily convertible for use as a closet, and meeting other code requirements for a sleeping room. Living rooms, family rooms and other similar habitable areas that are so situated and designed ~~so as~~ to clearly indicate these intended uses, shall not be interpreted as sleeping rooms.

CHAPTER 3 BUILDING PLANNING

Commented [DD10]: Altered to provide clarity, when a TCO is issued it will be valid for 30 days and fees are due until certificate of occupancy is issued.

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Commented [DD11]: Areas defined as habitable space will require a minimum ceiling height as required by R313. The definition specifies areas to not be considered habitable space which were not deleted. This sentence appears to provide no additional value.

Commented [DD12]: Added definition for sleeping room to support zoning regulation 206.2.1 item 3. This is specific to CCC

Commented [DD13R12]: Modified to reflect the change in location in the code.

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SECTION R301 – DESIGN CRITERIA

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Amend the Table R301.2(1) as follows:

Table R301.2(1) – Climatic and Geographic Design Criteria

GROUND SNOW LOAD^	WIND DESIGN				SEISMIC DESIGN CATEGORY[f]	SUBJECT TO DAMAGE FROM			ICE BARRIER UNDERLAYMENT REQUIRED[h]	FLOOD HAZARDS[g]	AIR FREEZINGINDEX[i]	MEAN ANNUAL TEMP[j]
	Speed[d] (mph)	Topographic effects[k]	Special wind region[l]	Windborne debris zone[m]		Weathering[a]	Frost line depth[b]	Termite[c]				
Varies-See Table	Varies-See Section R301.1(4).1	Yes	Yes	No	B	Severe	42"	None to slight	Yes	2012 (FEMA)Map	2500	40°F
MANUAL J DESIGN CRITERIA[n]												
Elevation			Altitude correction factor[e]	Coincident wet bulb	Indoor winter design relative humidity	Indoor winter design dry-bulb temperature			Outdoor winter design dry-bulb temperature		Heating temperature difference	
Varies			Varies	60°F	20%	68°F			(-10°F)		78°F	
Latitude			Daily range	Summer design gains	Indoor summer design relative humidity	Indoor summer design dry-bulb temperature			Outdoor summer design dry-bulb temperature		Cooling temperature difference	
40°N			High	Varies	50%	75°F			90°F		15°F	

~~(a) Wind exposure category may be determined on a site-specific basis in accordance with Figure R301.2.1.1~~

~~(b) In accordance with R905.1.~~

~~(c)From the 100-year (99%) value on the National Climatic Data Center data table "Air Freezing Index – USA Method (Base 32°F)"~~

Add the following:

R301.2.3 Snow Loads. The roof structure shall be designed for snow loads as determined by the Snow Load Design in Table R301.2.3. No snow load reductions shall be allowed.

Basic Snow Load Design Table R301.2.3 Roof Snow Loads Required in Pounds per Square Foot (PSF)

Elevation (feet above sea level)	Basic Snow Load (PSF)	Elevation (feet above sea level)	Basic Snow Load (PSF)
6,500 to 6,750	35	9,001 to 9,250	85
6,751 to 7,000	40	9,251 to 9,500	90
7,001 to 7,250	45	9,501 to 9,750	95

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7,251 to 7,500	50	9,751 to 10,000	100
7,501 to 7,750	55	10,001 to 10,250	110
7,751 to 8,000	60	10,251 to 10,500	120
8,001 to 8,250	65	10,501 to 10,750	128
8,251 to 8,500	70	10,751 to 11,000	135
8,501 to 8,750	75	11,001 to 11,500	150
8,751 to 9,000	80		

Add the following:

Figure R301.2(2) Determination of Wind Loads: Figure R301.2(2) identifies parts of Clear Creek County to be in a Special Wind Region. The basic wind speed is 105 MPH Exposure C excepting the areas identified as Special Wind Region, which are determined to be 110 MPH Exposure C. See Exhibit 1 on page ~~45~~ 51 containing the Special Wind Region Map attached hereto and incorporated herein.

Table R301.5 Minimum Uniformly Distributed Live Loads

Add footnote (j) to live load requirement for Balconies(exterior) and decks as follows:

j. Total load design shall include Basic Snow Load per Table R301.2.3 and the dead load.

Delete Section R301.6 Roof Load in its entirety and replace with the following:

R301.6 Roofs. Roofs shall be designed to the snow load indicated in Table R301.2.3, plus the dead load.

SECTION R302 – FIRE-RESISTANT CONSTRUCTION

Delete Section R302.6 in its entirety and replace with the following:

R302.6 Dwelling/garage fire separation. The garage shall be separated from the residence and its attic area by not less than 5/8" Type X Gypsum wallboard or its equivalent applied to the garage side. Where the separation is a floor-ceiling assembly, the structure supporting the assembly shall also be protected by not less than 5/8" Type X Gypsum wallboard or its equivalent. Openings in garage walls shall comply with section R302.5.

Delete Table R302.6 and replace with the following:

Table R302.6 Dwelling/Garage Separation

Separation	Material
From the residence and attics	Not less than 5/8" Type X Gypsum wallboard or its equivalent applied to the garage side

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From all habitable rooms above the garage	Not less than 5/8" Type X Gypsum wallboard or its equivalent applied to the garage side
Structure(s) supporting floor/ceiling assemblies used for separation required by this section	Not less than 5/8" Type X Gypsum wallboard or its equivalent
Garages located less than 3 feet from a dwelling unit on the same property	Not less than 5/8" Type X Gypsum wallboard or its equivalent applied to the interior side of exterior walls that are within this area

Delete Section R302.7 and replace with the following:

R302.7 Under-stair protection. Enclosed accessible space under stairs shall have walls, under-stair surface and any soffits protected on the enclosed side with not less than 5/8" Type X Gypsum wallboard or its equivalent.

SECTION ~~R313~~ R309 – AUTOMATIC FIRE SPRINKLER SYSTEMS

~~Delete R313.2 One and two-family dwellings automatic fire systems and replace with the following:~~

~~**R313.2 Two-Family Dwellings Automatic Fire Systems.** An automatic residential fire sprinkler system shall be installed in two-family dwellings. Fire Systems shall be designed in accordance with Section P2904 or NFPA 13 D.~~

Delete ~~exceptions to R309.2 One- and two-family dwellings automatic sprinkler systems and replace with the following:~~

~~**Exceptions:**~~

~~1. An automatic fire sprinkler shall not be required where two-family dwellings are separated by 2 hour wall and floor assemblies. These assemblies shall extend to and be tight to exterior wall, and extend from the foundation to the underside of the roof sheathing.~~

~~An automatic sprinkler system shall not be required for additions or alterations to existing buildings that are not already provided with a sprinkler system.~~

~~An automatic sprinkler system shall be not required where single-family dwellings driveways are compliant with County standards, are located on primary or secondary County maintained roads, and are less than 4400 square feet in area~~

~~2. An automatic sprinkler system shall not be required where two-family dwellings are separated by a 2-hour fire-resistive-rated wall or floor assembly, driveways are compliant with County standards, are located on primary or secondary County maintained roads, and the structure is less than 4400 square feet in area.~~

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Commented [DD14]: This section has been modified in the past to alleviate the requirements of automatic fire sprinkler systems for single-family homes and duplex's. The estimated cost per SQFT for the installation of a system is three (3) dollars per SQFT of home area. Staff recommends requiring new construction to be provided with automatic fire sprinklers, considering the moderate and high wild fire intensity designation of the County by the State. Staff understand there is a cost associate with these systems.

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SECTION ~~R315~~ R311 CARBON MONOXIDE ALARMS

~~R315~~R311.2.2 Alterations, repairs and additions. Delete all exceptions.

CHAPTER 4 FOUNDATIONS

Delete the following entirely:
Sections R403.2 Footings for wood foundations.

SECTION R405.2 – Wood Foundations

Delete the following entirely:
Section R405.2 Wood foundations.

Add the following section:
R405.2 Wood foundations shall not be allowed.

CHAPTER 9 ROOF ASSEMBLIES

SECTION R902 – ROOF CLASSIFICATION

Delete Section R902.1 (do not delete exceptions) and replace with the following:
R902.1 Roofing covering materials. Roofs shall be covered with materials as set forth in Sections R904 and R905. All roofing material shall be Class A or Class B roofing materials may be used only if the material has been tested with a fire-resistive assembly and the assembly has received a Class A rating and the material is installed exactly as specified in the Class A rated assembly.

Delete the following section:
R902.2 Fire-retardant-treated shingles and shakes.

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Add the following section:
R902.2 Wood shingles and shakes shall not be permitted regardless if they are fire-retardant-treated.

CHAPTER 13 GENERAL MECHANICAL SYSTEM REQUIREMENTS

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SECTION M1307 – APPLIANCE ~~LOCATION~~ INSTALLATION

Add the following:

M1307.1.1 Liquid Propane Gas (LPG) Appliance. LPG appliances shall not be installed in a pit, basement, or crawl space where unburned fuel may accumulate unless an approved sensing device, with a solenoid shut off on the gas line is installed and a daylighted drain is installed. If the appliance is installed in a crawl space it must have a pad poured for the daylighted drain in addition to the above mitigation. The pad shall be a minimum of 8'x 8'.

CHAPTER 14
HEATING AND COOLING EQUIPMENT AND APPLIANCES

SECTION M1401 – GENERAL

Add the following:

M1401.1.1 Unvented Room Heaters. Unvented room heaters are prohibited in one- and two-family dwellings and in townhouses. All references to unvented room heaters in the ~~2021~~2024 2024 IRC are hereby deleted.

CHAPTER 24 FUEL GAS

~~Add the following:~~

~~**G2415.2 (404.2) CSST.** All CSST must be continuously bonded to the electrical grounding system.~~

SECTION G2415 – PIPING SYSTEM INSTALLATION

Delete G2415.12 and 2415.12.1 and replace with following:

G2415.12 Minimum burial depth. Underground piping systems shall be installed a minimum depth of 18 inches below grade.

~~**SECTION G2417 – INSPECTION, TESTING AND PURGING**~~

~~Delete Section G2417.4.1 in its entirety and replace with the following:~~

~~**G2417.4.1 (406.4.1) Test Pressure.** This inspection shall include an air test, at which time the gas piping shall withstand a pressure of not less than 15 PSI for threaded pipe. For a duration of not~~

Commented [DD15]: Not needed covered in G2411.1 and the electrical portions of the code 3609.7

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Commented [DD16]: Restore to code text.

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~~less than 15 minutes. See manufacturer specifications for other types of gas piping; i.e. flexible gas piping.~~

SECTION G2420 – SHUTOFF VALVES

Add the following:

G2420.1.4 (409.1.4) Auxiliary Emergency Shutoff Valve. An auxiliary emergency shutoff valve (brass-key operated type) is required for gas fireplace appliances and located adjacent to appliance, not less than 12" from appliance, for emergency isolation purposes, regardless of if the appliance provides a similar isolation valve.

SECTION G2445 (641) – UNVENTED ROOM HEATERS

Delete Section G2445 (621) Unvented Room Heaters in its entirety and replace with the following:

G2445.1 Unvented Room Heaters. Unvented room heaters are prohibited and all references to unvented room heater in the 2024~~1~~ IRC and Code Series are deleted.

CHAPTER 26 GENERAL PLUMBING REQUIREMENTS

SECTION P2603 – STRUCTURAL AND PIPING PROTECTION

Delete 2603.5.1 Sewer depth in its entirety and replace with the following:

P2603.5.1. Sewer Depth. Building sewers that ~~are~~ connect~~ed~~ to ~~a~~ private sewage disposal system~~s~~ ~~are regulated by the~~shall be in alignment with the Environmental Health Department OWTS Regulation.

~~Delete Chapters 34 through 40 in their entirety (Electrical Sections) Except sections E3405 and E3609~~

The following Appendix Chapters to the ~~2021~~2024 International Residential Code are hereby adopted and enforced by Clear Creek County, Colorado.

Delete APPENDIX CHAPTER E and replace and adopt Appendix E as follows:

APPENDIX CHAPTER E UNSAFE BUILDINGS

SECTION E101 – UNSAFE BUILDING OR STRUCTURES

E101 Unsafe Building or Structures. All buildings or structures regulated by this code, which are structurally unsafe or not provided with adequate egress, or which constitute a fire hazard, or are otherwise dangerous to human life are, for the purpose of this section, unsafe. Any use of

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Commented [DD17]: Recommend keeping all electrical provisions of the IRC. The state does not perform electrical plan review nor does it regulate who may perform electrical plan review. Therefor in certain cases the electrical portion of the code should remain, this section also supports some areas of energy efficiency which the state electrical department may not enforce.

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buildings or structures constituting a hazard to safety, health or public welfare by reason of inadequate maintenance, dilapidation, obsolescence, fire hazard, disaster, damage or abandonment is, for the purpose of this section, an unsafe use. Parapet wall, cornices, spires, towers, tanks, statuary and other appendages or structural members which are supported by, attached by, attached to, or a part of a building and which are in deteriorated condition or otherwise unable to sustain the design loads which are specified in this Code are hereby designated as unsafe building appendages.

E102 Public Nuisances. All such unsafe buildings are hereby declared to be public nuisances and shall be abated by repair, rehabilitation, demolition, or removal in accordance with the procedures specified in this chapter. As an alternative, the building official may institute any other appropriate action to prevent, restrain, correct or abate the violation, at the expense of the owner.

E102.2.1 Notice to Owner. The building official shall examine or cause to be examined every building or structure or portion thereof reported as dangerous or damaged and, if such is found to be an unsafe building as defined in this section, the building official shall give to the owner of such building or structure written notice stating the defects thereof. This notice may require the owner or person in charge of the building premises, within 48 hours, to commence either the required repairs or improvements or demolition and removal of the building or structure or portion thereof, and all such work shall be completed within 90 days from the date of notice unless otherwise stipulated by the building official. If necessary, such notice shall also require the building, structure or portion thereof to be vacated forthwith and not re-occupied until the required repairs and improvements are completed, inspected, and approved by the Building Official.

Proper service of such notice shall be by personal service upon the owner of record, or such service may be made upon said owner by certified mail; provided that, if such notice is by certified mail, the designated period within which said owner or persons in charge is required to comply with the order of the building official shall begin as of the date delivery is attempted by the Postal Service. If no address can be found for the owner of said property, the notice may be served by publishing a copy of the notice once in a newspaper of general circulation within Clear Creek County, setting forth the address of the premises involved, if any, and the legal description of said premises and stating defects complained of and the time in which said defects shall be corrected. Said notice shall be considered served three (3) days after the publication of said newspaper.

E102.2.2 Posting of Signs. The building official shall cause to be posted at each entrance of such building a notice to read: "DANGER, KEEP OUT. THIS STRUCTURE IS UNSAFE FOR OCCUPANCY." Such notice shall remain posted until the required repairs, demolition or removals are completed.

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Such notice shall not be removed without permission of the building official, and no person shall enter the building except for the purpose of making the required repairs or demolishing the building.

E102.2.3 Right to Demolish. In case the owner shall fail, neglect, or refuse to comply with the notice to repair, rehabilitate, or to demolish and remove said building or structure or portion thereof, the Board of County Commissioners may order the owner of the building prosecuted as a violator of the provisions of the code and may order the building official to proceed with the work specified in such notice. A statement of the cost of such work will be transmitted to the County Commissioners who shall cause the same to be paid and levied against the property.

Adopt APPENDIX CHAPTER ~~AF~~BE as written ~~PASSIVE RADON GAS CONTROLS~~Radon Control Methods

Appendix Chapter ~~AF~~BE

Adopt APPENDIX CHAPTER ~~AT~~NB
as written SOLAR-READY PROVISIONS-DETACHED ONE-AND TWO-FAMILYL DWELLINGS, MULTIPLE SINGLE-FAMILY DWELLINGS (TOWNHOUSES)

Appendix Chapter ~~AT~~NB

~~Add and adopt new **APPENDIX CHAPTER W** as follows:~~

~~**APPENDIX W WILDFIRE HAZARD MITIGATION**~~

~~**SECTION W101 – GENERAL**~~

~~**W101.1 Purpose.** The purpose of this chapter is to establish minimum standards for design and construction of buildings or portions thereof for the protection of life and property from fire.~~

~~**W101.2 Scope.** The provisions of this chapter shall apply to all new building construction, to all additions greater than 400 square feet and to all existing driveways and proposed driveway construction. If a second or more additions are constructed within three years of the permit issuance date, the total square footage of the additions will be added together for the purposes of this chapter.~~

~~Building construction shall include manufactured homes, modular homes, factory-built homes and factory-built nonresidential structures.~~

~~EXCEPTIONS: Mobile Homes and manufactured homes, as defined in Clear Creek County Zoning Regulations, to be located in the Mobile Home (MH)~~

Commented [DD18]: Appendices are not enforceable unless specifically adopted. Some of these Appendices are specific to CCC, we can work together on what makes sense for IS. This will generally just list the specific appendix adopted, two appendices were completely drafted by the county and not part of the building code.

Commented [DD19]: Remove sue to adoption of the 2024 CWRC

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~~Zoning District.~~

~~Where requirements are more restrictive in other sections of this code, they will take precedence over Appendix W.~~

~~**W101.3 Alternate Approval.** The provisions of this code are not intended to prevent the use of any material or method of compliance not specifically prescribed by this code, provided any alternate has been approved and its use authorized by the building official. The building official shall require sufficient evidence or proof be submitted to substantiate that the material or method is, for the purpose intended, at least the equivalent of that prescribed in this code in suitability, effectiveness, fire resistance, durability and safety.~~

~~**SECTION W102 – Definitions.** For the purpose of this Appendix W, certain terms are defined as follows:~~

~~**BUILDING SIZE** is the total square footage of all buildings located on the same property. The building size is calculated on the structure's exterior perimeter, excluding decks.~~

~~EXCEPTIONS: 1. Attached private garages accessory to Group R occupancies will not be included in the building size.~~

~~2. One story detached buildings used as tool and storage sheds, playhouses, and similar uses accessory to Group R-3 occupancies will not be included in building size, provided the projected roof area does not exceed 120 square feet and the building is located at least ten (10) feet away from any other building on the same property.~~

~~3. A detached building of any occupancy group and any size will not be included in the building size for another building on that same property provided it is at least fifty (50) feet away from any building on the same property.~~

~~**DEFENSIBLE SPACE** is defined in the Service in Action bulletin by the Colorado State University Cooperative Extension, No. 6.302.~~

~~**DEFENSIBLE SPACE, EXPANDED** is an additional area of clear space surrounding the proposed or existing structure(s) as determined by the building official, which is equivalent to two or more times greater than the minimum requirement defined in Service in Action bulletin by the Colorado State University Cooperative Extension, No. 6.302.~~

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DRIVEWAY is a thoroughfare for vehicles providing access from a public or private road to a dwelling unit or to a parking area serving structures, facilities, or an approved draft site. A driveway may serve no more than five (5) single-family units.

DRIVEWAY STANDARDS shall be in conformance with Chapter 4 of the County's adopted "Roadway Design and Construction Manual." The driveway may also be approved as meeting the standard by the Site Development Inspector or the applicable Fire Marshall/Chief.

ONE-HOUR FIRE RESISTIVE THROUGHOUT means not less than one-hour fire-resistive construction throughout the entire building, including all structural frame, walls and partitions, floor/ceiling, and roof/ceilings, for the purposes of this chapter only, no opening protection is required.

PRIMARY COUNTY MAINTAINED ROADS are roads and connections carrying heavy traffic flow into and out of subdivisions and residential or commercial centers (including municipalities) in various sectors of the County. Primary roads can have either asphalt surface and/or gravel surface, and are graded and drained. Roads in this category may carry school bus traffic and mail routes, and receive first day snow removal service by the Public Works (Road & Bridge) Division.

SECONDARY COUNTY MAINTAINED ROADS are roads that may not meet vertical or horizontal alignment standards, and may not allow for the safe passage of two vehicles. Roads with this classification which are maintained on a year-round basis may expect snow removal on the second or third day, and may not receive snow removal with each snowfall; existing conditions may curtail secondary service in order to focus operations on Primary Roads. Some roads in this classification may have a seasonal maintenance classification with no winter maintenance.

SITE PLAN shall include all existing and proposed structures and improvements, property boundaries and access all drawn to scale.

STANDPIPE, for purposes of this section, is a manual dry standpipe system that does not have a permanent water supply attached to the system. Manual dry standpipe systems require water from a fire department pumper to be pumped into the system through the fire department connection in order to supply the system demand. The standpipe must have prior Fire Marshall/Chief approval prior to using this option for points in Table W.

SUPPRESSION SYSTEM is an automatic fire-extinguishing system designed to provide life safety and some property protection by the rapid extinguishment or control of fire within buildings or structures. All required suppression systems must be approved by the applicable Fire Marshall/Chief before a permit will be issued.

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WATER SUPPLY is a source of water, equipped with an approved water source hydrant, which may be used by Fire Departments for fire protection. Water sources include man-made water sources and natural water sources capable of providing required fire flow meeting requirements set forth in NFPA 1142 and/or approved by the applicable Fire Marshall/Chief.

SECTION W103 – PLANS

W103 Plans. Plans submitted as a part of the building permit application shall include an accurate site plan and proposals describing any required mitigation such as, but not limited to, construction mitigation, water supply and suppression and/or monitored smoke detection systems.

SECTION W104 – CERTIFICATE OF OCCUPANCY

W104 Certificate of Occupancy. No certificate of occupancy shall be issued prior to all construction and site modifications described or referenced in this chapter being completed, inspected and approved.

SECTION W105 – FIRE MITIGATION PLAN

W105 Fire Mitigation Plan. Fire Hazard Mitigation shall be provided for as follows:

(1) DEFENSIBLE SPACE. Defensible space in compliance with the Colorado State Forest Service specifications as determined by the building official or designated agent.

(2) ROOFING MATERIALS. All new roof construction and any re-roofing shall have a Class A Roof Covering.

(3) CHIMNEY AND FLUE OUTLETS. Chimney and flue outlets shall be constructed with a minimum of a (10) ten feet of clearance from all vegetation.

(4) STRUCTURE SIZE. All structures 4400 square feet or more shall be equipped with an approved monitored automatic suppression system.

EXCEPTION: Buildings within response zone 1 and within 1000 feet of an approved water source, or buildings meeting alternate mitigation measures approved by the building official by recommendation from Fire Marshall/Chief.

(5) DRIVEWAY AND ROAD ACCESS REQUIREMENTS. Any building site which cannot meet all of the following requirements must acquire 300 points from "TABLE W" prior to the issuance of a building permit:

1. County driveway standards.
2. Site accessible by a Primary or Secondary #1 and #2 Roads.

EXCEPTION: Building official may waive requirements, if recommended to do so by the Fire Marshall/Chief for the District

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~~TABLE W-300 POINTS REQUIRED~~

~~Category~~	~~Criteria~~	~~Points~~
~~A. BUILDING SIZE~~		
	~~Building Size less than 1,300 Square Feet~~	~~125~~
	~~Building Size 1,300 to less than 2,400 Square Feet~~	~~100~~
	~~Building Size 2,400 to less than 3,600 Square Feet~~	~~50~~
	~~Building Size 3,600 Square Feet or more~~	~~00~~
~~B. ROAD ACCESS~~		
	~~Primary County Maintained Road~~	~~100~~
	~~Secondary County Maintained Road~~	~~75~~
	~~Other County Maintained or No Maintenance~~	~~00~~
~~C. RESPONSE ZONE~~		
	~~Response Zone 1 within 5 minutes of manned station~~	~~75~~
	~~Response Zone 2 within 10 minutes of manned station~~	~~50~~
	~~Response Zone 3 within 15 minutes of manned station~~	~~25~~
	~~(Manned station requires 4 on site fire fighters or 12 volunteers)~~	
~~D. WATER SUPPLY~~		
	~~Pressurized Hydrant within 5 miles~~	~~100~~
	~~NFPA 1142 Water source within 1,000 feet~~	~~100~~
	~~NFPA 1142 Water source outside 1,000 feet within subdivision~~	~~75~~
	~~NFPA 1142 Water source within 5 miles~~	~~25~~
~~E. FIRE-RESISTIVE CONSTRUCTION~~		
	~~Building of one-hour Fire-resistive throughout~~	~~100~~
	~~Exterior non-combustible construction~~	~~75~~
	~~One-hour Fire-resistive exterior~~	~~50~~
	~~Installation of Class A Roof System~~	~~75~~
	~~Installation of Gutter Guards~~	~~25~~
~~F. OTHER MITIGATION CONSTRUCTION~~		
	~~Expanded Defensible Space~~	~~100~~
	~~Installation of Suppression System~~	~~175~~
	~~Monitored Suppression System~~	~~200~~

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~~Monitored Smoke Detection/Alarm System 100~~
~~Installation of Standpipe (only when applicable) 150~~

Add and adopt **APPENDIX CHAPTER X** as follows:

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 adopt and enforce provisions of a building code in accordance with the public health, safety, morals, and general welfare (C.R.S. §§ 30-28 201, 30-28-203, 30-28-204, 30-28-109, and 30-28-210), 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

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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

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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.

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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

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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

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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 be 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.

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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.

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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

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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

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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

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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.

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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.

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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.

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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 of 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.

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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 M*anaging 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:

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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.

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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

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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:

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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

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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.

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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.

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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.

~~2021~~2024 INTERNATIONAL BUILDING CODE

CHAPTER 1 SCOPE AND ADMINISTRATION

SECTION 101 – GENERAL

Delete section 101.1 Title and replace with:

101.1 Title. These provisions shall be known as the Building Code of Clear Creek County, Colorado, and shall be cited as such and will be referred to herein as "this code".

101.4 Referenced codes.

101.4.3 Plumbing. Delete the last sentence and replace with the following:

Private sewage disposal systems are regulated by the Clear Creek County Environmental Health Department.

Delete Section 101.4.4 Property maintenance in its entirety

SECTION 103 - DEPARTMENT OF BUILDING SAFETY

Delete section 103.1 Creation of enforcement agency and replace with:

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103.1 Creation of enforcement agency. The Building Department is hereby created and the official in charge thereof shall be known as the building official. The function of the agency shall be the implementation, administration and enforcement of the provisions of this code.

SECTION 105 – PERMITS

~~Section 105.2 Work Exempt from permit delete Number 1 under "Building" and replace with:~~
~~1. One-story detached accessory *structures* used as tool and storage sheds, playhouses and similar uses, provided the floor area does not exceed 120 square feet (11.15m^2) and the *structure* is located more than 50 feet (15240 MM) from the nearest adjacent *structure*.~~

Add section R105.1.3 License Required:

105.1.3 License Required. All persons undertaking work which requires a permit as provided in Section 105, or seeking to obtain that permit from the County, are required to have a currently valid contractor's license issued from Clear Creek County Planning and Building Services Department. That license shall have been issued by the County in accordance with the provisions of the Clear Creek County Contractors Licensing Requirements and the Contractor Licensing Regulations adopted by the Board of County Commissioners, and any regulations subsequently adopted by the Board of County Commissioners, as said resolution and regulations may be amended from time to time by said Board.

Exception:

1. The Building Official may waive the provisions of this section where it can be established that no license exists for the installation, alteration, or repair of a certain type of work requiring a permit, or due to other unique circumstances.

Section 105.2 Work Exempt from permit delete Number 1 under "Building" and replace with:
1. One-story detached accessory *structures* used as tool and storage sheds, playhouses and similar uses, provided the floor area does not exceed 120 square feet (11.15m^2) and the *structure* is located more than 50 feet (15240 MM) from the nearest adjacent *structure*.

Add sentence to **105.3.1 Action on application**:
The building official is authorized to deny a permit to an applicant or property not meeting the provisions of this code, to any person who has an outstanding failure to appear in court pertaining to a county violation, a person or property with associated outstanding permit(s) or fees related to any county application or permit, or to any person or property not in compliance

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with any other county regulations. Permits may be issued once conditions set by the building official are satisfied.

Delete Section 105.5 in its entirety and replace with following:

105.5 Expiration. Every permit issued by the building official under the provisions of this code shall expire by limitation and become null and void if more than 180 days pass before an initial inspection or 180 days pass between inspections after the issuance of such permit. Work must be pursued and completed in good faith to complete construction in a timely manner as determined by the building official.

105.5.1 Renewal Permit. A renewal for a permit may be applied for when a permit has expired and a full fee will be assessed unless the permit has received approvals from the building official through all of the rough inspections and provided no changes have been made to the original plans and specification, then a 50% fee will be charged. The rough inspections include all Framing, Mechanical and Plumbing. The renewal will be subject to the provisions of the currently adopted code unless technically infeasible. Trade permits may be renewed if not more than 1 year has elapsed from original permit issuance for 50% permit fee.

105.5.2 Permit Extension. Any permittee holding an unexpired permit may apply for an extension of the time to complete the work and inspections under that permit when the permittee is unable to complete the work within the time required by Section 105.5 due to circumstances beyond the control of the permittee. The extension shall be requested in writing prior to the expiration of the permit and justifiable cause for the extension shall be demonstrated. The building official is authorized to grant an extension of time for a period of 180 days.

Add the following Sections:

105.10 Transfer of Permits. An unexpired permit may be transferred from one party to another upon written application to the building official by the new owner of the property or his/her authorized agent, provided there is no change in the plans and specifications. Documentation of the change in ownership must be provided by the new owner. No change shall be made in the expiration date of the original permit. A fee is required to transfer the permit, please refer to the building permit fee schedule for the fee schedule.

SECTION 109 – FEES

109.1 Payment of Fees. Add the following sentence:

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Any reduction or waiver of a permit fee must be approved by the Board of County Commissioners.

Delete Section 109.2 in its entirety and replace with the following:

109.2 Schedule of Permit Fees. A fee for each permit shall be paid to the Building Department as set forth in the building permit fee schedule.

Delete Section 109.3 in its entirety and replace with the following:

109.3 Building Permit Valuations. The applicant for a permit shall provide an estimated value of all the work to be performed, including materials and labor, for all building, mechanical and plumbing, at the time of application. The determination of value or valuation under any of the provisions of this Code shall be made by the building official. The valuation to be used in computing the building permit fees shall be the total value of all construction work and materials for which the permit is issued, or annual average cost of construction as published in the "Buildings Safety Journal" by the International Code Council. No adjustment will be made by the regional modifier.

Delete 109.4 completely and replace with the following:

109.4 Work commencing before permit issuance. In addition to the required permit fee, any person who commences work on a building, structure, gas, mechanical or plumbing system before obtaining the necessary permits or who violates Section 110.6 shall be subject to an Investigation Fee in an amount equal to the permit fee.

109.5.1 Temporary Certificate of Occupancy. There shall be a fee for a Temporary Certificate of Occupancy as set forth in the building permit fee schedule.

109.5.2 Reinspection. A Reinspection Fee may be assessed for each inspection or reinspection when such portion of work for which inspection is called for, is not complete or when corrections called for are not made. Reinspection Fees shall be assessed when the inspection record card is not posted or otherwise available on the work site, the approved plans are not readily available to the Inspector, for failure to provide access on the date for which the inspection is requested, or for deviating from the plans requiring the approval of the building official. A Reinspection may be assessed for failure to post a readily visible address. To obtain a reinspection, the applicant shall pay the Reinspection Fee in accordance with the building permit fee schedule. In instances where reinspection fees have been assessed, no additional inspection of the work shall be performed until the required fees have been paid.

109.6 Refunds. Add the following sentence:

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The building official may authorize refunding of any fee paid hereunder which was erroneously paid or collected. The building official may authorize refunding of not more than 80 percent of the permit fee paid when no work has been done under a permit issued in accordance with this code. The building official shall not authorize refunding of any fee paid except on written application filed by the original permittee not later than 180 days after the date of fee payment. Only permit fees shall be eligible for refunds. No refunds will be made of plan review fees.

~~Commercial Permit Fees~~

~~**See Separate Building Permit Fee Schedule**~~

SECTION 110 – INSPECTIONS

Add the following:

110.1.1 Posting of Assigned Site Address. The address of the building site must be posted in a conspicuous place readily visible from the public road.

~~Add the following:~~

~~**110.1.2 Inspection Record Card.** Work requiring a permit shall not be commenced until the permit holder or his agent shall have posted an inspection record card in a conspicuous place on the premises and in a position as to allow the building official to make the required entries conveniently thereon regarding inspection of the work. This card shall be maintained in such position by the permit holder until all inspections have been made and final approval has been granted by the building official.~~

SECTION 111 – CERTIFICATE OF OCCUPANCY

111.3 Temporary Occupancy. Add the following sentence: See building permit fee schedule for Temporary Certificate of Occupancy fee.

Add section 111.3.1 Validity.

111.3.1 Validity. Temporary certificate of occupancy shall be valid for 30 days. Extensions may be granted as allowed by the building official. Fees shall apply as set forth building fee schedule. If the TCO expires prior to certificate of occupancy being issued, temporary certificate of occupancy fees will be due for the period of time up to the certificate of occupancy issue date.

SECTION 116 - UNSAFE STRUCTURES AND EQUIPMENT

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Delete section 116 in its entirety replace with adopted appendix E Unsafe Buildings or Structures

CHAPTER 4 SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY

SECTION 406 – MOTOR-VEHICLE-RELATED OCCUPANCIES

~~**406.3.2.1 Separation.**~~

Delete all reference to ½ inch gypsum board and replace with 5/8-inch Type X gypsum within 406.3.2.1 Separation.

CHAPTER 15 ROOF ASSEMBLIES AND ROOFTOP STRUCTURES

SECTION 1507 – REQUIREMENTS FOR ROOF COVERINGS

Add the following sentence to 1507.1 Scope:

All roofing material shall be Class A rated except wood roofing which can be Class B fire resistant with an approved Class A assembly underlayment. Class B or Class C roofing materials may be used only if the material has been tested with a fire-resistive assembly and the assembly has received a Class A rating and the material is installed exactly as specified in the Class A rated assembly.

Add the following sentence to 1507.9 Wood Shakes:

Wood roofing without a Class A fire resistant assembly rating shall not be permitted.

SECTION ~~1510~~ 1512 – REROOFING

Add the following sentence to ~~1510~~1512.1 General:

All roofing material shall be a Class A fire resistant assembly with an approved Class A assembly compatible underlayment as stated by product manufacturer.

CHAPTER 16 STRUCTURAL DESIGN

SECTION 1608 – SNOW LOADS

Delete 1608.1 and 1608.2 and replace with:

1608.1 Snow Loads. The roof structure shall be designed for snow loads as determined by the Basic Snow Load Design in Table 1608.1.1 No snow load reductions are allowed.

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Commented [KP28R26]: The IWUIC has override language for conflicts, meaning that the IWUIC would override the ban on wood shakes in the IRC.

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Basic Snow Load Design Table 1608.1.1 Roof Snow Loads Required in Pounds per Square Foot (PSF)

Elevation (feet above sea level)	Basic Snow Load (PSF)	Elevation (feet above sea level)	Basic Snow Load (PSF)
6,500 to 6,750	35	9,001 to 9,250	85
6,751 to 7,000	40	9,251 to 9,500	90
7,001 to 7,250	45	9,501 to 9,750	95
7,251 to 7,500	50	9,751 to 10,000	100
7,501 to 7,750	55	10,001 to 10,250	110
7,751 to 8,000	60	10,251 to 10,500	120
8,001 to 8,250	65	10,501 to 10,750	128
8,251 to 8,500	70	10,751 to 11,000	135
8,501 to 8,750	75	11,001 to 11,500	150
8,751 to 9,000	80		

SECTION 1609 - WIND LOADS

Add the following to:

1609.1.1 Determination of wind loads:

Figures 1609.3(1), 1609.3(2), 1609.3(3), and 1609.3(4) identifies parts of Clear Creek County to be in a Special Wind Region. See Exhibit 1 containing Special Wind Region Map "Clear Map" Building Design Criteria "Windspeed" identifies windspeeds for various risk category buildings. Portions of Clear Creek County are shown to be in a 'Special Wind Region'. Clear Map location: map.co.clear-creek.co.us/HTML5viewer/?Viewer=clearmap

EXHIBIT 1:

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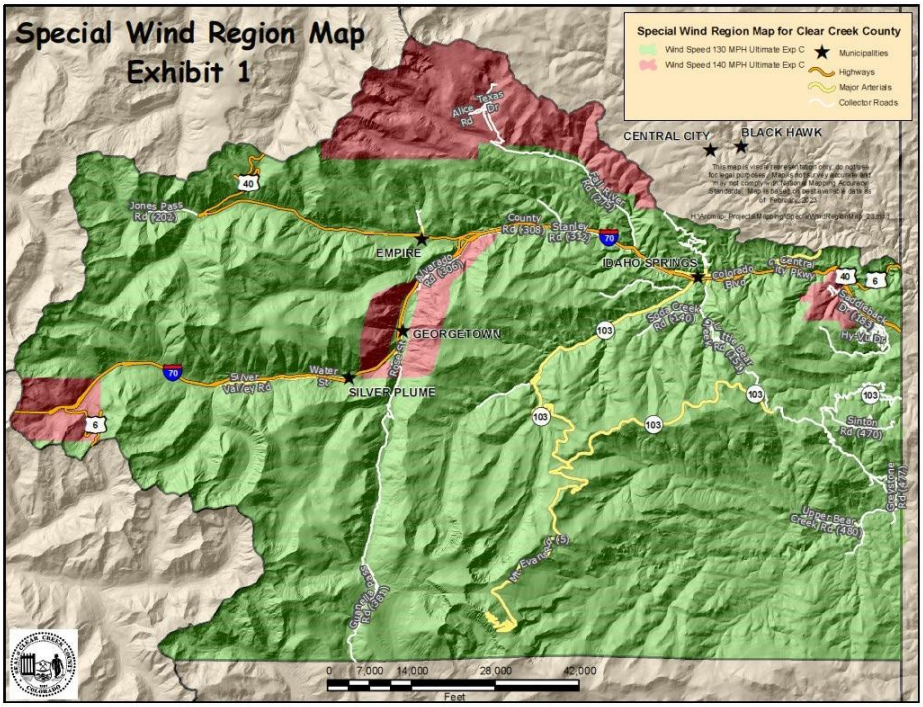

CHAPTER 21 MASONRY

SECTION 2111 – MASONRY FIREPLACES

Add the following:

2111.1.1 New fireplaces. Every new solid-fuel burning fireplace shall have permanently installed either: (1) approved gas logs; (2) other approved gas or alcohol specific appliances; (3) an approved fireplace insert meeting emission standards for wood stoves established under State statute and/or regulations promulgated by the State Air Quality Control Commission (AQCC) as of the time of installation of the fireplace; or (4) a solid fuel-burning device which is exempt from and not eligible for certification under U.S. Environmental Protection Agency (U.S. EPA) regulations for wood stoves but which has been tested to demonstrate its emission performance

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is in accordance with criteria and procedures not less stringent than those required by the U.S. EPA and/or AQCC for wood stoves manufactured after July 1, 1990. (Effective January 1, 1991-CC90-617.)

Add the following to 2111.14.1:

2111.14.1 Factory-built fireplaces. Every new solid-fuel burning factory-built fireplace shall have permanently installed either: (1) approved gas logs; (2) other approved gas or alcohol specific appliances; (3) an approved fireplace insert meeting emission standards for wood stoves established under State statute and/or regulations promulgated by the State Air Quality Control Commission (AQCC) as of the time of installation of the fireplace; or (4) a solid fuel-burning device which is exempt from and not eligible for certification under U.S. Environmental Protection Agency (U.S. EPA) regulations for wood stoves but which has been tested to demonstrate its emission performance is in accordance with criteria and procedures not less stringent than those required by the U.S. EPA and/or AQCC for wood stoves manufactured after July 1, 1990. (Effective January 1, 1991-CC90-617.)

Chapter 29 Plumbing Systems

SECTION 2902 – MINIMUM PLUMBING FACILITIES.

Add the following exception to 2902.1:

Exception: Minimum plumbing facilities shall not be required for primitive ~~transient~~ housing where allowed by the Environmental Health Department and the specific zoning of the parcel. The following Appendix Chapters to the ~~2021~~2024 International Building Code are hereby adopted and enforced by Clear Creek County, Colorado.

Delete Appendix Chapter E and replace with **APPENDIX CHAPTER E UNSAFE BUILDINGS OR STRUCTURES** as written in the ~~2021~~2024 International Residential Code Amendments and adopt as part of this code.

Delete Appendix Chapter F and replace with **APPENDIX CHAPTER BEF PASSIVE RADON CONTROLS** as written in the ~~2021~~2024 International Residential Code Amendments and adopt as part of this code.

Delete Appendix Chapter M, and replace with the following and adopt as part of this code:

APPENDIX CHAPTER M MARIJUANA OPERATIONS

SECTION M101 – GENERAL

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M101.1 Scope. This section shall apply to all occupancies engaging in marijuana (i.e. cannabis and extract derivatives) sales locations, growing, processing, extraction, and/or testing. These occupancies shall comply with this chapter and other applicable provisions of this Code.

M101.2 Permits. Permits shall be required for all Marijuana Operations.

M101.3 Existing Operations. Buildings containing existing growing or extraction operations shall comply with this code within 6 months of adoption.

SECTION M102 - EXTRACTION OPERATIONS

M102 Construction Requirements.

M102.1 Location. Extraction of Marijuana and or Hemp processes shall be performed in a room dedicated to the extraction process.

M102.2 Egress. Exit doors from extraction rooms utilizing hazardous materials shall swing in the direction of egress and be self-closing. Panic hardware shall be provided on doors in liquefied petroleum gas (LPG) extraction rooms. Where latching door hardware is provided on extraction rooms utilizing hazardous materials, panic hardware shall be provided.

M102.3 Extraction Rooms. Extraction room shall be fully enclosed. The floor, ceiling, and walls of extraction rooms shall be non-combustible, and smooth. Rooms designed in accordance with Section M102.4 shall be constructed to permit the free passage of exhaust air from all parts of the room.

EXCEPTIONS: 1. Enclosed booths constructed in accordance with IFC Section 2404.3.2.1 through 2404.3.2.3.
2. CO_2 extraction rooms and extraction rooms containing processes not utilizing hazardous materials.

M102.4 Openings and penetrations. Openings and penetrations into extraction rooms utilizing hazardous materials shall only be provided for egress, mechanical, electrical, or plumbing systems serving the extraction room. Penetrations into LPG extraction rooms shall be sealed vapor tight. Non-operable glazing is permitted where glazing does not interfere with required exhaust systems.

M102.5 Extraction room illumination. Luminaires inside the extraction room shall comply with Section M103.3. Luminaires attached to the walls or ceilings of an extraction room or booth, but outside of any classified area and separated from the flammable vapor areas by vapor-tight glass

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panels, shall be suitable for use in ordinary hazard locations. Such luminaires shall be serviced from outside the flammable vapor areas.

M102.6 Fire protection. Extraction rooms, booths, or hoods, including ductwork where required for hazardous exhaust systems, shall be protected by an approved automatic fire extinguishing system complying with Chapter 9 where any of the following exist:

Extraction processes utilizing LPG or off gassing LPG from spent plant material or oil.
Vapors are released exceeding 25% of the lower flammable limit from flammable liquid extraction processes or flammable liquid post oil processing.

M103.1 Sources of ignition. Extraction or post oil processing operations which use flammable liquids or liquefied petroleum gas (LPG) shall comply with Sections M103.1 through M103.3.1

M103.2 Open flame and sparks. Smoking, open flames, direct fired heating devises, etc. shall be prohibited where flammable vapors exist.

M103.3 Electrical equipment. Electrical equipment installed in rooms designed in accordance with Section M105.1.2, hoods or booths containing LPG extraction processes shall be in accordance with NFPA 70 (NEC) as a Class I Division I location. Areas adjacent to classified locations shall be in accordance with NFPA 70 (NEC). Electrical equipment installed in areas of flammable liquid extractions or post oil processing shall be in accordance with IFC Chapter 50, as amended, and NFPA 70 (NEC).

M103.3.1 Grounding and Bonding. Precautions shall be taken within LPG extraction rooms to minimize the possibility of ignition by static electrical sparks through static bonding and grounding of extraction equipment, ducts, and piping etc. installed in accordance with NFPA 70 (NEC).

M104 Equipment. Extraction process equipment utilizing hazardous materials shall be listed or approved. No more than 5 gallons of Butane or LPG shall be stored in the building/tenant finish at any time. Storage outside must be in rated cabinets, and placed in an approved location.

M105 Exhaust required. Extraction and post oil processing, utilizing LPG or flammable liquids shall be provided with an exhaust system in accordance with Section 3903.1 or 3903.4.2. The exhaust system shall be in operation at all times when extractions or post oil processing is being performed and until LPG is off gassed from oil and/or plant material removed from LPG extraction equipment. Fans shall be of the type approved for use when flammable or explosive vapors are present in accordance with the *International Mechanical Code*, Section 503. Capture and

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containment air velocity shall be provided across booths, hoods, or exhausted enclosures to capture and convey emissions to the exhaust system and shall be no less than 75 cfm.

M105.1 Exhaust for LPG extraction processes. An engineered hazardous exhaust system shall be provided for LPG or flammable liquids extraction processes including LPG degassing from processed plant material or oil removed from extraction equipment.

M105.1.2 Exhausted enclosure. Where the extraction room is used as the exhausted enclosure, the exhaust system shall be designed to provide capture and containment air velocity across all areas of the enclosure.

M105.1.3 Electrical Interlocks. The exhaust system shall be interlocked with the room power, such that when the exhaust system is not operating, power and lighting will be disabled.

M106 Gas Detection. A continuous gas detection system shall be provided within rooms, booths, or hoods, containing CO_2 or flammable liquids extraction processes. Actuation of the gas detection system shall initiate a local alarm within the room. CO_2 gas detection systems shall alarm at 5000ppm. LPG gas detection system shall alarm at no greater than 20% of the LFL. Portable LPG gas detection shall be utilized by the extraction system operator to verify local hydrocarbon levels, including system leaks.

M106.1 CO_2 Extraction Equipment Process discharge. CO_2 discharges shall be piped to the exterior.

M107 Refrigeration and Cooling Equipment. Refrigerators, freezers, and other cooling equipment to store or process flammable liquids shall meet NFPA 45.

SECTION M201-CARBON DIOXIDE ($C0_2$) GAS ENRICHMENT SYSTEMS USING ON-SITE SUPPLY TANKS AND/OR CYLINDERS IN PLANT GROWING (HUSBANDRY) APPLICATIONS

M201.1 General. Carbon dioxide enrichment systems with more than 100 pounds (45.4 kg) of carbon dioxide or any system using any amount of carbon dioxide (CO_2) below grade used in plant growing (husbandry) applications shall comply with Sections 5310.2 through 5310.8.

M201.2 Permits. Permits shall be required.

M201.3 Equipment. The storage, use, and handling of carbon dioxide shall be in accordance with IFC Chapter 53, and the applicable requirements of NFPA 55, Chapter 13. All equipment utilized in compressed gas systems shall be compatible with the intended gas and use.

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M201.3.1 Containers, cylinders and tanks. Gas storage containers, cylinders and tanks shall be designed, fabricated, tested and labeled with manufactures' specifications and shall be maintained in accordance with the regulations of DOT 49 CPR, Parts 100-185 or the ASME Boiler and Pressure Vessel Code, Section VIII.

M201.3.1.1 Location. Location of gas storage containers, cylinders and tanks, inside or outside the building, shall be at an approved location.

M201.3.1.2 Security. Gas storage containers, cylinders and tanks shall be seemed in an approved manner to prevent overturning. Containers, cylinders and tallies located outside shall be secured and safeguarded against tampering and protected from physical damage if exposed to vehicle traffic.

M201.3.1.3 Design and construction. Bulk tank installations over 2,000 pounds will require an engineered foundation and construction permit in accordance with the County Building Code.

M201.3.2 Piping systems. Piping, tubing, fittings, valves and pressure regulating devices shall be designed and installed in accordance with approved standards and manufacturers' recommendations.

M201.3.2.1 Piping, tubing and hoses. Piping, tubing and hose materials shall be compatible with carbon dioxide and rated for the temperatures and pressures encountered in the system. All hoses and tubing used in carbon dioxide service shall be designed for a bursting pressure of at least four times their design pressure. PVC/ABS and other types of rigid plastic piping are not approved materials. Acceptable piping for carbon dioxide shall be the following:

a. Stainless steel A269 grade, which is either seamless or welded drawn over mandrel
b. Copper K grade, hard drawn seamless
c. Copper ACR grade (1/2 inch outside diameter or less) annealed seamless
d. Plastic/polymer materials rated for use with carbon dioxide
e. Additional approved piping, tubing and hoses found in the Compressed Gas Association (CGA) standards for carbon dioxide

M201.3.2.1.1 Support. Gas piping shall not be attached or supported by any electrical light supports or wiring.

M201.3.2.1.2 Identification. Markings for carbon dioxide ($C0_2$) piping systems shall consist of the content's name (carbon dioxide or $C0_2$) and direction-of-flow arrow. Markings shall be provided at each valve; at wall, floor or ceiling penetrations; at each change of direction; and at not less than every 20 feet or fraction thereof throughout the piping run.

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M201.3.2.2 Fittings, joints and connections. Fittings, joints and connections shall be subject to the approval of the fire and building departments.

M201.3.2.2.1 Fittings and joints between gas supply containers and automatic shutoff valve. Joints and fittings on the supply piping or tubing between the CO_2 supply source and the automatic system shutoff valve shall be threaded, compression or welded.

M201.3.2.2.2 Unused connections. Unused piping or tubing connected to the supply system shall be capped or plugged. A closed valve will not be allowed in lieu of a cap or plug.

M201.3.2.2.3 Concealed connections. All fittings and joints shall be exposed and located adjacent to the supply source or points of use and shall be protected by a detector.

M201.3.2.3 Valves. Piping systems shall be provided with valves in accordance with Sections 5307.3.2.3.1 through 5307.3.2.3.4.

M201.3.2.3.1 Pressure relief valves. Pressure relief valves shall be provided and piped to the outdoors.

M201.3.2.3.2 System shutoff valve. An automatic system shutoff valve shall be provided as near to the supply pressure regulator as possible and shall be designed to fail to a closed condition closing on loss of electrical power to the valve and gas detection. Additional automatic shutoff valves may be provided at each point of use. Automatic shutoff valves shall be designed and located so that all phases (i.e., gas, liquid and solid) of carbon dioxide (CO_2) will not interfere with the operation of the device.

M201.3.2.3.3 Appliance shutoff valves. Each appliance shall be provided with a shutoff valve within 3 feet of the appliance. All shutoff valves shall be capable of being locked or tagged in the closed position for servicing.

M201.3.2.3.4 Accessibility and identification. Valves and controls shall be readily accessible at all times. Normal and emergency system shut-off valves shall be clearly identified. All valves shall be designed or marked to indicate clearly whether it is open or closed.

M201.3.3 Venting. Venting of gases shall be directed to an approved location outside the building. Insulated liquid carbon dioxide systems shall have pressure relief devices vented in accordance with NFPA 55.

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M201.4 Protection from damage. Carbon dioxide systems shall be installed so the storage tanks, cylinders, piping and fittings are protected from damage by occupants or equipment during normal facility operations.

M201.5 Required protection. Where carbon dioxide storage tanks, cylinders, piping and equipment are located indoors, rooms or areas containing carbon dioxide storage tanks, cylinders, piping and fittings and grow room/areas where carbon dioxide is released and can collect shall be provided with an emergency alarm system in accordance with Section 5310.5.1.

M201.5.1 Emergency alarm system. An emergency alarm system shall comply with all of the following:

1. Continuous gas detection shall be provided to monitor areas where carbon dioxide ($C0_2$) can accumulate. Detection equipment shall be provided to indicate carbon dioxide ($C0_2$) levels in each grow cultivation area/room and interior carbon dioxide ($C0_2$) storage location.

2. Detectors shall be:
   a. listed or approved devices
   b. permanently mounted
   c. installed at a height of no more than 48 inches above the floor or as approved by the fire code official
   d. directly connected to building electrical supply and fire alarm systems and protected from accidental disconnection or damage
   e. auto calibrating and self "zeroing" devices are not permitted unless they can be zeroed and spanned
   f. located within manufacturers specified detection range for each point of use and storage location

3. Activation of the emergency alarm system shall initiate amber strobes and audible hams provided in the vicinity of each interior storage container, cylinder or tank and at each point of release. Additional amber strobes and audible hams shall be placed at the entrances to below grade locations and confined spaces. The notification devices shall be rated a minimum of 80cd for a visible effect and 75 DBA for an audible effect and shall be mounted in accordance with NFPA 72 requirements. Provide audible visual devices at the following locations:
   - Inside an interior storage room/area and outside the room/area at each entrance.
   - Inside grow cultivation room/areas.

4. Local alarm set points shall be set at:

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a. 5,000 PPM- Latching Alarm

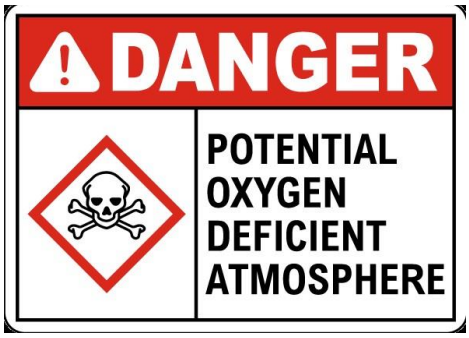
- Visual and audible notification in approved locations at room or area in alarm
- Activation of automatic system shut off valve
- Evacuate the room in alarm and contact a qualified service company to investigate and address the condition.
- Reset of the emergency alarm to be conducted by qualified personnel.

5. Signage shall be required adjacent to each horn/strobe as follows.

Storage area/room: "DO NOT ENTER WHEN LIGHT IS FLASHING - CARBON DIOXIDE LEAK DETECTED"

Grow cultivation room/area dispensing: "FLASHING LIGHT MEANS CARBON DIOXIDE LEAK DETECTED- EVACUATE ROOM"
The sign shall have a minimum l-inch block lettering with a minimum *Y4* -inch stroke. The sign shall be on a contrasting surface of black on yellow and shall be of durable construction.

Signage on entrance doors to grow cultivation and storage rooms: Signage shall be provided at entrance doors to each grow cultivation room/area and at each entrance to storage rooms/areas:



NFPA 704 placards for simple asphyxiates shall also be provided at the exterior main entrance and at each entrance to storage rooms/areas.

6. A minimum of one portable carbon dioxide ($C0_2$) meter shall be in use during business hours.

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M201.6 Transfilling. Filling and transfilling of gases between storage containers, cylinders and tanks and delivery vehicles shall be performed by qualified personnel using equipment and operating procedures in accordance with CGA P-1. Interior storage containers, cylinders and tanks shall be filled via remote fill ports on the exterior of the building at grade level. Exterior remote fill ports shall be fitted with a vent line to the outside. Delivery personnel shall have access to interior storage areas to inspect valves and piping prior to initiating filling operations.

M201.7 Training. All employees shall receive annual training in hazard identification, physical properties, inspections, and emergency procedures. Training records shall be maintained on site and be available to inspectors upon request.

SECTION M301 - CARBON DIOXIDE ($C0_2$) GAS ENRICHMENT SYSTEMS USING A NATURAL GAS BURNER IN PLANT GROWING (HUSBANDRY) APPLICATIONS

M301.1 General. Natural gas burners that are utilized to generate carbon dioxide ($C0_2$) in plant growing (husbandry) applications shall comply with Sections M301.2 through M301.6. A mechanical exhaust system shall be provided as required by the *International Mechanical Code.*

M301.2 Permits. Permits shall be acquired.

M301.3 Equipment. Natural gas burners shall be listed, labeled and installed in accordance with the manufacturer's installation instructions. Piping systems, combustion and ventilation air and venting for natural gas appliances shall be designed and installed in accordance with approved standards, the International Fuel Gas Code and manufacturer's recommendations.

M301.4 Required protection. Where natural gas burners are located indoors for carbon dioxide ($C0_2$) enrichment, grow room/areas shall be provided with an emergency alarm system in accordance with Section 5311.4.1 and carbon monoxide detection in accordance with Section 5311.4.2.

M301.4.1 Emergency alarm system. An emergency alarm system shall comply with all of the following:

1. Continuous gas detection shall be provided to monitor areas where carbon dioxide ($C0_2$) can accumulate. Detection equipment shall be provided to indicate carbon dioxide ($C0_2$) levels in each grow cultivation area/room.

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2. Detectors shall be:

   a. listed or approved devices
   b. permanently mounted
   c. installed at a height of no more than 48 inches above the floor or as approved by the fire code official
   d. directly connected to building electrical supply and fire alarm systems and protected from accidental disconnection or damage
   e. auto calibrating and self "zeroing" devices are not permitted unless they can be zeroed and spanned
   f. located within manufacturer's specified detection range for each point of release

3. Activation of the emergency alarm system shall initiate amber strobes and audible horns provided in each room/area where carbon dioxide (CO_2) can accumulate. Additional amber strobes and audible horns shall be placed at the entrances to below grade locations. The notification devices shall be rated a minimum of 80cd for a visible effect and 75 DBA for an audible effect and shall be mounted in accordance with NFPA 72 requirements. Provide notification devices at the following locations:
   - Inside grow cultivation room/areas.

4. Local alarm set points shall be set at: 5,000 PPM- Latching Alarm
   - Visual and audible notification in approved locations at room or area in alarm
   - Activation of the automatic natural gas control valves to each burner to a closed position stopping the generation of carbon dioxide (C02) • Evacuate the room in alarm and contact a qualified service company.
   - Reset of emergency alarm to be conducted by qualified personnel.

5. Signage will be required adjacent to each horn/strobe as follows:

Entrance to below grade location: "DO NOT ENTER WHEN LIGHT IS FLASHING- CARBON DIOXIDE LEAK DETECTED"

Grow cultivation room/area dispensing: "FLASIDNG LIGHT MEANS CARBON DIOXIDE LEAK DETECTED- EVACUATE ROOM"

The sign shall have a minimum l-inch block lettering with a minimum 1.4 -inch stroke. The sign shall be on a contrasting surface of black on yellow and shall be of durable construction.

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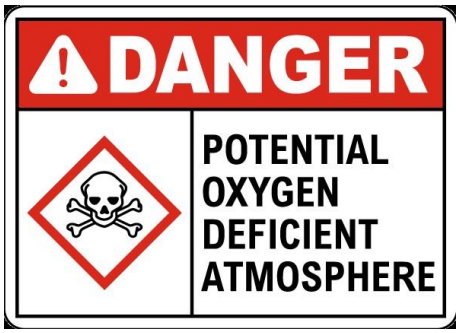
Signage at entrance doors: Signage shall be provided at entrance doors to each grow cultivation room/area:



NFPA 704 placards for simple asphyxiants shall also be provided at the exterior main entrance.

6. All carbon dioxide (CO_2) burner systems shall shut down in the event of a loss of electrical power to the carbon dioxide (CO_2) detectors.

7. A minimum of one (1) portable carbon dioxide (CO_2) meter shall be in use during business hours.

M301.4.2 Carbon monoxide (CO) detection.

1. Carbon monoxide (CO) gas detection shall be provided to monitor products of combustion continuously.

2. Detectors shall be:
   a. listed or approved devices
   b. permanently mounted
   c. Installed per manufacturer's recommendations and directions
   d. directly connected to building electrical supply and fire alarm systems and protected from accidental disconnection or damage

3. CO detection shall be at set at 35 PPM and upon activation shall initiate the following:

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- Close the automatic valve to each burner
- Activate the mechanical exhaust system

4. All carbon dioxide (CO_2) venting burner systems shall shut down in the event of a loss of electrical power to the carbon monoxide (CO) detectors.

5. A minimum of one (1) portable carbon monoxide (CO) meter shall be in use during business hours.

M301.5 Acceptance testing. Appliances and equipment shall not be placed in operation until after the detectors, notification devices, automatic gas control valves and mechanical exhaust system have been tested by a qualified service company.

.

M301.6 Training. All employees shall receive annual training in hazard identification, physical properties, inspections, and emergency procedures. Training records shall be maintained on site and be available to inspectors upon request.

M400 Enforcement Enacted. All of the Marijuana related regulations will be made retroactive on existing facilities and will have 6 months from the date of adoption of these amendments to comply with all of the above stated Marijuana regulations.

~~Adopt **APPENDIX CHAPTER W** as follows:~~

~~**APPENDIX W WILDFIRE HAZARD MITIGATION**~~

Commented [DD29]: Wildfire urban interface code is applicable no longer needed.

~~Adopt **APPENDIX CHAPTER W** as written in the 2021 International Residential Code Amendments~~

Adopt **APPENDIX CHAPTER X** as follows:

APPENDIX X EXCAVATION AND GRADING

Adopt **APPENDIX CHAPTER X** as written in the ~~2021~~2024 International Residential Code Amendments

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~~2021~~2024 INTERNATIONAL PLUMBING CODE

CHAPTER 1 ADMINISTRATION

SECTION 101 – GENERAL

Delete section 101.1 Title and replace with the following:

101.1 Title. These provisions shall be known as the Plumbing Code of Clear Creek County, Colorado, and shall be cited as such and will be referred to herein as "this code".

SECTION ~~106~~ 105 PERMITS

Delete section ~~106~~ 105 in its entirety and replace with IBC Section 105 Permits

CHAPTER 3 GENERAL REGULATIONS

SECTION 305 – PROTECTION OF PIPES AND PLUMBING SYSTEM COMPONENTS

Delete 305.4 in its entirety and replace with the following:

305.4 Freezing. In localities having a winter design temperature of 32 Degrees Fahrenheit or lower as shown in Table R301.2 (1) of the ~~2021~~2024 IRC for severe climate zone, a water, soil or waste pipe shall not be installed outside of a building, exterior walls, in attics or crawl spaces, or in any other place subjected to freezing temperature unless adequate provision is made to protect it from freezing by insulation, heat or burial. Outside water and soil or waste pipe shall be installed not less than 6 inches below the frost line. The ~~Department of Building Safety~~Building Department is not responsible for the inspection of the protection of the water, soiled or waste outside of the perimeter of the building.

Delete 305.4.1 in its entirety and replace with the following:

Building sewers that connect to a private sewage disposal system shall be installed in accordance with regulations promulgated by the State of Colorado and the Environmental Health Department

CHAPTER 9 VENTS

SECTION 903 - VENT TERMINALS

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Delete Section 903.1.1 in its entirety and replace with the following:

903.1.1 Roof extension. All open vent pipes which extend through a roof shall be terminated at least 6 inches (152.4 mm) above the roof or 6 inches (152.4 mm) above the anticipated snow accumulation whichever is greater.

~~2021~~2024 INTERNATIONAL MECHANICAL CODE

CHAPTER 1 ADMINISTRATION

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SECTION 101 – GENERAL

Delete section 101.1 Title and replace with the following:

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101.1~~2~~ Title. These provisions shall be known as the Mechanical Code of Clear Creek County, Colorado, and shall be cited as such and will be referred to herein as "this code".

SECTION ~~106~~ 105 – PERMITS

Delete section ~~106~~ 105 in its entirety and replace with IBC Section 105 Permits

CHAPTER 3 GENERAL REGULATIONS

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SECTION 303 – EQUIPMENT AND APPLICANCE LOCATION

Add the following

303.1.1 Carbon Monoxide Alarm Requirements. Installation of Carbon Monoxide alarm shall be installed as written in the ~~2021~~2024 IRC Section R315.3.1.

Add the following Item Number 6 for Section 303.3:

303.3 Prohibited locations. 6. LPG appliances shall not be installed in a pit, basement, or crawl space where unburned fuel may accumulate unless an approved sensing device, with a solenoid shut off on the gas line is installed and a daylighted drain is installed. If the appliance is installed in a crawl space it must have a pad poured for the daylighted drain in addition to the above mitigation. The pad shall be a minimum of 8'x 8'.

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CHAPTER 9 - SPECIFIC APPLIANCES, FIREPLACES AND SOLID FUEL-BURNING EQUIPMENT

SECTION 903 – FACTORY-BUILT FIREPLACES

~~**903.1 General.**~~ Add the following sentence to **903.1 General.** :

~~-~~Every new installation of a solid fuel-burning, vented decorative appliance or room heater shall meet the most stringent emission standards for woodstoves established under State statute and/or regulations promulgated by the State Air Quality Control Commission as of the time of installation of the appliance or room heater. (Effective January 1, 1991 – CC90-617.)

Delete 903.3 in its entirety and replace with the following:

903.3 Unvented gas log heaters. Unvented gas log heaters or any unvented room heaters are prohibited.

Add the following:

903.5 Auxiliary Emergency Shutoff Valve. All-natural gas or LPG appliance shall have an auxiliary emergency shutoff valve installed within close proximity of the appliance and not closer than 12" to the appliance for emergency isolation purposes.

~~2021~~2024 INTERNATIONAL FUEL GAS CODE

CHAPTER 1 ADMINISTRATION

~~-~~**SECTION 101 - GENERAL**

Delete section 101.1 Title and replace with the following:

101.1 Title. These provisions shall be known as the Fuel Gas Code of Clear Creek County, Colorado, and shall be cited as such and will be referred to herein as "this code".

SECTION ~~106~~105 - PERMITS

Delete section ~~106~~ 105 in its entirety and replace with IBC Section 105 Permits

404.12 Minimum burial depth.

Replace 12 inches with 18 inches

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~~2021~~2024 INTERNATIONAL ENERGY CONSERVATION CODE

CHAPTER 1 ADMINISTRATION

SECTION 101 – GENERAL

Delete section 101.1 Title and replace with the following:

101.1 Title. These provisions shall be known as the Energy Conservation Code of Clear Creek County, Colorado, and shall be cited as such and will be referred to herein as "this code".

Adopt appendices RE Electric Vehicle Charging, RK Electric Ready Provisions, and RD Electrical Energy Storage

~~2021~~2024 INTERNATIONAL EXISTING BUILDING CODE

CHAPTER 1 ADMINISTRATION

SECTION 101 – GENERAL

Delete section 101.1 Title and replace with the following:

101.1 Title. These provisions shall be known as the Existing Building Code of Clear Creek County, Colorado, and shall be cited as such and will be referred to herein as "this code".

SECTION 104 – DUTIES AND POWERS OF CODE OFFICIAL

Delete 104.2.~~4~~10 Modifications and replace with the following.

104.10 Modifications. Wherever there are practical difficulties involved in carrying out the provisions of this code, the *code official* or a preservation commission designated by the authority having jurisdiction shall have the authority to grant modifications for individual cases on application of the owner or owner's authorized representative, provided that the *code official* or preservation commission shall first find that special individual reason makes the strict letter of this code impractical, the modification is in compliance with the intent and purpose of this code and such modification does not lessen health, accessibility, life and fire safety, or structural requirements. The details of action granting modifications shall be recorded and entered in the files of the Building Department.

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Commented [DD31]: Adopting the Existing building code which provides guidance and requirements for existing buildings, in many cases new construction requirements in existing buildings cannot be met or are not required. For example, when "technically infeasible"

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Commented [DD32]: This section has been modified to allow a preservation commission to have authority to grant modifications as well as the code official

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SECTION 105 - PERMITS

Delete section 105 in its entirety and replace with IBC section 105

Add section 111.3.1 Validity.

111.3.1 Validity. Temporary certificate of occupancy shall be valid for 30 days. Extensions may be granted as allowed by the building official. Fees shall apply as set forth building fee schedule. If the TCO expires prior to certificate of occupancy being issued, temporary certificate of occupancy fees will be due for the period of time up to the certificate of occupancy issue date.

~~2021~~2024 **INTERNATIONAL SWIMMING POOL AND SPA CODE**

CHAPTER 1 ADMINISTRATION

SECTION 101 – GENERAL

Delete section 101.1 Title and replace with the following:

101.1 Title. These provisions shall be known as the Swimming Pool and Spa Code of Clear Creek County, Colorado, and shall be cited as such and will be referred to herein as "this code".

SECTION 105 - PERMITS

Delete section 105 in its entirety and replace with IBC section 105

~~**2024 INTERNATIONAL WILDLAND-URBAN INTERFACE CODE**~~

~~**CHAPTER 1 ADMINISTRATION**~~

~~**SECTION 101 – GENERAL**~~

~~Delete section 101.1 Title and replace with the following:~~

~~**101.1 Title.** These provisions shall be known as the Wildland-Urban Interface Code of Clear Creek County, Colorado, and shall be cited as such and will be referred to herein as "this code".~~

~~**SECTION 105 – PERMITS**~~

~~Modify Section 105.2 Permits Required as follows:~~

~~**Replace "code official" with "fire code official" within the third sentence as follows:**~~

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Commented [DD33]: Adopting the swimming pool and spa code, this code provides requirements for pools, spas, and hot tubs.

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Commented [KP34]: Section 503.2.3 potentially conflicts with Section 902 of the IBC.

Commented [KP35]: CWRC
101.2.2 Factory-Built Structures (nonresidential, residential, and tiny homes).
Structure hardening provisions of this code for factory-built structures as defined by
sections 24-32-3302(9), (10), (11), and (35), C.R.S., are in accordance with Rules
adopted by the Division of Housing in 8 CCR 1302-1, Rule 2 Codes and Standards.

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~~Where required by the fire code official, a permit shall be obtained for the following activities, operations, practices or functions within a wildland-urban interface area:~~

~~**CHAPTER 3 WILDLAND-URBAN INTERFACE AREAS**~~

~~**SECTION 302 – WILDLAND-URBAN INTERFACE AREAS**~~

~~Add the following section:~~
~~**302.1.1 Wildland-Urban Interface Areas.** Wildland-Urban interface areas shall be as designated on the most current Colorado Wildfire Resiliency Code Map as adopted by the Colorado Wildfire Resiliency Code Board.~~

2024 INTERNATIONAL FIRE CODE

CHAPTER 1 ADMINISTRATION

SECTION 101 – GENERAL

Delete section 101.1 Title and replace with the following:
101.1 Title. These provisions shall be known as the Fire Code of Clear Creek County, Colorado, and shall be cited as such and will be referred to herein as "this code".

SECTION 103 – CODE COMPLIANCE AGENCY

Delete section 103.1 Creation of agency and replace with the following:
103.1 Creation of agency. Fire Authorities and Fire Protection Districts having jurisdiction within the Clear Creek County are hereby recognized, and the official in charge thereof shall be known as the fire code official. The function of the agency shall be the implementation, administration and enforcement of the provisions of this code within the boundaries of their respective jurisdictions as defined by interagency agreements.

2025 COLORADO WILDFIRE RESILIENCY CODE

CHAPTER 1 ADMINISTRATION

SECTION 101 – SCOPE AND GENERAL REQUIREMENTS

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Delete section 101.1 Title and replace with the following:
101.1 Title. These regulations shall be known as the Colorado Wildfire Resiliency Code as adopted by Clear Creek County, hereinafter referred to as "this code."

SECTION 102 – APPLICABILITY

Delete exemption 8 of section 102.10 and replace with the following:

8. Accessory structures and buildings of an accessory character classified as Utility and Miscellaneous Group U (including Agricultural Structures) not provided with electricity or fuel burning appliance and located more than 50 feet from a structure containing occupiable or habitable space.

Delete exemption 10 of section 102.10

SECTION 103 – CODE COMPLIANCE AGENCY

Delete section 103.1 Creation of agency and replace with the following:
103.1 Creation of agency. The Building Department is hereby created and the official in charge thereof shall be known as the code official. The function of the agency shall be the implementation, administration and enforcement of the provisions of this code.

SECTION 106 – FEES

Delete section 106 and replace with section 109 of the IBC

SECTION 108 – CONSTRUCTION DOCUMENTS

Add section 108.1
108.1 Construction Documents. Construction Documents shall be as required by section 106 of the IRC for detached one- and two-family dwellings and townhouses not more than three stories above grade plane in height with a separate means of egress, and their accessory structures not more than three stories above grade plane in height or section 107 of the IBC for all other buildings or structures.

SECTION 109 – PERMITS

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Add section 109.1

109.1 PERMITS. Permits shall be as required by section 105 of the IRC for detached one- and two-family dwellings and townhouses not more than three stories above grade plane in height with a separate means of egress, and their accessory structures not more than three stories above grade plane in height or section 105 of the IBC for all other buildings or structures.

SECTION 303 - MAPPING

Add section 303.1.3

303.1.3 Wildland-Urban Interface Areas. Wildland-Urban interface areas shall be as designated on the most recent Colorado Wildfire Resiliency Code Map as adopted by the Colorado Wildfire Resiliency Code Board.

SECTION 401 – GENERAL

Delete exemption 1 of section 401.1 and replace with the following:

1. Accessory structures and buildings of an accessory character classified as Utility and Miscellaneous Group U (including Agricultural Structures) not provided with electricity or fuel burning appliance and located more than 50 feet from a structure containing occupiable or habitable space.

END DELETIONS AND ADDITIONS

~~NOW BE IT RESOLVED, this resolution shall be and is hereby declared to be adopted and in full force and effect, and this Code shall apply to all permits applied for after January 1, 2025.~~

~~ADOPTED THIS 17th DAY OF December, 2024 BY THE CLEAR CREEK BOARD OF COUNTY COMMISSIONERS.~~

~~_____~~

~~Sean C. Wood, Chairman~~

~~_____~~

~~George Marlin, Commissioner~~

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Randall P. Wheelock, Commissioner

Attest

Deputy Clerk and Recorder
For Brenda L. Corbett
Clear Creek County Clerk and Recorded

Exhibit 2

Clear Creek County Roadway Design and Construction Manual

Chapter 4

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Chapter 4 – Driveway Permit Requirements

4.1 Purpose and Intent

Driveway permits must be obtained whenever an individual proposes to construct and connect a driveway to an existing public or private roadway in unincorporated Clear Creek County. The reason for requiring driveway permits is to mitigate hazards to public health, safety and welfare; to ensure the design of the connections meets the specifications in these regulations allowing for emergency vehicle access; and for proper drainage. Driveway permits are also intended to ensure adequate reconstruction and/or repair of any damage caused to the County right-of-way or roadway during construction of the connection. Driveway permits shall be obtained before building permits may be issued. This standard supersedes Resolution 00-24.

4.2 Permits and Performance Guarantees

Individuals proposing to construct a driveway connection to an existing County roadway shall obtain an approved driveway permit as provided in Section 4.3. Before undertaking any excavation, a Performance Guarantee may be required.

4.3 Procedures/Requirements for Issuance of Driveway Permits

Procedures for obtaining Driveway Permits are detailed in Section X102.4 of Appendix Chapter X of the Clear Creek County International Code Series.

1. Fee scheduling will be set for various permits, inspections, and on-site approvals. Permit fees will be periodically reviewed by the County for adequacy, and when appropriate the fee schedule will be revised.
2. The property owner/owners are responsible for obtaining all necessary easements and/or CDOT Access permits prior to the application of the Driveway Permit. A copy of the easement and/or CDOT Access permit must be attached to the permit application.
3. The permit holder assumes the responsibility to have buried gas lines, telephone cable and other utilities located by contacting the Utility Notification Center of Colorado.
4. Applicant represents all parties in interest, and affirms that the driveway approach is to be constructed for the purpose of securing access to the described property.
5. Permit holder or authorized agent shall furnish all labor and materials, perform all work, and pay all costs in connection with the construction requested.
6. The permit holder shall be responsible for the work to be performed in accordance with the approved plans and specifications and in conformance with the provisions of this code, and the permit holder shall engage consultants, if required, to provide professional inspections on a timely basis. In the event of changed conditions, the permit holder shall be responsible for providing revised plans for approval.
7. Permit holder shall protect the traveling public during the installation of the driveway and building site excavation with approved traffic control, as outlined by Part VI of the Manual of Uniform Traffic Control Devices. Right-of-way permits shall be obtained

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whenever a developer, contractor, owner, utility company or other individual proposes to install utility lines, culverts or any other work within the County right of way.

8. The County shall be held harmless against any action for personal injury or property damage sustained by reason of the exercise and issuance of the permit.
9. Failure to comply with any portion of these driveway design standards and permit procedures shall be sufficient grounds for denial, suspension, or revocation of any necessary permit. Financial penalties may also be imposed.

4.3.1 Submittal Requirements for Driveway Permits:

Submittal requirements for Driveway Permits are detailed in Section X102.4.1 of Appendix Chapter X of the Clear Creek County International Code Series.

4.3.2 Action on Driveway Permits:

Applications for driveway permits shall be submitted to the Site Development Department for review and action. Approval shall be granted only if the proposed driveway or roadway connection meets the specifications in these regulations and the required fee has been paid. Approval of a driveway permit may be accompanied by any condition deemed reasonable by the Site Development Department to ensure protection of health, safety and welfare and compliance with these regulations. Applications for driveway permits must be submitted at least 15 calendar days prior to planned commencement of construction, and construction cannot commence without permit approval.

4.3.3 Construction Specification for Driveway Work:

All work undertaken to connect driveways to existing County roadways shall conform to the standards contained in this Manual as well as Appendix Chapter X of the Clear Creek County International Code Series. In the event of a discrepancy between the regulations, the more stringent requirements shall apply.

4.3.4 Construction Schedule for Driveway Work:

As part of its approval of any driveway permit, the Site Development Department shall also approve a construction schedule. The approved schedule shall not be changed after the permit is issued without the written consent of the Site Development Department and approved by the Road and Bridge Department.

4.4 Supervision of Driveway Work

All driveway work shall be completed under the supervision of the permit holder. The permit holder shall at all times conduct work within County right-of-way so as to avoid obstruction and hazard to the traveling public. Materials necessary for construction of driveway access points to the County roadway shall not be stored on the County right-of-way at any time. The roadway and roadside area where driveway access work has been performed shall be thoroughly cleared of all debris and extraneous material and shall be restored to a condition equal to or better than the original when construction is concluded.

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4.5 Inspection and Testing of Driveway Work

Adequate inspections ensure compliance with County requirements. In-progress inspections of all elements of work will eliminate the need of extensive post testing. At least one inspection at the conclusion of construction is required. In making this inspection, the Site Development Department shall check for compliance with these regulations, specific permit conditions and approved plans, and also for adequate cleanup of roadway surfaces and the right-of-way. Certificates of Occupancy shall not be issued by the Building Department until driveway work is determined to be satisfactory by the Site Development Department.

Any work or material determined not to conform to these regulations as well as any pavement failures or broken asphalt, damaged signs or fencing, and remaining debris either in the roadway or adjacent property, or improper drainage reported to and observed by the Site Development Department shall be brought to the attention of the permit holder both verbally and in writing. Any work in which untested or unaccepted materials are used shall be ordered removed and replaced at the permit applicant's expense. Any required corrective work shall be made at the permit applicant's expense and shall be done to the satisfaction of the Site Development Department. If immediate corrections are not made, further project construction shall be stopped.

In determining whether or not the driveway work done by the permit holder is acceptable, the Site Development Department may consult with the Road and Bridge Department. If a determination is made that testing by a third party is required, the number and location of the tests shall be determined by the Site Development Department and the cost of such testing shall be paid by the permit holder. If the Site Development Department determines testing by an independent lab is necessary, the cost of such testing shall be paid by the permit applicant.

4.6 Responsibility for Rework on Driveway Connections

The permit holder shall be fully responsible for the maintenance and correction of any faulty construction, including unstable road cuts and potholes developed during the construction period and for a period specified in Chapter 5, Section 5.10. All deficiencies shall be resolved to the satisfaction of the Road and Bridge Department. Failure to do so could be cause for denial of future permits.

4.7 Driveway and Parking Areas

4.7.1 Requirement for Driveway Permit:

Whenever a property owner, developer, contractor or other individual proposes to connect a driveway or parking area to the public roadway, they must obtain approval for a Driveway Permit from the Site Development Department prior to commencing construction.

4.7.2 Requirement for Grading Permit:

When road grading of an existing road on private property is proposed the individual responsible for the construction must obtain approval for a grading permit from the Site Development Department prior to commencing construction.

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4.7.3 Standards for Driveway Design:

A driveway is defined as an accessory 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 businesses; recreational, institutional, or industrial land uses. For purposes of this regulation only, single family residences shall be defined as individual detached houses or duplexes (two single family residences) either of which are on individual platted lots or on footprint lots with surrounding property held in common ownership. If an accessway serves more than five (5) individual single-family residences, it shall be classified as a roadway rather than a driveway and must meet the County's standards and requirements for road construction. A driveway may provide access to a common parking area for multi-family residential development if the development meets all Clear Creek County regulations for multi-family development. An accessway serving a working ranch or farm and any associated residence regardless of length shall be considered a driveway, and shall meet only such standards as are necessary for public health and safety and as outlined in this section.

A. Location of Driveways Relative to Intersections:

Driveways shall be placed so the following minimum distances are maintained to any street intersection.

Where the driveway connects to a local access or low volume road, a minimum distance of 50 feet from curve return to edge of right-of-way at the intersection shall be maintained. If the required driveway separation distance cannot be met for a T-intersection of two roads, the driveway shall be aligned as close to opposing road as possible.

Where a driveway connects to a collector or larger road, a minimum distance consisting of the left turn stacking distance plus 20 feet as measured from outside of flares, shall be maintained (see Figure 16). The left turn stacking distance shall be determined by the Road and Bridge Department based on an acceptable traffic study. If a traffic study is not available, or date provided is incomplete, the Road and Bridge Department shall estimate the length of the left turn stacking distance.

B. Spacing of Driveways:

Driveway openings shall be separated by at least 30 feet, as measured from outside of flares, or else shall be combined. More spacing may be required for traffic safety and proper traffic operation.

C. Shared Driveways:

Developers or property owners proposing the use of shared driveways shall record an easement defining the location of the driveway in a form acceptable to the County.

D. Horizontal Alignment and Horizontal Curves:

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1. The dimensions of driveway widths, openings, centerline curve radii and turnout spacing shall be as shown in Table 12. Turn Out dimensions are given in Figure 23.
2. All driveways exiting onto collector roads, roadways with average daily counts greater than 700 vehicles per day, or driveways in excess of 100 feet shall be designed with a vehicle turnaround within 50 feet of the dwelling unit to avoid vehicles having to back onto the roadway when exiting (See Figure 24). Driveways serving multi family, industrial, or commercial developments shall provide a turnaround as specified in Figure 7 if the driveways dead ends.
3. Driveways serving single-family residences must be either graveled or paved. Where roads are paved, driveways serving duplexes must be paved. Where a driveway is to be graveled the surface shall be constructed of four inches of road base compacted to a minimum of 95% of the maximum dry density at +/- two percent (2%) of optimum moisture content as determined by AASHTO Method T-180. Where driveway serving a single-family residence or duplex is to be paved, the surface shall be constructed of four inches of compacted road base and two inches of pavement that can be placed in one lift.
4. Driveways serving multifamily residences, commercial or non-residential uses must be designed in accordance with Section 2.4.3.C., with TI equaling 6.0. Single-family and duplex residences may only have one access point onto the County road system unless a minimum separation of 250 feet can be provided. Otherwise, looped driveways are not allowed. Where a lot has two different roads to provide driveway access, access shall always be onto the road with the lowest functional classification.

E. Driveway Cross Section:

1. Driveways constructed on natural slopes greater than 20% shall be super-elevated toward the cut slope as shown in Figure 13.
2. Driveways constructed on natural lateral slopes less than 20% may be crowned as shown in Figure 14.

F. Vertical Alignment and Vertical Curves:

1. Driveways shall have a maximum grade of 8% for the first 25-feet from the connection to the road.
2. Grades less than 1% are not allowed.
3. The maximum allowable grade on straight sections of driveway is 12%.
4. The maximum allowable grade on sections of driveway with a radius of less than 50 feet is 8%, as measured along the center line.

G. Cut Slopes:

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1. Cut slopes may be constructed as steep as 1½:1, but only where lot line proximity or building site natural grade imposes restrictions (30% slope and greater).
2. Cut slopes steeper than 1½:1 require a stability report prepared by a Geotechnical (Soils) Engineer confirming competent slope material prior to approval from the county.
3. In areas of solid rock, slope shall not be cut steeper than 1:1. Slopes steeper than 1:1 require a stability report prepared by a Geotechnical (Soils) Engineer confirming competent slope material prior to approval from the county. Exposed rock faces shall be free of all loose material.
4. All slopes shall be made sufficiently stable to prevent failures. Steep driveway cut slopes not in solid rock, require retaining wall built to prevent slope failure.
5. Retaining walls require plan submittal and approval by the county. All retaining walls with a vertical height greater than 4 feet shall be of an engineer approved design.

H. Fill Slopes:

1. Fill slopes may be constructed as steep as 1½:1, but only where lot line proximity or building site grade imposes restrictions (30% slope and greater).
2. Fill slopes constructed at a 1½:1 slope shall be constructed so that the toe of the slope is keyed into the natural slope and/or supported by a retaining wall.
3. Retaining walls with heights greater than 4 feet shall be designed and certified by an engineer.
4. Organic materials shall not be placed in fills. Rock material with a maximum dimension greater than 12 inches shall not be buried or placed in fills.
5. Rock disposal areas are to be delineated prior to issuance of driveway and excavation permits
6. Fills shall be compacted to a minimum of 90% of the maximum dry density at +/- two percent (2%) of optimum moisture content as determined by AASHTO Method T-180.

I. Drainage:

1. All driveway accesses from existing private or public roads, which interfere with a natural or constructed drainage course, shall provide a drainage culvert. The culvert shall be a minimum of 18" diameter, but will carry the flow of a 10-year storm event, and be positioned offset to the drainage ditch centerline, away from the traveled portion of the access road.
2. Cross road drainage will be provided at a minimum of every 800 feet or where an identifiable drainage course is defined.

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3. Culverts under driveways at intersections shall be of sufficient length to properly fit the radius of flare required and shall be no more than 30 feet in length unless otherwise approved by the Road & Bridge Department.
4. Culvert inlets and outlets shall be designed to cause minimal erosion, and erodible soils shall be adequately protected by riprap, flares, or energy dissipaters.
5. All springs, seeps or bogs evidenced within the proposed driveway shall be treated with a subsurface drainage treatment approved by the county.
6. All driveway culverts shall have a minimum of 6 inches of cover unless otherwise approved by the Site Development Department.

J. Construction Plans and Specifications:

1. All work shall be performed as specified in the latest edition of these standard specifications and any referenced manuals indicated herein.
2. Geotechnical reports analyzing soil and geotechnical 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 shall be prepared by a qualified geotechnical engineer or professional geologist.
3. 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.

K. Fire Protection and Emergency Access:

1. Emergency access must be maintained at all times.

L. Embankments and Stabilization:

1. Fill shall be developed generally in horizontal layers of similar materials for their length and width, and compacted to a minimum of 90% of the maximum dry density at +/- two percent (2%) of optimum moisture content as determined by AASHTO Method T-180.

M. Intersections:

1. Intersections shall meet at right angles of each other. With supporting justification, a relaxation of up to 15° can be requested from the county.
2. The portion of driveway though the right-of-way connecting the property with the physical roadway shall be the shortest perpendicular distance possible.
3. Driveways shall be sloped down and away from the road at a minimum of 2% for the length of the Right-of-Way but no less than 10 feet.

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4. Driveways shall maintain a grade equal to or less than the crown slope of the road from the point where the driveway meets the road to where the driveway crosses the ditch line (Figure 15).
5. No horizontal curves shall carry onto the existing County Right-Of-Way in the design of the driveway or private road.
6. Driveways shall be designed and located to provide a minimum sight distance clear of all obstructions, natural or man-made, for at least 200 feet in either direction on local access roads and 400 feet on collector roads.

N. Signs and Delineation:

1. All signage, delineation, and mounting devices on driveway approaches, adjacent to the county roadway but within the Right-Of-Way, shall be in conformance with the Manual of Uniform Traffic Control Devices, the most recent Colorado Supplement, and the County Sign Regulations.
2. All necessary delineation must be installed prior to County approval.
3. Stop signs shall be installed at the junction of a driveway with a roadway for all driveways serving six (6) or more residential units, commercial shopping areas, or when required by the Road and Bridge Supervisor for protection of public safety.

O. Utilities:

1. Overhead utilities shall at least meet minimum vertical clearances specified by the utility company or Colorado Public Utilities Commission requirements above the driveway and in no case shall the vertical distance be less than 16 feet 6 inches.

P. Bridges:

1. See Section 2.61 and 2.62.

Q. Maintenance:

1. The property owner/owners assumes responsibility for the maintenance of the driveway approach. All snow, ice, or sleet removal from the portion of the driveway approach, including that deposited on the driveway in the course of snow removal operations by the County Road and Bridge Department, is to be done by the property owner.
2. Pushing snow from a driveway onto a County roadway is prohibited. Snow storage for driveways shall be provided on the owner's property. Use of the right-of-way for snow storage by private individuals or companies is prohibited (C.R.S. 43-5-303). The property owner/owners assumes responsibility for the replacement, maintenance, and cleaning of the culvert installed in the driveway approach (See Section 3.3.6.D.2).

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3. Road & Bridge may require owners to heat tape their culvert to ensure flow during the winter months to minimize the potential of ice forming on roadways (see Chapter 6 Section 6.8.2).

R. Deviations from the Standards:

1. All new driveway construction commencing after adoption of these standards shall adhere to these driveway standards unless a deviation from the standards is granted in accordance with Appendix Chapter X of the Clear Creek County International Code Series.
2. Request for deviation from the driveway standards contained herein must be submitted to the Site Development Department in writing with appropriate justification for consideration for approval.
3. When driveways are granted a deviation to a lesser standard, building construction must meet the criteria set forth by the Wildfire Hazard Mitigation Plan.

4.7.4 Standards for Parking Areas:

A. Parking Index:

The Parking Index standards are specified in the Clear Creek County Zoning Regulations Section 10, Part 1006.1.5.

B. Parking Area Grades:

Parking areas shall have a maximum grade of 4%, and a minimum grade of 1% to facilitate drainage.

C. Surfacing of Parking Areas:

Paving is not required for parking areas and driveways serving single-family units, or for duplexes and Recreational Use Facilities with less than 20 vehicle parking spaces where the road providing access is not paved. Where roads are paved, parking areas for duplexes and recreational areas must be paved.

Unless specifically exempted above, parking areas and drives must be paved with a minimum of six inches of road base compacted to a minimum of 95% of the maximum dry density at +/- two percent (2%) of optimum moisture content as determined by AASHTO Method T-180 and three inches of pavement; or shall be designed in accordance with Section 2.4.3.C, with TI equaling 6.0.

D. Provision for Drainage in Parking Areas:

Parking area design shall made adequate provision for drainage and prevention of erosion. Drainage from parking areas shall flow to roadside ditches or other approved drainageways. Drainage from parking areas shall not flow onto roadways. Collection points for runoff across parking areas shall be provided to minimize sheet flow.

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E. Placement of Parking Areas on Fill:

If a parking area is to be placed on fill, the fill used shall be suitable material as specified by a registered geotechnical engineer. The fill shall be compacted to a minimum of 95% of the maximum dry density at +/- two percent (2%) of optimum moisture content as determined by AASHTO Method T-180with slopes at no more than 1½:1 (H:V) and protected by rip-rap to prevent erosion from snow storage.

F. Use of Parking Area in Lieu of Meeting Driveway Grades:

In instances where construction of a single family or duplex unit is proposed, and it is not possible to build a driveway to County standards for driveway grades because of the steepness of the lot, a parking area which does meet County standards may be built adjacent to the road which provides access to the lot in lieu of meeting driveway grades. The parking area must be outside the road right-of-way and within 150 feet of the residential structure. The parking area shall be sized so, whenever possible, vehicles can be maneuvered within the parking area so they will not be backed onto the road when exiting. The minimum size for parking areas shall be 400 square feet for each unit served. Parking areas shall not be designed so vehicles are parked end-to-end or parallel to the road, but must allow for cards to be parked side-by-side.

G. Snow-Stack Storage:

Snow storage for parking areas shall be provided on the associated private property. Use of the right-of-way for snow storage by private individuals or companies is prohibited (C.R.S. 43-5-301).

H. Parking Dimensions:

Parking space dimensions and parking lot layout are per Figure 17.

4.8 Landscaping and Erosion Control

Whenever roadway or bridge construction results in earth disturbance, revegetation and reforestation is required per the Clear Creek County Best Management Practices Manual. The site plan shall be approved by the Site Development Department and shall be completed during the first planting season after construction. Native or similar horticulture material shall be used. All areas disturbed by construction operations and not otherwise covered by structures or pavement must be seeded and otherwise treated to provide an established stand of vegetation. Cut and fill slopes must be treated to prevent erosion. Areas not disturbed by construction shall be left in their present vegetative state, except that thinning of trees may be required. In no case shall landscaping in the right-of-way or on private property impede the normal maintenance operations of the Road & Bridge Department or the normal flow and operations of traffic. Specific requirements are as follows:

Erosion Control and Environmental Mitigation Efforts for Driveway Construction:

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1. The faces of cut and fill slopes shall be prepared and maintained to control against erosion.
2. This control shall consist of effective planting as a permanent control measure.
3. Permanent soil stabilization measures shall be installed within thirty (30) days after final grade is reached. Planting shall occur within the next window of opportunity should construction be completed during winter months.
4. Were cut slopes are not subject to erosion due to the erosion-resistant character of the materials, such protection may be omitted.
5. Where necessary, check dams, cribbing, riprap, or other devices or methods shall be employed to control erosion and provide safety.
6. Preserve existing trees, shrubs and grasses where possible to prevent erosion.
7. No work may interfere with the flow of storm water.
8. Excavations shall be constructed so they are stable.
9. Storm water runoff shall be discharged from the site in quantities and at velocities not to exceed historic levels.
10. All erosion control devices shall be maintained so that they function as designed.
11. Dust emissions (wind erosion) shall be controlled.
12. Temporary erosion protection shall be installed prior to excavation.
13. All topsoil shall be salvaged and redistributed.
14. Road crossings across water courses designated as “Waters of the United States” must meet the requirements set forth by the Army Corps of Engineers for permitting before a County permit will be issued.

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Table 4 – Stopping and Passing Sight Distance

Design Speed	Stopping Sight Distance	Passing Sight Distance
15	100	500
20	150	700
25	200	900
30	250	1100
35	300	1300
40	400	1500
45	500	1650
50	600	1800
55	700	1950

Table 12 – Driveway Widths

Driveway Widths				
Type of Service	Minimum Driveway Driving Surface Width	Opening Width (including flares)		Minimum Centerline Radius of Curvature
		Minimum	Maximum	
Commercial	22 feet	24 feet	*	65 feet
Residential				
Single Family:				
<200' in length	12 feet	18 feet	24 feet	40 feet
>200' in length	14 feet	18 feet	24 feet	40 feet
Serving two to five units:				
<200' in length	14 feet	20 feet	24 feet	40 feet
>200' in length	16 feet	20 feet	24 feet	40 feet
Multi-Family	22 feet	24 feet	30 feet	65 feet
	Turnout Spacing for Driveways			
	Length	Turnouts		
	< 400 feet	None		
	400 – 800 feet	One turnout at midway point of driveway		
	> 800 feet	Every 400 feet		
*To be determined at time of site plan review.				

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Figure 7 – Hammerhead and Cul-De-Sac Designs

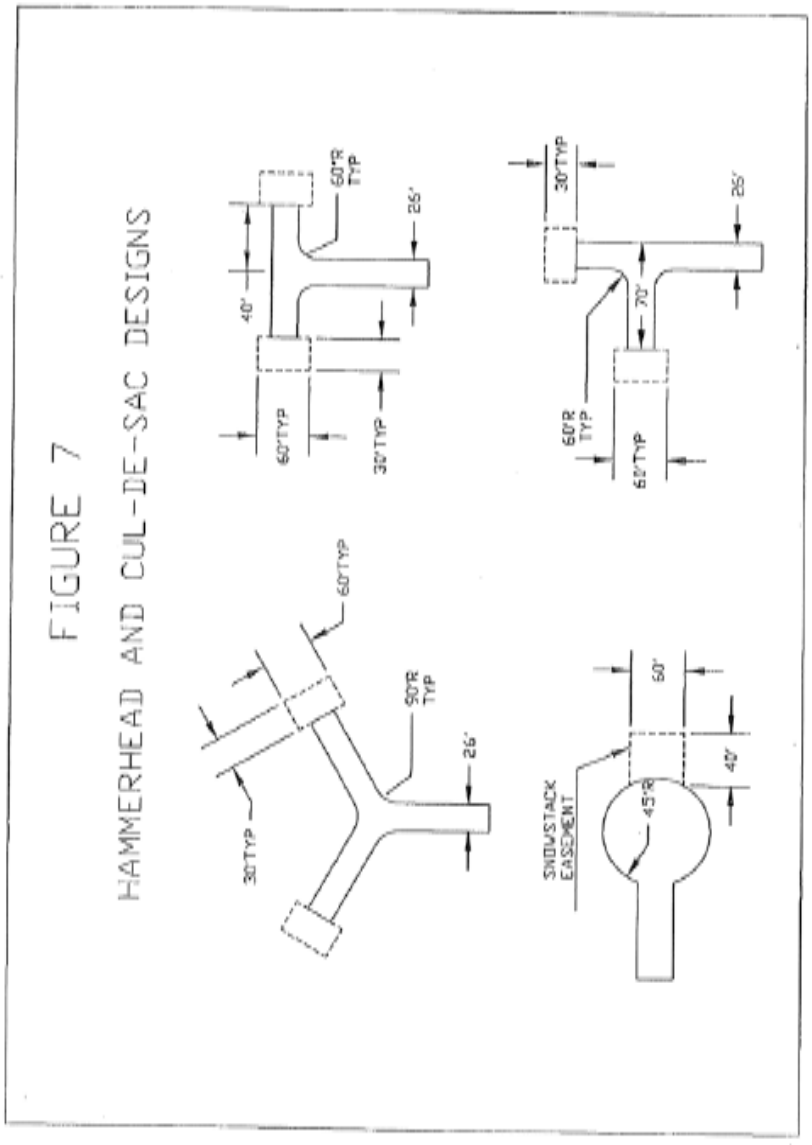

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Figure 13 – Typical Cross Section Super Elevated

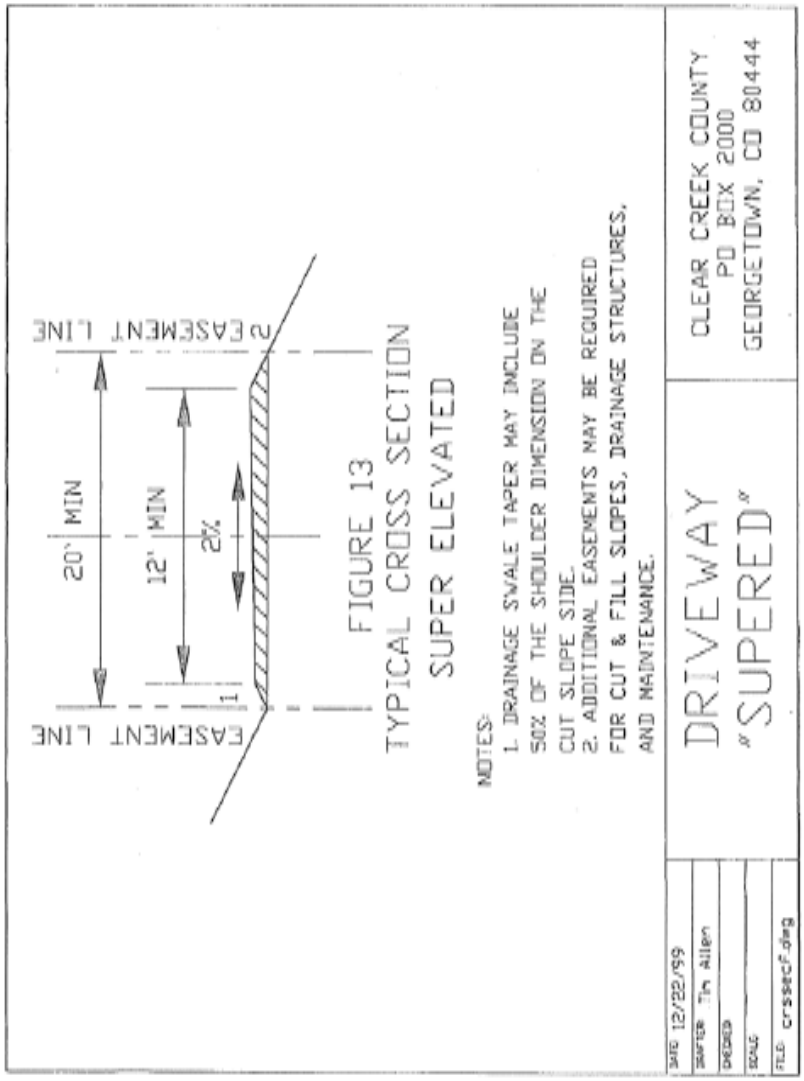

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Figure 14 – Typical Cross Section of a Crowned Driveway

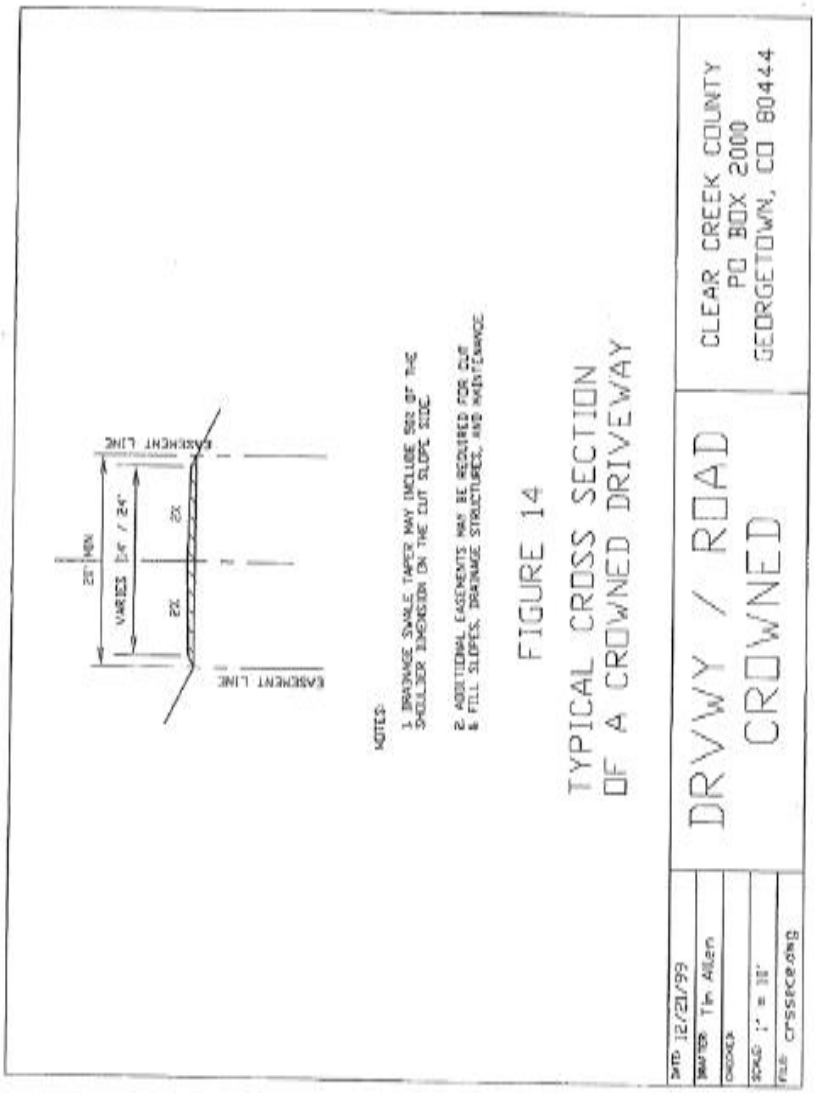

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Figure 15 – Typical Cross Section of a Driveway Approach

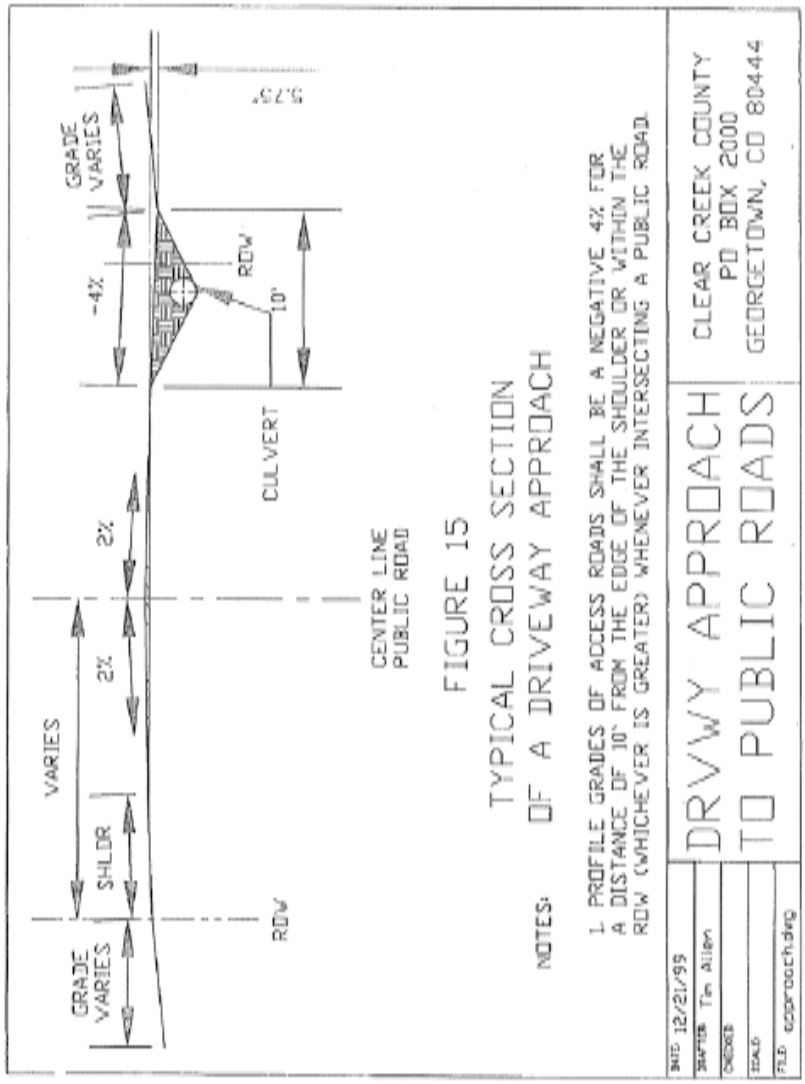

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Figure 16 – Driveway/Intersection Spacing

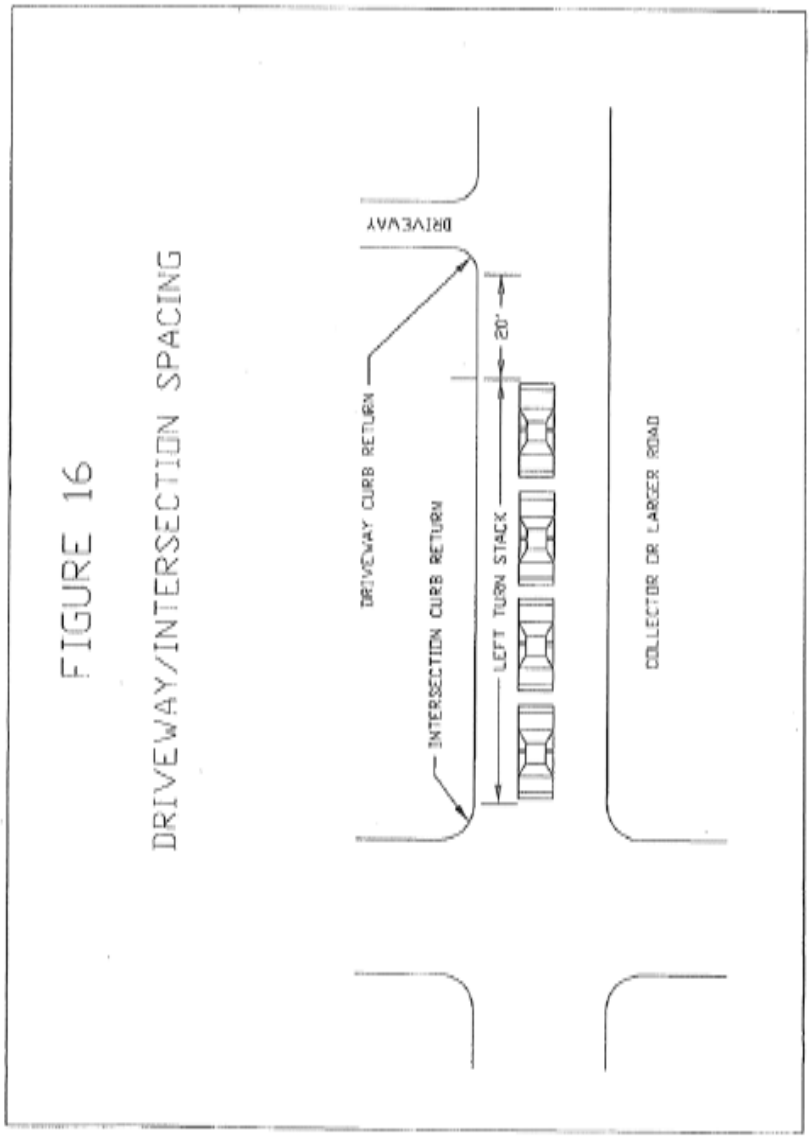

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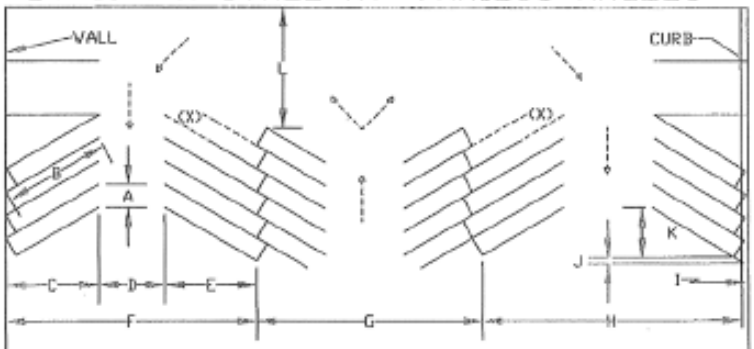
Figure 17 – Parking Layout Dimensions

FIGURE 17
PARKING LAYOUT DIMENSIONS FOR 9 FT. BY 19 FT. STALL AT VARIOUS ANGLES



WALL TO INTERLOCK INTERLOCKING MODULE INTERLOCK TO CURB

X = STALL NOT ACCESSABLE IN CERTAIN LAYOUTS

DIMENSION	ON DIAGRAM	ANGLE			
		45	60	75	90
Stall Width, parallel to aisle	A	12.7	10.4	9.3	9.0
Stall length of line	B	28.0	24.2	22.3	19.0
Stall depth to wall	C	19.8	21.0	21.0	19.0
Aisle width between stall lns	D	12.0	16.0	19.0	22.0
Stall depth, interlock	E	16.6	18.7	19.0	19.0
Module, wall to interlock	F	48.4	57.7	59.0	59.0
Module, interlocking	G	45.2	53.4	57.0	59.0
Module,interlock to curbface	H	46.4	55.2	55.5	56.5
Bumper overhang (typical)	I	2.0	2.3	2.5	2.5
Offset	J	6.4	2.6	2.5	2.5
Setback	K	13.1	9.3	4.8	0.0
Cross aisle, one way	L	14.0	14.0	14.0	14.0
Cross aisle, two way	M	22.0	22.0	22.0	22.0

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Figure 23 – Driveway Pull Out

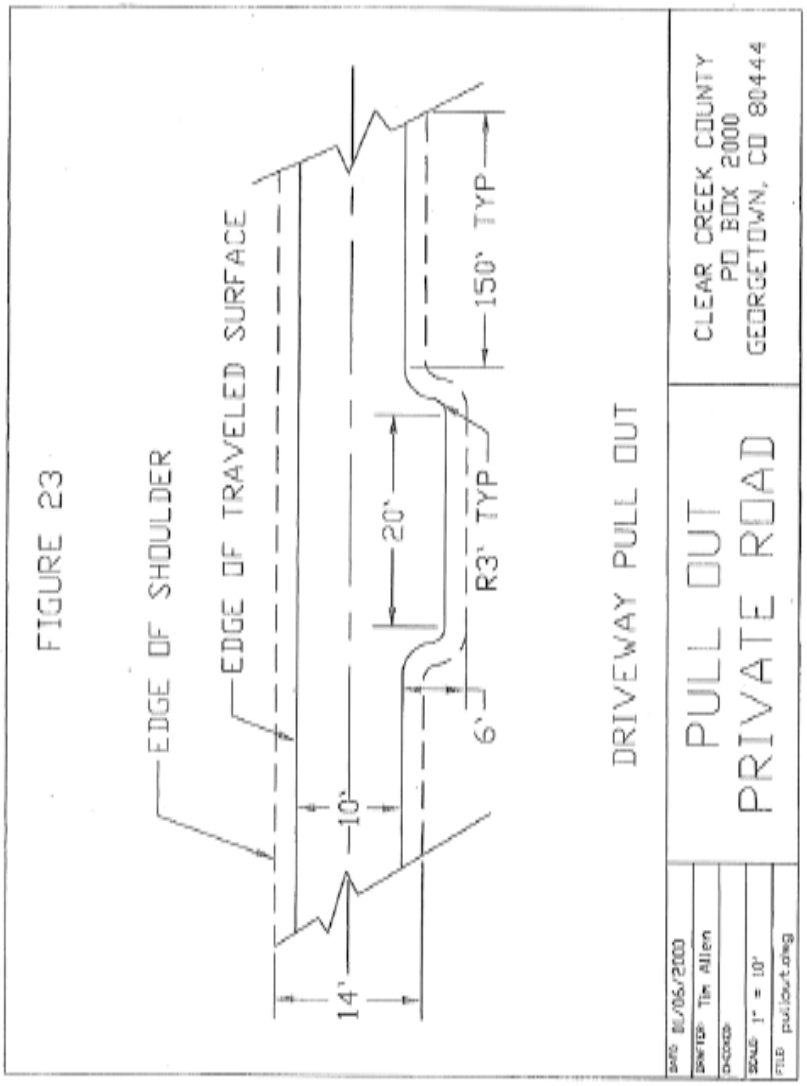

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Figure 24 – Driveway Turnaround

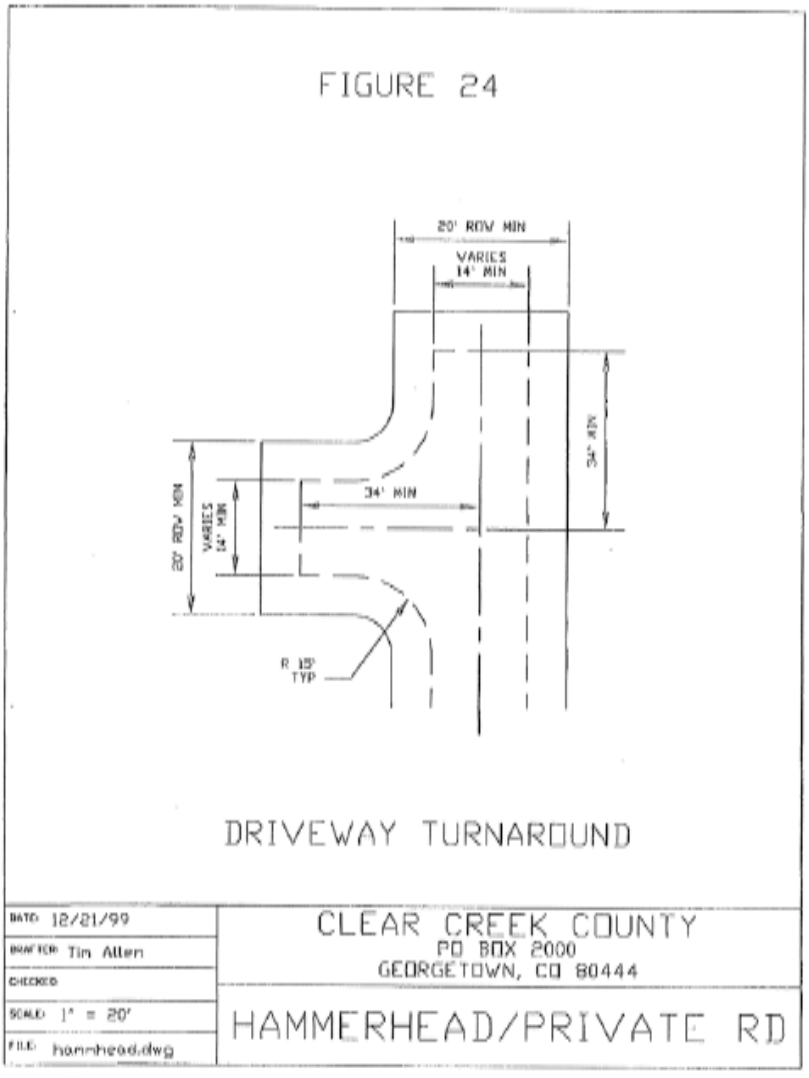

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EXHIBIT 3 – International Residential and Building Code

Clear Creek County Best Management Practices Manual

Amended 11/26/12

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BMP Manual Table of Contents

Topic Page

BMP: REVEGETATION

1. METHODS: The primary purpose of revegetation is erosion control. Grass provides the best protection for the first few years. Grasses germinate and grow quickly and provide a fast and complete ground cover. Trees and shrubs are effective for long-term erosion control, but grasses are needed for initial soil protection until the slower growing trees and shrubs become well established. Decorative landscaping with trees and shrubs can be done later.

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The harshness of the mountain climate, geologic conditions, and the steepness of the terrain make it difficult for plants to become established. The steeper the slope, the more difficult it is. You will have the greatest chance of success with revegetation if you keep the area and angle of disturbed slopes to a minimum.

Before you can revegetate an area, you must first roughen or loosen the soil surface so that seeds can get a foothold in it. Use a dirt rake or tiller. Broadcast the seed by hand or with a "belly grinder." Rake the soil after seeding to cover the seeds with ¼" - ½" of soil. The Site Development Inspector may require the addition of topsoil to sites having or which generate extremely rocky soils as a good seedbed is crucial to successful revegetation. Slope degree may require hydroseed/hydromulch as per the County's adopted revegetation policy below. Revegetation efforts shall provide for at least 70 percent coverage of the disturbed areas. The Site Development Inspector shall inspect the site periodically for two (2) years from the date revegetation work is completed to ensure compliance. If 70 percent coverage is not obtained, the property owner may be required to provide for additional revegetation.

The time of planting depends on whether or not you irrigate. If you choose to irrigate, you must continue irrigating until the grass is well established.

- If you do not irrigate:

  (a) Plant seeds as late as possible in the fall but before the ground is frozen and before snowfall. October and November are generally good months to seed. Seeds planted too early in the fall may germinate with fall rains and the young seedlings can then be killed by frost.

  Or,

  (b) Plant seeds in April or May as soon as possible after snowmelt.

- If you are legally allowed to irrigate:
  Plant seeds as soon as possible after grading is completed and the area can be closed to vehicle traffic. During the germination period (at least the first 2 weeks), irrigate often enough to keep the seedbed moist. You may have to water more than once per day. Water with fine spray to avoid washing away seeds and soil. Water only long enough to moisten the first 2" of soil. You can discontinue irrigating when the grass is about 6" tall.

2. MATERIALS: The following grass seed mixtures are suggested for the three major habitats encountered in higher elevations of Colorado.

- Roadside Mix – Drought tolerant grasses for roadside stabilization consisting of tall and low growing bunchgrasses for rapid establishment and long term persistence.

SEED	**VARIETY**	**(LB per ¼ Acre)**

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Slender wheat grass	San Luis, Revenue	2¼
Mountain Brome	Broman	2¼
Orchard grass	Paiute, Potomac	1
Hard Fescue	Durar	1
Sheep Fescue	Covar	1
		7½

- Landscape Mix – Low growing grasses comprised of bunchgrasses and sod formers giving a varied texture for transitional areas adjacent to buildings.

SEED	**VARIETY**	**(LB per ¼ Acre)**
Chewing Fescue	Shadow	2¼
Red Fescue	Pennlawn	2¼
Hard Fescue	Durar	1½
Sheep Fescue	Covar	1½
		7½

- Meadow Mix – For wetter sites adjacent to streams and in meadow areas where there is a high water table.

SEED	**VARIETY**	**(LB per ¼ Acre)**
Meadow Foxtail		¾
Smooth Brome	Manchar	1½
Tufted Hairgrass		½
Red Fescur	Pennlawn	¾
Timothy		½
Kentucky Bluegrass	Park	1
		5

3. MAINTENANCE TIPS: Fertilizing: Apply 5 lbs./1000 sq. ft. of 16-20-0 fertilizer with 15% sulfur (ammonium phosphate sulfate) at the time of seeding. Reapply once per year in the spring until the soil is well protected with grass. Do not over fertilize. Excess fertilizer will wash away and can pollute downstream water resources.

4. TEMPORARY OR PERMANENT USE: Revegetation can be a temporary or permanent BMP.

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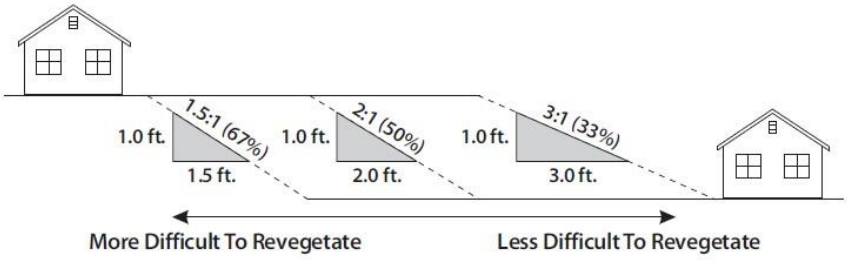
Clear Creek County's Re-vegetation requirement is: 1) Slopes constructed at >3:1 (horizontal to vertical) can be hand seeded and mulched. 2) Slopes constructed at 3:1 to 2:1 to must be hydroseeded/hydromulched. 3) Slopes constructed at 2:1 to 1½:1 must be hydroseeded/hydromulched and have slope netting/erosion control blankets installed (or equivalent erosion control measure with the approval of the Site Development Inspector). Slopes steeper than 1½:1 are not permitted or require retaining walls.

Permanent soil stabilization measures shall be installed within thirty days after final grade is reached. If construction is completed during winter months, planting should occur within the next window of opportunity. Silt fence or brush barrier to be installed on downhill side of excavation.

Determining Steepness of Grade



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METHODS:

BMP: MULCHING

1. Mulch is essential for revegetation success. Mulch protects bare soil from erosion until new vegetation grows large enough to do the job. It also holds seed and fertilizer in place, keeps soil moist and shades seedlings, helping them to become established.

Straw is the best mulch material. Apply 1 bale of straw per 1,000 sq. ft. Distribute the straw evenly so that it forms a layer 1" to 2" thick. Soil should still be visible through the straw mat. If you apply too much mulch, it may produce a mat too dense for seedlings to penetrate.

Anchor the straw by punching it into the soil every 1' to 2' with a dull, round-nosed shovel to avoid cutting the straw) or by covering it with netting (jute, plastic mesh, woven paper, or chicken wire). Fasten the netting to the ground with wire staples. Because the soils in many areas are quite hard, you may have to use netting to anchor the straw.

Wood fibers, wood chips, and pine needles are other usable mulch materials. Wood fiber mulch is applied hydraulically in a slurry that also contains the seed and fertilizer. It is suitable for use on steep slopes or large areas and must be applied by a contractor. (The application rate for wood fiber mulch is 3,000 lbs/acre.) Wood chips and pine needles can protect the soil from erosion, but they also inhibit plant growth. They can only be used where a grass cover is not desired. Apply wood chips so that the soil is completely covered. Apply pine needles in a layer 2" to 3" thick. You can save the pine needles from graded areas on your property to use as a mulch later, but you will probably have to supplement them with wood chips to achieve an adequate ground cover.

2. MATERIALS:

- Straw, wood fibers, wood chips, or pine needles.

3. MAINTENANCE TIPS:

- Replace as required.

4. TEMPORARY OR PERMANENT USE: Mulching is a temporary BMP.

1. METHODS:

BMP: SLOPE NETTING/EROSION CONTROL BLANKETS

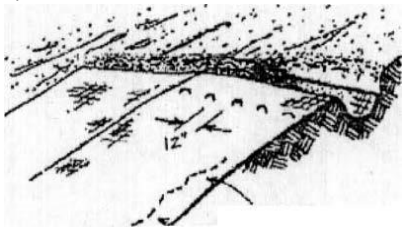
1. METHODS: Netting or erosion control blankets are often used to hold mulch in place on steeper slopes. Netting can be used by itself to protect seeds and soils from washing away during watering or rain storms. The following installation procedures should be used.

A. Starting above the mulched area, bury top end of strip of netting material in a trench at least 4" deep.

B. Fill trench with soil and tamp firmly. Fasten with a row of staples 12" apart.

C. Overlap lower end of uphill strip over next strip at least 12" and secure with staples 12" apart.

D. Continue adding strips of material until entire mulched area is covered. Overlap sides of strip at least 4" and staple as shown.



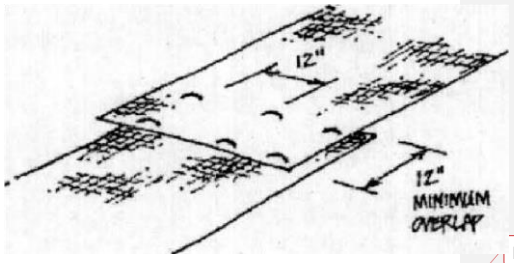
Outermost edge of mulched area

2. MATERIALS:

- Jute, excelsior, fiberglass, or plastic netting. (Do not use plastic sheeting or filter fabric.)
- Wire staples, no.11 gauge or heavier, 6" to 10" long. (Use longer staples on loose soils.)

3. MAINTENANCE TIPS:

- Inspect and repair as needed.



4. TEMPORARY OR PERMANENT USE:

- Slope netting is a temporary BMP. Remove nonbiodegradable netting and staples when vegetation is stabilized.

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BMP: TREE PROTECTION

Trees and other native vegetation must be protected against construction damage. Protect vegetation by following these guidelines:

A. Do not nail boards, filter fabric, or anything else to trees.

B. Grading, paving, or placing fill within a tree's drip line are not allowed except when all of the following are met:

- encroachment is only on one side of tree; encroachment is no closer than 5' from the trunk or no more than ½ the distance between the drip line and the trunk;
- a drainage system that allows air and water to circulate through the root zone is placed under all fills over 1' deep within the drip line; and
- care is taken not to cut tree roots unnecessarily or to compact the soil around them.

C. Remove low tree limbs that are likely to be broken by construction activities. Cut the limb flush to the trunk or main branch. Paint cut or damaged limbs, trunks or roots with a good grade of tree paint.

D. When planting new vegetation, water frequently and protect from adverse weather conditions.

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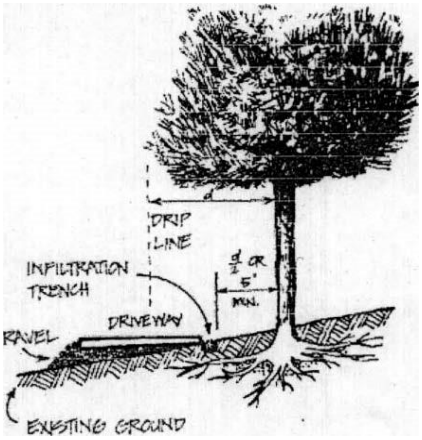
1. **METHODS:**
2. **MATERIALS:**
None required but materials such as plastic construction fence or silt fence could be used to delineate the area of non-disturbance.

3. **MAINTENANCE TIPS:**
Water as required and wrap if necessary.

4. **TEMPORARY OR PERMANENT USE:** Tree protection can be a temporary or permanent BMP.



BMP: SURFACE ROUGHENING

1. **METHODS:** Surface roughening involves roughening previously disturbed soils. Surface roughening is used to reduce the speed of runoff, increase infiltration, reduce erosion, trap sediment and prepare the soil for seeding by capturing moisture for the seed. The soil surface is considered roughened if depressions are created 2 to 4 inches deep and spaced approximately 4 to 6 inches apart. Revegetation is required within 30 days of surface roughening or the next window of opportunity.

2. **MATERIALS:**
   - Dozer, tracked machine or tiller.
   - Seed, mulch and/or erosion control blankets.

3. **MAINTENANCE TIPS:**
   - Do not drive over areas that have been treated.
   - Revegetation must occur within 30 days or next window of opportunity.

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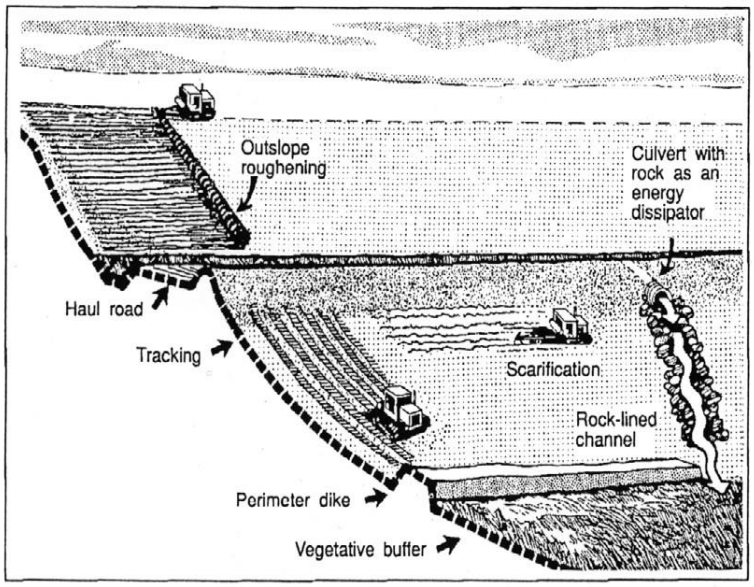
4. TEMPORARY OR PERMANENT USE:

- Surface roughening is a temporary BMP until revegetation occurs.



BMP: BERMS AND DITCHES

A berm is a ridge of compacted soil. A ditch is a small drainageway. Both of these structures have similar purposes. Berms and ditches should be used:

- Above disturbed slopes
- Around graded areas (to keep clean runoff out and to contain sediment-laden runoff within)
- Along slope benches
- Above leach fields when required.

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1. METHODS:

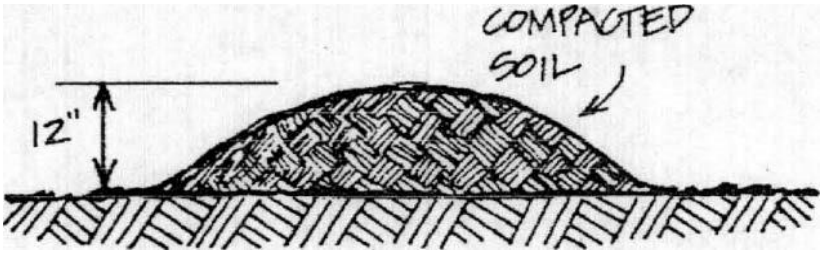
The most common use of berms and ditches is to divert upland runoff away from exposed soil to a protected outlet (such as an infiltration trench, storm drain, or stable channel). When a berm or ditch is used to contain runoff from a disturbed area, you must route the sediment-laden water to a sediment trapping device (see section on sediment basins).

The following method should be used to construct a berm:

A. Deposit a ridge of soil about 18" high with a shovel or backhoe.

B. Compact the soil by rolling or tamping until it has the dimensions shown.

C. Vegetate permanent berms with installation of an erosion control blanket.



The following method should be used to construct a ditch:

A. If the drainage area to the ditch is ¼ acre or less, dig the channel 8" deep. If the drainage area is ¼ to 2 acres, dig the channel 12" deep. Deposit the excavated soil where it will not wash into a drainage way (such as on the downhill side of the ditch).

B. Compact the channel by tamping or rolling.

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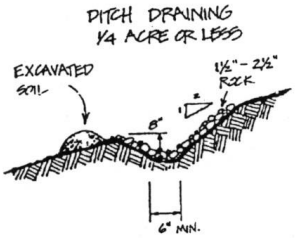

C. Line temporary ditches with rock, filter fabric, plastic sheeting or jute netting. Do not construct a temporary ditch at a slope exceeding 15%.

D. Line permanent ditches with rock, asphalt or concrete. Install a rock lining as shown here. Do not install a rock lining on a ditch steeper than 15% slope.

E. Install an outlet protector or infiltration system at the end of the ditch.

2. MATERIALS:

- Use rock, filter fabric, plastic sheeting or jute netting for temporary ditches.
- Use rock, asphalt or concrete for permanent ditches.

3. MAINTENANCE TIPS:

- Clean out upstream side of berms after snowmelt or storm event.
- Inspect dikes and ditches after each storm.
- Re-compact any loose soil on berms and ditches periodically.
- Fill gaps and low spots (such as tire tracks across a dike).
- If an unlined channel is eroding, line it with a suitable material.
- Repair damaged linings immediately.

4. TEMPORARY OR PERMANENT USE: Berms and ditches can be temporary or permanent BMPs.

BMP: SEDIMENT BARRIERS

Sediment barriers are temporary structures that slow runoff and trap small amounts of sediment. Sediment barriers can be built with:

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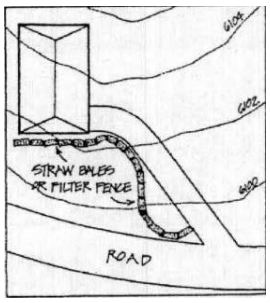
1. METHODS:

- Straw bales
- Silt fence or filter fabric attached to a wire fence or to straw bales
- Erosion Control Log/wattle
- Native Erosion Control Log, or
- Sandbags



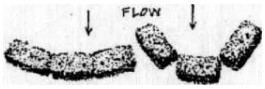
Sediment barriers should be used:

- Below small disturbed areas;
- At the base of exposed slopes;
- Along streets, curbs, and property lines (below disturbed areas).

The following method should be used to install straw bales:

A. Dig a 6-inch deep by 2-foot wide trench. Align trench along contour but curved slightly uphill so runoff cannot escape around the end bales.

B. Place bales in trench with ends tightly abutted.



C. Anchor each bale with 2 re-bars or wood stakes hammered 1½ to 2 feet into the ground.

Angle first stake in each bale toward the *IncorrectCorrect* previously laid bale.

D. Wedge loose straw between bales.

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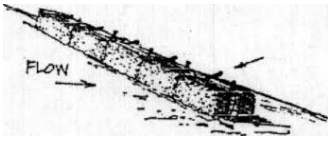
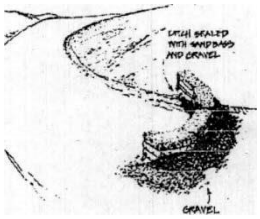
Backfill and compact the excavated soil against the uphill side of the barrier.



E. When installing bales on pavement, you can pile gravel or rock behind the bales to hold them in place.

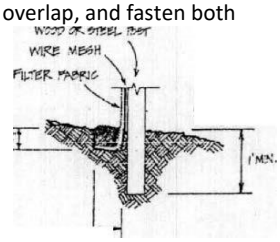


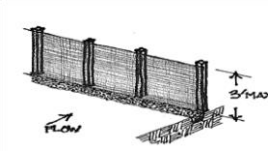
SILT FENCE: Silt fence is required when excavation occurs next to any watercourse and must be installed prior to any earthwork.

The following method should be used to install silt fence or filter fence:

A. Space posts no more than 10' apart and drive them at least 1' into the ground, align the fence along the slope of the contour, curving it slightly uphill to avoid end runs.

B. The fabric should not extend more than 3' above the ground. Cut filter fabric from a continuous roll to avoid having joints. Where joints are necessary, splice the fabric only at a post, with at least a 6" overlap, and fasten both ends securely to the post.





C. Fasten mesh to uphill side of posts with staples or wire, extend mesh to bottom of trench. (Do not attach mesh or fabric to trees.)

D. Dig a 4" x 4" trench on the uphill side of the fence.

E. Backfill trench and compact the soil.

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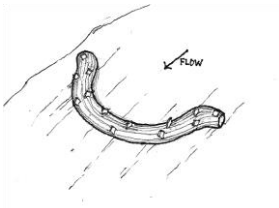
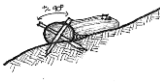
1. METHODS:

Note: Silt fences will not withstand high-volume of water, snow loading and high wind environments and often require higher maintenance.



The following method should be used to install an erosion control log:

A. Erosion control logs should conform to the slope and must maintain contact with the ground the entire length of the log. When installed in series as a wattle, ends should be tightly fastened together with plastic ties.



B. Install using 1 ½" x 1 ½" x min. 24" wood stakes. Locate stakes at all ends or joints, otherwise on 24" centers. Alternate orientation throughout the length of the erosion control log. Proper staking is essential for erosion control log function.

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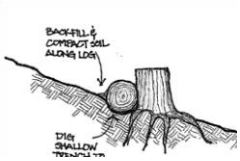
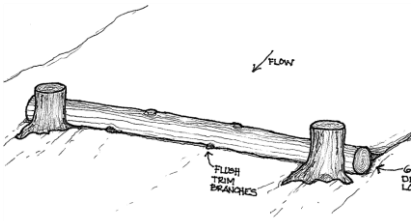
The following method should be used to install a native erosion control log:

A. Cut a native log to length, allowing for some overlap past each of the supporting tree stumps. Flush trim the branches.





B. Dig a shallow trench, slightly wider and longer than the log, on the uphill side of the tree stumps. Set the log into trench and against the supporting tree stumps.

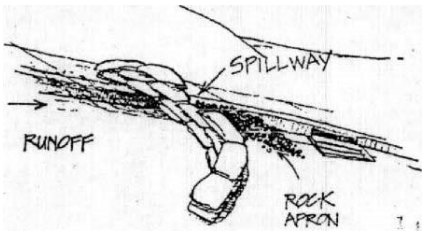
C. Backfill and compact the excavated soil along uphill side of the log barrier.

The following method should be used to install a sandbag sediment barrier:

A. Place a row of sandbags from the top of the curb to at least 3' into the driveway. Curve the barrier so the ends point uphill.

B. Place a second layer of bags overlapping the first. Press the bags tightly together to eliminate any spaces between the bags.

C. Place a third layer of bags on top leaving a 6" wide spill way near the center of the row.



D. If the driveway is unpaved, construct a rock apron below the downhill side of the spillway (see section on outlet protectors).

E. Add 1 or 2 more layers of bags, if necessary, to accommodate higher flow. If using more than 3 layers, place a second row of bags behind the first for reinforcement. Leave a gap in the top layer as a spillway.

2. MATERIALS:

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- For a straw bale sediment barrier, use straw bales (bound with wire or twine) and wood or steel stakes, minimum 4foot long (2" X 2" wood, re-bars or steel pickets), 2 stakes per bale.
- For a filter fence, use filter fabric (42 inches wide, tensile strength = 120 lbs., equivalent opening size 70); posts, minimum 5 feet long (4" X 4" wood or 1.3 lbs/ft steel); wire mesh (42 inches wide, 6 inch mesh maximum, 14-guage wire minimum); staples for wood posts (heavy duty, 1 inch long minimum); and wire for steel posts. Note: Some types of filter fence have stakes included and do not require all the above materials.
- For an erosion control log sediment barrier, use 9 to 18 inch diameter tubular mesh encased straw, coir or excelsior erosion logs, and 1 ½" x 1 ½" wood or rebar stakes, minimum 24 inches long, placed every 24 inches along length.
- For a natural erosion control log sediment barrier, use a minimum 6 to 8 inch diameter site harvested log with all branches trimmed flush to trunk.
- For a sandbag barrier, use sandbags and add rocks if needed.

3. MAINTENANCE:

- Inspect periodically and after each storm, and before the winter season.
- Replace damaged bales or logs; re-anchor displaced ones.
- Clean out accumulated sediment before it reaches the top of the bales or logs.
- Deposit the sediment where it will not enter a drainage way.
- To winterize a site adequately, all loose fill material should be protected from erosion. Cover fill material necessary for backfilling during the next grading season with sheeting of straw and install a sediment barrier around it. Remove loose material and rocks from the road and from drainage ditches or gutters. Gravel or pave driveways and access roads before the grading season ends. Where slope stabilization is necessary as a permanent erosion control measure, it should be installed before the winter season to prevent undue erosion.

4. TEMPORARY OR PERMANENT USE: Sediment barriers are temporary BMPs.

BMP: DRIVEWAY AND PARKING AREA STABILIZATION

1. METHODS: As soon as driveways and parking areas are graded, pave them or cover them with gravel to prevent soil erosion. Spread a 4" layer of ½" to ¾" gravel over these

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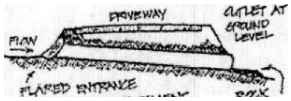
areas. Size culverts to handle the peak flow during a heavy storm. Generally, the Site Development Department, Road and Bridge Department or private engineer will size the culvert necessary for installation in roadside ditches along public roads. Where sizing requirements are not provided, as a rule-of-thumb, use a culvert with twice the cross-sectional area of the channel draining into it. The extra capacity is needed because of flow efficiency loss at the culvert's inlet.

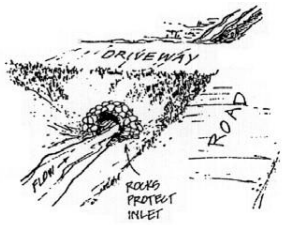
Erosion frequently occurs at culvert entrances. It Good is best to install a culvert with its inlet flush to the embankment. The edge of the pipe should be rounded or flared to improve flow into it. Place rocks or sandbags around the inlet to prevent scour. As flow volumes and velocities increase, outlet protection is usually needed. An outlet protector, such as a rock apron, is a device for absorbing the energy of water discharging from a pipe or channel. Outlet protectors should be used:



- Below culverts. Poor
- Below sediment trap outlets.
- Where a steep or paved channel drains into an unlined or natural drainageway.

2. MATERIALS: The following method should be used to construct a rock apron outlet protector. (Note: The following description applies to a ditch or culvert discharging at the side of a drainageway.)

The ditch or culvert should end at the top of the bank of this drainageway if you are constructing a driveway and culvert across a natural drainageway.



A. Place a 3" layer of sand or gravel in a trapezoidal-shaped apron from the ditch or culvert to the middle of the drainageway. The apron width at a ditch should be as wide as the ditch. The apron width at a culvert should be 3 times the culvert's diameter. The apron should flare out at a ratio of 1' sideways for each 2' of length until the apron is 5 times the width of the ditch or culvert.

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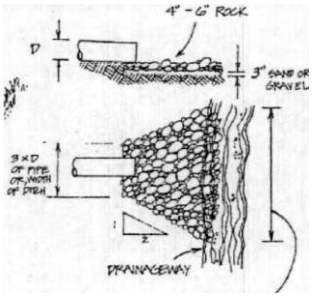
B. Place a layer of 4" to 6" rock on the top of the apron. The top of the finished apron should be at the same level as the inflowing ditch or culvert and should slope at the existing grade.



3. MAINTENANCE:

- Inspect inlets and outlets during and after each storm.
- Replace dislodged stones with larger ones.
- Enlarge the apron if erosion is occurring around its edges.

4. TEMPORARY OR PERMANENT USE: Driveway and parking area stabilization can be temporary or permanent BMPs.

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BMP: INFILTRATION SYSTEMS

1. METHODS: An infiltration system is a device used to percolate runoff into the soil. A typical system is a rock-filled trench/basin (called a dry well) or Infiltrator Chambers. Both mechanisms are similar to a septic system's leach field. The rock-filled trench is limited in storage capacity compared to the Infiltrator Chamber. You should infiltrate runoff from all impervious surfaces, including roof tops, driveways, and areas where the soil has been packed down.

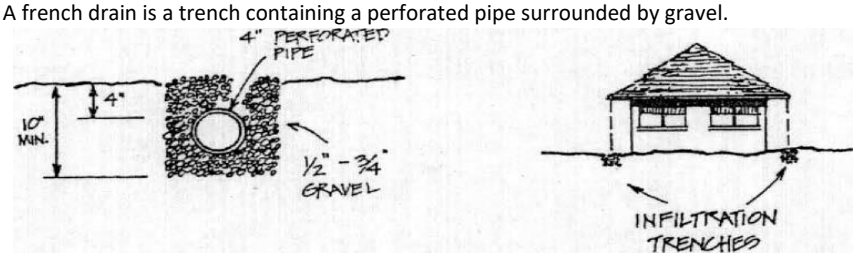
An infiltration system should be used:

- Below roof drip lines;
- In conjunction with downspouts/gutters;
- Along driveways and walkways;
- Along dikes and ditches; ▪ Below sediment trap outlets; and ▪ On flat or gently-sloping ground.

Infiltration systems are required on all BMP Permits and for all development where the roof square footage area is greater than 1,750 square feet.

The capacity of infiltration trenches decreases as the slope of the trench increases. Don't build infiltration trenches with drain slopes steeper than 15%. Where a roof drip line or driveway exceeds 15% slope, install a lined ditch to convey the runoff to a dry well or lateral infiltration trench located along a slope contour.

A french drain is a trench containing a perforated pipe surrounded by gravel.



Where water dripping from a roof will fall on a slope above a house's foundation, install a french drain to convey the roof drip to an infiltration system away from the house. The french drain will prevent water from seeping under the foundation and weakening it.

Where an infiltration system is located below a disturbed area, install a sediment barrier to remove the soil before it reaches the system.

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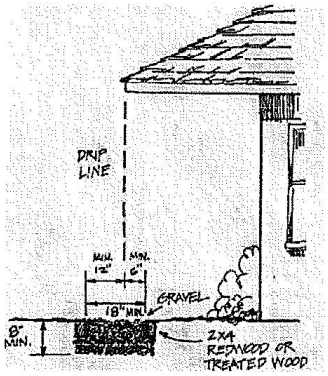
Removing sediment from the runoff will increase the efficiency of the infiltration system and reduce maintenance costs.



The size of the infiltration system depends on soil permeability, runoff area and is sized according to storm events. The system must be able to infiltrate at a minimum 0.5" of precipitation per hour, which is 90% of the precipitation from storm events. A more effective system would be designed for 1" of precipitation which is 95% of the annual storm events. If you have hired an architect or engineer to prepare the plans for your house, he or she can calculate the size of the infiltration system needed.

The following method should be used to construct a roof drip line infiltration trench:

A. Dig a trench of the required size along the roof drip line as shown. Allow 3" extra width for the border boards.

B. Add the border boards (which are optional) and gravel to fill the trench to ground level.

C. Downspout/gutter infiltration devices are designed per project. Either an engineer, contractor or the County's Site Development Department can assist on a design. See diagrams for examples of these devices.

The following method should be used to construct a driveway infiltration trench when the driveway surface is paved or non-erodible:

A. Grade the driveway with a 1%-5% slope towards the trench.

B. If the driveway slope is less than 15%, size and construct a trench along the low side of the driveway as described above.

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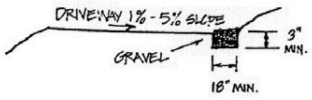
C. If driveway slope is 15% or more, install a paved ditch or trench drain along the low side of the driveway and route the runoff to lateral infiltration trenches located along slope contours or to dry wells located in more level areas. Install a 2' long water bar between each section of ditch to prevent runoff from



continuing down slope.

D. Do not install lateral infiltration trenches on fill slopes steeper than 4 horizontal to 1

vertical (4:1). Do not locate a driveway on top of an infiltration trench. Avoid placing infiltration trenches where their construction will damage tree roots.

The following method should be used to construct a dry well:

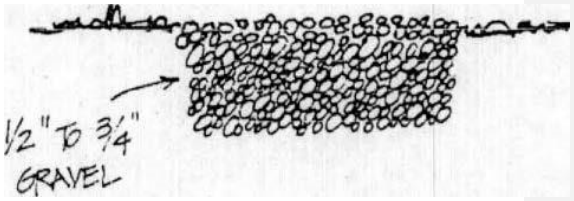
A. Determine the required dry well size.

B. Dig a basin of the required size and fill it with gravel. You may want to cover the top of the dry well with a shallow layer of sand or wood chips to create a more pleasing appearance.

Lateral Infiltration Trenches

2. MATERIALS:

- Catch basin
- Perforated pipe
- Gravel
- Wood, cinderblock, etc.



3. MAINTENANCE: Clean out accumulated sediment and debris when the dry well fails to infiltrate storm runoff.

4. TEMPORARY OR PERMANENT USE: Infiltration systems are permanent BMP's.

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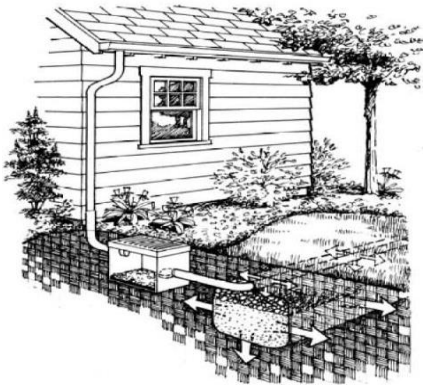

Dry Well (seepage pit)

BMP: SLOPE STABILIZATION

1. METHODS: Rip rapping is the use of cobble-size rock, generally 6"- 10" in size, placed closely together on disturbed soils to prevent erosion. Rock riprap is generally the most effective erosion control device for slopes greater than 30%. It can also be used on less steep slopes and works well with seeding. Concrete can be used to fill in between the rocks to hold the riprap securely in place, a common practice on steep slopes.

Slopes that are cut for building or driveway construction are sometimes so steep that vegetation or rip rapping alone cannot adequately protect them. Runoff from these over-steepened slopes often erodes the toe of the slope, causing continued slope slippage. Retaining walls prevent toe erosion and slope slippage.

The following method should be used to construct a native rock retaining wall. (Note: Any retaining wall over 4' high shall be designed by a licensed Colorado engineer and require a retaining wall permit.

A. Remove all large rocks from the eroding slope and stockpile on site.

B. Dig a footing trench along the toe of the slope.

C. Place the largest rocks in the trench with their longest axes perpendicular to the slope.

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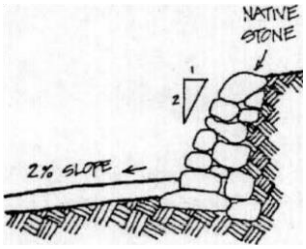
D. The face of the wall may vary from vertical to a 1:2 slope.



E. Fill the space behind the rock wall with leftover soil excavated from the site.

F. Slope the ground at the base of the wall at a 2% grade away from the wall and stabilize it with vegetation or mulch. If a driveway is located at the base of the wall, pave it up to the wall or install a curb.

The following method should be used to construct a wood retaining wall. Note: Any retaining wall over 4' high and shall be designed by a licensed Colorado engineer and require a retaining wall.

A. Set 6" x 6" wood posts into concrete foundations at least 2' into ground. Space the posts 5' apart.

B. Nail 2" x 12" wood planks to the upslope side of posts. Leave a small vertical space between planks to allow drainage at the base of the wall and between planks. You may want to backfill the space behind the wall with surplus soil from excavations.

C. Slope the ground at base of the wall at a 2% grade away from the wall and stabilize it with vegetation or mulch. If a driveway is located at the base of the wall, pave it up to the wall or install a curb.

2. MATERIALS:

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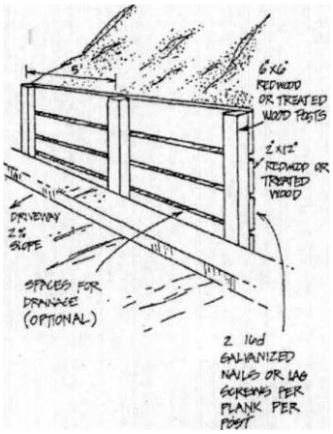
- Rocks
- Redwood, cedar, or treated wood
- Rock-filled baskets (gabions)
- Railroad ties
- Concrete
- Steel



3. MAINTENANCE: Inspect periodically for erosion, slippage, sloughing, or other damage. Repair as needed.

4. TEMPORARY OR PERMANENT USE: Slope stabilization can be a temporary or permanent BMP.

BMP: INLET AND OUTLET PROTECTION

1. METHODS: The primary function of stormwater inlet protection is to decrease sedimentation/siltation impacts to these devices, which increases their functionality and longevity. Outlet protection, such as rip-raping drainage ways, reduces channelization and decreases erosion. Once a stormwater device is installed, protection to both inlets and outlets should then also be installed.

2. MATERIALS:

- Straw bales, erosion control logs, silt fence, sand bags and riprap.

3. MAINTENANCE:

- Silt and sediment must be removed on a regular basis.
- Devices installed should be inspected after each storm event.

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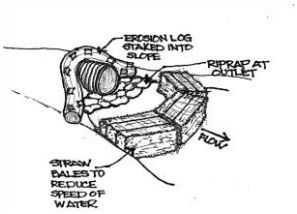
4. **TEMPORARY OR PERMANENT USE:** Inlet and outlet protection can be a temporary or permanent BMP.



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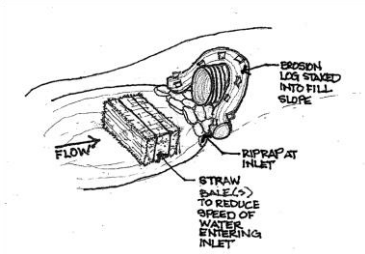
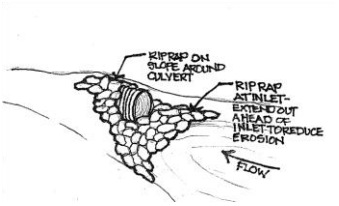
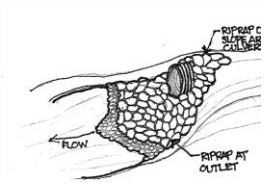


Temporary
Inlet Protection

Temporary
Outlet Protection



Permanent Inlet Protection



Permanent Outlet
Protection

BMP: SNOW REMOVAL

1.

METHODS: Snow removal is essential for the safe and efficient operation of roads, parking areas and driveways. In rural areas and along highways, snow is usually plowed to the sides of roads and allowed to melt there. In more densely developed areas, particularly in commercial areas and parking lots, snow must be removed and transported by truck to separate storage areas. Because of the concentration of petroleum products (from oil and gasoline) and salt in snow on roads and parking areas, the runoff from stockpiled snow can have significant impacts on water quality. Suggested methods for minimizing these impacts are:

- Where conditions permit, plow snow to the center of roadways and parking areas prior to removal by truck. This reduces the clogging of storm drains and reduces damage to curbing and other structures.

- Create a snow storage area that prevents contaminated snowmelt from reaching stream channels and groundwater. The size of the area will be vary with the needs of the municipality, but in general should be of sufficient size to allow evaporation. The area should be lined and bermed to prevent runoff, and incorporate a settling pond if necessary.

- If snow storage area is located near a waterway it should be surrounded by a sand berm for the snowmelt to percolate through.

- Do not dump or plow snow into or adjacent to stream channels, storm drains or other drainage ways.

- Remove plowed snow as soon as possible following storm to minimize on-site runoff.

2. MATERIALS: Silt fence, berms, hay bales, riprap, see other BMP's.

3. MAINTENANCE: Storage area(s) should be checked annually, and any necessary repairs to liners, berms or settling ponds. Sand and other foreign materials should periodically be removed as needed.

4. TEMPORARY OR PERMANENT USE: Permanent installation recommended.

BMP: SANDING PROCEDURES

1. METHODS: Wintertime sanding during storms is a necessity for roads and driveways in the upper Clear Creek watershed.
Since road sand typically contains some percentage of salt (5 to 20%), snow melt can have negative effects on water quality.
Recommended methods include:

- Use the minimum amount of sand needed to accomplish the job.
- Use the lowest feasible content of salt.
- Sweep sand from paved roads as soon as possible following storm.
- Recycle sand if feasible.
- Store sand on lined, curbed or bermed site and under shelter if possible.

2. **MATERIALS:** Sand with salt. Alternate materials to reduce fugitive dust and reduce the need for salt are being evaluated by various municipalities and the Department of
Transportation. Contact CDOT for more information.

3. **MAINTENANCE:** Sand should be removed from paved streets as soon as feasible following storm.

4. **TEMPORARY OR PERMANENT USE:** This is a permanent BMP.

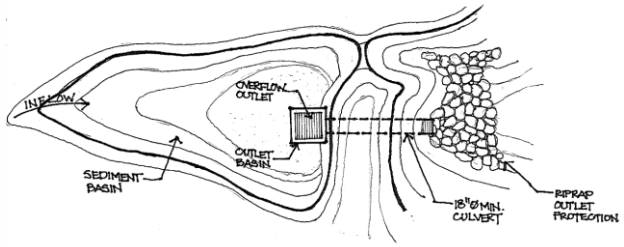
BMP: SEDIMENT BASINS

1. **METHODS:** Sediment basins are small impoundments that allow sediment to settle out of stormwater runoff. The outlet from the sediment basin should be designed to empty its volume over an extended period of time.

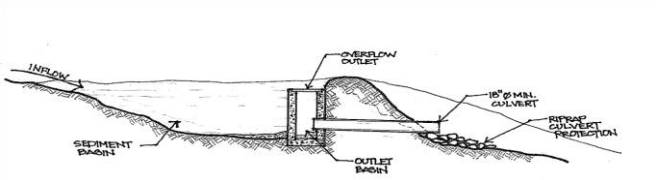
2. **MATERIALS:** Inlet structure and pipe, riprap and compacted earth.

3. **MAINTENANCE:** Remove sediment as required.

4. **TEMPORARY OR PERMANENT USE:** Permanent.



Sediment Basin



Sediment Basin Section

BMP: CONSTRUCTION FENCE

1. METHOD: Construction fence is required on slopes greater than 20° when adjacent to a public/private road, adjacent to any structures or if determined it is needed to provide for the health, safety or welfare of the general public.

There are several types of construction fence that can be used. They vary in strength and integrity. On steeper, rockier slopes, a chain link fence and metal post will be required. Gentler, less rocky slopes can use the welded wire fence and in some cases, the orange plastic construction fence will be required.

Brush barriers are also a mechanism that can be used in place of a construction fence. A brush barrier is the tree material removed from the site and placed on the downside of all excavation, relatively close to the ground. Trees are a great tool for decreasing rock fall from the property and should be used where appropriate.

2. MATERIALS:

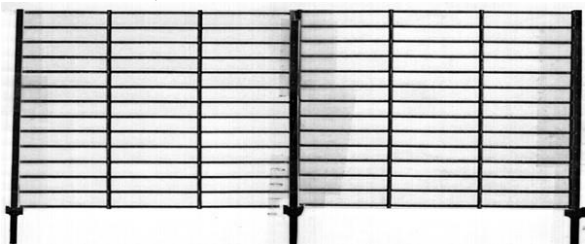
- 4' - 2"x4" Welded Wire Fence and standard 6' Fence Posts
- 4' or 6' Chain Link Fence with Steel Posts
- Native tree material used from site for a Brush Barrier

The individual permit will specify what type of safety barrier to use. These devices must be installed prior to any excavation.

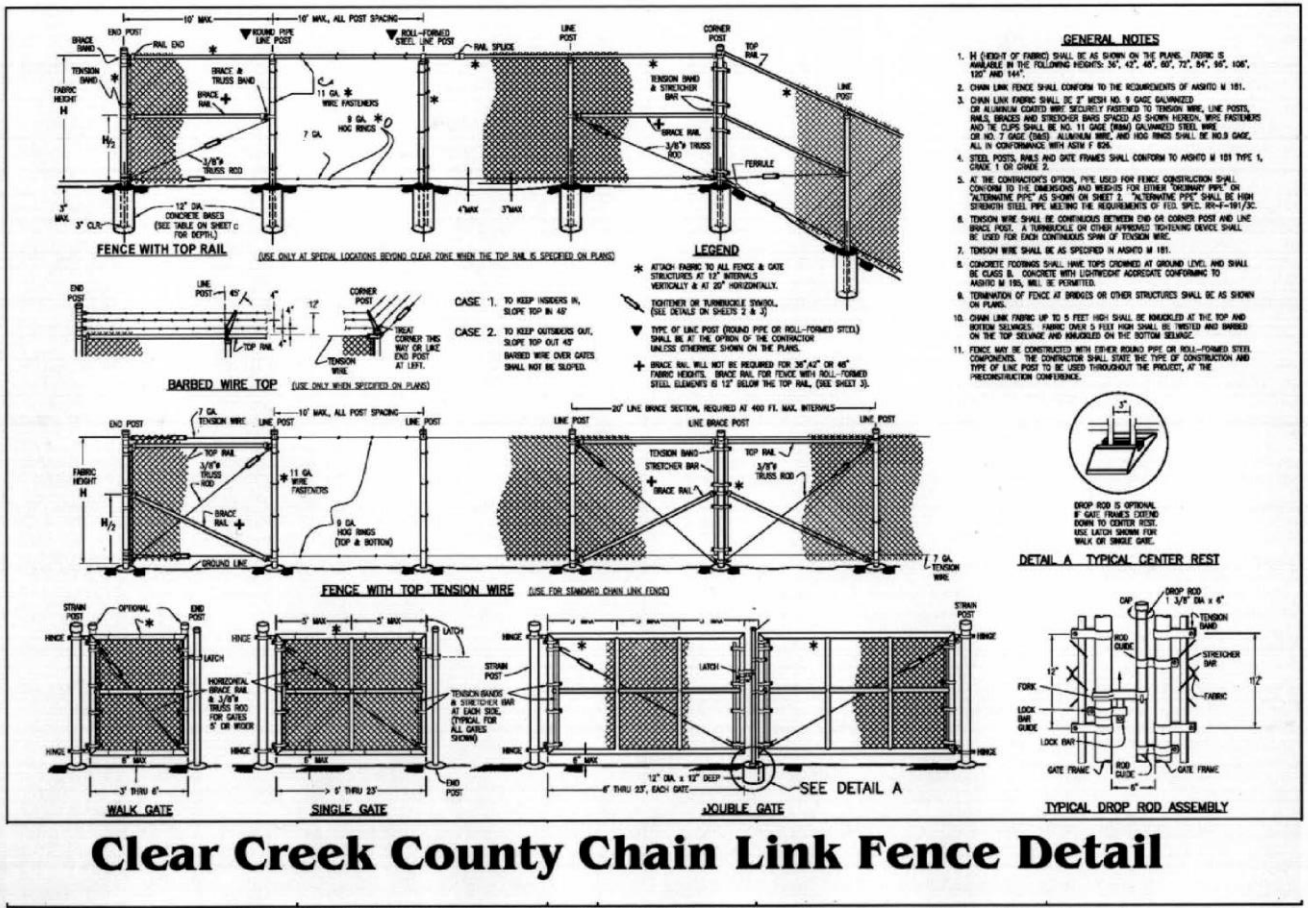
3. MAINTENANCE TIPS:

- Repair or replace fence as needed
- Repair or replace any fence posts
- Inspect daily after excavation
- Add additional tree material when needed

4. **TEMPORARY OF PERMANENT USE:** The fence or brush barrier is a temporary BMP. The fence or brush barrier can be removed after excavation is completed and the slope has been stabilize.



2" X 4" Welded Wire Fence with 6' High Poles



Clear Creek County Chain Link Fence Detail

BMP: PAVING

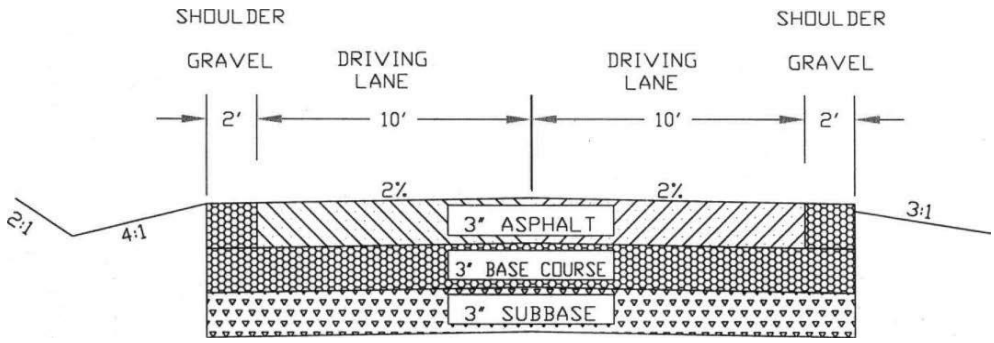
1. **METHODS:** Paving is required on private roads, driveways and parking areas when they are accessed by a paved road. Parking areas and drives must be paved with a minimum of 6 inches of road base compacted to 95% modified Proctor and 3 inches of asphalt, see figure. Paved parking areas for all other development shall be designed in accordance with Section 2.43. C, with TI equaling 6.0, as per Clear Creek County's Roadway Design and Construction Manual.

The County may also require pavement that drinks, or porous pavement. This requirement will be contingent upon any land use case stipulation/condition and will be designed by a Colorado licensed engineer.

2. **MATERIALS:**
   - 3" asphalt, 3"base course, 3" subbase, as per figure 6, Clear Creek County's Roadway Design and Construction Manual.

3. **MAINTENANCE TIPS:**
   - Replace/repair as required.

4. **TEMPORARY OR PERMANENT USE:** Paving is a temporary and Permanent BMP.



Typical Cross Section for a Primitive Status Road

- The Primitive Road Standard can be either one (1) or two (2) lanes as per Clear Creek County Roadway Design and Construction Manual .
- Parking areas are required to meet the same criteria as above (3”Asphalt, 3” Base Course and 3” Sub Base) with a maximum of 4% grade.