

# Public Review Draft

Proposed Addendum af to Standard 189.1-2017

# Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings

First Public Review Draft (July 2019)  
(Draft Shows Proposed Changes to Current Standard)

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**(This foreword is not part of this standard. It is merely informative and does not contain requirements necessary for conformance to the standard. It has not been processed according to the ANSI requirements for a standard and may contain material that has not been subject to public review or a consensus process. Unresolved objectors on informative material are not offered the right to appeal at ASHRAE or ANSI.)**

**Foreword**

This addendum identifies a number of requirements from Section 10 of Standard 189.1 as being appropriate for local jurisdictions to consider excluding from their adopted ordinances. These “Jurisdictional Options” are designed by [JO] in Section 10 and added to Table 4.2, which has been proposed by several other addenda that have previously gone out for public review: addenda o, p, q, r, s and t.

*[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 af to 189.1-2017**

*Add rows to Table 4.2 indicating those portions of Section 10 that are jurisdictional options:*

**INFORMATIVE TABLE 4.2 – to become normative in IgCC  
REQUIREMENTS DETERMINED BY THE JURISDICTION**

SECTION	SECTION TITLE OR DESCRIPTION AND DIRECTIVES	Jurisdictional Requirement
<u>10.3.1.5.b</u>	<u>IAQ Construction Management b. (flush-out)</u>	___ No
<u>10.3.1.8</u>	<u>Construction Activity Pollution Prevention: Protection of Occupied Areas</u>	___ No
<u>10.3.2.3</u>	<u>Service Life Plan</u>	___ No
<u>10.3.2.4.2</u>	<u>Transportation Management Plan: Owner Occupied Building Projects or Portions of Building Projects</u>	___ No
<u>10.3.2.4.3</u>	<u>Transportation Management Plan: Building Tenant</u>	___ No

*Add [JO] following the section number to indicate jurisdictional options in Section 10 as listed in Table 4.2.*

**10.3.1.5 IAQ Construction Management.** Develop and implement an IAQ construction management plan to include the following:

- a. Air conveyance materials shall be stored and covered so that they remain clean. All filters and controls shall be in place and operational when HVAC systems are operated during building flush-out or baseline IAQ monitoring. Except for system startup, testing, balancing, and commissioning, permanent HVAC systems shall not be used during construction.

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b. **[JOL]** After construction ends, prior to occupancy and with all interior finishes installed, a postconstruction, preoccupancy building flush-out as described under Section 10.3.1.5(b)(1), or postconstruction, preoccupancy baseline IAQ monitoring as described under Section 10.3.1.5(b)(2), shall be performed:

1. **Postconstruction, preoccupancy flush-out.** A total air volume of *outdoor air* in total air changes as defined by Equation 10-1 shall be supplied while maintaining an internal temperature of a minimum of 60°F (15°C) and relative humidity no higher than 60%. For buildings located in nonattainment areas, filtration and/ or air cleaning as described in Section 8.3.1.3 shall be supplied when the Air Quality Index forecast exceeds 100 (category orange, red, purple, or maroon). One of the following options shall be followed:

- i. **Continuous postconstruction, preoccupancy flush-out.** The flush-out shall be continuous and supplied at an outdoor airflow rate no less than that determined in Section 8.3.1.1.
- ii. **Continuous postconstruction, preoccupancy/post occupancy flush-out.** If occupancy is desired prior to completion of the flush-out, the *space* is allowed to be occupied following delivery to the *space* of half of the total air changes calculated from Equation 10-1. The *space* shall be ventilated at a minimum rate of 0.30 cfm per ft<sup>2</sup> (1.5 L/s per m<sup>2</sup>) of *outdoor air*, or the outdoor airflow rate determined in Section 8.3.1.1, whichever is greater. These conditions shall be maintained until the total air changes calculated according to Equation 10-1 have been delivered to the *space*. The flush-out shall be continuous.

$$\text{TAC} = V_{ot} \times \frac{1}{A} \times \frac{1}{H} \times 60 \text{ min/h} \times 24 \text{ hr/day} \times 14 \text{ days} \quad (\text{IP})$$

(10-1)

$$\text{TAC} = V_{ot} \times \frac{1 \text{ m}^3}{1000\text{L}} \times \frac{1}{A} \times \frac{1}{H} \times 3600 \text{ s/h} \times 24 \text{ hr/day} \times 14 \text{ days} \quad (\text{SI})$$

where:

TAC = total air changes

$V_{ot}$  = system design outdoor air intake flow, cfm (L/s) (according to ANSI/ASHRAE Standard 62.1)

$A$  = floor area, ft<sup>2</sup> (m<sup>2</sup>)

$H$  = ceiling height, ft (m)

2. **Postconstruction, preoccupancy baseline IAQ monitoring.** Baseline IAQ testing shall be conducted after construction ends and prior to occupancy. The ventilation system shall be operated continuously, within ±10% of the outdoor airflow rate provided by the ventilation system at design occupancy, for a minimum of 24 hours prior to IAQ monitoring. Testing shall be performed using protocols consistent with the USEPA Compendium of Methods for the Determination of Toxic Organic Pollutants in Ambient Air, TO-1, TO-11, TO-17, and ASTM Standard Method D 5197. The testing shall demonstrate that the *contaminant* maximum concentrations listed in Table 10.3.1.5 are not exceeded in the return airstreams

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of the HVAC systems that serve the *space* intended for occupancy. If the return airstream of the HVAC system serving the *space* intended for occupancy cannot be separated from other *spaces*, then for each portion of the building served by a separate ventilation system, the testing shall demonstrate that the *contaminant* maximum concentrations at *breathing zone* listed in Table 10.3.1.5 are not exceeded in the larger of the following number of locations: (i) no fewer than one location per 25,000 ft<sup>2</sup> (2500 m<sup>2</sup>) or (ii) in each contiguous floor area. For each sampling point where the maximum concentration limits are exceeded, conduct additional flush-out with *outdoor air*, and retest the specific parameters exceeded to demonstrate that the requirements are achieved. Repeat procedure until all requirements have been met. When retesting noncomplying building areas, take samples from the same locations as in the first test.

**10.3.1.8 [JO] Construction Activity Pollution Prevention: Protection of Occupied Areas.** The *construction documents* shall identify operable windows, doors, and air intake openings that serve occupied *spaces*, including those not associated with the *building project*, that are in the area of construction activity or within 35 ft (11 m) of the limits of construction activity. Such windows, doors, and air intake openings that are under control of the *owner* shall be closed, or other measures shall be taken to limit *contaminant* entry.

Management of the affected buildings not under the control of the *building project owner* shall be notified in writing of planned construction activity and possible entry of *contaminants* into their buildings.

**10.3.2 Plans for Operation.** This section specifies the items to be included in plans for operation of a *building project* that falls under the requirements of this standard.

**10.3.2.3 [JO] Service Life Plan.** A service life plan that is consistent with the *OPR* shall be developed to estimate to what extent structural, *building envelope* (not mechanical and electrical), and *hardscape* materials will need to be repaired or replaced during the service life of the building. The design service life of the building shall be no less than that determined using Table 10.3.2.3. The estimated service life shall be documented for building assemblies, products, and materials that will need to be inspected, repaired, and/or replaced during the service life of the building. *Site* improvements and *hardscape* shall also be included. Documentation in the service life plan shall include the *building project* design service life and basis for determination, and the following for each assembly or component:

- a. Building assembly description
- b. Materials or products
- c. Design or estimated service life in years
- d. Maintenance frequency
- e. Maintenance access for components with an estimated service life less than the service life of the building

Provide a service life plan at the completion of design development. The *owner* shall retain a copy of the service life plan for use during the life of building.

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**Table 10.3.2.3 Minimum Design Service Life for Buildings**

<b>Category</b>	<b>Minimum Service</b>	<b>Building Types</b>
Temporary	Up to 10 years	Nonpermanent construction buildings (sales offices, bunkhouses) Temporary exhibition buildings
Medium life	25 years	Industrial buildings Stand-alone parking structures
Long life	50 years	All buildings not temporary or medium life, including the parking structures below buildings designed for long life

**10.3.2.4 Transportation Management Plan.** A transportation management plan shall be developed compliant with the following requirements. *Owner* shall retain a copy of the transportation management plan.

**10.3.2.4.1 All Building Projects.** The plan shall include the following:

- a. Preferred parking for carpools and vanpools with parking facilities
- b. A plan for bicycle transportation

**10.3.2.4.2 [JO] Owner-Occupied Building Projects or Portions of Building Projects.** For *owner*-occupied buildings, or for the employees in the *owner*-occupied portions of a building, the building *owner* shall offer at least one of the following primary benefits to the *owner*'s employees:

- a. Incentivize employees to commute using mass transit, vanpool, carpool, or nonmotorized forms of transportation.
- b. Initiate a telework or flexible work schedule program that reduces by at least 5% the number of commuting trips by the *owner*'s employees.
- c. Initiate a ridesharing or carpool matching program, either in-house or through an outside organization.

**Exception to 10.3.2.4.2(a) through (c) above:** Multifamily *residential building project*.

In addition, the *owner* shall provide all of the following to the *owner*'s employees:

- a. Access to an *emergency ride home* for employees, either provided in-house or by an outside organization
- b. A central point of contact in charge of commuter benefits
- c. Maintenance of commuter benefits in a centralized location
- d. Active promotion of commuter benefits to employees

**10.3.2.4.3 [JO] Building Tenant.** The building *owner*

- a. shall provide a copy of the plan to tenants within the building and
- b. shall not include parking fees in lease rates, or shall identify the value of parking in the lease.

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**Addenda o, p, q, r, s, and t to 189.1-2017**

*Note to reviewers: The first section of this addendum shows changes being made by this addendum relative to Sections 4 and 10 of 189.1-2017. The changes open for public review are those in the first section.*

*This section of the addendum shows changes being made to Section 4 by addenda o, p, q, r, s, and t. Each of these addenda make identical changes to section 4, with the exception that each adds unique rows to Table 4.2. The text changes from those addenda are shown below, with table 4.2 showing all the rows from those addenda in a combined table. The changes shown in this section are not open for public review.*

*Add a new informative Section 4.2 including a new informative Table 4.2, and move Sections 4.1.1 through 4.1.4 to a new Section 4.3:*

**4. ADMINISTRATION AND ENFORCEMENT**

**4.1 General.** *Building projects shall comply with Sections 4 through 11. Within each of those sections, building projects shall comply with all mandatory provisions (x.3) and, where offered, either the*

- a. Prescriptive Option (x.4) or
- b. Performance Option (x.5).

**Informative Note – to become normative in IgCC:**

**4.2 Requirements determined by the jurisdiction.** *The jurisdiction shall indicate the following information in Informative Table 4.2 for inclusion in its code adopting ordinance:*

- 1. Where “No” boxes are provided, the jurisdiction shall check the box to indicate where that section is not to be enforced as a requirement in the jurisdiction. Where the “No” box is not checked, that section is to be enforced.
- 2. Where a numerical value is required to specify the level of performance required, the jurisdiction shall indicate the required value. Where a numerical value is not indicated, the value in the text is to be enforced.

**Informative Note:** *The jurisdictional requirements listed in Table 4.2 are formatted to afford jurisdictions the flexibility to adapt the code in a manner that is best suited to meet their unique environmental and regional goals and needs. Enforcement of these jurisdictional requirements will result in higher performing buildings, but may go beyond the needs of specific jurisdictions. Jurisdictional option provisions are indicated in the body of the standard with the symbol [JO] after the section number.*

**INFORMATIVE TABLE 4.2 – to become normative in IgCC**  
**REQUIREMENTS DETERMINED BY THE JURISDICTION**

<b><u>SECTION</u></b>	<b><u>SECTION TITLE OR DESCRIPTION AND DIRECTIVES</u></b>	<b><u>Jurisdictional Requirement</u></b>
5.3.3.2	Greenfield Sites	___ No
5.3.5.2	Mitigation of Heat Island Effect, Walls	___ No

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<b>SECTION</b>	<b>SECTION TITLE OR DESCRIPTION AND DIRECTIVES</b>	<b>Jurisdictional Requirement</b>
5.3.6	<u>Reduction of Light Pollution</u>	___ No
5.3.7.1.1.1	<u>Public Frontage Walkway</u>	___ No
5.3.7.1.2	<u>Bicycle Paths</u>	___ No
5.3.7.2.2	<u>Bicycle Parking, Location</u>	___ No
5.3.7.2.3	<u>Bicycle Parking, Horizontal Parking Racks</u>	___ No
5.3.7.2.5	<u>Bicycle Parking, Security and Visibility</u>	___ No
5.3.8.1	<u>Building Site Waste Management – Diversion Percentage</u>	___ 75%
6.3.1.2.1 a3	<u>Irrigation System Design, Master Valve</u>	___ No
6.3.1.2.1 a4	<u>Irrigation System Design, Flow Sensors</u>	___ No
6.3.3	<u>Special Water Features</u>	___ No
6.3.4.2	<u>Consumption Data Collection</u>	___ No
6.3.4.3	<u>Data Storage and Retrieval</u>	___ No
6.3.8	<u>Dual Water Supply Plumbing</u>	___ No
7.4.2.1	<u>Building Envelope Requirements</u>	___ No
7.4.2.2	<u>Single Rafter Roof Insulation</u>	___ No
7.4.2.3	<u>High Speed Doors</u>	___ No
7.4.2.6	<u>Permanent Projections</u>	___ No
7.4.2.9	<u>Orientation</u>	___ No
7.4.3.2	<u>Ventilation Controls for Densely Occupied Spaces</u>	___ No
7.4.3.4	<u>Economizers</u>	___ No
7.4.3.5	<u>Zone Controls</u>	___ No
7.4.3.6	<u>Fan System Power and Efficiency</u>	___ No
7.4.3.7	<u>Exhaust Air Energy Recovery</u>	___ No
7.4.3.8	<u>Kitchen Exhaust Systems</u>	___ No
7.4.3.10	<u>Automatic Control of HVAC and Lights in Hotel/Motel Guest Rooms</u>	___ No
7.4.4.2	<u>Insulation for Spa Pools</u>	___ No
7.4.6.2	<u>Occupancy Sensor Controls with Multilevel Switching or Dimming</u>	___ No
7.4.6.3	<u>Automatic Controls for Egress and Security Lighting</u>	___ No
7.4.7.2	<u>Supermarket Heat Recovery</u>	___ No
7.4.7.4	<u>Programmable Thermostats</u>	___ No
7.4.7.5	<u>Refrigerated Display Cases</u>	___ No
8.3.1.3.(b)	<u>Ozone</u>	___ No
8.3.1.4	<u>Building Pressure</u>	___ No
8.3.1.5.1	<u>Vented Combustion</u>	___ No
8.3.1.9	<u>Guest Room Preoccupancy Outdoor Air Purge Cycle</u>	___ No
8.3.1.10	<u>Preoccupancy Ventilation Control</u>	___ No

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<u>SECTION</u>	<u>SECTION TITLE OR DESCRIPTION AND DIRECTIVES</u>	<u>Jurisdictional Requirement</u>
8.3.4	Soil Gas Control	___ No
8.4.1.3	Shading for Offices	___ No
9.3.1.2	Total Waste	___ No

### **4.3 References and Appendices.**

**4.13.1 Referenced Standards.** The standards referenced in this standard and listed in Section 11 shall be considered part of the requirements of this standard to the prescribed extent of such reference. Where differences exist between provisions of this standard and a referenced standard, the provisions of this standard shall apply. Informative references in Informative Appendix G are cited to acknowledge sources and are not part of this standard.

**4.13.2 Normative Appendices.** The normative appendices to this standard are considered to be integral parts of the mandatory requirements of this standard, which for reasons of convenience are placed apart from all other normative elements.

**4.13.3 Informative Appendices.** The informative appendices to this standard, and informative notes located within this standard, contain additional information and are not mandatory or part of this standard.

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