



**BSR/ASHRAE/IES Addendum av
to ANSI/ASHRAE/IES Standard 90.1-2022**

Public Review Draft

Proposed Addendum av to Standard 90.1-2022, Energy Standard for Sites and Buildings Except Low- Rise Residential Buildings

**First Public Review (September 2024)
(Draft Shows Proposed Changes to Current Standard)**

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FOREWORD

The purpose of this proposal is to clarify existing building envelope alteration provisions in Section 5.1.4 and improve upon similar updates to the 2024 IECC Chapter 5 (existing buildings). The existing list of exceptions in Section 5.1.4 are in some cases exceptions and in other cases requirements. The list of exception items are incomplete or lacking appropriate triggers for when alteration requirements should or should not apply, and to what degree. This proposal is intended to re-format the provisions to address alteration requirements, exceptions, triggers, and allowances to better accommodate alterations for various building thermal envelope assemblies while promoting energy efficiency improvements. It also seeks to provide flexibility in allowing deviating from the provisions for new construction by way of an “approved” design to accommodate existing building conditions that may sometimes inhibit full compliance with the envelope requirements for new construction (similar to the approach already used with roof replacements).

[Note to Reviewers: This addendum makes proposed changes to the current standard. These changes are indicated in the text by underlining (for additions) and ~~strikethrough~~ (for deletions) except where the reviewer instructions specifically describe some other means of showing the changes. Only these changes to the current standard are open for review and comment at this time. Additional material is provided for context only and is not open for comment except as it relates to the proposed changes.]

Addendum av to 90.1-2022

Revise as follows (new definition):

Approved: Acceptable to the *authority having jurisdiction*.

Revise as follows:

5.1.4 Alterations to Building Envelopes. *Alterations to the building envelope in accordance with Section 4.2.1.3(a) shall comply with this section. the requirements of Section 5.2 for insulation, air leakage, and fenestration applicable to those specific portions of the building that are being altered. Building envelope alterations shall not increase the energy use of the building.*

Informative Note: Where an *approved* design is referenced in Section 5.1.4, it is a design for a *building envelope alteration* that is sufficiently documented by a qualified entity such that the *authority having jurisdiction* can make a determination of the design's compliance with the intent of this section.

Exceptions to 5.1.4: The following *alterations* need not comply with these requirements, provided such *alterations* will not increase the *energy* use of the *building*:

1. ~~Installation of storm windows or glazing panels over existing glazing, provided the storm window or glazing panel contains a low emissivity coating. However, a low emissivity coating is not required where the existing glazing already has a low emissivity coating. Installation is permitted to be either on the inside or outside of the existing glazing.~~
2. ~~Replacement of glazing in existing sash and frame, provided the *U-factor* and *SHGC* will be equal to or lower than before the glass replacement.~~
3. ~~Alterations to roof, wall, or floor cavities that are insulated to full depth with insulation having a minimum nominal value of R 3.0/in.~~
4. ~~Alterations to walls and floors, where the existing structure is without framing cavities and no new framing cavities are created.~~
5. ~~Roof recovering.~~
6. ~~Roof replacements, where the existing roof insulation is integral to or is located below the roof deck.~~
7. ~~Roof replacement, provided the area of the replacement roof covering complies with the opaque element requirements for roofs in Tables 5.5-0 through 5.5-8 and Section 5.5.3.1.4.~~
8. ~~Replacement of existing doors that separate a conditioned space from the exterior shall not require the installation of a vestibule or revolving door, provided that an existing vestibule that separates a conditioned space from the exterior shall not be removed.~~
9. ~~Replacement of existing fenestration, provided that the area of the replacement fenestration does not exceed 25% of the total fenestration area of an existing building and that the *U-factor* and *SHGC* will be equal to or lower than before the fenestration replacement.~~

5.1.4.1 Roof, ceiling, and attic alterations. Alterations to the *roof*, ceiling, or attic shall comply with the following as applicable:

1. Alterations of Roof Construction Below the Roof Deck: Insulation shall be installed where existing insulation below the *roof deck* or on an *attic envelope floor* does not comply with the insulation requirements of Section 5.2. Insulation installed in existing *roof cavities* is not required to be increased where insulated to the full depth excluding space required for *roof ventilation*. Where such full-depth insulation is less than 75% of the *rated R-value of insulation* required by Section 5.2, compliance shall be determined by an *approved design* minimizing deviation from the insulation requirements of Section 5.2.

2. Roof Replacement or Roof Recovering:

~~2.1 5.1.4.1~~ Roof Replacement for Roofs with Insulation Entirely Above Deck: ~~Roof replacement for roofs with insulation entirely above deck shall comply with Section 5.5.3.1 and, shall not be required to comply with the requirements of Section 5.4.3., and shall not increase the energy use of the building. Where the insulation requirements in Section 5.5.3.1.1 cannot be met due to existing roof conditions, the roof replacement shall be in accordance with an approved design minimizing deviation from the approved construction documents and insulation requirements of Section 5.2., which shall include:~~

- ~~a. a roof inspection report documenting existing roof conditions and~~
- ~~b. a roof design minimizing deviation from the requirements of Section 5.5.3.1.1.~~

Informative Note: ~~The proposed roof design should be prepared by an approved entity capable of determining whether the design complies with the requirements of Section 5.1.4.1 to the extent practical.~~

2.2 Roof Replacement for Roofs where All Insulation is Integral to or Located Below the Roof Deck: Compliance with Section 5.2 shall not be required and the replacement roof surface shall comply with Section 5.5.3.1.4.

2.3 Roof Recovering: Compliance with Section 5.2 shall not be required and the recovered roof surface shall comply with Section 5.5.3.1.4.

5.1.4.2 Fenestration Alterations. Alterations of *fenestration* shall comply with the following as applicable:

1. Added Fenestration Area: The addition of new vertical fenestration area or skylight area that results in total building vertical fenestration area or skylight area less than or equal to the maximum permitted by Section 5.5.4.2 shall comply with Section 5.4.2 and Sections 5.5.4.1 through 5.5.4.6, or with Section 5.6. Addition of new vertical fenestration area or skylight area that results in total building vertical fenestration area or skylight area greater than the maximum permitted by Section 5.5.4.2 shall comply with Section 5.5.4.2 for the space adjacent to the new vertical fenestration or skylight only, or comply with Section 5.6.

2. Replacement Fenestration: Where replacement of existing *fenestration* is more than 25% of the total *fenestration area* of an existing building, replacement *fenestration* shall comply with Sections 5.4.2, 5.5.4.1, 5.5.4.3, 5.5.4.4, and 5.5.4.6, or with Section 5.6. Where replacement of existing *fenestration* is not more than 25% of the total *fenestration area* of an existing building, compliance with Section 5.5.4 shall not be required for the replacement *fenestration* provided the *U-factor* and *SHGC* is equal to or lower than before the *fenestration* replacement.

3. Replacement Glazing: Compliance with Sections 5.4.2 and 5.5.4 shall not be required for the replacement of glazing in existing sash and frame, provided the *U-factor* and *SHGC* is equal to or lower than before the glazing replacement.

4. Replacement Doors: Replacement of existing doors that separate a conditioned space from unconditioned space shall not require the installation of a vestibule or revolving door, provided that an existing vestibule that separates a conditioned space from unconditioned space is not removed.

5. Storm Windows or Glazing Panels over Existing Glazing: Installation of storm windows or glazing panels over the inside or outside of existing glazing shall be permitted and shall include a low-emissivity coating where not already present on the existing glazing.

5.1.4.3 Above-grade Wall Alterations. Alterations to *above-grade walls* shall comply with the following as applicable:

1. *Wall Cavities Exposed:* Insulation shall be installed where existing insulation in the *wall cavity* does not comply with the insulation requirements of Section 5.2. Insulation installed in existing *wall cavities* is not required to be increased where insulated to the full depth. Where such full-depth insulation results in less than 75% of the *rated R-value of insulation* required by Section 5.2 for the *wall cavity*, compliance shall be determined by an *approved design* minimizing deviation from the insulation requirements.
2. *Exterior Wall Covering Removed and Fenestration Replaced:* Where exterior *wall coverings* are removed and the vertical fenestration is replaced for not less than one entire side of a *building*, *continuous insulation* shall be installed in the altered portions where required by Section 5.2 or an *approved design* minimizing deviation from the insulation requirements. *Continuous insulation* is not required where the *wall cavities* contain insulation that satisfies the insulation requirements of Section 5.2.
3. *Other Wall Alterations:* For other *wall alterations* where the extent of the *alteration* or existing *wall conditions* prevent full compliance with the insulation requirements of Section 5.2, the *wall alteration* shall be constructed in accordance with an *approved design* minimizing deviation from the insulation requirements.

5.1.4.4 Envelope Floor Alterations. Where *envelope floor cavities* are exposed prior to or during *alteration* of an *envelope floor* assembly, such cavities shall be insulated in accordance with Section 5.2, or an *approved design* that minimizes deviation from the insulation requirements. Insulation installed in existing *envelope floor cavities* is not required to be increased where insulated to the full depth. Where such full-depth insulation results in less than 75% of the *rated R-value of insulation* required by Section 5.2, compliance shall be determined by an *approved design* minimizing deviation from the insulation requirements.

5.1.4.5 Below-grade Wall Alterations. Where *below-grade walls* are altered to expose cavities, enclose existing cavities, or add finish and framing materials other than paint or similar coatings, they shall be insulated in accordance with Section 5.2, or an *approved design* that minimizes deviation from the insulation requirements.

5.1.4.6 Air Barrier. *Building envelope* assemblies altered in accordance with Section 5.1.4 shall have a *continuous air barrier* installed in accordance with Section 5.4.3.2 or an *approved design*. The air barrier shall be made continuous with an existing air barrier where present in adjacent assemblies provided access is unobstructed. Measurement of *air leakage* in accordance with Section 5.4.3.1.4 shall not be required.