

PIKES PEAK REGIONAL BUILDING DEPARTMENT

Residential Construction Plans Review

This packet is provided to assist in assembling a successful construction plans review submittal. The information is a summary of construction plan review requirements. In addition to the information in this handout, please refer to the Residential Mechanical Plans Review handout for assembly of those plans. Consult government departments in the jurisdiction of the site for additional criteria to meet their requirements.

PIKES PEAK REGIONAL BUILDING DEPARTMENT

The Department enforces building codes through plan reviews and site inspections; tests and grants licenses to building and mechanical contractors, registers electrical and plumbing contractors who are licensed by the state of Colorado; oversees floodplain management; assigns addresses; and issues permits to build, alter, convert, repair, move or demolish structures. Pikes Peak Regional Building Department provides services to:

**El Paso County
Colorado Springs
Fountain
Green Mountain Falls**

**Manitou Springs
Monument
Palmer Lake**

RESIDENTIAL PLAN REVIEW OVERVIEW

“Residential” is defined as detached one- and two-family dwellings and their accessory structures. (Condominium and town home projects of 3 or more units per building are classified as “Commercial.”) Plans may be drawn and submitted by a home owner who intends to obtain the permit, a design professional licensed by the state of Colorado, or a contractor who holds a Building Contractor C (home builder) license or higher license. The contractor may also submit an “engineered” plan if the contractor has successfully completed a minimum of three detached single family homes. When plans are submitted, you will be given an estimated time for the length of review. The plans review typically requires three weeks, however, it is subject to change based on the project scope and if plans must be amended and rerouted through departments.

SITE SPECIFIC PLANS

These are residential construction plans for a determined site (site specific). Your plans require reviews and approvals from the zoning department in the jurisdiction where site is located, and Regional Building Department’s Floodplain, Enumeration (addressing), Construction and Mechanical (HVAC) departments. (Plumbing and Electrical code requirements are addressed in the field during inspections.) If plans are modified during construction, the plans usually require another review and approval, however, changes are generally made on the plans without requiring a new set.

MASTER PLANS

A master plan is used to build two or more identical single-family detached homes on unspecified sites. After the master plans are reviewed and approved by Regional Building Department’s Construction and Mechanical (HVAC) departments, the builder may obtain permits to build homes based on the plans. The building permit is issued for a plan after being reviewed and approved by the zoning department in the jurisdiction where site is located, and Regional Building Department Floodplain and Enumeration (addressing). The site specific soils report and foundation design are provided with a copy of the plans in the field.

Although master plans are valid for 5 years from original approval date, the construction is required to meet the codes in effect at the time the permit is issued — not just codes when the plan was approved. Master plans may only be used by those with at least a Building Contractor C license. An approved master plan may not bear any handwritten modifications (red lines) and all options must be clearly identified.

Basic plans information

RESIDENTIAL BUILDING CODES

Jurisdictions served by Pikes Peak Regional Building Code adopted the following codes pertaining to residential:

- 2005 Pikes Peak Regional Building Code (PPRBC)
- 2003 International Residential Code (IRC)
- 2003 International Existing Building Code (IEBC)
- 2003 International Energy Conservation Code (IECC)
- 2003 International Mechanical Code (IMC)
- 2003 International Fuel Gas Code (IFGC)
- 2003 International Plumbing Code (IPC)
- 2005 National Electrical Code (NEC)

The 2003 International Fire Code and amendments are adopted by the Colorado Springs Fire Department. Plans are reviewed for compliance with this code by the fire department.

TYPES OF CONSTRUCTION

Components and requirements for residential plans differ between conventional and unconventional construction.

Conventional construction

Residential plans of conventional construction do not require the seal and signature of a design professional licensed by the state of Colorado with the exception of the soils report and foundation design. Conventional components include:

- A foundation of poured in place or block concrete with or without footers as loading and soils conditions dictate;
- Wood framed walls of nominal 2 x 4 hem-fir or better quality lumber spaced in compliance with the Code;
- Headers, beams and posts of dimensioned lumber, engineered wood laminate products or steel;
- Floor framing that consists of either dimensioned lumber or approved engineered joist or truss product; and
- Roof framing that consists of either dimensioned lumber or approved engineered rafter or truss product.

Unconventional construction

Residential plans that differ from conventional construction must be sealed and signed by a design professional licensed by the state of Colorado. Examples of unconventional construction include:

- Block or poured concrete walls, including approved insulated concrete forms (ICF), that extend beyond foundation
- Earth-sheltered or bermed when the upper most level meets the code definition of a basement
- Steel stud or post-and-beam
- Pre-engineered metal
- Structural Insulated Panel (SIP)
- Log
- Adobe or masonry brick
- Straw or tire bale
- Pole barns

PLAN REVIEW FEES

The plans review fee is paid when the submittal is checked in at the front counter. The fee is calculated as a percentage of the building permit fee that is based on the square footage of the proposed construction, (refer to the current permit fee schedule). Regional Building Department may also assess additional fees in the following circumstances:

- A \$50 review fee of each option after two options on a master plan, payable when the permit is issued.
- Review of changes to an approved and permitted plan is \$50 per hour; payable prior to the next inspection.
- After the third review of a plan, a \$50 per hour fee is assessed for each additional review.

Plan review or other fees may be charged by the zoning department in the jurisdiction where the site is located.

Preparing the residential plans package

Two complete and identical sets of plans are required. After approval and the permit is issued, keep one set of plans on the building site at all times and accessible to the inspectors. The other plans package will be retained in the records at Pikes Peak Regional Building Department.

LABELING EACH PLANS SHEET

The following information is important for each sheet of your plans package:

Builder's name, address, phone numbers

Architect, Engineer and Design Professionals' names, addresses, phone numbers

Accurate and complete address of the building site

Master plan number (if applicable)

DRAWINGS

Both sets of plans must be in a clear and legible format on substantial paper, plastic or fabric material, or electronic means as approved by the Regional Building Official. With the exception of the site plan, plans are drawn to a scale no smaller than 1/8 inch = 1 foot, (1/4 inch = 1 foot is preferred). Lettering must be no smaller than 1/8 inch in height. Clarity is important for accurate review and transfer of plans to public record. Plans that do not meet these criteria can be rejected.

ATTACHMENTS

Staple the following items to your plans:

- Manufactured trusses** used for the roof frame: Attach to both sets of plans, the truss manufacturer's shop drawings sealed and signed by an engineer currently licensed by the state of Colorado.
(Exception for Master Plans: A single set of manufacturer's shop drawings will be accepted with the plan or in a separate three-ring binder in consideration of multiple options that may be present. However, if a single set of drawings is provided, they will be retained on file at Regional Building Department.)
- International Energy Conservation Code Certificate** (*attached to this document*) or **REScheck** printout
- Residential HVAC Equipment Certificate**
- Heat Loss Calculation Form**

NOTE: The IECC certificate or REScheck printout must match the heat loss calculations.

DIMENSIONS

Dimensions (stated in English units) must be noted on all floor plans, elevations and sections. The conventional method for stating dimensions of openings is foot-inch by foot-inch for doors and inch by inch for windows. State any variation from this format on your plans for accurate measurement conversion.

CHECKING IN PLANS FOR REVIEW

Before checking in plans for review, make certain all information is included and accurate. Plans cannot be amended until the conclusion of the review process that includes the above governmental departments. Incomplete or inaccurate information will require correcting and resubmitting plans for another review which will cause a delay.

Residential construction plans

Plot plan *(Site specific plans only)*

Scaled to standard engineer's scale (1" = 20' recommended)

- Complete address
- Lot lines and dimensions from side, front, rear yards
- All site improvements indicated, including
 - Existing construction
 - New construction
 - Patios
 - Decks
- Legal description
- Tax Schedule number (County Clerk & Recorder)

Foundation plan

- Type of foundation
- Type of under floor space
 - Basement
 - Crawl space
 - Not excavated

Floor plans

Complete architectural floor plan for each level, including basement, that identifies:

- All interior dimensions
- Intended use of each room or area
- Location and dimension of each door
- Location and dimension of each window and type:
 - Single hung
 - Double hung
 - Casement
 - Sliding
 - Fixed
- Window well size
- Safety glass (tempered) where required
- Mechanical equipment location specified as:
 - Furnace/boiler, gas or electric indicated with thermal input values in BTU/hr
 - Water heater, gas or electric indicated
 - Floor drain
 - Vent stack
- Attic access, location and size
- Crawl space access, location and size
- Fireplaces as listed appliances
- Smoke detectors, location
- Area in square feet of each habitable room

Exterior elevations *(Master plans show options)*

Illustrate all sides of the building to include:

- Finished grade (if known)
- Floor and plate heights
- Roof slope or pitch
- Roof material
- Exterior finish (wood, stucco, etc.)
- Attic ventilation information
- Crawl space ventilation information
- Chimney heights & distance to roof

Interior sections/details

A minimum of one dimensioned section through the entire building is provided that identifies:

- Foundation
- Elevations of each level
- Framing material/description
- Floor levels
- Number of plates
- Finish grades, if known
- Insulation (match or exceed Energy Certificate)
- Stairs
 - Material
 - Rise/run dimensions
 - Handrail, guardrail
 - Head clearance
 - Landing
 - Stringer connection detail
 - Fire protection on underside, if any

Floor framing plan

Complete structural plan per floor that identifies:

- Framing material:
 - Dimensioned lumber
 - Engineered product (I joists)
 - Pre-manufactured product (floor trusses)
- If engineered material, include manufacturer and model description
- Spacing
- Post, beam and header size and locations
- Bearing walls, indicate stud size and spacing
- Number of trim & king studs for beams and headers
- Hangers and tie downs (either at location on plans)
- If framing involves any steel to steel connections, provide details. Drawings may require the seal of a design professional licensed by the state of Colorado.

Roof framing plan

Complete structural plan that includes:

- Framing material:
 - Rafters
 - Engineered product (I joists)
 - Pre-manufactured product (roof trusses)
- Spacing
- Over-framing shaded and noted
- Post, beam and header locations, size & material
- Bearing walls, indicate stud size and spacing
- Number of trim & king studs for beams and headers
- Hangers and tie downs (either at location on the plans or as a schedule on the plans)
- If engineered wood trusses are used, provide the following information. (Note: Truss manufacturer layouts are not accepted in lieu of framing plans.)
 - Detail of each truss component produced by the manufacturer,
 - Label all trusses on the roof framing plan with alphanumeric labels corresponding to the details,
 - Label all girder trusses with the number of plies, indicate size and species of bearing chord or web.

Departments that review plan submittals

Contact information is listed in the typical order of the plan review process, and includes most departments. After plans are submitted for review, you may track the progress on our web site, under PLAN CHECK, by the assigned plan number.

DEPARTMENT	PHONE	WEB ADDRESS
Pikes Peak Regional Building Department		
Plan Review	719-327-2880	www.pprbd.org
Enumeration	719-327-2960	www.pprbd.org
Floodplain Management	719-327-2889	www.pprbd.org
Elevators	719-327-2880	www.pprbd.org
Zoning		
Colorado Springs Development Review	719-385-5982	www.springsgov.com
El Paso County Development Services	719-520-6300	www.co.elpasoco.com
Fountain Planning & Zoning	719-322-2028	www.ci.fountain.co.us
Green Mountain Falls City Clerk	719-684-9414	
Manitou Springs Planning	719-685-4398	www.manitousprings_co.gov
Monument Planning*	719-481-2953	www.ci.palmer_lake.co.us
Fire Authority		
Colorado Springs	719-385-5959	www.springsgov.com
Engineering		
Colorado Springs	719-385-5918	www.springsgov.com
El Paso County	719-520-6460	www.co.elpasoco.com
Traffic Engineering		
Colorado Springs	719-385-5908 or 385-5051	www.springsgov.com
El Paso County	719-520-6460	www.co.elpasoco.com
El Paso County Health Department		
	719-578-3199	www.co.elpasoco.com
Colorado Springs Utilities		
Applications & Permits	719-668-8111	www.csu.org
Electrical Division	719-668-7211 or 668-8253	www.csu.org
Wastewater & Water Division	719-668-7211 or 668-8253	www.csu.org

Suburban communities located outside of the city of Colorado Springs are served by several different utility providers and fire districts. Please call the appropriate phone number listed above under "Zoning" for information. Links to most cities and townships served by Regional Building Department are also available on our web site.

PIKES PEAK REGIONAL BUILDING DEPARTMENT

International Energy Conservation Code Certificate Single Family Dwellings

This certificate is based on the 2003 International Energy Conservation Code (IECC), as amended by the Pikes Peak Regional Building Code. Include this certificate with your residential construction plans submittal, it will also be reviewed by mechanical plans examiners. This form is applicable for type A-1 residential buildings as defined by the IECC.

(NOTE: If you are using REScheck, provide the signed and dated REScheck printed document instead of this form.)

ADDRESS or MASTER # _____

DECLARATION OF ENERGY CODE METHOD

The IECC provides seven options for compliance with minimum standards. Check the box to indicate your selection below.

- Energy Analysis- Available only to architects or engineers licensed by the state of Colorado.*
- Performance by individual component
- Performance by envelope
- Acceptable practice
- Prescriptive method
- Practical method

* If Energy Analysis is selected, do not continue with this form. Submit data and calculations with the plans submittal.

INSULATION DATA

State the appropriate values for the project area; this may be the entire house or a portion such as a room addition.

_____ Area of exterior doors (sq ft)	_____ R value of ceiling insulation
_____ Area of exterior glazing (sq ft)	_____ R value of exterior wall
_____ Gross area of exterior walls (sq ft)	_____ R value of floor over unheated space
_____ (U _g) Glass/window units	_____ R value of floor over exterior space
_____ (U _d) Doors	_____ R value of basement wall
	_____ R value of slab perimeter
	_____ R value of crawl space wall

ENERGY CALCULATIONS

If method 2, 3 or 4 is used, attach documentation, calculation or data to substantiate compliance with declared method.

If method 5 is used, please state the window area percentage of the gross exterior wall: _____%

CERTIFICATION

I certify the data stated is correct to the best of my knowledge based on the plans provided and calculations performed for the address (or master number) listed above.

Signature

Date

Print full name

Phone number

Name of company

International Energy Conservation Code Specifications

Single Family Dwellings

Use the following tables for minimum U- and R-Values applicable to the selected Method.

METHODS 2, 3 & 4 IECC TABLE 502.2^a HEATING & COOLING CRITERIA

ELEMENT	MODE	SINGLE FAMILY DETACHED DWELLINGS
Walls	Heating/Cooling	U_o
		0.13
Roof/Ceiling	Heating/Cooling	0.026
Floors over unheated spaces	Heating/Cooling	0.05
Heated slab on grade ^c	Heating	R-Value 7.5
Unheated slab on grade ^c	Heating	R-Value 5.0
Basement wall ^{b,c}	Heating/Cooling	U-Value 0.10
Crawl space wall ^{b,c}	Heating/Cooling	U-Value 0.077

Footnotes:

- Values must be determined using the graphs [Figures 502.2(1-6)] with HDD as specified in Table 302.1 of the 2003 IECC as amended.
- Basement & crawl space wall U-Factors are based on the wall components and surface air films. Adjacent soil does not affect the U-Factor.
- Typical foundation insulation techniques are found in the Building Foundation Design Handbook published by the Department of Energy.

METHODS 5 & 6 IECC TABLES 502.2.4(1 - 6) and 602.1 HEATING & COOLING CRITERIA

WINDOW AREA PERCENTAGE OF GROSS EXTERIOR WALL	MAXIMUM	MINIMUM					
	Glazing U-Factor	Ceiling R-Value	Exterior Wall R-Value	Floor R-Value	Basement wall R-Value	Slab perimeter R-Value	Crawl space wall R-Value
8%	0.45	R-38	R-13	R-19	R-10	R-5, 3 ft	R-16
12%	0.40	R-38	R-13	R-19	R-10	R-5, 3 ft	R-16
15%	0.35	R-38	R-13	R-21	R-10	R-5, 3 ft	R-20
18%	0.34	R-49	R-22	R-19	R-10	R-8, 3 ft	R-17
20%	0.31	R-49	R-24	R-19	R-10	R-7, 3 ft	R-17
25%	0.25	R-49	R-19	R-21	R-10	R-9, 3 ft	R-20

Notes for Methods 5 & 6:

One door may be omitted from calculations. The maximum U-Factor for any additional door is 0.35.
 Floors over exterior spaces must meet the same criteria as Ceiling R-Value, including bay windows, cantilevers and overhangs.
 Floors over unheated, enclosed spaces, such as garages and crawl spaces, must meet the Floor R-Value criteria.
 For Method 6 use the 15% criteria. However, do not use Method 6 if window area percentage of gross exterior wall exceeds 15%.

PIKES PEAK REGIONAL BUILDING DEPARTMENT

Residential HVAC Equipment Certificate

Provide this certificate with heat loss or (optional heat gain) calculations, for all new residential construction and additions: this will be part of the permanent record.

Address or Master Plan # _____

CALCULATIONS

- () new structure () new addition () existing structure
() existing structure + new addition, requires separate calculations for each

1. Envelope heat loss _____ BTU/hr
2. Infiltration heat loss (.5 ach max) _____ BTU/hr
3. Envelope heat gain (option) _____ BTU/hr
4. Infiltration heat gain (option) _____ BTU/hr
5. Total heat loss add lines 1 & 2 _____ BTU/hr
6. Total heat gain add lines 3 & 4 (option) _____ BTU/hr
7. Type of heating appliance _____ new () existing ()
btu/hr input _____ / _____ location _____ area served _____
8. Type of heating appliance _____ new () existing ()
btu/hr input _____ / _____ location _____ area served _____
9. Type of cooling appliance _____ new () existing ()
btu/hr input _____ location _____ area served _____
10. Type of cooling appliance _____ new () existing ()
btu/hr input _____ location _____ area served _____

SUMMARY

- a. Input of heating appliance(s)* _____ BTU/hr
- b. Altitude derate (x 0.80) _____ BTU/hr
- c. Efficiency derate (output) _____ BTU/hr
- d. Electrical heating (1 watt = 3.413 btu/hr) _____ BTU/hr
- e. **Total Heating Output** _____ BTU/hr
- f. **Total Cooling** _____ BTU/hr

*1. If using high / low fired equipment, assign the sum of the low fires on this line.

*2. Total heat output must be greater than total heat loss, but not by more than 30%. This could change if cooling is used as the primary function. The equipment heating function must then be the smallest option available.

I certify that the equipment certificate is correct to the best of my knowledge based on plans provided and calculations performed for the address or master listed above.

Contractor/Homeowner signature _____ Date _____

Print full name of signer and company _____ Phone # _____