2020 -PERMIT TO FINAL *

A CHECK-LIST FOR ARCHITECTS, DESIGNERS, CONTRACTORS AND OWNER-BUILDERS

2015 INTERNATIONAL RESIDENTIAL CODE

2015 INTERNATIONAL BUILDING CODE

TOWN OF CRESTED BUTTE MUNICIPAL CODE (TCBMC) & CHAPTER 18 BUILDING REGULATIONS

Allow 24 hours' notice for inspections. Please call the building department at (970) 349-5338 to make an appointment.

Construction Work Hours: Monday- Saturday 7:00 am to 7:00 pm; Sunday 8:00 am to 5:00 pm

Site Safety must be sustained at all times per OSHA (Occupational safety requirements).

***This checklist is not intended to be an exhaustive list of all building and zoning code requirements.**

Changes to previous year document are marked with ‖.

‖ Prior to obtaining a building permit the permit set, permit application and plan review fee shall be submitted.

‖ Building Permits will not be issued until the CBFPD has issued an approval letter.

‖ Demolition Permits shall be obtained prior to demolition work is started.

SPECIFIC TOWN DATA

1. IRC SECTION R301.2 (Climatic and Geographical Design Criteria) is amended by adding to Table 301.2(1) on page 29 of the IRC.
    - Flat roof snow load: 100 LBS per square foot
    - Ground Snow Load: Not determined
    - Wind Design Speed: 115 miles per hour- 3 –second gust, 75 mile per hour fastest mile.
    - Seismic Design Category: C
    - Subject to Damage From:
      Weathering: Severe
      Frost Line Depth: 36"
      Termite: Slight
    - Winter Design Temperature: -16 Degrees Fahrenheit
    - Ice Shield underlayment required: Yes
    - ‖ Flood Hazards: Flood Insurance Rate Map (FIRM) 08051C0726D, 08051C0727D *(New maps will most likely come out in 2020).*
    - Air Freezing Index: 3500
    - Mean Annual Temperature: 36 Degrees Fahrenheit.

PRIOR TO DEMOLITION WORK

1. For buildings older than 1978 Lead Testing by an independent qualified testing company must be done before any demolition work can commence.
2. For buildings older than 1988 Asbestos Testing by an independent qualified testing company must be done before any demolition work can commence.
3. Any lead, asbestos or mold found during Demolition should be abated at this time.
4. Any structure in excess of 100 sq. ft. that is to be demolished must submit a deconstruction and recycle plan prior to demolition. TCBMC 18-15-10
5. ‖*The Town Council adopted Ordinance 34 updating demolition and relocation of existing structures. This ordinance can be viewed on the town website under Town Council/Ordinances/2019/Ordinance #34.

SPRINKLER FIRE SUPRESSION SYSTEM

‖ Note: Sprinkler systems are only required for duplex structures with units owned by two separate owners, and more than two unit Townhouses. Tri-plex condo units or larger require sprinkler systems.

1. Submit sprinkler design plans and obtain approval prior to installation by CBFPD.
2. Excavator must have State certification for underground supply lines for fire suppression systems. And must complete "Contractor's Material & Test Certificate for Underground Piping" prior to requesting inspection.

   https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=0ahUKEwi9yv_yv5zRAhULiVQKHbJBA6wQFgggMAE&url=http%3A%2F%2Fwww.cherokeecountyfire.org%2Ffire-marshal%2Fdocuments%2FUnder_Test_Cert.pdf&usg=AFQjCNGh13jkHGK47efk-h-zogDph52EKA

3. Underground fire service installation must be inspected by Town of Crested Butte Water Department staff.
4. Pressure test of service must be witnessed and signed off upon by Town of Crested Butte Water Department staff and the Crested Butte Fire Protection District.
5. Flushing of fire service must be inspected by the Town of Crested Butte Water Department Staff and the Crested Butte Fire Protection District. (Commercial Projects)

ELEVATOR

1. An elevator Inspection and Certification must be done for residential elevators.
2. For commercial elevators, a State Elevator Permit must be obtained, and inspections required by the State must be completed prior to final inspection by the building inspector.

https://www.colorado.gov/pacific/sites/default/files/atoms/files/ConveyancePermitApplication052416.pdf

FOUNDATION APPROVAL

1 Property comers must be properly established and marked. 18-13-50 Boundaries (TCBMC)
2 Building comers must be staked. Setbacks are measured to eve lines. 18-13-50 Boundaries (TCBMC)
3 Building elevation must be set and a benchmark established by the building inspector so as to insure max height is not violated. Town Zoning Code15-2-3 (height) and BOZAR approved height.
4 Foundations shall be capable of supporting all loads and transmitting those loads to the soil. R401.2
5 In lieu of a geotechnical evaluation, the load-bearing values in table R401.4.1 shall be assumed. See R401.4.2
6 Call the utility notification center prior to digging. 1-800-922-1987.
7 If digging in the Town Right of Way a Town Dig Permit must be obtained by the Public Works Director. ‖ Digging in the ROW from November 1st through April 30th is not allowed.
8 If Town Right of Way is used a ROW permit must be obtained prior to using the Town Right of Way. ‖ Typically the right of way can be used only from November 1st through April 30th.
9 All basements and basement floors must be waterproofed and designed by a Colorado licensed professional engineer in compliance with Article 18-16-10.

FOOTINGS RIENFORCING SETBACK

1. See above #'s 1 & 2 above.
2. Check minimum footing width and depth per plans or see Specific Town Data above.
3. Spread footings shall be at least 6" in depth. Projections shall be at least 2", shall not exceed the thickness of the footing. R403.1.1
4. Reinforcement must be placed and supported prior to pour. R403.1.3.5
5. Check for minimum reinforcement per plans or per R403.1.3.1, #6 below.
6. Stem walls shall be provided with a minimum of one No.4 bar at the top of the wall and one No.4 bar at the bottom of the footing. R403.1.3 and Figure R403.1.3.
7. Check for minimum concrete coverage: 3" to earth: 1 1/2" to weather.
8. Footing depth below grade (frost protection) is 36". R403.1.4.1/Table R301.2(1)
9. Concrete shall be protected from freezing and running water for 5 days. Chapter 19 IBC.
10. Footings shall not be placed on frozen soil. Footings shall be placed on natural soil or engineered fill. R401.2 and R403.
11. Concrete-Encased Electrode shall consist of at least 20' of either one or more bare or zinc galvanized or electrically conductive coated steel reinforcing bars or rods not less than ½ DIAMETER or #4 AWG copper wire. 2014 NEC 250.52 Grounding Electrodes
12. See table R402.2 for minimum specified compressive strength of concrete.

STEMWALL REINFORCING BACKFILL

1. Check wall thickness per structural plans or table R404.1.1(1) – R404.1.1(4) Masonry and Concrete. The size of footings supporting piers and columns shall be based on the tributary load and allowable soil pressure in accordance with Table 401.4.1
2. Check for minimum reinforcement per plans or R404. See #6 above.
3. Forms and reinforcing must be placed and supported prior to pour. Steel reinforcement in concrete cast against the earth shall have a minimum cover of 3". Minimum cover for reinforcement in concrete cast in removable forms that will be exposed to earth or weather shall be 1 ½ for No. 5 bars and smaller, and 2" for No. 6 bars and larger. For more see R404.1.3.3.7.
4. Anchor bolts shall be ½ " x 7" min., spaced @ 6' on center max., with 2 bolts per plate min. and not more than 12" from each end. R403.1.6 with 3 x 3 washers per R602.11.1.
5. Concrete or masonry foundation walls shall be designed in accordance with accepted engineering practice when either of the following conditions exist: Walls that are subject to hydrostatic pressure from groundwater or walls supporting more than 48 inches of unbalanced backfill that do not have a permanent lateral support at the top or bottom must meet R404.1.4.2, R406.2.
6. Horizontal reinforcement is required if the foundation wall is less than 7.5 inches in thickness, supporting more than 4 feet of unbalanced backfill or exceeding 8 feet in height. See Table R404.1.2(1).
7. Foundation drains are required for habitable spaces below grade. R405 See inspector for town required details.
8. Water proofing of foundation walls is required for habitable spaces below grade. R406 and 18-16-10 TCBMC.
9. Insulation required see IECC Residential Table R402.1.2 7 & 8 Climate Zone. || Commercial Table C402.1.3.
10. Stem walls shall extend a minimum 4"with masonry veneer finish above grade, 6" elsewhere. R404.1.6
11. Backfill shall not be placed until concrete wall has sufficient strength and anchored to the floor above or sufficiently braced to prevent damage to the wall. R404.1.6.
12. Surface drainage shall be obtained by grading backfill to at least a 6" in 10' slope away from the walls, R401.3, or by providing swales as allowed per the exception. Impervious surfaces within 10 feet of the building foundation shall be sloped a minimum of 2 percent away from the building.
13. See table R402.2 for concrete compressive strength.
14. Stay in place forms must meet Section R404.1.3.3.6.1 for plastic foam flame spread index and smoke-developed index and protection from the interior.
15. Stay in place forms must meet Section R404.1.3.3.7 rebar reinforcement, Section R404.1.3.3.7.4 rebar support and coverage, and R404.1.3.3.7.5 rebar lap splices.
16. Stay in place forms (ICF) for waterproofing materials see Section R406.2 Exception.

CONCRETE SLAB UNDERFLOOR

1. Frost protected shallow foundations see R506.2.2 Base requirements.
   a. Shall extend 6" minimum above grade per R404.1.6 and R317.1.
   b. Shall extend 12" minimum below grade or per engineering. R403.1.4
   c. ‖ Shall have 6 mil polyethylene plastic installed above the insulation and directly below the slab.
   d. Shall be insulated around the perimeter with R-15 insulation and then horizontally 48" with R-15 insulation. IECC Table 402.1.2 for 7 & 8 Climate Zone.
   e. Insulation shall be protected from damage. R403.3.2 and flashed per R703.8.
2. Minimum slab thickness is 3 1/2". R506.1 & R403.1.8 Expansive soils.
3. Where provided in slabs-on ground, or otherwise shall be supported to remain in place from the center to upper one-third of the slab for the duration of the concrete placement. R506.2.4
4. Minimum slab edge reinforcement per engineering plans or a minimum of one No.4 bar at top and bottom of footing. R403.1.3.2
5. R-10 under slab minimum insulation is required for heated and thermal mass slabs. Table R402.1.2 R-5 shall be added to the required slab edge R values for heated slabs.
6. Soil-gas retarder of 6 mil minimum or 3 mil cross laminated polyethylene flexible sheeting is required per R506.2.3 and Appendix F. Install this sheeting above the insulation.
7. Surface drainage away from slab on grade foundations shall be obtained by grading backfill to at least 6" in 10' slope, R401.3, or by providing swales as allowed per the exception. Impervious surfaces within 10 feet of the building foundation shall be sloped a minimum of 2 percent away from the building.
8. See table 402.2 for concrete compressive strength.
9. Radon passive mitigation requirements must meet IRC Appendix F for dwelling units, ‖ including mixed use commercial structures that have residential units.
10. A soil gas-retarder lapped not less than 12 inches at the joints and extended to the foundation walls enclosing the crawl space must be provided. The soil-gas retarder shall fit closely around pipes, wires or any penetrations of the sheeting material. Punctures or tears in the material shall be sealed or covered with additional sheeting. AF103.3.1
11. Potential radon entry routes: floor openings, sumps, foundation walls, air conditioning systems entry points, ducts under slabs, and crawl space access shall be closed (sealed) per Appendix F, AF103.2.
12. A radon passive sub-slab depressurization system shall be provided in basements or slab on grade buildings during construction. Appendix F including Figure AF102.
    i. A minimum 3 inch diameter ABS, PVC or equivalent gas tight pipe shall be embedded vertically into the sub slab aggregate or other permeable material before the slab is cast. A T fitting or equivalent method shall be used to ensure that the pipe opening remains clear of the gas permeable material. Alternatively, the 3 inch pipe shall be inserted directly into an interior perimeter drain tile loop or through a sealed sump cover where the sump is exposed to the sub slab permeable material or connected to it through a drainage system. AF 103.4 AF103.5

ii. The vent pipe shall extend through the building and terminate through the roof to at least 12” above the roof in a location at least 10 feet away from a window or intake opening into conditioned space that is less than 2 feet below the exhaust point. AF103.4.3.

13. In buildings where interior footings or other barriers separate the sub slab permeable material, each area radon vent pipe can be connected to a single radon vent pipe that terminates above the roof. AF103.7.

14. ‖ If a radon vent pipe is exposed in the interior, the pipe shall have a label stating, “Radon Reduction System.”

15. ‖ A power source and access for future if needed radon fan is required in the attic space outside of the building envelope per AF103.10 and Colorado Department of Public Health & Environment Technical Guide. An accessible clear space of 24 inches in diameter by 3 feet in height adjacent to the vent pipe shall be provided at the anticipated location of a future radon fan and an electrical outlet shall also be provided.

FRAMING

FLOORS

1. See Section R317 -Decay resistant wood locations; R317.1.1 –R317.1.5 and R317.3 Fasteners and connectors in contact with preservative-treated and fire-retardant-treated wood. Also see R504 for pressure preservative treated wood floors on the ground.
   a. Floor joists closer than 18" to earth.
   b. Girders closer than 12" to earth.
   c. Framing members in contact with concrete on exterior foundation walls or supports that are less than 8" from earth.
   d. Sills and sleepers that rest on a concrete wall or slab that is in contact with the earth unless separated by an impervious moisture barrier.
   e. Ends of wood girders entering concrete beam pockets unless a ½” gap is provided on top, sides and ends.
   f. Siding, sheathing and framing on the exterior that rest closer than 6" to ground.
   g. Wood structural members supporting moisture permeable floors and roofs.
   h. Furring strips or framing members that attach to the interior of below grade concrete walls unless separated by an approved vapor retarder.
   i. Wood in direct contact or embedded in earth.
   j. Wood posts or columns embedded in concrete.
   k. Wood posts or columns exposed to weather or in basements or cellars unless separated with a moisture barrier and supported by 1"piers if on concrete or by 6" piers if on exposed earth.
   l. Wood posts or columns in crawlspaces unless elevated by at least 8" above exposed earth and supported by a moisture barrier.
   m. The portions of glued-laminated timbers that form the structural supports of a building or other structure and are exposed to weather and not properly protected by a roof,

eave or similar covering shall be pressure treated with preservative, or be manufactured from naturally durable or preservative-treated wood.

n. Wood siding, sheathing and wall framing on the exterior of a building having a clearance of less than 6 inches from the ground or less than 2" inches measured vertically from concrete steps, porch slabs, patio slabs and similar horizontal surfaces exposed to weather.

2. Deck see R507: Where supported by attachment to an exterior wall, decks shall be positively anchored to the primary structure and designed for both vertical and lateral loads as applicable. Such attachment shall not be accomplished with toe nails or nails subject to withdrawal. Where positive connection cannot be verified during inspection, decks shall be self-supporting. For decks with cantilevered framing members, connections to exterior walls or other framing members, shall be designed and constructed to resist uplift resulting from live load specified in Table R301.5 acting on the cantilevered portion of the deck. R507.2, Table R507.2, Table 507.2.1 and Figures 507.2.1(1)Placement of Lag Screws and Bolts in Ledgers, 507.2.1(2) Placement of Lag Screws and Bolts in Band Joists, and R507.2.3(2) Deck attachment for lateral loads. R507.4 Decking and Table R50.4, Table R507.5 and Table R507.6 for maximum joist spacing. See Table R507.8 Deck Post Heights as measured to underside of beam, Figures R507.7.1 for Deck Beam to Deck Post details, and 507.8.1 for Typical Deck Posts to Deck Footings
3. Crawlspaces must be ventilated by providing openings that equal I to 150 ratio of opening to area or 1 to 1500 ratio of opening to area if a vapor barrier is installed. One vent shall be with-in 3 feet of each corner of the building. Crawlspaces may be mechanically ventilated at l cfm per 50 square feet. R408.3.
4. Subfloor preparation. A uniform layer of clean aggregate, a minimum of 4 inches thick. The aggregate shall consist of material that will pass through a 2-inch sieve and be retained by a ¼" sieve. AF103.
5. Soil gas retarder. 6 mil. Polyethylene or 3 mil cross laminated Polyethylene flexible sheeting placed with if necessary 12 inch laps on top of the gas permeable layer prior to casting the slab or placing the floor assembly to serve as a soil-gas –retarder by bridging any cracks that develop in the slab AF103. ‖ The soil gas retarder shall extend up the stem wall 6" minimum and be attached with wood strips. (No closed cell foam shall be used to do this because it does not remain in place). 2015 IECC Section R402.2.11.
6. The under-floor grade shall be cleaned of all organic material including wood forms and construction materials. R408.5
7. Entry Routs shall be closed in accordance to Sections AF103.2.
    i. Openings around bathtubs, showers, water closets, pipes, wires or other objects that penetrate the concrete slabs or floor assemblies shall be filled with polyurethane caulk or expanding foam applied according to manufacturer's recommendations.
    ii. All concrete control joints, isolation joints and any joints in concretes slabs and foundation walls shall be filled with a polyurethane caulk or equivalent or other elastomeric sealant applied per manufacturer's recommendations.
    iii. Condensate drains shall be trapped or routed through non-perforated pipe to daylight.

iv. Sump pits open to soil or serving as the termination point for sub-slab or exterior drain tile loops shall be covered with a gasketed or sealed lid.

v. Openings around all penetrations through floors above crawl spaces shall be caulked or filled to prevent air leakage.

vi. Crawl space access doors and openings or penetrations between basements and adjoining crawl spaces shall be closed, gasketed or otherwise filled to prevent air leakage. See R408.4 and see item 9 below.

vii. Air-conditioning systems entry points or other openings into air-conditioning systems in enclosed crawl spaces shall be sealed. Ductwork passing through or beneath a slab within a dwelling shall be a seamless material unless the air-conditioning system is designed to maintain continuous positive pressure within such ducting. Joints in ductwork shall be sealed.

viii. Ductwork located in enclosed crawl spaces shall have seams and joints sealed by closure systems in accordance with Section M10601.4.1.

8. Passive sub-membrane depressurization system (Radon) must be provided for crawl space foundations except in which an approved mechanically ventilated system is installed. AF103.5

   i. A plumbing tee or other approved connection shall be inserted horizontally beneath the sheeting and connected to a 2 or 4 inch diameter pipe installed through the sheeting. The vent pipe shall extend vertically through the building and terminate through the roof at least 12”above the roof and at least 10’ away from a window or other intake opening into conditioned space that is that is less than 2 feet below the exhaust point and 10 feet away from adjacent building. AF103.5.3

9. Exposed and visible interior vent pipes shall be identified with not less than one label at each floor level and in accessible attics. The label shall read: “Radon Reduction System”. AF103.9

10. Under-floor access openings are required to be a minimum of 18"x 24". Access openings in a perimeter wall or from a below grade area are to be a minimum of 16"x 24". R408.4

11. Joist and Girder spans including cantilevers must be designed for the material used. R502.3.3 Figure R502.2.

12. Joists under bearing partitions must be adequate for the load supported. If they are separated they must be fully blocked with 2" lumber 4' oc. R502.4

13. Joists, girders and beams shall have a minimum of 1 1/2" bearing on wood or 3" on concrete. R502.6

14. The allowable spans of girders and headers fabricated of dimensional lumber shall not exceed the values set forth in Tables R602.7(1), R602.7(2) and R602.7(3).

15. Joist lap over a supporting girder shall be 3" or spliced with wood or metal. R502.6.1

16. Joist framing into the side of a girder shall be supported by hangars or supported by a minimum of a 2x2 ledger. R502.6.2

17. Joist shall be supported laterally at ends by full 2" blocking or by a rim joist. R502.7

18. Joists 2x12 and greater shall be bridged at 8' intervals with blocking, diagonal bridging or a nail strip along the bottom. R502.7.1 Exception: Trusses, structural composite lumber, structural glued-laminated members and I-Joists shall be supported laterally as required by the manufacturer’s recommendation.

19. Sawn joists may be bored or notched in accordance with Figure R502.8.
20. Engineered framing members may not be bored or notched in excess of the Manufacturer's recommendations, or approved by a registered design professional. R502.8.2
21. Framed openings larger than 4' shall have head and trim joists doubled. R502.10
22. Wood flooring trusses shall be installed and braced as specified in the construction documents for the building and truss design. R502.11.
23. Concealed spaces with-in ceiling/floor assemblies shall be draft stopped so the space does not exceed 1000 sq. ft. R502.12. Materials may be ½" gypsum or 3/8" wood panels. R502.12, R302.12.
24. Fire blocking is required to separate floors and all other concealed draft openings including vents, pipes and ducts. R502.13, R302.11
25. Fire blocking materials may be 2" wood, ½" gypsum, ¼" cement based mill board, batts or blankets of mineral wool of fiber glass insulation or other approved materials. R302. 11.1, R302.11.1.1, through R302.11.3, and R302.11.2 Fire blocking integrity must be maintained and fixed in place.
26. Floor Sheathing per engineer or Table R503.1, R503.2.1(2)
27. Pressure preservative treated wood basement floors on ground shall withstand axial forces and bending moments resulting from lateral soil pressures at the base of the exterior walls and floor live and dead loads. Floor framing shall be designed to meet joist deflection requirements R301. R504.1 and R504.1.1 through R504.1.3.

WALLS

1. The size, height and spacing of wood studs shall be in accordance with Section R602.3 and Table R602.3.5. Grade minimum No.3, standard or stud grade lumber. R602.2.
2. Top plates are required to be doubled and overlap at comers and intersections. End joints in top plates shall be offset at least 24". Plates shall be 2" nominal thickness and at least the width of the studs. Single top plates are allowed if steel ties are used at comers and intersections as long as rafters and joists stack directly on the studs below. R602.3.2 Exception and Table R602.3.2 for connections.
3. See Table R602.3(1) Fastening Schedule for wood construction.
4. Where joists, trusses or rafters are spaced more than 16" on center and the bearing studs below are spaced 24" on center, such members must stack with-in 5" of bearing studs unless a double 2x6, triple 2x4 top plate or solid blocking is installed between studs. R602.3.3 Bearing Studs
5. Bottom or sole plates are required and must be 2" nominal in thickness and the width of the stud supported. R602.3.4
6. Bearing studs maybe notched up to 25% of the width. Non-bearing studs may be notched up to 40% of the width. R602.6 and figure R602.6(1)
7. Non-bearing studs may be bored up to 40% of the width provided that such whole is not closer than 5/8" to the edge of the stud. If studs are doubled they may be bored to 60% of the width provided that not more than two successive studs are board. R602.6
8. Top plates may be bored or notched by not more than 50% of the width. If notched or bored greater than 50% a galvanized metal tie plate not less than .54 inches thick and 1 ½" wide,

fastened across the notch to at least 6 inches beyond on each side with not less than 8 10d inch diameter nails with minimum length of 1 ½"must be installed, unless the wall is sheathed with a full length structural wood panel. R602.6 and Figure R602.6.1

9. Headers shall be installed over openings in bearing walls and sized and supported according to structural plans, local engineering requirements or by common building practice. (R 602.7 tables do not allow for greater than 70 lb. snow load).
10. Wall bracing per R602.10 or simplified wall bracing per R602.12
11. Fire blocking shall be installed in the following locations R302.11:
    a. Vertically at ceiling and floor levels.
    b. Horizontally at 10' intervals in stud cavities.
    c. At interconnections that occur at soffits, drop ceilings and cove ceilings.
    d. Top and bottom of stair stringers.
    e. At openings around vents, pipes and ducts at ceiling and floor levels.
    f. At chimneys and fireplaces see R1003.19.
    g. At cornices at the line of the dwelling unit separation of two family dwellings.
12. Fire blocking materials may be of 2" nominal wood, ½"gypsum board 3/4" particleboard with joints backed by ¾" particle board, ¼" cement based millboard, mineral wool, fiber glass or other approved materials securely retained in place or cellulose tested for the specific application ASTM E 119 or UL 263. See R302.11.1 for more specific information.
13. Cripple walls less than 14" in height shall be sheathed on one side with wood structural panels that fasten to top and bottom plates or be of solid blocking. Cripple walls shall be supported on continuous foundations R602.9nm

ROOF

1. Ridge boards must be at least 1"nominal thickness and full depth of the rafter end cuts. Valley and hip rafters must be at least 2" nominal thickness and full depth of the rafter end cuts. Hip and valley rafters must be supported at the ridge by a brace to a bearing partition or designed to carry and distribute the specific load at that point. R802.3
2. Rafters shall be nailed to ridge, hip and valley boards see R802.3.1 and table R602.4(1).
3. A load bearing ridge is required if rafter ties are not provided. Minimum rafter tie spacing is 4'oc. R802.3.1
4. Joists must be lapped and connected a minimum of 3" or butted and tied over bearing walls or beams and toe nailed. R802.3.2
5. Joist spans must be designed for the material used. R802.4
6. Minimum rafter bearing on wood is 1 1/2" and 3" on concrete. R802.6
7. Cutting and notching of sawn rafters are limited by the following: R802.7 Notches:
    a. May not exceed 1/6 the depth of the member.
    b. May not be longer than 1/3 the depth of the member.
    c. May not occur in the middle 1/3 of the span.
    d. May not occur on the tension side of members of 4" nominal thickness except at ends.
    e. End notches may not be more than ¼ of the depth of the member.
    f. Holes:
        i. May not exceed 1/3 the depth of the member.

ii. Holes may not be closer than 2" to the top or bottom of the member or to any other hole or notch located in the member.

8. Cuts, notches and holes in engineered lumber are not allowed unless specifically considered in the design of the member by a registered design professional, and per manufacturer's recommendations. R802.7.2
9. Lateral blocking is required at bearing points for rafters 2x10 and greater. R802.8
10. Bridging, full depth blocking or horizontal stripping is required at 8' o.c. for rafters 2x12 and greater. R802.8.1
11. Openings greater than 4' shall have head and trim rafters doubled. Opening greater than 6' shall be joined by approved hangars. R802.9
12. Wood trusses shall conform to the following requirements: •R802.10
    a. Truss design drawings must be provided to the building official prior to installation.
    b. Trusses must be supported laterally and braced in accordance with the design drawings and other construction documents for the building.
    c. Trusses may not be altered unless approved by a registered design professional.
    d. Trusses shall be connected to wall plates with approved connectors having a resistance to uplift of not less than 175 lbs. and installed per manufactures instructions. R802.10.5
13. Roof tie-down must resist uplift resistance per Section R802.11.1. Truss uplift resistance must meet Section R802.11.1.1.
14. Enclosed attic spaces and enclosed rafter spaces shall have cross ventilation for each enclosed space by ventilating openings protected against the entrance of rain or snow. R806
15. Attic access is required for areas with 30" or greater headroom and 30 square feet or greater area. The rough framing opening shall be a minimum of 22x30 and located in a hall-way or other readily accessible location. R807.1
16. Combustible insulation shall be separated from heat producing devises by at least 3" unless devises are listed for lesser clearances. R808
17. Roofs shall be covered with approved materials and secured to the structure. R903.1
18. Flashing shall be installed at all wall/roof intersections, changes in roof pitch, joints and around all roof openings. R903 .2.1
19. Parapets shall be coped with non-combustible, weatherproof materials. R903.3
20. Roofs shall drain to roof edges or approved roof drains shall be installed at all low points. R903.4
21. Overflow drains shall be installed where roof drains are required. Overflow drains shall be the same size as the required drains and installed 2" above the low point of the roof. Over flow scuppers shall have three times the size of the drains, have a minimum opening height of 4" and must be located 2" above the low point of the roof. Over flow drains shall comply with the IPC and drain to approved locations. R903.4.1

CEILING HEIGHT

1. Habitable rooms shall have a minimum ceiling height of 7' with the following exceptions: R305.1
    a. Basement ceilings without habitable spaces may be 6'8" and have projections not lower than 6'4".

b. Not more than 50% of the required floor area (70 squre feet) of a room or space is permitted to have a sloped ceiling less than 7' in height with no portion of the required area less than 5'.
c. Bathrooms must have a ceiling height of 6'8" minimum, as well as in front of a showerhead (30”w x 30”d) and 21”deep in front of fixtures so that they are capable of being used for its intended purpose.

2. Every dwelling unit hall have one habitable room that shall have not less than 70 sq. ft... R304.1 Exception kitchens.
3. Habitable rooms shall not be less than 7 feet in any horizontal dimension. R304.2.

LOCATION OF SAFETY GLAZING R308.4

(See building official for exceptions).

1. All doors.
2. Glazing next enclosing hot tubs, whirlpools, pools, saunas etc. with exposed edge is less than 60" above the walking surface.
3. Glazing with-in 2' of a door- from either side of the door in the plane of the door in a closed position. R308.4.2
4. Glazing is on a wall perpendicular to the plane of the door in a closed position and within 24 inches of the hinge side of an in-swinging door.
5. Glazing that meet the following R308.4.3:
   a. Glazing panels greater than 9 square feet.
   b. The bottom edge of the glazing is less than 18" above the floor.
   c. The top edge of the glazing is greater than 36" and one or more walking surfaces are within 36" measured horizontally and in a straight line, of glazing.
6. Glazing in guardrails.
7. Glazing in fences enclosing swimming pools, hot tubs etc. with-in 60" of the pool edge and less than 60" from the walking surface.
8. Glazing adjacent to the bottom of the stair landing where glazing is less than 36” above the landing and within 60 inches horizontal arc less than 180 degrees from the bottom tread nosing shall be considered a hazardous location. Exception. The glazing is protected by a guard complying with Section R312 and the plane of the glass is more than 18 inches away from the guard.

EMERGENCY ESCAPE AND RESCUE OPENINGS

1. Basements, habitable attics, and every bedroom egress requirements:
   a. Sill height may not be more than 44". R310.2.2
   b. 5 sq. ft. is required for grade level openings or below grade openings. R310.2.1
   c. 5.7 sq. ft. is required for all other openings. 310.2.1
   d. Minimum height- 24". R310.2.1
   e. Minimum width- 20". R310.2.1

f. Net clear opening shall be obtained by the normal operation of the emergency escape and rescue opening from the inside without the use of a key, tools, or special knowledge. R310.1.1

2. Window well requirements: R310.2.3
   a. Minimum area is 9 sq. ft. (3' depth by 3’ width) R310.2
   b. Rescue windows must be able to open fully.
   c. Ladders are required in wells deeper than 44". Ladders may not encroach more than 6". Ladders must be at least 12" in width with rungs not more than 18"vertically and project at least 3" from the window well. R310.2.3.1
   d. Basement egress under decks and porches design must comply with R310.5 (See building official).
3. Bulkhead enclosures must provide a net clear opening of 9 sq. ft. R310.3.2
4. Emergency escape rescue doors from basement are permitted to be sliders or hinged doors. R310.3
5. Bars, grills and screens may be placed over emergency escapes windows, wells or bulkheads so long as they do not interfere with the net clear opening size and may be removed from the inside with-out the use of tools or keys or force greater than that required for the operation of the escape and rescue opening. R310.4
6. The window well shall meet the Town Municipal Code Section 18-2-30 Amendment Number 5. All window wells shall be provided with a roof structure above and curbing sufficient to prevent the accumulation of snow and ice inside the window well. Window wells shall be maintained to provide operability of any egress opening to the extent required by the Town code and specifically Section R310.2.

MEANS OF EGRESS

1. Hallways shall not be less than 36" in width. R311.6
2. Doors:
   a. Means of egress from dwellings (living space utilized for living, cooking, bathing, washing and sanitation purposes) shall be provided with a means of an egress door side hinged, and shall provide a clear width of not less than 32 inches when measured from the door stop , with the door open 90 degrees. The height of the door as measured from the top of the threshold to the bottom of the stop shall not be less than 78 inches in height. Not less than one door shall be provided for each dwelling unit. Egress travel from all portions of the dwelling to the required egress door without requiring travel through a garage shall open directly into the public way or to a yard or court that opens to a public way. R311
   b. Landings are required on both sides. Landings shall be at least as wide as the door served and at least 36 inches in the direction of travel. R311.3 Exceptions;
      i. Stairways of two or fewer risers located on the exterior side of a door, other than the required exit door.
      ii. Landings maybe 7 ¾” lower than the threshold for the main exit door if the door does not swing over the landing.

c. Egress doors shall be readily operable from the side from which egress is to be made without the use of a key or special knowledge or effort. R311.2
d. Doors separating a garage from dwelling (living) spaces shall be 1 3/8" solid wood, honey comb steel self-closing weather-stripped doors R402.2.4 (TCBMC), or 20 minute rated and self-closing door. Openings from a garage directly into a room used for sleeping shall not be permitted. R302.5.1

3. Stairs:
   a. Residential: Minimum 36" width above the handrail height. Handrails shall not project more than 4 ½" on either side of the stairway and the minimum clear width of the stairway at and below the handrail height, including treads and landings, shall not be less than 31 ½" where a handrail is installed on one side and 27" where handrails are provided on both sides. R311.7.8

      Commercial: See Section 1011 Stairways

   b. Minimum headroom shall be 6'8" measured from the plane of the nose of the treads. R311.7.2; commercial 1011.3.
   c. Residential: Maximum riser height is 7 3/4". Maximum variation is 3/8" R311.7.5.1.

      Commercial: Maximum riser height is 7", minimum 4" exclusive of carpets, rugs or runners. 1011.5.2.

   d. Minimum tread depth is 10". Maximum variation is 3/8". Tread depth is measured nose to nose. Winder treads must be at least 10" measured 12" from the point of rotation. Minimum winder depth is 6". R311.7.5.2.1

      Commercial: Minimum tread depth is 11" measured from nosing to nosing. 1011.5.2, exclusive of carpets, rugs or runners.

   e. Profile of stair tread leading edge shall include a nosing of not greater than ¾" or more than 1 ¼" and a radius of not greater than 9/16". Sloped risers shall not exceed 30 degrees from vertical. R311.7.5.3 Open risers are permitted provided that the openings located more than 30 inches, as measured vertically, to the floor or grade below do not permit passage of a 4" diameter sphere. R311.7.5.1

   Exceptions

      i. The opening between adjacent treads is not limited on spiral stairways.
      ii. The riser height of spiral stairways shall be in accordance with Section 311.7.10.1.

4. Landings shall be provided at the top and bottom of each stairway. A flight of stairs shall not have a vertical rise greater than 12'-3"between floor levels or landings. Landings shall be the width of the stairway served and a minimum of 36" in the direction of travel. R311.7.6

   Exception:

      i. A landing is not required at the top of an interior flight of stairs including in an enclosed garage, provided a door does not swing over the stairs.

5. Stairways shall be provided with illumination in accordance with Section R303.7.
6. Handrails for a residence shall be provided on at least one side of each continuous run of treads or flight with four or more risers. R311.7.8.2
7. Handrail height, measured vertically from the sloped plane adjoining the tread nosing, or finish surface of ramp slope, shall be not less than 34 inches and not more than 38 inches. R311.7.8.1

   Exceptions:

   i. The use of a volute, turnout or starting easing shall be allowed over the lowest Tread.
   ii. Where handrail fittings or bending's are used to provide continuous transition between flights, transitions at winder treads, the transition from handrail to guard, or used at the start of the handrail height at the fittings or bending's shall be permitted to exceed 38 inches.

8. Handrails shall be continuous for the full length of the flight of the stairs from a point directly above the bottom riser to a point directly above the top riser. Handrail ends shall returned or terminate at a newel post or safety terminal. Handrails shall have a minimum of a 1 ½" space between the wall and handrail. R311 .7.8.2

   Exceptions:

   i. Handrails may be interrupted by a newel post at a turn.
   ii. The use of a volute, turnout etc. shall be allowed at the lowest tread. *(The idea is to eliminate catching or snagging of persons clothing or belongings or fire department equipment).*

9. Handrail grip sizes are as follows: R311.7.8.3
   i. Type I: Min. diameter of 1 ¼"and max. diameter of 2". If not circular shall have a min. perimeter of dimension of 4" but not larger than 6 ¼" with a maximum cross sectional dimension of 2 ¼"
   ii. Type II- Handrails with a perimeter dimension greater than 6 ¼"shall provide a graspable finger recess area on both sides of the profile. The finger recess shall begin within a distance of ¾" measured vertically from the tallest portion of the profile and achieve a depth of at least 5/16" within 7/8" below the widest portion of the profile. This required depth shall continue for at least 3/8" to a level that is not less than 1 ¾"below the tallest portion of the profile. The minimum width of the handrail shall be 1 ¼" and a maximum of 2 ¾".
10. Spiral stairways in a residence are permitted provided the minimum width shall be 26" at and below the handrail and the walk-line radius is not greater than 24 1/2". Each tread shall have a depth of not less than 6 3/4 inches at the walk line. All treads must be identical and no rise shall be greater than 9 ½". Minimum headroom shall be 6'6". R311.7.10.1

11. Ramps serving the egress door required by R311.2 shall have a slope of not more than 1 unit horizontal to 12 units vertical. All other ramps shall have a maximum slope of 1 vertical to 8 units 8 horizontal. 3'x3' landings are required at the top and bottom, at doors and change of direction. Handrails shall be provided on one side of ramps with slope greater than 1 in 12 and comply with requirements for stairs R311.8

Commercial: ramps and handrail requirements see Section 1012.

GUARDS AND WINDOW FALL PROTECTION

1. Guards shall be located along open sided walking surfaces, including stairs, ramps, and landings located more than 30 inches measured vertically to the floor or grade below at any point within 36" horizontally to the edge of the open side. Insect screening shall not be considered as a guard. R312.1.1

2. Height of required guards shall not be less than 36 inches high as measured vertically above the adjacent walking surface or the line connecting the leading edges of the treads.

Exceptions:

i. Guards on the open sides of stairs shall have a height of not less than 34 inches measured vertically from a line connecting the leading edges of the treads.
ii. Where the top of the guard serves as a handrail on the open sides of stairs, the top of the guard shall be not less than 34 inches and not more than 38 inches as measured vertically from a line connecting the leading edges of the treads. R312.1.2

1. Openings in guards shall not allow a 4 inch in diameter sphere to pass through. Exception. The triangular openings of the open side of the stair, formed by the riser, tread and bottom rail of the guard shall not allow passage of a 6 inch sphere. R312.1.3

Commercial: Guards shall be 42 inches high. 1015.3 See exceptions for R-2 and R-3 dwellings in commercial buildings.

2. In dwelling units, where the top of the sill is less than 24 inches from the finished floor and greater than 72 inches above finished grade or other finished surface below on the exterior of the building, the operable window shall not allow the passage of a 4 inch diameter sphere to pass through the opening where the opening is in its largest opened position. R312.2
3. The window opening devices must meet either ASTM 2090 or section R312.2.

DWELLING UNIT SEPARATION

1. All Two-family dwelling units shall be separated from each other by a wall and floor

assemblies having not less than half hour tested fire resistant wall, and have a an automatic sprinkler system installed in accordance with NFPA 13 unless the structure is constructed as a two unit Townhouse. The dividing wall must be a two hour tested fire rated assembly constructed wall. The fire resistant rated floor/ceiling and wall assemblies shall extend to and be tight against the exterior wall, and wall assemblies shall extend from the foundation to the underside of the roof sheathing.

Exceptions:

i. Wall assemblies need not extend through attic spaces where the ceiling is protected by not less than 5/8 inch Type X gypsum board, an attic draft stop constructed as specified in Section R302.12.1 is provided above and along the wall assembly separating the dwellings, and the structural framing supporting the ceiling is protected by not less than ½ inch gypsum board or equivalent. R302.3, and (TCBMC)

ii. Townhouses (two connected units) are not required to have an automatic sprinkler system
installed. (TCBMC) Common walls separating townhouses shall be of 2-hour fire resistance rated wall assembly tested in accordance with ASTM E 119 or UL 263. R302.2, Table R302.1(1) and (TCBMC) Three or more townhouse units must be sprinklered. (TCBMC)

iii. The common wall shall be constructed without plumbing, and mechanical equipment, such as ducts, vents in the cavity of the common wall.

iv. Each Townhouse shall be considered a separate building and be separated by wall assemblies meeting the requirements of section R302.2, and be continuous from the foundation to the underside of the roof sheathing, deck or slab. The fire resistant rating shall extend the full length of the wall or assembly including wall extensions through and separating attached enclosed accessory structures. For exterior walls. Exterior walls closer than 5 feet to the property line shall have not less than a one hour fire resistive rating. R302.2.1

v. For parapets where required for townhouse see Section R302.2.2.

1. Where the roof surfaces adjacent to the wall or walls are at the same elevation , the parapet shall extend not less than 30 inches above the roof surfaces.
2. Where roof surfaces adjacent to the wall or walls are at different elevations and the higher roof is not more than 30 inches above the lower roof, the parapet shall extend not less than 30 inches above the lower roof.

Exception: A parapet is not required in the preceding two cases where the roof covering

complies with a minimum Class C rating as tested in accordance with ASTM E 108 or UL 790 and the roof decking and sheathing is of non-combustible materials or approved fire-retardant treated wood for a distance of 4 feet on each side of the wall or walls or one layer of 5/8”

vi. For detailed fire resistive construction requirements and membrane penetration restrictions consult the building inspector

SMOKE AND CARBON MONOXIDE DETECTORS

1. Smoke alarms must be located at least three feet from bathroom (with showers or bathtubs) doors and within 15 feet of bedroom, or room lawfully used at any time for sleeping in dwelling units.
2. Alarms with photoelectric sensor must be at least six feet from a cooking appliances.
3. Ionization detectors must be at least 20 feet away from cooking appliances.
4. Alarms shall be installed on each story of the dwelling, including basements, and habitable attics.
5. Carbon-monoxide alarms shall not be installed in garages unless the alarm is located in a room or space where a fuel-burning device is or will be installed therein and the room or space is separated from the garage with a weather-stripped sealed door. TCBMC
6. Carbon-monoxide alarms must be hard-wired to the building power and are required in Bedrooms when a fuel-fired appliances such as a gas fireplace is in the bedroom or in an attached bathroom. R314.1-R314.7
7. In dwelling units where alterations, repairs or additions requiring a permit occur, or Where one or more sleeping rooms are added or created in existing dwellings, the Individual dwelling unit shall be equipped with smoke alarms located as required for Dwellings.

Exceptions:

1. Work involving the exterior surfaces of dwellings, such as the replacement of roofing or siding, the addition or the replacement of windows or doors, or the addition of a porch or deck.
2. Installation, alteration or repairs of plumbing or mechanical systems are Exempt from the requirements of this section.

SPRINKLER SYSTEM (rough)

Sprinkler System engineered drawings must be submitted for approval to the Crested Butte Fire Protection District and the Town of Crested Butte prior to commencing work.

Performed by Crested Butte Fire Protection District.

PLUMBING (rough)

Performed by the State Plumbing Inspector.

ELECTRICAL (rough)

Performed by the State Electrical Inspector.

FIRE DISTRICT (rough)

Performed by the Crested Butte Fire Protection District.

MECHANICAL (rough)

Performed by the Building Inspector.

1. Verify the installation of a heat recovery ventilation system. Access to the HRV must be maintained to clean filters per manufacturer.
2. If provided crawlspace mechanical ventilation at 1 cfm per 50 sq. ft. R408.3
3. Gas fired warm air furnaces, boilers, water heaters and fireplaces must be direct vent, sealed combustion appliances. TCBMC Sec. 18-9-80 (e)
4. Bathrooms must be mechanically vented. TCBMC Sec. 18-2-30
5. Clothes dryers: M1502
    a. Dryer exhaust systems shall be independent of all other systems, convey moisture and products of combustion to the exterior of the building and be equipped with a back draft damper without screens. The duct termination must terminate 3 feet away in any direction from any openings into the building unless the manufacturer specifies the termination location. 502.3
    b. Dryers exhausting more than 200 cfm shall be provided with makeup air.
    c. Dryer ducts shall be constructed of 4"metal and shall have smooth interior finishes. Ducts may not be connected with screws that protrude more than a 1/8” into the inside of the duct, and shall be connected with the male to female connection in the direction of flow.
    d. Ducts may not penetrate fire blocking, draft stops or fire barriers.
    e. Maximum length of dryer exhaust ducting shall not exceed 35 feet, excluding transition duct. Transitional ducting from the appliance to the permanent ducting shall not exceed 8 feet and not be concealed within the building construction. 4” duct length shall be reduced by 30” for each 45 degree bend and 5' for each 90 degree bend. M1502.4.3, Table M1502.4.5.1
    f. Dryer exhaust duct power ventilators must be installed per manufacturer’s instructions and be approved by the building inspector at permit review. M1502.4.4

g. Provide dryer manufacturer installation instructions to building inspector at the time of framing inspection. M1502.4.5.2 Dryer duct connectors shall be inspected by Building Official and/or Fire Official.
h. Range Hoods exhausting more than 400 cfm shall be provided with makeup air. M1503.4 Duct length and type must meet Table M1506.2.
i. Whole-house mechanical ventilation systems must meet M1507.3. If run intermittently see Table M1507.3.3(2). Exhaust air from bathrooms and toilet rooms shall not be recirculated within the residence or to another dwelling unit and shall be directly exhausted to the outdoors. M1507.2
j. Minimum exhaust rates for one and two family dwellings kitchens and bathrooms- toilet rooms per Table M1507.4.
k. Elevation of ignition source of equipment and appliances having an ignition source less than 18" from the floor in hazardous locations such as garages must be elevated so that ignition source is at 18" or higher from the floor. Rooms or spaces that are not part of the living space of a dwelling unit and that communicate directly with the private garage through openings shall be considered part of the private garage.

Exception:

vii. Elevation of the ignition source is not required for appliances that are listed as flammable vapor ignition resistant. G2408.2
viii. In residential garages where appliances are installed in a separate, enclosed space having access only from the outside of the garage can be installed at floor level. G2408.3

l. Protective shield plates shall be placed where nails or screws from finish or other work are likely to penetrate the clothes dryer duct. Shield plates shall be placed on the finish face of framing members where there is less than 1 ¼" inches between the duct and the finished face of the framing member. Protective shield plate must be constructed of steel, minimum thickness of 0.062- inch. M1502.5
m. Heat producing equipment and appliances shall be installed to maintain the required clearances to combustible construction as specified in the listing and manufacturer's instructions. Such clearances shall be reduced only accordance with Section G2409. Clearances to combustibles shall include considerations for door swing, drawer pull, overhead projections or shelving and window swing. Devices such as door stops or limited closers, shall not be used to provide the required clearances. G2408.5
n. Appliances shall be supported and connected to the piping so as not to exert strain on the connections. G2408.6
o. The vent terminal of a direct vent appliance with an input of 10,000 Btu per hour or less shall be located not less than 6 inches from any air opening into a building. Such an appliance with an input over 10,000 Btu per hour but not over 50,000 Btu per hour shall be installed with a 9 inch vent termination clearance, and input over 50,000 Btu shall not have less than 12 inches vent termination clearance.
p. For venting heating equipment such as high-efficiency furnaces and gas

fireplaces that vent directly through a sidewall, place termination a minimum of 12 inches away from a door swing. This rule applies to storm and screen doors.

q. Condensate pumps must be wired to the water heater or furnace so if the pump fails the appliance will stop working. The occupant will then know that there is a condensate pump failure.

INSULATION AND ENERGY EFFICIENCY

Insulation requirements compliance may be achieved in two ways;

1. Obtaining an E-Star rating.
2. Compliance with the Simplified Prescriptive Building Envelope Thermal Component Criteria; IECC table 402.1.2
   a. Maximum window U value- .32. No Solar Heat Gain Coefficient requirement.
   b. Skylight maximum .55
   c. Ceiling R value minimum- 49
   d. Wall R value minimum- Wood Framed Cavity R-20 + R-5 Continuous insulation or R-13 Cavity + R-10 Continuous insulation
   e. As an alternative to insulating the floors over crawl spaces, crawl space walls shall be permitted to be insulated when the crawl space is not vented to the outside. Crawl space wall insulation shall be permanently fastened to the wall and extend downward from the floor to the finished grade level and then vertically and/or horizontally for at least another 24 inches. R402.2.11
   f. Floor R value- R38 or insulation to sufficiently fill the framed cavity, R-19 minimum
   g. Basement Walls-R-15 Continuous insulation on the interior or exterior or R-19 cavity insulation, or R-13 Cavity Insulation + R5 Continuous Insulation on the interior or exterior wall.
   h. Slab perimeter R value and depth – 18”, 4 ft. R-10 un- heated, R15 for heated slabs
   i. Crawlspace wall R value- R-15 Continuous or R-19 Cavity Insulation on the interior side

Other prescriptive Energy requirements are as follows:

3. A permanent certificate shall be completed by the builder or registered design professional shall be posted on a wall where the furnace or mechanical equipment is located. The certificate shall list the predominant R values of insulation installed and the U values of fenestration installed, and the results from any required duct system and building envelope air leakage testing done on the building. IECC R401.3
4. Under slab R value for heated slabs, sidewalks and patio's- R-10 minimum.
5. Foam plastic insulation must be protected with a thermal barrier that separates the interior of the building from the insulation by a minimum 1/2" gypsum or other approved material. R316
6. A vapor barrier is required on the warm side of exterior walls with bat cavity insulation. R702.7
7. Minimum pipe insulation: IECC R403.4, R403.5.3
8. Mechanical system piping capable of carrying fluids above 105 degrees or below 55 degrees

shall be insulated a minimum R-3. And shall be applied to the following:

1. Piping ¾" and larger in nominal diameter.
2. Piping serving more than one dwelling unit.
3. Piping located outside of the conditioned space.
4. Piping from the water heater to a distribution manifold.
5. Piping located under a floor slab.
6. Buried piping.
7. Supply and return piping in recirculation systems other than demand recirculation systems.

9. Minimum Duct insulation: IECC table 403.3

   a. Supply and return ducts in attics shall be insulated to a minimum of R-8 where 3 inches in diameter and greater and R-6 where less than 3 inches in diameter.
   b. Supply and return ducts in other parts of the building insulated to a minimum of R-6 where duct is 3 inches in diameter or greater and R-4.2 where less than 3 inches in diameter.

Exception: Ducts or portions thereof located completely inside the building thermal envelope.

10. All duct systems must be sealed. IECC R403.3.2

11. Ducts shall be pressure tested to determine air leakage unless the duct and air handlers are located entirely within the building thermal envelope. A copy of the duct air leakage results shall be signed by the party conducting the test and provided to the code official. R403.3.5

12. Air handlers shall have a manufacturer's designation for an air leakage of no more than 2 percent of the design air flow rate when tested in accordance with ASHRAE 193.

13. All structures with solid fuel burning devices must obtain a HERS rating of 85 for new structures and 100 for existing structures. TCBMC

14. Snow melt and ice system controls must meet TCBMC and R403.9. Temperature sensor and automatic or manual control that will allow shutoff when the outdoor temperature is above 40 degrees F.

15. Not less than 75 percent of lamps in permanently installed lighting fixtures shall be high efficacy lamps. R404.1

16. Recessed lighting installed in the building thermal envelope shall be sealed to limit air 4.5 leakage between conditioned and unconditioned spaces. All recessed luminaires shall be IC-rated and labeled as having an air leakage rate of not more than 2.0 cfm. All shall be sealed with a gasket or caulk between the housing and the interior wall or ceiling covering. R402.

17. Access hatches and doors from conditioned spaces to unconditioned spaces such as attic spaces and crawl spaces shall be weather-stripped and insulated to a level equivalent to the insulation on the surrounding surfaces.

FOAM PLASTICS

R316.3 Surface burning characteristics.

Unless otherwise allowed in Section R314.5 or R314.6, all foam plastic or foam plastic cores used as a component in manufactured assemblies used in building construction shall have a flame spread index of not more than 75 and shall have a smoke-developed index of not more than 450 when tested in the maximum thickness intended for use in accordance with ASTM E 84 or UL 723.. Loose-fill-type foam plastic insulation shall be tested as board stock for the flame spread index and smoke-developed index.

Exception: Foam plastic insulation more than 4 inches thick shall have a maximum flame spread index of 75 and a smoke-developed index of 450 where tested at a minimum thickness of 4 inches, provided the end use is approved in accordance with Section R316.6 using the thickness and density intended for use.

R316.4 Thermal barrier.

Unless otherwise allowed in Section R316.5 foam plastic shall be separated from the interior of a building by an approved thermal barrier of minimum 1/2 inch (12.7 mm) gypsum wallboard or 23/32 inch wood structural panel or a material that is tested in accordance with and meets the acceptance criteria of both the Temperature Transmission Fire Test and the Integrity Fire Test of NFPA 275.

R314.5 Specific requirements.

The following requirements shall apply to these uses of foam plastic unless specifically approved in accordance with Section R316.6 or by other sections of the code or the requirements of Sections R316.2 through R316.4 have been met.

R316.5.1 Masonry or concrete construction.

The thermal barrier specified in Section R316.4 is not required in a masonry or concrete wall, floor or roof when the foam plastic insulation is separated from the interior of the building by a minimum 1-inch (25 mm) thickness of masonry or concrete.

R316.5.2 Roofing.

The thermal barrier specified in Section R316.4 is not required when the foam plastic in a roof assembly or under a roof covering is installed in accordance with the code and the manufacturer's installation instructions and is separated from the interior of the building by tongue-and-groove wood planks or wood structural panel sheathing in accordance with Section R803, not less than $^{15}/_{32}$ inch (11.9 mm) thick bonded with exterior glue and identified as Exposure 1, with edges supported by blocking or tongue-and-groove joints or an equivalent material. The smoke-developed index for roof applications shall not be limited.

R316.5.3 Attics.

The thermal barrier specified in Section R316.4 is not required where all the following apply:

1. Attic access is required by Section R807.1.
2. The space is entered only for the purposes of repairs or maintenance.
3. The foam plastic insulation has been tested in accordance with Section R316.6 or the foam plastic insulation is protected against ignition using one of the following ignition barrier materials:
    1. 1 1/2-inch-thick (38 mm) mineral fiber insulation
    2. 1/4-inch-thick (6.4 mm) wood structural panels
    3. 3/8-inch (9.5 mm) particleboard
    4. 1/4-inch (6.4 mm) hardboard
    5. 3/8-inch (9.5 mm) gypsum board
    6. Corrosion-resistant steel having a base metal thickness of 0.016 inches.
    7. 1 ½-inch thick cellulose insulation; or
    8. 1/4 inch fiber-cement panel, soffit or backer board.

The ignition barrier is not required where the foam plastic insulation has been tested in accordance with Section R316.6. NFPA 286 with the acceptance criteria of Section R302.9, FM 4880, UL 1040 or UL 1715 or fire tests related to end use configurations. R316.6

R316.5.4 Crawl spaces.

The thermal barrier specified in Section R316.4 is not required where all the following apply:

1. Crawl space access is required by Section R408.4.
2. The space is entered only for the purposes of repairs or maintenance.
3. The foam plastic insulation has been tested in accordance with Section R316.6 or the foam plastic insulation is protected against ignition using one of the following ignition barrier materials:
    1. 1 1/2-inch-thick (38 mm) mineral fiber insulation
    2. 1/4-inch-thick (6.4 mm) wood structural panels
    3. 3/8-inch (9.5 mm) particleboard
    4. 1/4-inch (6.4 mm) hardboard
    5. 3/8-inch (9.5 mm) gypsum board
    6. Corrosion-resistant steel having a base metal thickness of 0.016 inches.

R314.5.5 Foam-filled exterior doors.

Foam-filled exterior doors are exempt from the requirements of Sections R316.3 and R316.4.

R316.5.6 Foam-filled garage doors.

Foam-filled garage doors in attached or detached garages are exempt from the requirements of Sections R316.3 and R316.4.

R316.5.7 Foam backer board.

The thermal barrier specified in Section R316.4 is not required where siding backer board foam plastic insulation has a maximum thickness of 0.5 inch (12.7 mm) and a potential heat of not more than 2000 Btu per square foot (22 720 kJ/m^2) when tested in accordance with NFPA 259 provided that:

1. The foam plastic insulation is separated from the interior of the building by not less than 2 inches (51 mm) of mineral fiber insulation or

2. The foam plastic insulation is installed over existing exterior wall finish in conjunction with re-siding; or
3. The foam plastic insulation has been tested in accordance with Section R316.6.

R316.5.8 Re-siding.
The thermal barrier specified in Section R316.4 is not required where the foam plastic insulation is installed over existing exterior wall finish in conjunction with re-siding provided the foam plastic has a maximum thickness of 0.5 inch (12.7 mm) and a potential heat of not more than 2000 Btu per square foot (22 720 kJ/m^2) when tested in accordance with NFPA 259.

R316.5.9 Interior trim.
The thermal barrier specified in Section R314.4 is not required for exposed foam plastic interior trim, provided all of the following are met:

1. The minimum density is 20 pounds per cubic foot (320 kg/m^3).
2. The maximum thickness of the trim is 0.5 inch (12.7 mm) and the maximum width is 8 inches (204 mm).
3. The interior trim shall not constitute more than 10 percent of the aggregate wall and ceiling area of any room or space.
4. The flame spread index does not exceed 75 when tested per ASTM E 84. The smoke-developed index is not limited.

R316.5.10 Interior finish.
Foam plastics shall be permitted as interior finish where approved in accordance with R316.6. Foam plastics that are used as interior finish shall also meet the flame spread and smoke-developed requirements of Sections R302.9.1 and R302.9.2.

R316.5.11 Sill plates and headers.
Foam plastic shall be permitted to be spray applied to a sill plate and header without the thermal barrier specified in Section R316.4 subject to all of the following:

1. The maximum thickness of the foam plastic shall be 3¼ inches (83 mm).
2. The density of the foam plastic shall be in the range of .5 to 2.0 pounds per cubic foot (8 to 32 kg/m^3).
3. The foam plastic shall have a flame spread index of 25 or less and an accompanying smoke developed index of 450 or less when tested in accordance with ASTM E 84 or UL 723.

R316.5.12 Sheathing.
Foam plastic insulation used as sheathing shall comply with Section R316.3 and Section R316.4. Where the foam plastic sheathing is exposed to the attic space at a gable or knee wall, the provisions of Section R316.5.3 shall apply. Where foam plastic insulation is used as exterior wall sheathing on framed wall assemblies, it shall comply with Section R316.8 for wind resistance.

R316.6 Specific approval.

Foam plastic not meeting the requirements of Sections R316.3 through R316.5 shall be specifically approved on the basis of one of the following approved tests: NFPA 286 with the acceptance criteria of Section R302.9.4, FM4880, UL 1040 or UL 1715, or fire tests related to actual end-use configurations. The specific approval shall be based on the actual end use configuration and shall be performed on the finished foam plastic assembly in the maximum thickness intended for use. Assemblies tested shall include seams, joints and other typical details used in the installation of the assembly and shall be tested in the manner intended for use.

Intumescent Coating

Intumescent coatings that meet the above test options noted above can be approved by the Building Inspector. A specification sheet from the coating company must be submitted for approval.

GYPSUM BOARD

1. Location and fastening for 5/8" type X for interior or exterior. Table 702.3.5
   a. On each side of framed party walls separating dwelling units. R302.2 and R302.3
   b. Fire-resistance rated floor-ceiling and wall assemblies shall extend to from the foundation to the underside of the roof sheathing.
   c. On the lid of the garage ceiling with living space above.

Exceptions:

   i. Wall assemblies need not extend through attic spaces when the ceiling is protected with not less than 5/8” drywall and an attic draft stop constructed as specified in Section R302.12.1 is provided above and along the wall assembly separating the dwellings. The structural framing supporting the ceiling shall also be protected by not less than ½” gypsum board or equivalent.

   a. Floor assemblies when not required to be fire- resistance rated by other sections of the code shall be provided with a ½ inch gypsum wall board membrane, or 5/8 inch wood structural panel membrane, or equivalent on the underside of the floor framing members. R302.13 See exceptions.
   b. Section R302.3 Two Family Dwellings the supporting construction of such floor assemblies shall have an equal or greater fire-resistance rating. R302.3.1
   c. Penetrations of wall or floor/ceiling assemblies required to be fire-resistance rated in accordance with Section R302.2 or R302.3 shall be protected in accordance with this section. R302.4
   d. Ceiling assembly separating a garage from habitable space. R302.6 Screws or nails shall penetrate framing not less than 5/8". R702.3.6 Ceilings- 16" and 24"oc framing- max spacing nails 6", max spacing screws 6" spacing. Walls- 16"oc framing- max spacing nails 8", max spacing screws 16" 12" for 24"oc framing. R702.3.5
   e. Exterior Walls less than 5’ separation distance to lot line or structure. Table R302.1(1)

f. Projections equal to 2’ to less than 5’ apply 5/8” gypsum board on the underside. Table R302.1 See exceptions note a and b of Table R302.1(1).
g. Openings in the walls are not allowed for buildings located less than 3 feet from property line. From 3 feet to less than 5 feet, 25% maximum of wall area can be openings.

Exceptions:

i. Walls of dwelling and accessory structures located on the same lot. However, if the garage is located less than 3 feet from the dwelling unit on the same lot then the wall must have not less than ½” gypsum board or equivalent applied to the interior side of the exterior walls that are within this area. Table R302.6

2. Location of ½” drywall: Table R702.3.5
   a. On walls separating a garage from a residence and it's attic on the garage side. Table R302.6
   b. On walls and soffits enclosing accessible usable space under stairways R302.7

3. All fire resistive assemblies must be fire taped. FRDM

MECHANICAL (final)

1. Verification of a blower door test having been performed by an approved testing contractor.
2. Verification of the operation of the heat recovery fresh air ventilation system. The filters need to be accessible to clean per mfg. requirements.
3. Verification that each mechanical ventilation system is equipped with a readily accessible programmable shut off/volume reduction switch. IECC R403
4. Rough inspection corrections completed.

SPRINKLER SYSTEM (final)

Performed by the Crested Butte Fire Protection District.

PLUMBING (final)

Performed by the State Plumbing Inspector.

ELECTRICAL (final)

Performed by the State Electrical Inspector.

FIRE DISTRICT (final)

Performed by the Crested Butte Fire Protection District

WATER METER AND BACKFLOW PREVENTION

Performed by utilities department. Call 349-0885 to arrange the inspection.

FINAL

1. Exterior of the building is finished.
2. Kitchen and one bathroom is complete.
3. Smoke detectors installed in each bedroom, adjacent hallway and each floor. At least one CO 1/smoke combo detector must be installed, within 15' of bedroom doors. A CO/alarm is installed in a room or closet containing a fuel burning device. And smoke alarms must be located 3 feet away from bathrooms.
4. Building heat on and able to maintain 68 degrees Fahrenheit.
5. Range hood has make up air if exhausting more than 400 cfm of air.
6. HRV is accessible for maintenance and is functioning.
7. Dryer vented to exterior.
8. Bathrooms mechanically vented to exterior.
9. Doors from dwelling to private garage must be solid, self-closing and latch from any open position. Chapter 18, 18-2-30 TCBMC
10. Guardrail and handrail requirements and baluster spacing correct.
11. Floor level at doors and door swings correct.
12. Attic and crawlspace access hatches or doors insulated and sized correctly and accessible.
13. House numbers installed. Minimum of 4" high with a minimum stroke width of ½" plainly visible from the street or road fronting the property. The numbers shall contrast with their background.
14. Gas meter attached to the building and in CBFPD pre-approved location.
15. Safety glazing installed in required locations.
16. Site drainage and parking complete.
17. Garage drains to door or floor drain that is tied to an oil sand separator.
18. Site cleaned up and landscaping underway.
19. Verify E-Star appliances Dishwashers, refrigerators, microwave ovens, boilers, and hot water heaters are installed.
20. Verify 75% of all lighting compact fluorescent, LED, or other approved fixtures installed.
21. If applicable elevator has been inspected and is functioning correctly.
22. Sold fuel burning fireplace installed is the approved model and a HERS certificate is provided and approved.
23. The gas fireplace(s) are installed per mfg. and a readily accessible gas shutoff is provided.
24. The door blower door test certificate is provided and approved.
25. The water meter has been inspected and approved by the Town Water Department.
26. A Temporary Certificate of Occupancy (TCO) or Certificate of Occupancy (CO) is required prior to a building being occupied or used by the occupants.