

**ANSI/ASHRAE/ICC/USGBC/IES Addendum w to
ANSI/ASHRAE/ICC/USGBC/IES Standard 189.1-2020**

Standard for the Design of High-Performance Green Buildings

Except Low-Rise Residential Buildings

The Complete Technical Content of the International Green Construction Code®

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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 (www.ashrae.org/continuous-maintenance).

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Cognizant TC: 2.8 Building Environmental Impacts and Sustainability

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ASHRAE obtains consensus through participation of its national and international members, associated societies, and public review.

ASHRAE Standards are prepared by a Project Committee appointed specifically for the purpose of writing the Standard. The Project Committee Chair and Vice-Chair must be members of ASHRAE; while other committee members may or may not be ASHRAE members, all must be technically qualified in the subject area of the Standard. Every effort is made to balance the concerned interests on all Project Committees.

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FOREWORD

Addendum w increases the stringency of the airtightness testing requirement in Standard 90.1 and requires testing in more buildings.

The changes in this addendum provide two benefits. First, the existing requirements related to continuous air barriers and airtightness testing, based on Standard 90.1, are clarified. Second, the reduction in air leakage that the standard will provide serves both to reduce energy consumption through reduced air leakage and to improve indoor air quality by reducing uncontrolled airflow and potential for contaminant and moisture transport into and through the building envelope.

Compliance with the provisions in this addendum may result in minor increases in construction costs, although requirements for continuous air barriers already exist in the energy codes. Where such requirements exist, the increased cost is primarily related to additional quality control activities related to air barrier installation and sealing. The addendum also adds airtightness testing requirements to many buildings that do not require testing under Standard 90.1. Buildings constructed with good quality control procedures are expected to achieve required air leakage rates with little difficulty, but additional expense will be incurred by buildings that need to perform corrective actions.

Code authorities will need to include checks of the continuous air barrier design in the plan review process, and building inspectors will need to verify installation of the air barrier. Review of test results and reports of corrective actions may be required for some buildings.

Requirements like those in this addendum are already included in Standard 90.1. This addendum simply reduces the acceptable leakage rate for tested buildings and expands the testing requirement to more buildings.

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 w to Standard 189.1-2020

Revise Section 3 as shown.

high-rise building: a building with an occupied floor located more than 75 ft (23 m) above the lowest level of fire department vehicle access.

Revise Section 7.3.1 as shown.

7.3.1 General. *Building projects shall be designed to comply with Sections 5.2.1, 6.2.1, 7.2.1, 8.2.1, 9.2.1, and 10.2.1 of ANSI/ASHRAE/IES Standard 90.1, except as modified below.*

Revise Section 7.3.1.2 as shown.

~~**7.3.1.2 Continuous Air Barrier.** The exceptions to the requirement for a *continuous air barrier* in ANSI/ASHRAE/IES Standard 90.1, Section 5.4.3.1, for specific climate zones and constructions shall not apply. The testing criteria of Section 10.6(a) shall supersede ANSI/ASHRAE/IES Standard 90.1, Section 5.4.3.1.1.~~

7.3.1.2 Airtightness. *The building envelope shall be designed to achieve air leakage less than 0.20 cfm/ft² (1.0 L/s m²) under a pressure differential of 0.3 in. of water (75 Pa). Exceptions 1 and 2 to the requirement for a continuous air barrier in ANSI/ASHRAE/IES Standard 90.1, Section 5.4.3.1 shall not apply. Buildings shall comply with airtightness testing requirements in Section 10.6.*

Revise Section 10.6 as shown.

10.6 Building Envelope Airtightness Testing. ~~Building envelope airtightness shall comply with ANSI/ASHRAE/IES Standard 90.1, with the following modifications and additions. Air leakage verification shall be determined in accordance with ANSI/ASHRAE/IES Standard 90.1, Section 5.9.1.~~

- a. ~~When implementing the testing option in ANSI/ASHRAE/IES Standard 90.1, Section 5.4.3.1.1, whole-building pressurization testing shall meet the following requirements:~~

1. ~~It shall be conducted in accordance with ASTM E779, ASTM E1827, CAN/CGSB-149.10, CAN/CGSB-149.15, ISO 9972, or equivalent standard by an independent third party.~~
2. ~~The measured air leakage rate of the *building envelope* shall not exceed 0.25 cfm/ft² (1.25 L/s·m²) under a pressure differential of 0.3 in. of water (75 Pa), with this air leakage rate normalized by the sum of the above and below grade *building envelope* areas of the *conditioned* and *semiheated space*.~~
3. ~~Section 5.4.3.1.1, Exception 1, is not allowed.~~
4. ~~Section 5.4.3.1.1, Exception 2, is allowed where the measured air leakage rate exceeds 0.25 cfm/ft² (1.25 L/s·m²) but does not exceed 0.40 cfm/ft² (2.0 L/s·m²).~~
- b. ~~When implementing the *verification* program option in ANSI/ASHRAE/IES Standard 90.1, Section 5.9.1, the air barrier design review shall be performed by an independent third party.~~

The requirements in this section supersede the requirements in ANSI/ASHRAE/IES Standard 90.1, Section 5.4.3.1.1.

An *approved* third party shall perform whole-building pressurization testing to determine the leakage rate of the *building envelope* at a reference pressure differential of 0.3 in. of water column (75 Pa), normalized by the sum of the above-grade and below-grade *building envelope* areas of *conditioned space* and *semi-heated space*. Such testing shall be in accordance with ASTM E779, ASTM E1827, ASTM E3158, CAN/CGSB-149.10, CAN/CGSB-149.15, or ISO 9972 and performed while the air barrier system is accessible for inspection and sealing.

- a. Where the measured air leakage rate of the *building envelope* is in the range of 0.20 cfm/ft² (1.0 L/s m²) to 0.35 cfm/ft² (2.0 L/s m²), an *approved* third party shall perform a diagnostic evaluation. Permitted methods include, but are not limited to, visible tracing or infrared imaging in accordance with ASTM E1186 while the building is pressurized. In addition, a visual inspection of the air barrier shall be conducted. Leaks identified by testing or inspection shall be sealed where such sealing can be made without destruction of existing building components. The *building envelope* shall be retested, and a report specifying the corrective actions taken to seal leaks and the resulting leakage rate shall be submitted to the building owner and made available to the *AHJ*.
- b. Where the measured air leakage rate is greater than 0.35 cfm/ft² (1.8 L/s m²), an *approved* third party shall perform corrective actions and repeat the whole-building pressurization testing described in (a) above until the measured air leakage rate is not greater than 0.35 cfm/ft² (1.8 L/s m²).

Exceptions to 10.6:

1. Existing buildings.
2. Where an *approved* third party has verified the design and installation of the *continuous air barrier* for *high-rise buildings* and for buildings greater than 100,000 ft² (10,000 m²) of *gross conditioned floor area*, in accordance with ANSI/ASHRAE Standard 90.1, Section 5.9.1.2.

Revise Section 11 table as shown.

Reference	Title	Section
ASTM E1186-17	Standard Practices for Air Leakage Site Detection in Building Envelopes and Air Barrier Systems	10.6

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FOR THE ENVIRONMENTAL IMPACT OF ITS ACTIVITIES**

ASHRAE is concerned with the impact of its members' activities on both the indoor and outdoor environment. ASHRAE's members will strive to minimize any possible deleterious effect on the indoor and outdoor environment of the systems and components in their responsibility while maximizing the beneficial effects these systems provide, consistent with accepted Standards and the practical state of the art.

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.

Standard 189.1 and the International Green Construction Code

Standard 189.1 serves as the complete technical content of the International Green Construction Code[®] (IgCC). The IgCC creates a regulatory framework for new and existing buildings, establishing minimum green requirements for buildings and complementing voluntary rating systems. For more information, visit www.iccsafe.org.

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As an industry leader in research, standards writing, publishing, certification, and continuing education, ASHRAE and its members are dedicated to promoting a healthy and sustainable built environment for all, through strategic partnerships with organizations in the HVAC&R community and across related industries.

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