THE CITY OF ASPEN

# IBC Building
# Submittal Guide

A description of permit requirements for Commercial, Multifamily, and Mixed-Use Buildings under the **International Building Code**

# Table of Contents

## Documents



## Drawings



## Additional Information

# Documents

## Planning Approvals (1 copy)

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

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

## Permit Application & Contact Sheet

Fill out the entire upper portion of the form.

- **Existing Sqft:** Provide the Gross Floor Area (See Area Sheet section for definition) of the entire unit or house as it exists.
- **Sqft this Permit:** Provide the Gross Floor Area of the area where the scope of work will take place.
- **Contractor:** The permit must be signed by a contractor who is licensed with the City of Aspen. An unlimited contractor's license is required to construct new type I or II buildings. A light commercial contractor's license is sufficient for all other work.
- **Valuation:** Enter the project valuation in the appropriate line on the Permit Application Form. Per City Policy, the permit valuation shall include **the total value of the work for which a permit is being issued.** This includes **materials and labor** for the permanent structure and mechanical, electrical, plumbing and gas, fire sprinkler and elevator systems and equipment. Permanent systems such as audio visual, lighting and HVAC controls are included in the total as are expenses directly related to construction such as equipment rental and contractor fees.

  Costs such as architectural and engineering design fees, landscaping and planting, tap fees, development mitigation fees, trash removal and cleaning are not included.

  It is the applicant's responsibility to provide the valuation according to 2009 IBC section 108.3. The valuation is ultimately determined by the building official and documentation presented to the building official. Following is the policy for determining permit valuation:

  **Commercial New Construction:**

| | |
|---|---|
| Building Shell | $250/square foot |
| Standard Tenant Finish | $250 to $400/ square foot |
| Luxury Tenant Finish | $400 to $1,000/ square foot |

  **Remodel Tenant Finish – No change in occupancy:**

| | |
|---|---|
| Standard Tenant Finish | $100/ square foot |

| | |
|---|---|
| Luxury Tenant Finish | $100 to $400/ square foot |

**Remodel Tenant Finish – Change in occupancy:**

| | |
|---|---|
| Standard Tenant Finish | $200/ square foot |
| Luxury Tenant Finish | $200 to $600/ square foot |

*For commercial work, the typical Luxury and Standard classifications are determined by use zone:
Luxury – CC, C-1, CL, C and MU zones.
Standard – SCI and NC zones and affordable housing in any zone.

**Residential New Construction**

| | |
|---|---|
| Deed Restricted | $250/square foot |
| Good | $400 to $600/square foot |
| Luxury | $600 to $1,000/square foot |

* Residential remodel valuation will be calculated as 2/3 the valuation for the above new construction.

**If your project valuation does not fall within the above ranges, you must submit the following:**

- ☐ Construction Bid
- ☐ Signed Valuation Adjustment Affidavit.

**The bid will not become public record. All valuation adjustments are subject to approval by the building official. You will be audited after certificate of occupancy is issued.**

# Fees

Fees will be due at submittal and at issuance. Contact a permit coordinator for an estimate at (970)920-5090.

## HOA Certification (1 copy)

Form must be filled out and signed by owner.

## IBC Building Description Form (1 copy)

Fill out the form completely. If you do not know the type of construction, we may have it on file at the Building Department.

## Asbestos Questionnaire (1 copy)

This must be filled out for all projects, regardless of the age of the building.

## Asbestos test and clearance reports (1 copy)

If 'yes' is checked on the Asbestos Questionnaire, you must provide an asbestos test report. This 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.

# State Asbestos Demolition Approval Notice (1 copy)

This is required if you are demolishing an entire building. One is required for each separate building, including outbuildings. You must submit the original license, not a copy. The Asbestos Questionnaire has information on how to acquire one.

# Fireplace Registration and Specs (1 copy)

Fill out the Fireplace Registration Form for all fireplaces and fire pits existing and proposed associated with the unit.

Provide the Manufacturer's Installation Instructions for each gas fireplace. The following must be included:

- ☐ Firebox clearances
- ☐ Flue/termination clearances
- ☐ Firebox construction
- ☐ Hearth Extension requirements
- ☐ Exterior air requirements
- ☐ Gasketed door information
- ☐ Damper/Flue sentinel information

# Energy Code Compliance (2 copies)

***Residential Buildings*** (R-3 buildings, as well as R-2 and R-4 buildings three stories or less in height above grade) and residential portions of mixed-use buildings may use of one of the following four 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 out of Table 402.1.1 Insulation and fenestration requirements by component from the 2009 IECC for climate zone 7 (printed below). Your details, sections, and/or schedules must be noted with these R and U values.

**2009 IECC Table 402.1.1**

| 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 | 0.35 | 0.60 | 49 | 21 | 19/21[i] | 38[g] | 15/19[c] | 10, 4 ft[d] | 10/13[c] |

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.
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 402.1.3 from the 2009 IECC for climate zone 7. 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.

**3. Total UA Alternative:** Use **Rescheck**, downloadable for free at www.energycodes.gov. Be sure to address the following in your Rescheck:

- ☐ Select 2009 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.
- ☐ Print out and sign the Rescheck. Two copies are required.

**4. Simulated Performance Alternative:** Use **Rescheck**, downloadable at 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.
- ☐ A benefit of using the Performance Alternative is that you do not need to comply with 404.1 of the 2009 IECC. **This means you will not be required to have 50% of all lamps be high efficacy.**

*For new construction, all alternatives will require a **blower door test** of less than 7 ACH at 50 Pa per 2009 IECC 402.4.2.1 prior to final inspection.

***Commercial Buildings*** (Any building or portion of a mixed-use building not included in the residential definition above) must comply with either the **2009 IECC** or **ASHRAE Standard 90.1 (2007)** for Envelope, Lighting, and Mechanical. *You must choose one code and not mix and match.*

## Envelope:

You may use of one of the following methods to demonstrate envelope energy code compliance. You must note on the plans which approach you are taking.

**Prescriptive:** Use the values out of table 502.2 and 502.3 from the 2009 IECC for climate zone 7. Your details, sections, and window/door/insulation schedules must be noted with these values.

**U-factor Alternative:** Same as above, but use the values out of table 502.1.2 from the 2009 IECC for climate zone 7. You must demonstrate your calculations of the U-factor of any assemblies using this alternative, including the effects of thermal bridging from framing materials. You may mix this approach with the Prescriptive one above.

**Total UA Alternative:** Use **Comcheck**, downloadable at www.energycodes.gov. Be sure to address the following in your Comcheck:

- ☐ Select 2009 IECC or ASHRAE 90.1 (2007) Standard as the code (no mixing and matching)
- ☐ 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 and insulation schedule.
- ☐ Cavity insulation is insulation that sits in the framing cavities between studs and joists. Continuous insulation is insulation that sits beyond framing and runs past it.
- ☐ Print out and sign the Comcheck. Two copies are required.

**Performance:** Comply with section 506 of the 2009 IECC.

## Interior and Exterior Lighting:

Use **Comcheck**; follow the instructions above, as well as:

- ☐ Create a labeling system to ease comparison between the comcheck, lighting plans, lighting schedule, and specs. All must match exactly.
- ☐ Provide spec sheets for all fixtures listing wattages
- ☐ Only take exemptions and allowances as allowed by 2009 IECC sections 101.4.3, 505.5.1, and table 505.5.2.

## Mechanical:

Use **Comcheck**; follow the instructions above, as well as:

- ☐ Create a labeling system to ease comparison between the comcheck, equipment schedule and plans. All must match exactly.

As an alternative to the above methods, you may use the **Total Building Performance Method.** Refer to 2009 IECC section 506.

# Non-Vented Roof Assembly Dew Point Calculations (2 copies)

Roof assemblies that do not meet the roof ventilation requirements of currently adopted codes shall be designed to avoid the likelihood of fungal growth or the accumulation of moisture on the linings and other building elements. The applicant shall submit calculations and/or supporting proof that the building systems will perform to avoid the accumulation of fungal growth and moisture in the roof assembly. The proposed roof assembly will be reviewed and approved by the building official and demonstrate compliance to the alternate method of roof ventilation.

The calculations 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(interface) = R(exterior) / R(total) x [T(inside) – T(outside)] + T(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:**

| Thickness: | Component: | R-Value: |
|---|---|---|
| | 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(exterior) = 0.17 + 0.21 + 0.77 + 28 = 29.15
R(total) = 29.15 + 21 + 0.56 + 0.65 = 51.36
T(inside) = 70 deg F
T(outside) = -16 deg F
T(interface) = R(exterior) / R(total) x [T(inside) – T(outside)] + T(outside)
T(interface) = 29.15 / 51.36 x [70 – 19.8] + 19.8)
T(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

(2 copies)

All new windows, skylights, and glazed doors must have a factory applied NFRC stickered label listing the U-factor of the entire assembly. This **U-factor must match what you selected in the Energy Code Compliance section 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 following options** per City policy. The calculations must be for the entire assembly, including the glazing *and* the frame.

**NFRC CMA certificate** (preferred): Component Modeling Approach. Uses CMA Software Tool (CMAST). Speak with your window/door representative to see if this is an option. More info here: http://cmast.nfrc.org

**ASHRAE Calculations:** Calculation methods from ASHRAE Fundamentals Handbook: "U-Factor (Overall Coefficient of Heat Transfer)." A calculation is required for each individual window assembly or you may calculate the worst performing window and use that U factor for every window. Below is an example:

1. Determine U-value for the three sections of window assembly. You must look these up in the ASHRAE tables:
    - Center of Glass (Ucg)
    - Edge of Glass (Ueg)
    - Window Frame (Uf)
2. Determine Area for the three sections of window assembly. Follow the directions in ASHRAE:
    - Center of Glass (Acg)
    - Edge of Glass (Aeg)
    - Window Frame (Af)
3. Calculate the weighted average U factor, by area of the three sections:

$$U = \frac{(Ucg \times Acg) + (Ueg \times Aeg) + (Uf \times Af)}{(Acg + Aeg + Af)}$$

# Renewable Energy Mitigation Program documents (1 copy)

Snowmelt, hot tubs, and outdoor pools are required to comply with the Renewable Energy Program (REMP). Residential Renewable Energy Mitigation Program guidelines apply to R-3 buildings, as well as R-2 and R-4 buildings three stories or less in height above grade and residential portions of mixed-use buildings. Commercial Renewable Energy Mitigation Program guidelines apply to all other types of buildings and commercial portions of mixed-use buildings. For further information on the REMP program, refer to Appendix A and Appendix B in the City of Aspen's adoption of the 2009 IECC.

In addition to the full size REMP plan sheets mentioned later, you must submit the following to demonstrate compliance:

**All**:

- ☐ Completed RREMP and/or CREMP worksheet, available on the aspenpitkin.com website.
- ☐ If using the solar off-set option, specs on solar panels, showing dimensions, orientation, and, if Photovoltaic, kW per panel. **You may only get credit for solar panels oriented per the Orientation Adjustment Factor Table below.**
- ☐ Specs on boiler (the boiler/heating unit for the snowmelt, pool, and/or spa), showing AFUE. (annual fuel utilization efficiency)

**Hot Tub**:

- ☐ Specs showing dimensions and CEC (California Energy Commision) or APSP-14 (Association of Pool and Spa Professionals) certification. The CEC has a database of all compliant spas at http://www.appliances.energy.ca.gov/QuickSearch.aspx. If using a spa that is not CEC or APSP-14 certified, you must include it in the REMP worksheet. The area is the area of the water surface.
- ☐ Specs on a safety cover listed as ASTM F 1346 (unless an enclosure barrier is used per 2009 IBC 3109.4) and that is insulated to R-12 (2009 IECC 403.9.3).

**Outdoor Pool**:

- ☐ Must include it in the REMP worksheet, the area is the area of the water surface.
- ☐ Specs on a safety cover listed as ASTM F 1346 (unless an enclosure barrier is used per 2009 IBC 3109.4).
- ☐ Specs on a vapor-retardant pool cover (2009 IECC 403.9.3).

**Solar Orientation Adjustment Factor:**

| | | Collector Tilt, Degrees From Horizontal | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **0** | **10** | **20** | **30** | **40** | **50** | **60** | **70** | **80** | **90** |
| **Collector Aspect Degrees From True South** | **0** | 87.0% | 93.2% | 97.6% | 99.9% | 100% | 98.0% | 93.9% | 87.8% | 80.0% | 70.7% |
| | **10** | 87.0% | 93.1% | 97.4% | 99.7% | 99.8% | 97.7% | 93.6% | 87.6% | 79.9% | 70.7% |
| | **20** | 87.0% | 92.8% | 96.9% | 99.0% | 99.1% | 97.1% | 93.0% | 87.1% | 79.6% | 70.7% |
| | **30** | 87.0% | 92.4% | 96.1% | 98.0% | 97.9% | 95.9% | 92.0% | 86.2% | 79.0% | 70.5% |
| | **40** | 87.0% | 91.8% | 95.0% | 96.6% | 96.4% | 94.3% | 90.5% | 85.0% | 78.1% | 70.0% |
| | **50** | 87.0% | 91.0% | 93.7% | 94.8% | 94.3% | 92.2% | 88.5% | 83.2% | 76.7% | 69.1% |
| | **60** | 87.0% | 90.0% | 92.0% | 92.7% | 91.9% | 89.6% | 86.0% | 80.9% | 74.7% | 67.6% |
| | **70** | 87.0% | 89.0% | 90.1% | 90.2% | 89.0% | 86.6% | 82.9% | 78.1% | 72.2% | 65.5% |
| | **80** | 87.0% | 87.9% | 88.1% | 87.4% | 85.7% | 83.0% | 79.3% | 74.6% | 69.1% | 62.8% |
| | **90** | 87.0% | 86.7% | 85.8% | 84.3% | 82.1% | 79.1% | 75.2% | 70.6% | 65.3% | 59.5% |

The solar panels (PV and thermal), must have 90% or greater efficiency rating in the table above. If less than 90%, partial REMP credit will be given in the following manner:

100% efficient = 100% credit
90% efficient = 100% credit
89% efficient = 89/90 = 99% credit
75% efficient = 75/90 = 83% credit

# Line Grade Verification Form (1 copy)

Fill out part A and show horizontal ties to property line on Site Plan.

# Verification of Structural Integrity (2 copies)

For alteration, demo 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 demo:

**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 (1 copy)

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.

# Special Inspection and Testing Agreement (2 copies)

Work that includes any of the following requires special inspection per 2009 IBC section 1704:

- ☐ High strength bolting
- ☐ Epoxy anchors
- ☐ Structural steel welding
- ☐ Pre and post stressed tendons
- ☐ Permanent micropiles or helical piers
- ☐ Sprayed fireresistant materials
- ☐ Mastic and intumescent fireresistant coatings

The Special Inspection and Testing Agreement must be signed by the following entities:

- ☐ Special Inspection Agency

- ☐ 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.

# Photos (1 copy)

Provide photographs of the proposed work areas. (optional: to aid plans examiner for better understanding of existing conditions)

# Unit/building Relationship (1 copy)

For alterations and additions to multi-unit buildings only. Provide an elevation, section, or photograph clearly showing the relationship of the unit being remodeled to the remainder of the building. Highlight your unit and show neighboring units. Note the occupancy type of the neighboring units (residential, business, retail, restaurant, etc).

# Construction Drawings Set

## Drawing Standards

- ☐ Submit two full sets of plans at 24” x 36” size sheets, as well as one reduced 11” x 17” set. Other sizes are not accepted under any conditions.
- ☐ Do not fold any of the plans.
- ☐ 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, mechanical, electrical, and plumbing 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 are required to be stamped unless they meet one of the following exemptions: 1) One, two, three, and four unit family dwelling including accessory buildings associated with such dwellings 2) Garages, industrial buildings, offices, farm buildings, and buildings for the marketing, storage, or processing of farm products, and warehouses, which do not exceed one story in height, exclusive of a one-story basement, and which under applicable building code, are not designed for occupancy by more than ten persons 3) Additions, alterations or repairs to the foregoing buildings which do not cause the completed building to exceed the applicable limitations 3) Nonstructural alterations of any nature to any building if such alterations do not affect the life safety of the occupants of the building. (CO State Board of Architect Examiners and State Board of Registration for Professional Engineers)
- ☐ **Existing/Demolition plans** shall be printed on the same sheet as the proposed plans. Where there is not enough room, the existing/demolition plans should be grouped 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.

***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

- ☐ List code editions (2009 IBC, 2009 IECC, 2009 IMC, 2009 IPC, 2009 IFGC, 2011 NEC, and City of Aspen Municipal Code Title 8)
- ☐ Note if a Fire Sprinkler system will be installed and whether it is NFPA 13, NFPA 13D or NFPA 13R.

- ☐ Address and unit #
- ☐ Parcel ID #
- ☐ Owners Name
- ☐ Permit Number: Provide a blank if this is not yet known. If submitting a change order, do not use the original permit number.
- ☐ #1 Permit Number: If submitting a change order, put the original permit's number here.
- ☐ Change Order Number: i.e. change order #2
- ☐ 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 this order, cover sheet, survey, site plan, zoning sheets, civil sheets, landscape sheets, architectural sheets, MEP's, structural sheets, stabilization sheets
- ☐ List required types of special inspections
- ☐ Note which path of energy code compliance you are taking
- ☐ **Planning approvals**. Print *every page of every approval* on the cover sheet.

# Survey

For new construction and additions. Must be drawn per the Compliant City of Aspen Survey Checklist.

# Excavation/Earth Retention Plans (under

Chapter 18 of the 2009 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 showing that there is adequate space on site for a one-to-one layback (the proposed foundation walls are within a horizontal distance less that 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')
- ☐ 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)

# Commercial and/or Residential Renewable Energy Mitigation Program (CREMP/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. Orientation and slope must achieve 90% efficiency. 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 if it can be done clearly and legibly.

# Area sheet

Illustrate and calculate building gross floor area as defined by 2009 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 nonoccupiable 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 2009 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.

# Occupancy/Means of Egress Plan

- ☐ Type of construction (i.e. Type VA, VB, IIIA, etc) Find this in the building address file or provide a calculation per 2009 IBC chapter 5.
- ☐ Building height, stories, area
- ☐ Note any increases or 'buy downs' used, such as sprinkler or frontage increases.
- ☐ Note if there is an existing fire sprinkler system, the type, and its extent (entire building?).
- ☐ All occupancies and incidental/accessory uses with square footages
- ☐ Proposed method of occupancy separation/non-separation
- ☐ Occupant load calculations
- ☐ Travel paths and distances
- ☐ Common path of egress measured rectilinearly
- ☐ Separation of exits
- ☐ Exit enclosures, exit passageways, corridors, lobbies, discharges, etc. labeled
- ☐ Exit illumination and signs, emergency power
- ☐ Seating, furniture, fixture, and/or merchandise display layout if applicable

# Fire Resistance Plans/Details

- ☐ Occupancy separations
- ☐ Type of Construction separations
- ☐ Means of Egress separations
- ☐ Fire resistive (and STC/IIC) walls, floors, ceilings, roofs, and shafts
- ☐ Dash/highlight all rated assemblies in plan view and section. Must show continuity (rating must not start and stop).
- ☐ Label all rated assemblies (walls, floor/ceilings, roof/ceilings, shafts, etc) to reference a detail and a listed and tested assembly. Print out the full installation instructions of each listed and tested assembly on the plans. Listed and tested assemblies can be from one of the following:
    - o UL Listings
    - o Gypsum Manual (GA-600 Fire Resistance Design Manual)
    - o From a manufacturer if the assembly was tested to UL 263 or ASTM 119.
    - o 2009 IBC section 720
    - o 2009 IBC section 721
- ☐ Label all fire rated doors, windows, and hatches with the minute fire rating (may show this on the door/window schedule alternatively)
- ☐ Show all penetrations through fire resistive assemblies and provide listed product specs (no penetrations are permitted in exit enclosures). Note that all penetrations of fire rated assemblies must comply with 2009 IBC 713
- ☐ Note where fireblocking and draftstopping will be installed. Show in any details as necessary.
- ☐ Provide the distance to property line of all exterior walls. If facing a street or alley, provide the distance to the centerline of the street or alley.
- ☐ Provide elevations of all exterior walls that are less than 30 feet from the property line or centerline of street or alley. Show the following on the elevations:
    - o Hatch the area of each portion of wall in a single plane on a single floor. Label the square footage.
    - o Hatch the aggregate area of all doors and windows (full frame size) on each wall portion above. Label the square footage.
    - o Provide calculations demonstrating compliance with 2009 IBC 705.8.

- ☐ Where interior finish materials are applied on walls, ceilings or structural elements required to have a fire-resistance rating or to be of noncombustible construction, clearly show the furred or set out construction with materials and dimensions shown in details. (803.11)

# Accessibility Plans & Details

- ☐ Show accessible entrances and routes from public way throughout site and facility
  - o Show door maneuvering clearances
  - o Include route to toilet/bathing facilities
- ☐ Show accessible means of egress
- ☐ If any of the following are provided, some or one must be accessible (see IBC chapter 11). Show in plan and clearly show all required clearances and dimensions.
  - o Parking, Toilet or Bathing facility, Sinks, Dressing room, POS counter, workspace, seating, dining, kitchen/kitchenette, drinking fountain, elevator, storage, controls, switches and outlets
- ☐ Show all required accessibility signage
- ☐ If four or more dwelling units, they must all be Type B accessible.
  - o State whether using option A or B for bathrooms and show all required elements with dimensions.
  - o Reach ranges for controls and outlets
  - o Door clear opening widths to all rooms
  - o Grab bar reinforcement in all bathrooms
- ☐ Show travel route and distance to toilet facilities
- ☐ Existing buildings: If modifying a space containing a primary function, then an accessible route, accessible toilet facilities and drinking fountain must be provided.

☐ **Accessibility details**

- ☐ Details and elevations showing clearances and dimensions for all accessible elements
- ☐ Toilet and bathing room fixture clearances
- ☐ Grab bars, mirrors, dispensers
- ☐ Point of sale counters
- ☐ Counters for dining and work surfaces

# Floor plans

Required for all permits

- ☐ **Existing drawings** preceding proposed drawings
- ☐ Room uses labeled
- ☐ Gridlines
- ☐ Section, detail, and assembly callouts
- ☐ Provide the equation comparing site (surveyed) elevation to structure/ architectural plan elevation: (i.e., 100’ first floor elev = 7962.50’)
- ☐ Floor finish material
- ☐ Carbon monoxide and smoke detector locations
- ☐ Door swings with floor levels shown on both sides including exterior landings
- ☐ Stairs: direction of travel, handrails with extensions and returns, rise/run
- ☐ Guard rail locations
- ☐ All appliances and equipment labeled

- ☐ Attic and crawlspace access, with dimensions
- ☐ Emergency Escape and rescue openings with height of sill above finish floor
- ☐ Window wells with dimensions, show ladder.
- ☐ Dashed outline of roof overhangs above

# Roof Plan

Applicable to new construction and roof work

- ☐ **Existing drawings** preceding proposed drawings
- ☐ Drains and secondary drains/scuppers
- ☐ Skylights with labels matching schedule
- ☐ Flue, exhaust, and chimney terminations and outside air intakes with dimensions to property lines and openings.
- ☐ Roof pitches shown as x:12
- ☐ Solar panels with orientation, slope, and height above roof
- ☐ Roofing material and class (Class A in Wildfire Zone High Hazard, Class B all others)
- ☐ Roof/attic ventilation
- ☐ Show exterior walls below with dashed line.
- ☐ Show parapets
- ☐ 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 31, 2011, pg17)
- ☐ 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 31, 2011, pg17)

# Elevations

- ☐ **Existing drawings** preceding proposed drawings
- ☐ Show grade, underground structure and window wells
- ☐ Windows and doors (show operable vs. fixed) label to match schedules
    - o In residential occupancies give dimensions showing whether widow openings are within 24” of finish floor and are located more than 72” above the surface below. In such cases glazing needs to be fixed or have an opening limitation device. (1405.13.2)
- ☐ Interior finish floor levels as dashed lines, including stairs
- ☐ Dimension all guard heights
- ☐ Egress windows labeled, bottom of opening heights dimensioned
- ☐ Safety glazing labeled on windows
- ☐ Vents, intakes, and exhausts with distances to openings and property lines
- ☐ Chimneys and flues with heights 3’ at roof penetrations and 2’ above building elements within 10’
- ☐ Finish materials, exterior walls, roofs

- ☐ Protection from decay, wood to earth separations 6” min above grade
- ☐ Landings at doors and stairways
- ☐ Electric service and gas and water meter locations
- ☐ Snow stops (see requirements in Roof Plan section)

# Sections

- ☐ Detail and assembly callouts
- ☐ Headroom height, including at dropped ductwork.
- ☐ Show the thermal envelope continuity. Must be continuous or you must account for gaps/thermal bridges using the UA trade off in Comcheck.
- ☐ Skylights with dimension above finish floor
- ☐ Roof and crawlspace ventilation
- ☐ Separations and all fire rated assemblies
    - o Fire resistive (and STC/IIC) walls, floors, ceilings, roofs, and shafts
    - o Extents clearly shown
    - o Callouts referencing details
- ☐ Fire rated openings, doors, windows.
- ☐ Show all penetrations and transfer openings through fire resistive assemblies and provide listed product specs.
- ☐ Note where fireblocking and draftstopping will be installed. Show in any details as necessary.
- ☐ Clearly show all furred or set out construction with materials and dimensions shown in details.
- ☐ Note exterior projections and/or concealed construction requiring sprinkler protection.
- ☐ Set out construction over fire rated or required non-combustible assemblies per 2009 IBC 803.11.
- ☐ Concealed combustible spaces in sprinklered buildings
    - o Concealed spaces of combustible construction require fire sprinklers unless filled with non-combustible insulation or are less than 6” deep. See NFPA 13-8.15.1 for additional exceptions.

# Details

- ☐ All wall, floor, ceiling, roof assemblies
- ☐ Fire resistive assemblies and firestop penetration details
    - o **Include the full listing installation instructions on the plans. If options are presented note specific option**
- ☐ All assembly, wall, floor, roof, parapet, eave, and ceiling intersections. Demonstrate continuity of fire assemblies.
- ☐ All intersections of dissimilar materials, corners and ends
- ☐ Control joints
- ☐ All insulation (rim joists, slab edge, etc.). No thermal breaks or cold bridges.
- ☐ Air barrier and vapor barrier continuity
- ☐ Air sealing locations (2009 IECC 402.4.1):
    - 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
- Rim joist junction
- Other sources of infiltration

☐ Waterproofing, flashing, means of drainage
☐ Details around openings such as windows and doors
☐ Finishes with schedule of flame spread index and smoke-development index
☐ Fire blocking and draft stopping
☐ Fire resistive assemblies and STC/IIC assemblies (at occupancy separations) including a copy of the listing and installation instructions printed on the plans. You must choose a listed and tested assembly or use a preapproved assembly.
☐ Masonry veneer assembly, support and weep holes.
☐ Protection of foam plastic
☐ Note where fireblocking and draftstopping will be installed. Show in any details as necessary.
☐ Clearly show all furred or set out construction with materials and dimensions shown in details

# Stairs

☐ Rise and run
☐ Vertical rise
☐ Headroom
☐ Fire protection for enclosed usable space under stairs
☐ Handrails, returns, extensions
☐ Guards
☐ Landings

# Ramps

☐ Slope and cross slope in % or 1:12
☐ Vertical rise
☐ Handrails, returns, extensions
☐ Guards
☐ Edge protection
☐ Landings

# Fireplace Details

☐ Note type of appliance (ie: gas log, direct-vent)
☐ Dimensions, including firebox opening
☐ Firebox and chimney/flue clearances to combustibles
☐ Hearth extension dimensions, construction, and support
☐ Firebox and hearth extension support
☐ Exterior air supply

- ☐ Gas log fireplaces must have gasketed doors or an interlocked electronic damper and outdoor combustion air. (2009 IECC 402.4.3, IBC 21)

# Schedules

- ☐ Window: size, U factor, emergency escape, safety glazing, fire rating
- ☐ Skylight: glazing materials, laminates, interlayer thickness, curb height, U factor, fire rating
- ☐ Door: size, clear opening width, U factor, fire rating
- ☐ Finishes – include flame spread index and smoke-development index

# Reflected Ceiling Plans

- ☐ Permanently installed light fixtures
- ☐ Skylights
- ☐ Soffits and furred/dropped ceilings
- ☐ Attic access with dimensions

# Lighting Plans (under the 2011 NEC, 2009 IECC)

- ☐ Permanently installed light fixtures
- ☐ Lighting Schedule, note IC rated cans
- ☐ Labeling on plan must match the COMcheck, lighting schedule, and specs.

# Electrical Plans

- ☐ All lighting with key notes matching schedule and cut sheets
- ☐ Note IC rated cans
- ☐ Receptacles, switches, circuits
- ☐ Panel schedule
- ☐ Location and size of all panel boards, electric service, service disconnect, and transformers with clearances
- ☐ Grounding and bonding
- ☐ Electrical load calculations per 2011 NEC
- ☐ Emergency power lighting
- ☐ Height AFF of all controls, switches and outlets required to be accessible
- ☐ Any fixtures projecting into a means of egress must be dimensioned
- ☐ Meter Location

# Commercial Kitchen Plans

- ☐ Commercial kitchen layout, equipment, and schedules
- ☐ Kitchen hoods with clearances
- ☐ Washable surfaces

# Mechanical Plans

- ☐ Show all equipment, ductwork, and venting
- ☐ Mechanical room equipment layout with working space and clearances
- ☐ Boiler or furnace size and efficiency
- ☐ Show all intake, exhaust, flue, and vent outlets
- ☐ Show calculations used to provide ventilation per 2009 IMC table 403
- ☐ Show design temperatures
- ☐ All fireplaces, sizes, types, exterior/combustion air, and venting
- ☐ Fire dampers
- ☐ Height AFF of all controls required to be accessible
- ☐ Radiant floor piping – show R5 insulation
- ☐ Snowmelted areas – show R10 insulation
- ☐ Equipment schedule that includes: Efficiency rating, Kitchen Hood CFMs, Dryer CFMs, Equipment BTUs
- ☐ Commercial kitchen layout, equipment, and schedules
- ☐ Kitchen hoods with clearances
- ☐ Equipment access

# Plumbing Plans

- ☐ DWV, water piping, storm water
- ☐ Roof drains, overflow drains or scuppers
- ☐ Discharge location for overflow drains
- ☐ Protection from freezing
- ☐ Below grade ejectors
- ☐ Condensate disposal method and termination location
- ☐ Gas piping
- ☐ Gas meter location (including protection from falling snow)
- ☐ Grease interceptors, sand and oil interceptors

# Structural Plans (under the 2009 IBC)

Required for new construction, additions, and structural alterations.

- ☐ Reference to soils report or soils 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 31, 2011
- ☐ 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 and stone veneer Support
- ☐ Special inspections program, list the elements and periodic or continuous inspections required

# Additional Information

## Adopted Codes & Standards

The following codes as amended by Ordinance 31, 2011 and Ordinance 11, 2011:

- 2009 International Building Code The adopted appendices for this code are:
  C: Group U – Agricultural Buildings
  E: Supplementary Accessibility Requirements
  I: Patio Covers
  J: Grading
  - ☐ 2009 IPC (International Plumbing Code)
  - ☐ 2009 IMC (International Mechanical Code)
  - ☐ 2009 IFGC (International Fuel Gas Code)
  - ☐ 2009 IECC (International Energy Conservation Code)
  - ☐ 2009 IFC (International Fire Code)
  - ☐ 2011 NEC (National Electrical Code)

## Design Criteria

As adopted by Ordinance 31, 2011:

- ☐ Roof snow load: 75 psf
- ☐ Ground snow load: 105 psf
- ☐ Wind speed: 90 mph (3 second gust), exposure category B
- ☐ Seismic design category: C
- ☐ Weathering: Severe
- ☐ Frost line depth: 36”
- ☐ Termite/Decay: none to slight
- ☐ Winter design temperature: -16 deg F
- ☐ Ice shield underlayment required: yes, 6’ up from eave
- ☐ Flood Hazards: FEMA MAP 6/4/1987
- ☐ Air Freezing Index: 1694
- ☐ Mean Annual Temp: 40 deg F
- ☐ Site Class: determined by soils report, or by structural engineer’s assumption statement.

Per City Policy:

- ☐ Summer outdoor design temp: 81 deg F
- ☐ Indoor design relative humidity: 35%

## Fire Sprinklers

As adopted by Ordinance 31, 2011:

- 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 City Ordinance: all 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

See the City of Aspen Inspection Checklist for a list of potential inspections your project may require.

# Final Inspection Expectations

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

1. Have final signoffs from each applicable review agency, including:
    a. Zoning
    b. HPC
    c. Engineering
    d. Fire
    e. Water
    f. Sanitation
    g. Parks
    h. Environmental Health
2. For new residential construction, you must have a report for the blower door test per 2009 IECC 402.4.2.1.
3. Manuals for all appliances and equipment must be compiled together in one location for the owner.
4. A certificate must be permanently affixed on or in the electric panel with the following information per 2009 IECC 401.3:
    a. List all insulation R values and fenestration U factors.
    b. List types and efficiencies of all heating, cooling, and service water heating equipment.
5. Submit a complete set of as-built drawings for the project.