



ALTERATIONS GUIDE

RESIDENTIAL (single family + multifamily)

Note:

- All scenarios allow an alternate design to be submitted for approval where there is an infeasibility. It will need to be justified and is subject to approval by the building official.
- Historic buildings may receive exemptions. You must submit a report detailing historic conflicts.
- Any altered thermal envelope assembly must be **air sealed**. Air sealing must be made continuous to adjacent assemblies to the maximum extent feasible.
- Insulation values are from the table R402.1.3 alterations row unless otherwise stated.
- **Roof scenarios (R503.1.1.2):**
 - Note: if not built to current snow loads, addition of insulation must provide a stamped engineer's letter for greatest amount of additional insulation structure can hold if any.
 - If currently no insulation above heated space: Insulate to R-49.
 - **Reroof:**
 - If there is **any existing insulation above the roof deck**: Insulate to R-49 (may be entirely above deck or a combo of above and below deck insulation).
 - Install controls for any existing heat tape
 - Interior
 - **If ceiling cavities or surfaces are exposed** to which insulation could be applied: Insulate to R-49.

Examples: Removal of ceiling finish exposing rafters, joists, pan deck above dropped ceiling framing, etc.
- **Wall scenarios (R503.1.3):**
 - Interior only:
 - **If wall cavities are exposed**, they must be filled with insulation to Grade 1 quality (R503.1.3 item 1)
 - **If wall cavities are exposed** in a Level 4 Work Area project: See Level 4 below.
 - **If basement walls are altered**, must be insulated to R-13 cavity insulation or R-10 continuous insulation.
 - Exterior only:
 - **If cladding/siding + fenestration are added or replaced** on any full elevation plane:

- An R-value of continuous insulation not less than that designated in Table R402.1.3 Alterations row for the applicable above-grade wall type and existing cavity insulation R-value, if any; or,
 - An R-value of not less than that required to bring the above-grade wall into compliance with Table R402.1.3 Alterations row.
 - Interior and exterior:
 - **If cladding/siding + fenestration added or replaced and cavities are exposed** on any full elevation plane:
 - Insulate wall per table R402.1.3 using the **New** row.
- **Floor scenarios** (overhangs and over unconditioned space):
 - **If floor cavities are exposed**, must be insulated to R-38.
- **Window scenarios:**
 - **Adding windows:** must stay under 30% WWR. If already over 30%, window area may be replaced but not added to. (R503.1.1.1)
- **Skylight scenarios:**
 - **Adding skylights:** must stay under 3% of roof area. If already over 3%, skylight area may be replaced but not added to. (R503.1.1.1)
- **Electric service replacement:**
 - Provide capacity for future electrification of cooking, clothes drying, EV charging, future solar, future energy storage.
- **Parking/garage scenarios:**
 - Single family, duplex, townhouse: installation of a **new branch circuit in garage** or adjacent to on-site parking triggers EV-capable (R503.1.4.2)
 - Group R-2 (condos): **If onsite parking added:** EV charging requirements (C503.6)
- **If Level 3 work area** (>50% of building, see Work Area section at end of this document):
 - Fire sprinklers required (IEBC 904.1.4)
 - Dwelling separations in Group R-3 that are not continuous and are exposed must be brought up to code. (IEBC 903.2)
 - Multifamily exit stair enclosure fire resistance per IEBC 802.2.1 (IEBC 903.1)
- **If Level 4 work area** (>50% of unit, see Work Area section at end of this document):
 - Exposed wall cavities must be insulated to the cavity portion of IECC prescriptive alteration table R402.1. (IECC R503.1.3 item 2)
 - 2x6: R-20
 - 2x4: R-13
 - Energy assessment with blower door test required at permit submittal (IECC R503.1.5)
 - Blower door < 5 ACH50 requires whole dwelling ventilation (may be supply only, exhaust only including a controlled bath fan, or combo including but not limited to ERV or HRV)
 - Blower door test required at final (IECC R503.1.1.6)
 - Same blower door/ventilation requirement as above.
 - Sign up for energy reporting (BIQ benchmarking - IECC R503.1.6)

COMMERCIAL

Note:

- All scenarios allow an alternate design to be submitted for approval where there is an infeasibility. It will need to be justified and is subject to approval by the building official.
- Historic buildings may receive exemptions. You must submit a report detailing historic conflicts.
- Any altered thermal envelope assembly must be **air sealed**. Air sealing must be made continuous to adjacent assemblies to the maximum extent feasible.
- Insulation values are from table C402.1.3 unless otherwise stated.
- **Roof** scenarios (C503.2.1):
 - Note: if not built to current snow loads, addition of insulation must provide a stamped engineer's letter for greatest amount of additional insulation structure can hold if any. For reference, adopted snow load requirements over the years are as follows:
 - Pre-1994: 40 psf
 - Oct 24, 1994: 75 psf (1994 UBC)
 - April 1, 2016: 100 psf ground load (70 psf roof)
 - If currently no insulation above heated space: Insulate to R-40 above deck or R-60 below deck.
 - **Reroof:**
 - If there is **any existing insulation above the roof deck**: Insulate to R-40 (may be entirely above deck or a combo of above and below deck insulation).
 - Install controls for any existing heat tape
 - Interior
 - **If ceiling cavities or surfaces are exposed** to which insulation could be applied: Insulate to R-60.

Examples: Removal of ceiling finish exposing rafters, joists, pan deck above dropped ceiling framing, etc.
- **Wall** scenarios (C503.2.4):
 - Interior only:
 - **If wall cavities are exposed**, they must be filled with insulation to Grade 1 quality (C503.2.4 item 1)
 - **If basement walls are altered**, must be insulated to R-20 continuous insulation or equivalent (C503.2.6). R-19 cavity + R-5 continuous meets the equivalent requirement.
 - Exterior only:
 - **If cladding/siding + fenestration are added or replaced** on any full elevation plane:
 - An R-value of continuous insulation not less than that designated in Table C402.1.3 for the applicable above-grade wall type and existing cavity insulation R-value, if any; or,
 - An R-value of not less than that required to bring the above-grade wall into compliance with Table C402.1.3

- Interior and exterior:
 - **If cladding/siding + fenestration added or replaced and cavities are exposed** on any full elevation plane:
 - Insulate wall per table C402.1.3.
- **Floor scenarios** (overhangs and over unconditioned space):
 - If **floor cavities are exposed**, must be insulated to R-38.
- **Adding windows**: comply with C503.2.2
- **Adding skylights**: comply with C503.2.3
- Parking/garage scenarios:
 - **If onsite parking added**: EV charging requirements (C503.6)
- Electric service scenarios:
 - **If Parking garage electric service replaced**: provide capacity for future EV charging (C503.7)
- **If Level 3 work area** (>50% of building, see Work Area section at end of this document):
 - Fire sprinklers required (IEBC 904.1.4)
 - Exit stair enclosure fire resistance per IEBC 802.2.1 (IEBC 903.1)
 - Means of egress lighting and exit signs (IEBC 905)
 - Substantial structural alterations require evaluation of lateral load system (IEBC 906.2)
 - Sign up for energy reporting (BIQ benchmarking - IECC C503.8)

Work Area and Alteration Levels

Repair (Not included in work area, not an alteration): The reconstruction, replacement or renewal of any part of an existing building for the purpose of its maintenance or to correct damage. Work on nondamaged components necessary for the required repair of damaged components shall be considered to be part of the repair and shall not be subject to the requirements for alterations. Repair is limited to work on the item and does not include complete or substantial replacement or other new work.

Level 1 Alterations/ Not included in Work Area: Removal and replacement or the covering of existing materials, elements, equipment, or fixtures. Can be 100% of the building or unit and still be level 1. This type of work is not counted towards 'work area.'

- Replace, remove, or cover finishes, including:
 - Flooring
 - Roofing
 - Drywall, including fire rated assemblies and asbestos abatement
 - Tile & cementitious backer (i.e. Durock)
- Replace fixtures, appliances, counters, cabinets, and built ins in the same location
- Ceiling: light fixtures (new or replaced), replace dropped ceiling finish.
- Window and door replacement (not relocation or addition)
- Replace HVAC equipment (no extension or reconfiguring)
- Accessibility improvements

Level 2, 3, and 4 Alterations / Included in Work Area:

- Addition or elimination of any door or window.
- Reconfiguration or extension of any system.
- Installation of additional or relocation of equipment.
- Reconfiguring space, including moving, adding, or removing walls
- Reconfiguring or extending systems including HVAC, lighting. Adding new lights, new light locations.
- Ceiling: newly framed dropped ceiling (not just replacing finish)
- Installing new (not replacing) equipment.

Level 2 Alteration: work area less than or equal to 50% of the building

Level 3 Alteration: work area greater than 50% of the building

Level 4 Alteration: work area greater than 50% of the dwelling unit (note: this is an Aspen specific category that can be found in the amended 2021 IECC R503.1)

How to measure Work Area:

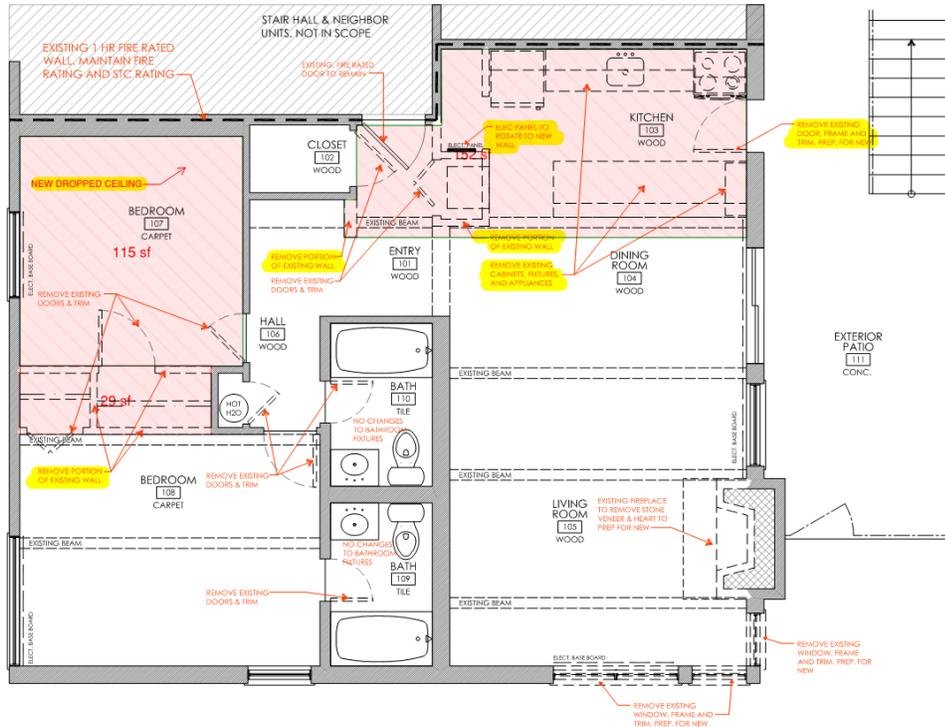
- If specific elements are being reconfigured in limited areas, only count the footprint of those elements:
 - Footprint of new window (new location, not replacement)
 - Footprint of new or removed column
- If multiple elements are being reconfigured in a room or space, count the entire room or space.
- If a room or space is reconfigured (i.e. if the surrounding wall locations are changed) that room or space is counted as work area.
- Incidental work triggered by primary work should not be counted, for example:
 - For a reconfigured or extended HVAC system with new or additional outdoor units, don't include the exterior units or line set or access/guards for exterior units.

WORK AREA PLAN EXAMPLE

Demo Plan: Work Area = Red shaded areas (see highlighted descriptions)

115 + 29 + 152 = 296 sqft

296 sqft work area / 933 sqft gross floor area = 32% = Level 2 alteration



Proposed plan: (see reconfigured kitchen)

