

ADDENDA

**ANSI/ASHRAE/IES Addendum as to
ANSI/ASHRAE/IES Standard 90.1-2019**

Energy Standard for Buildings Except Low-Rise Residential Buildings

Approved by ASHRAE and the American National Standards Institute on January 27, 2022, and by the Illuminating Engineering Society on January 18, 2022.

This addendum was approved by a Standing Standard Project Committee (SSPC) for which the Standards Committee has established a documented program for regular publication of addenda or revisions, including procedures for timely, documented, consensus action on requests for change to any part of the standard. Instructions for how to submit a change can be found on the ASHRAE® website (<https://www.ashrae.org/continuous-maintenance>).

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FOREWORD

Addendum as has two parts. First, it cleans up language and spelling errors in the testing, verification, and commissioning requirements throughout the standard. Second, it moves the inspections currently in Section 5.9.3 to Section 4, "Administration and Enforcement," to parallel where inspections are in the IBC. A couple of the inspection items that are specifically related to verification and commissioning (and not general administration and enforcement) are moved from Section 5.9.3 to Section 5.9.1.

Note: In this addendum, changes to the current standard are indicated in the text by underlining (for additions) and ~~striking through~~ (for deletions) unless the instructions specifically mention some other means of indicating the changes.

Addendum as to Standard 90.1-2019

Modify the standard as shown (I-P and SI units).

4.2.4 Inspections. All *building construction*, additions or *alterations* work subject to the provisions of this standard shall remain accessible and exposed for inspection purposes until approved in accordance with the procedures specified by the *building official*. The *building official*, upon notification, shall make the inspections set forth in Section 4.2.4.1 through 4.2.4.6.

4.2.4.1 Fenestration Inspections. Fenestration shall be inspected in accordance with the compliance path selected in Section 4.2.1 and approved documentation provided in Section 4.2.2.

4.2.4.2 Opaque Assembly Thermal Insulation Inspections. Opaque assemblies shall be inspected in accordance with the compliance path selected in Section 4.2.1 and approved documentation provided in Section 4.2.2.

4.2.4.3 Continuous-Air-Barrier Inspections. Where a *continuous air barrier* is installed as a component of an *opaque roof*, *above-grade walls* and *below-grade walls*, or *floors*, it shall be inspected for compliance in accordance with Section 5.8.3.1. Integration with adjoining *fenestration* and other *continuous air barrier* elements shall be in accordance with Section 5.4.3.1.

4.2.4.4 Operable Fenestration and Door Inspections. Fenestration and door closers, inclusive of operating mechanisms, shall be installed in accordance with *manufacturer's* installation instructions. Associated seals and gaskets shall be installed in accordance with *manufacturer's* installation instructions and consistent with the provisions of Section 5.4.3.

4.2.4.5 Loading-Dock Weatherseals Inspections. Loading-dock weatherseals shall be inspected for installation and to verify that the seals are in good condition.

4.2.4.6 Other Inspections. Other inspections related to mechanical, plumbing, lighting, and other equipment shall be inspected in accordance with the compliance path selected in Section 4.2.1 and approved documentation provided in Section 4.2.2, or as otherwise required by the *building official*.

[...]

5.9 Verification, Testing, ~~and Commissioning, and Inspection~~

5.9.1 Verification and Testing

5.9.1.1 Building Envelope Performance Verification. ~~The *energy performance of the building envelope* shall be verified in accordance with this Sections~~ Sections 5.9.1.2 through 5.9.1.3 and Section 4.2.5.1.

5.9.1.2 Verification of the Design and Installation of the Continuous Air Barrier. ~~Verifica-~~ tion of the design and installation of the continuous air barrier shall be determined in accordance with the following by an independent third party when using Exception 3 of Section 5.4.3.1.1:

- a. A design review shall be conducted to verify and document compliance with the requirements in Sections 5.4.3 and 5.8.3.2.

- b. Periodic field inspection of the continuous air barrier materials and assemblies shall be conducted during construction while the *continuous air barrier* is still accessible for inspection and repair to verify and document compliance with the requirements of Sections 5.4.3.1.2 and 5.8.3.
- c. Reporting Verification and FPT documentation shall comply with Section 4.2.5.1.2

5.9.1.3 Dynamic Glazing. *Dynamic glazing operation shall be tested for conformance with the manufacturer's installation instructions.*

5.9.1.4 Air Curtains. Air curtains shall comply with Section 10.4.5.

5.9.2 Commissioning. The *energy performance of the building envelope* shall be *commissioned* in accordance with Section 4.2.5.2. *Commissioning reporting shall comply with Section 4.2.5.2.2.*

5.9.3 Inspections. ~~In addition to the requirements of Section 4.2.4, building envelope components and assemblies shall be inspected in accordance with Sections 5.9.13.1 through 5.9.13.4.~~

5.9.3.1 Fenestration and Door Requirements. ~~Fenestration and doors shall be inspected to verify compliance with the requirements of Sections 5.4.3.2, 5.8.2.1, 5.8.2.2, and 5.8.2.3. Where testing is required to demonstrate compliance with the air leakage requirements, it shall be conducted by an independent third party. Operation of the door and closers or operating mechanisms shall be inspected for conformance with the manufacturer's instructions, and that the seals or gaskets are installed and in accordance with the manufacturer's instructions.~~

5.9.3.2 Inspection of Loading Dock Weatherseals. ~~Where there is a loading dock, weatherseals shall be inspected for proper installation and to verify that the seals are in good condition.~~

5.9.3.3 Inspection of Opaque Building Envelope Air Tightness Requirements. ~~Opaque roof, above-grade walls and below-grade walls, and floors, shall be subject to the following inspections during construction:~~

- a. ~~Use of compliant materials and assemblies as indicated in Section 5.8.3.1.~~
- b. ~~Integration with adjoining fenestration and continuous air barrier elements.~~

5.9.3.4 Fenestration Inspections. ~~Fenestration shall be subject to the following inspections during construction:~~

- a. ~~Skylights size and location in relation to the designed primary sidelighted area and secondary sidelighted area below.~~
- b. ~~Roof monitor size and location in relation to the designed primary sidelighted area and secondary sidelighted area below.~~
- c. ~~Dynamic glazing compliance with SHGC and U-factor in accordance with Sections 5.5.4.4.1 and 5.5.4.4.2, and testing of the operation for conformance with the manufacturer's instructions.~~
- d. ~~Permanent fenestration projections installation and performance in accordance with Section 5.5.4.4.1 and the construction documents.~~

[...]

6.9 Verification, Testing, and Commissioning

6.9.1 Verification and Testing. HVAC *control systems* shall be tested in accordance with this section and ~~provisions of Section 4.2.5.1.~~ Testing shall verify that systems and control elements are calibrated, adjusted, configured, and operating in accordance with applicable requirements of Sections 6.3, 6.4, and 6.5. Verification and ~~FPT~~ FPT documentation shall comply with Section 4.2.5.1.2.

6.9.2 Commissioning. The performance of the *mechanical systems* shall be commissioned in accordance with Section 4.2.5.2. ~~Detailed instructions for commissioning HVAC systems shall be provided in the construction documents.~~ Commissioning reporting shall comply with Section 4.2.5.2.2.

[...]

7.9 Verification, Testing, and Commissioning

7.9.1 Verification and Testing. Service hot-water controls shall be verified and tested in accordance with this section and ~~provisions of Section 4.2.5.1.~~ Testing shall verify that *systems* and *controls* are configured and operating in accordance with applicable requirements of

- a. *service water heating system* temperature controls (Sections 7.4.4.1 and 7.4.4.3),

- b. recirculation pump or *heat trace* controls (Section 7.4.4.2), or
- c. *pool* time switch controls (Section 7.4.5.3).

Verification and ~~FTPFPT~~ documentation shall comply with Section 4.2.5.1.2.

7.9.2 Commissioning. The *energy* performance of the *service water heating systems* shall be *commissioned* in accordance with Section 4.2.5.2, and reporting shall comply with Section 4.2.5.2.2.

[. . .]

8.9 Verification, Testing, and Commissioning

8.9.1 Verification and Testing. ~~*Building power distribution systems* and *applicable equipment*~~ *Automatic receptacles controls* (Section 8.4.2) and *energy monitoring* (Section 8.4.3) shall be verified and tested in accordance with this section and ~~provisions of~~ Section 4.2.5.1. Testing shall verify that control elements are configured and operating in accordance with applicable requirements of

- a. *automatic receptacles controls* (Sections 8.4.2) and
- b. *energy monitoring* (Section 8.4.3).

Verification and *FPT* documentation shall comply with Section 4.2.5.1.

8.9.2 Commissioning. The *energy* performance of the *power systems* shall be *commissioned* in accordance with Section 4.2.5.2, and reporting shall comply with Section 4.2.5.2.2.

[. . .]

9.9 Verification, Testing, and Commissioning

9.9.1 Verification and Testing. *Lighting control devices* and *control systems* shall be tested in accordance with this section and Section 4.2.5.1 to verify that *control* hardware and software are calibrated, adjusted, programmed, and in proper working condition in accordance with the *construction documents* and *manufacturer's* installation instructions. When *occupancy sensors*, time switches, programmable schedule controls, or *photosensors* are installed, at a minimum, the following procedures shall be performed:

[. . .]

Verification and ~~FTPFPT~~ documentation shall comply with Section 4.2.5.1.2.

9.9.2 Commissioning. The *energy* performance of the *lighting systems* shall be *commissioned* in accordance with Section 4.2.5.2, and reporting shall comply with Section 4.2.5.2.2.

[. . .]

10.9 Verification, Testing, and Commissioning

10.9.1 Verification and Testing. ~~*Other applicable equipment*~~ *Service water pressure-booster system controls*, *elevator standby mode* and *whole-building energy monitoring* shall be ~~commissioned or~~ verified and tested in accordance with this section and Section 4.2.5.1. Testing shall ~~to~~ verify that *control* elements and *monitoring systems* are configured and operating in accordance with ~~Sections~~ applicable requirements of

- a. *service water pressure-booster system controls* (Section 10.4.2),
- b. *elevator standby mode* (Section 10.4.3.3),
- c. *air curtains* (Section 10.4.5), ~~and 4.2.5.2,~~
- d. *whole-building energy monitoring* (Section 10.4.6), and
- e. *pumps* (Section 10.4.7).

Verification and *FPT* documentation shall comply with Section 4.2.5.1.1~~2~~.

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ASHRAE's short-range goal is to ensure that the systems and components within its scope do not impact the indoor and outdoor environment to a greater extent than specified by the Standards and Guidelines as established by itself and other responsible bodies.

As an ongoing goal, ASHRAE will, through its Standards Committee and extensive Technical Committee structure, continue to generate up-to-date Standards and Guidelines where appropriate and adopt, recommend, and promote those new and revised Standards developed by other responsible organizations.

Through its *Handbook*, appropriate chapters will contain up-to-date Standards and design considerations as the material is systematically revised.

ASHRAE will take the lead with respect to dissemination of environmental information of its primary interest and will seek out and disseminate information from other responsible organizations that is pertinent, as guides to updating Standards and Guidelines.

The effects of the design and selection of equipment and systems will be considered within the scope of the system's intended use and expected misuse. The disposal of hazardous materials, if any, will also be considered.

ASHRAE's primary concern for environmental impact will be at the site where equipment within ASHRAE's scope operates. However, energy source selection and the possible environmental impact due to the energy source and energy transportation will be considered where possible. Recommendations concerning energy source selection should be made by its members.

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