

Boulder County

Boulder County Building Code Amendments



Resolution 2010-138: Amendments to Boulder County
Building Code • Effective January 1, 2011



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Office Hours: Monday – Friday 8:00 a.m. to 4:30 p.m. • Building Permits can be applied for and issued until 4:00 p.m.

Adoption of Model Codes by Reference with Deletions and Amendments

The following publications shall hereby be adopted as the Boulder County Building Code by reference thereto with deletions and amendments as indicated.

1. 2009 INTERNATIONAL BUILDING CODE, including specifically Appendix Chapters C, I and J;
2. 2009 INTERNATIONAL RESIDENTIAL CODE, including specifically Appendix Chapters F, G, H and O;
3. 2009 INTERNATIONAL MECHANICAL CODE;
4. 2009 INTERNATIONAL PLUMBING CODE;
5. 2009 INTERNATIONAL FUEL GAS CODE;
6. CURRENT VERSION ADOPTED BY THE STATE OF COLORADO OF THE NATIONAL ELECTRICAL CODE;
7. 2009 INTERNATIONAL ENERGY CONSERVATION CODE; and the
8. INTERNATIONAL GREEN CONSTRUCTION CODE, Public Version 2.0, November 2010 (selected portions);

all, except the National Electrical Code, as published by the International Code Council (ICC), 4051 West Flossmoor Road, Country Club Hills, IL 60478; and the National Electrical Code, as published by the National Fire Protection Association, One Batterymarch Park, Quincy, MA 02169-7471; with additions, deletions and amendments as follows:

The administrative provisions of the International Building Code, International Residential Code, International Mechanical Code, International Plumbing Code, International Fuel Gas Code, National Electrical Code, International Green Construction Code and the International Energy Conservation Code are combined under the amended administrative provisions of Chapter 1 of the International Building Code.

Exception: IRC R101.1, IRC R101.2, IRC R101.3, IFGC 101.2, IECC Section 101.3, IECC Section 101.4, and IECC Section 101.5.

Amendments to the Boulder County Building Code



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Amendments to the Boulder County Building Code



Modeled from the 2009 International Building Code

2009 International Building Code, including specifically Appendix Chapters C, I, and J, published by the International Code Council (ICC) with additions, deletions, and amendments as follows:

Administrative Chapter 1 • Administration

Administrative Section 101 • General

101.1 Title. These regulations shall be known as the "Boulder County Building Code," may be cited as such and will be referred to herein as "this code."

101.2 Scope. The provisions of this code shall apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures.

Exception: Detached one and two family dwellings and multiple single-family dwellings (townhouses) not more than three stories in height above grade plane with separate means of egress and their accessory structures shall comply with the International Residential Code.

101.2.1 Appendices. Provisions in the appendices shall not apply unless specifically adopted.

101.3 Intent. The purpose of this code is to establish the minimum requirements to safeguard the public health, safety and general welfare through structural strength, means of egress facilities, stability, sanitation, adequate light and ventilation, energy conservation, and safety to life and property from fire and other hazards attributed to the built environment.

101.4 Referenced Codes. The other codes listed in Sections 101.4.1 through 101.4.6 and referenced elsewhere in this code shall be considered part of the requirements of this code to the prescribed extent of each such reference.

101.4.1 Residential. The provisions of the International Residential Code for One and Two family Dwellings shall apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, removal and demolition of detached one and two family dwellings and multiple single-family dwellings (townhouses) not more than three stories in height with a separate means of egress and their accessory structures as defined in IRC Section R 202.

101.4.2 Mechanical. The provisions of the International Mechanical Code shall apply to the installation, alteration, repairs and replacement of mechanical systems, including equipment, appliances, fixtures, fittings and/or appurtenances, including ventilating, heating, cooling, air-conditioning and refrigeration systems, incinerators, and other energy-related systems.

101.4.3 Plumbing. The provisions of the International Plumbing Code shall apply to the installation, alterations, repairs and replacement of plumbing systems, including equipment, appliances, fixtures, fittings and appurtenances, and where connected to a water or sewage system and all aspects of medical gas system.

101.4.4 Gas. The provisions of the International Fuel Gas Code shall apply to the installation of gas piping from the point of delivery, gas appliances and related accessories as covered in the code. These requirements apply to gas piping systems extending from the point of delivery to the inlet connections of appliances and the installation and operation of residential and commercial gas appliances and related accessories.

101.4.5 Electrical. The provisions of the National Electrical Code shall apply to the installation of electrical systems, including alterations, repairs, replacement, equipment appliances, fixtures, fittings and appurtenances thereto.

101.4.6 Energy. The provisions of the International Energy Conservation Code shall apply to all matters governing the design and construction of buildings for energy efficiency.

Administrative Section 102 • Applicability

102.1 General. Where, in any specific case different Sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern. Where there is a conflict between a general requirement and a specific requirement the specific requirement shall be applicable.

102.2 Other Laws. The provisions of this code shall not be deemed to nullify any provisions of local, state or federal law.

102.3 Application of References. References to chapter or Section numbers or to provisions not specifically identified by number shall be construed to refer to such chapter, Section, or provision of this code.

102.4 Referenced Standards and Codes. The codes and standards referenced in this code shall be considered part of requirements of this code to the prescribed extent of each such reference. Where differences occur between provisions of this code and referenced codes and standards, the provisions of this code shall apply.

102.5 Partial Validity. In the event any part or provision of this code is held to be illegal or void, this shall not have the effect of making void or illegal any of the other parts or provisions.

102.6 Existing Structures. The legal occupancy of any structure existing on the date of adoption of this code shall be permitted to continue without change except as specifically covered in this code or as deemed necessary by the Building Official for the general safety and welfare of the occupants and the public.

Administrative Section 103 • Division of Building Safety and Inspection Services

103.1 Creation of Enforcement Agency. The division of building safety and inspection services is hereby created and the official in charge thereof shall be known as the building official.

103.2 Appointment. The building official shall be appointed by the chief appointing authority of the jurisdiction.

103.3 Deputies. In accordance with the prescribed procedures of this jurisdiction and with the concurrence of the appointing authority, the building official shall have the authority to appoint a deputy building official, the related technical officers, inspectors, plans examiners and other employees. Such employees shall have the powers as delegated by the Building Official.

Administrative Section 104 • Duties and Powers Of Building Official

104.1 General. The building official is hereby authorized and directed to enforce the provisions of this code. The building official shall have the authority to render interpretations of this code and to adopt policies and procedures in order to clarify the application of its provisions. Such interpretations, policies, and procedures shall be in compliance with the intent and purpose of this code. Such policies and procedures shall not have the effect of waiving requirements specifically provided for in this code.

104.2 Applications and Permits. The building official shall receive applications, review construction documents and issue permits for the erection, alteration, demolition, and removing of buildings and structures, inspect the premises for which permits have been issued, and enforce compliance with the provisions of this code.

104.3 Notices and Orders. The building official shall issue all necessary notices or orders to ensure compliance with this code.

104.4 Inspections. The building official shall make all of the required inspections, or shall have the authority to accept reports of inspections by approved agencies or individuals. Reports of such inspections shall be in writing and be certified by a responsible officer of such approved agency or by the responsible individual. The building official is authorized to engage such expert opinion as deemed necessary to report upon unusual technical issues that arise subject to the appointing authority.

104.5 Identification. The building official shall carry proper identification when inspecting structures or premises in the performance of duties under this code.

104.6 Right of Entry. When the building official or his authorized representative has reasonable cause to believe that a violation of this code is likely to exist in a structure or upon a premises and that entry into the structure or upon the premises is necessary to verify the violation, the building official or his authorized representative shall first make a reasonable effort to locate the owner or other person having charge or control of the structure or premises, or portion thereof desired to be inspected, and request consent to enter and inspect. If such person cannot be located or if entry is refused, the building official or his authorized representative may seek entry by submitting a sworn affidavit to the proper court of jurisdiction, setting forth facts sufficient to support a reasonable belief that the violation is likely to exist, and that further investigation of the structure or premises is warranted. Any subsequent entry and inspection shall be conducted in accordance with an administrative search warrant if issued by the court. The foregoing provisions of this subsection notwithstanding, consent to enter or an administrative search warrant shall not be required in the following circumstances:

1. To conduct inspections during regular county business hours under an applied for or issued building permit, for work authorized under that permit prior to the issuance of a final Certificate of Occupancy.
2. To make observations of the structure or premises in plain view from public property or from portions of the structure or premises which are open or accessible to the public, or in which the owner or occupant otherwise lacks a reasonable expectation of privacy.
3. In emergency situations in which the building official or his authorized representative has reason to believe that the public health or safety is in imminent danger and could be jeopardized by any delay in Securing entry.

104.7 Division Records. The building official shall keep official records of applications received, permits and certificates issued, fees collected, reports and inspections, and notices and orders issued. Such records shall be retained in the official records for the period required for retention of public records.

104.8 Liability. This code shall not be construed to relieve or lessen the responsibility of any person owning, operating or controlling any building or structure in the unincorporated area of Boulder County for any damages or injuries to persons or property caused in whole or in part by defects or other conditions which may be subject to inspection or regulation under this code. Neither Boulder County, the Boulder County Board of County Commissioners, the Boulder County Land Use Department or any division thereof, the building official, or any other employee or authorized representative of Boulder County who is charged or connected with the enforcement of this code, shall be liable in damages for any act or omission in the course or context of the discharge of duties under this code or any provisions related to it, and nothing in this code or in its administration or enforcement shall be considered in any way to be a waiver by Boulder County or any of its officials or employees of the protection to which they are entitled under the Colorado Governmental Immunity Act, C.R.S. §24-10-101, et seq., as amended. Any claim or suit brought against the building official or any other employee or authorized representative of Boulder County which is alleged to have arisen out of or as a result of any act or omission in the enforcement of any provision of this code, and which occurred within the scope of employment of such official, employee or representative, shall be defended by Boulder County until final termination of such proceedings, and any judgment resulting there from shall be assumed by Boulder County.

104.9 Approved Materials and Equipment. Materials, equipment and devices approved by the building official shall be constructed and installed in accordance with such approval.

104.9.1 Used Materials and Equipment. The use of used materials which meet the requirements of this code for new materials is permitted. Used equipment and appliances shall not be reused unless approved by the building official.

104.10. Modifications. Whenever there are practical difficulties involved in carrying out the provisions of this code the building official shall have the authority to grant modifications for individual cases upon application of the owner or owner's representative provided the building official shall first find that special individual reason makes the strict letter of this code impractical and the modification is in compliance with the intent and purpose of this code and that such modification does not lesson the 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 division of building safety.

104.11 Alternate Materials, Design, and Methods of Construction and Equipment. The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code provided that any such alternative has been approved. An alternative material design or method of construction shall be approved where the building official finds the proposed design is satisfactory and complies with the intent of provisions of this code and that the material, method, or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability, and safety.

104.11.1 Research Reports. Supporting data, where necessary to assist in the approval of materials or assemblies not specifically provided for in this code shall consist of valid research reports from approved sources.

104.11.2 Test. Whenever there is insufficient evidence of compliance with the provisions of this code, or evidence that a material or method does not conform to the requirements of this code, or in order to substantiate claims for the alternative materials or methods, the building official shall have the authority to require tests as evidence of compliance to be made at no expense to the jurisdiction. Test methods shall be as specified in this code or by other recognized test standards. In the absence of recognized and accepted test methods, the building official shall approve the testing procedures. Tests shall be performed by an approved agency. Reports of such test shall be retained by the building official for the period required for retention of public records.

104.12 Cooperation of Other Officials and Officers. The building official may request and shall receive the assistance and cooperation of other officials of this jurisdiction so far as is required in the discharge of the duties required by this code or other pertinent law or ordinance.

Administrative Section 105 • Permits

105.1 Required. No person shall erect, construct, reconstruct, alter, or change the use of any building or other structure without first obtaining a building permit.

105.2 Work Exempt from Permit. Exemptions from permit requirements of this code shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this code or any other laws or ordinances of this jurisdiction. Permits shall not be required for the following:

Building:

1. One story detached accessory structures used as a storage shed, playhouse, greenhouse, chicken coop, agricultural loafing shed, or similar uses, provided:
 - a. The floor area of any structure does not exceed 120 square feet, except agricultural listed in item b. below.
 - b. Loafing sheds not exceeding 200 square feet,
 - c. Structures without utilities of less than 12 feet in height,
 - d. Structures that do not violate the conditions of any existing land use approval or conservation easement.
 - e. The number of detached accessory structures which may be constructed without a building permit shall be determined by the size of the subject parcel:
 - i. One detached accessory structure may be constructed without a building permit on parcels 0.5 acres or less in size.
 - ii. Two detached accessory structures may be constructed without a building permit on parcels greater than 0.5 acre and less than ten acres.
 - iii. Three detached accessory structures may be constructed without a building permit on parcels 10 acres and larger.
2. Fences not over 6 feet high.
3. Retaining walls not over 4 feet in height measured from the bottom of the footing to the top of the wall, unless supporting a surcharge or impounding flammable liquids.
4. Water tanks supported directly upon grade if the capacity does not exceed 5,000 gallons and the ratio of height to diameter or width does not exceed two to one.
5. Platforms, sidewalks and driveways not more than 30 inches above grade and not over any basement or story below and not subject to a grading permit.
6. Painting, papering, tiling, carpeting, cabinets, counter tops and similar finish work.
7. Temporary motion picture, television and theater stage sets and scenery.
8. Shade cloth structures constructed for nursery or agricultural purposes, and not including service systems.
9. Prefabricated swimming pools where the pool walls are entirely above the adjacent grade and the capacity does not exceed 5,000 gallons.
10. Swings and other playground equipment.

11. Window awnings supported by an exterior wall which do not project more than 54 inches from the exterior wall and do not require additional support.
12. Non-fixed and movable fixtures, cases, racks, counters, and partitions not over 5 feet 9 inches in height.
13. Antennas and/or their supporting structures other than buildings, accessory to residential use less than ten feet in height and lower than the structure height limit in the zoning district in which located, or which were constructed or erected prior to July 1, 1988.
14. Temporary emergency noncommercial telecommunication-sites operated by a governmental agency, or by a volunteer public safety agency officially sanctioned by a governmental agency for that purpose, for public safety communication uses, for a period not to exceed six months.

The above exceptions to the building permit requirements do not exempt structures from meeting the other applicable provisions of this Code, including but not limited to the applicable zoning district setback and height requirements and the provisions of the Floodplain Overlay District.

Electrical:

Repairs and Maintenance: Minor repair work, including the replacement of lamps or the connection of approved portable electrical equipment to approved, permanently installed receptacles.

Radio and Television Transmitting Stations: The provisions of this code shall not apply to electrical equipment used for radio and television transmissions but does apply to equipment and wiring for power supply for the installation of towers and antennas.

Temporary Testing Systems: A permit shall not be required for the installation of any temporary system required for the testing or servicing of electrical equipment or apparatus.

Gas:

1. Portable heating appliance.
2. Replacement of any minor part that does not alter approval of equipment or make such equipment unsafe.

Mechanical:

1. Portable heating appliances;
2. Portable ventilation appliances and equipment;
3. Portable cooling units;
4. Steam, hot, or chilled water piping within any heating or cooling equipment or appliances regulated by this code;
5. The replacement of any minor part that does not alter the approval of equipment or an appliance or make such equipment or appliance unsafe;
6. Portable evaporative coolers;
7. Self-contained refrigeration systems that contain 10 pounds or less of refrigerant, or that are actuated by motors of 1 horsepower (0.75 kW) or less; and
8. Portable fuel cell appliances that are not connected to a fixed piping system and are not interconnected to a power grid.

Plumbing:

1. The stopping of leaks in drains, water, soil, waste or vent pipe provided, however, that if any concealed trap, drainpipe, water, soil, waste or vent pipe becomes defective and it becomes necessary to remove and replace the same with new material, such work shall be considered as new work and a permit shall be obtained and inspection made as provided in this code.
2. The clearing of stoppages or the repairing of leaks in pipes, valves or fixtures, and the removal and reinstallation of water closets, provided such repairs do not involve or require the replacement or rearrangement of valves, pipes or fixtures.

Exemption: Exemption from the permit requirements of this code shall not be deemed to grant authorization for any work to be done in violation of the provisions of this code or any other laws or ordinances of this jurisdiction.

105.2.1 Emergency Repairs. Where equipment replacement and repairs must be performed in an emergency situation the permit application shall be submitted within the next working business day to the building official.

105.2.2 Repairs. Application or notice to the Building Official is not required for ordinary repairs to structures, replacement of lamps, or the connection of approved portable electrical equipment to approved permanently installed receptacles. Such repairs shall not include the cutting away of any wall, partition, or portion thereof, the removal or cutting of any structural beam or load bearing support, or the removal or change of any required means of egress, or rearrangement of parts of a structure affecting the egress requirements; nor shall any ordinary repairs include the addition to, alteration of, replacement or relocation of any standpipe, water supply, sewer, drainage, drain leader, gas, soil, waste, vent or similar piping, electric wiring, or mechanical, or other work affecting public health or general safety.

105.2.3 Public Service Agencies. A permit shall not be required for the installation, alteration or repair of generation, transmission, distribution, or metering or other related equipment that is under the ownership and control of public service agencies by established right.

105.3 Application for Permit. To obtain a permit the applicant shall first file an application therefore in writing on a form furnished by the division of building safety for that purpose. Such application shall:

1. Identify and describe the work to be covered by the permit for which application is made.
2. Describe the land on which the proposed work is to be done by legal description, street address, or similar description that will readily identify and definitely locate the proposed building or work area.
3. Indicate the use and occupancy for which the proposed work is intended.
4. Be accompanied by construction documents and other information as required in Section 106.
5. State the valuation of the proposed work.
6. Be signed by the applicant, or the applicant's authorized agent.
7. Give such other data and information as required by the building official.

105.3.1 Action on Application. The building official shall examine or cause to be examined applications for permits and amendments thereto within a reasonable time after filing. If the application or construction documents do not conform to the requirements of pertinent laws, the building official shall reject such application in writing stating the reasons therefore. If the building official is satisfied that the proposed work conforms to the requirements of this code and laws and ordinances applicable thereto, the building official shall issue a permit therefore as soon as practical.

105.3.2 Time Limitation of Application. An application for a permit for any proposed work shall be deemed to have been abandoned 180 days after the date of filing unless such application has been pursued in good faith or a permit has been issued; except that the Building Official is authorized to grant one or more extensions of time for additional periods not exceeding 90 days each. The extension shall be requested in writing and justifiable cause demonstrated.

105.4 Validity of Permit. The issuance or granting of a permit shall not be construed to be a permit for or an approval of any violation of any provisions of this code or of any other ordinance of the jurisdiction. Permits presuming to give authority to violate or cancel the provisions of this code or other ordinance of the jurisdiction shall not be valid. The issuance of a permit based on construction documents and other data shall not prevent the building official from requiring the correction of errors in the construction documents and other data. The Building Official is also authorized to prevent occupancy or use of the structure where in violation of this code or of any other ordinances of this jurisdiction.

105.5 Expiration. Every permit issued shall become invalid unless the work on the site authorized by such permit is commenced within 180 days after its issuance or if the work authorized on the site by such permit is suspended or abandoned for a period of 180 days after the time the work is commenced. The building official is authorized to grant in writing, one or more extensions of time for periods not more than 180 days each. The extension shall be requested in writing and justifiable cause demonstrated.

105.6 Suspension or Revocation. The building official is authorized to suspend or revoke a permit issued under the provisions of this code wherever the permit is issued in error or on the basis of incorrect, inaccurate, or incomplete information, or in violation of any ordinance or regulation or any of the provisions of this code.

105.7 Placement of Permit. The building permit or copy shall be kept on the site of the work until the completion of the project.

Administrative Section 106 • Floor and Roof Design Loads

106.1 Live Loads Posted. Where the live loads for which each floor or portion thereof of a commercial or industrial building is or has been designed to exceed 50 psf, such design live loads shall be conspicuously posted by the owner in that part of each story in which they apply, using durable signs. It shall be unlawful to remove or deface such notices.

Add exceptions to clarify that the live load posting requirements do not apply to other than commercial or industrial buildings.

Exceptions:

1. Group U occupancies.
2. One- and two-family dwellings and townhouses.
3. Residential accessory structures as defined in Section R202 of the International Residential Code.

106.2 Issuance of Certificate of Occupancy. A certificate of occupancy required by Section 111 shall not be issued until the floor load signs, required by Section 106.1, have been installed.

106.3 Restrictions on Loading. It shall be unlawful to place, or cause or permit to be placed, on any floor or roof of a building, structure or portion thereof, a load greater than is permitted by this code.

Administrative Section 107 • Submittal Documents

107.1 Submittal Documents. Construction documents, special inspection and structural observation programs, and other data shall be submitted in one or more sets with each application for permit. The construction documents shall be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed. Where special conditions exist the building official is authorized to require additional construction documents to be prepared by a registered design professional.

Exception: 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 review of construction documents is not necessary to obtain compliance with this code.

107.1.1 Information on Construction Documents. Construction documents shall be dimensioned and drawn upon suitable material. Electronic media documents are permitted to be submitted when approved by the building official. Construction documents shall be of sufficient clarity to indicate the location, nature, and extent of the work proposed and show in detail that it will conform to the provisions of this code and relevant laws, ordinances, rules, and regulations as determined by the building official.

107.1.1.1 Fire protection System Shop Drawings. Shop drawings for the fire protection system(s) shall be submitted to indicate conformance with this code and the construction documents and shall be approved prior to the start of system installation. Shop drawings shall contain all information as required by the referenced installation standards in Chapter 9.

107.1.2 Means of Egress. The construction documents shall show in sufficient detail the location, construction, size and character of all the portions of the means of egress in compliance with the provisions of this code. In other than occupancies in Groups R-2 and R-3 as applicable in Section 101.2 and I-1 the construction document shall designate the number of occupants to be accommodated on every floor and in all rooms and spaces.

107.1.3 Exterior Wall Envelope. Construction documents for all buildings shall describe the exterior wall envelope in sufficient detail to determine compliance with this code. The construction documents shall provide details of the exterior wall envelope as required, including flashing, intersections with dissimilar materials, corners, end details, control joints, intersections at roof, eaves, or parapets, means of drainage, water-resistive membrane, and details around openings.

The construction documents shall include manufacturing installation instructions that provide supporting documentation that the proposed penetration and opening details described in the construction documents maintain the weather resistance of the exterior wall envelope. The supporting documentation shall fully describe the exterior wall system which was tested, where applicable, as well as the test procedure used.

107.2 Site Plan. The construction documents submitted with the application for permit shall be accompanied by a site plan showing to scale the size and location of new construction and existing structures on the site, distances to lot lines, the established street grade, the proposed finished grades; when applicable the flood hazard area, and floodways and design flood elevations. The site plan shall be drawn in accordance with an accurate boundary line survey. In the case of demolition, the site plan shall show construction to be demolished and the location and size of existing structures and construction that are to remain on the site or plot. The building official is authorized to waive or modify the requirement for a site plan when the application for permit is for alteration or when otherwise warranted.

107.2.1 Site Plans in Hillside Areas. When a building site is located in a hillside area and, in the opinion of the building official, is located in an area subject to geologic hazards the building official may require that a detailed site plan be submitted as a prerequisite to the issuance of a building permit. Such site plans, when required, shall be prepared by an architect or a civil engineer and shall be based on an accurate topographic map prepared by a land surveyor. The site plans shall bear the seal and signature of the responsible architect or civil engineer and the land surveyor. The topographic map shall encompass the building site and shall be drafted at a scale no smaller than 1 inch equal to 20 feet (1:240) and at a contour interval less than or equal to two (2) feet. Such site plans, at a minimum, shall show:

1. A grading plan showing existing and proposed contour lines reflecting the proposed grading as well as the locations and pertinent elevations of finished floors of all structures, basements, driveways, level areas, septic disposal fields and retaining walls.
2. The locations of all water wells (whether on-site or off) within 250 feet of any septic disposal field.
3. All property lines within 100 feet of the building site.
4. Setbacks of cut slopes, fill slopes, retaining walls, and structures from property lines.
5. At least one critical cross Section oriented through the structural site and drafted at equal horizontal and vertical levels.

107.3 Water and Sanitation Requirements. Every building or addition thereto shall be provided with water and sanitation facilities in accordance with the provisions of this code. Water supplies and sewerage facilities shall be in conformance with regulations and requirements of the Boulder County Health Department, Colorado Department of Health and the Colorado Division of Water Resources Office or any supplier recognized thereby. When applicable, evidence of same shall be submitted to the building official prior to the issuance of the building permit.

107.4 Examination of Documents. The building official shall examine or cause to be examined the accompanying construction documents and shall ascertain by such examination whether the construction indicated and described is in accordance with the requirements of this code and other pertinent laws or ordinances.

107.4.1 Approval of Construction Documents. When the building official issues a permit the construction documents shall be approved in writing or by stamp as "Reviewed for Code Compliance." One set of construction documents so reviewed shall be retained by the building official. The other set shall be returned to the applicant, shall be kept at the site of work, and shall be open to inspection by the building official or his authorized representative.

107.4.2 Previous Approvals. This code shall not require changes in the construction documents, construction or designated occupancy of a structure for which a lawful permit has been heretofore issued or otherwise authorized, and the construction of which has been pursued in good faith within 180 days after the effective date of this code and has not been abandoned.

107.4.3 Phased Approval. The building official is authorized to issue a permit for the construction of foundations or any other part of a building or structure before the construction documents for the whole building or structure have been submitted, provided that adequate information and detailed statements have been filed complying with pertinent requirements of this code. The holder of such permit for the foundation or other parts of a building or structure shall proceed at the holder's own risk with the building operation and without assurance that a permit for the entire structure will be granted.

107.4.4 Design Professional in Responsible Charge.

107.4.4.1 General. When it is required that construction documents be prepared by a registered design professional, the building official shall be authorized to require the owner engage and designate on the building permit application a registered design professional who shall act as the registered professional in responsible charge. If the circumstances require, the owner shall designate a substitute registered design professional in responsible charge who shall perform the duties of the original registered design professional in responsible charge. The owner shall notify the building official in writing if the registered design professional in responsible charge is changed or is unable to continue to perform the duties. The registered design professional in responsible charge shall be responsible for reviewing and coordinating submittal documents prepared by others, including phased and deferred submittal items, for compatibility with the design of the building.

Where structural observation is required by Section 1709, the inspection program shall name the individual or firms who are to perform structural observation and describe the stages of construction at which structural observation is to occur (see also duties specified in Section 1704).

107.4.4.2 Deferred Submittals. For the purposes of this Section, deferred submittals are defined as those portions of the design that are not submitted at the time of the application and that are to be submitted to the building official within a specified period.

Deferral of any submittal items shall have the prior approval of the building official. The registered design professional in responsible charge shall list the deferred submittals on the construction documents for review by the building official.

Submittal documents for deferred submittal items shall be submitted to the registered design professional in responsible charge who shall review them and forward them to the building official with a notation indicating that the deferred submittal documents have been reviewed and that they have been found to be in general conformance with the design of the building. The deferred submittal items shall not be installed until the design and submittal documents have been approved by the building official.

107.5 Amended Construction Documents. Work shall be installed in accordance with the approved construction documents and any changes made during construction that are not in compliance with the approved construction documents shall be resubmitted for approval as an amended set of construction documents.

107.6 Retention of Construction Documents. One set of approved construction documents shall be retained by the building official for a period of not less than 180 days from the date of completion of the permitted work or as required by state or local laws.

107.7 Reports. When, in the opinion of the building official, certain geologic hazards or constraints including but not limited to, landslides, rock falls, flash flooding, mudslides, avalanches, subsidence and/or soil creep exist or may exist with respect to a specific building proposal, a soil and/or geologic investigation may be required prior to the issuance of a building permit. Such investigation, when required, shall be documented by submittal to the building official of an acceptable written report which is signed by a soils engineer and/or an engineering geologist within his field of expertise. Said report(s) shall contain specific recommendations regarding the building location and design. The relationships of (1) site grading, structural integrity, and septic drain fields and (2) the geologic hazards or constraints shall be considered in the report(s).

Administrative Section 108 • Temporary Structures and Uses

108.1 General. The building official is authorized to issue a permit for temporary structures and temporary uses. Such permits shall be limited as to time of service but shall not be permitted for more than 180 days. The building official is authorized to grant extensions for demonstrated cause.

108.2 Conformance. Temporary structures and uses shall conform to the structural strength, fire safety, means of egress, accessibility, light, ventilation, and sanitary requirements of this code as necessary to ensure the public health, safety, and general welfare.

108.3 Temporary Power. The building official is authorized to give permission to temporarily supply and use power in part of an electrical installation before such installation has been fully completed and the final certificate of completion has been issued. The part covered by the temporary certificate shall comply with the requirements specified for temporary lighting, heating or power in the National Electrical Code.

108.4 Termination of Approval. The building official is authorized to terminate such permit for a temporary structure or use and to order the temporary structure or use to be discontinued.

Administrative Section 109 • Fees

109.1 Payment of Fees. A permit shall not be valid until the fees described by law have been paid. Nor shall an amendment to a permit be released until the additional fee, if any, has been paid.

109.2 Schedule of Permit Fees. On buildings, structures, electrical, gas, mechanical, and plumbing systems or alterations requiring a permit, a fee for each permit shall be paid as required in accordance with Table 1-A of this code (this fee schedule is administrative and subject to change by the Board of County Commissioners).

109.3 Plan Review Fees. When submittal documents are required by Section 106.1 a non-refundable plan review fee deposit shall be paid. The plan review fee shall be 65 percent (65%) of the building permit fee as shown in Table 1-A. The plan review fees specified in this Section are separate fees from the permit fees specified in Section 108.2 and are in addition to the permit fees. When submittal documents are incomplete or changed so as to require additional plan review or when the project involves deferred submittal items as defined in Section 106.4.3, an additional plan review fee shall be charged at the rate shown in Table 1-A.

109.4 Building Permit Valuations. The applicant for a permit shall provide an estimated permit value at the time of application. Permit valuations shall include total value of work including materials and labor for which the permit is being issued such as electrical, gas, mechanical, plumbing equipment, and permanent systems. If, in the opinion of the building official the valuation is underestimated on the application the permit shall be denied unless the applicant can show detailed estimates to meet the approval of the building official. Final building permit valuation shall be set by the building official.

109.5 Investigation Fees: Work without a Permit.

109.5.1 Investigation. Whenever any work for which a permit is required by this code has been commenced without first obtaining said permit, a special investigation shall be made before a permit may be issued for such work.

109.5.2 Fee. An investigation fee in addition to the permit fee shall be collected whether or not a permit is then or subsequently issued. The investigation fee shall be equal to the amount of the permit fee required by this code. The minimum investigation fee shall be the same as the minimum fee set forth in Table 1 A. The payment of such investigation fee shall not exempt any person from compliance with all other provisions of this code nor from any penalty prescribed by law.

109.6 Fee Refunds. The building official may authorize refunding of any fee paid here under 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 may authorize refunding of not more than 80 percent of the plan review fee paid when an application for a permit for which a plan review fee has been paid is withdrawn or canceled before any plan reviewing is done. 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.

Building Permit Fees

Total Cost of the Building Permit

Add the following fees for the total cost of the building permit.

1. Building Permit Fee
2. Plan Check Fee
3. Use Taxes

1. Building Permit Fees Valuation Table

Building permits for structures being rebuilt after being destroyed in the 2010 Fourmile Canyon Fire, if they are the same size or smaller than the structures that existed prior to the fire, and not larger than 2,500 sq. ft. in floor area for dwellings or not larger than 530 sq. ft. in floor area for accessory buildings, may have the building permit fee calculated in accordance with the table above reduced by 25 percent (25%). This provision applies only to qualifying building permit applications received on or before September 30, 2012.

Total Valuation* of project	Building Permit Fee
\$1.00 to \$800.00	\$36.40.
More than \$800.00, but not more than \$2,000.00	\$36.40 for the first \$800.00, plus \$3.92 for each additional \$100.00, or fraction thereof, up to and including \$2,000.00.
More than \$2,000.00, but not more than \$25,000.00	\$83.40 for the first \$2,000.00, plus \$14.35 for each additional \$1,000.00, or fraction thereof, up to and including \$25,000.00.
More than \$25,000.00, but not more than \$50,000.00	\$413.27 for the first \$25,000.00, plus \$10.85 for each additional \$1,000.00, or fraction thereof, up to and including \$50,000.00.
More than \$50,000.00, but not more than \$100,000.00	\$684.44 for the first \$50,000.00, plus \$9.58 for each additional \$1,000.00, or fraction thereof, up to and including \$100,000.00.
More than \$100,000.00, but not more than \$200,000.00	\$1,163.63 for the first \$100,000.00, plus \$12.47 for each additional \$1,000.00, or fraction thereof, up to and including \$200,000.00.
More than \$200,000.00, but not more than \$500,000.00	\$2,410.94 for the first \$200,000.00, plus \$8.68 for each additional \$1,000.00, or fraction thereof, up to and including \$500,000.00.
More than \$500,000.00, but not more than \$1,000,000.00	\$5,014.24 for the first \$500,000.00, plus \$7.47 for each additional \$1,000.00, or fraction thereof, up to and including \$1,000,000.00.
More than \$1,000,000.00	\$8,750.36 for the first \$1,000,000.00, plus \$4.82 for each additional \$1,000.00, or fraction thereof.

* Valuation shall be determined in accordance with Section 109.4 of the Boulder County Building Code. Where the valuation that is calculated based upon standard building valuation data and the actual total contract construction cost differ, the higher of the two valuation figures shall be used to determine the building permit fee.

Residential Building Valuation Data

Type of Structure	Cost Per Sq. Ft.
Dwellings: Type VB Wood Frame	\$92.40
Basement: Unfinished	\$17.70
Basement: Finished	\$23.20
Private Garages: Wood Frame	\$24.30
Misc. Structures: Carports, Pole Barns, Decks, Loafing Sheds, Covers	\$16.60

2. Plan Check Fee

The plan review fee is determined by multiplying the building permit fee by 65%.

3. Use Taxes

1994 Open Space Use Tax	$\frac{1}{2}$ of the valuation X .0035
Boulder County Transportation Sales and Use Tax	$\frac{1}{2}$ of the valuation X .0010
Non Profit Human Services Tax	$\frac{1}{2}$ of the valuation X .0005
Jail Improvement & Operation Tax	$\frac{1}{2}$ of the valuation X .0005
2005 Open Space Tax	$\frac{1}{2}$ of the valuation X .0010
2011 Open Space Tax	$\frac{1}{2}$ of the valuation X .0015

Application Deposit Feest

The application deposit is based on the stated valuation shown on the building permit application in accordance with the following schedule:

Project Valuation	Deposit
\$0.00 — \$50,000.00	\$25.00
\$50,001.00 — \$200,000.00	\$200.00
\$200,001.00 and up	\$500.00

† Building permit applicants for structures being rebuilt after being destroyed in the 2010 Fourmile Canyon Fire are not required to pay an application deposit at the time of building permit application. This provision applies only to qualifying building permit applications received on or before September 30, 2012.

Other Fees

Calculated fees are to be rounded to the nearest whole dollar figure, with amounts of \$0.50 or less rounded down and amounts of \$0.51 or more to be rounded up.

Where structures are being rebuilt after being destroyed by the 2010 Fourmile Canyon Fire and qualified third party inspectors satisfactorily perform required inspections that would otherwise need to be performed by county building inspectors, rebates of \$125.00 per such required inspection may be paid to the holder of the building permit. This provision applies only to qualifying building permit applications received on or before September 30, 2012.

Manufactured Home Setup Permit Fee	\$131.00
Manufactured homes installed upon permanent foundations — use the schedule above with valuation of foundation and other associated work performed on the site.	See Valuation Table (previous page)
Re-inspection fees assessed under provisions of Section 109.8	\$72.00
Inspections outside of normal business hours	\$72.00 per hour‡
Appeals to the Board of Review	\$278.00
Temporary Certificates of Occupancy	\$87.00
Oil and gas well drilling permits	\$52.00
Additional plan review required due to changes, additions or revisions to plans	\$72.00 per hour‡
For use of outside consultants for plan checking and inspections, or both	Actual costs⌘
Grading Fees (see following page for fee structure)	See Grading Permit Fee Table (following page)
Renewable Energy Permit	\$400.00 plus tax (based on materials only at \$8.00 per watt)
Returned Check Fee	\$20

‡ Or the total hourly cost to the jurisdiction, whichever is the greatest. This cost shall include supervision, overhead, equipment, hourly wages and fringe benefits of the employees involved.

⌘ Actual costs include administrative and overhead costs.

Note: Building materials purchased in Boulder County are tax-exempt for County Taxes when you present your building permit to the materials vendor at time of purchase.

Grading Permit Fees

For grading less than 50 cubic yards, no permit required.

Total Earthwork in Cubic Yards	Permit Fee	Plan Review Fee	Total Fee
51 - 100	\$58.46	\$38.00	\$96.46
101 - 200	\$86.90	\$56.49	\$143.39
201 - 300	\$115.34	\$74.97	\$190.31
301 - 400	\$142.20	\$92.43	\$234.63
401 - 500	\$170.64	\$110.92	\$281.56
501 - 600	\$197.50	\$128.38	\$325.88
601 - 400	\$225.94	\$146.86	\$372.80
701 - 800	\$252.80	\$164.32	\$417.12
801 - 900	\$281.24	\$182.81	\$464.05
901 - 1,000	\$308.10	\$200.27	\$508.37
1,001 - 2,000	\$330.22	\$214.64	\$544.86
2,001 - 3,000	\$353.92	\$230.05	\$460.10
3,000 - 4,000	\$376.04	\$244.43	\$620.47
4,001 - 5,000	\$399.74	\$259.83	\$519.66
5,001 - 6,000	\$421.86	\$274.21	\$696.07
6,001 - 7,000	\$445.56	\$289.61	\$735.17
7,001 - 8,000	\$467.68	\$303.99	\$771.67
8,001 - 9,000	\$491.38	\$319.40	\$810.78
9,001 - 10,000	\$513.50	\$333.78	\$847.28
10,001 - 20,000	\$617.78	\$401.56	\$1,019.34
20,001 - 30,000	\$722.06	\$469.34	\$1,191.40
30,001 - 40,000	\$826.34	\$537.12	\$1,363.46
40,001 - 50,000	\$930.62	\$604.902	\$1,535.52
50,001 - 60,000	\$1,034.90	\$672.69	\$1,707.59
60,001 - 70,000	\$1,139.18	\$740.47	\$1,879.65
70,001 - 80,000	\$1,243.46	\$808.25	\$2,051.71
80,001 - 90,000	\$1,347.74	\$876.03	\$2,223.77
90,001 - 100,000	\$1,452.02	\$943.81	\$2,395.83

Note: Taxes are not associated with grading permits as there are no taxable materials.

Administrative Section 110 • Inspections

110.1 General. All construction or work for which a permit is required shall be subject to inspection by the building official and all such construction or work shall remain accessible and exposed for inspection purposes until approved by the building official. In addition, certain types of construction shall have continuous inspection as specified in Section Table 1704.5.1 and Table 1704.5.3.

Approval as a result of an inspection shall not be construed to be an approval of a violation of the provisions of this code or of other ordinances of the jurisdiction. Inspections presuming to give authority to violate or cancel the provisions of this code or of other ordinances of the jurisdiction shall not be valid.

It shall be the duty of the permit applicant to cause the work to remain accessible and exposed for inspection purposes. Neither the building official nor the jurisdiction shall be liable for expense entailed in the removal or replacement of any material required to allow inspection.

A survey of the lot may be required by the building official to verify that the structure is located in accordance with the approved plans.

110.2 Inspection Record Card. Work requiring a permit shall not be commenced until the permit holder or an agent of the permit holder shall have posted or otherwise made available an inspection record card such as to allow the building official to conveniently make the required entries thereon regarding inspection of the work. This card shall be maintained available by the permit holder until final approval has been granted by the building official.

110.3 Inspection Requests. It shall be the duty of the person doing the work authorized by a permit to notify the building official that such work is ready for inspection. The building official may require that every request for inspection be filed at least one working day before such inspection is desired. Such request may be in writing or by telephone at the option of the building official. It shall be the duty of the person requesting any inspections required by this code to provide access to and means for inspection of such work.

110.4 Approval Required. Work shall not be done beyond the point indicated in each successive inspection without first obtaining the approval of the building official. The building official, upon notification, shall make the requested inspections and shall either indicate that portion of the construction is satisfactory as completed, or shall notify the permit holder or an agent of the permit holder wherein the same fails to comply with this code. Any portions which do not comply shall be corrected and such portion shall not be covered or concealed until authorized by the building official. There shall be a final inspection and approval of all buildings and structures when completed and ready for occupancy and use.

110.5 Required Inspections.

110.5.1 General. Reinforcing steel, structural framework, plumbing, electrical or mechanical systems of any part of any building or structure shall not be covered or concealed without first obtaining the approval of the building official. Protection of joints and penetrations in fire-resistive assemblies shall not be concealed from view until inspected and approved. The building official, upon notification, shall make the inspections set forth in the following subsection.

110.5.2 Rough Inspections:

110.5.2.1 Temporary Electric Construction Pole: To be made after all wiring installations have been made as required in the National Electrical Code, Article 590 entitled "Temporary Wiring."

110.5.2.2 Zoning/Building Code Setbacks: May be performed at the same time as inspection 109.5.2.4 below but only after location of the structure has been laid out and staked. A general observation of distances between building(s) and property lines will be conducted. If any discrepancies are apparent a survey may be required by the building official to verify that the structure is located in accordance with the approved plans.

110.5.2.3 Trenches, Footings, Pads, Caissons: To be made after trenches are excavated, forms erected, steel in place and prior to placement of concrete. The County requires on-site observation and a stamped written report by an architect or professional engineer when plans call for drilled piers (caisson) construction. Observation of the preparation, reinforcement and placement shall be described in detail in the written report as mentioned by an architect or engineer and is not the responsibility of the County.

110.5.2.4 Foundation Walls and/or Grade Beams Steel Reinforcement: To be made after all forms are erected, steel in place, and prior to placement of concrete.

110.5.2.5 Damp-Proofing of Footing and Foundation and/or Grade Beams of Basement Walls: To be made prior to backfilling. Contractor or homeowner shall provide an invoice from the damp-proofing applicator, or receipts for the materials used. Foundation drainage systems for concrete and masonry foundations that enclose habitable spaces shall be inspected by the engineer of record.

110.5.2.6 Electrical-Underground: Within building, inspection to be made prior to backfilling and/or pouring concrete floor. Note: If meter housing is mounted on a pole, the County must inspect between pole and structure prior to backfilling.

110.5.2.7 Plumbing-Underground: Within building only, inspection to be made prior to backfilling and/or pouring concrete floor.

110.5.2.8 Gas Piping-Underground: Inspections to be made prior to backfilling.

110.5.2.9 Rough Electrical: Prior to covering and concealing, inspection will be made of all walls, ceilings, floors, service equipment panel and service entrance.

110.5.2.10 Rough Plumbing: Inspection will be made prior to concealing and/or covering all walls, ceilings and floors. Includes waste lines, vents and water lines.

110.5.2.11 Rough Gas Piping: Inspection will be made prior to covering and/or concealing all walls, ceiling, and floor.

110.5.2.12 Rough Heating and Ventilation: Inspection will be made prior to covering and/or concealing all walls, ceilings, and floors.

110.5.2.13 Rough Framing: Inspection to be made after the roof, all framing, fire blocking and bracing are in place and all pipes, chimneys, and vents are complete. Note: the roof covering (shingles) must be installed in order to pass inspection.

110.5.2.14 Insulation Walls/Ceilings/Floors: Inspection will be made prior to covering and concealing all walls, ceilings and floors. Insulation inspections for projects exceeding 200 sq. ft. of conditioned floor area (CFA) must be done by a certified energy rater. For projects of 200 sq. ft. of conditioned floor area (CFA) or less, the insulation installer shall post an insulation certificate in accordance with IECC Section 401.3 or IRC Section N1101.9.

110.5.2.15 Lath and/or Wallboard: Inspection will be made prior to plastering or taping wall and ceiling covers and after all nails and/or screws are installed.

110.5.2.16 Fire-Resistant Penetrations. Protection of joints and penetrations in fire-resistant-rated assemblies shall not be concealed from view until inspected and approved.

110.5.3 Final Inspections. The following final inspections must all be made after building and site are completed and ready for occupancy.

110.5.3.1 Final Grading. Positive drainage away from building(s).

110.5.3.2 Frame. All rooms and areas complete in every respect.

110.5.3.3 Electrical. All fixtures, service equipment panel and service entrance.

110.5.3.4 Plumbing. All fixtures installed.

110.5.3.5 Gas Piping. This inspection shall include an air pressure test of not less than ten (10) pounds per square inch gauge pressure, which shall hold not less than fifteen (15) minutes in the presence of an inspector.

110.5.3.6 Heating and Ventilation.

110.5.3.7 Window Glazing and Insulation.

110.5.3.8 Other. As may be specific to the project.

110.6 Special Inspections. For special inspections, see Section 1704.

110.7 Other Inspections.

110.7.1 General. If due to excessive workload and manpower limitations the building official is unable to perform a requested inspection on the working day following the inspection request, special inspection reports, contractor certifications, or other satisfactory evidence of the work being completed substantially in compliance with this code may be accepted in lieu of the required inspections noted below. When approved by the building official trenches, footings, or pads inspections of foundation walls and/or grade beams steel reinforcement inspections may be performed by a qualified architect or engineer serving as a Special Inspector (See Section 1704.1). The building official may accept written, signed certifications from the contractor performing the work in lieu of the required inspections for damp-proofing, insulation, and lath and/or wallboard fastening if all or a portion of the work cannot be inspected on the working day following the day of the inspection request. In addition to the called inspections specified above, the building official may make or require other inspections of any construction work to ascertain compliance with the provisions of this code and other laws, which are enforced by the code enforcement agency.

110.7.2 Inspections in Hillside or Geologic Hazard Areas. At the completion of rough grading and/or foundation excavation and prior to the construction of retaining walls, footings, or bearing caissons, a soil engineer and/or an engineering geologist within their respective fields of competency shall inspect the site at the applicant's expense and render opinions in writing to the building official concerning the soil and geologic conditions actually encountered and that all known geologic hazards or constraints have been taken into account in the design of the facility.

110.8 Reinspection. A reinspection fee may be assessed for each inspection or reinspection when such portion of work for which inspection is called is not complete or when correction called for is not made.

This subsection is not to be interpreted as requiring reinspection fees the first time a job is rejected for failure to comply with the requirements of this code but as controlling the practice of calling for inspections before the job is ready for such inspection or reinspection.

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 plans requiring the approval of the building official.

To obtain a reinspection, the applicant shall pay the reinspection fee in accordance with Table I A or as set forth in the fee schedule adopted by the jurisdiction. In instances where reinspection fees have been assessed, no additional inspection of the work will be performed until the required fees have been paid.

Administrative Section 111 • Certificate of Occupancy

111.1 Use and Occupancy. No building or structure shall be used or occupied, and no change in the existing occupancy classification of a building or structure or portion thereof shall be made until the building official has issued a Certificate of Occupancy therefore as provided herein.

Exception:

1. Certificates of occupancy are not required for work exempt from permits under Section 105.2.
2. Utility and Miscellaneous Group U occupancies constructed under the International Building Code and additions, remodels and accessory structures subject to the International Residential Code.

111.2 Change in Use. Changes in the character or use of a building shall not be made except as specified in Chapter 34 of this code.

111.3 Certificate Issued. After the building official inspects the building or structure and finds no violations of the provisions of this code or other laws which are enforced by the code enforcement agency, the building official shall issue a certificate of occupancy which shall contain the following:

1. The building permit number.
2. The address of the structure.
3. The name and address of the owner.
4. A description of that portion of the structure for which the certificate is issued.
5. A statement that the described portion of the building has been inspected for compliance with the requirements of this code for the occupancy and division of occupancy and the use for which the proposed occupancy is classified.
6. The name of the building official.
7. The edition of the code under which the permit was issued.
8. The use and occupancy, in accordance with the provisions of Chapter 3.
9. The type of construction as defined in Chapter 6.
10. The design occupant load.
11. If an automatic sprinkler system is provided, whether the sprinkler system is required.
12. Any special stipulations and conditions of the building permit.

111.4 Temporary Certificate. 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. The building official shall set a time period during which the temporary certificate of occupancy is valid.

111.5 Revocation. The building official is authorized to, in writing, suspend or revoke a certificate of occupancy issued under the provisions of this code whenever it is issued in error or on the basis of incorrect information supplied, or when the building or structure or portion thereof is in violation of any ordinance or regulation or any of the provisions of this code.

Administrative Section 112 • Service Utilities

112.1 Connection of service utilities. No person shall make connections from a utility, source of energy, fuel or power to any building or system that is regulated by this code for which a permit is required until released by the building official.

112.2 Temporary Connection. The building official shall have the authority to authorize the temporary connection of the building or system to the utility source of energy, fuel, or power.

112.3 Authority to Disconnect Service Utilities. The building official shall have the authority to authorize disconnection of utility service to the building, structure or system regulated by this code and the codes referenced in case of emergency where necessary to eliminate an immediate hazard to life or property. The building official shall notify the serving utility and whenever possible the owner and occupant of the building, structure, or service system of the decision to disconnect prior to taking such action. If not notified prior to disconnecting the owner or occupant of the building, structure, or service system shall be notified in writing as soon as practical thereafter.

Administrative Section 113 • Board of Review

113.1 Appeals. Appeals to the Board of Review may be taken by a person aggrieved by his inability to obtain a building permit or by an officer or department, board, or bureau of the County affected by the grant or refusal of the building permit because of non-compliance with the Boulder County Building Code. Any person, officer or department, board or bureau may appeal to the Board of Review from the decision of any enforcement of the provisions of the Building Code. Such appeals must be made within fourteen (14) days from the date of grant or refusal of the building permit or administrative decision. Such appeals shall be in writing directed to the Secretary of the Board of Review and shall state the basis for appeal.

113.2 Interpretations, Alternate Materials and Methods of Construction and Modifications. The Board of Review, in appropriate cases and subject to appropriate principles, standards, rules, conditions, and safeguards set forth in the building code may make interpretations of the terms of the building code in harmony with their general purpose and intent. The Board of Review may also approve of alternate materials or methods of construction or modifications provided the Board finds that the alternate material or method of construction or modification meets the standards found under Sections 104.2.7 or 104.2.8 of this code.

113.3 Limitations of Authority. The Board of Review shall have no authority relative to interpretation of the administrative provisions of this code nor shall the Board be empowered to waive requirements of this code.

113.4 Amendments to the Code. The Board of Review is authorized to formulate suggested amendments to the Building Code for consideration of the Board of County Commissioners.

113.5 Additional Authority. The Board of Review may adopt substantive rules and regulations based upon the provisions of the Building Code adopted by the Board of County Commissioners. In no case, however, shall these rules become effective unless the Board of Review thereon has conducted a public hearing. Notice of the hearing stating its time and place and where the text of the proposed substantive rules and regulations may be inspected shall be given in the same manner as provided in the initial adoption of the code.

Administrative Section 114 • Occupancy and Use Violations

114.1 Occupancy and Use Violations. It shall be unlawful for any person, firm, or corporation to erect, construct, enlarge, alter, repair, move, improve, remove, convert or demolish, equip, use, occupy or maintain any building or structure or cause or permit the same to be done in violation of this code. Any person, firm, or corporation violating any provision of this code is guilty of a misdemeanor and, upon conviction thereof, shall be punished by a fine of not more than one hundred dollars, or by imprisonment in the County jail for not more than ten days, or by both such fine and imprisonment. Each day during which such illegal erection, construction, reconstruction, alteration, remodeling, or use continues shall be deemed a separate offense. In case any building or structure is or is proposed to be erected, constructed, reconstructed, altered, remodeled, or used in violation of this code, the District Attorney of the district, the Board of County Commissioners, or any owner of real estate within the area, in addition to other remedies provided by law, may institute an appropriate action for injunction, mandamus, or abatement to prevent, enjoin, abate, or remove such unlawful erection, construction, reconstruction, alteration, remodeling, or use.

114.2 Order to Vacate. Whenever any building or structure or equipment therein regulated by this code is being used contrary to the provisions of this code, the building official may order such use discontinued and the structure, or portion thereof, vacated by notice served on any person causing such use to be continued. Such person shall discontinue the use within the time prescribed by the building official after receipt of such notice to make the structure, or portion thereof, comply with the requirements of this code.

114.3 Authority to Condemn Electrical, Mechanical and Plumbing Systems. Whenever the building official determines that any electrical, mechanical or plumbing system, or portion thereof, regulated by this code has become hazardous to life, health, property, or has become unsanitary, the code official may order in writing that such system either be removed or restored to a safe condition. A time limit for compliance with such order shall be specified in the written notice. A person shall not use or maintain a defective electrical, mechanical, or plumbing system after receiving such notice.

114.4 Notice of Violation. The building official may serve a notice of violation or order to the person responsible for the erection, installation, alteration, extension, repair, removal, or demolition of work in violation of the provisions of this code, or in violation of the approved construction documents there under, or in violation of a permit issued under the provisions of this code. Such order shall direct the discontinuance of the illegal action or condition and the abatement of the violation. When an electrical, mechanical, or plumbing system is to be disconnected, written notice as prescribed in this Section shall be given. In cases of immediate danger to life or property such disconnection shall be made immediately without such notice.

114.5 Prosecution of Violation. If the notice of violation is not complied with promptly, the building official is authorized to request legal council of the jurisdiction to institute the appropriate proceeding at law or in equity to restrain, correct, or abate such violation, or to require the removal or termination of the unlawful occupancy of the building or structure in violation of this code or of order or direction made pursuant thereto.

114.6 Violation Penalties. Any person who violates a provision of this code or fails to comply with any of the requirements thereof or who erects, constructs, alters, or repairs a building or structure in violation of the approved construction documents or directive of the building official, or of a permit or certificate issued under the provisions of this code, shall be subject to penalties as prescribed by law.

Administrative Section 115 • Stop Work Order

115.1 Authority. Whenever the building official finds any work regulated by this code, or other pertinent laws or ordinances being performed in a manner contrary to the provisions of this code or in a dangerous or unsafe manner the building official is authorized to issue a stop work order.

115.2 Issuance. The stop work order shall be in writing and shall be given to the owner of the property involved or to the owner's agent or to the person doing the work. Upon issuance of a stop work order the cited work shall immediately cease. The stop work order shall state the reason for the order and the conditions under which the cited work will be permitted to resume.

115.3 Unlawful Continuance. Any person who shall continue any work after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be subject to penalties as prescribed by law.

Administrative Section 116 • Unsafe Structures and Equipment

116.1 Conditions. Structures or existing equipment that are or hereafter become unsafe, unsanitary, or deficient because of inadequate means of egress facilities, inadequate light and ventilation, or which constitute a fire hazard, or are otherwise dangerous to human life or the public welfare, or which involve illegal or improper occupancy or inadequate maintenance, shall be deemed an unsafe condition. Unsafe structures shall be taken down and removed or made safe, as the building official deems necessary and as provided for in this Section. A vacant structure that is not secured against entry shall be deemed unsafe.

116.2 Record. The building official shall cause a report to be filed on an unsafe condition. The report shall state the occupancy of the structure and the unsafe condition.

116.3 Notice. If an unsafe condition is found, the building official shall serve the owner, agent or person in control of the structure a written notice that describes the condition deemed unsafe and specifies the required repairs or improvements to be made to abate the unsafe condition, or that requires the unsafe structure to be demolished within a stipulated time. Such notice shall require the person thus notified to declare immediately to the building official acceptance or rejection of the terms of the order.

116.4 Method of Service. Such notice shall be deemed properly served if a copy thereof is: (a) Delivered to the owner personally, (b) sent by certified or registered mail addressed to the owner at the last known address with the return receipt requested, or (c) delivered in any other manner prescribed by law. If the certified or registered letter is returned showing that the letter was not delivered, a copy thereof shall be posted in a conspicuous place in or about the structure affected by such notice. Service of such notice in the foregoing manner upon the owner's agent or upon the person responsible for the structure shall constitute service of notice upon the owner.

116.5 Restoration. The structure or equipment determined to be unsafe by the building official is permitted to be restored to a safe condition. To the extent that repairs, alterations, or additions are made or a change of occupancy occurs during the restoration of the structure, such repairs, alterations, additions or change of occupancy shall comply with the requirements of Section 105.2.2 and Chapter 34.

Administrative Section 117 • Contractor Licensing

117.1 Authority. This Chapter is adopted pursuant to authority granted in C.R.S. §30-11-125, and related provisions of the County Building Codes Act and the County Planning Act (Parts 1 and 2 of Article 28, Title 30, C.R.S.).

117.2 Purpose. The purpose of the program adopted in this Chapter is to protect the public health, safety, and welfare of the citizens of unincorporated Boulder County by requiring that building contractors doing work under County-issued building permits demonstrate, through the licensing process, their basic competency in the general construction trades or practices in which they are engaged.

117.3 Principles of Interpretation. In the case of conflicting or ambiguous provisions in this Chapter, the interpretation taken shall be the more restrictive one, or the one that otherwise best protects the public health and safety in the sound discretion of the Building Official.

117.4 Definitions. The following definitions shall apply in the interpretation of this Chapter. Words not defined shall be given their ordinary meaning, or their accepted technical meaning as appropriate.

Building Contractor

A person who for compensation directs, supervises, or undertakes any work for which a County building permit is required under the County Building Code or Land Use Code, with the exception of the following:

1. A person whose sole function in the work is to perform labor under the supervision or direction of a building contractor.
2. An individual performing repair or maintenance work on that individual's own property.
3. An individual whom a person employs full-time or part-time to perform repair or maintenance work on that person's own property.
4. Electricians required to be licensed by the State of Colorado pursuant to Article 23, Title 12, C.R.S., and plumbers required to be licensed by the State pursuant to Article 58, Title 12, C.R.S.

Board of Review ("BOR")

The advisory and appellate board appointed by the BOCC pursuant to C.R.S. §30-28-206 of the County Building Codes Act (see also §30-28-207), that has the powers set forth in the Building Codes Act, in Resolution 98-164 of the BOCC adopted September 29, 1998 (establishing the basic powers and procedures of the BOR), and in this Chapter, all as they may be amended from time to time.

Building Official

The head of the Boulder County Building Division, who works under the direction of the County Land Use Director in the County Land Use Department.

Person

Any individual, corporation, limited liability company, partnership, association, or other legal entity.

Repair or Maintenance Work

Minor work to repair or maintain structures including but not limited to interior decorating and minor exterior maintenance (painting, window covering installation, drywall patching, masonry repair, and the like); the replacement of lamps or the connection of approved portable electrical equipment to approved permanently installed receptacles; the replacement of any minor part of a portable gas heating appliance that does not alter approval of equipment or make such equipment unsafe; the stopping of leaks in drains, water, soil, waste or vent pipes (but not the removal and replacement of any concealed trap, drain pipe, water, soil, waste or vent pipe); the clearing of stoppages or the repairing of leaks in pipes, valves or fixtures, and the removal and installation of water closets (provided such work does not involve the replacement or rearrangement of valves, pipes or fixtures); and emergency equipment replacement and repairs (for which any required building permit is applied for within the next business day).

Repair or maintenance work does not include the cutting away of any wall, partition or portion thereof; the removal or cutting of any structural beam or load bearing support; the removal or change of any required means of egress, or rearrangement of parts of a structure affecting the egress requirements; the addition to, alteration of, replacement or relocation of any standpipe, water supply, sewer, drainage, drain leader, gas, soil, waste, vent or similar piping, electrical wiring, or mechanical or other work affecting public health or safety; or any other work requiring a County building permit.

117.5 Building Contractor Licensing Requirement. Any person who engages in the business of being a building contractor in unincorporated Boulder County must, prior to engaging in such business, obtain and hold a valid license from the Building Official as further required in this chapter.

117.6 Administration of Licensing Requirement. The Building Official shall be the County official responsible for administering the provisions of this chapter. Appeals of the Building Official's decisions may be made to the Board of Review as further provided in Section 117.14.

117.7 Types of Licenses. The following types of building contractor licenses are established, and must be obtained as specified below:

- A. Class A Contractors License.** Permits the licensee to construct or perform work on all structures subject to the International Building Code.
- B. Class B Contractors License.** Permits the licensee to perform work on structures subject to the International Building Code limited to tenant finish work and remodeling within the existing footprint of the building.
- C. Class C Contractors License.** Permits the licensee to construct and perform work on 1- & 2- family dwellings and accessory structures as defined in Section R202 of the International Residential Code.
Exception: The construction of agricultural buildings of any size and agricultural buildings that contain habitable space will be permitted to be constructed under a Class C license.
- D. Commercial Contractors Mechanical Contractor License.** Permits the licensee to do HVAC and mechanical work on all buildings.
- E. Residential Mechanical Contractors License.** Permits the licensee to do HVAC and mechanical work on 1- and 2-family dwellings subject to the International Residential Code.
- F. Roofing Contractors License.** Permits the licensee to perform roofing and re-roofing work on all structures.
- G. Class M Miscellaneous Structures Contractors Licenses.** This license category covers a wide range of projects where there is no applicable ICC test, therefore the achievement of a passing grade on the ICC exam is not required for Miscellaneous Contractor Licenses. Work included under a class M Contractors License shall include, but not be limited to: deconstruction, masonry, grading and excavations, repair and installation of signs, solar photovoltaic equipment installation and repair, residential elevator repair and installation, window replacements, re-siding, installation of listed wood-burning appliances, 1-story pre-engineered agricultural buildings that do not contain habitable space, electrical, HVAC or plumbing. At the discretion of the Building Official, other work may be included under a Class M Contractors License.

117.8 Conditions for Issuance of a License. The Building Official shall not issue any license unless the following requirements have been met:

- A.** The applicant has submitted the required administrative licensing fee.
- B.** The applicant has demonstrated that he or she has achieved a passing test score on an exam found to be acceptable by the Building Official. Acceptable exams include any nationally recognized exams or an exam required by another jurisdiction for licensing purposes that is related to the particular license type being applied for.

Exceptions:

- 1.** Class M Licenses.
- 2.** The passage of the test will be waived for the construction of agricultural buildings that don't exceed 1 story in height, that are pre-engineered, and that do not include habitable space, and do not include electrical, plumbing, or HVAC systems.
- 3.** In the instance where no applicable test is offered by another nationally recognized organization, or by another jurisdiction, the Building Official may waive the requirement for the test.

In the case of corporate applicants, proof of the appropriate passing exam grade must be demonstrated by the president of or principal in the company or by the person who is charged with directing the work.
- C.** The applicant has demonstrated proof of lawful presence in the United States by sworn affidavit stating that the applicant is a U.S. citizen or legal permanent resident or is otherwise lawfully present in the U.S. pursuant to federal law, accompanied by a valid form of identification (current Colorado Driver's License or Colorado Identification Card issued under Article 2 of Title 42, C.R.S., U.S. Military I.D. card, U.S. Coast Guard Merchant Mariner card, Native American Travel Documents, or such other valid form of identification recognized by the current lawful presence rules of the Colorado Department of Revenue). In the case of corporate applicants, proof of lawful presence must be demonstrated by the president of or principal in the company or by the person who is charged with directing the work. That individual must certify as part of the license application process that his or her company will employ only building contractors who have demonstrated to the company a lawful presence in the United States.

- D The applicant has provided proof of current insurance coverage, including:
1. Workers' Compensation Insurance as require by the State of Colorado.
 2. General Liability Insurance provided on an ISO 1998 (or most current) form, with minimum limits of \$600,000.00 combined single limit for each occurrence. Proof of such insurance shall be accompanied by a valid endorsement requiring that this insurance not be canceled, terminated, or modified without providing 30 days advance written notice to the Building Official (at the Boulder County Land Use Department, P.O. Box 471, Boulder, CO. 80306) signed by an authorized agent of the issuing company.
- E. The applicant has provided proof of building contractor licenses held in any other jurisdictions, and a signed statement disclosing any adverse action taken under those licenses.
- F. The Building Official determines, based on the application materials and another other reliable information know to the Building Official, that the applicant has the basic competence to perform the work for which the license is being sought.
- G. The requirements for processing of licenses in Section 117.9 have been met.

117.9 Process for Issuance of License. The following procedural requirements shall apply to the issuance of licenses under this Chapter:

- A. Applicants must submit a complete license application to the Building Official on the form provided by the Building Official including all required supporting documentation.
- B. A complete application shall include the required administrative licensing fee and all of the documentation necessary to demonstrate compliance with the conditions for license issuance specified in Section 116-8 above.
- C. Within seven (7) days after a complete application for a license is submitted the Building Official shall issue a license, a provisional license, or a written statement of license denial. Inadvertent failure of the Building Official to act within seven days shall not entitle the applicant to engage in building contracting work in the unincorporated County without a license.
1. The Building Official shall issue a license if the Building Official determines, based on the submitted complete application, that the conditions for license issuance have been met.
 2. The Building Official shall issue a provisional license if the Building Official determines that the submitted complete application indicates that the conditions for licensing appear to have been met but the Building Official needs additional information to verify this indication. If a provisional license is issued, the Building Official shall have 45 days after the submission of the complete application to issue a license or a written statement of license denial.

Inadvertent failure of the Building Official to issue a license within this 45-day period shall not preclude an applicant who has otherwise satisfied the requirements for obtaining a license from engaging in the business of being a building contractor and applying for or working under a County building permit, provided that the Building Official subsequently approves the submitted application and issues a license.
 3. The Building Official shall issue a written statement of license denial if the Building Official determines that any of the conditions for license issuance have not been met. A statement of license denial shall specify the reason for denial based on Section 117.8, above.
 4. Any issued license or provisional license may contain reasonable terms or conditions which the Building Official deems necessary to carry out the purposes of this Chapter.

117.10 License term and expiration, reapplication. Licenses shall have a term of three (3) calendar years after their date of issuance. Licensees shall expire at the end of this term. Applicants holding licenses may apply for a new license within three (3) calendar months prior to the expiration of their existing license. Licensees holding a valid County license who apply for a new license must meet the license application requirements of Section 117.8 above.

117.11 License fees. Administrative fees under this resolution shall be assessed as follows:

- A. The Building Official shall impose a reasonable license fee as determined by the Building Official, confirmed by the County Land Use Director, and approved at a public meeting by the BOCC. The purpose of the fee is to cover the Building Official's administrative costs associated with processing license applications and issuing licenses under this Chapter. In imposing such fees, the Building Official shall consider the differences in cost, if any, associated with issuing licenses to applicants holding a valid license issued by another county or municipality in the State of Colorado, and to applicants who do not hold such a license.
- B. As of the date of adoption of this Chapter, the applicable fee for a license shall be \$100.00.
- C. The foregoing fee may be adjusted annually or at such time periods as the Building Official deems appropriate and necessary to reflect the reasonable costs of administering licenses under this Resolution, provided that such fee adjustments are approved as required in this Section 117.11.

117.12 License penalties for violation.

- A. The building official may suspend or revoke any issued license if the building official determines that any of the following violations of this chapter have occurred:
 - 1. Provision of any materially false, misleading, or incomplete information on a license application.
 - 2. Failure to have or maintain adequate insurance as required in this chapter.
 - 3. Failure to have or maintain a lawful presence in the United States.
 - 4. Failure to obtain a required building permit or to follow any other applicable requirements of the Boulder County Building Code as amended.
 - 5. Performance of work outside the scope of an issued license, transferring a license to a person other than the licensee, or employing unlicensed persons in work under a County building permit who are required to be licensed under this Chapter.
 - 6. Adverse action taken under a license issued by another jurisdiction which, in the sound discretion of the Building Official, exercised in light of the requirements of the Boulder County Building Code, indicates that the licensee lacks the basic competence to perform the work for which the license has been issued.
 - 7. Any other violation or adverse conduct related to the license which, in the sound discretion of the Building Official exercised in light of the requirements of the Boulder County Building Code, indicates that the licensee lacks the basic competence to perform the work for which the license has been issued.
- B. If the Building Official determines that a license should be suspended or revoked for violation of this Resolution, the Building Official shall send a notice of violation by certified mail to the licensee's address of record. The notice shall specify the nature of the violation in reasonable detail.
- C. The licensee shall have two (2) calendar weeks after the date of mailing of the notice of violation to request a hearing before the Building Official, or to rectify the violation to the satisfaction of the Building Official.
- D. If the licensee makes a timely request for a hearing before the Building Official, the Building Official shall, within seven (7) business days after receipt of a hearing request, set a time, date and place for the hearing, and shall promptly so notify the licensee.
- E. The licensee and other interested parties may attend the hearing, and the Building Official shall record the hearing. Upon completion of the hearing, the Building Official shall take all the evidence presented under advisement, and shall notify the licensee in writing within ten (10) days after the hearing of the Building Official's findings. No suspension or revocation shall be effective while the matter is under advisement, except for emergency suspensions under Section 117-12.F., below.

- F. If the Building Official finds that emergency cause endangering the public health and safety exists as a result of an apparent violation of this Chapter, which warrants the Building Official taking immediate action against a license, the Building Official may enter an order for immediate suspension of such license pending further investigation and proceedings for suspension or revocation as provided in this Section, above. The Building Official shall notify the licensee of an immediate suspension by personally delivering the notice to the licensee, by posting the suspension order at a prominent location on a property which has been issued an active building permit on which the licensee is known to be working, or by transmitting the notice to the licensee by same-day or next-day mail or courier at the licensee's address of record with the Building Official. The licensee shall then have two (2) calendar weeks to take the action specified in Section 117-12.C., above, or the Building Official shall have the authority to revoke the license. If the licensee requests a hearing before the Building Official, the Building Official shall set the hearing at the soonest time practicable, and shall promptly so notify the licensee. The Building Official shall hold any requested hearing and make a decision as required in Section 117-12.E., above.

117.13 Building permit penalties for violation.

- A. The building official may stop work on a project that requires but does not have an issued building permit, may suspend/stop work under an issued building permit, may refuse to issue a certificate of occupancy or perform a final inspection under an issued building permit, or may revoke an issued building permit, whenever the Building Official determines that a building contractor doing work on the project or under the building permit has committed any of the following violations of this Chapter:
1. Failure of a building contractor to have a valid license under this Chapter.
 2. Any of the reasons specified in Section 117-12.A, above.
- B. Any building permit suspension or revocation under this Chapter shall be subject to the procedures specified in Sections 117.-12(B.) - (E.), above. In addition, any notice of violation under Section 117.12 (B.) shall be sent to the attention of the building permit holder/applicant of record, if different from the licensee. The building permit holder, in addition to the licensee, shall have the same rights to request and participate in a hearing before the Building Official and to receive notice of the Building Official's decision as the licensee under Sections 117.12 (C.) – (E.) above.
- C. If the Building Official finds that emergency cause endangering the public health and safety exists as a result of a violation of this Chapter which warrants the Building Official taking immediate action against an issued building permit or work being done without a building permit, the Building Official may impose a stop work (immediate suspension) order against the building permit pending further investigation and proceedings for suspension or revocation as provided in this section above. The Building Official shall post any such stop work order at a prominent location on the affected property. At the time of posting, the Building Official shall also transmit a copy of the stop work order, including the reasons for the order, to the licensee and the affected building permit holder/applicant (if different from the licensee), by personal delivery or by same-day or next-day mail or courier, at their addresses of record with the Building Official. The licensee or building permit holder shall then have the right to respond as set forth in 117.12 (C.) above, or the Building Official shall have the authority to extend the suspension of or revoke the permit. If the licensee or building permit holder requests a hearing before the Building Official, the Building Official shall conduct the hearing and make a decision as required in Section 117.12 (E.), with the building permit holder having the same rights to participate in the hearing and receive notice of the decision as the licensee.
- D. The building permit remedies in this Section 117.13 are in addition to, and do not limit, any remedies related to building permits specified in the Boulder County Building Code and Land Use Code.

117.14 Appeals from decision of the Building Official.

- A.** Appeals to the Board of Review ("BOR") may be made by any person aggrieved by the following final decisions made by the Building Official in the course of administering this Chapter:
 - 1. Denial of a license application.
 - 2. Suspension or revocation of a license.
 - 3. Issuance of a stop work/suspension order or revocation of a building permit.
 - 4. Written determination that a person is a building contractor required to obtain a license or a certain class of license under this Chapter.
- B.** Appeals to the BOR must be in writing addressed to the Secretary to the BOR, must state in reasonable detail the basis for the appeal and must be received by the Secretary no later than 14 days after the date of the decision being appealed. If the official decision being appealed was sent by regular U.S. mail, three (3) additional days shall be added to the 14-day appeal deadline. Each appeal must be accompanied by a non-refundable fee of \$200 or such other amount as may be duly required for BOR appeals.
- C.** Upon receipt of a complete and timely appeal the Secretary of the BOR shall schedule a hearing before the BOR. The hearing shall be held no earlier than 15 days and no later than 45 days after receipt of the appeal, or as soon as possible thereafter given the availability of BOR members for the appeal hearing.
- D.** The Secretary to the BOR shall make a written analysis of and recommendation to the BOR on each appeal request. The Secretary shall make this analysis available to the appellant and the BOR, and shall notify the appellant of the hearing date at least seven (7) days prior to the hearing.
- E.** Appeals under this Chapter shall be heard by a 3-member panel of the BOR convened by the Secretary.
- F.** The BOR shall conduct appeal hearings according to the procedures set forth in Section V. of the BOR's adopted procedural rules, as contained in BOCC Resolution 98-164 adopted September 29, 1998, as they may be amended from time to time.
- G.** The BOR shall keep a written or recorded record of its hearing, and shall issue a decision on the appeal which the Secretary shall provide to the appellant in writing no more than 14 days after the hearing. The BOR's decision shall be final unless otherwise stated.
- H.** The provisions for BOR appeal under this Section 116-14 shall supplement the BOR's authority under the Boulder County Building Code and the BOR's adopted procedural rules contained in BOCC Resolution 98-164 adopted September 29, 1998, as they may be amended from time to time.

117.15 Reapplication for Denied or Revoked License. If a license is denied or revoked under this Chapter, the applicant may reapply for a license, but not sooner than 90 days after the final decision of the Building Official or the BOR, as applicable.

IBC Chapter 2 • Definitions

IBC Section 202 • Definitions

Architect

Architect is a person licensed under the provisions of Title 12, Article 4, CRS.

Building Code

Building Code is the Boulder County Building Code with deletions and amendments as adopted by the Boulder County Board of County Commissioners.

Building Site

Building Site is all that area or those areas encompassed by horizontal radii of 150 feet measured outwardly from exterior structural walls, water wells, of the limits of artificial grading, on-site sewage disposal systems, or slope retaining devices, except where limited by the parcel.

Civil Engineer

Civil Engineer is a person licensed under the provisions of Title 12, Article 25, Part I, CRS, and who is experienced and knowledgeable in the practice of civil engineering.

Civil Engineering

Civil Engineering is the application of the knowledge of the forces of nature, principles of mechanics, and the properties of materials to the evaluation, design, and construction of civil works for the beneficial uses of mankind.

County Geologist

County Geologist is either (1) a staff member employed by the County under the Class Title Geologist and who performs the duties assigned there under or (2) any geologist who may be retained by the County to perform the duties of said Class Title. In either case, the County Geologist shall be a professional geologist as defined in 34-1-201 CRS.

Energy Code

Energy Code is the International Energy Conservation Code and IRC Chapter 11 promulgated by the International Code Council as adopted by this jurisdiction.

Engineering Geologist

Engineering Geologist is a professional geologist as defined in 34-1-201 CRS, and who is experienced and knowledgeable in the practice of engineering geology.

Engineering Geology

Engineering Geology is the application of geologic knowledge and principles in the investigation and evaluation of naturally occurring rock and soil for use in the design of civil works for the purpose of assuring that geological features and processes affecting the planning, location, design, construction, operation and maintenance of civil works are recognized and adequately interpreted.

Fuel Gas Code

Fuel Gas Code is the International Fuel Gas Code and IRC Chapter 24 as promulgated by the International Code Council.

Hillside Area

Hillside Area is an area in the County which exhibits a predominant ground slope with a gradient of five (5) horizontal to one (1) vertical or steeper (20% or steeper).

Land Surveyor

Land Surveyor is a person licensed under the provisions of Title 12, Article 25, Part 2, CRS.

Manufactured Home

Manufactured Home shall mean manufactured home as defined in the Boulder County Land Use Code.

Mechanical Code

Mechanical Code is the International Mechanical Code and IRC Chapters 12 through 23 promulgated by the International Code Council.

Plumbing Code

Plumbing Code is the International Plumbing Code or IRC Chapters 25 through 32 promulgated by the International Code Council.

Soil Engineer

Soil Engineer is a person licensed under the provisions of Title 12, Article 25, Part 2, CRS, and who is experienced and knowledgeable in the practice of soil engineering.

Soil Engineering

Soil Engineering is the application of the principles of soil mechanics in the investigation, evaluation and design of civil works involving the use of earth materials and the inspection and testing of the construction thereof.

Residential Code

Residential Code is the International Building Code and the International Residential Code promulgated by the International Code Council as applicable per Section 101.2.

IBC Chapter 7 • Fire and Smoke Protection Features

IBC Section 722 • Requirements Based on Location in Wildfire Zones

722.1. General. Unless other more restrictive requirements, such as those imposed through Site Plan Review, apply, this Section shall be applicable to all new buildings, additions and repairs.

Exceptions:

1. Detached accessory structures with a floor area not exceeding 400 sq. ft.
2. Additions to structures that do not increase the existing floor area by more than 20%.
3. Additions which increase the existing floor area by more than 20% but not more than 30% need not comply provided defensible space is provided for the entire dwelling in conformance with Sections 722.5.10, 722.6.10, or 722.7.10.

722.2 Wildfire Zones Defined. For the purpose of this code, the unincorporated portion of Boulder County is divided into wildfire zones, which shall be known and designated as Wildfire Zone 1 and Wildfire Zone 2. The wildfire zones shall include such territory or portions of the unincorporated county as shown in Figure No. 1, the Wildfire Zone Map, which is attached to and incorporated into this chapter by this reference.

722.2.1 Buildings Located in More Than One Wildfire Zone. A building or structure that is located partly in one wildfire zone and partly in another shall be considered to be in the wildfire zone in which the more restrictive conditions apply.

722.2.2 Moved Buildings. Any building or structure moved within or into any wildfire zone shall be made to comply with all the requirements for new buildings in that wildfire zone.

722.3 Definitions.

The following words and terms shall, for the purpose of this Section, have the meanings shown herein.

Critical Fire Weather

A set of weather conditions (usually a combination of low relative humidity and wind) whose effects on fire behavior make control difficult and threaten fire fighter safety.

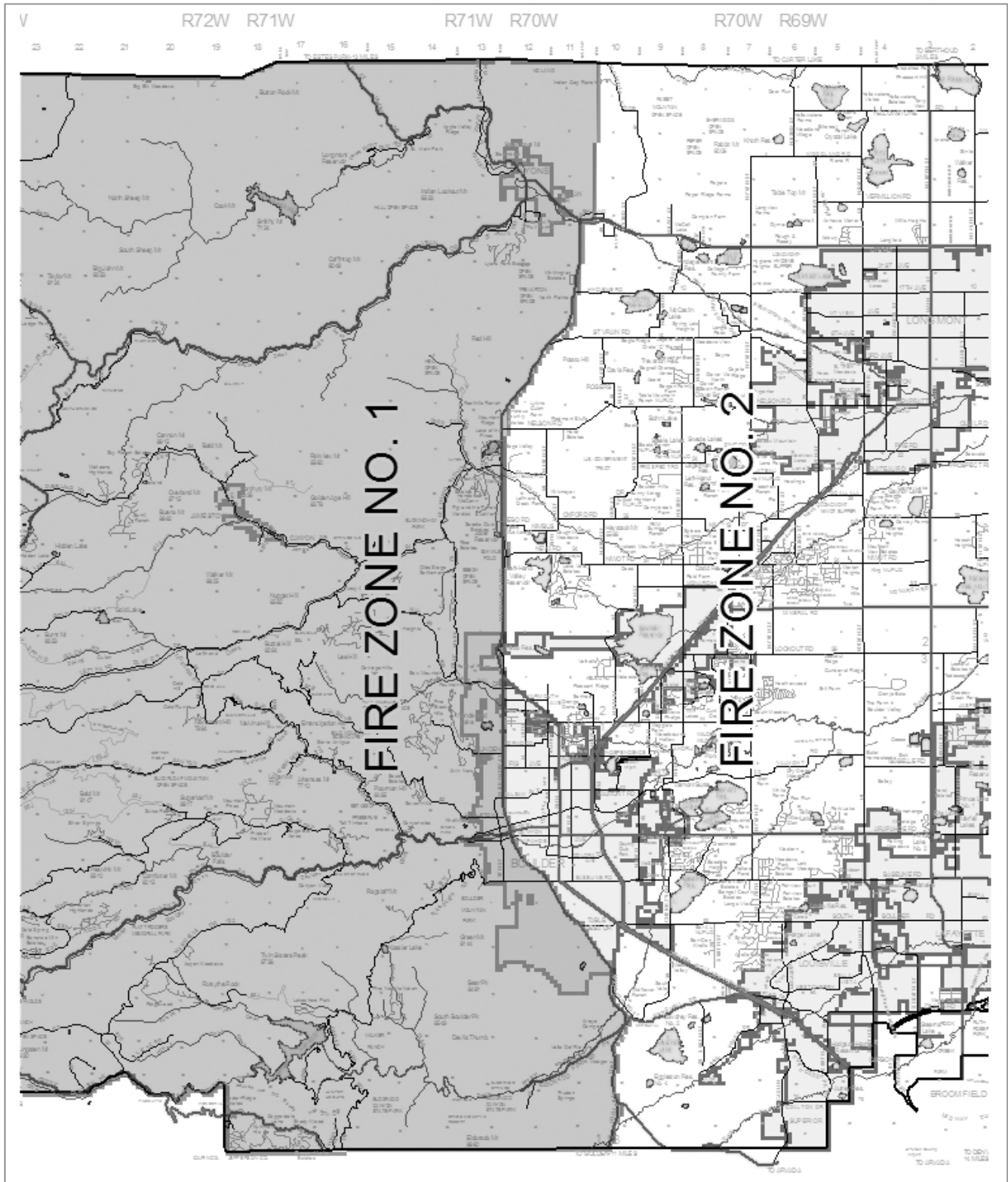
Heavy Fuel

Vegetation in closed canopy and mixed forest areas consisting of woody plants 6 inches to 8 inches or greater in diameter. Vegetation at the site includes: Dense conifer stands with heavy accumulation of litter and downed wood, abundant conifer regeneration, dense conifer stands that are suffering damage from insects, disease, or wind, closed stands of ponderosa or lodgepole pines, Douglas fir and/or Engleman spruce/Subalpine fir.

Medium Fuel

Vegetation in closed canopy areas with some openings consisting primarily of woody plants 6 to 8 inches in diameter with some larger diameter trees. Vegetation at the site includes: Dense brush, brush where 1/4 of the area is covered with dead fuel, stands of ponderosa pine and Douglas fir, with woody understory and/or conifer regeneration occupying at least 1/3 of the site.

WILDFIRE ZONE MAP



Created by Boulder County GIS
June 6, 2003
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Wildfire Zone Map.

Light Fuel

Vegetation in open canopy areas with some leaf and needle litter consisting of primarily herbaceous and woody plants less than 1/4 inch in diameter or 3 ft. in height. Vegetation at the site includes: grasses, forbs, some shrubs and overstory trees occupying less than 1/3 of the area.

Extreme Hazard Wildfire Sites

A building site with the potential critical fire weather condition in excess of 8 days with slopes of 40% and greater and medium fuel loading; or a building site with a critical fire weather condition in excess of 1 day with slopes greater than 40% and heavy fuel loading.

High hazard Wildfire Sites

A building site with the potential critical fire weather condition of at least 8 days with slopes greater than 60% and light fuel loading; a building site with a critical fire weather condition greater than 1 day with slopes of at least 40% and medium fuel loading; a building site with a critical fire weather condition of at least 1 day with level ground or slopes not greater than 40% and heavy fuel loading.

Ignition-Resistant Building Material

Ignition-resistant building materials shall comply with any one of the following:

1. **Extended ASTM E 84 testing.** Materials that, when tested in accordance with the test procedures set forth in ASTM E 84 or UL 723, for a test period of 30 minutes, comply with the following:
 - a. **Flame spread.** Material shall exhibit a flame spread index not exceeding 25 and shall show no evidence of progressive combustion following the extended 30 minute test.
 - b. **Flame front.** Material shall exhibit a flame front that does not progress more than 10 1/2 feet (3200 mm) beyond the centerline of the burner at any time during the extended 30 minute test.
 - c. **Weathering.** Ignition-resistant building materials shall maintain their performance in accordance with this Section under conditions of use. Materials shall meet the performance requirements for weathering (including exposure to temperature, moisture and ultraviolet radiation) contained in the following standards, as applicable to the materials and the conditions of use:
 - i. **Method.** A "Test Method for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing" in ASTM D 2898, for fire-retardant-treated wood, wood-plastic composite and plastic lumber materials.
 - ii. **ASTM D 7032** for wood-plastic composite materials.
 - iii. **ASTM D 6662** for plastic lumber materials.
 - d. **Identification.** All materials shall bear identification showing the fire test results.
2. **Noncombustible material.** Material that complies with the definition for NONCOMBUSTIBLE in this Section 722.3.
3. **Fire-retardant-treated wood.** Fire-retardant-treated wood identified for exterior use and meeting the requirements of Section 2303.2 of the International Building Code.
4. **Fire-retardant-treated wood roof coverings.** Roof assemblies containing fire-retardant-treated wood shingles and shakes which comply with the requirements of Section 1505.6 of the International Building Code and classified as Class A roof assemblies as required in Section 1505.2 of the International Building Code.

Moderate Hazard Wildfire Sites

A building site with the potential critical fire weather condition of at least 1 day with level or sloping ground with light fuel loading; a building site with a critical fire weather condition of at least 1 day with level or sloping ground with medium fuel loading.

Add a new definition (from Section 202 of the 2009 International Wildland-Urban Interface code) as follows:

Noncombustible

As applied to building construction material means a material that, in the form in which it is used, is either one of the following:

1. Material of which no part will ignite and burn when subjected to fire. Any material conforming to ASTM E 136 shall be considered noncombustible within the meaning of this Section.
2. Material having a structural base of noncombustible material as defined in Item 1 above, with a surfacing material not over 1/8 inch (3.2 mm) thick, which has a flame spread index of 50 or less. Flame spread index as used herein refers to a flame spread index obtained according to tests conducted as specified in ASTM E 84 or UL 723.

"Noncombustible" does not apply to surface finish materials. Material required to be noncombustible for reduced clearances to flues, heating appliances or other sources of high temperature shall refer to material conforming to Item 1. No material shall be classified as noncombustible that is subject to increase in combustibility or flame spread index, beyond the limits herein established, through the effects of age, moisture or other atmospheric condition.

722.4 Restrictions in Wildfire Zone No. 1. Buildings constructed in Wildfire Zone 1 must comply with this Section. When additions to existing structures increase the floor area by 100% or more, existing portions of the building must be made to comply.

722.4.1 Exterior Material Requirements Throughout Wildfire Zone 1.

722.4.1.1 Roof Covering. Roof covering materials installed in Wildfire Zone 1 shall be listed Class A roof covering materials or be constructed as a Class A roof assembly. For roof coverings where the profile allows a space between the roof covering and roof decking, the space at the eave ends shall be fire stopped to preclude entry of flames or embers, or have one layer of 72-pound (32.4 kg) mineral-surfaced, non-perforated cap sheet complying with ASTM D 3909 installed over the combustible decking.

722.4.1.1.1 Roof valleys. When provided, valley flashings shall be not less than 0.019 inch (No. 26 galvanized sheet gage) corrosion-resistant metal installed over a minimum 36-inch-wide underlayment consisting of one layer of 72-pound mineral-surfaced, non-perforated cap sheet complying with ASTM D 3909 running the full length of the valley.

722.4.1.2 Gutters and Downspouts. Gutters and downspouts shall be constructed of noncombustible material.

722.4.1.3 Spark Arrestors. Chimneys serving fireplaces, barbecues, incinerators or decorative heating appliances in which solid or liquid fuel is used, shall be protected with a spark arrester. Spark arresters shall be constructed of woven or welded wire screening of 12 USA standard gauge wire (0.1046 inch)(2.66 mm) having openings not exceeding 1/2 inch (12.7 mm). The net free area of the spark arrester shall not be less than four times the net free area of the outlet of the chimney.

722.4.1.4 Deck Walking Surface. Deck walking surface materials are to be approved noncombustible materials, ignition-resistant materials in accordance with Section 722.3, or any Class A roof assembly.

722.4.4 Wildfire Hazard Zone Classification. Upon application for a building permit, each building site within Wildfire Zone 1 shall have its site-specific wildfire hazard classified by the Building Official. Wildfire hazard sites shall be classified as extreme wildfire hazard sites, high wildfire hazard sites, or moderate wildfire hazard sites pursuant to the definitions in Section 722.3. Exterior materials shall be approved based on the wildfire hazard site classification. Buildings hereafter erected, constructed, enlarged, altered, repaired or moved into Wildfire Zone No. 1 shall comply with the specific construction requirements for their wildfire hazard classification.

722.5 Restrictions for Extreme Hazard Wildfire Sites.

722.5.1 General. Construction in extreme hazard wildfire sites shall be in accordance with Sections 722.5.2 through 722.5.10.

722.5.2 Protection of Eaves. Eaves, soffits, covered decks, and covered porch ceilings shall be protected on the exposed underside by ignition-resistant materials or by materials approved for a minimum of 1-hour fire-resistance-rated construction, 2-inch nominal dimension lumber, or 1-inch nominal fire-retardant-treated lumber, or 3/4 inch nominal fire retardant-treated plywood, identified for exterior use and meeting the requirements of Sections 2302.2 of the International Building Code. Fascias are required and shall be protected on the backside by ignition-resistant materials or by materials approved for a minimum of 1-hour fire-resistance-rated construction or 2-inch nominal dimensional lumber.

722.5.3 Exterior Walls. Exterior walls of buildings or structures shall be constructed with one of the following methods:

1. Noncombustible materials approved for a minimum of 1-hour fire-resistance-rated construction on the exterior side.
2. Approved noncombustible materials.
3. Heavy timber or log wall construction with a minimum member dimension or diameter of 6 inches.
4. Fire-retardant-treated wood on the exterior side. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the International Building Code
5. Ignition-resistant materials on the exterior side.

Such material shall extend from the top of the foundation to the underside of the roof sheathing.

722.5.4 Unenclosed Under Floor Protection. Buildings or structures shall have all underfloor areas enclosed to the ground with exterior walls in accordance with Section 722.5.3.

Exception: Complete enclosure may be omitted where the underside of all exposed floors and all exposed structural columns, beams, and supporting walls are protected as required for exterior 1-hour fire-resistance-rated construction or heavy timber construction or fire-retardant-treated wood. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the International Building Code.

722.5.5 Decks, Appendages, and Projections. Unenclosed accessory structures attached to buildings with habitable spaces and projections, such as decks, shall be a minimum of 1-hour fire resistance-rated construction, heavy timber construction or constructed of one of the following:

1. Approved noncombustible materials,
2. Fire-retardant-treated wood identified for exterior use and meeting the requirements of Section 2303.2 of the International Building Code, or
3. Ignition-resistant building materials in accordance with Section 722.3.

722.5.6 Exterior Windows and Glazing. Exterior windows, window walls, glazed doors, windows within exterior doors, and skylights shall be tempered glass, multi-layered glazing, glass block, or have a fire protection rating of not less than 20 minutes. Window frames and sashes must be metal, vinyl covered metal, solid wood, vinyl-covered solid wood or fiberglass.

722.5.7 Exterior Doors. Exterior doors and garage doors shall be approved noncombustible construction, metal clad, solid core wood not less than 1 3/4 inches thick, or have a fire protection rating of not less than 20 minutes. Windows within doors and glazed doors shall be in accordance with Section 722.5.6.

722.5.8 Vents. Attic ventilation openings, foundation or under-floor vents, or other ventilation openings in vertical exterior walls and vents through roofs shall not exceed 144 square inches each. Such vents shall be covered with noncombustible corrosion-resistant mesh with openings not to exceed 1/4 inch, or shall be designed and approved to prevent flame or ember penetration into the structure.

722.5.8.1 Vent locations. Attic ventilation openings shall not be located in soffits, in eave overhangs, between rafters at eaves, or in other overhang areas. Gable end and dormer vents shall be located at least 10 feet from property lines. Underfloor ventilation openings shall be located as close to grade as practical.

722.5.9 Detached Accessory Structures. Detached accessory structures located less than 50 feet from a building containing habitable space shall have exterior walls constructed in accordance with Section 722.5.3.

722.5.9.1 Underfloor Areas. When the detached structure is located and constructed so that the structure or any portion thereof projects over a descending slope surface greater than 10 percent, the area below the structure shall have all underfloor areas enclosed to within 6 inches of the ground with exterior wall construction in accordance with Section 722.5.3 or underfloor protection in accordance with Section 722.5.4.

Exception: The enclosure shall not be required where the underside of all exposed floors and all exposed structural columns, beams, and supporting walls are protected as required for exterior 1-hour fire-resistance-rated construction or heavy timber construction or fire-retardant-treated wood on the exterior side. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the International Building Code.

722.5.10 Defensible Space. Individual buildings or structures on a property must be provided with a fuel modification zone of at least 100 ft. The fuel modification zone must be maintained at all times.

Exception: The fuel modification zone may extend to the property line if it is less than 100 ft. from the building or structure.

Vegetation, leaves, needles and dead organic material must be removed and kept clear of the structure. Trees may be located in the fuel modification zone provided crowns do not extend within 10 feet of other trees or within 10 feet of buildings or structures. Limbs located less than 6 ft. above the ground and dead wood must be removed. A weed barrier and gravel or crushed rock not less than 3/4" applied at least 2 inches thick must be installed beneath decks, unenclosed floors, and around the perimeter of the building to extend 3 feet beyond the exterior walls.

722.6 Restrictions for High Hazard Wildfire Sites.

722.6.1 General. Construction in high hazard wildfire sites shall be in accordance with sections 722.6.2 through 722.6.10

722.6.2 Protection of Eaves. Eaves, fascias, and soffits, covered decks or covered porch ceilings shall be enclosed by using any materials approved under the Building Code.

722.6.3 Exterior Walls. Exterior walls of buildings or structures shall be constructed with one of the following methods:

1. Noncombustible materials approved for a minimum of 1-hour fire-resistance-rated construction on the exterior side.
2. Approved noncombustible materials.
3. Heavy timber or log wall construction with a minimum member dimension or diameter of 6 inches.
4. Fire-retardant-treated wood on the exterior side. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the International Building Code
5. Ignition-resistant materials on the exterior side.

Such material shall extend from the top of the foundation to the underside of the roof sheathing.

722.6.4 Unenclosed Under Floor Protection. Buildings or structures shall have all underfloor areas enclosed to the ground, with exterior walls in accordance with Section 722.6.3.

Exception: Complete enclosure may be omitted where the underside of all exposed floors and all exposed structural columns, beams, and supporting walls are protected as required for exterior 1-hour fire-resistance-rated construction or heavy timber construction or fire-retardant-treated wood. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the International Building Code.

722.6.5 Decks, Appendages, and Projections. Decks and other unenclosed accessory structures attached to buildings shall be constructed of the following materials:

Deck surface: Non-combustible material or materials meeting the ignition-resistant building material requirements defined in Section 722.3.

Deck framing: Deck framing may be of any material permitted by the International Building Code.

722.6.6 Exterior Windows and Glazing. Exterior windows, window walls, and glazed doors, windows within exterior doors, and skylights shall be tempered glass, multilayered glazing, glass block, or have a fire protection rating of not less than 20 minutes. Window frames and sashes must be metal, vinyl covered metal, or solid wood or fiberglass.

Exception: Vinyl windows may be used in high hazard wildfire sites.

722.6.7 Exterior Doors. Exterior doors and garage doors shall be approved noncombustible construction, metal clad, solid core wood not less than 1 3/4 inches in thickness, or have a fire protection rating of not less than 20 minutes. Windows within doors and glazed doors shall be in accordance with Section 722.6.6.

722.6.8 Vents. Attic ventilation openings, foundation or under-floor vents, or other ventilation openings in vertical exterior walls and vents through roofs shall not exceed 144 square inches each. Such vents shall be covered with noncombustible corrosion-resistant mesh with openings not to exceed 1/4 inches or shall be designed and approved to prevent flame or ember penetration into the structure. Gable end and dormer vents shall be located at least 10 feet from property lines. Underfloor ventilation openings shall be located as close to grade as practical.

722.6.9 Detached Accessory Structures. Detached accessory structures located less than 50 feet from a building containing habitable space shall have exterior walls constructed in conformance with Section 722.6.3. When the detached structure is located and constructed so that the structure or any portion thereof projects over a descending slope surface greater than 10 percent, the area below the structure shall have all underfloor areas enclosed to within 6 inches of the ground with exterior wall construction in accordance with Section 722.6.3 or underfloor protection in accordance with Section 722.6.4.

Exception: The enclosure may be omitted where the underside of all exposed floor and all exposed structural columns, beams, and supporting walls are protected as required for exterior 1-hour fire-resistive-rated construction or heavy timber construction.

722.6.10 Defensible Space. Individual buildings or structures on a property must be provided with a fuel modification zone of at least 50 ft. The fuel modification zone must be maintained at all times.

Exception: The fuel modification zone may extend to the property line if it is less than 50 ft. from the building or structure.

Vegetation, leaves, needles and dead organic material must be removed and kept clear of structures. Trees may be located in the fuel modification zone provided crowns do not extend within 10 feet of other trees or within 10 feet of buildings or structures. Limbs located less than 6 ft. above the ground and dead wood must be removed. A weed barrier and gravel or crushed rock not less than 3/4 applied at least 2 inches thick must be installed beneath decks, unenclosed floors, and around the perimeter of the building to extend 3 feet beyond the exterior walls.

722.7 Restrictions for Moderate Hazard Wildfire Sites.

722.7.1 General. Construction in moderate hazard wildfire site shall be in accordance with Sections 722.7.2 through 722.7.10.

722.7.2 Protection of Eaves. Eaves, fascias, soffits, and covered deck or covered porch ceilings may be constructed of any material permitted by the International Building Code.

722.7.3 Exterior Walls. Exterior walls may be constructed of any material permitted by the International Building Code.

722.7.4 Unenclosed Under Floor Protection. Buildings or structures shall have all under floor areas enclosed to the ground with exterior walls in accordance with Section 722.7.3.

Exception: Enclosure may be omitted where the underside of all exposed floors and all exposed structural columns, beams, and supporting walls are protected as required for exterior 1-hour fire-resistance-rated construction or heavy timber construction or by 3/4 inch thick plywood.

722.7.5 Decks, Appendages, and Projections. Decks and other unenclosed accessory structures attached to buildings shall be constructed of the following materials:

722.7.5.1 Deck surface: Noncombustible material or materials meeting the ignition-resistant building material requirements defined in Section 722.3.

722.7.5.2 Deck framing: Deck framing may be of any material permitted by the International Building Code.

722.7.6 Exterior Windows and Glazing. Window glazing, frames, and sashes may be of any material permitted by the International Building Code.


722.7.7 Exterior Doors. Exterior and garage doors may be of any material permitted by the International Building Code.

722.7.8 Vents. Attic ventilation openings, soffits vents, foundation or under floor vents, or other ventilation openings in vertical exterior walls and vents through roofs shall not exceed 144 square inches each. Such vents shall be covered with noncombustible corrosion-resistant mesh with openings not to exceed 1/4 inch.


722.7.9 Detached Accessory Structures. Detached accessory structures may be of any material permitted by the International Building Code.

Colorado Front Range Gust Map and Snow Load Design Data for Colorado


LEGEND


 **140 mph**

Design 3 Second Gust
Wind Load
Interpolate with horizontally labeled lines.
Constant with horizontally labeled areas.

 **50**
lbs/sqft

Design Ground Snow Load

 Incorporated Areas

 Subdivision or Platted Area

NOTE:

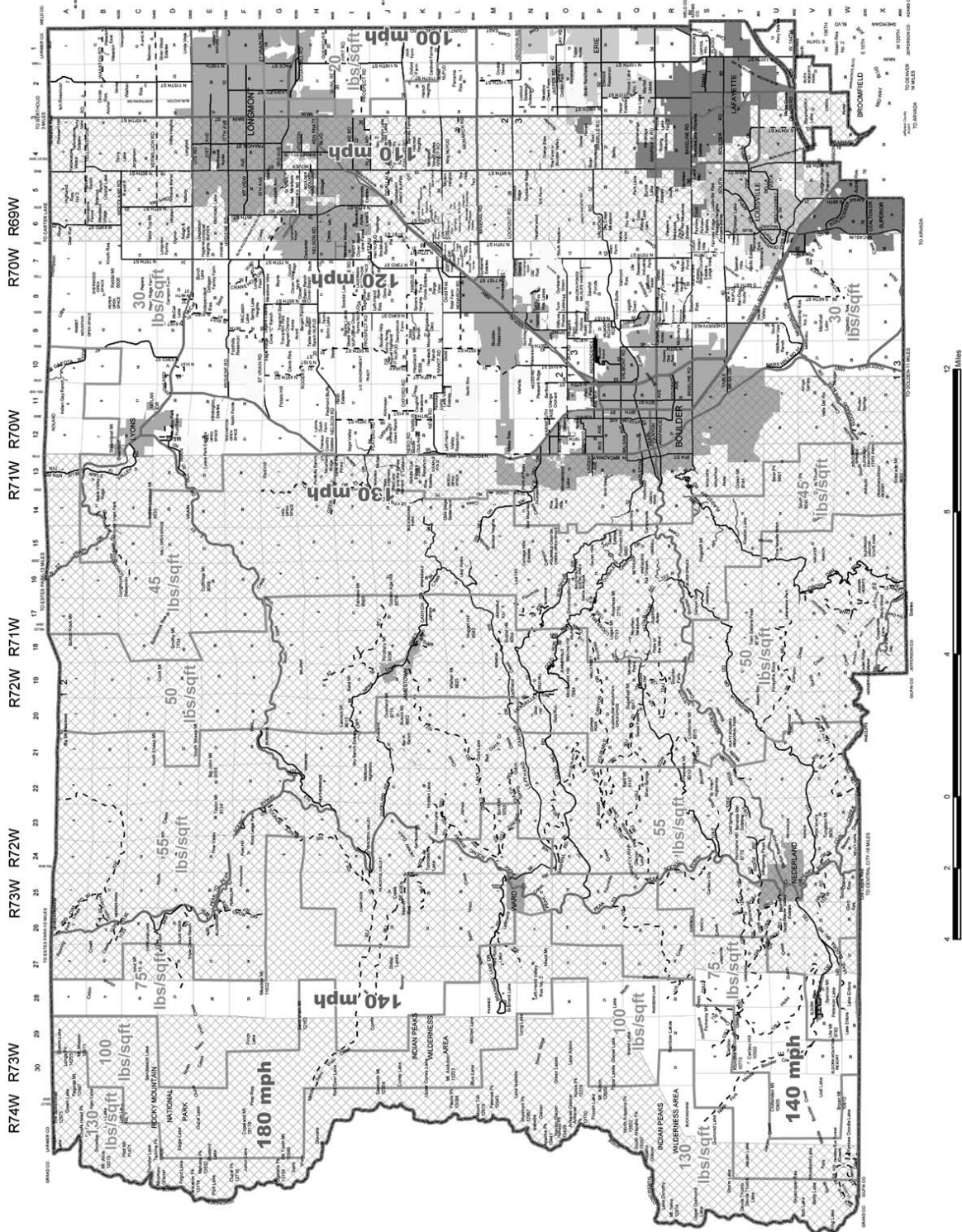
Snow load design data based on a report from the National
Engineers Assoc. of Colorado, Oct. 1971, modified by
the International Building Code 2006 and International
Building Code 2009 and International Building Code 2012
basic design ground snow loads for anywhere within Boulder County.

Wind Load design data based on a report from the Colorado
Front Range Gust Map presented to the Structural Engineers
Meeting, authored by Jon A. Pienkwa with the technical
assistance of SBA's Wind Load Committee.



This map is for illustrative purposes only, and is not suitable for parcel-specific studies. More site-specific studies may be required to draw accurate conclusions.

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722.7.10 Defensible Space. Individual buildings or structures on a property must be provided with a fuel modification zone of at least 30 ft. The fuel modification zone must be maintained at all times.

Exception: The fuel modification zone may extend to the property line if it is less than 30 ft. from the building or structure.

Vegetation, leaves, needles and dead organic material shall be removed and kept clear of structures. Trees may be located in the fuel modification zone provided crowns do not extend within 10 feet of other trees or within 10 feet of buildings or structures. Limbs located less than 6 ft. above the ground and dead wood must be removed. A weed barrier and gravel or crushed rock not less than 3/4 applied at least 2 inches thick must be installed beneath decks, unenclosed floors, to extend around the perimeter of the building 3 feet beyond the exterior walls.

722.8 Restrictions in Wildfire Zone 2.

722.8.1 Roofing. Roof coverings for new buildings, additions, or materials used for re-roofing shall be Class A, Class B, or Class C materials. Wood roofing materials must be listed and tested as minimum Class C fire-retardant material.

IBC Chapter 15 • Roofs Assemblies and Rooftop Structures

IBC Section 1503 • Weather Protection

1503.4 Sizing of Roof Drains, Scuppers, and Downspouts. The rainfall amount to be used to size roof drainage components in unincorporated Boulder County shall be 2.4 inches per hour.

IBC Section 1505 • Fire Classification

Add a new footnote designation to table heading and text as follows:

Table 1505.1^{a, b}

d. For roof coverings in Wildfire Zones, see Sections 722.4.1.1 and 722.8.1.

IBC Chapter 16 • Structural Design

IBC Section 1608 • Snow Loads

Add wording to more readily identify the snow load map that is currently being used.

1608.1 General. Design snow loads shall be determined in accordance with Section 7 of ASCE 7, but the design roof load shall not be less than that determined by Section 1607. Where snow loads occur, the snow loads shall be determined by the building official utilizing the Boulder County Snow Load Map, entitled "Colorado Front Range Gust Map and Snow Load Design Data for Colorado."

IBC Section 1609 • Wind Loads

Add wording to more readily identify the snow load map that is currently being used.

1609.3 Basic Wind Speeds. The basic wind speed, in miles per hour (V3s), for the determination of wind loads, shall be taken from the Boulder County Wind Pressure Map, entitled "Colorado Front Range Gust Map and Snow Load Design Data for Colorado."

IBC Chapter 18 • Foundations and Retaining Walls

IBC Section 1803 • Geotechnical Investigations

1803.5.4.1 Design Water Table. The design water table shall be the measurement or prediction of the highest potential elevation of the water table at the building site where such measurement or prediction is based upon a report by a soils engineer or other qualified professional and where the accuracy of such measurement or prediction considers the average annual rain fall or other sources or factors which may influence fluctuations in the water table for the area in which the subject building site is located. In cases where the water table may be artificially lowered, the design water table must be determined subsequent to the completion of the subdrain system. Provisions must be made for maintenance of the subdrain system, funds for maintenance, and individual or group responsibility for on-going maintenance.

IBC Section 1805 • Dampproofing and Waterproofing

1805.5 Gutters and downspouts. Gutters, downspouts, and downspout extensions are required on all buildings in unincorporated Boulder County.

Exceptions:

1. Post framed buildings.
2. Buildings where, in the opinion of the Building Official, the gutters will become damaged by sliding snow.
3. Roofs with eaves or overhangs of six feet or greater.
4. Roofs that are constructed with internal roof drains.

IBC Section 1806 • Retaining Walls

1806.1 Requirements for Slabs. Requirements for slabs below grade and crawl spaces.

1806.1.4.1 Slabs Below Grade. Building permits for structures with slabs below grade shall not be issued unless the finished slab elevation is 6 inches or more above the design water table.

1806.1.4.2 Peripheral Subdrain Required. Structures with slabs below grade shall be provided with a peripheral subdrain which slopes to a sump or sumps, daylight, or other approved point. In each case the ultimate discharge point(s) for peripheral subdrains shall be approved during building permit application review by the County.

1806.1.4.3 Crawl Spaces. Crawl spaces shall be permitted only where the design water table is a minimum of 36 inches below the interior finished crawl space grade.

1806.1.4.4 Alternative Designs. Alternate designs and construction practices may be permitted where it is demonstrated to the reasonable satisfaction of the building official that they are in compliance with the intent of the criteria listed above.

IBC Chapter 30 • Elevators and Conveying Systems

This chapter is deleted in its entirety.

Elevator repairs, installations, and inspections are governed by the Colorado Department Of Labor and Employment, Division of Oil and Public Safety, Elevator and Escalator Certification Act, Title 9, Article 5.5, Sections 1-7, Colorado Revised Statutes.

IBC Chapter 34 • Existing Structures

IBC Section 3410 • Moved Structures

3410.1 Conformance. Structures moved into or within the jurisdiction shall comply with the provisions of this code for new buildings or structures.

3410.2 Manufactured Housing.

3410.2.1 General. No manufactured home shall be installed or placed upon a site or manufactured home space unless a permit has first been obtained from the building official and the manufactured home bears a label or has other approved documentation certifying that the manufactured home was constructed in accordance with NFPA 501B/ANSI A119.1 (1973, 1974 and 1975 editions) or the federal Manufactured Home Construction and Safety Standards Act (42 U.S.C. 5401, et. seq., as amended). For manufactured homes placed in Wildfire Zone 1 see Section 722.4. For manufactured homes placed in Wildfire Zone 2 see Section 722.8.1.

3410.2.2 Installation Standards. Manufactured homes shall be installed in accordance with Resolution 20 of the State Housing Board, The Colorado Installation and Set-up Standards for Manufactured Housing; which resolution adopts by reference, with amendments, NCSBCS A225.1 (ANSI A225.1-1987), the NCSBCS Standard for Manufactured Home Installations. Wind anchoring equipment (ties) shall be in accordance with the installation standards with wind zones information from the Boulder County Wind pressure Map.

3410.2.3 Manufactured Homes on Permanent Foundations. Manufactured homes which are not less than 24 feet in width and 36 feet in length and which have a brick, wood, or cosmetically equivalent exterior siding and a pitched roof and are otherwise in accordance with C.R.S. ? 30-28-115(3)(a), as amended, may be installed outside of manufactured home parks if installed on engineered permanent foundations and if the installation is otherwise in accordance with all applicable site installation requirements of this code for dwellings. In addition, such homes shall be certified as having roof structures sufficient to support snow loads at the building site as shown on the Boulder County Snow Load Map. For manufactured home placement in Wildfire Zone 1 refer to Section 722.2.

3410.2.4 Accessory Buildings and Structures. Accessory structures including porches, stairways, landings, storage structures, awnings, carports, cabanas, ramadas, and similar structures shall be constructed in accordance with the Building Code and the applicable requirements of the Colorado Installation and Set-up Standards for Manufactured Housing. Accessory structures shall not increase the loading on manufactured homes unless proof is provided that the manufactured home has been designed to support such loads or the accessory structure is designed by an engineer.

3410.2.5 Replacement Furnaces, Water Heaters and Wood Stoves. The installation or replacement of furnaces, unit heaters, water heaters and solid-fuel-burning appliances shall be in accordance with the federal Manufactured Home Construction and Safety Standards Act as amended, and the applicable requirements of the Mechanical Code.

IBC Appendix Chapter J • Grading

J103.2 Exemptions. A grading permit shall not be required for the following:

Add two new exemptions, as follows:

8. Grading of 50 cubic yards or less.
9. Grading associated with approved agricultural grading.

Amendments to the Boulder County Building Code



Modeled from the 2009 International Residential Code

2009 International Residential Code, including specifically Appendix Chapters F, G, H, and O thereof, **published by the International Code Council (ICC), with amendments to the following:**

IRC Chapter 1 • Administration

IRC Section R101 • Title, Scope, and Purpose

R101.1 Title. These provisions shall be known as the International Residential Code for One- and Two Family Dwellings of Boulder County and shall be cited as such and will be referred to herein as “this code.”

R101.2 Scope. The provisions of the International Residential Code for One and Two family Dwellings shall apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, deconstruction to the first floor level, removal and deconstruction of detached one and two family dwellings, multiple single-family dwellings (townhouses) not more than three stories in height with a separate means of egress, and their accessory structures as defined in IRC Section R 202.

R101.3 Purpose. The purpose of this code is to provide minimum requirements to safeguard life or limb, health and public welfare.

The remainder of this chapter is deleted in its entirety.

Please refer to the previous Chapter 1 above for the administrative provisions of the Boulder County Building Code.

IRC Chapter 2 • Definitions

IRC Section R202 • Definitions

Basement

That portion of a building that is partially or completely below grade (see “Story above grade”). An under floor space below the first story of the building that does not meet the definition of **Story Above Grade Plane** and has a ceiling height measured from the basement floor to the bottom of the floor joists above of 6 feet 8 inches or more.

Crawl Space

An under floor space below the first story floor of the building that does not meet the definition of **Story Above Grade Plane**, that has a ceiling height measured from the crawlspace grade or floor to the bottom of the floor joists above of less than six feet 8 inches, and that does not contain interior stairs, windows, wall, and ceiling finish materials, trim or finished flooring.

Floor Area

The area of the building, existing or new, under consideration including basements and attached garages calculated without deduction for corridors, stairways, closets, the thickness of interior walls, columns, or other features as measured from the exterior face of the exterior walls.

IRC Chapter 3 • Building Planning

IRC Section R301 • Design Criteria

R301.2.1 Wind Speeds. Wind speeds in V3s shall be determined based on the Boulder County Wind Pressure Map (titled the Wind Speed Map for the Front Range of Colorado) prepared by Jon A Peterka and dated February 28, 2006, entitled “Colorado Front Range Gust Map and Snow Load Design Data for Colorado.”

R301.2.3 Snow Loads. Ground snow loads shall be determined based on the Boulder County Snow Load Map prepared by the Structural Engineers Association of Colorado and dated October 1971, entitled “Colorado Front Range Gust Map and Snow Load Design Data for Colorado.”

Table R301.2(1) • Climate and Geographic Design Criteria

Climate and Geographic Design Criteria

Ground Snow Load	Varies ¹
Wind Speed (mph):	Varies ²
Seismic Design Category:	B
Subject To Damage From:	
Weathering:	severe
Frost line depth:	30"
Termite:	Slight to Moderate
Winter Design Temp:	1°F
Ice Shield Underlayment Required:	no
Flood Hazards:	
Air Freezing Index:	1000
Annual Mean Temp:	50°F
Anticipated Snow Depth:	
Plains	12 Inches
Mountains	24 Inches

* ¹ See Boulder County's Snow Load Map.

* ² See Boulder County's Wind Speed Map.

IRC Section R302 • Fire-Resistant Construction

Revise the exception to Section R302.2 to read as follows:

Exception: A common 1-hour fire-resistance-rated wall assembly tested in accordance with ASTM E 119 or UL 263 is permitted for townhouses with automatic residential fire sprinkler systems installed throughout if such walls do not contain plumbing or mechanical equipment, ducts or vents in the cavity of the common wall. The wall... (remainder of exception to read as published).

IRC Section R303 • Light, Ventilation, and Heating

Add a new Section R303.1.1 to read as follows:

R303.1.1 Habitable Rooms. Mechanical ventilation shall be provided in all habitable rooms by an approved mechanical ventilation system capable of providing the rate of air change required in Table N1103.5.1.

Add an exception to Section R303.8 to read as follows:

R303.8 Required heating. When the winter design temperature in Table R301.2(1) is below 60°F (16°C), every dwelling unit shall be provided with heating facilities capable of maintaining a minimum room temperature of 68°F (20°C) at a point 3 feet (914 mm) above the floor and 2 feet (610 mm) from exterior walls in all habitable rooms at the design temperature. The installation of one or more portable space heaters shall not be used to achieve compliance with this Section.

Exception: Appliances relying on biofuels that are capable of maintaining the required temperature may be used to meet the requirements of this Section.

IRC Section R313 • Automatic Fire Sprinkler Systems

R313.1 Townhouse Automatic Fire Sprinkler Systems. Effective for all building permit applications received on or after January 1, 2013, an automatic residential fire sprinkler system shall be installed in townhouses.

Exception: An automatic residential fire sprinkler system shall not be required when additions or alterations are made to existing townhouses that do not have an automatic residential fire sprinkler system installed, except as provided for in Section R313.3.

R313.1.1 Design and installation. Automatic residential fire sprinkler systems for townhouses shall be designed and installed in accordance with Section P2904.

R313.2 One- and two-family dwellings automatic fire systems. Effective for all building permit applications received on or after January 1, 2013, an automatic residential fire sprinkler system shall be installed in one- and two-family dwellings.

Exception: An automatic residential fire sprinkler system shall not be required for additions or alterations to existing buildings that are not already provided with an automatic residential sprinkler system, except as provided for in Section R313.3.

R313.2.1 Design and installation. Automatic residential fire sprinkler systems shall be designed and installed in accordance with Section P2904 or NFPA 13D.

R313.3 Automatic fire sprinkler system required. An automatic fire sprinkler system shall be installed throughout every dwelling where one of the following conditions exists:

1. In new dwellings with a floor area in excess of 3,600 square feet. The floor area of detached structures having floor areas of 120 square feet or greater that are located less than 50 feet from the dwelling shall be included in the floor area calculated for the dwelling.
2. In existing dwellings where the combined new and existing floor area is increased to 4,800 sq. ft or greater.
3. In existing dwellings with a floor area of 4,800 sq. ft. or greater where renovations or remodeling work for which a building permit is required takes place in more than 50% of the area within the structure. Closets, stairways, and non-habitable spaces will not be included in the area calculation.

Exception: Dwellings which have approved fire fighting water supply hydrants within 400 feet of all portions of the structure as measured around the structure may be constructed without automatic fire sprinkler systems. In order to be considered approved fire fighting water supplies, fire flow from hydrants shall be in accordance with the provisions of Appendix Section B105.1 and Table B105.1 of the International Fire Code, Minimum Required Fire Flow and Flow Duration for Buildings.

R313.3.1 Standards. Automatic sprinkler systems shall be designed and installed in accordance with Section P2904 or the current National Fire Protection Association Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes, NFPA 13D. Residential or quick-response standard sprinklers shall be used.

IRC Section R324 • Moved Buildings

Amended section numbers have been renumbered to match available Section numbers in 2009 IRC.

R324.1 Conformance. Structures moved into or within the jurisdiction shall comply with the provisions of this code for new buildings or structures.

R324.2 Manufactured housing.

R324.2.1 General. No manufactured home shall be installed or placed upon a site or manufactured home space unless a permit has first been obtained from the building official and the manufactured home bears a label or has other approved documentation certifying that the manufactured home was constructed in accordance with NFPA 501B/ANSI A119.1 (1973, 1974 and 1975 editions) or the federal Manufactured Home Construction and Safety Standards Act (42 U.S.C. 5401, et. seq., as amended). For manufactured homes placed in Wildfire Zone 1, see Section R325.4. For manufactured homes placed in wildfire zone 2, see Section R 325.8.1.

R324.2.2 Installation standards. Manufactured homes shall be installed in accordance with Resolution 20 of the State Housing Board, "The Colorado Installation and Set-up Standards for Manufactured Housing, which resolution adopts by reference, with amendments, NCSBCS A225.1 (ANSI A225.1-1987), the NCSBCS Standard for Manufactured Home Installations. Wind anchoring equipment (ties) shall be in accordance with the installation standards with wind zones information from the Boulder County Wind Pressure Map.

For manufactured homes placed in Wildfire Zone 1, see Section R325.

R324.2.3 Manufactured homes on permanent foundations. Manufactured homes which are not less than 24 feet in width and 36 feet in length and which have a brick, wood, or cosmetically equivalent exterior siding and a pitched roof and are otherwise in accordance with C.R.S. 30-28-115(3)(a), as amended may be installed outside of manufactured home parks if installed on engineered permanent foundations and if the installation is otherwise in accordance with all applicable site installation requirements of this code for dwellings. In addition, such homes shall be certified as having roof structures sufficient to support snow loads at the building site as shown on the Boulder County Snow Load Map.

R324.4 Accessory buildings and structures. Accessory structures including porches, stairways, landings, storage structures, awnings, carports, cabanas, ramadas, and similar structures shall be constructed in accordance with the Building Code and the applicable requirements of the Colorado Installation and Set-up Standards for Manufactured Housing. Accessory structures shall not increase the loading on manufactured homes unless proof is provided that the manufactured home has been designed to support such loads".

R324.5 Replacement furnaces, water heaters and wood stoves. The installation or replacement of furnaces, unit heaters, water heaters and solid-fuel-burning appliances shall be in accordance with the federal Manufactured Home Construction and Safety Standards Act, as amended, and the applicable requirements of the Mechanical Code.

IRC Section R325 • Ignition-Resistant Materials and Construction

Add a new Section, as follows (Amended section numbers have been renumbered to match available section numbers in 2009 IRC.):

R325.1 Requirements based on locations in wildfire zones.

R325.1.1 Unless other more restrictive requirements, such as those imposed through Site Plan Review, apply, this Section shall be applicable to all new buildings, additions and repairs.

Exceptions:

1. Detached accessory structures with a floor area not exceeding 400 sq. ft.
2. Additions to structures that do not increase the existing floor area by more 20%.
3. Additions which increase the existing floor area by more than 20% but not more than 30% need not comply, provided defensible space is provided for the entire dwelling in conformance with Sections 325.5.10, 325.6.10 or 325.7.10, as applicable.

R325.2 Wildfire Zones Defined. For the purpose of this code, the unincorporated portion of Boulder County is divided into wildfire zones, which shall be known and designated as Wildfire Zone 1 and Wildfire Zone 2. The wildfire zones shall include such territory or portions of the unincorporated county as shown in Figure No. 1, the Wildfire Zone Map, which is attached to and incorporated into this Section by this reference.

R325.2.1 Buildings Located in More Than One Wildfire Zone. A building or structure that is located partly in one wildfire zone and partly in another shall be considered to be in the wild-fire zone in which the more restrictive conditions apply.

R325.2.2 Moved Buildings. Any building or structure moved within or into any wildfire zone shall be made to comply with all the requirements for new buildings in that wildfire zone.

R325.3 Definitions. The following words and terms shall, for the purpose of this Section, have the meanings shown herein.

Critical Fire Weather

A set of weather conditions (usually a combination of low relative humidity and wind) whose effects on fire behavior make control difficult and threaten fire fighter safety.

Heavy Fuel

Vegetation in closed canopy and mixed forest areas consisting of woody plants 6 inches to 8 inches or greater in diameter. Vegetation at the site includes: Dense conifer stands with heavy accumulation of litter and downed wood, abundant conifer regeneration, dense conifer stands that are suffering damage from insects, disease, or wind, closed stands of ponderosa or lodgepole pines, Douglas fir and/or Engleman spruce/Subalpine fir.

Medium Fuel

Vegetation in closed canopy areas with some openings consisting primarily of woody plants 6 to 8 inches in diameter with some larger diameter trees. Vegetation at the site includes: Dense brush, brush where 1/4 of the area is covered with dead fuel, stands of ponderosa pine and Douglas fir, with woody understory and/or conifer regeneration occupying at least $\frac{1}{3}$ of the site.

Light Fuel

Vegetation in open canopy areas with some leaf and needle litter consisting of primarily herbaceous and woody plants less than 1/4 inch in diameter or 3 ft. in height. Vegetation at the site includes: grasses, forbs, some shrubs and overstory trees occupying less than $\frac{1}{3}$ of the area.

Extreme Hazard Wildfire Sites

A building site with the potential critical fire weather condition in excess of 8 days with slopes of 40% and greater and medium fuel loading; or a building site with a critical fire weather condition in excess of 1 day with slopes greater than 40% and heavy fuel loading.

High hazard Wildfire Sites

A building site with the potential critical fire weather condition of at least 8 days with slopes greater than 60% and light fuel loading; a building site with a critical fire weather condition greater than 1 day with slopes of at least 40% and medium fuel loading; a building site with a critical fire weather condition of at least 1 day with level ground or slopes not greater than 40% and heavy fuel loading.

Ignition-Resistant Building Material

Ignition-resistant building materials shall comply with any one of the following:

1. Extended ASTM E 84 testing. Materials that, when tested in accordance with the test procedures set forth in ASTM E 84 or UL 723, for a test period of 30 minutes, comply with the following:

1.1. Flame spread. Material shall exhibit a flame spread index not exceeding 25 and shall show no evidence of progressive combustion following the extended 30 minute test.

1.2. Flame front. Material shall exhibit a flame front that does not progress more than 101/2 feet (3200 mm) beyond the centerline of the burner at any time during the extended 30 minute test.

1.3. Weathering. Ignition-resistant building materials shall maintain their performance in accordance with this Section under conditions of use. Materials shall meet the performance requirements for weathering (including exposure to temperature, moisture and ultraviolet radiation) contained in the following standards, as applicable to the materials and the conditions of use:

1.3.1. Method. A "Test Method for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing" in ASTM D 2898, for fire-retardant-treated wood, wood-plastic composite and plastic lumber materials.

1.3.2. ASTM D 7032 for wood-plastic composite materials.

1.3.3. ASTM D 6662 for plastic lumber materials.

1.4. Identification. All materials shall bear identification showing the fire test results.

2. Noncombustible material. Material that complies with the definition for NONCOMBUSTIBLE in this Section R325.2.3

3. Fire-retardant-treated wood. Fire-retardant-treated wood identified for exterior use and meeting the requirements of Section R802.1.3 of the International Residential Code.

4. Fire-retardant-treated wood roof coverings. Roof assemblies containing fire-retardant-treated wood shingles and shakes which comply with the requirements of Section R902 of the International Residential Code and classified as Class A roof assemblies as required in Section R902 of the International Residential Code.

Moderate Hazard Wildfire Sites

A building site with the potential critical fire weather condition of at least 1 day with level or sloping ground with light fuel loading; a building site with a critical fire weather condition of at least 1 day with level or sloping ground with medium fuel loading.

Add a new definition (from Section 202 of the 2009 International Wildland-Urban Interface code) as follows:

Noncombustible

As applied to building construction material means a material that, in the form in which it is used, is either one of the following:

1. Material of which no part will ignite and burn when subjected to fire. Any material conforming to ASTM E 136 shall be considered noncombustible within the meaning of this Section.
2. Material having a structural base of noncombustible material as defined in Item 1 above, with a surfacing material not over 1/8 inch (3.2 mm) thick, which has a flame spread index of 50 or less. Flame spread index as used herein refers to a flame spread index obtained according to tests conducted as specified in ASTM E 84 or UL 723.

"Noncombustible" does not apply to surface finish materials. Material required to be noncombustible for reduced clearances to flues, heating appliances or other sources of high temperature shall refer to material conforming to Item 1. No material shall be classified as noncombustible that is subject to increase in combustibility or flame spread index, beyond the limits herein established, through the effects of age, moisture or other atmospheric condition.

R325.4 Restrictions in Wildfire Zone No. 1. Buildings constructed in Wildfire Zone 1 must comply with this section. When additions to existing structures increase the floor area by 100% or more existing portions of the building must be made to comply.

R325.4.1 Exterior Material Requirements Throughout Wildfire Zone 1.

R325.4.2 Roof Covering. Roof covering materials installed in Wildfire Zone 1 shall be listed Class A roof covering materials or be constructed as a Class A roof assembly. For roof coverings where the profile allows a space between the roof covering and roof decking, the space at the eave ends shall be fire stopped to preclude entry of flames or embers, or have one layer of 72-pound (32.4 kg) mineral-surfaced, non-perforated cap sheet complying with ASTM D 3909 installed over the combustible decking.

R325.4.2.1 Roof valleys. When provided, valley flashings shall be not less than 0.019 inch (No. 26 galvanized sheet gage) corrosion-resistant metal installed over a minimum 36-inch-wide underlayment consisting of one layer of 72-pound mineral-surfaced, non-perforated cap sheet complying with ASTM D 3909 running the full length of the valley.

R325.4.3 Gutters and Downspouts. Gutters and downspouts shall be constructed of noncombustible material.

Add a new section.

R325.4.4 Spark Arrestors. Chimneys serving fireplaces, barbecues, incinerators or decorative heating appliances in which solid or liquid fuel is used, shall be protected with a spark arrester. Spark arresters shall be constructed of woven or welded wire screening of 12 USA standard gauge wire (0.1046 inch)(2.66 mm) having openings not exceeding ½ inch (12.7 mm). The net free area of the spark arrester shall not be less than four times the net free area of the outlet of the chimney.

R325.4.5 Deck Walking Surface. Deck walking surface materials are to be approved noncombustible materials, ignition-resistant materials in accordance with Section R325.4.2 or any Class A roof assembly.

R325.4.6 Wildfire Hazard Zone Classification. Upon application for a building permit, each building site within Wildfire Zone 1 shall have its site-specific wildfire hazard classified by the Building Official. Wildfire hazard sites shall be classified as extreme wildfire hazard sites, high wildfire hazard sites, or moderate wildfire hazard sites pursuant to the definitions in Section R325.2.3 Exterior materials shall be approved based on the wildfire hazard site classification. Buildings hereafter erected, constructed, enlarged, altered, repaired or moved into Wildfire Zone No. 1 shall comply with the specific construction requirements for their wildfire hazard classification.

R325.5 Restrictions for Extreme Hazard Wildfire Sites.

R325.5.1 General. Construction in extreme hazard wildfire sites shall be in accordance with Sections R325.5.2 through R325.5.10.

R325.5.2 Protection of Eaves. Eaves, soffits, covered decks, and covered porch ceilings shall be protected on the exposed underside by ignition-resistant materials or by materials approved for a minimum of 1-hour fire-resistance-rated construction, 2-inch nominal dimension lumber, or 1-inch nominal fire-retardant-treated lumber, or 3/4 inch nominal fire retardant-treated plywood, identified for exterior use and meeting the requirements of Sections R802.1.3 of the International Residential Code. Fascias are required and shall be protected on the backside by ignition-resistant materials or by materials approved for a minimum of 1-hour fire-resistance-rated construction or 2-inch nominal dimensional lumber.

R325.5.3 Exterior Walls. Exterior walls of buildings or structures shall be constructed with one of the following methods:

1. Noncombustible materials approved for a minimum of 1-hour fire-resistance-rated construction on the exterior side.
2. Approved noncombustible materials.
3. Heavy timber or log wall construction with a minimum member dimension or diameter of 6 inches.
4. Fire-retardant-treated wood on the exterior side. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section R802.1.3 of the International Residential Code.
5. Ignition-resistant materials on the exterior side.

Such material shall extend from the top of the foundation to the underside of the roof sheathing.

R325.5.4 Unenclosed Under Floor Protection. Buildings or structures shall have all underfloor areas enclosed to the ground with exterior walls in accordance with Section R325.5.3.

Exception: Complete enclosure may be omitted where the underside of all exposed floors and all exposed structural columns, beams, and supporting walls are protected as required for exterior 1-hour fire-resistance-rated construction or heavy timber construction or fire-retardant-treated wood. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section R802.1.3 of the International Residential Code.

R325.5.5 Decks, Appendages, and Projections. Unenclosed accessory structures attached to buildings with habitable spaces and projections, such as decks, shall be a minimum of 1-hour fire resistance-rated construction, heavy timber construction or constructed of one of the following:

1. Approved noncombustible materials,
2. Fire-retardant-treated wood identified for exterior use and meeting the requirements of Section R802.1.3 of the International Residential Code, or
3. Ignition-resistant building materials in accordance with Section R325.3.

R325.5.6 Exterior Windows and Glazing. Exterior windows and glazing. Exterior windows, window walls, glazed doors, windows within exterior doors, and skylights shall be tempered glass, multi-layered glazing, glass block, or have a fire protection rating of not less than 20 minutes. Window frames and sashes must be metal, vinyl covered metal, solid wood, vinyl-covered solid wood or fiberglass.

R325.5.7 Exterior Doors. Exterior doors and garage doors shall be approved noncombustible construction, metal clad, solid core wood not less than 1 3/4 inches thick, or have a fire protection rating of not less than 20 minutes. Windows within doors and glazed doors shall be in accordance with Section R325.5.6.

R325.5.8 Vents. Attic ventilation openings, foundation or under-floor vents, or other ventilation openings in vertical exterior walls and vents through roofs shall not exceed 144 square inches each. Such vents shall be covered with noncombustible corrosion-resistant mesh with openings not to exceed 1/4 inch, or shall be designed and approved to prevent flame or ember penetration into the structure.

R325.5.8.1 Vent locations. Attic ventilation openings shall not be located in soffits, in eave overhangs, between rafters at eaves, or in other overhang areas. Gable end and dormer vents shall be located at least 10 feet from property lines. Underfloor ventilation openings shall be located as close to grade as practical.

R325.5.9 Detached Accessory Structures. Detached accessory structures located less than 50 feet from a building containing habitable space shall have exterior walls constructed in accordance with Section R325.5.3.

R325.5.9.1 Underfloor Areas. When the detached structure is located and constructed so that the structure or any portion thereof projects over a descending slope surface greater than 10 percent, the area below the structure shall have all underfloor areas enclosed to within 6 inches of the ground with exterior wall construction in accordance with Section R325.5.3 or underfloor protection in accordance with Section R325.5.4.

Exception: The enclosure shall not be required where the underside of all exposed floors and all exposed structural columns, beams, and supporting walls are protected as required for exterior 1-hour fire-resistance-rated construction or heavy timber construction or fire-retardant-treated wood on the exterior side. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section R802.1.3 of the International Residential Code.

R325.5.10 Defensible Space. Individual buildings or structures on a property must be provided with a fuel modification zone of at least 100 ft. The fuel modification zone must be maintained at all times.

Exception: The fuel modification zone may extend to the property line if it is less than 100 ft. from the building or structure.

Vegetation, leaves, needles and dead organic material must be removed and kept clear of the structure. Trees may be located in the fuel modification zone provide crowns do not extend within 10 feet of other trees or within 10 feet of buildings or structures. Limbs located less than 6 ft. above the ground and dead wood must be removed. A weed barrier and gravel or crushed rock not less than 3/4 applied at least 2 inches thick must be installed beneath decks, unenclosed floors, and around the perimeter of the building 3 feet beyond the exterior walls.

R325.6 Restrictions for High Hazard Wildfire Sites.

R325.6.1 General. Construction in high hazard wildfire sites shall be in accordance with Sections R325.6.2 through R325.6.10.

R325.6.2 Protection of Eaves. Eaves, fascias, and soffits, covered decks or covered porch ceilings shall be enclosed by using any materials permitted by this code.

R325.6.3 Exterior Walls. Exterior walls of buildings or structures shall be constructed with one of the following methods:

1. Noncombustible materials approved for a minimum of 1-hour fire-resistance-rated construction on the exterior side.
2. Approved noncombustible materials.
3. Heavy timber or log wall construction with a minimum member dimension or diameter of 6 inches.
4. Fire-retardant-treated wood on the exterior side. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section R802.1.3 of the International Residential Code.
5. Ignition-resistant materials on the exterior side.

Such material shall extend from the top of the foundation to the underside of the roof sheathing.

R325.6.4 Unenclosed Under Floor Protection. Buildings or structures shall have all underfloor areas enclosed to the ground, with exterior walls in accordance with Section R325.6.3.

Exception: Complete enclosure may be omitted where the underside of all exposed floors and all exposed structural columns, beams, and supporting walls are protected as required for exterior 1-hour fire-resistance-rated construction or heavy timber construction or fire-retardant-treated wood. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the International Building Code.

R325.6.5 Decks, Appendages, and Projections. Decks and other unenclosed accessory structures attached to buildings shall be constructed of the following materials:

R325.6.5.1 Deck Surface: Non-combustible material or materials meeting the ignition-resistant building material requirements defined in Section R325.3.

R325.6.5.2 Deck Framing: Deck framing may be of any material permitted by this code.

R325.6.6 Exterior Windows and Glazing. Exterior windows, window walls, and glazed doors, windows within exterior doors, and skylights shall be tempered glass, multilayered glazing, glass block, or have a fire protection rating of not less than 20 minutes. Window frames and sashes must be metal, vinyl covered metal, or solid wood or fiberglass.

Exception: Vinyl windows may be used in high hazard wildfire sites.

R325.6.7 Exterior Doors. Exterior doors and garage doors shall be approved noncombustible construction, metal clad, solid core wood not less than 1 3/4 inches in thickness, or have a fire protection rating of not less than 20 minutes. Windows within doors and glazed doors shall be in accordance with Section R325.6.6.

R325.6.8 Vents. Attic ventilation openings, foundation or under-floor vents, or other ventilation openings in vertical exterior walls and vents through roofs shall not exceed 144 square inches each. Such vents shall be covered with noncombustible corrosion-resistant mesh with openings not to exceed 1/4 inches or shall be designed and approved to prevent flame or ember penetration into the structure. Gable end and dormer vents shall be located at least 10 feet from property lines. Underfloor ventilation openings shall be located as close to grade as practical.

R325.6.9 Detached Accessory Structures. Detached accessory structures located less than 50 feet from a building containing habitable space shall have exterior walls constructed in conformance with Section R325.6.3. When the detached structure is located and constructed so that the structure or any portion thereof projects over a descending slope surface greater than 10 percent, the area below the structure shall have all underfloor areas enclosed to within 6 inches of the ground with exterior wall construction in accordance with Section R325.6.3 or underfloor protection in accordance with Section R325.6.4.

Exception: The enclosure may be omitted where the underside of all exposed floor and all exposed structural columns, beams, and supporting walls are protected as required for exterior 1-hour fire-resistive-rated construction or heavy timber construction.

R325.6.10 Defensible Space. Individual buildings or structures on a property must be provided with a fuel modification zone of at least 50 ft. The fuel modification zone must be maintained at all times.

Exception: The fuel modification zone may extend to the property line if it is less than 50 ft. from the building or structure.

Vegetation, leaves, needles and dead organic material must be removed and kept clear of structures. Trees may be located in the fuel modification zone provide crowns do not extend within 10 feet of other trees or within 10 feet of buildings or structures. Limbs located less than 6 ft. above the ground and dead wood must be removed. A weed barrier and gravel or crushed rock not less than 3/4 applied at least 2 inches thick must be installed beneath decks, unenclosed floors, and around the perimeter of the building 3 feet beyond the exterior walls.

R325.7 Restrictions for Moderate Hazard Wildfire Sites.

R325.7.1 General. Construction in moderate hazard wildfire site shall be in accordance with Sections R325.7.2 through R325.7.10.

R325.7.2 Protection of Eaves. Eaves, fascias, soffits, and covered deck or covered porch ceilings may be constructed of any material permitted by this code.

R325.7.3 Exterior Walls. Exterior walls may be constructed of any material permitted by this code.

R325.7.4 Unenclosed Under Floor Protection. Buildings or structures shall have all under floor areas enclosed to the ground with exterior walls in accordance with Section R325.7.3.

Exception: Enclosure may be omitted where the underside of all exposed floors and all exposed structural columns, beams, and supporting walls are protected as required for exterior 1-hour fire-resistance-rated construction, heavy timber construction or by ¾-inch thick plywood.

R325.7.5 Decks, Appendages, and Projections. Decks and other unenclosed accessory structures attached to buildings shall be constructed of the following materials:

R325.7.5.1 Deck surface: Noncombustible material or materials meeting the ignition-resistant building material requirements defined in Section R325.4.5.

R325.7.5.2 Deck framing: Deck framing may be of any material permitted by this code.

R325.7.6 Exterior Windows and Glazing. Window glazing, frames, and sashes may be of any material permitted by the International Residential Code.

R325.7.7 Exterior Doors. Exteriors and garage doors may be of any material permitted by the International Building Code.

R325.7.8 Vents. Attic ventilation openings, soffits vents, foundation or under floor vents, or other ventilation openings in vertical exterior walls and vents through roofs shall not exceed 144 square inches each. Such vents shall be covered with noncombustible corrosion-resistant mesh with openings not to exceed 1/4 inch.

R325.7.9 Detached Accessory Structures. Detached accessory structures may be of any material permitted by the International Building Code.

R325.7.10 Defensible Space. Individual buildings or structures on a property must be provided with a fuel modification zone of at least 30 ft. The fuel modification zone must be maintained at all times.

Exception: The fuel modification zone may extend to the property line if it is less than 30 ft. from the building or structure.

Vegetation, leaves, needles and dead organic material shall be removed and kept clear of structures. Trees may be located in the fuel modification zone provide crowns do not extend within 10 feet of other trees or within 10 feet of buildings or structures. Limbs located less than 6 ft. above the ground and dead wood must be removed. A weed barrier and gravel or crushed rock not less than ¾ applied at least 2 inches thick must be installed beneath decks, unenclosed floors, and around the perimeter of the building 3 feet beyond the exterior walls.

R325.8 Restrictions in Wildfire Zone 2.

R325.8.1 Roofing. Roof coverings for new buildings, additions, or materials used for re-roofing shall be Class A, Class B, or Class C materials. Wood roofing materials must be listed and tested as minimum Class C fire-retardant material.

IRC Section R326 • Solar Pre-Wire Option

R326.1 Solar pre-wire option. In accordance with Section 1, Article 37.7 of title 38 of the Colorado Revised Statutes, every new single-family detached residence shall include one of the following:

1. A residential photovoltaic solar generation system or a residential solar thermal system, or both, or
2. Upgrades of wiring or plumbing, or both, installed by the builder to accommodate the future installation of a residential photovoltaic solar generation system or a residential solar thermal system, or both, or
3. A metallic chase or conduit, or both, constructed to allow ease of future installation of the necessary wiring or plumbing for a residential photovoltaic solar generation system or a residential solar thermal system, or both.

IRC Chapter 4 • Foundations

IRC Section R401 • General

R401.2.1 Design Water Table. The design water table shall be the measurement or prediction of the highest potential elevation of the water table at the building site where such measurement or prediction is based upon a report by a soils engineer or other qualified professional and where the accuracy of such measurement or prediction considers the average annual rain fall or other sources or factors which may influence fluctuations in the water table for the area in which the subject building site is located. In cases where the water table may be artificially lowered, the design water table must be determined subsequent to the completion of the sub drain system. Provisions must be made for maintenance of the sub drain system, funds for maintenance, and individual or group responsibility for on-going maintenance.

R401.2.1.2 Requirements for Slabs Below Grade and Crawl Spaces.

R401.2.1.3 Slabs Below Grade. Building permits for structures with slabs below grade shall not be issued unless the finished slab elevation is 6 inches or more above the design water table.

R401.2.1.4 Peripheral Sub Drain Required. Structures with slabs below grade shall be provided with a peripheral subdrain which slopes to a sump or sumps, daylight, or other approved point. In each case the ultimate discharge point(s) for peripheral subdrains shall be approved during building permit application review by the County.

R401.2.1.5 Crawl Spaces. Crawl spaces shall be permitted only where the design water table is a minimum of 36 inches below the interior finished crawl space grade.

R401.2.1.6 Alternative Designs. Alternate designs and construction practices may be permitted where it is demonstrated to the reasonable satisfaction of the building official that they are in compliance with the intent of the criteria listed above.

R401.3 Drainage.

Add a new sub-Section to read as follows:

R401.3.1 Gutters and Downspouts. Gutters, downspouts, and downspout extensions are required on all buildings in unincorporated Boulder County.

Exceptions:

1. Post framed buildings.
2. Buildings where in the opinion of the Building Official the gutters will become damaged by sliding snow.
3. Roofs with eaves or overhangs of six feet or greater.
4. Roofs that are constructed with internal roof drains.

IRC Section R408 • Under-Floor Space

Delete the existing amendment in favor of Section R408 of the 2009 IRC, which permits ventilated crawl spaces, mechanically ventilated crawl spaces or conditioned crawl spaces.

Add a second paragraph to Section R408.1 to read as follows:

R408.1 Details for Mechanically Vented Crawlspaces. For additional ventilation requirements for crawl spaces, See Chapter 11, Boulder County's BuildSmart program requirements.

IRC Chapter 8 • Roof-Ceiling Construction

IRC Section R806 • Roof Ventilation

Add a new sentence to the end of the Section as follows:

R806.1 Roof ventilation. See the provisions of Sections R325.5.8, R325.6.8, and R325.7.8 for attic ventilation in Wildfire Zone 1.

IRC Chapter 9 • Roof Assemblies

IRC Section R902 • Roof Covering Materials

Add a sentence to Section R902.1, as follows:

R902.1 Roof covering materials. See Section R325.4.2 for roof covering materials in Wildfire Zone 1.

IRC Section R903 • Roof Drainage

Add a new subsection to read as follows:

R903.4.1.1 Sizing of roof drains, scuppers, and downspouts. The rainfall amount to be used to size roof drainage components in unincorporated Boulder County shall be 2.4 inches per hour.

IRC Chapter 11 • Energy Efficiency

2009 IRC Chapter 11 has been re-written in its entirety. This new version serves as Boulder County's energy code for one- and two-family dwellings and conditioned accessory buildings.

IRC Section N1101 General

N1101.1 Scope and Intent. This Chapter 11 implements the provisions of the “Boulder County BuildSmart” program. BuildSmart serves the County's stated goals of promoting and encouraging high performing, sustainable residential development and redevelopment in the unincorporated areas of Boulder County by: Promoting development that will create energy efficient structures that reduce both the production of greenhouse gases from residential buildings and the amount of material sent to landfills; Conserving water and other natural resources in the homebuilding process; and insuring proper indoor air quality. BuildSmart also furthers the goals and measures outlined in the Colorado Climate Action Plan and the County's Sustainable Energy Plan. The production and efficient use of energy will continue to play a central role in the future of Colorado and the nation as a whole. The development, production, and efficient use of renewable energy will advance the security, economic well-being, and public and environmental health of Colorado, as well as contributing to the energy independence of our nation. The 2010 revision to BuildSmart includes both a performance and a prescriptive option for compliance, providing additional flexibility in selection of the most cost-effective design for each project.

N1101.1.1 Requirements for all dwellings. Sections N1101.1 thru Section N1105.3 apply to the conditioned floor area for all one- and two-family dwellings and accessory buildings, as defined in IRC Section R202. Section N1105.2.5.3 provides a Performance Path Option for compliance. Section N1105.2.5.4 provides a Prescriptive Path Option for compliance.

N1101.2 Compliance. Compliance shall be demonstrated by meeting the requirements of this chapter for climate zone 5B.

N1101.2.1 Warm Humid Counties. This section has been deleted and is non-applicable.

N1101.3 Identification and definitions. Materials, systems, and equipment shall be identified in a manner that will allow a determination of compliance with the applicable provisions of this chapter.

N1101.3.1 Definitions. Unless otherwise expressly stated, the following words and terms shall, for the purposes of this code, have the meanings indicated in this chapter.

Addition

The placement of or fabrication of a structure that adds floor area to an existing structure. (See definition of floor area in Section R202).

Certified or Accredited Home Energy Rater

A residential energy professional who is certified by the Residential Energy Services Network (RESNET); also referred to as an Energy Rater.

Conditioned Floor Area

The floor area of a building that is heated or cooled or that is constructed with rough-in ducts or piping with the intent of it becoming heated or cooled at a future date. This includes: floor area with a fixed opening (such as a door or doorway) into heated or cooled space and unfinished basement space. Unenclosed unconditioned covered porches, decks and unconditioned garages are not considered conditioned floor area.

Deconstruction

The dismantling of an existing building or portion thereof without the use of heavy machinery or the destruction of the materials. Deconstruction includes the salvage of materials from the existing structure for recycling, resale, or reuse as an alternative to sending them to a landfill. There are two types of deconstruction, structural and non-structural deconstruction.

Non-Structural Deconstruction (also referred to as soft-stripping) is the removal and reclaiming of the reusable non-structural components such as appliances, cabinets, doors, windows, flooring, fixtures, and finish materials.

Structural Deconstruction is the removal and reclaiming of the reusable structural components of a building, such as walls, floors, and roofs.

Deconstruction Professional

A professional engaged in the deconstruction field.

Demolition

The tearing down of an existing structure and the disposal of its components or materials without the implementation of deconstruction techniques.

Energy Efficiency Rating

An unbiased indication of a residential building's relative energy efficiency based on consistent inspection procedures, operating assumptions, climate data, and accepted calculation methods.

Energy Rater

See "Certified or Accredited Home Energy Rater."

Floor Area (as defined in IRC Section R202)

The area of the building, existing or new, under consideration, including basements and attached garages, calculated without deduction for corridors, stairways, closets, the thickness of interior walls, columns, or other features as measured from the exterior face of the exterior walls.

Gross Wall to Floor Area Ratio

The relationship of the total wall area and the total floor area of the conditioned space including the floor area within the outside face of the exterior wall and the wall area measured from the top of the foundation to the bottom of the ceiling including all door and window openings.

HERS Rating

Home Energy Rating System.

Home Energy Rating System

A nationally recognized and accepted method of providing a standardized evaluation of a dwelling's energy efficiency and projected energy costs resulting in a numerical rating based on standardized performances determined by the Residential Energy Services Network ("RESNET").

Performance Path Option

Construction of conditioned space where compliance is measured using the RESNET system to determine anticipated energy consumption and energy efficiency, (HERS Rating System).

Prescriptive Path Option

Construction of conditioned space where compliance is achieved by applying minimum standards to the dwellings thermal envelope, fenestration, lighting, and air leakage, (from Tables N1102.1 & N1102.1.3) Plus Either Table 3 or 4 if applicable.

Reconstructed Dwelling

A dwelling which has been completely deconstructed, deconstructed to the foundation level, or deconstructed to the first floor level.

Remodel/Renovation

Work within the conditioned spaces of an existing dwelling that requires a building permit but does not increase the floor area of the dwelling.

Renewable Energy Systems

Any renewable energy systems which meet the intent of the required on-site renewable energy offset required by other Sections of this code, including solar thermal systems, solar photovoltaic electric systems, geothermal heating systems, wood and pellet burning stoves, boilers, or furnaces, small scale wind generation systems, and other similar systems.

N1101.4 Building thermal envelope insulation. An R-value identification mark shall be applied by the manufacturer to each piece of building thermal envelope insulation 12 inches or more in width. Alternately, the insulation installers shall provide a certification listing the type, manufacturer, and R-value of insulation installed in each element of the building thermal envelope. For blown or sprayed insulation, the initial installed thickness, settled thickness, settled R-value, installed density, coverage area, and number of bags installed shall be listed on the certification. For insulation, the installed thickness shall be listed on the certificate. The insulation installer shall sign; date and mail the certificate or electronically mail the certificate to the Building Division office at the completion of the work.

N1101.4.1 Blown or sprayed roof/ceiling insulation. The thickness of blown in or sprayed roof/ceiling insulation shall be written in inches on markers that are installed a minimum of one in each 300 sq. ft. throughout the insulated space. The markers shall be affixed to the trusses or joists and marked with the minimum initial installed thickness with numbers a minimum of 1 inch high. Each marker shall face the attic access opening. Spray polyurethane foam thickness and installed R-value shall be listed on the certificate provided by the insulation installer.

N1101.4.2 Insulation mark installation. Insulating materials shall be installed such that the manufacturer's R-value mark is readily observable upon inspection.

N1101.5 Fenestration product rating. U-factors of fenestration products, including windows, doors, and skylights, shall be determined in accordance with NFRC 100 by an accredited, independent laboratory, and labeled and certified by the manufacturer.

Table N1101.5.2 Default Door U-Factors

Door Type	U Factor
Uninsulated metal	1.2
Insulated metal	0.6
Wood	0.5
Insulated, nonmetal edge, max 45% glazing, any glazing double pane	0.35

N1101.6 Insulation product rating. The thermal resistance (R-value) of insulation shall be determined in accordance with Section N1105.2.5.3 and Section N1105.2.5.4.

N1101.7 Installation. All materials, systems, and equipment shall be installed in accordance with the manufacturer's installation instructions and the provisions of this code.

N1101.7.1 Protection of exposed foundation insulation. Insulation applied to the exterior of basement walls, crawl space walls, and the perimeter of slab-on-grade floors shall have a rigid, opaque, and weather-resistant protective covering to prevent the degradation of the insulation's thermal performance. The protective covering shall cover the exposed exterior insulation and extend a minimum of 6 inches below grade.

N1101.8 Above code programs. This section has been deleted and is non-applicable.

N1101.9 Certificate. A certificate bearing the address of the residence shall be completed by the installer. The certificate shall list the predominant R-values of the insulation installed in or on the ceiling/roof, walls, foundation, slab, basement slab, crawlspace wall or floor, and ducts outside conditioned spaces, U-factors for fenestration, and the solar heat gain coefficient of fenestration. Where there is more than one value for each component, the certificate shall list the value covering the largest area. The certificate shall be mailed or electronically mailed to the Building Division at the completion of the work.

Exception: Projects constructed in conformance with the Performance Path Option.

N1101.10 Renewable energy requirements. Whenever renewable energy systems are required by this chapter, those systems must be constructed on-site. If an applicant's property is situated in a part of the county where state law permits local utility companies to operate "solar gardens," "solar farms," or similar community renewable energy facilities, the renewable energy requirements of Chapter 11 may also be satisfied off site through the purchase of an adequate share in a community facility, at the discretion of the Chief Building Official. At a minimum, an "adequate" share in a community facility must (1) enable the production of an equivalent amount of power compared to what the applicant would otherwise be required to produce on-site; (2) be purchased from a facility located within Boulder County or a county contiguous to Boulder County; and (3) given that such shares do not automatically run with the applicant's land, include a mechanism that ensures the share cannot be sold or modified in any way without the consent of Boulder County, with the exception of legal transfer to the applicant's successors-in-interest for use on the same property. Written proof that these requirements are met must be filed with the Building Department before a Certificate of Occupancy will be issued.

IRC Section N1102 Building Thermal Envelope

N1102.1 Insulation and fenestration criteria. The building thermal envelope shall meet the requirements of Tables N1102.1 and N1102.1.2 or be constructed as prescribed by the Energy Rater.

IRC Table N1102.1

Insulation and Fenestration Requirements by Component	
Fenestration U-Factor	0.35
Skylight U-Factor	0.45
Ceiling R-Value	54
Wood Frame Wall R-Value	19+10 ^d
Mass Wall R-Value ^a	18/24
Floor ^f R-Value	42
Basement ^b Wall R-Value	15/20
Slab ^c Edge R-Value and Depth	15, 3 ft.
Crawl Space ^b Wall R-Value	15/20
Additional Requirements	
Maximum Glazing to Floor Area Ratio	18%
Maximum Air Leakage ⁱ	5 ACH at 50 Pascals
Appliances (New or Replaced)	Energy Star Certified
Lighting Fixtures	80% CFL or equal
Insulation Installation Standards	RESNET grade 1 standards
Furnaces And Boilers ^{g,h}	92% AFUE With ECM Blower Motors
Water Heaters ^{g,h}	82 EF

Note: R-Values are minimums. U-factors and solar heat gain coefficients (SHGC) are maximums. R-19 batts compressed in to nominal 2 x 6 framing cavity such that the R-value is reduced by R-1 or more shall be marked with the compressed batt R-value in addition to the full thickness R-value.

- The second R-value applies when more than half the insulation is on the interior.
- The first R-value applies to continuous insulation, the second to framing cavity insulation; either insulation meets the requirement.
- R-5 shall be added to the required slab edge R-values for heated slabs and the entire underside of the heated slab shall be insulated with a minimum R-Value of 10.

- d. "19 + 10" means R-19 cavity insulation plus R-10 insulated sheathing. If structural sheathing covers 25% or less of the exterior, R-10 sheathing is not required where structural sheathing is used. If structural sheathing covers more than 25% of exterior, structural sheathing shall be supplemented with insulated sheathing of at least R-5.
- e. When more than half the insulation is on the interior, the mass wall U-factor shall be the same as the frame wall U-factor.
- f. Floors over conditioned space are exempt from this requirement.
- g. Permits issued for the replacement of existing furnaces, boilers, and water heaters are exempt from these requirements.
- h. For projects involving additions and remodels furnace and water heaters only need to meet these requirements if they are replaced.
- i. Seven (7) Air Changes per Hour (ACH) at 50 Pascals for additions and remodels.

N1102.1.1 R-value computation. Insulation materials used in layers, such as framing cavity insulation and insulating sheathing, shall be summed to compute the component R-value. The manufacturer's settled R-value shall be used for blown insulation. Computed R-values shall not include an R-value for other building materials or air films.

Exception: Where the energy efficiency is being determined by using the HERS the required insulation R-value shall determined by the Energy Rater.

N1102.1.2 U-factor alternative. An assembly with a U-factor equal to or less than that specified in Table N1102.1.2 shall be permitted as an alternative to the R-value in Table N1102.1.

IRC Table N1102.1.2 Equivalent U-Factors

Equivalent U-Factors	
Ceiling U-Factor	0.020
Wood Frame Wall U-Factor	0.039
Mass Wall U-Factor*	0.056
Floor U-Factor	0.026
Basement Wall U-Factor	0.067/0.05
Slab U-Factor and Depth	0.067, 3 ft.
Crawl Space Wall U-Factor	0.05

Note: R-Values are minimums. U-factors and solar heat gain coefficients (SHGC) are maximums. R-19 batts compressed in to nominal 2 x 6 framing cavity such that the R-value is reduced by R-1 or more shall be marked with the compressed batt R-value in addition to the full thickness R-value.

* When more than half the insulation is on the interior, the mass wall U-factor shall be the same as the frame wall U-factor.

N1102.1.3 Total UA alternative. If the total building thermal envelope UA (sum of U-factor times assembly area) is less than or equal to the total UA resulting from using the U-factors in Table N1102.1.2 (multiplied by the same assembly area as in the proposed building), the building shall be considered in compliance with Table N1102.1. The UA calculation shall be done using a method consistent with the ASHRAE Handbook of Fundamentals and shall include the thermal bridging effects of framing materials. The SHGC requirements shall be met in addition to UA compliance.

N1102.2 Specific insulation requirements.

N1102.2.1 Ceilings with attic spaces. This section has been deleted and is non-applicable.

N1102.2.2 Ceilings without attic spaces. This section has been deleted and is non-applicable.

N1102.2.3 Access hatches and doors. Access doors from conditioned spaces to unconditioned spaces shall be weather stripped and insulated to a level equivalent to the insulation on the surrounding surfaces. Access shall be provided to all equipment, which prevents damaging or compressing the insulation. A wood framed or equivalent baffle or retainer is required to be provided when loose fill insulation is installed, the purpose of which is to prevent the loose fill insulation from spilling into the living space when the attic access is opened and to provide a permanent means of maintaining the installed R-value of the loose fill insulation.

N1102.2.4 Mass walls. Mass walls, for the purposes of this chapter, shall be considered above-grade walls of concrete block, concrete, insulated concrete form (ICF), masonry cavity, brick other than brick veneer, earth or compressed or rammed earth, and solid timbers or logs.

N1102.2.5 Steel-frame ceilings, walls, and floors. Dwellings constructed with steel-framed ceilings, walls, or floors must be constructed in accordance with Section N1105.2.5.3 in accordance with the Performance Path Option.

N1102.2.6 Floors. Floor insulation shall be installed to maintain permanent contact with the underside of the sub floor decking.

N1102.2.7 Basement walls. Exterior walls associated with conditioned basements shall be insulated from the top of the basement wall down to 10 feet below grade or to the basement floor, whichever is less. Exterior basement wall insulation associated with conditioned space must be continuous from the top of the foundation wall to the top of the footing and protected as prescribed in Section N1101.8.1. Walls associated with unconditioned basements shall meet this requirement unless the floor above is insulated in accordance with Section N1102.2.6 and Table N1102.1.

N1102.2.8 Slab-on-grade floors. Slab-on-grade floors with a floor surface less than 12 inches below grade shall be insulated on the perimeter in accordance with Table N1102.1. The insulation shall extend downward from the top of the slab on the outside or inside of the foundation wall. Insulation located below grade shall be extended the distance provided in Table N1102.1 by any combination of vertical insulation, or insulation extending out from the building. Insulation extending away from the building shall be protected by pavement or by a minimum of 10 inches of soil. The top edge of the insulation installed between the exterior wall and the edge of the interior slab shall be permitted to be cut at a 45-degree angle away from the exterior wall.

N1102.2.9 Crawlspaces.

N1102.2.9.1 Crawlspace grade. Exposed earth in unvented crawl space foundations shall be covered with a continuous Class I vapor retarder with a minimum thickness of 10 mils. All joints of the vapor retarder shall overlap by 6 inches and be sealed and taped. The edges of the vapor retarder shall extend at least 6 inches up the stem wall and shall be attached to the stem wall.

N1102.2.9.2 Crawlspace insulation.

N1102.2.9.2.1 Conditioned crawlspaces and unvented crawlspaces. Conditioned crawlspaces and unvented crawlspaces shall be provided with insulation in compliance with Table N1102.1. The insulation must 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 an additional 24 inches.

N1102.2.9.2.2 Ventilated crawlspaces. Ventilated crawlspaces shall be provided with cavity insulation in accordance with Table N1102.1.

N1102.2.9.3 Crawlspace ventilation. Additions that result in an increase in conditioned floor area of 50% or more of the pre-existing dwelling and remodels/renovations where 50% or more of the existing finished wall membrane is removed shall have crawlspaces that are conditioned in accordance with IRC Section R408.3(2.)(2.2.).

Exception: For additions which do not result in an increase in conditioned floor area of 50% or more of the pre-existing dwelling and remodels/renovations where less than 50% of the existing finished wall membrane is removed, crawlspaces may be ventilated in compliance with any of the methods permitted under IRC Section R408.

N1102.2.10 Masonry veneer. Insulation shall not be required on the horizontal portion of the foundation that supports a masonry veneer.

N1102.2.11 Thermally isolated sunrooms. This section has been deleted and is non-applicable.

N1102.3 Fenestration.

N1102.3.1 U-factor. An area-weighted average of fenestration products shall be permitted to satisfy the U-factor requirements.

N1102.3.2 Glazed fenestration SHGC. This section has been deleted and is non-applicable.

N1102.3.3 Glazed fenestration exemption. This section has been deleted and is non-applicable.

N1102.3.4 Opaque door exemption. One side-hinged opaque door assembly up to 24 square feet in area is exempted from the U-factor requirement in Section N1101.5(2). This exemption shall not apply to the U-factor alternative approach in Section N1102.1.2 and the Total UA alternative in Section N1102.1.3.

N1102.3.5 Thermally isolated sunroom U-factor. This section has been deleted and is non-applicable.

N1102.3.6 Replacement fenestration. Where some or all of an existing fenestration unit is replaced with a new fenestration product, including sash and glazing, the replacement fenestration unit shall meet the applicable requirements for U-factor in Table N1102.1.

N1102.4 Air leakage.

N1102.4.1 Building thermal envelope. The building thermal envelope shall be durably sealed to limit infiltration. The sealing methods between dissimilar materials shall allow for differential expansion and contraction. The following shall be caulked, gasketed, weather-stripped, or otherwise sealed with an air barrier material, suitable film, or solid material.

1. All joints, seams, and penetrations.
2. Site-built windows, doors, and skylights.
3. Openings between window and door assemblies and their respective jambs and framing.
4. Utility penetrations.
5. Dropped ceilings or chases adjacent to the thermal envelope.
6. Knee walls.
7. Walls and ceilings separating the garage from conditioned space.
8. Behind tubs and showers on exterior walls.
9. Common walls between dwelling units.
10. Attic access openings.
11. Rim joists junction.
12. Other sources of infiltration.

N1102.4.2 Air sealing and insulation. Building envelope air tightness and insulation installation shall comply with Section N1102.4.2.1.

N1102.4.2.1 Testing. Tested air leakage is less than 5 ACH when tested with a blower door at a pressure of 50 Pascals (7ACH at 50 Pa for additions and remodels). Testing shall occur after rough in and after installation of penetrations of the building envelope, including penetrations for utilities, plumbing, electrical, ventilation, and combustion appliances.

During testing:

1. Exterior windows and doors, fireplace, and stove doors shall be closed, but not sealed.
2. Dampers shall be closed, but not sealed including exhaust, intake, makeup air, back draft, and flue dampers.
3. Interior doors shall be open.
4. Exterior openings for continuous ventilation systems and heat recovery ventilators shall be closed and sealed.
5. Heating and cooling systems(s) shall be turned off.
6. HVAC ducts shall not be sealed.
7. Supply and return registers shall not be sealed.

N1102.4.3 Fireplaces. This section has been deleted and is non-applicable.

N1102.4.4 Fenestration air leakage. Windows, skylights, and sliding glass doors shall have an air infiltration rate of no more than 0.3 cubic foot per minute per square foot, and swinging doors no more than 0.5 cubic foot per minute per square foot when tested according to NFRC 400 or AAMA/WDMA/CSA 101/I.S.2/A440 by an accredited, independent laboratory, and listed and labeled by the manufacturer.

Exception: Site-built widows, skylights, and doors that serve unconditioned space.

N1102.4.5 Recessed Lighting. Recessed luminaires installed in the building thermal envelope shall be sealed to limit air leakage between conditioned and unconditioned spaces. All recessed luminaires shall be IC-rated and labeled as meeting ASTM E 283 when tested a 1.57 psi pressure differential with not more than 2.0 cfm of air movement from the conditioned space to the ceiling cavity. All recessed luminaires shall be sealed with a gasket or caulk between the housing and the interior wall or ceiling covering.

IRC Section N1103 Systems

N1103.1 Controls. At least one thermostat shall be installed for each separate heating and cooling system.

N1103.1.1 Programmable thermostat. Where the primary heating system is a forced air furnace, at least one thermostat per dwelling unit shall be capable of controlling the heating and cooling system on a daily schedule to maintain different temperature set points at different times of the day. This thermostat shall include the capability to set back or temporarily operate the system to maintain zone temperatures down to 55 degrees F or up to 85 degrees F. The thermostat shall initially be programmed with a heating temperature set point no higher than 70 degrees F and a cooling temperature set point no lower than 78 degrees F.

N1103.1.2 Heat pump supplementary heat. Heat pumps having supplementary electric-resistance heat shall have controls that, except during defrost, prevent supplemental heat operation when the heat pump compressor can meet the heating load.

N1103.1.3 Equipment design. New equipment installed for heating, cooling, or ventilation must be designed and sized based on building loads in accordance with ACCA Manual J or other approved software or methodologies. Calculations must be provided to the Building Division prior to scheduling the rough inspection.

Exception: Submittal of calculations is not required for permits issued only for the replacement of existing equipment in existing dwellings.

N1103.2 Ducts. New ductwork installed in new dwellings, additions, and existing dwellings shall be located inside the buildings thermal envelope unless structural or design conditions make this type of installation impossible.

N1103.2.1 Insulation. Supply ducts in attics shall be insulated to a minimum of R-8. All other ducts shall be insulated to a minimum of R-6.

N1103.2.1.1 Duct design. New duct systems serving heating, cooling, and ventilation equipment shall be designed in accordance with ACCA Manual D or other approved software. Design calculations must be provided to the Building Division prior to scheduling the rough inspections.

Exception: Submittal of calculations for ductwork is not required for existing ductwork or for existing ductwork serving replacement appliances.

N1103.2.2 Sealing. Ducts, air handlers and filter boxes shall be sealed. Joints and seams shall comply with IRC Section M1601.4. Framed building cavities shall not be used as ducts. Duct tightness shall be verified by:

- 1. Post-construction test:** Leakage to outdoors shall be less than or equal to 8 cubic feet per minute (cfm) per 100 square feet of conditioned floor area or a total leakage less than or equal to 12 cfm of conditioned floor area when tested at a pressure differential of 0.1 inch w. g. (25 Pascals) across the entire system, including the manufacturer's air handler end closure. All register boots shall be taped or otherwise sealed during the test. If the air Handler is not installed at the time of the test, total leakage shall be less than or equal to 4 cfm of conditioned floor area.
- 2. Rough-in test:** Total leakage shall be less than or equal to 6 cfm per 100 ft.2 of conditioned floor area when tested at a pressure differential of 0.1 inch w.g. (25 Pascals) across the roughed in system, including the manufacturer's air handler enclosure. All register boots shall be taped or otherwise sealed during the test. If the air handler is not installed at the time of the test, total leakage shall be less than or equal to 4 cfm per 100 ft2 of conditioned floor area.

N1103.2.3 Building Cavities. Building framing cavities shall not be used as supply or return ducts.

N1103.3 Mechanical system piping insulation. Mechanical system piping capable of carrying fluids above 105 degrees F or below 55 degrees F shall be insulated to a minimum of R-3.

N1103.4 Circulating hot water systems. All circulating service hot water piping shall be insulated to at least R-2. Circulating hot water systems shall include an automatic or readily accessible manual switch that can turn off the hot water circulating pump when the system is not in use.

N1103.5 Mechanical ventilation. Mechanical ventilation. Mechanical ventilation of all habitable spaces is required for new dwellings and for additions and remodels/renovations in accordance with this subsection. Outdoor air intakes and exhausts shall have automatic or gravity dampers that close when the ventilation system is not operating.

N1103.5.1 Minimum required ventilation. In addition to and in lieu of the requirements of IRC Section R303.1, all residences must be provided with mechanical ventilation. All habitable rooms must be supplied with a mechanical ventilation system capable of producing an air flow in conformance with Table N1103.5.1.

Exception: Additions that result in an increase in conditioned floor area of less than 50% of the pre-existing dwelling and remodels/renovations where less than 50% of the existing finished wall membrane is removed.

IRC Table N1103.5.1 Ventilation Air Requirements in Cubic Feet Per Minute

Floor Area (square feet)	Bedrooms				
	0-1	2-3	4-5	6-7	>7
< 1,500	30	45	60	75	90
1,501-3,000	45	60	75	90	105
3,001-4,500	60	75	90	105	120
4,501-6,000	75	90	105	120	150
6,001-7,500	90	105	120	135	150
>7,500	105	120	135	150	165

* For SI: 1 square foot = 1 square foot=0.0929 m2.

Alternative Method of Calculating Ventilation Air Requirements:

$$Q_{fan} = 0.01 A_{floor} + 7.5 (N_{br} + 1)$$

Where:

Q_{fan} = fan flow rate in cubic feet per minute (cfm).

A_{floor} = floor area in square feet (ft²)

N_{br} = number of bedrooms; not to be less than 1

N1103.6 Equipment sizing. Heating and cooling equipment shall be sized as specified in IRC Sec M1401.3.

N1103.7 Snow melt systems.

N1103.7.1 Controls. Snow and ice melting systems supplied through energy service to the building shall include automatic controls capable of shutting off the system when the pavement temperature is above 50 degrees F. and no precipitation is falling and an automatic or manual control that will allow shutoff when the outdoor temperature is above 40 degrees F.

N1103.7.2 Design. Energy use by snow and ice melt systems must be offset by on-site renewable energy generation equivalent to the energy used by the snow and ice melting equipment. Plans must be submitted that detail the type, size and location of the on-site renewable energy generation equipment.

Note: A separate building permit is required for on-site renewable energy generation equipment.

N1103.7.2.1 Design criteria for supporting on-site renewable energy equipment. On-site renewable energy generation equipment installed to offset the energy used by snow and ice melt systems must be designed to provide 34,425 BTUs per square foot per year.

N1103.8 Swimming Pools. Swimming pools must be provided with energy conservation measures in accordance with Section N1103.8.1 through N1103.8.6, or be unheated. Heated pools must be heated by solar thermal or other equipment that does not rely directly or indirectly on the burning of fossil fuels or they must have their energy use offset by on-site renewable energy generation equipment equivalent to the energy use by the swimming pool. The energy use shall be determined as follows:

Exception: Swimming pools less than 200 sq. ft. in area are exempt from the requirements to provide renewable energy.

N1103.8.1 Pool heaters. All pool heaters shall be equipped with a readily accessible on-off switch to allow shutting off the heater without adjusting the thermostat setting. Pool heaters fired by natural gas or LPG shall not have continuously burning pilot lights.

N1103.8.2 Time switches. Time switches that can automatically turn heaters and pumps off and on according to a preset schedule shall be installed on swimming pool heaters and pumps.

Exception: Where pumps are required to operate solar and waste heat recovery pool heating systems.

N1103.8.3 Pool Covers. Heated pools shall be equipped with a vapor retardant pool cover on or at the water surface. Pools heated to more than 90 degrees F shall have a pool cover with a minimum insulation value of R-12.

N1103.8.4 Filters. Swimming pool filters must be cartridge-type filters.

N1103.8.5 Pumps. Swimming pool pumps must be multi-speed pumps.

N1103.8.6 Energy conservation design standards for swimming pools. For the purpose of calculating the energy use of swimming pools, the following are assumed.

Note: This Section is not intended to limit the season or temperature of swimming pools.

Swimming Pool Season:

Outdoor Pools	3 months
Indoor Pools	12 months

Pool Heating Temperature:

82 degrees Fahrenheit or less.

On-Site Renewable Energy Requirements:

29,000 BTUs per square foot of pool surface area per year.
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N1103.9 Spas. Any energy use by indoor or outdoor spas must be offset by on-site renewable energy generation equivalent to the energy use by the spa. Plans must show the annual energy use of the spa, the calculation method used to determine the expected energy use, and the on-site renewable energy system(s) which will be used to offset the energy used by the spa. All spas must be equipped with an insulated cover that is listed to provide a minimum R-value of at least 12.

Exception: New Spas and hot tubs which have been tested and listed for compliance with the requirements of the California Energy Commission (CEC) Title 20 (Standby power for portable electric spas shall not be greater than 5[V2/3] watts where V=the total volume of the spa in gallons), and are less than 64 square feet in surface area shall be exempted from the requirement to offset their energy usage by on-site renewable energy generation. Spas larger than 64 sq. ft. in surface area that are certified to meet the requirements of the CEC shall offset their requirements at the rate of 140,000 BTUs per square foot per year.

N1103.9.1 Design criteria for spas. The requirements of this Section apply to spas that do not meet the standards in Section N1103.9.

Spa Season:

Season	12 months
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On-Site Renewable Energy Requirements:

430,000 BTUs per square foot per year.
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N1103.10 Other exterior energy uses. Exterior energy uses, with the exception of cooking appliances, must be offset with on-site renewable energy production.

IRC Section N1104 Lighting Systems

N1104.1 High-efficacy lamps. A minimum of 80 percent of the lamps in permanently installed lighting fixtures shall be high-efficacy lamps.

IRC Section N1105 Sustainability

N1105.1 Applicability. This Section implements the provisions of the Boulder County BuildSmart program. This Chapter applies to new one and two family dwellings and residential accessory buildings as defined in IRC Section R202, and all related residential construction work that requires a building permit including: renovated dwellings, remodeled dwellings, moved dwellings, additions to existing dwellings, and combined additions and/or remodels/renovations. Sections N1101.1 through Section N1105.3 apply to the conditioned floor area of all one- and two-family dwellings and accessory buildings as defined in IRC Section R202. Section N1105.2.5.3 provides a Performance Path Option for compliance. Section N1105.2.5.4 provides a Prescriptive Path Option for compliance. All work not constructed using the Performance Path Option shall be done in accordance with the Prescriptive Path Option.

Exception: Federally-certified manufactured dwellings and state-certified factory-built dwellings.

N1105.2 Required Elements.

N1105.2.1 Deconstruction. All existing buildings and portions thereof requiring removal of building materials must be deconstructed as defined in this Section. Demolition is not permitted.

N1105.2.1.1 Penalty. Buildings that are demolished or partially demolished rather than deconstructed will, at the discretion of the Building Official, be issued a Stop Work notice for a period not exceeding 30 days.

N1105.2.1.2 Documentation of Intent to Deconstruct. Documentation of intent to deconstruct. Documentation of intent to deconstruct consisting of a deconstruction plan, a written description of deconstruction work, or the County Deconstruction Checklist must be provided at building permit application. The documentation of intent to deconstruct must include: the name of the Deconstruction Contractor, a list of the materials to be recovered, donated, or reused, and the destination of the materials. The documentation must include both Nonstructural Deconstruction and Structural Deconstruction. Items which must be donated, sold, or re-used include: cabinets, dimensional lumber, flooring, and solid core doors.

N1105.2.1.3 Verification of deconstruction of a structure. The completion of deconstruction as approved on the deconstruction plan must be verified by the Building Division. The owner or deconstruction contractor shall provide written verification of deconstruction by means of receipts or a written log, maintained by the homeowner or general contractor, which includes the volume or weight of materials and the destination where they were transported to the Building Division office. Verification must be received prior to scheduling the rough inspections.

N1105.2.2 Construction Jobsite Waste Reduction and Recycling. All construction jobsite waste must be recycled including wood, scrap metal, cardboard, and concrete. Labeled containers must be provided at the construction-site for use in capturing recyclable material. A mixed load container may be used if that container is being sent to a waste/recycling center that will verify the weight of recycled material recovered from that mixed load.

N1105.2.2.1 Documentation of Intent to Recycle. Documentation of intent to recycle which consists of a recycling plan, a written description of recycling activity, or the submittal of the County Recycling Checklist must be provided at building permit application. The documentation must clearly show how the requirements of Section 1105.2.1 will be met and must specify the locations of recycling containers and the destination where material will be recycled.

N1105.2.2.2 Verification. Field inspection will be made by the Boulder County Building Division during the construction process to assure that recycling containers have been placed on-site. Prior to the final inspection, documentation must be provided to the Building Division office by the owner or waste/recycling contractor indicating the weight or volume of materials diverted from the waste stream. Materials that must be recycled include: appliances, concrete, metals, cardboard, and wood (except pressure treated or painted wood), and thermostats and other devices containing mercury. Other materials which are accepted by the waste/recycling contractor must also be recycled.

N1105.2.3 Indoor water conservation.

N1105.2.3.1 Requirements. The following new and replacement plumbing fixtures must be labeled as meeting EPA Water Sense (www.epa.gov/WaterSense/) criteria: Bathroom sink faucets, shower heads, toilets, and urinals.

Exception: Showerheads with a maximum flow of 2.0 gpm, urinals with a flush rate of .5 gallons per flush.

N1105.2.4 Indoor air quality.

N1105.2.4.1 Attached garages. Doors between attached garages and living space shall be weather stripped to the degree necessary to make them airtight and shall be self-closing and self-latching.

N1105.2.5 Energy Conservation. The provisions of this Section apply to conditioned portions of one and two family dwellings and conditioned accessory buildings as defined in IRC Section R202. Dwellings and accessory buildings with new, remodeled/renovated, conditioned floor area as defined in Section N1101.4.1 shall be constructed in accordance with either the Performance Path Option in Section N1105.2.5.3.2 or in accordance with the Prescriptive Path Option in Section N1105.2.5.4.

Exception: Federally-certified manufactured dwellings and state-certified factory-built dwellings.

N1105.2.5.1 Construction. Conditioned floor area within new dwellings, additions to dwellings, remodeled dwellings, and accessory buildings that contain conditioned space shall be constructed in accordance with for the Performance Path Option in Section N1105.2.5.3.2 or in accordance with the Prescriptive Path Option in Section N1105.2.5.4. All work that is not done in accordance with the Performance Path Option must meet the requirements of the Prescriptive Path Option.

N1105.2.5.2 Calculation of energy usage for projects using the Performance Path Option. Energy conservation requirements of this Section will be calculated by using the HERS Index applicable on the date of the adoption of this Chapter.

Exception: Dwellings constructed in accordance with the Prescriptive Path in Section N1105.2.5.4.

N1105.2.5.3 Performance Path Option requirements. The provisions of this Section apply to the conditioned floor area of all new one- and two-family dwellings, additions of conditioned floor area to one- and two-family dwellings, and remodels of the conditioned floor area of one- and two-family dwellings unless the design and construction complies with the Prescriptive Path Option of Section N1105.2.5.4.

N1105.2.5.3.1 New dwellings and reconstructed dwellings. The requirements of this subsection apply to the conditioned floor area of new dwellings and reconstructed dwellings constructed in accordance with the Performance Path Option. New dwellings and reconstructed dwellings shall meet the HERS Index Rating shown on Table 1. A RESNET model prepared by an Energy Rater shall be provided with the building permit application showing compliance with the required HERS Index Rating.

N1105.2.5.3.2 Performance Path Option requirements for additions to existing dwellings. The requirements of this subsection apply to the total combined conditioned floor area of existing dwellings and the new conditioned floor area of additions. The required HERS rating will be first determined by applying Figure 1. The combined new and existing conditioned floor area must comply with Table 1 or Table 2 as indicated by Figure 1. A RESNET model prepared by an Energy Rater must be provided with the building permit application showing compliance with the required HERS Index rating.

N1105.2.5.3.3 Performance Path Option requirements for remodels. Remodel/renovations of conditioned interior spaces including basement spaces must meet the requirements of this subsection unless constructed in accordance with the Prescriptive Path Option in Section N1105.2.5.4. A RESNET model prepared by an Energy Rater must be provided with the building permit application showing that the entire dwelling can achieve a HERS rating of at least 80.

N1105.2.5.3.4 Performance path option requirements for basement finishes. Basement finishes (the finishing of previously unfinished conditioned basement space) must meet the requirements of this subsection unless constructed in accordance with the Prescriptive Path Option in Section N1105.2.5.4. A RESNET model prepared by an Energy Rater must be provided with the building permit application which demonstrates that the total conditioned floor area of the dwelling has achieved a HERS rating of 80.

N1105.2.5.3.5 Performance Path Option requirements for accessory buildings. Detached accessory structures as defined in IRC Section R202 that contain conditioned space that are constructed in accordance with the Performance Path Option must meet the HERS Rating shown on Table 1. As an alternative, an acceptable analysis may be presented by an Energy Rater demonstrating that the building design achieves the applicable percent above current code. The RESNET energy model or analysis must be provided with the building permit application.

N1105.2.5.3.6 Performance path option for relocated dwellings. Dwellings relocated from one building site to another, or to a new location on the same site shall meet the requirements of Section N1105.2.5.3.3 for renovations/remodels.

N1105.2.5.3.7 Inspection requirements for projects constructed under the performance path option.

N1105.2.5.3.7.1 During construction. An Energy Rater must perform a pre-drywall inspection including a duct blaster test (if applicable) to ensure the ability of the residence to achieve the required HERS Index rating. **Prior to the installation of the wall or ceiling finish materials,** the owner or contractor must submit verification of the Energy Rater's inspection to the Building Division office which certifies that the building has been constructed in conformance with the RESNET model.

N1105.2.5.3.7.2 Final inspection Upon completion of construction and prior to final building inspection approval, or (if applicable) issuance of a Certificate of Occupancy an Energy Rater must perform a final inspection which includes a blower door test and submit documentation to the Building Division office certifying that the residence meets the applicable HERS Index rating, (final HERS certificate).

N1105.2.5.4 Prescriptive Path Option requirements. As an alternative to compliance with the Performance Path Option requirements in Section N1105.2.5.3, the conditioned floor area of new dwellings, additions, remodels/ renovations, as well as combinations thereof, may be constructed in accordance with the Prescriptive Path Option. Dwellings constructed in compliance with the Prescriptive Path Option must conform to Tables N1102.1, N1102.1.2, and, as applicable, Tables 3 and 4.

Exceptions:

1. New dwellings with conditioned floor area exceeding 6,000 sq. ft. must be constructed in accordance with the Performance Path Option in Section N1105.2.5.3.
2. Additions where the combined new and existing conditioned floor area exceeds 6,000 sq. ft. must be constructed in accordance with the Performance Path Option in Section N1105.2.5.3.

N1105.2.5.4.1 New dwellings and reconstructed dwellings constructed using the prescriptive path option. Conditioned areas of new and reconstructed dwellings designed and constructed to meet the Prescriptive Path requirements must conform to the values in Table N1102.1 or Table N1102.1.2. Dwellings with conditioned floor area in excess of 3,000 sq. ft. must also comply with Table 3.

N1105.2.5.4.2 Additions to existing dwellings constructed using the prescriptive path option. Additions which result in a total conditioned floor area (new and existing) of 3,000 sq. ft. or less must conform to the values of Table N1102.1 or Table N1102.1.2. Additions which result in a total conditioned floor area of not more than 6,000 sq. ft. must also conform to the values of Table 4.

N1105.2.5.4.3 Remodels/renovations constructed using the prescriptive path option. Remodels/renovations in existing dwellings including basement spaces must conform to the values of Table N1102.1 or Table N1102.1.2.

N1105.2.5.4.4 Basement finishes constructed using the prescriptive path option. Basement finishes (the finishing of previously unfinished conditioned basement space) must conform to the values of Table N1102.1 or Table N1102.1.2.

N1105.2.5.4.5 Accessory buildings constructed using the prescriptive path option. Accessory buildings must conform to the values of Table N1102.1 or Table N1102.1.2.

N1105.2.5.4.5.1 Garages and shops. Garages and shops that contain conditioned floor area that are equipped with overhead doors must have fully weather stripped overhead doors with a minimum R-value of 13. Such doors must be weather stripped at the top, sides, bottom, and between the panels.

N1105.2.5.4.6 Relocated dwellings. Dwellings which have been moved to a new location on a parcel or dwellings which have been moved from one parcel to another must comply with the requirements of this Section.

N1105.2.5.4.6.1 New construction. New construction associated with the relocation of the building must conform to Table N1102.1 or Table N1102.1.2.

N1105.2.5.4.6.2 Existing building. The existing portions of the relocated building must conform to the requirements of Section N1105.2.5.4.7 for Requirements for the Existing Portions of Dwellings for Additions and Remodels/Renovations.

N1105.2.5.4.7 Prescriptive path option requirements for additions and remodels/renovations. Existing portions of dwellings shall be upgraded in accordance with this subsection:

Exception: The following projects are not required to comply with items 1 - 5 of Section N1105.2.5.4.7.1 or items 1 - 3 of Section N1105.2.5.4.7.2:

1. Window replacements.
2. Bathroom remodel/renovation projects limited to the replacement of fixtures and cabinets.
3. Kitchen remodel/renovation projects limited to the replacement of cabinets, counter tops, fixtures and appliances.

N1105.2.5.4.7.1 Additions that result in an increase in conditioned floor area of 50% or more of the pre-existing dwelling and remodels/renovations where 50% or more of the existing finished wall membrane is removed:

1. The insulation in the existing attic must be upgraded to a value of R-38. Vaulted or cathedral ceiling cavities must be completely filled with insulation.
2. The existing dwelling must achieve a maximum air leakage of 7 air changes per hour measured at 50 pascals.
3. Mechanical ventilation is required in compliance with Section N 1103.5.
4. Crawlspace walls must be insulated in compliance with Table N1102.1 or Table N1102.1.2.
 - a. A Class 1 vapor retarder shall be placed on the crawlspace grade with joints sealed and overlapped a minimum of 6 inches and edges extending at least 6 inches on to the stem wall and sealed.
 - b. The crawlspace must be provided with continuously-operated mechanical exhaust ventilation at a rate of 1 cu. ft./minute for each 50 sq. ft. of crawlspace floor area including an air pathway to the common area such as a duct or transfer grill. (see IRC Section R408) As an alternative to the continuously operated mechanical exhaust ventilation, a conditioned air supply of at least 1 cu. ft./minute for each 50 sq. ft. of crawlspace area and a return air pathway to the common area may be provided (see IRC Section R408).
5. A minimum of 50 percent of the lamps in existing permanently installed lighting fixtures shall be high-efficacy lamps.

N1105.2.5.4.7.2 Additions that result in an increase in conditioned floor area of less than 50% of the pre-existing dwelling and remodels/renovations where less than 50% of the existing finished wall membrane is removed:

1. The insulation in the existing attic must be upgraded to a value of R-38. Vaulted or cathedral ceiling cavities must be completely filled with insulation.
2. The existing dwelling must achieve a maximum air leakage of 7 air changes per hour measured at 50 pascals.
3. A minimum of 50 percent of the lamps in existing permanently installed lighting fixtures shall be high-efficacy lamps.

Exception: Additions and remodels/renovations which result in less than 500 sq. ft. of conditioned floor area must be caulked and weather stripped, but need not be tested for air leakage.

N1105.2.5.4.8 Inspection requirements for projects constructed under the prescriptive path option.

During construction

1. An Energy Rater must perform an insulation inspection. Insulation must meet RESNET Grade 1 Standard.
2. An Energy Rater must perform a duct blaster test (when applicable). Duct leakage must not exceed 8 cfm per 100 sq. ft. of conditioned floor area or a total leakage less than or equal to 12 cfm of conditioned floor area when tested at a pressure differential of 0.1 inch w. g. across the entire system (25 Pascals), including the manufacturer's air handler enclosure.
3. An Energy Rater must verify the installation of the mechanical ventilation equipment and the ventilation rate of flow.

Exception: For additions and renovations/remodels that result in less than 500 sq. ft. of conditioned floor area, an insulation certificate shall be posted in compliance with Section N1101.9, but a duct blaster test will not be required.

Upon completion of construction and prior to final building inspection approval, an Energy Rater must perform a blower door test and submit documentation to the Building Division office verifying that air leakage does not exceed 5 air changes per hour at 50 pascals of pressure.

Exception: Air leakage not exceeding 7 air changes per hour (ACH50) at 50 Pascals (PA) of pressure is permitted for additions and remodels/renovations.

N1105.3 Modifications. The Chief Building Official may make modifications to the requirements of this Chapter as allowed in Section 104.10 of the Boulder County Building Code if it is determined that strict application of the requirements of this Chapter:

1. Creates practical difficulties or excessive expense in the upgrade of an existing residential structure.
2. Requires alteration to either a structure greater than 50 years in age or any structure in a historic district or site which would materially alter the historic integrity of that structure or adversely affect the historic integrity of the district or site.
3. Creates practical difficulties in meeting on-site renewable energy requirements due to topographic constraints associated with the lot or location of the structure.

In assessing whether a request for a modification should be granted, the Chief Building Official shall, in consultation with the staff and/or an Energy Rater retained by the Building Official at the applicant's expense, determine whether the strict application of this Chapter creates a situation described in items 1 through 3 listed above. If it is determined that the request warrants a modification on this basis, the Chief Building Official shall determine what appropriate mitigation measures shall be required to ensure that the structure meets the intent and spirit of this Chapter. Appropriate mitigation measures may include requiring additional energy-saving or resource-efficient construction methods or materials, sustainable framing techniques, use of environmentally friendly materials, adoption of water-saving landscaping and irrigation, or similar conservation measures.

How To Use Figure 1:

First, calculate the Total Conditioned Floor Area of your project by adding the area of the addition to the area of the existing dwelling, then calculate the Percent of Increase to the Existing Structure by dividing the area of the addition by the area of the existing dwelling.

Take the results of these two calculations and plot their intersecting point on Figure 1 to determine the next steps for compliance.

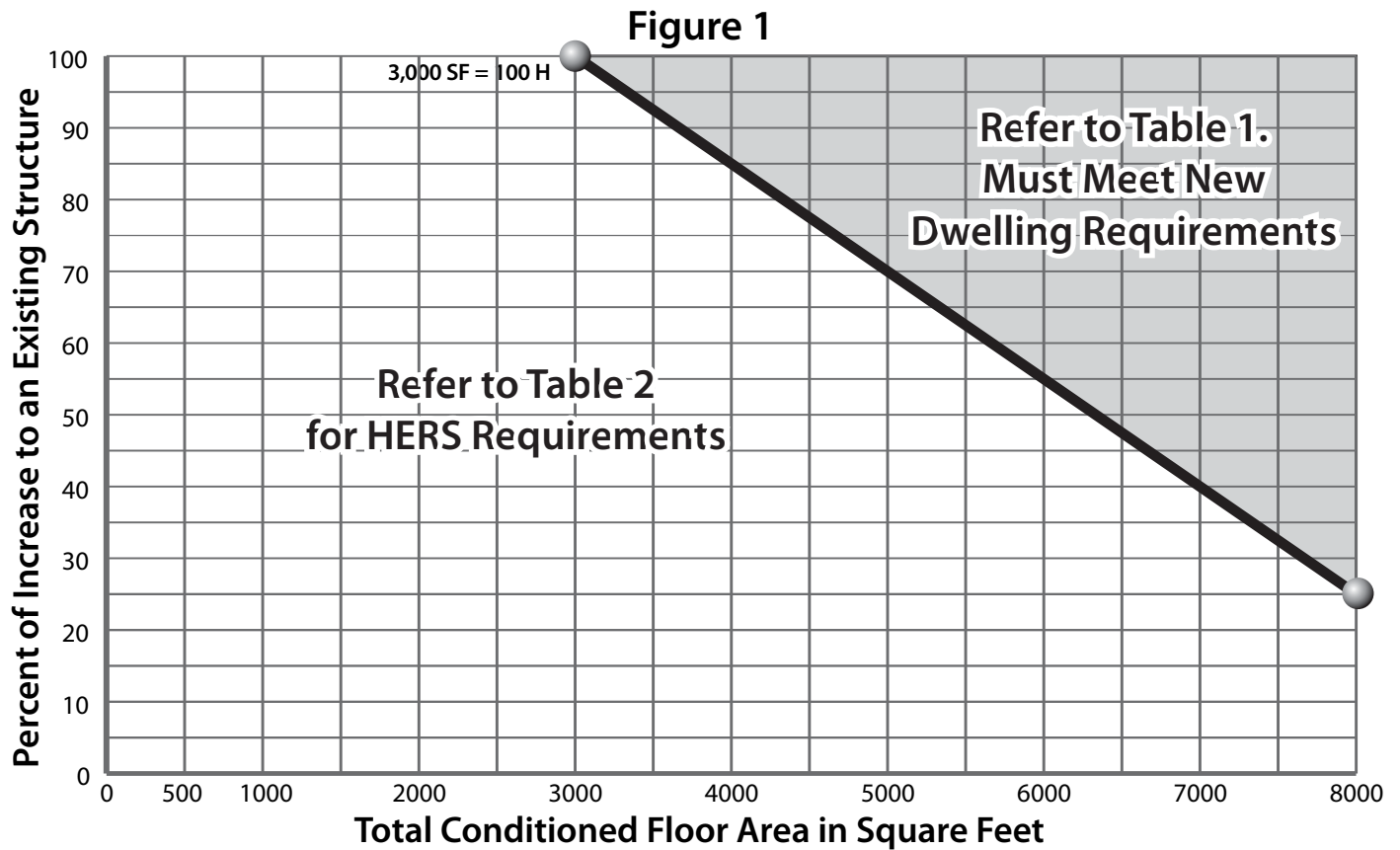


Table 1 HERS Rating Requirements for New Construction

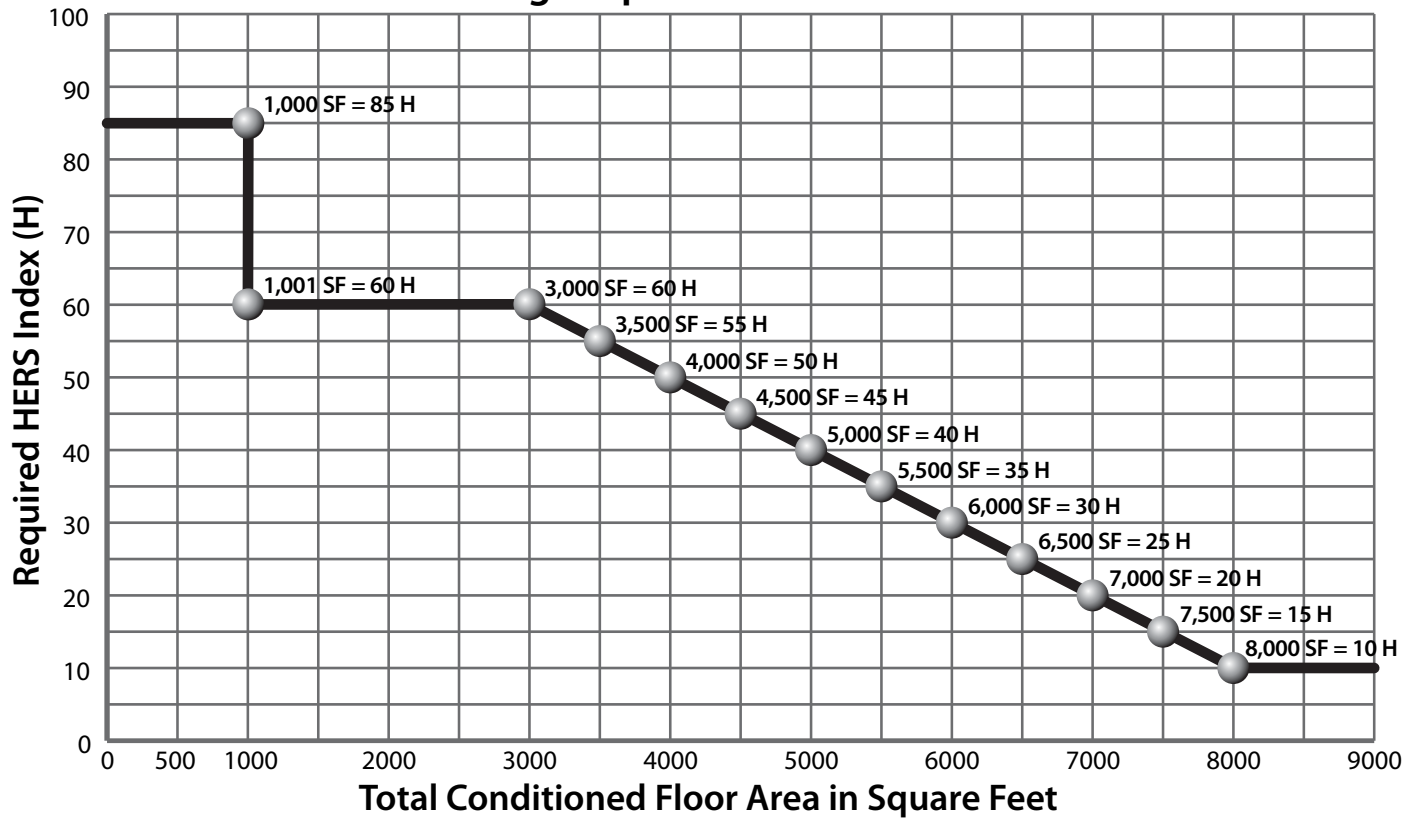


Table 2: HERS Rating Requirements for Additions

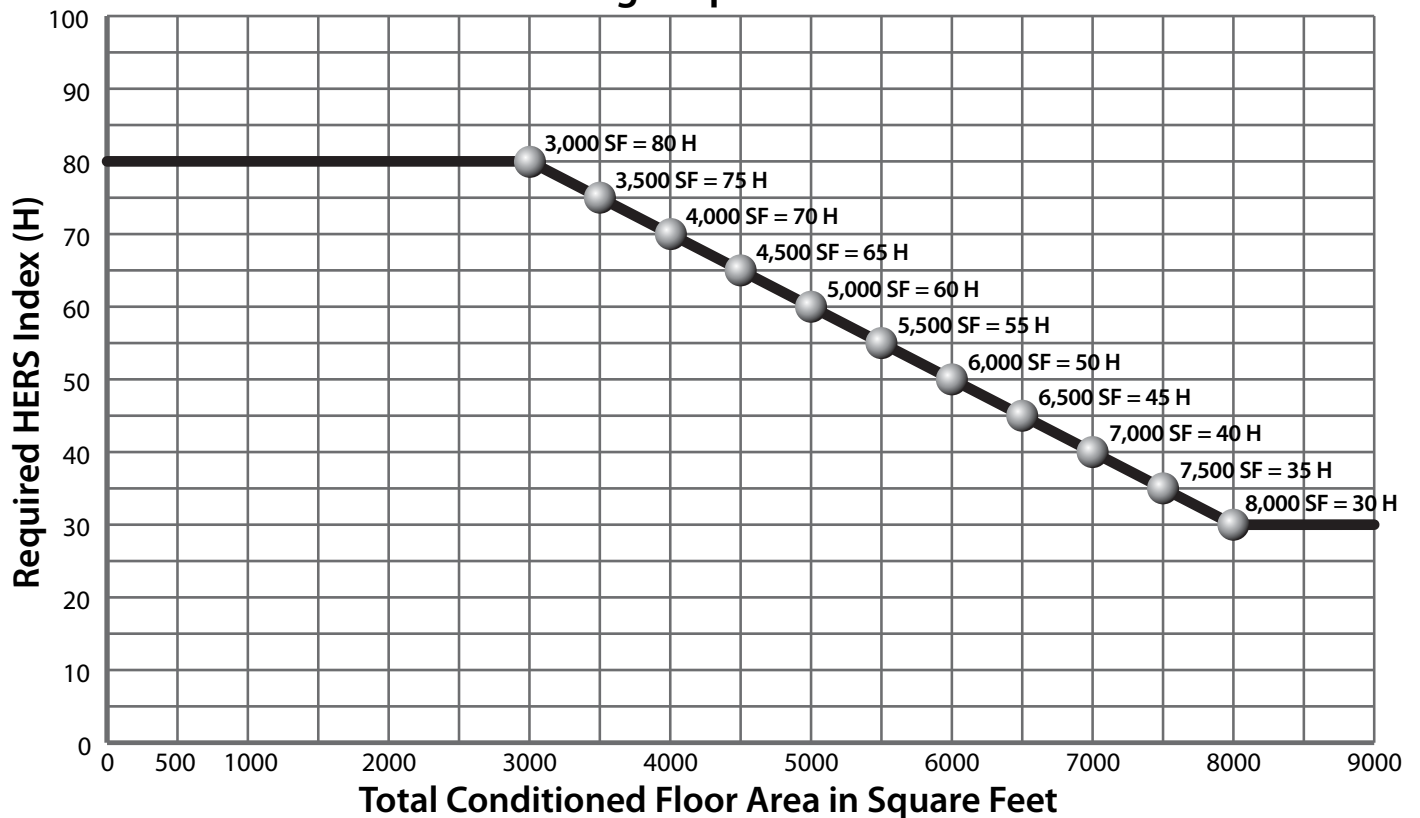
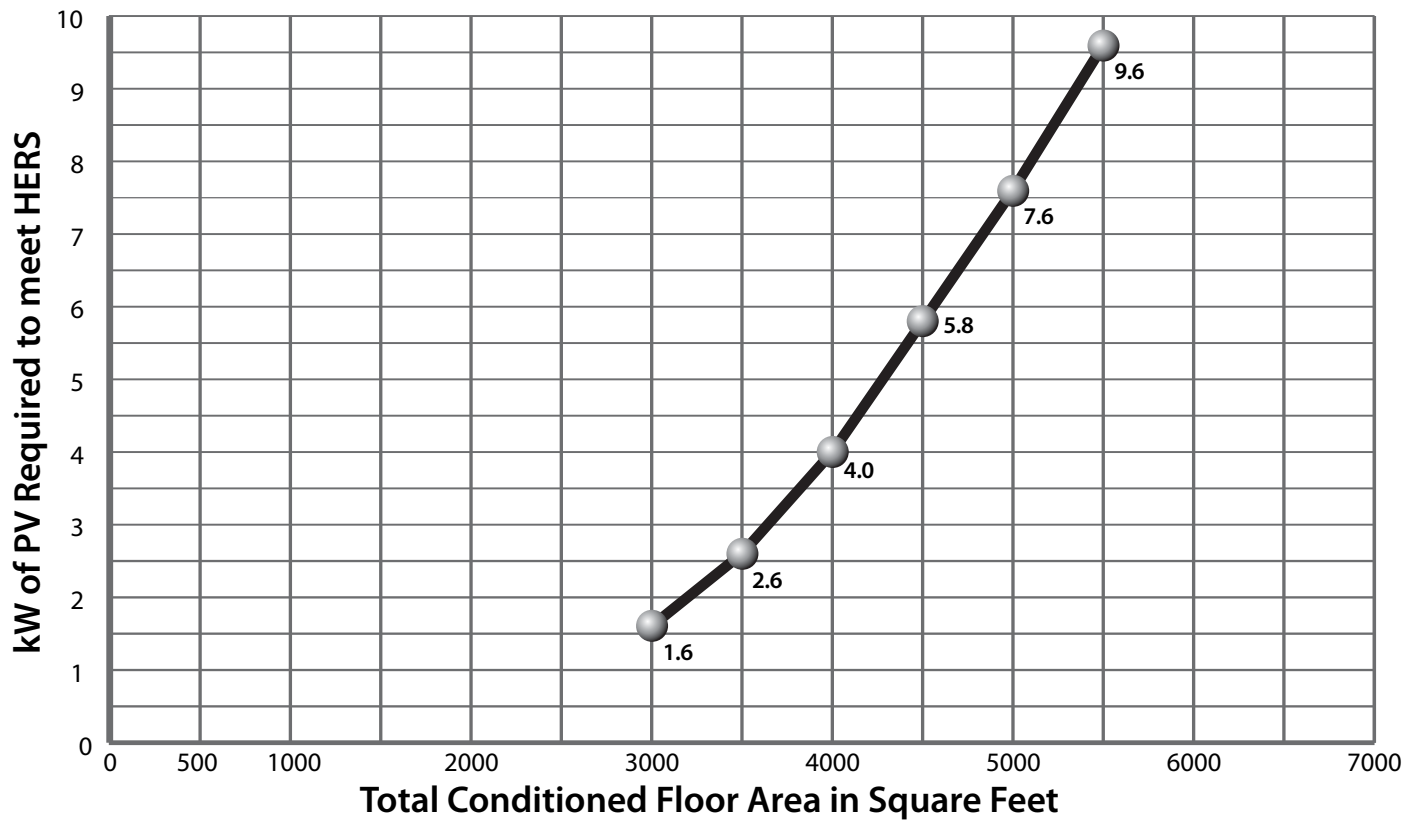


Table 3: PV Requirements for New Residences Prescriptive Path Option 3,000 sq. ft. to 6,000 sq. ft.

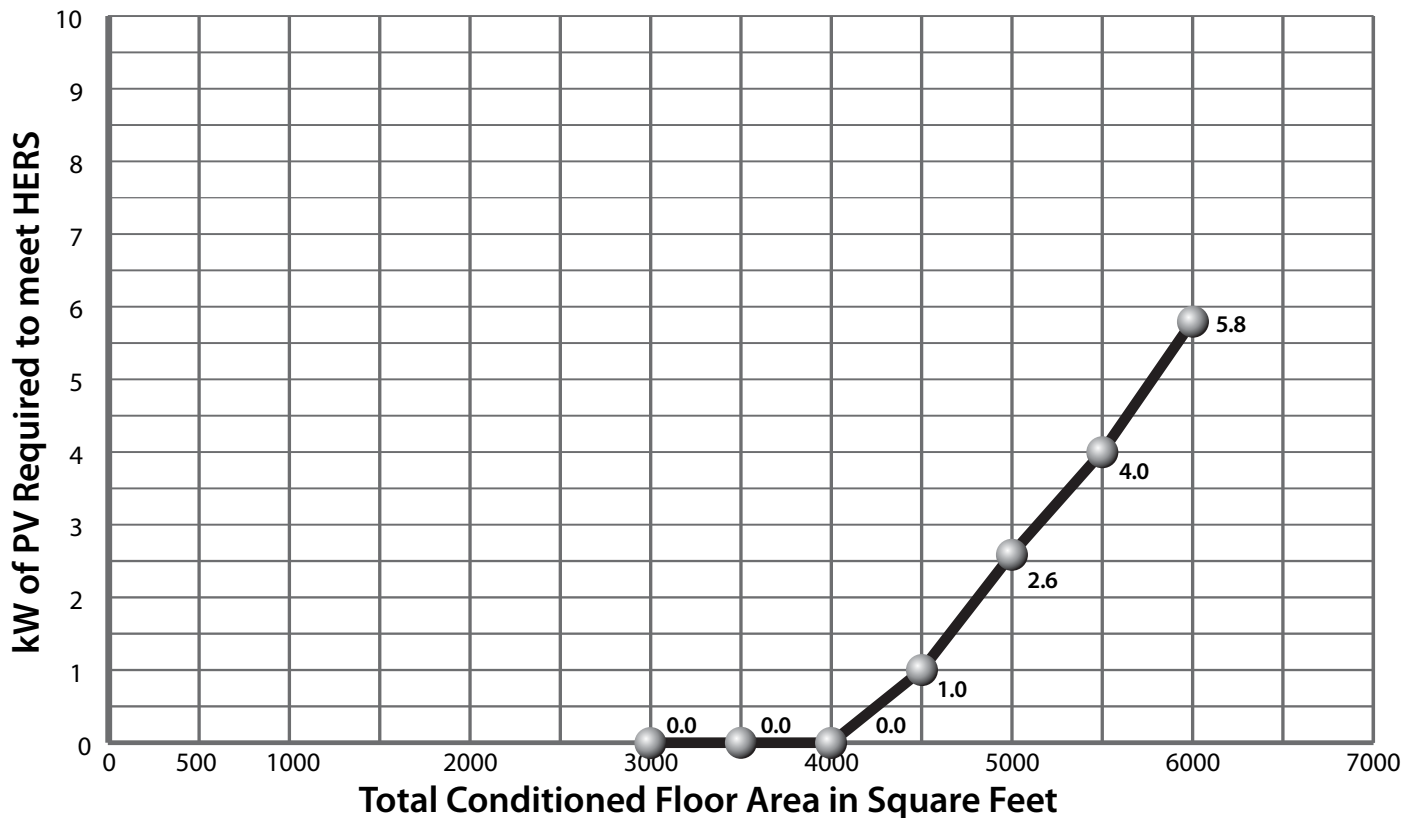


If the gross wall to floor area ratio is greater than one, the Performance Path Option must be used.

In calculating the wall to floor area ratio the following must be included:

- The entire floor area within the outside face of the exterior wall.
- The wall area measured from the top of the foundation to the bottom of the ceiling including all door and window openings.
- The gross wall area is divided by the gross floor area.

Table 4: PV Requirements for Additions Prescriptive Path Option 3,000 sq. ft. to 6,000 sq. ft.



If the gross wall to floor area ratio is greater than one the Performance Path Option must be used.

In calculating the wall to floor area ratio the following must be included:

- The entire floor area within the outside face of the exterior wall.
- The wall area measured from the top of the foundation to the bottom of the ceiling including all door and window openings.
- The gross wall area is divided by the gross floor area.

IRC Chapter 12 • Elevators And Conveying Systems

IRC Section R1201 • General.

R1201.1 Scope. This chapter shall govern the installation and inspection of conveyances including elevators, chair lifts, and dumbwaiters in one- and two-family dwellings

R1201.2 Referenced standards. Except as otherwise provided for in this code the design, construction, installation, alteration, repair, and maintenance of elevators and conveying systems and their components shall conform to ASME A17.1/CSA B44-2007 and ASME A18.1-2005.

R1201.3 Design. The conveyance shall be designed by an experienced person who has achieved ASME QE-1 certification and who in the opinion of the Building Official has expert knowledge of ASME A 17.1 part 5.3 and A18.1 parts 5, 6, & 7. Structural members within the building which support the weight of the conveyance must be designed by a Colorado-licensed engineer.

R1201.4 Permits and inspections. Each residential conveyance must be applied for on a separate building permit. Inspections shall be performed by an inspector who has obtained ASME QEI-1 certification. The inspection report(s) must be sent to the Building Safety & Inspection Services Division office for approval at the completion of the work and prior to the use of the conveyance.

IRC Chapter 13 • General Mechanical System Requirements

IRC Section M1302 • Approval

M1302.2 Solid Fuel Burning Equipment. No permit shall be issued for the installation of a solid-fuel-burning fireplace stove, fireplace insert or wood stove appliance unless the appliance fully conforms with the requirements for emissions testing, certification and labeling found under Title 30, Article 28, Sections 402-405 of the Colorado Revised Statutes. All such appliances to be installed must be certified by the Air Pollution Control Division of the Colorado Department of Health to meet the emissions standards set forth in Section IV of Regulation No. 4 of Volume I of the Colorado Air Quality Control Commission as EPA Phase II or Colorado Phase III solid-fuel-burning devices.

IRC Chapter 24 • Fuel Gas

IRC Section G2434 • Vented Gas Fireplace (Decorative Appliances)

G2434.3 Vented Gas Fireplaces.

G2434.3.1 Gas Log Fireplaces. In addition to the general requirements specified in Section R2434, gas logs installed in fireplaces shall comply with the requirements specified for heating equipment and heating appliances in this code. Approved gas-fired decorative log sets may be installed only in solid-fuel-burning fireplaces, provided:

1. The gas log is a listed appliance and is installed only in accordance with the manufacturer's instructions.
2. If the fireplace is equipped with a damper, it shall either be permanently blocked open, removed completely, or an opening or openings shall be cut in the damper to provide the minimum amount of opening prescribed in the manufacturer's instructions.

Exception: Damper clamps that are an integral part of a listed gas log assembly and are installed in accordance with the manufacturer's instructions are permitted.

3. The fireplace chimney shall comply with Sections 2101.3.1 and 2111 of the Building Code. The cross-sectional area of the flue passageway shall be in accordance with Figure 2113.16 for masonry chimneys and Section 805 for factory-built chimneys.
4. Gas logs shall be equipped with a pilot and listed safety shutoff valve.
5. Gas logs may be installed in factory-built fireplaces only if the factory-built fireplace is listed for the installation of a gas log and provided with a means for installation of the gas piping.
6. Permanent combustion air opening(s), communicating directly with outside air, shall be provided in the firebox or in an area directly communicating with the room in which the fireplace is located when additional combustion air is required by Chapter 7 or if the gas log is installed in a bedroom.

IRC Chapter 26 • Plumbing

IRC Section P2601 • General

Add an exception to Section P2601.2 to read as follows:

Exception: Garage floor drains may drain to the exterior of the building to a point at least 5 feet away from the building.

Add a new sub-Section to read as follows:

P2601.4 Sanitation Facilities for Workers. Toilet facilities shall be provided for construction workers and such facilities shall be maintained in a sanitary condition. Construction workers toilet facilities of the non-sewer type shall conform to ANSI Z4.3

IRC Chapter 28 • Water Heaters

IRC Section P2801 • General

Add a new sub-Section to read as follows:

P2801.2.1 Heat Traps. Water heating equipment not supplied with integral heat traps that serve noncirculation systems shall be provided with heat traps on the supply and discharge piping consisting of an arrangement of piping and fittings that prevents thermo-siphoning of hot water during standby periods.

IRC Chapter 29 • Water Supply and Distribution

Section P2903 • Water-Supply System

P2903.10 Hose bibb.

Add a new sub-Section to read as follows:

P2903.10.1 Yard Hydrants. All yard hydrants that are connected to a potable water supply shall be listed sanitary hydrants or shall comply with Section P2902 for backflow and cross connection protection.

Delete any amendments to the electrical provisions of the IRC (The State Electrical Board has adopted the 2008 NEC as published, without amendments, and the 2009 IRC includes the arc fault circuit interrupter and tamper-proof receptacle requirements of the 2008 NEC).

IRC Appendix G • Swimming Pools, Spas, and Hot Tubs

Add a new item 11 under Section AG105.2, to read as follows:

AG105.2 Outdoor swimming pool.

11. Pool barriers constructed of wood framing and wire mesh must meet the following requirements:

- a. Wood columns in contact with earth or set in concreted that is in direct contact with earth must be preservative-treated wood in accordance with AWPA U1.
- b. Columns and rails must be mechanically fastened together.
- c. Wire mesh must be a minimum 14 gage.
- d. Wire mesh must be fastened to the columns and rails using minimum 1" galvanized staples placed a maximum of 6 inches on center.

IRC Appendix O • Gray Water Recycling Systems

Amend Section AO101.1 to read as follows:

AO101.1 Scope. The provisions of this appendix shall govern the materials, design, construction and installation of gray water systems for flushing of water closets and urinals [see Figures AO101.1(1) and AO101.1(2)].

Amend Section AO101.4 to read as follows:

AO101.4 Installation. In addition to the provisions of Section AO101, systems for flushing of water closets and urinals shall comply with Section AO102. Except as provided for in Appendix O, all systems shall comply with the provisions of the International Residential Code.

IRC Section AO103 • Subsurface Landscape Irrigation Systems

This Section is deleted in its entirety.

Add a new Section AO104, Rainwater Recycling Systems, to read as follows:

IRC Section AO104 • Rainwater Recycling Systems

AO104.1 Compliance with Colorado revised statutes. The reuse of rainwater must comply with all of the requirements of the Colorado Division of Water Resources and applicable state statutes.

AO104.2 Scope. The provisions of this Section apply to the construction, installation, alteration, and repair of rainwater recycling systems for the supply of water to water closets and urinals.

AO104.3 Plans. All rainwater recycling system piping, valves, connections, and equipment must be clearly detailed on the building plans.

AO104.4 Connections to potable water. Rainwater recycling system piping shall not be connected to potable water piping. Backflow protection devices shall comply with IRC Chapter 29.

AO104.5 Pipe sizing. Rainwater recycling system piping shall be sized in accordance with IRC Chapter 29.

AO104.6 Materials. All materials used for rainwater recycling systems shall comply with this Section.

AO104.6.1 Gutters, downspouts, leaders and conductors. Gutters, downspouts, leaders and conductors shall comply with Chapter 11 of the International Plumbing Code.

AO104.6.2 Piping. Piping shall comply with IRC Chapter 29.

AO104.6.3 Storage tanks. Storage tanks shall be made of durable material. Above-grade tanks shall be listed for above-grade use. Below-grade tanks shall be listed for below-grade use and tank surfaces shall be designed to withstand the loads imposed.

AO104.7 Installation. The installation of rainwater collection systems shall comply with the requirements of this Section.

AO104.7.1 Collection surface. Rainwater for reuse must be collected from hard, impermeable, unpainted roof surfaces. Rainwater may not be collected from vegetated surfaces.

Exception: Roof surfaces that are painted with materials that are certified as having a toxicity level that is acceptable for drinking water contact.

AO104.7.2 Storage tanks. The installation, use and maintenance of storage tanks shall comply with this Section.

AO104.7.2.1 Maintenance. Tanks shall be maintained in a way that will prevent the entry of birds, rodents, and in Sections. Inlet openings, vent openings, and overflow pipes shall be protected by screens with aperture openings not greater than 1/16 inch. Storage tanks shall be provided with a means of draining and access for cleaning and repairs. Access openings greater than 12 inches shall be fastened and secured to prevent unintended entry.

AO104.7.2.2 Overflow. Storage tanks shall be equipped with an overflow drain sized to be not less than the area of the inflow piping.

AO104.7.2.3 Underground tanks. Underground storage tanks shall be provided with a manhole opening located a minimum of 4 inches above grade.

AO104.7.2.4 Labeling. Storage tanks shall bear the label "NON-POTABLE RAINWATER."

AO104.7.2.5 Outlet. Tank outlets shall be located a minimum distance of 4 inches above the bottom of the tank.

AO104.7.3 Protection from freezing. Where tanks, valves, pumps, and piping are installed in locations where sustained freezing temperatures occur, provisions shall be made to adequately protect the equipment from freezing.

AO104.7.4 Pumps. Pumps shall be listed and be accessible for maintenance and repair. Pumps shall be capable of maintaining a minimum pressure of 15 psi to all outlets.

AO104.7.5 Roof washer. Roof washers shall be sized to capture the first gallon for each 100 square foot of roof area. The roof washer shall operate automatically without the use of manually operated valves or devices. Roof washers shall drain to a location at least 10 feet from the foundation of the building. Drainage water shall not cause erosion.

AO104.7.6 Trenching and underground pipe installation. Water service piping shall be installed to a minimum depth of 30 inches measured from the top of the pipe. Water service piping may be located in the same trench as the building sewer provided the sewer piping is installed in accordance with IRC Section P2905.4.2.

AO104.7.7 Filtration. Collected rainwater shall be filtered by means of a filter which permits passage of particles no larger than 100 microns.

AO104.7.8 Makeup water. Plumbing fixtures that rely on rainwater must be provided with a source of makeup water to the storage tank. Potable water used for makeup water must be protected against pollution and contamination by means of an approved backflow device or an air gap of not less than 4 inches. The makeup water supply shall be connected to the supply to the tank by means of a full open valve.

Amendments to the Boulder County Building Code



Modeled from the 2009 International Mechanical Code

2009 International Mechanical Code. published by the International Code Council (ICC), with amendments to the following;

IMC Chapter 1 • Administration

This chapter is deleted in its entirety.

IMC Chapter 9 • Specific Appliances, Fireplaces, and Solid Fuel-Burning Equipment

IMC Section 901 • General

901.5 Solid Fuel burning Equipment. No permit shall be issued for the installation of a solid-fuel-burning fireplace stove, fireplace insert, or wood stove appliance unless the appliance fully conforms with the requirements for emissions testing, certification, and labeling found under Title 30, Article 28, Sections 402-405 of the Colorado Revised Statutes. All such appliances to be installed must be certified by the Air Pollution Control Division of the Colorado Department of Health to meet the emissions standards set forth in Section IV of Regulation No. 4 of Volume I of the Colorado Air Quality Control Commission as EPA Phase II or Colorado Phase III solid-fuel-burning devices.

Amendments to the Boulder County Building Code



Modeled from the 2009 International Plumbing Code

2009 International Plumbing Code, including specifically **Appendices E** and published by the International Code Council (ICC).

IPC Chapter 1 • Administration

This chapter is deleted in its entirety.

IPC Chapter 5 • Water Heaters

IPC Section 502 • Installation

Add a new subsection, to read as follows:

502.1.1 Heat Traps. Water heating equipment not supplied with integral heat traps that serve noncirculation systems shall be provided with heat traps on the supply and discharge piping consisting of an arrangement of piping and fittings that prevents thermo-siphoning of hot water during standby periods.

IPC Chapter 6 • Water Supply and Distribution

IPC Section 608 • Protection of Potable Water Supply

Add a new subsection, to read as follows:

608.1.1 Yard Hydrants. All yard hydrants that are connected to a potable water supply shall be listed sanitary hydrants or shall comply with Section Table 608.1 for backflow and cross connection protection.

IPC Chapter 11 • Storm Drainage

IPC Section 1106 • Size of Conductors, Leaders, and Storm Drains

Revise Section 1106.1 to read as follows:

1106.1 General. The size of the vertical conductors and leaders, building storm drains, building storm sewers, and any horizontal branches of such drains or sewers shall be based on the 100-year hourly rainfall rate of 2.4 inches per hour.

Amendments to the Boulder County Building Code



Modeled from the 2009 International Fuel Gas Code

5. International Fuel Gas Code (IFGC), 2009 edition, published by the International Code Council. (ICC)

IFGC Chapter 1 • Administration

This chapter is deleted except for section 101.2.

IFGC Chapter 6 • Specific Appliances

IFGC Section 602 • Decorative Appliances for Installation in Fireplaces

Add a new sub-Section as follows:

602.4 Gas logs in fireplaces. In addition to the general requirements specified in Section 602 of The International Fuel Gas Code, gas logs installed in fireplaces shall comply with the requirements specified for heating equipment and heating appliances in this code. Approved gas-fired decorative log sets may be installed only in solid-fuel-burning fireplaces, provided:

1. The gas log is a listed appliance and is installed only in accordance with the manufacturer's instructions.
2. If the fireplace is equipped with a damper, it shall either be permanently blocked open, removed completely, or an opening or openings shall be cut in the damper to provide the minimum amount of opening prescribed in the manufacturer's instructions.

Exception: Damper clamps that are an integral part of a listed gas log assembly and are installed in accordance with the manufacturer's instructions are permitted.

3. The fireplace chimney shall comply with Sections 2101.3.1 and 2111 of the Building Code. The cross-sectional area of the flue passageway shall be in accordance with Figure 2113.16 for masonry chimneys and Section 805 for factory-built chimneys.
4. Gas logs shall be equipped with a pilot and listed safety shutoff valve.
5. Gas logs may be installed in factory-built fireplaces only if the factory-built fireplace is listed for the installation of a gas log and provided with a means for installation of the gas piping.
6. Permanent combustion air opening(s), communicating directly with outside air, shall be provided in the firebox or in an area directly communicating with the room in which the fireplace is located when additional combustion air is required by Chapter 7 or if the gas log is installed in a bedroom.

Amendments to the Boulder County Building Code



Modeled from the 2009 International Energy Conservation Code

7. International Energy Conservation Code (IECC), 2009 edition, published by The International Code Council (ICC), with amendments as follows:

IECC Chapter 1 • Administration

This chapter is deleted with the exception of the following sections: 101.3, 101.4, and 101.5.

IECC Section 101 • Scope and General Requirements

Add the following language to IECC Section 101.5 Compliance:

101.5 Compliance. Residential buildings shall meet the provisions of Chapter 4. Commercial buildings shall meet the provisions of Chapter 5. New commercial buildings with over 25,000 square feet in total building floor area and additions to existing commercial buildings that result in over 25,000 square feet in total building floor area shall meet the amended provisions of the International Green Construction Code, Public Version 2.0, as adopted by Boulder County.

IECC Chapter 3 • Climate Zones

IECC Section 303 • Materials, Systems, and Equipment

Amend Section 303.1.3 Fenestration product rating, to read:

303.1.3 Fenestration product rating. U-factors of fenestration products (windows, doors, and skylights) shall be determined in accordance with NFRC 100 by an accredited, independent laboratory, and labeled and certified by the manufacturer.

The remainder of this Section and Table 303.1.3(1), Table 303.1.3(2), and Table 303.1.3(3) are deleted.

IECC Chapter 4 • Residential Energy Efficiency

IECC Section 401 • General

Amend Section 401.2 Compliance, to read:

401.2 Compliance. Projects shall comply with all applicable provisions of Sections 401, 402, 403, and 404 or meet the provisions of Section 405.

IECC Section 402 • Building Thermal Envelope

402.2.1 Ceilings with Attic Spaces. This Section is deleted.

402.2.2 Ceilings without Attic Spaces. This Section is deleted.

IECC Table 402.1.1 Insulation and fenestration requirements by component.

IECC Table 402.1.1 is amended to read as follows:

Insulation and Fenestration Requirements by Component	
Fenestration U-Factor	0.35
Skylight U-Factor	0.45
Ceiling R-Value	54
Wood Frame Wall R-Value	19+10 ^d
Mass Wall R-Value ^a	18/24
Floor ^f R-Value	42
Basement ^b Wall R-Value	15/20
Slab ^c Edge R-Value and Depth	15, 3 ft.
Crawl Space ^b Wall R-Value	15/20

Additional Requirements

Additional Requirements	
Maximum Glazing to Floor Area Ratio	18%
Maximum Air Leakage ³	5 ACH at 50 Pascals
Appliances (New or Replaced)	Energy Star Certified
Lighting Fixtures	80% CFL or equal
Insulation Installation Standards	RESNET grade 1 standards
Furnaces And Boilers ^{1,2}	92% AFUE With ECM Blower Motors
Water Heaters ^{1,2}	82 EF

Note: R-Values are minimums. U-factors and solar heat gain coefficients (SHGC) are maximums. R-19 batts compressed in to nominal 2 x 6 framing cavity such that the R-value is reduced by R-1 or more shall be marked with the compressed batt R-value in addition to the full thickness R-value.

- a. The second R-value applies when more than half the insulation is on the interior.
 - b. The first R-value applies to continuous insulation, the second to framing cavity insulation; either insulation meets the requirement.
 - c. R-5 shall be added to the required slab edge R-values for heated slabs.
 - d. "19 + 10" means R-19 cavity insulation plus R-10 insulated sheathing. If structural sheathing covers 25% or less of the exterior, R-10 sheathing is not required where structural sheathing is used. If structural sheathing covers more than 25% of exterior, structural sheathing shall be supplemented with insulated sheathing of at least R-5.
 - e. When more than half the insulation is on the interior, the mass wall U-factor shall be the same as the frame wall U-factor.
 - f. Floors over conditioned space are exempt from this requirement.
1. Permits issued for the replacement of existing furnaces, boilers, and water heaters are exempt from these requirements.
 2. For projects involving additions and remodels furnace and water heaters only need to meet these requirements if they are replaced.
 3. Seven (7) Air Changes per Hour (ACH) at 50 Pascals for additions and remodels.

IECC Table 402.1.3

Equivalent U-Factors^a	
Ceiling U-Factor	0.020
Wood Frame Wall U-Factor	0.039
Mass Wall U-Factor ^b	0.056
Floor U-Factor	0.026
Basement Wall U-Factor ^d	0.067/0.05
Slab U-Factor and Depth	0.067, 3 ft.
Crawl Space Wall U-Factor ^c	0.067

- a. Nonfenestration U-factors shall be obtained from measurement, calculation or an approved source.
- b. When more than half the insulation is on the interior, the mass wall U-factors shall be a maximum of 0.17 in Zone 1, 0.14 in Zone 2, 0.12 in Zone 3, 0.10 in Zone 4 except Marine, and the same as the frame wall U-factor in Marine Zone 4 and zones 5 through 8.
- c. Basement wall U-factor of 0.360 in warm-humid locations as defined by Figure 301.1 and Table 301.2.
- d. Foundation U-factor requirements shown in Table 402.1.3 include wall construction and interior air films but exclude soil conductivity and exterior air films. U-factors for determining code compliance in accordance with Section 402.2.4 (total UA alternative) of Section 405 (simulated Performance Alternative) shall be modified to include soil conductivity and exterior air films.

Amend Table 402.2.5 to read as follows:

IECC Table 402.2.5 • Steel-Frame Ceiling, Wall, And Floor Insulation

Wood Frame R-Value Requirement	Cold-Formed Steel Equivalent R-Value a
	Steel Truss Ceilings b
R-35	R-44 or R-34 + 3 or R-30 + 6
R-44	R-56 or R-38 + 3
R-56	R-44 + 6
	Steel Joist Ceilings b
R-35	R-46 in 2X4, or 2X6, or 2X8, R56 in any framing
R-44	R-56 in 2X4, or 2X6, or 2X8, or 2X10
	Steel-Framed Wall
R-15	R-15+5, or R-17+4, or R-24+3, or R-0+11
R-22	R-15+10, or R-22+9, or R-29+8
R-24	R-15+11, or R-22+10, or R-29+9
	Steel Joist Floor
R-15	R-22 in 2X6, R-22 in 2X8, R-22 in 2X10
R-22	R-22 + 6 in 2X6, R-22 + 14 in 2X8 or 2X10

Amend Section 402.2.9 Crawl space walls, to read:

402.2.9 Crawl space walls. Crawlspace walls shall be provided with conditioned air in compliance with Section N1105.3.5.4.3. Crawlspace walls shall be insulated in accordance with Table N1102.1 or Table N 1102.21.2. Crawl space wall insulation shall be permanently fastened to the wall and extend downward from the floor to the finish grade level and then vertically and/or horizontally for a least an additional 24 inches. Exposed earth in unvented crawl space foundations shall be covered with a continuous Class I vapor retarder with a minimum thickness of 10 mil. All joints of the vapor retarder shall overlap by 6 inches and be sealed and taped. The edges of the vapor retarder shall extend at least 6 inches up the stem wall and shall be attached to the stem wall.

402.2.11 Thermally isolated sunroom insulation. This Section is deleted.

402.3.5 Thermally isolated sunroom U-factor. This Section is deleted.

402.4.2.2 Visual inspection option. This Section is deleted.

402.4.3 Fireplaces. This Section is deleted.

IECC Section 403 • Systems

403.2.2 Sealing (Mandatory). Delete the exception to item 2.

Amend Section 403.9 Pools, to read:

403.9 Pools (Mandatory). Swimming pools shall be provided with energy-conserving measures in accordance with Section 403.9.1 through 403.9.3, or be unheated. Heated pools must be heated by solar thermal or other equipment that does not rely directly or indirectly on the burning of fossil fuels or they must have their energy use offset by on-site renewable energy generation equipment equivalent to the energy use by the swimming pool. The energy use shall be determined by using the Boulder County Renewable Energy Offset Requirements Form, or by other means approved by the Building Official.

Exception: Swimming pools less than 200 sq. ft. in area are exempt from the requirements to provide renewable energy.

403.9.3 Pool covers. Exception deleted.

IECC Section 404 • Electrical Power and Lighting Systems

Amend Section 404.1 Lighting equipment, to read:

404.1 Lighting equipment (Prescriptive). A minimum of 80% of the lamps in permanently installed lighting fixtures shall be high-efficacy lamps.

IECC Section 405 • Simulated Performance Alternative

Amend Section 405.3 Performance-based compliance, to read:

405.3 Performance-based compliance. Compliance based on simulated energy performance requires that a proposed residence (proposed design) be shown to have an annual energy cost that is 15% less than the annual energy cost of the standard reference design. The remainder of this Section shall remain as published.

IECC Chapter 5 • Commercial Energy Efficiency

IECC Section 502 • Building Envelope Requirements

IECC Table 502.1.2 • Building Envelope Requirements Opaque Element, Maximum U-Factors

This table shall be amended as follows:

IECC Table 502.1.2 Climate Zone 5 and Marine 4

Climate Zone	All Other	Group R
Roofs		
Insulation entirely above deck	U-0.039	U-0.039
Metal Buildings	U-0.035	U-0.035
Attic and other	U.027	U.027
Walls, Above Grade		
Mass	U-.078	U-0.068
Metal Building	U-.052	U-0.052
Metal framed	U-0.064	U-0.064
Wood framed & other	U-0.064	U-0.064
Walls Below Grade		
below-grade wall ^a	C-.119	C-.119
Floors		
Mass	U-0.074	U-0.064
Joist/Framing	U-0.033	U-0.033
Slab-on-Grade Floors		
Unheated slabs	F-0.54	F-0.540
Heated slabs	F-0.058	F-0.058

- a. When heated slabs are placed below-grade, below grade walls must meet the F-factor requirements for perimeter insulation according to the heated slab-on-grade construction.

IECC Table 502.2(1) Building Envelope Requirements-Opaque Assemblies

IECC Table 502.2(1) shall be amended as follows:

IECC Table 502.2.1 Climate Zone 5 and Marine 4

Climate Zone	All Other	Group R
Roofs		
Insulation entirely above deck	R-25ci	R-25ci
Metal buildings with R-5 thermal blocks ^{a, b}	R-19 + R-11ci	R-19 + R-11ci
Attic and other	R-38	R-38
Walls, Above Grade		
Mass	R-11.4ci	R-13.3ci
Metal Building ^b	R-13 + R-13ci	R-13 + R-13ci
Metal framed	R-13 + R-7.5ci	R-13 + R-7.5ci
Wood framed & other	R-13 + R-3.8ci or	R-20 R-13 + R-7.5ci
Walls Below Grade		
below-grade wall ^d	R-7.5ci	R-7.5ci
Floors		
Mass	R-10ci	R-12.5ci
Joist/Framing Steel (wood)	R-30	R-30
Slab-on-Grade Floors		
Unheated slabs	R-10, for 24 in. below	R-10, for 24 in. below
Heated slabs	R-15, for 36 in. below	R-15, for 36 in. below
Opaque doors		
Swinging	U-0.37	U-0.37
Roll-up or sliding	U-4.75	U-4.75

For SI: 1 inch = 25.4 mm.

CI= Continuous insulation.

NR = No requirement

- When using R-value compliance method, a thermal spacer block is required, otherwise use the U-factor compliance method. (see Tables 502.1.2 and 502.2(2)).
- Assembly descriptions can be found in Table 502.2(2).
- R-5.7 CI is allowed to be substituted with concrete block walls complying with ASTM C90, ungrouted or partially grouted at 32 inches or less on center vertically and 48 inches or less on center horizontally, with ungrouted cores filled with material having a maximum thermal conductivity of 0.44 Btu-in/h-² F.
- When heated slabs are placed below grade, below=grade walls must meet the exterior insulation requirements for perimeter insulation according to the heated slab-on-grade construction.
- Steel floor joist systems shall be R-38.

IECC Table 502.2(2) Building Envelope Requirements-Opaque Assemblies

IECC Table 502.2(2) shall be amended as follows:

Roofs	Description	Reference
R-22	Standing seam roof with single fiberglass insulation layer. This construction is R-19 fiberglass insulation batts draped perpendicular over the purlins. A minimum R-3.5 thermal spacer block is placed above the purlin/batt, and the roof deck is Secured to the purlins.	ASHRAE/IESNA 90.1 Table A2.3 including Addendum "G"
R-15 + R-15	R-15 + R-22 Standing seam roof with two fiberglass insulation layers. The first R-value is for faced fiberglass insulation batts draped over purlins. The Second R-value is for unfaced fiberglass insulation batts installed parallel to the purlins. A minimum R-3.5 thermal spacer block is placed above the purlin/batt, and the roof deck is Secured to the purlins.	ASHRAE/IESNA 90.1 Table A2.3 including Addendum "G"
R-13 + R-22	Filled cavity fiberglass insulation. A continuous vapor barrier is installed below the purlins and uninterrupted by framing members. Both layers of uncompressed, unfaced fiberglass insulation rest on top of the vapor barrier and are installed parallel, between the purlins. A minimum R-3.5 thermal spacer block is placed above the purlin/batt, and the roof deck is Secured to the purlins.	ASHRAE/IESNA 90.1 Table A2.3 including Addendum "G"
Walls		
R-18, R-22	Single fiberglass insulation layer. The construction is faced fiberglass insulation batts installed vertically and compressed between the metal wall panels and the steel framing. ASHRAE/IESNA 90.1	Table A3.2 including Addendum "G"
R-15 + R6.4	R-22 + R6.4 The first T-value is for faced fiberglass insulation batts installed perpendicular and compressed between the metal wall panels and the steel framing. The Second rated R-value is for continuous rigid insulation installed between the metal wall panel and steel framing, or on the interior of the steel framing. ASHRAE/IESNA 90.1	Table A3.2 including Addendum "G"

IECC Table 502.3 Building Envelope Requirement: Fenestration

Climate Zone	5 and Marine 4
Vertical fenestration (40% maximum of above-grade wall)	
U-Factor	
Framing material other than metal with or without metal reinforcement or cladding.	
U factor	0.35
Metal framing with or without thermal break	
Curtain wall/storefront U-factor	0.42
Entrance door U-factor	0.80
All other U-factor a	0.50
SHGC-all frame types	
SHGC: PF < 0.25	0.40
SHGC: 0.25 < PF < 0.5	NR
SHGC: PF > 0.5	NR
Skylights (3% maximum)	
U-factor	0.50
SHGC	0.40

NR = No requirement.

PF = Projection factor (see Section 502.3.2).

a. All others includes operable windows, fixed windows and non-entrance doors.

Add a new IECC subsection 502.4.9 to read as follows:

502.4.9 Air barriers. A continuous air barrier shall be provided throughout the building thermal envelope. The air barriers shall be permitted to be located on the inside or outside of the building envelope, located within the assemblies composing the envelope, or any combination thereof. The air barrier shall comply with Sections 502.4.1.1 and 502.4.1.2.

502.4.9.1 Continuous air barrier. The continuous air barrier shall be constructed to comply with all of the following:

1. The air barrier shall be continuous for all assemblies which are the thermal envelope of the building and across the joints and assemblies.
2. Air barrier joints and seams shall be sealed including sealing transitions in places and changes in materials. Air barrier penetrations shall be sealed in accordance with Section 502.4.2. The joints and seals shall be securely installed in or on the joint for its entire length so as not to dislodge, loosen or otherwise impair its ability to accommodate expected building movement.
3. Recessed lighting fixtures shall comply with Section 504.2.8. Where similar objects are installed which penetrate the air barrier, provisions shall be made to maintain the integrity of the air barrier.

Exception: Buildings that comply with Section 502.4.9.2(3) below are not required to comply with either 1 or 3.

502.4.9.2 Air barrier compliance options. A continuous air barrier for the opaque building envelope shall meet the requirements of at least one of the compliance options in Section 502.4.1.2(1), 502.4.1.2(2), or 502.4.1.2(3).

502.4.9.2.1 Materials. One of the individual materials listed in items 1 through 13 with joints sealed or any material with an air permeability no greater than 0.02 L/s•m² under a pressure differential of 75 Pa (0.004 cfm/ft² under a pressure differential of 0.3 in. water (1.57 lb/ft²)) when tested in accordance with ASTM E2178. Complying materials shall be installed as air barriers in accordance with manufacturer's installation instructions.

1. Plywood - minimum 3/8 in (10 mm)
2. Oriented strand board - minimum 3/8 in (10 mm)
3. Extruded polystyrene insulation board - minimum ½ in (12 mm)
4. Foil-back polyisocyanurate insulation board – minimum ½ in (12 mm)
5. Spray foam with a minimum density of 1.5 pcf (2.4 kg/m³) no less than 1.5 in (36 mm)
6. Spray foam with a density between 0.4 and 1.5 pcf (0.6 and 2.4 kg/m³) no less than 3 in (72 mm)
7. Exterior or interior gypsum board - minimum 1/2 in (12 mm)
8. Cement board - minimum 1/2 in (12 mm)
9. Built up roofing membrane
10. Modified bituminous roof membrane
11. Fully adhered single-ply roof membrane
12. A Portland cement/sand parge, or gypsum plaster minimum 5/8 in (16 mm) thick
13. Cast-in-place and precast concrete.
14. Fully grouted concrete block masonry.
15. Sheet steel or aluminum

502.4.9.2.2 Assemblies. Assemblies of materials and components shall have an average air leakage not to exceed 0.2 L/s•m² @ 75 Pa (0.04 cfm/ft² under a pressure differential of 0.3" w.g. (1.57psf)) when tested in accordance with ASTM E2357 or ASTM E1677.

502.4.9.2.3 Building test. The completed building shall be tested and the air leakage rate of the building envelope shall not exceed 2.0 L/s•m² @ 75 Pa (0.40 cfm/ft² at a pressure differential of 0.3" w.g. (1.57 psf)) in accordance with ASTM E779 or an equivalent method approved by the code official.

502.4.9.3 Air barrier penetrations. Penetrations of the air barrier and paths of air leakage shall be sealed with caulking materials or closed with gasketing systems compatible with the construction materials and location. Joints and seals shall be sealed in the same manner or taped or covered with a moisture vapor-permeable wrapping material. Sealing materials shall be appropriate to the construction materials being sealed. The joints and seals shall be securely installed in or on the joint for its entire length so as not to dislodge, loosen or otherwise impair its ability to accommodate expected building movement.

502.4.9.4 Fenestration. The air leakage of fenestration assemblies and doors shall meet the provisions of Table 502.4.9.4. Testing shall be in accordance with the applicable reference test standard referenced in Table 502.4.9.4 and all fenestration assemblies shall be listed and labeled.

Exceptions:

1. Field-fabricated fenestration assemblies that are sealed in accordance with Section 502.4.1 shall not be tested, listed or labeled.
2. Fenestration in buildings that comply with Section 502.4.2 shall not be tested, listed or labeled.

Add a new Table 502.4.3 to read as follows:

IECC Table 502.4.9.4 • Maximum Air Infiltration Rate For Fenestration Assemblies

Fenestration Assembly	Maximum Rate^a
Windows	0.20
Sliding Doors	0.20
Swinging Doors	0.20
Skylights	0.20
Curtain Walls	0.06
Storefront Glazing	0.06
Commercial Glazed Swinging Entrance Doors	1.00
Revolving Doors	1.00
Garage Doors	0.40 ^b
Rolling doors	1.00

- a. cfm per square foot of fenestration area when tested in accordance with NFRC 400, AAMA/WDMA/CSA101/I.S.2/A440 or ASTM E283 at 1.57 psf (75 Pa). Alternatively the maximum rate for Windows, Sliding and Swinging Doors and Skylights is permitted to be 0.3 cfm per square foot of fenestration area when tested in accordance with AAMA/WDMA/CSA101/I.S.2/A440 at 6.24 psf (300 Pa)
- b. cfm per square foot of fenestration or door area when tested in accordance with NFRC 400, AAMA/WDMA/CSA101/I.S.2/A440, ANSI/DASMA 105 or ASTM E283 at 1.57 psf (75 Pa)

Amend the first paragraph of 505.2.2.2 Automatic lighting shutoff, to read:

505.2.2.2 Automatic lighting shutoff. Buildings larger than 2,000 square feet shall be equipped with an automatic control device to shut of lighting in those areas. This automatic control device shall function on either: The remainder of this Section remains as published.

Add a new Section 507.

IECC Section 507 • System Commissioning

507.1 General. This Section covers the commissioning of the building mechanical systems in Section 503 and electrical power and lighting systems in Section 505.

507.2 Mechanical systems commissioning and completion requirements. Prior to passing the final mechanical inspection, the registered design professional shall provide evidence of mechanical systems commissioning and completion in accordance the provisions of this Section.

Drawing notes shall clearly indicate provisions for commissioning and completion requirements in accordance with this Section and are permitted to refer to specifications for further requirements. Copies of all documentation shall be given to the owner and made available to the code official upon request in accordance with Sections 507.2.4 and 507.2.5.

Exceptions: The following systems are exempt from the commissioning requirements:

1. Mechanical systems in buildings where the total building capacity does not exceed 480,000 Btu/h cooling capacity and 600,000 Btu/h heating capacity.
2. Systems included in Section 503.3 that serve dwelling units and sleeping units in hotels, motels, boarding houses or similar units.

507.2.1 Commissioning plan. A commissioning plan shall be developed by a registered design professional or approved agency and shall include as a minimum the following items:

- a. A narrative describing the activities that will be accomplished during each phase of commissioning, including guidance on who accomplishes the activities and how they are completed,
 - b. Equipment and systems to be tested, including but not limited to, the specific equipment, appliances or systems to be tested and the number and extent of tests.
3. Functions to be tested, including, but not limited to calibrations and economizer controls.
 4. Conditions under which the test shall be performed including, but not limited to, affirmation of winter and summer design conditions and full outside air.
 5. Measurable criteria for performance.

507.2.2 Systems adjusting and balancing. HVAC systems shall be balanced in accordance with generally accepted engineering standards. Air and water flow rates shall be measured and adjusted to deliver final flow rates within the tolerances provided in the product specifications. Test and balance activities shall include as a minimum the following:

507.2.2.1. Air systems balancing. Each supply air outlet and zone terminal device shall be equipped with means for air balancing in accordance with the requirements of Chapter 6 of the International Mechanical Code. Discharge dampers are prohibited on constant volume fans and variable volume fans with motors 10 hp (18.6 kW) and larger. Air systems shall be balanced in a manner to first minimize throttling losses then, for fans with system power of greater than 1 hp, fan speed shall be adjusted to meet design flow conditions.

Exception: Fans with fan motors of 1 hp or less.

507.2.2.2 Hydronic systems balancing. Individual hydronic heating and cooling coils shall be equipped with means for balancing and measuring flow. Hydronic systems shall be proportionately balanced in a manner to first minimize throttling losses, then the pump impeller shall be trimmed or pump speed shall be adjusted to meet design flow conditions. Each hydronic system shall have either the capability to measure pressure across the pump, or test ports at each side of each pump.

Exceptions:

1. Pumps with pump motors of 5 hp or less.
2. When throttling results in no greater than five percent of the nameplate horsepower draw above that required if the impeller were trimmed.

507.2.3 Functional performance testing.

507.2.3.1 Equipment. Equipment functional performance testing shall demonstrate the installation and operation of components, systems, and system-to-system interfacing relationships in accordance with approved plans and specifications such that operation, function, and maintenance serviceability for each of the commissioned systems is confirmed. Testing shall include all modes of and sequence of operation, including under full-load, part-load and the following emergency conditions:

1. All modes as described in the sequence of operation,
2. Redundant or automatic back-up mode,
3. Performance of alarms, and
4. Mode of operation upon a loss of power and restoration of power.

Exception: Unitary or packaged HVAC equipment listed in Tables 503.2.3 (1) through (3) that do not require supply air economizers.

507.2.3.2 Controls. HVAC control systems shall be tested to document that control devices, components, equipment, and systems are calibrated, adjusted and operate in accordance with approved plans and specifications. Sequences of operation shall be functionally tested to document they operate in accordance with approved plans and specifications.

507.2.3.3 Economizers. Air economizers shall undergo a functional test to determine that they operate in accordance with manufacturer's specifications.

507.2.4 Preliminary commissioning report. A preliminary report of commissioning test procedures and results shall be completed and certified by the registered design professional or approved agency and provided to the building owner. The report shall be identified as "Preliminary Commissioning Report" and shall identify:

1. Itemization of deficiencies found during testing required by this Section that have not been corrected at the time of report preparation.
2. Deferred tests that cannot be performed at the time of report preparation because of climatic conditions.
3. Climatic conditions required for performance of the deferred tests.

507.2.4.1 Acceptance of report. Buildings, or portions thereof, shall not pass the final mechanical inspection until such time as the code official has received a letter of transmittal from the building owner acknowledging that the building owner has received the Preliminary Commissioning Report.

507.2.4.2 Copy of report. At the request of the code official, a copy of the Preliminary Commissioning Report shall be made available for review.

507.2.5 Completion requirements. The construction documents shall specify that the construction documents described in this Section be provided to the building owner within 90 days of the date of receipt of the certificate of occupancy.

507.2.5.1 Drawings. Construction documents shall include as a minimum the location and performance data on each piece of equipment.

507.2.5.2 Manuals. An operating manual and a maintenance manual shall be in accordance with industry-accepted standards, shall be provided and shall include all of the following:

1. Submittal data stating equipment size and selected options for each piece of equipment requiring maintenance.
2. Manufacturer's operation manuals and maintenance manuals for each piece of equipment requiring maintenance, except equipment not furnished as part of the project. Required routine maintenance actions shall be clearly identified.
3. Names and addresses of at least one service agency.
4. HVAC controls system maintenance and calibration information, including wiring diagrams, schematics, and control sequence descriptions. Desired or field-determined setpoints shall be permanently recorded on control drawings at control devices or, for digital control systems, in programming comments.
5. A complete narrative of how each system is intended to operate, including recommended setpoints.

507.2.5.3 System balancing report. A written report describing the activities and measurements completed in accordance with Section 507.2.2.

507.2.5.4 Final commissioning report. A complete report of test procedures and results identified as "Final Commissioning Report" shall include:

1. Results of all Functional Performance Tests.
2. Disposition of all deficiencies found during testing, including details of corrective measures used or proposed.
3. All Functional Performance Test procedures used during the commissioning process including measurable criteria for test acceptance, provided herein for repeatability.

Exception: Deferred tests which cannot be performed at the time of report preparation due to climatic conditions.

507.3 Lighting controls completion requirements. Prior to issuance of a certificate of occupancy, the registered design professional shall provide evidence of lighting and electrical systems functional testing in accordance with Section 508.3.1.

507.3.1 Functional testing. Testing shall ensure that control hardware and software are calibrated, adjusted, programmed, and in proper working condition in accordance with the construction documents and manufacturer's installation instructions. The construction documents shall state the party who will conduct the required functional testing. The party responsible for the functional testing shall not be directly involved in the design or construction of the project and shall provide documentation to the code official certifying that the installed lighting controls meet the provisions of Section 505.

When occupant sensors, time switches, programmable schedule controls, photo sensors or daylighting controls are installed, the following procedures shall be performed:

1. Confirm that the placement, sensitivity and time-out adjustments for occupant sensors yield acceptable performance.
2. Confirm that the time switches and programmable schedule controls are programmed to turn the lights off.
3. Confirm that the placement and sensitivity adjustments for photosensor controls reduce electric light based on the amount of usable daylight in the space as specified.

IECC Chapter 6 • Water Conservation

Add new IECC Chapters 6 – 10 and renumber the published 2009 IECC Chapter 6, Referenced Standards, as Chapter 11.

IECC Section 601 • Plumbing Fixtures

601.1 Plumbing fixtures. All new or replaced plumbing fixtures shall be EPA Water Sense certified, including irrigation controllers, where such fixtures are certified.

IECC Section 602 • Hot Water Distribution

602.1 Hot water distribution systems. Hot water distribution lines shall be constructed as a central core/remote manifold system, a central manifold system, or a re-circulation loop.

602.2 Maximum volume of hot water. The maximum volume of water contained in hot water distribution lines between the water heater and the fixture stop or connection to showers, kitchen faucets, and lavatories shall be calculated using Table 602.7.

Table 602.7 • Water Volume For Distribution Piping Materials

Ounces of Water Per Foot Length of Piping								
Nominal Size (inch)	Copper M	Copper L	Copper K	CPVC CTS SDR 11	CPVC SCH 40	PEX-AL-PEX	PE-AL-PE	PEX CTS SDR 9
3/8	1.06	0.97	0.84	NA	1.17	0.63	0.63	0.64
1/2	1.69	1.55	1.45	1.25	1.89	1.31	1.31	1.18
3/4	3.43	3.22	2.90	2.67	3.38	3.39	3.39	2.35
1	5.81	5.49	5.17	4.43	5.53	5.56	5.56	3.91
1 1/4	8.70	8.36	8.09	6.61	9.66	8.49	8.49	5.81
1 1/2	12.18	11.83	11.45	9.22	13.20	13.88	13.88	8.09
2	21.08	20.58	20.04	15.79	21.88	21.48	21.48	13.86

Add a new Chapter 7.

IECC Chapter 7 • Energy Efficiency Requirements for Existing Portions of Buildings

IECC Section 701 • Additions and Remodels or Renovations

701.1 Additions and remodels or renovations. For additions that result in an increase in conditioned floor area of 50% or more of the pre-existing building and remodels or renovations where 50% or more of the existing finished wall membrane is removed, the following requirements are applicable to existing portions of buildings Existing portions of buildings must be up-graded with the following elements:

1. The existing building must achieve a maximum air leakage of 7 air changes per hour measured at 50 pascals
2. The insulation in the existing attic must be upgraded to a minimum value of R-38. Vaulted or cathedral ceiling cavities must be completely filled with insulation.
3. A minimum of 80 percent of the lamps in existing permanently installed lighting fixtures shall be high-efficacy lamps.

Add a new Chapter 8.

IECC Chapter 8 • Deconstruction

IECC Section 801 • Deconstruction

801 Deconstruction. All existing buildings and portions thereof requiring removal of building materials must be deconstructed as defined in this Section . Demolition is not permitted.

801.1 Penalty. Buildings demolished or partially demolished rather than deconstructed will, at the discretion of the Building Official, be issued a Stop Work notice for a period not exceeding 30 days.

801.2 Documentation of intent to deconstruct. Documentation of intent to deconstruct consisting of a deconstruction plan, a written description of deconstruction work, or the County Deconstruction Checklist must be provided at building permit application. The documentation of intent to deconstruct must include: the name of the Deconstruction Contractor, a list of the materials to be recovered, donated, or reused, and the destination of the materials. The documentation must include both Nonstructural Deconstruction and Structural Deconstruction. Items which must be donated, sold, or re-used include: cabinets, dimensional lumber, flooring, and solid core doors.

801.3 Verification of deconstruction of a structure. The completion of deconstruction as approved on the deconstruction plan must be verified by the Building Division. The owner or deconstruction contractor shall provide written verification of deconstruction by means of receipts or a written log, maintained by the homeowner or general contractor, which includes the volume or weight of materials and the destination where they were transported to the Building Division office. Verification must be received prior to scheduling the rough inspections.

Add a new Chapter 9.

IECC Chapter 9 • Construction Jobsite Waste Reduction And Recycling

IECC Section 901 • Construction Jobsite Waste Reduction and Recycling

901.1 Construction jobsite waste reduction and recycling. All construction jobsite waste must be recycled, including wood, scrap metal, cardboard, and concrete. Labeled containers must be provided at the construction-site for use in capturing recyclable material. A mixed load container may be used if that container is being sent to a waste/recycling center that will verify the weight of recycled material recovered from that mixed load.

901.2 Documentation of intent to recycle. Documentation of intent to recycle which consists of a recycling plan, a written description of recycling activity, or the submittal of the County Recycling Checklist must be provided at building permit application. The documentation must specify the locations of recycling containers and the destination where material will be recycled.

901.3. Verification. Field inspection will be made by the Boulder County Building Division during the construction process to assure that recycling containers have been placed on-site. Prior to the final inspection, documentation must be provided to the Building Division office by the owner or waste/recycling contractor indicating the weight or volume of materials diverted from the waste stream. Materials that must be recycled include: appliances, concrete, metals, cardboard, and wood (except pressure treated or painted wood), and thermostats and other devices containing mercury. Other materials which are accepted by the waste/recycling contractor must also be recycled.

Add a new Chapter 10.

IECC Chapter 10 • Trash Storage And Recycling Areas

IECC Section 1001 • On-site Recycling

1001 On-site recycling. The following standards shall apply to the construction of trash storage and recycling areas for attached dwellings and all business and industrial buildings or uses:

- (a) Covered Area: Trash storage and recycling area shall be accommodated within the structure, or adequate common area shall be included on-site and indicated on a site plan.
- (b) Hard Surface Required, Screening and Landscaping: All outdoor trash recycling storage and containers shall be placed on a hard surface, including, without limitation, concrete, and shall be screened.
- (c) Maintenance and Service: Trash storage and recycling area shall include adequate space for the maintenance and servicing of containers for recyclable materials that are provided by local disposal and recycling companies.
- (d) Adequate Space for Trash and Recyclables: The amount of space provided for the collection and storage of recyclable materials shall be at least as large as the amount of space provided for the collection and storage of trash materials.
- (e) Convenience and Accessibility: The recycling area shall be must be at least as accessible and convenient for tenants and collection vehicles as the trash collection and storage area.
- (f) Minimum Clearance: A minimum height clearance of eight feet shall be required if the space is provided in a covered enclosure.

IECC Chapter 11 • Referenced Standards

Renumber Chapter 6 as Chapter 11 and modify remaining section numbers accordingly.

A detailed floor plan of the first floor of a house. The plan includes the following rooms and dimensions:

- Living Room (120):** 13'-1 3/4" x 17'-6 1/4".
- Kitchen (121):** 10'-0" x 10'-6".
- Family Rm. (125):** 13'-1 3/4" x 17'-6 1/4".
- Powder (119):** 7'-7 1/2" x 5'-0".
- Bath (122):** 7'-7 1/2" x 5'-0".
- Overall Dimensions:** 29'-6" wide by 51'-11 1/2" deep.
- Other Features:** A fireplace is located in the Living Room and Family Room. A north arrow points towards the top right. The plan also shows a front porch, a side porch, and a rear porch.

8. International Green Construction Code, Public Version 2.0, 2010, published by the International Code Council, Chapters 2, 6 and 12 only, with amendments as follows:

IGCC Chapter 6 • Energy Conservation, Efficiency and Atmospheric Quality

601.1 Scope. This chapter shall regulate the design, construction, commissioning and operation of new buildings, existing building additions, and alterations to existing buildings over 25,000 square feet in total building floor area and their associated building sites for the effective use of energy.

601.3 Minimum requirements. Buildings and building sites shall comply with Sections 502.4, 503.2, 504 and 505 and Chapters 6 – 11 of the International Energy Conservation Code as amended by Boulder County regardless of the compliance path chosen.

602.1 Zero energy performance index (zEPI). The building shall be designed and constructed to have a zEPI not greater than the values shown in Table 602.1.

Table 602.1 • Minimum Zero Energy Performance Index

Building Occupancy Types	zEPI Point of Entry^a	zEPI of Jurisdictional Choice^b
Assembly: Groups A-1, A-2, A-3, A-4, A-5	51	44
Business: Group B	51	44
Educational: Group E	51	44
Factory and Industrial: Groups F-1, F-2	51	44
High Hazard: Groups H-1, H-2, H-3, H-4, H-5	51	44
Institutional: Groups I-1, I-2, I-3, I-4	51	44
Mercantile: Group M	51	44
Groups R-1, R-2, R-3, R-4 ^c	51	44
Storage: Groups S-1, S-2	51	44
Utility and Miscellaneous: Group U	51	44

- a. Minimum acceptable performance for all building types and sizes.
- b. Where the jurisdiction elects to adopt a greater threshold for energy efficiency, a zEPI of Jurisdictional Choice shall apply only to buildings pursuing performance-based compliance in accordance with Section 602.2.2.
- c. Residential occupancies as regulated by this code in accordance with Section 101.2.

602.2 Compliance paths. New buildings, existing building additions, and alterations to existing buildings over 25,000 square feet in total building floor area and their associated building sites shall comply with Section 602.2.2. or 602.2.3.

602.2.1 Prescriptive-based compliance. Buildings designed on a prescriptive basis shall comply with the requirements of Sections 604, 605, 606, 607, 608, 609, 610, 611 and 612 of this code, and shall be deemed to have a zEPI in compliance with Section 602.1.

602.2.2 Performance-based compliance. Buildings designed on a performance basis shall comply with Sections 604, 605, 609.6, 610, 611 and 612 of this code.

602.2.2.1 Minimum performance. The building shall be designed and constructed to deliver a zero energy performance index (zEPI) not greater than the value shown in Table 602.1. The zEPI shall be calculated in accordance with Section 603.1.1. Buildings complying with the 2006 International Energy Conservation Code shall be deemed to have a zEPI of 73.

602.2.2.2 Building peak energy demand. Buildings shall be designed and constructed to limit peak energy demand during the building's anticipated peak consumption period in accordance with Section 603.1.2.

602.2.2.3 Annual direct and indirect CO₂e emissions. Where total annual CO₂e emissions limits are required in Table 302.1, CO₂e emissions calculations shall be performed in accordance with Sections 603.1.3 and 603.1.4. The emissions associated with the proposed design shall be less than or equal to the CO₂e emissions associated with the standard reference design in accordance with Equation 6-1.

CO₂e emissions associated with the proposed building design < CO₂e emissions associated with the standard reference design x zEPI of proposed building/100 (Equation 6-1).

602.2.3 Outcome based compliance. Buildings that are intended to comply on an outcome basis shall comply with this section and Sections 604, 605 and 612 of this code.

602.2.3.1 Maximum energy use. The building shall be designed, constructed, commissioned, operated and maintained to have an annual net energy performance in accordance with Section 603.2.

602.2.3.2 Building peak energy demand. The building shall be designed, constructed, commissioned, operated and maintained to limit peak net energy demand during the building's anticipated peak consumption period in accordance with Section 603.2.

602.2.3.3 CO₂e emissions. The building shall be designed, constructed, commissioned, operated and maintained to limit annual direct and indirect CO₂e emissions in accordance with Section 603.2.

The remainder of Chapter 6 is to be adopted as published.

Validity, Repeals, and Effective Date

1. Validity:

If any section, subsection, sentence, clause or phrase of this Resolution is, for any reason, held to be unconstitutional, such decision shall not affect the validity of the remaining portions of this Resolution. The Board of County Commissioners hereby declares that it would have passed this Resolution, and each section, subsection, clause, or phrase thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses and phrases be declared unconstitutional.

2. Repeals:

The following codes or regulations shall be repealed at the effective date of adoption of this Resolution:

International Building Code and Appendices C, I, & J, 2006 Edition

International Residential Code 2006 Edition

International Mechanical Code 2006 Edition

International Mechanical Code 2006 Edition

International Fuel Gas Code 2006 Edition

International Energy Conservation Code 2006 Edition

National Electrical Code 2005 Edition

3. Date Effective:

This Resolution shall be, and is hereby declared to be in full force and effect for all applications for building permits filed on or after January 1, 2011.



Land Use Department

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