



# IRC Building Submittal Guide

A description of permit application requirements for detached one and two family dwellings and townhouses under the **International Residential Code**

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# Documents

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## Planning Approvals

Check with the Planning Department to see if your project requires land use review. Any of the following documents that are specific to your project must be submitted with your application:

- Resolutions
- Decisions
- Ordinances
- Development Orders
- Other Land Use Approvals

## Permit Application Signatures Packet

This is required for every type of building permit application and can be found in the City's [Document Library](#). The COA Permit Application Signature Packet is comprised of the following forms:

- **Building Permit Contact Sheet**
- **Homeowner Association Compliance Form**
- **Valuation Affidavit**
- **Asbestos Verification and Checklist**
- **Zoning Compliance Verification Policy**

Each page of the Signature Packet must be filled out entirely with appropriate signatures where required. Incomplete pages in this application packet will be rejected.

## Asbestos Test and Asbestos Clearance Reports

If **'YES'** is checked on any of the questions on the Asbestos Verification and Checklist (above), you must provide an asbestos test report. The report must include the following:

1. Inspector's narrative including sampling locations
2. Inspector's certificate
3. Lab data

If Asbestos is found and you will be disturbing it, you must submit a final air clearance asbestos abatement report prior to permit issuance.

## State Asbestos Demolition Approval Notice

This document is required if you are demolishing an entire building. One notice is required for each

separate building, including outbuildings. You must submit the original license, not a copy. The Asbestos Verification and Checklist has information on how to acquire one.

## Fireplace Registration and Installation Instructions

The **Fireplace Registration Form** can be found in the [Document Library](#) and is required if you are adding or altering a fireplace. You must enter details for all fireplaces and fire pits existing and proposed associated with the unit.

For factory-built wood and gas log fireplaces, provide the **manufacturer's installation instructions** for each factory-built component (note: no new wood burning fireplaces are permitted indoors).

The following must be included in the instructions per R1004 and R1005:

- Firebox clearances
- Chimney/Flue/Termination clearances
- Hearth Extension requirements
- Structural support
- Exterior air requirements (R1006)
- Damper or tight-fitting door (2015 IECC R402.4.2)
- Damper/Flue sentinel/Power vent information if applicable for gas log fireplaces

## Energy Code Compliance

Applicable to new construction, additions, and alterations that affect the thermal envelope (exterior windows, doors, walls, roof, etc). See the Details section (p.17) for air sealing requirements and the Electrical section for lighting requirements.

**You must choose one of the following five methods to demonstrate energy code compliance of the thermal envelope. You must note on the plans which approach you are taking.**

**1. Prescriptive Alternative:** Use the values in Table R402.1.2 for insulation and fenestration (printed below). Your details, sections, and/or schedules must be noted with these R and U values.

**2015 IECC Table R402.1.2 (as amended by City of Aspen Ordinance 40, 2016)**

CLIMATE ZONE	FENESTRATION U-FACTOR	SKYLIGHT U-FACTOR	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE	FLOOR R-VALUE	BASEMENT WALL R-VALUE	SLAB R-VALUE & DEPTH	CRAWL SPACE WALL R-VALUE
7	0.28	0.55	49	20 +5 or 13+10 <sup>h</sup>	19/21 <sup>i</sup>	38 <sup>g</sup>	15/19 <sup>c</sup>	10, 4 ft <sup>d</sup>	15/19 <sup>c</sup>

Table Footnotes:

c. "15/19" means R-15 continuous insulated sheathing on the interior or exterior of the home or R-19 cavity insulation at the interior of the basement wall. "15/19" shall be permitted to be met with R-13 cavity insulation on the interior of the basement

wall plus R-5 continuous insulated sheathing on the interior or exterior of the home. "10/13" means R-10 continuous insulated sheathing on the interior or exterior of the home or R-13 cavity insulation at the interior of the basement wall.

d. R-5 shall be added to the required slab edge R-values for heated slabs. Insulation depth shall be the depth of the footing or 2 feet, whichever is less in Zones 1 through 3 for heated slabs.

g. Or insulation sufficient to fill the framing cavity, R-19 minimum.

h. The first value is cavity insulation, the second value is continuous insulation, so "13+5" means R-13 cavity insulation plus R-5 continuous insulation.

i. The second R-value applies when more than half the insulation is on the interior of the mass wall.

**2. U-factor Alternative:** Use the values out of table R402.1.4 from the 2015 IECC as amended (see below). You must demonstrate your calculations of the U-factor of any assemblies using this alternative, including the effects of thermal bridging of from framing materials. Your details, sections, and/or schedules must be noted with these values. You may mix this approach with the prescriptive one above.

Fenestration U-Factor	Skylight U-Factor	Ceiling U-Factor	Frame Wall U-Factor	Mass Wall U-Factor	Floor U-Factor	Basement Wall U-Factor	Crawl Space U-Factor
0.28	.55	0.026	0.045	0.057	0.028	0.050	0.055

**3. Total UA Alternative:** Use **REScheck**, downloadable for free at [www.energycodes.gov](http://www.energycodes.gov). The proposed design must be a minimum of 2% more efficient than the standard reference design to accommodate for Aspen's amended prescriptive fenestration U-factor.

Be sure to address the following in your REScheck:

- Select 2015 IECC as the code
- Under Options, choose Compliance Method: UA trade-off
- Fill out all info on the Project tab, including Project Details (not optional!)
- Fill out the Envelope tab with all of your assemblies and fenestration. See the Help section for guidance.
- The makeup and area of all assemblies must EXACTLY match the plans.
- Cavity insulation is insulation installed in the framing cavities between studs and joists. Continuous insulation is installed beyond framing and runs past it.
- Sign the REScheck.

**4. Simulated Performance Alternative:** Use **REScheck**, downloadable at [www.energycodes.gov](http://www.energycodes.gov), or other software approved by the building official.

Be sure to address the following in your REScheck:

- Under Options, choose Compliance Method: Performance Alternative
- All the requirements of the Total UA Alternative method above apply.
- Using the performance alternative requires additional inputs including conditioned floor area, orientation of the building, a minimum of four walls having unique orientations, and a minimum of one roof and floor.

**5. Simplified Equivalent Compliance Alternative:** Under this approach, energy compliance is based on adhering to minimum size for the heating and cooling systems:

1. The ratio of the air conditioning capacity to conditioned space is less than or equal to 1 ton per 1000 square feet.
2. The ratio of the space heating system capacity to floor area of conditioned space is less than or equal to 32,000 Btu/h per 1000 square feet.

The design team must provide details, sections, and/or schedules with insulation and fenestration R or U values, but any values are acceptable if the air conditioning and space heating capacity meets the minimum. The heating system size is only intended for space heating, so if the system also supplies hot water and/or snowmelt, load calculations need to be provided to show what portion of the total output is needed for each of its uses.

This path also has two additional requirements:

- 1) The distance from the hot water supply outlet to hot water pipe to the hot water entry to a room where hot water is used shall be no more than 10ft. This shall apply to the kitchens, bathrooms with showers or tub, and rooms with a clothes washer. Provide hot water piping plans to illustrate compliance.
- 2) Lighting - at least one of the following requirements shall be deemed in compliance: 1. Lamps over 15 watts shall be CFL, LED, or have an efficacy not less than 90 lumens per watt. 2. At least 90% of the lamps or fixtures shall have an efficacy not less than 75 lumens per watt. Provide lighting plans to illustrate compliance.

## Non-Vented Roof Assembly Dew Point Calculations

If your project adds or alters a non-vented roof assembly, you must demonstrate that it will avoid the accumulation of moisture. You must either demonstrate compliance with section R806 or demonstrate compliance with a dew point calculation. **In either case, you must submit a detail of your assembly.**

**R806.5Alternative:** Unvented attic assemblies (spaces between the ceiling joists of the top story and the roof rafters) shall be permitted if all the following conditions are met:

1. The unvented attic space is completely contained within the building thermal envelope.
2. No interior vapor retarders are installed on the ceiling side (attic floor) of the unvented attic assembly.
3. Where wood shingles or shakes are used, a minimum 1/4 inch (6 mm) vented air space separates the shingles or shakes and the roofing underlayment above the structural sheathing.
4. Any air-impermeable insulation shall be a vapor retarder or shall have a vapor retarder coating or covering in direct contact with the underside of the insulation.
5. Either Items 5.1, 5.2 or 5.3 shall be met, depending on the air permeability of the insulation directly under the structural roof sheathing.
  - 5.1. Air-impermeable insulation only. Insulation shall be applied in direct contact with the underside of the structural roof sheathing.

5.2. Air-permeable insulation only. In addition to the air-permeable installed directly below the structural sheathing, minimum R-30 rigid board or sheet insulation shall be installed directly above the structural roof sheathing for condensation control.

5.3. Air-impermeable and air-permeable insulation. Minimum R-30 air-impermeable insulation shall be applied in direct contact with the underside of the structural roof sheathing for condensation control. The air-permeable insulation shall be installed directly under the air-impermeable insulation.

**Dew Point Calculation Alternative:** The calculation must show that the temperature of the condensing surface (T interface) is greater than 41 degrees F at 35% relative humidity. You may use the following equation:

$$T(\text{interface}) = R(\text{exterior}) / R(\text{total}) \times [T(\text{inside}) - T(\text{outside})] + T(\text{outside})$$

Where:

T(interface) = temperature at the sheathing/insulation interface or the temperature of the first condensing surface. Must be great than 41 deg F.

R(exterior) = the R-value of the exterior sheathing

R(total) = the total R-value of the entire assembly

T(inside) = 70 deg F

T(outside) = 19.8 deg F (mean daily temp)

**Example:**

<u>Thickness:</u>	<u>Component:</u>	<u>R-Value:</u>
	Outside air layer	0.17
	Water-proof membrane	0.21
5/8"	Sheathing	0.77
4"	Closed-cell spray foam	28
	-----condensing surface-----	
5 1/4"	Fiberglass Batt (high density)	21
5/8"	Gypsum board	0.56
	Inside air layer	0.65

$$R(\text{exterior}) = 0.17 + 0.21 + 0.77 + 28 = 29.15$$

$$R(\text{total}) = 29.15 + 21 + 0.56 + 0.65 = 51.36$$

$$T(\text{inside}) = 70 \text{ deg F}$$

$$T(\text{outside}) = -16 \text{ deg F}$$

$$T(\text{interface}) = R(\text{exterior}) / R(\text{total}) \times [T(\text{inside}) - T(\text{outside})] + T(\text{outside})$$

$$T(\text{interface}) = 29.15 / 51.36 \times [70 - 19.8] + 19.8$$

$$T(\text{interface}) = 48.3$$

The temperature at the first condensing surface (closed-cell spray foam insulation) is 48.3 degrees F. Therefore, the resulting dew point temperature of 41 degrees F would occur within the spray foam, which verifies compliance.

# U-Factor Fenestration Documentation

All new windows, skylights, and glazed doors must have a factory applied NFRC stickered label listing the U-factor of the entire assembly. **The maximum U-factor will be determined by Energy Code Compliance path selected (see above).** You must **note on the plans** that all new fenestration on the project will comply with this.

If new windows, skylights, or doors do not come with a factory applied NFRC stickered label listing the U value of the entire assembly, you must demonstrate the U value using one of the options in the **City of Aspen [Fenestration U-Factor Policy Revision](#)**.

# Residential Renewable Energy Mitigation Program (RREMP) Documents

Snowmelt equipment, outdoor hot tubs, and outdoor pools are required to comply with the Residential Renewable Energy Mitigation Program (RREMP). In addition to the **full size RREMP plan sheets**, you must submit the following to demonstrate compliance:

## **All:**

- Completed **RREMP worksheet**, available in the City of Aspen's [Document Library](#).
- Provide specs on boiler** (the boiler/heating unit for the snowmelt, pool, and/or spa), showing AFUE. (annual fuel utilization efficiency)
- If using solar renewable credits: The renewable credit will be determined by the system kW capacity X efficiency of the system as calculated on the RREMP worksheet. Be sure to include this tab from the worksheet.
  - Plans should show panel location, tilt, and aspect from true South.
  - **Provide specs on solar panels**, showing dimensions, orientation, and, if Photovoltaic, kW per panel.

## **Hot Tub:**

- If using a spa that is not CEC or APSP-14 certified, you must include it in the RREMP worksheet and pay the RREMP option fee. For RREMP, the area is the area of the water surface. If installing a RREMP exempt spa, **provide specs showing dimensions and CEC (California Energy Commission) or APSP-14 (Association of Pool and Spa Professionals) certification**. The CEC has a database of compliant spas at <https://cacertappliances.energy.ca.gov/Pages/Search/AdvancedSearch.aspx>.
- Provide specs on a safety cover listed as ASTM F 1346** (unless an enclosure barrier is used per 2015 International Swimming Pool and Spa Code 305)
- Permanent spas and pools require an APSP-15 checklist to be submitted. This form can be found in the [Document Library](#).



### Outdoor Pool:

- Must include it in the RREMP worksheet and pay the RREMP option fee. For RREMP, the area is the area of the water surface.
- Provide specs on a safety cover listed as ASTM F 1346** (unless an enclosure barrier is used per 2015 International Swimming Pool and Spa Code 305).
- Provide specs on a vapor-retardant pool cover** (2015 IECC R403.10.3).
- Permanent spas and pools require an APSP-15 checklist to be submitted. This form can be found in the [Document Library](#).

## Line Grade Verification Form

If the project proposes additional square footage (additions and new construction), you must include this form with your submission. It can be found in the City's [Document Library](#). Fill out part A.

## Verification of Structural Integrity

For alteration, demolition and repair work minor in nature; if any walls, or other potentially structural elements are being altered, whether bearing or non-bearing, verification in one of the following forms may be accepted in lieu of a structural plan prior to demolition:

- Stamped Letter Option:** A letter stamped and signed by a structural engineer or architect stating that they will be involved with the project and certifying the structural integrity of the proposed demolition or other work. Once finishes have been removed, if it is determined that structural bearing components will be altered, a structural plan will be required.
- Original Framing Plans Option:** Provide the original framing plans demonstrating that the elements you are proposing to alter are non-bearing and not part of the structural frame. If during construction it is determined that the existing structure does not match the original plans, a new structural plan or stamped letter will be required.

## Soils Report

This document is required for new construction and additions if the load bearing capacity of the soil is assumed to be greater than 2000 psf. Report must comply with the [City of Aspen Soils Report Requirements](#). Alternatively, a letter from a geotechnical engineer committing to excavate and then confirm assumptions or a letter from a geotechnical engineer to use a soils report from an adjacent property may be submitted if approved by the building official.

## Smuggler Superfund Soil Removal Permit

Applicable to any soil disturbance in the [Smuggler Mountain Superfund zone](#). If your project is within the red boundary lines of the [Superfund Map](#), then this applies to you.

## Special Inspection and Testing Agreement

In addition to Inspections per Sec R109, other inspections per R109.1.5 may be required by the building official. Work that includes any of the following requires special inspection per 2015 IBC section 1704:

- High strength bolting
- Epoxy anchors
- Structural steel welding
- Prestressed tendons
- Permanent micropiles or helical piers
- Sprayed fire-resistant materials
- Mastic and intumescent fire-resistant coatings

The Special Inspection and Testing Agreement may be turned in later in the submittal process; it is not required at application submittal but is required prior to sign off and issuance. This document can be found on the City's [Document Library](#). The agreement must be signed by the following entities:

- Special Inspection Agency** (must be hired by the owner or owner's authorized agent. NOT by the contractor)
- Owner**
- Engineer/Architect**
- Contractor**
- Fabricator (either approved or inspected)\***

\*Approved fabricators may inspect their own shop fabrication but must have their field work inspected by the special inspector. Inspected fabricators must have all of their work inspected by the special inspector.

## Mechanical Documents

**For all projects: Submit cut sheets and/or installation instructions for any new equipment as necessary to demonstrate code compliance.**

**See also:** Mechanical Plan section

## Photos

Provide photographs of the proposed work areas. **Photos are a requirement for roof and repair permits**, but optional for other permit types to aid plans examiner in better understanding the existing conditions.

## Unit/Building Relationship

For alterations and additions to duplexes and townhouses only. Provide an elevation, section, or photograph clearly outlining and showing the relationship of the unit being altered to the remainder of the building. Highlight your unit and show neighboring units.

## Class A Roof Assembly Documentation

For all new roofs and reroofs, a Class A assembly is required by Ordinance 40, 2016. Provide documentation that your assembly is listed as a Class A assembly. This is typically an ESR or UL report. Provide roof details in the plans to match the report.

# Construction Drawings Set

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## Drawing Standards

- All drawing sets must be submitted virtually in 24"x 36" size format. For full electronic submittal standards, see the [Electronic File Preparation Standards for the City of Aspen](#).
- All sheets in a drawing set must be the same size, sequentially labeled, dated and have a page title/description.
- Include North arrow and the scale [standard architectural or engineering scales (1/4"=1', etc)].
- 1/4" scale is preferred. Minimum scale is 3/16".
- Title block with project name, project address and legal description.
- Include matching gridlines on all drawings.
- All structural plans, details and calculations must be prepared, stamped, and signed by a professional engineer or architect licensed in the state of Colorado (digital copy of seal and signature is sufficient).
- Architectural drawings do not require a stamp for single family buildings per Colorado Revised Statutes.
- Existing/Demolition plans and elevations** shall be grouped together prior to the proposed plans.
- All drawings must differentiate between existing and proposed construction.**
- Provide **floor plans of the entire unit**, not just the area of work.
- The floor plans should be ordered from lowest floor to the highest floor (i.e. basement, first floor, second floor).
- All Change Orders shall highlight with clouds or bubbles all areas changed and **include a bulleted list of the changes**. All changes must be identified in this manner. Corrections made to a permit during the review process shall not have clouds or bubbles, only change orders should have revision clouds.
- The sheets must be in the order shown below.

***Note: Some items below are repeated on different sheets. It is not required to have these items shown multiple times, just be sure to show in one of the listed locations.***

## Cover Sheet

- Contact Info for all involved parties, Designer or Architect, Structural Engineer, Mechanical Engineer, Civil Engineer, Contractor, Owner and if Owners Representative
- Table of Contents: index of sheets in the same order presented in this guide.
- Planning approvals**. Print *every page of every approval* on the cover sheet, if it won't all fit, add additional sheets.

## Survey

For new construction and additions. Must be drawn per the Compliant City of Aspen Survey Checklist in the [Document Library](#).

# Excavation/Earth Retention Plans

(under Chapter 18 of the 2015 IBC and City of Aspen Engineering Standards)

- Plans for Temporary and/or Permanent Soil Nails and Micropiles (must be stamped by engineer), or a site plan that includes layback area and profile. Site plan must show adequate space on site for a one-to-one layback (the proposed foundation walls are within a horizontal distance less than the vertical depth of excavation of any existing travel way, structure, or property line.)

## Site Plan

For new construction, additions, and exterior alterations, include the following:

- Property lines, building setbacks, building envelopes, and easements
- Exterior walls, roof lines, and overhead building projections with dimensions that tie the building to the property line and other buildings on the same lot.
- Provide the equivalent grade to architectural 100'. (i.e. 100' = 7495.5')
- Show horizontal dimensions that 'tie the building to the property boundary
- All development, including: Structures, decks, patios, walls, retaining walls, fences, gates, walkways, fire pits, water features, railings, pergolas, trellises, vehicular access, parking areas, vehicular turn-arounds, driveways, carports, condensers, equipment, etc
- Fire truck access, including distance and width, and turnarounds
- Adjacent streets, alleys, adjacent building properties
- Existing and proposed grades including spot elevations
- Locations of all utility meters and shutoffs
- Design flood elevations, flood hazard areas, and floodways (if applicable)
- May show RREMP sheet information if preferred.

## Residential Renewable Energy Mitigation Program (RREMP) Plan

- Show all snowmelt areas in plan, provide individual area square footages and the total square footage.
- R-10 insulation detail under snowmelt. Must be rigid foam, no bubble wrap.
- Solar panels shown on plan. Photovoltaic: kW, orientation, slope, and height above roof. Thermal: square footage, orientation, slope, and height above roof.
- Spas and pools.
- Enclosure barriers or listed covers for pools and spas
- You may choose to put all of this on the Site Plan instead if it can be done legibly.

# Area Sheet

Illustrate and calculate building gross floor area as defined by 2015 IBC section 1002 for all structures.

**FLOOR AREA, GROSS.** The floor area within the inside perimeter of the *exterior walls* of the building under consideration, exclusive of vent shafts and courts, without deduction for corridors, stairways, closets, the thickness of interior walls, columns or other features. The floor area of a building, or portion thereof, not provided with surrounding *exterior walls* shall be the usable area under the horizontal projection of the roof or floor above. The gross floor area shall not include shafts with no openings or interior courts.

Commentary: Gross floor area is that area measured within the perimeter formed by the inside surface of the exterior walls. The area of all occupiable and non-occupiable spaces, including mechanical and elevator shafts, toilets, closets, mechanical equipment rooms, etc., is included in the gross floor area. This area could also include any covered porches, carports or other exterior space intended to be used as part of the building's occupiable space.

Illustrate and calculate fire area as defined by 2015 IBC section 902. If the fire area is greater than 5000sqft, a fire sprinkler system is required per Ordinance 31, 2011.

**FIRE AREA.** The aggregate floor area enclosed and bounded by fire walls, *fire barriers*, *exterior walls* or *horizontal assemblies* of a building. Areas of the building not provided with surrounding walls shall be included in the fire area if such areas are included within the horizontal projection of the roof or floor next above.

## Floor Plans

Required for all permits

- Existing drawings** preceding proposed drawings
- Room uses labeled
- Gridlines
- Section, detail, and assembly callouts
- Finish Floor elevations
- Floor finish material
- Carbon monoxide and smoke detector locations (Aspen Municipal Code Ch 8.15)
- Door swings with floor levels shown on both sides (R311)
- Exterior landings, landing surface slope. (R311)
- Stairs and ramps: direction of travel, handrails (must return), guardrails. (R311)
- Toilet and bathing fixture clearances, any safety glazing located in shower enclosures, shower windows, etc. (R307.1, R308.4)
- Show safety glazing where applicable. (R308.4)

- Windows and doors with coordinated labeling system matching schedule and, if applicable, Rescheck.
- All appliances and equipment labeled. Show clearances and access (per Manufacturer's instructions & 2015 IMC 306)
- Show location of electric panel (cannot be located in a bathroom or storage closet and must have minimum 3' by 3' clear space. (NEC 110.26)
- Fireplaces and hearth extensions. Note type of fireplace. (Ch 10)
- Attic and crawlspace access sizes. (R408.4, R807.1)
- Emergency escape and rescue openings. Height of sill above finish floor, opening size. Show overhead projections of any deck, porches or balconies above, if any. (R310)
- Window well dimensions, show ladder. If covered with a grate, it must require no more than 15lbs of force to open and permit the passage of smoke. If well is in walkway, provide guards as a grate could be obstructed and is not permitted. (R310, policy)
- Projections of patio covers, trellis, pergolas or any other similar overhead structures. Dashed outline of roof above. (policy)
- Garage/dwelling separation, including door. (R302.6)
- Dwelling separations and all fire rated assemblies (for two family and townhouses) (R302.3, R302.2)
  - Fire resistive (and STC/IIC per Appendix K) walls, floors, ceilings, roofs, and shafts
  - Continuity clearly shown
  - Callouts referencing details
- Fire rated openings, doors, and windows
- Below grade ejectors, sump pumps
- Floor drains
- Electrical panel location with 30"x36" working space in front (may not be in a bathroom or clothes closet)

## Roof Plan

Applicable to roof work.

- Existing drawings** preceding proposed drawings
- Drains, downspouts, gutters, scuppers and secondary drains/scuppers.
- Skylights with coordinated labeling system matching schedule and, if applicable, Rescheck.
- Flue, exhaust, and chimney terminations and intakes with dimensions to property lines and openings.
- Roof pitches shown as x:12, crickets
- Solar panels with orientation, slope, and height above roof (unless shown on REMP or site plan).
- Rooftop equipment
- Roofing material and class (Class A required in all locations per Ordinance 40, 2016)
- Roof/attic ventilation. Sec R806.2 If using the ratio 1/300 with ventilators, show calculation area of how the 50 to 80% area required by ventilators are located at least 3' above eave or cornice and the balance provided with eave or cornice vents. See alternate non-vented roof assembly option.

- Show exterior walls below with dashed line.
- Snow stop locations. These are required anywhere a roof could shed ice and snow onto potentially occupied areas such as a walkway, stairway, alley, deck, pedestrian and vehicular exit from buildings or areas where there is potential for personal injury or property damage and areas directly above or in front of gas utility or electric utility meters. (Ordinance 40, 2016) R903.6 Snow shed design.
- FYI (this does not need to be on plans but must be installed): Ice dam barrier of at least two layers of underlayment cemented together or of a self-adhering polymer modified bitumen sheet shall extend from the roof eave edge at least six feet inside the exterior wall line as measured along the roof surface, eighteen inches from the centerline of the valley and up twenty-four inches on the vertical wall at a roof and wall juncture. (Ordinance 40, 2016) R905.2.7.1 Ice Barrier

## Elevations

Required for any exterior work, including exhausts, windows, etc.

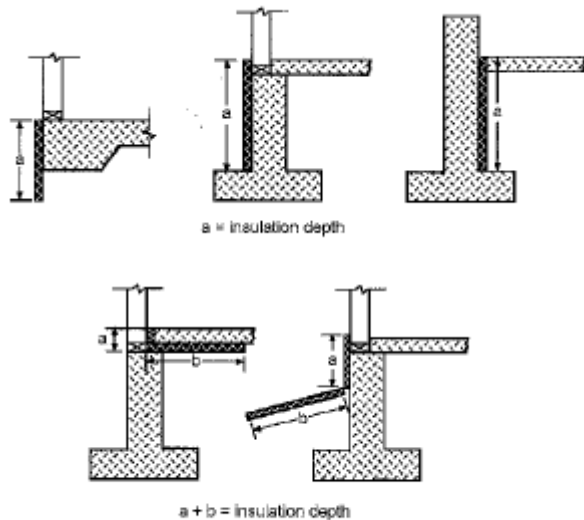
- Existing drawings** preceding proposed drawings
- Show proposed grade, underground structure and window wells
- Show windows, skylights and doors with opening size and door swing operation in dashed lines. With coordinated labeling system matching schedule and, if applicable, Rescheck.
- Interior finish floor levels as dashed lines, including stairs
- Exterior stairs, with guards and handrails.
- Note fall protection requirements at windows where the bottom of the opening is more than 72" above finished grade and is less than 24" above interior finished floor. (R312.2)
- Egress windows labeled, height of bottom of opening dimensioned. (R310)
- Safety glazing labeled on windows. (R308.4)
- Vents, intakes, and exhausts with distances to openings. (2015 IMC 401.4, 501.3.1)
- Chimneys and flues with heights above roof penetration and building elements within 10'. (Manufacturer's instructions, R1003.9)
- Finish materials, exterior walls, roofs
- Protection of wood and wood-based materials from decay, wood to earth separations (R317)
- Landings at doors and stairways (R311)
- Water, electric, and gas service and meter locations (per utilities)
- Snow stops (see requirements in Roof Plan requirements.)

## Sections

- Detail and assembly references
- Show stair and ramp enlargement sections with guardrails, handrails, landings, risers, treads, nosing, vertical rise, slope, & headroom. Include dimensions. (R311)
- Gypsum board on ceiling and walls of any enclosed usable space under stairs. (R302.7)



- Show heights of ceilings, dropped ductwork, dropped beams, dropped ceilings, and soffits. (R305)
- Show the thermal envelope continuity. This means that you should be able to put your pen down on paper and trace insulation around the entire envelope without having to lift your pen. Must be continuous or you must account for gaps/thermal bridges using the UA trade off in Rescheck. Some common mistakes:
  - At the connection of the exterior wall and the foundation and floor. If the floor joists are hung from the foundation wall, rather than sitting on top, you will need to insulate the portion of the foundation wall above the floor up to the framed wall.
  - Steel beams and columns in the thermal envelope. To avoid thermal bridging, the steel member should not create a gap in the continuous thermal envelope.
  - Forgetting slab edge insulation. See the options below. Not needed if top of slab is 12" or more below grade. (2015 IECC R402.2.10)



**Figure 402.2.8  
SLAB INSULATION METHODS**

- Skylights with distance above finish floor
- Roof/attic and crawlspace ventilation. (R806, R408)
- Dwelling separations and all fire rated assemblies for two family and townhouses. (R302)
  - Fire resistive (and STC/IIC) walls, floors, ceilings, roofs, and shafts
  - Extents clearly shown
  - Callouts referencing details
- Note where fire blocking and draft stopping will be installed. Show in any details as necessary.
- Note exterior projections and/or concealed construction requiring sprinkler protection.

## Details

- All wall, floor, ceiling, and roof assemblies

- Roof details must match the Class A roof assembly documentation
- All assembly, wall, floor, roof, parapet, eave, and ceiling intersections
- All intersections of dissimilar materials, corners and ends
- All insulation (rim joists, slab edge, etc.). No thermal breaks.
- Air barrier and vapor barrier continuity at the thermal envelope (2015 IECC Table R402.4.1.1):
  - All joints, seams and penetrations
  - Site built windows, doors and skylights
  - Openings between window and door assemblies and their respective jambs and framing
  - Utility penetrations
  - Dropped ceilings or chases adjacent to the thermal envelope
  - Knee walls
  - Walls and ceilings separating a garage from conditioned spaces
  - Behind tubs and showers on exterior walls
  - Common walls between dwelling units
  - Attic access openings (provide a detail showing insulation and air sealing)
  - Rim joist junction
  - Other sources of infiltration
- Foundation waterproofing or damp proofing (R406)
- Flashing, drainage plane
- Details around openings such as windows doors and skylights (including skylight curb height)
- Ext. wall Finishes (masonry sills, windowsills etc.)
- Dwelling separation **wall** assemblies (for townhomes, duplexes, ADUs)
  - Must be 1 hour (R302.2, R302.3)
  - Must have a Sound Transmission Class (STC) rating of 45 or greater (IRC Appendix K)
  - Choose an assembly from our **preapproved assembly list**; choose one listed to UL 263 or ASTM E 119; choose one from 2015 IBC 720; or create one from 2015 IBC 721.
  - **Print each page of the chosen assembly's installation instructions on the plans.**
- Dwelling separation **floor** assemblies (for townhomes, duplexes, ADUs)
  - Must be 1 hour (R302.2, R302.3)
  - Must have a Sound Transmission Class (STC) and an Impact Insulation Class (IIC) rating of 45 or greater (IRC Appendix K)
  - Choose an assembly from our **preapproved assembly list** (Additional information section below); choose one listed to UL 263 or ASTM E 119; choose one from 2015 IBC 720; or create one from 2015 IBC 721.
  - **Print each page of the chosen assembly's installation instructions on the plans.**
- Exterior walls closer than 5 feet to the property line
  - Must be 1 hour (R302.1)
  - Choose an assembly from our **preapproved assembly list** (Additional information section below); choose one listed to UL 263 or ASTM E 119; choose one from 2015 IBC 720; or create one from 2015 IBC 721.
  - **Print each page of the chosen assembly's installation instructions on the plans.**
- Roof overhangs and other projections closer than 5 feet to the property line
  - Must have one layer of Type X gypsum product on the underside (R302.1)

- Show all penetrations and transfer openings through fire resistive assemblies and provide listed product specs.
- Fire blocking and draft stopping. Note or show in any details as necessary.
- Masonry veneer assembly, support and weep holes.
- Protection of foam plastic with thermal barrier. R316.4
- Fireplace details (for gas log and hearth alterations to wood burning fireplaces)
  - Dimensions, including firebox opening (R1001.6)
  - Firebox construction (R1001.5)
  - Firebox and chimney/flue clearances to combustibles (R1001.11)
  - Hearth extension dimensions, construction, and support (R1001.9, R1001.10)
  - Firebox and hearth extension structural support (R1001.9)
  - Exterior air supply (R1006.1)
  - New or altered wood burning fireplaces and gas logs must have tight-fitting doors and exterior air supply. (2015 IECC R402.4.2)
  - Chimney/Flue/Termination clearances (R1003.9, R1003.18, R1005)

## Schedules

- Windows and Skylights: size, U factor, emergency escape, safety glazing, fall protection
- Door: size, clear opening width, U factor

## Reflected Ceiling Plans

- Permanently installed light fixtures
- Skylights
- Soffits and furred/dropped ceilings, dropped beams, vaulted and cathedral ceilings, sloped ceilings.
- Attic access size

## Mechanical Plans (under the 2015 IMC)

Mechanical Plans are required for new construction and should be prepared by a licensed mechanical engineer or licensed mechanical contractor. Drawings should include the following:

- Basic one-line schematic drawing of the HVAC system
- Show all intake, exhaust, flue, and vent outlets with dimensions to openings and property lines
- Equipment layout with access, working space, and clearances
- Equipment schedule
- Description of all systems and sequence of operation
- Winter/summer indoor and outdoor design temperatures listed on the plan. Must fit within the following parameters:
  - Winter indoor temp may not be above 72 deg F (2015 IECC R302.1)
  - Winter indoor temp may not be below 68 deg F (2015 IRC R303.8)
  - Summer indoor temp may not be below 75 deg F (2015 IECC R302.1)

- Summer outdoor design temp: 82 deg F (Ordinance 40, 2016)
- Winter outdoor design temp: -15 deg F (Ordinance 40, 2016)
- Kitchen Hood CFMs and interlocked makeup air if over 400cfm
- Dryer duct length, CFMs and makeup air as required by 2015 IMC 504.6
- All fireplaces, sizes, types, and venting
- Radiant floor locations
- A whole house balanced mechanical ventilation system (Ordinance 40, 2016). Show your calculations or use our Residential Ventilation Calculator from the [Document Library](#).

The minimum continuous outdoor airflow rate shall be determined in accordance with the following equation:

$$Q_r = ((0.01 \times A_{\text{floor}}) + [7.5 \times (N_{\text{br}} + 1)]) \times S_c$$

where:

$Q_r$  = ventilation flow rate, cubic feet per minute (cfm)

$A_{\text{floor}}$  = floor area in square feet (ft<sup>2</sup>)

$N_{\text{br}}$  = number of bedrooms, not less than one

$S_c$  = 0.75 (system coefficient for balanced systems)

*Exception: The outdoor air ventilation system is not required to operate continuously where the system has controls that enable operation for not less than 1 hour of each 4-hour period. The average outdoor air flow rate over the 4-hour period shall be not less than that prescribed by the equation.*

- Note fuel type and combustion air requirements for existing equipment to remain.

See also Mechanical Documents Section

## Lighting Plans (under the 2017 NEC, 2015 IECC)

- Permanently installed light fixtures
- Lighting Schedule, note IC rated cans
- 75% of all lamps in permanently installed fixtures must be high efficacy. Clearly show on the plan and schedule which lamps are high efficacy and which are not. Provide the total number of high efficacy and the total number of non-high efficacy. (2015 IECC R404.1)
- High efficacy lamps are defined by 2015 IECC R202 as:
  - 60 lumens per watt for lamps over 40 watts
  - 50 lumens per watt for lamps over 15 watts to 40 watts
  - 40 lumens per watt for lamps 15 watts or less

## Structural Plans (under the 2015 IBC)

Required for new construction, additions, and structural alterations.

- Reference to soils report or soil bearing capacity assumption signed letter from structural engineer
- Design load criteria, wind speed & exp. category, ground snow load, and seismic category. All to match City's amended design criteria Ordinance 40, 2016
- Foundation plan: footing, pad and foundation wall sizes, steps, and elevations; cross sections showing reinforcement
- Frost protection depth
- Roof and floor framing plans

- Locations and sizes of all framing components
- Hangers
- Header sizing
- Fasteners and welds
- Shear walls/bracing locations and nailing requirements
- Material types, grades and species identified
- Details referenced in plans
- Masonry Support
- Special Inspections program, list the elements and periodic or continuous inspections required

## Radon Plan (Under 2015 IRC Appendix F)

For new construction & additions

- Details for membrane under slabs and crawl spaces
- Radon Vent location
- Power to location and access for future fan

# Additional Information

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## Adopted Codes & Standards

The following codes as amended by Ordinance 40, 2016

- [2015 IRC \(International Residential Code\) Chapters 1-10](#)
- [2015 IRC appendixes: E: Manufactured homes, F: Radon, J: Existing Buildings & Structures, H: Patio Covers, K: Sound Transmission.](#)
- [2015 IPC \(International Plumbing Code\)](#)
- [2015 IMC \(International Mechanical Code\)](#)
- [2015 IFGC \(International Fuel Gas Code\)](#)
- [2015 IECC \(International Energy Conservation Code\)](#)
- [2015 IFC \(International Fire Code\)](#)
- [2015 IEBC \(International Existing Building Code\)](#)
- [2015 ISPSC \(International Swimming Pool and Spa Code\)](#)
- [2015 ISEP \(International Solar Energy Provisions\)](#)
- 2020 NEC (National Electrical Code)

## Design Criteria

As adopted by Ordinance 40, 2016:

Ground snow load	100 psf
Wind Speed /Exposure Category	89/B
Seismic design category	C
Weathering	Severe
Frost line depth	36"
Termite	None to slight
Decay	None to slight
Winter design temp	-15 deg F
Summer design temp	82 deg F
Ice shield underlayment required	Yes
Flood hazards	See Sec. 8.20.020(bb)
Air Freezing index	2000
Mean annual temperature	40 degrees

Per City Policy:

- Indoor design relative humidity: 35%

## Permitting Fees

Fees will be due at both application submittal and at permit issuance. Use the Building Permit Fee Estimator tool in the [Document Library](#) to estimate your permit fees or request an estimate from a permit coordinator.

## Fire Sprinklers

As adopted by Ordinance 40, 2016:

- Automatic fire sprinkler systems are required in all structures 5,000 square feet or greater as defined by fire area and in structures 2 stories or more in height and in structures containing 4 or more dwelling units.

## Carbon Monoxide Detectors

As adopted by Municipal Code, owners of existing residential occupancies shall come into compliance with the requirements of Chapter 8.15 Carbon Monoxide Detectors. The ordinance became effective on March 2, 2009 and applies to all existing, new and altered dwelling units.

## Inspections

For a list of potential inspections your project may require, [click here](#). For more information about inspections through City of Aspen, visit our [Inspections](#) page.

## Final Inspection Expectations

Prior to Final inspection, you must have/complete the following:

1. Have final signoffs from each review agency, including:
  - a. Zoning
  - b. HPC
  - c. Engineering
  - d. Fire
  - e. Water
  - f. Sanitation
  - g. Parks
  - h. Environmental Health

2. Manuals for all appliances and equipment must be compiled together in one location for the owner.
3. A certificate must be permanently affixed on or in the electric panel with the following information per 2015 IECC R401.3:
  - a. List all insulation R values and fenestration U factors.
  - b. List types and efficiencies of all heating, cooling, and service water heating equipment.
4. Submit a complete set of as-built drawings for the project.

## Permit Application Process: What to Expect

### Consider a Pre-submittal Meeting

If you are unfamiliar with the City's permit application requirements, it is recommended that you schedule a pre-submittal meeting so that you have a clear understanding of what documents and plans you will need to submit. The purpose of a pre-submittal meeting is to identify a project's major areas for improvement through a high-level completeness assessment prior to a submission for building permit. As the applicant, you will be expected to present your drawings to plans examiners so that they can provide feedback. Prior to the meeting, you should review all applicable building and zoning checklists in the [Document Library](#) to ensure you have the required documents ready for reference at this meeting. You may reach out to a permit coordinator to schedule a pre-submittal meeting: [permitcoordinators@cityofaspen.com](mailto:permitcoordinators@cityofaspen.com).

### Permit Review

Once your application is submitted, your permit will move through the various referral agencies' review queues. Different referral agencies have different queues and therefore not all agencies review a permit at the same time. The Permit Coordinator will let you know which agencies will be reviewing and will be your point of contact for status inquiries.

### Receive Comment Letter(s)

You may receive comments from review agencies as they review your permit. The comments will require you to edit your plans or documents and re-submit the revised documents as a part of a formal response to comments.

### Create Your Response to Comments

If you receive comments during permit review, you will address all referral agency comments by providing a written response to each comment as well as revised plan sets and other documents as necessary. Please note: individual plan sheets will not be accepted at response to comments. **Each response should include a description of how the comment has been resolved and which drawing(s) or document(s) has been revised. You may not submit any response to comments until all agencies have reviewed in the current review round.** If desired, you may schedule a re-submittal meeting for review of your response to comments through a permit coordinator prior to submitting your response. Please reach out to the Permit Coordinator if you have any questions about this process.



### **Permit Review and Issuance**

When an acceptable response to comments has been submitted, the permit will be entered back into the queue for re-review. This process continues until all Review Agencies have signed off. Once all reviews are approved, you will be contacted to pay for your permit. After you've paid issuance fees, the permit will be issued to you. Please allow 1-2 business days from fee payment to issuance.

### **Changes to Submitted and/or Approved Plans**

If changes are made to a project's design such that the drawings no longer match the proposed work, contact a Permit Coordinator. Depending on the scope of the change, a Change Order permit may be required; if the changes are minor in scope, it may be sufficient to simply submit the updated documents as additional information. **You may not submit changes to any permit, whether in review or issued status, without the consent of a plans examiner or permit coordinator.**

## How to Apply for a Permit

As of 2020, all permit applications are submitted virtually through Salesforce, the City's online permitting platform. Here are the steps to submit an application in Salesforce:

- Visit the [Salesforce Support page](#) and use the "REGISTER HERE" link to create a Salesforce account.
- Once you receive your Salesforce login credentials (via email), you may login using the link on the [Salesforce Support page](#).
- Follow the instructions on the screen to start a new permit application.