Public Review Draft

Proposed Addendum w to Standard 189.1-2023

Standard for the Design of High-Performance Green Buildings

Except Low-Rise Residential Buildings

First Public Review (October 2025)
(Draft Shows Proposed Changes to Current Standard)

This draft has been recommended for public review by the responsible project committee. To submit a comment on this proposed standard, go to the ASHRAE website at www.ashrae.org/standards-research--technology/public-review-drafts and access the online comment database. The draft is subject to modification until it is approved for publication by the Board of Directors and ANSI. Until this time, the current edition of the standard (as modified by any published addenda on the ASHRAE website) remains in effect. The current edition of any standard may be purchased from the ASHRAE Online Store at www.ashrae.org/bookstore or by calling 404-636-8400 or 1-800-727-4723 (for orders in the U.S. or Canada).

This standard is under continuous maintenance. To propose a change to the current standard, use the change submittal form available on the ASHRAE website, www.ashrae.org.

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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 provides definitions extracted from their source standards. These definitions are currently adopted automatically through reference by Standard 189.1. Putting these definitions directly in Standard 189.1 will be more helpful for users of the standard, obviating the need for multiple standards for the terminology used by Standard 189.1.

Additionally, having the content of its definitions in Standard 189.1 will avoid cases where referenced definitions are changed by a different project committee without consideration or publication for review by the Standard 189.1 project committee.

Some definitions have been changed from their original source to better support application of Standard 189.1, (*baseline building design, baseline building performance, proposed building performance*). In many cases secondarily referenced definitions (defined terms embedded in referenced definitions) are undefined (unitalicized) in favor of commonly understood terminology. Definitions that are native to Standard 189.1 have not been changed and are not published.

The ANSI/ASHRAE/IES Standard 90.1 definitions of enclosed space, space, conditioned space, (heated space, cooled space, and indirectly conditioned space), semiheated space, and unconditioned space are not included in this addendum. They will be addressed in a future addendum pending correlation with potential revisions of Standard 90.1.

Several sections of Standard 189.1 are changed where it was determined that a definition was not needed.

There should be minimal cost implications. The addendum is not intended to change technical requirements beyond clarifying application of the standard.

[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 w to 189.1-2023

Modify Section 3 as follows:

3. DEFINITIONS, ABBREVIATIONS, AND ACRONYMS

3.1 General. Certain terms, abbreviations, and acronyms are defined in this section for the purposes of this standard. These definitions are applicable to all sections of this standard.

~~Terms that are not defined herein, but that are defined in standards that are referenced herein (***Informative Note:*** e.g., ANSI/ASHRAE/IES Standard 90.1), shall have the meanings as defined in those standards.~~

Other terms that are not defined shall have their ordinarily accepted meanings within the context in which they are used. Ordinarily accepted meanings shall be based on American standard English language usage, as documented in an approved unabridged dictionary.

3.2 Definitions

air, makeup: ~~see ANSI/ASHRAE Standard 62.1.~~ any combination of outdoor and transfer air intended to replace exhaust air and exfiltration.

air, outdoor: ~~see ANSI/ASHRAE Standard 62.1.~~ ambient air and ambient air that enters a building through a ventilation system, through intentional openings for natural ventilation, or by infiltration.

air, transfer: ~~see ANSI/ASHRAE Standard 62.1.~~ air moved from one indoor space to another.

attic and other roofs: ~~see ANSI/ASHRAE/IES Standard 90.1.~~ all other *roofs*, including *roofs* with insulation entirely below (inside of) the *roof* structure (i.e., attics, cathedral ceilings, and single-rafter ceilings), *roofs* with insulation both above and below the *roof* structure, and *roofs* without insulation but excluding *metal building roofs*.

Automatic* or *automatically: ~~see ANSI/ASHRAE/IES Standard 90.1.~~ self-acting, operating by its own mechanism when actuated by some nonmanual influence, such as a change in current strength, pressure, temperature, or mechanical configuration.

baseline building design: ~~see ANSI/ASHRAE/IES Standard 90.1.~~ computer representation of a reference building design based on the *proposed design* and Appendix G of Standard 90.1. This representation is used for calculating the *baseline building performance* when using the performance rating method in accordance with Section 4.2.1.1 of Standard 90.1.

baseline building performance: ~~see ANSI/ASHRAE/IES Standard 90.1.~~ the calculated annual energy use, CO_2e emissions, or energy cost, of the building design used as the baseline when using the performance rating method in accordance with Section 4.2.1.1 of Standard 90.1.

building entrance: ~~see ANSI/ASHRAE/IES Standard 90.1.~~ any doorway, set of doors, revolving door, vestibule, or other form of portal that is ordinarily used to gain access to the building or to exit from the building by its users and occupants. This does not include doors solely used to directly enter mechanical, electrical, and other building utility service equipment rooms.

building envelope: ~~see ANSI/ASHRAE/IES Standard 90.1.~~ the exterior plus the semiexterior portions of a building.

contaminant: ~~see ANSI/ASHRAE Standard 62.1.~~ an unwanted airborne constituent with the potential to reduce acceptability

of the air.

continuous air barrier: ~~see ANSI/ASHRAE/IES Standard 90.1.~~ the combination of interconnected materials, assemblies, and sealed joints and components of the *building envelope* that minimize *air leakage* into or out of the *building envelope*.

daylight area under roof monitors: ~~see ANSI/ASHRAE/IES Standard 90.1.~~ the *daylight area under roof monitors* is the combined *daylight area* under each *roof monitor* within each *space*. The *daylight area* under each *roof monitor* is the product of

a. the width of the *vertical fenestration* above the ceiling level plus, on each side, the smallest of

1. 2 ft,

2. the distance to any 5 ft or higher vertical obstruction, or

3. the distance to the edge of any *primary sidelighted area*

and

b. the smaller of the following horizontal distances inward from the bottom edge of the *vertical fenestration* (see Figure 3.2-1):

1. The monitor sill height (MSH) (the vertical distance from the *floor* to the bottom edge of the monitor glazing)

2. The distance to the nearest face of any opaque vertical obstruction, where any part of the obstruction is farther away than the difference between the height of the obstruction (OH) and the monitor sill height (MSH – OH)

daylight area under skylights: ~~see ANSI/ASHRAE/IES Standard 90.1~~ the *daylight area under skylights* is the combined *daylight area* under each *skylight* within a *space*. The *daylight area* under each *skylight* is bounded by the opening beneath the *skylight* and horizontally in each direction (see Figure 3.2-2), the smaller of

a. 70% of the ceiling height (0.7 × CH) or

b. the distance to the nearest face of any opaque vertical obstruction, where any part of the obstruction is farther away than 70% of the distance between the top of the obstruction and the ceiling (0.7 × [CH – OH], where CH = the height of the ceiling at the lowest edge of the *skylight*, and OH = the height to the top of the obstruction).

primary sidelighted area: ~~see ANSI/ASHRAE/IES Standard 90.1~~ the total *primary sidelighted area* is the combined *primary sidelighted area* within each *space*. Each *primary sidelighted area* is directly adjacent to *vertical fenestration* in an exterior *wall* below the ceiling (see Figure 3.2-4).

a. The *primary sidelighted area* width is the width of the *vertical fenestration* plus, on each side, the smaller of

1. one half of the *vertical fenestration* head height (where head height is the distance from the *floor* to the top of the glazing) or

2. the distance to any 5 ft or higher opaque vertical obstruction.

b. The *primary sidelighted area* depth is the horizontal distance perpendicular to the *vertical fenes- tration*, which is the smaller of

1. one *vertical fenestration* head height or

2. the distance to any 5 ft or higher opaque vertical obstruction.

daylight area under skylights in multistory spaces: ~~see ANSI/ASHRAE/IES Standard 90.1~~ the *daylight area under skylights in multistory spaces* includes *floor* areas directly beneath the *skylight* and portions of the uppermost *floor* adjacent to the multistory *space* that meet the criteria for a *daylight area under skylights*, where CH is the ceiling height of the uppermost *floor* (see Figure 3.2-3).

secondary sidelighted area: the total *secondary sidelighted area* is the combined *secondary sidelighted area* within a *space*. Each *secondary sidelighted area* is directly adjacent to a *primary sidelighted area* (see Figure 3.2-5):

a. The *secondary sidelighted area* width is the width of the *vertical fenestration* plus, on each side, the smaller of

1. one half of the *vertical fenestration* head height or

2. the distance to any 5 ft or higher *opaque* vertical obstruction.

b. The *secondary sidelighted area* depth is the horizontal distance perpendicular to the *vertical fenestration*, which begins at the edge of the *primary sidelighted area* depth and ends at the smaller of

1. one *vertical fenestration* head height or

2. the distance to any 5 ft or higher opaque vertical obstruction.

Where the adjacent *primary sidelighted area* ends at a 5 ft or higher opaque vertical obstruction, there is no *secondary sidelighted area* beyond such obstruction.

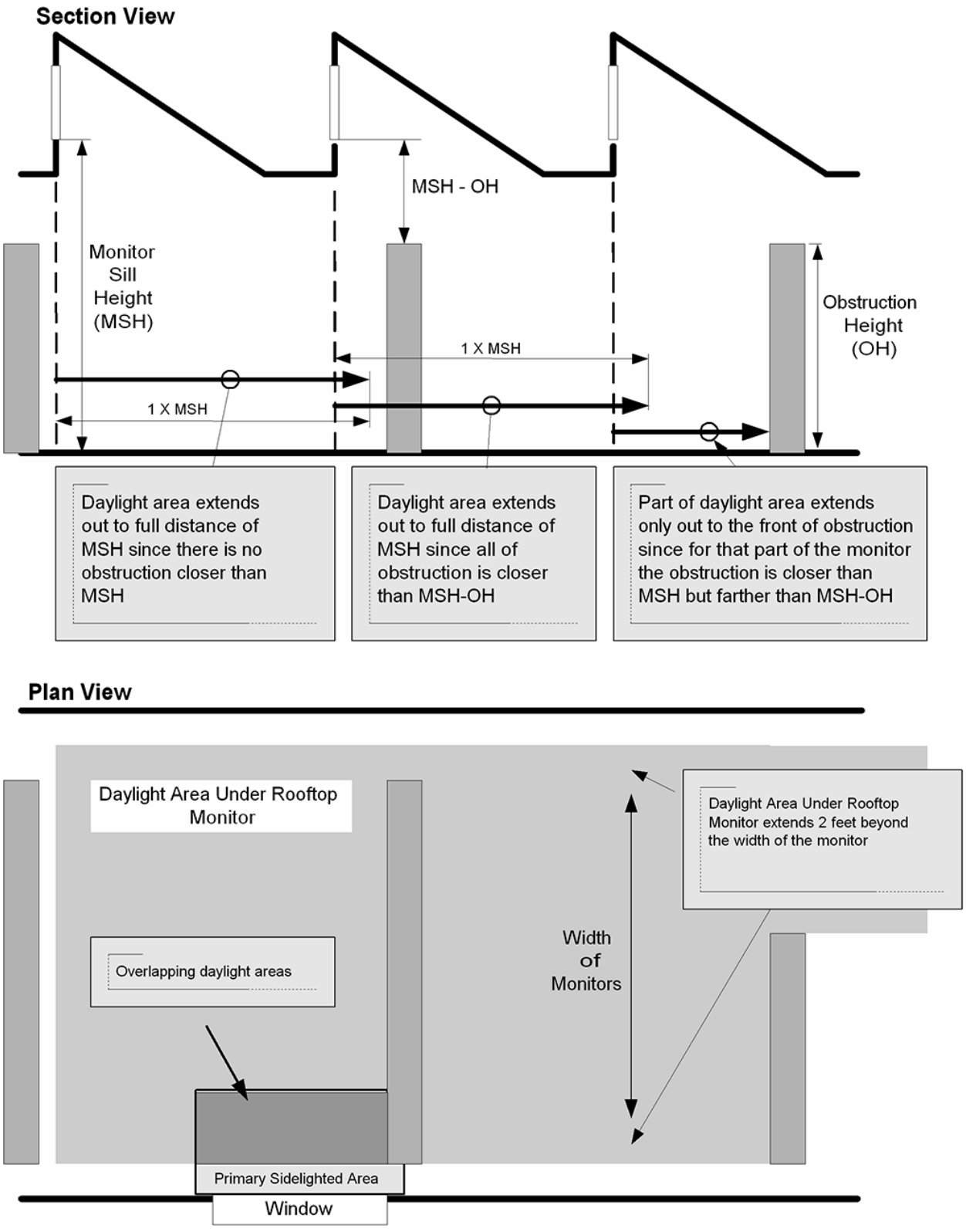


Figure 3.2-1 Computing the daylight area under roof monitors.

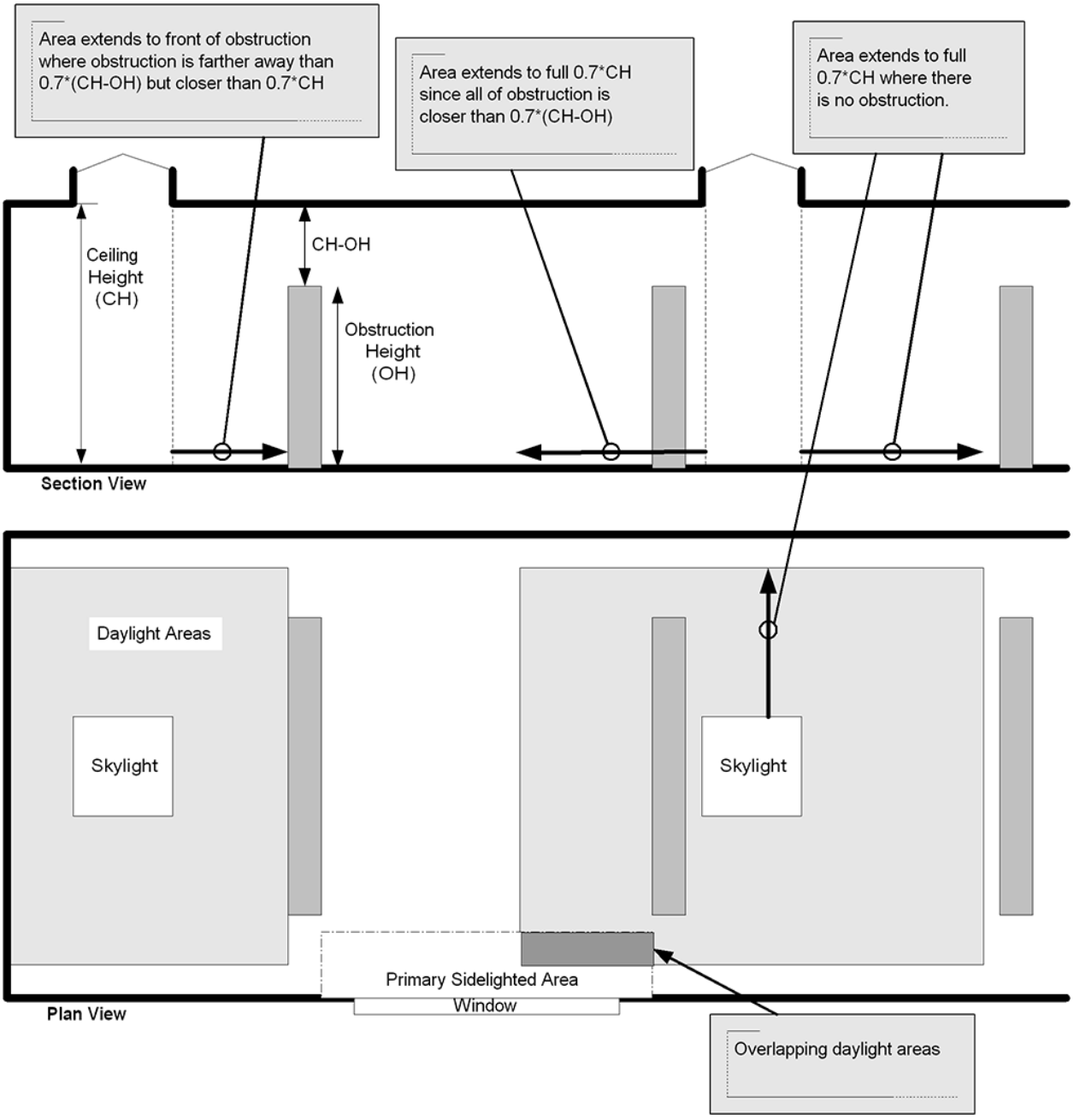


Figure 3.2-2 Computing the daylight area under skylights.

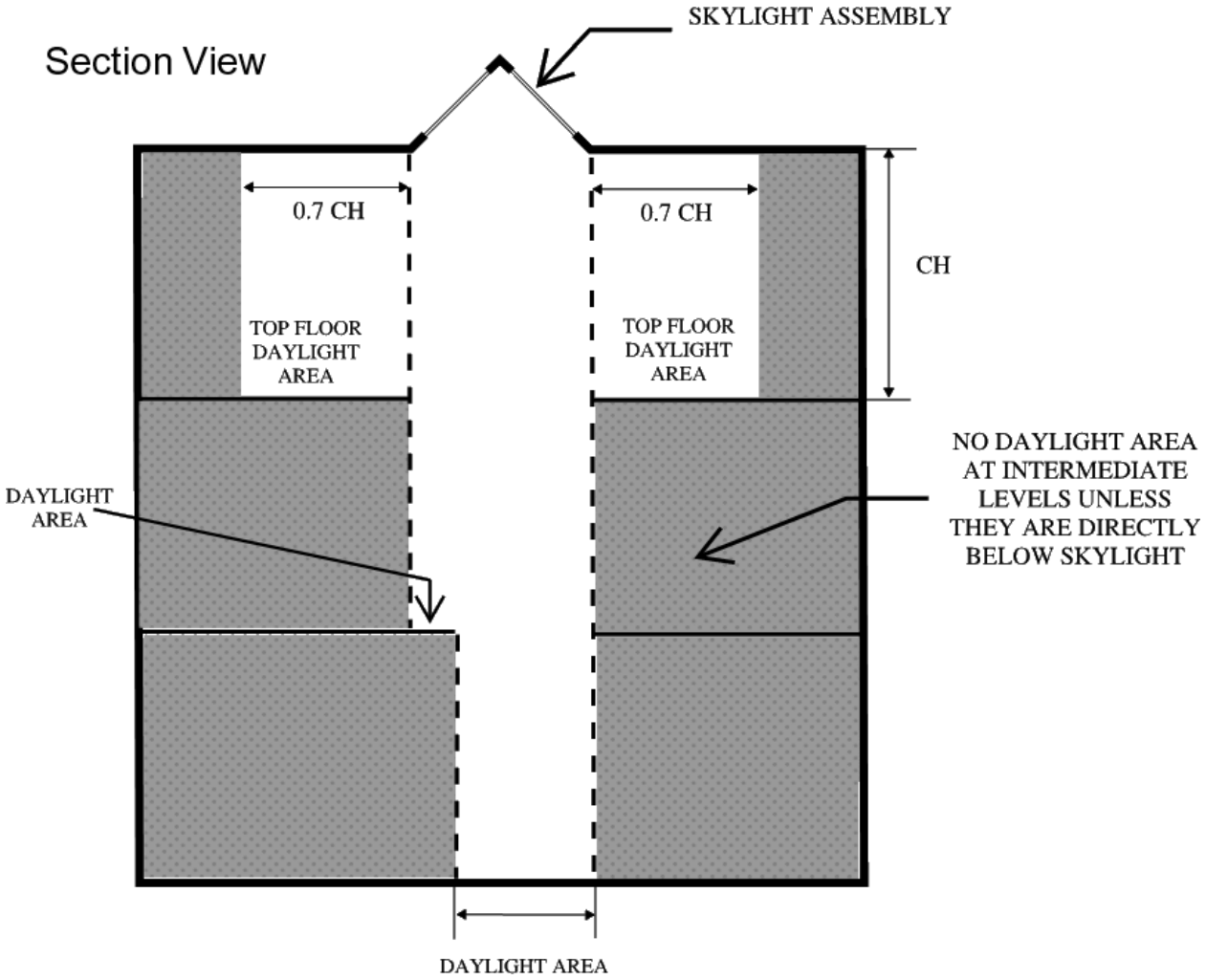
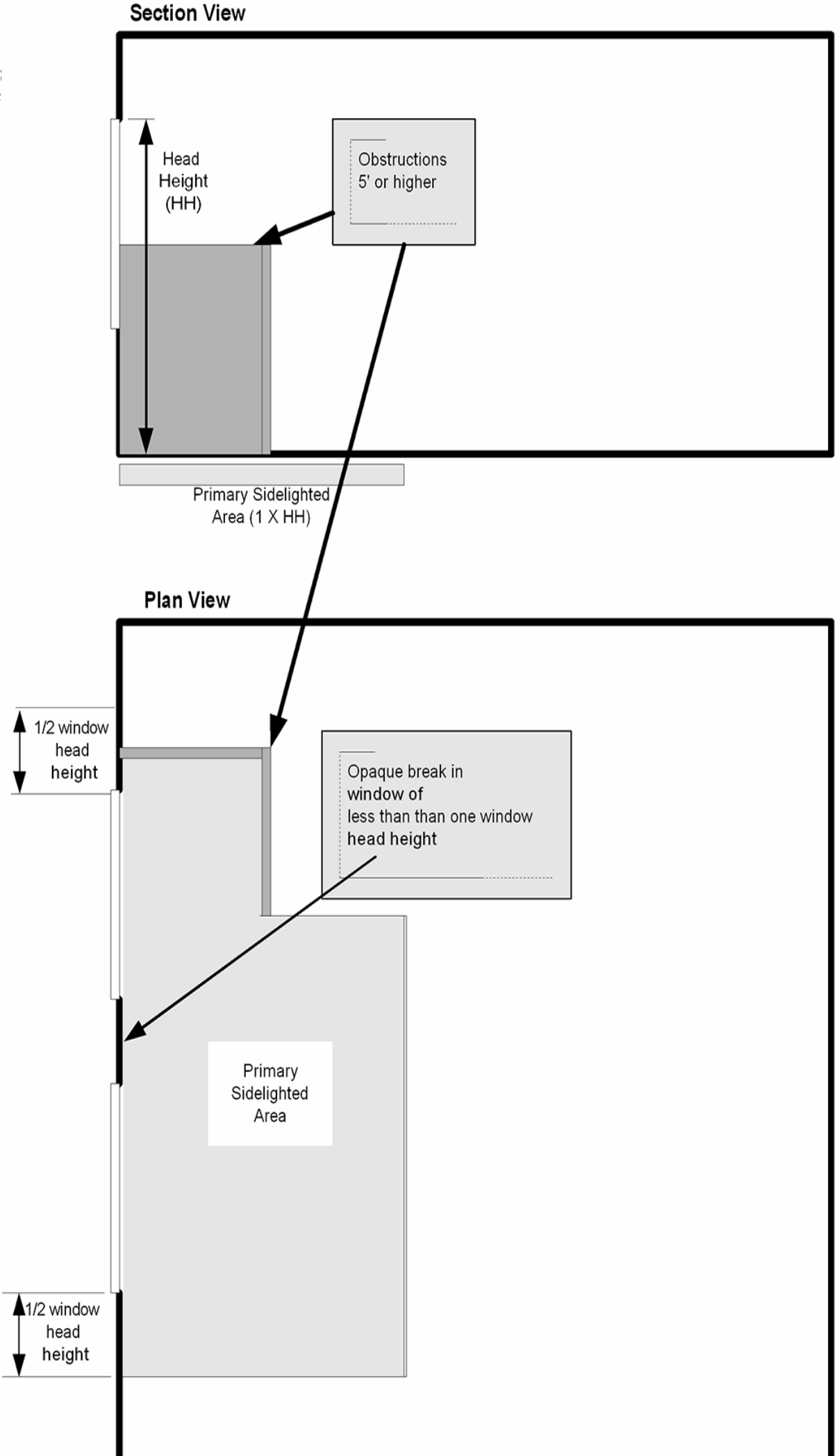
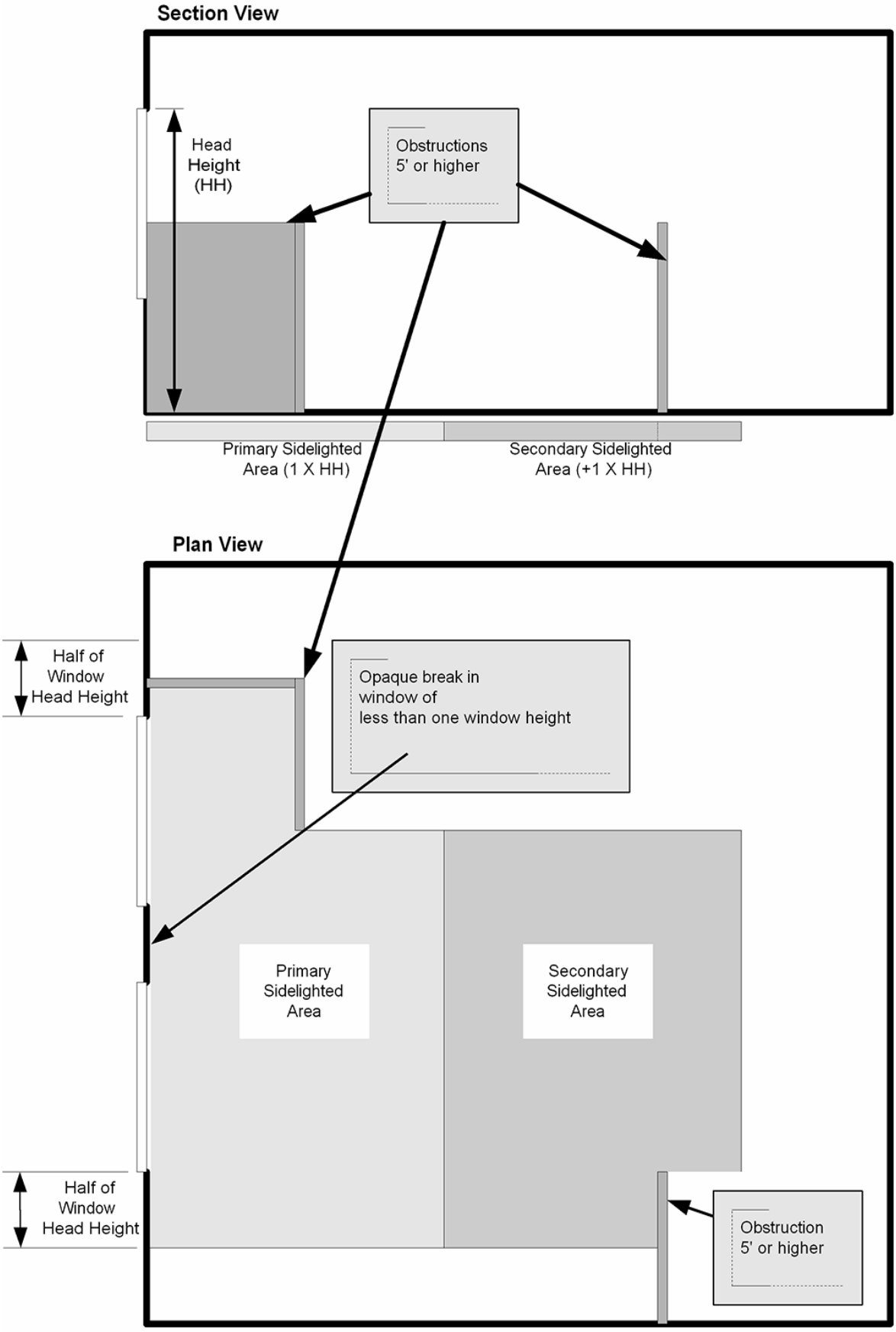


Figure 3.2-3 Computing the daylight area under skylights in multistory spaces.

Figure **3.2-4**


Section View
Head Height (HH)
Obstructions 5' or higher
Primary Sidelighted Area (1 X HH)
Plan View
1/2 window head height
Opaque break in window of less than than one window head height
Primary Sidelighted Area
1/2 window head height



Computing the primary sidelighted area.

Figure 3.2-5 Computing the secondary sidelighted area

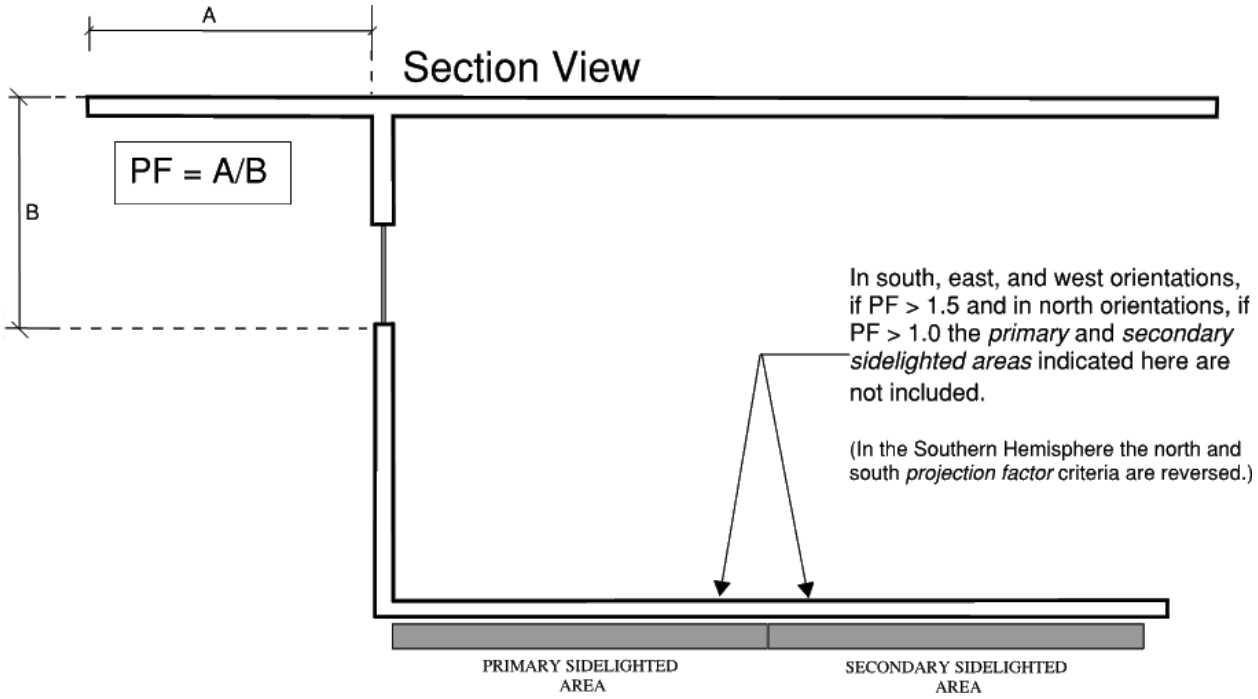


Figure 3.2-6 Computing the primary and secondary sidelighted areas with external projections

demand control ventilation (DCV): ~~see ANSI/ASHRAE/IES Standard 90.1.~~ a ventilation system capability that provides for the *automatic* reduction of *outdoor air* intake below design rates when the actual occupancy of *spaces* served by the system is less than design occupancy.

design conditions: ~~see ANSI/ASHRAE/IES Standard 90.1.~~ specified environmental conditions, such as temperature and light intensity, required to be produced and maintained by a system and under which the system must operate.

dimmer: ~~see ANSI/ASHRAE/IES Standard 90.1.~~ a lighting control device that is capable of varying the light output and energy usage of light sources.

door area: total area of the door measured using the rough opening and including the door slab and the frame. (See *fenestration area*.)

dwelling unit: ~~see ANSI/ASHRAE/IES Standard 90.1.~~ a single unit providing complete independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking, and sanitation.

dynamic glazing: ~~see ANSI/ASHRAE/IES Standard 90.1.~~ any glazing system /glazing infill that has the fully reversible ability to change its performance properties, including *U-factor*, *solar heat gain coefficient*, or visible transmittance. This includes, but is not limited to, shading systems between the glazing layers and chromogenic glazing.

enthalpy recovery ratio: ~~see ANSI/ASHRAE/IES Standard 90.1.~~ change in the enthalpy of the *outdoor air* supply divided by the difference between the *outdoor air* and entering exhaust air enthalpy, expressed as a percentage.

fenestration: ~~see ANSI/ASHRAE/IES Standard 90.1.~~ an assembly, including the frame, in the *building envelope* that allows light to pass. *Fenestration* assemblies include (but are not limited to) windows, plastic panels, clerestories, *roof monitors*, *skylights*, glass block, and doors where more than one-half of the *door area* is glazed. For the purposes of determining *building envelope* requirements, the classifications are defined as follows:

field-fabricated fenestration: *fenestration* whose frame is made at the construction site of materials that were not previously cut, or otherwise formed with the specific intention of being used to fabricate a *fenestration* product or exterior glazed doors. *Field-fabricated fenestration* does not include *site*-built *fenestration* designed to be glazed or assembled in the field using specific factory-cut or otherwise factory-formed framing and glazing units, such as storefront systems, curtain *walls*, and atrium roof systems.

skylight: a *fenestration* surface having a slope of less than 60 degrees from the horizontal plane. Other *fenestration*, even if mounted on the *roof* of a building, is considered *vertical fenestration*.

vertical fenestration: all *fenestration* other than *skylights*. Trombe *wall* assemblies, where glazing is installed within 12 in. of a *mass wall*, are considered *walls*, not *fenestration*.

fenestration area: ~~see ANSI/ASHRAE/IES Standard 90.1.~~ total area of the *fenestration* measured using the rough opening and including the glazing, sash, and frame. For doors where the glazed vision area is less than 50% of the *door area*, the *fenestration area* is the glazed vision area. For all other doors, the *fenestration area* is the *door area*. (See *door area*.)

floor area, gross: ~~see ANSI/ASHRAE/IES Standard 90.1.~~ the sum of the *floor* areas of the *spaces* within the building, including basements, mezzanine and intermediate-floored tiers, and penthouses with a headroom height of 7.5 ft or greater. It is measured from the exterior faces of *walls* or from the centerline of *walls* separating buildings, but excluding covered walkways, open roofed-over areas, porches and similar *spaces*, pipe trenches, exterior terraces or steps, chimneys, *roof* overhangs, and similar features.

general lighting: ~~see ANSI/ASHRAE/IES Standard 90.1.~~ lighting that provides a substantially uniform level of illumination throughout an area. *General lighting* does not include decorative lighting or lighting that provides a dissimilar level of illumination to serve a specialized application or feature within such area.

generally accepted engineering standard: ~~see ANSI/ASHRAE/IES Standard 90.1.~~ a specification, rule, guide, or procedure in the field of engineering, or related thereto, recognized and accepted as authoritative.

gross conditioned floor area: ~~see ANSI/ASHRAE/IES Standard 90.1.~~ the *gross floor area* of *conditioned spaces*.

gross roof area: ~~see ANSI/ASHRAE/IES Standard 90.1.~~ see *roof area, gross*.

gross wall area: ~~see ANSI/ASHRAE/IES Standard 90.1.~~ see *wall area, gross*. the area of the *wall* measured on the exterior face from the top of the *floor* to the bottom of the *roof*.

lighting power allowance: ~~see ANSI/ASHRAE/IES Standard 90.1.~~

lighting power allowance (LPA), exterior: the maximum lighting power in watts allowed for the exterior of a *property*.

Lighting power allowance (LPA), interior: the maximum lighting power in watts allowed for the interior of a building.

mechanical cooling: ~~see ANSI/ASHRAE/IES Standard 90.1.~~ reducing the temperature of a gas or liquid by using vapor compression, absorption, desiccant dehumidification combined with evaporative cooling, or another energy-driven thermodynamic cycle. Indirect or direct evaporative cooling alone is not considered *mechanical cooling*.

nonresidential: ~~see ANSI/ASHRAE/IES Standard 90.1.~~ all occupancies other than *residential*.

~~***occupiable space:*** see ANSI/ASHRAE Standard 62.1~~. *Note to reviewers: The single use of the term "occupiable space" in Standard 189.1 is proposed to be deleted by this addendum.*

permanently installed: see ANSI/ASHRAE/IES Standard 90.1.

projection factor (PF): see ANSI/ASHRAE/IES Standard 90.1. the ratio of the horizontal depth of the external shading projection divided by the sum of the height of the *fenestration* and the distance from the top of the *fenestration* to the bottom of the farthest point of the external shading projection, in consistent units.

proposed building performance: see ANSI/ASHRAE/IES Standard 90.1. the calculated annual energy use, CO2e emissions, or energy cost, of the *proposed design*.

proposed design: see ANSI/ASHRAE/IES Standard 90.1. a computer representation of the actual proposed building design, or portion thereof, used as the basis for calculating the *proposed building performance.*

readily accessible: see ANSI/ASHRAE/IES Standard 90.1. installed in a manner and location that allows it to be reached quickly for operation, renewal, or inspection without requiring those to whom ready access is requisite to climb over or remove obstacles or to resort to portable ladders, chairs, etc. In public facilities, accessibility may be limited to certified personnel through locking covers or by placing equipment in locked rooms.

regulated energy use: see ANSI/ASHRAE/IES Standard 90.1. energy used by *building systems* and components with requirements prescribed in Sections 5 through 10 of Standard 90.1 This includes energy used for HVAC, lighting, *service water heating*, motors, *transformers*, vertical transportation, refrigeration equipment, *computer-room* cooling *equipment*, and other *building systems*, components, and processes with requirements prescribed in Sections 5 through 10 of Standard 90.1.

residential: see ANSI/ASHRAE/IES Standard 90.1. *spaces* in buildings used primarily for living and sleeping. *Residential spaces* include, but are not limited to, *dwelling units*, hotel/motel guest rooms, dormitories, nursing homes, patient rooms in hospitals, lodging houses, fraternity/sorority houses, hostels, prisons, and fire stations.

roof: see ANSI/ASHRAE/IES Standard 90.1. the upper portion of the *building envelope*, including opaque areas and *fenestration*, that is horizontal or tilted at an angle of less than 60 degrees from horizontal. For the purposes of determining *building envelope* requirements, the classifications are defined as follows:

roof area, gross: see ANSI/ASHRAE/IES Standard 90.1. the area of the *roof* measured from the exterior faces of *walls* or from the centerline of party walls. (See *roof* and *wall*.)

single-rafter roof: see ANSI/ASHRAE/IES Standard 90.1. a subcategory of attic *roofs* where the *roof* above and the ceiling below are both attached to the same wood rafter and where insulation is located in the *space* between these wood rafters.

roof monitor: see ANSI/ASHRAE/IES Standard 90.1. that part of a building that projects above the plane of the *roof* and whose *walls* contain *vertical fenestration* for lighting the interior.

salvaged material: material, component, or assembly removed in a whole form from a structure or site in which it was ~~*permanently installed*~~ permanently installed and subsequently reused in the *building project*.

semiheated space: see ANSI/ASHRAE/IES Standard 90.1. see *space*.

sensible energy recovery ratio: see ANSI/ASHRAE/IES Standard 90.1. change in the dry-bulb temperature of the outdoor air supply divided by the difference between the outdoor air and entering exhaust air dry-bulb temperatures, expressed as a percentage.

service water heating: see ANSI/ASHRAE/IES Standard 90.1. heating water for domestic or commercial purposes other than

space heating and process application requirements.

single-rafter roof: ~~see ANSI/ASHRAE/IES Standard 90.1.~~ see *roof*.

site-recovered energy: ~~see ANSI/ASHRAE/IES Standard 90.1.~~ waste energy recovered at the building site that is used to offset consumption of purchased fuel or electrical energy supplies.

skylight: ~~see ANSI/ASHRAE/IES Standard 90.1.~~ a *fenestration* surface having a slope of less than 60 degrees from the horizontal plane. Other *fenestration*, even if mounted on the *roof* of a building, is considered *vertical fenestration*.

skylight effective aperture: ~~see ANSI/ASHRAE/IES Standard 90.1.~~ the overall amount of *visible transmittance* of the *roof* via *skylights*. *Skylight effective aperture* is calculated according to the following formula:

$$\textit{Sidelighting Effective Aperture} = \frac{0.85 \times Skylight\ \text{Area} \times Skylight\ VT \times WF}{Daylight\ Area\ Under\ Skylights}$$

Where

Daylight Area Under Skylights

Skylight Area = total *fenestration area* of *skylights*

Skylight VT = area-weighted average *visible transmittance* of *skylights* as determined in accordance with Section 5.8.2.6.

WF = area-weighted average skylight well factor, where *skylight well* factor is 0.9 where the skylight well depth is less than 2 ft, or 0.7 where the *skylight well* depth is 2 ft or greater. Skylight well depth is measured vertically from the underside of the lowest point on the *skylight* glazing to the ceiling plane under the *skylight*.

solar heat gain coefficient (SHGC): ~~see ANSI/ASHRAE/IES Standard 90.1.~~ the ratio of the solar heat gain entering the *space* through the *fenestration area* to the incident solar radiation. Solar heat gain includes directly transmitted solar heat and absorbed solar radiation, which is then reradiated, conducted, or convected into the *space*. (See *fenestration area*.)

task lighting: ~~see ANSI/ASHRAE/IES Standard 90.1.~~ lighting directed to a specific surface or area that provides illumination for visual tasks.

unregulated energy use: see ~~ANSI/ASHRAE/IES Standard 90.1~~ energy used by building systems and components that is not *regulated energy use*. (See *regulated energy use*.)

variable-air-volume (VAV) system: ~~see ANSI/ASHRAE/IES Standard 90.1.~~ *HVAC system* that controls the dry-bulb temperature within a *space* by varying the volumetric flow of heated or cooled supply air to the *space*.

vertical fenestration: ~~see ANSI/ASHRAE/IES Standard 90.1.~~ all *fenestration* other than *skylights*. Trombe *wall* assemblies, where glazing is installed within 12 in. of a *mass wall*, are considered *walls*, not *fenestration*. For the purposes of determining *building envelope* requirements, the *vertical fenestration* classifications are defined as follows:

fixed: all types of *vertical fenestration*, other than entrance door and *operable*, including, but not limited to, curtain *walls*, window *walls*, fixed windows, picture windows, glass block *walls*, nonopenable clerestory windows, *roof monitors* with nonopenable windows, and nonopenable sidelights and transoms.

operable: all *vertical fenestration* that opens, except entrance doors, including, but not limited to, casement windows,

projecting windows, pivoting windows, horizontal sliding windows, vertical sliding windows, openable clerestory windows, openable sidelights and transoms, sliding glass doors, *roof monitors* with openable windows, and doors that are not entrance doors.

wall: ~~see ANSI/ASHRAE/IES Standard 90.1.~~ that portion of the *building envelope*, including *opaque* area and *fenestration*, that is vertical or tilted at an angle of 60 degrees from horizontal or greater. This includes *above-* and *below-grade walls*, between *floor* spandrels, peripheral edges of *floors*, and foundation *walls*. For the purposes of determining *building envelope* requirements, the classifications are defined as follows:

above-grade wall: a *wall* that is not a *below-grade wall.*

below-grade wall: that portion of a *wall* in the *building envelope* that is entirely below the finish *grade* and in contact with the ground.

mass wall: a *wall* with a *heat capacity* exceeding (a) 7 Btu/ft^2·°F or (b) 5 Btu/ft^2·°F, provided that the *wall* has a material unit weight not greater than 120 lb/ft^3.

metal building wall: a *wall* whose structure consists of metal spanning members supported by steel structural members (i.e., does not include spandrel glass or metal panels in curtain *wall* systems).

steel-framed wall: a *wall* with a cavity (insulated or otherwise) whose exterior surfaces are separated by steel framing members (i.e., typical steel stud *walls* and curtain *wall* systems).

wood-framed and other walls: all other *wall* types, including wood stud *walls*.

wall area, gross: ~~see ANSI/ASHRAE/IES Standard 90.1.~~ the area of the *wall* measured on the exterior face from the top of the *floor* to the bottom of the *roof*.

zero carbon emissions factor (zCEF): CO_2e emissions of the proposed building compared to the CO_2e of the baseline building, as defined ~~in~~ by the performance rating method of ASHRAE Standard 90.1.

Modify Section 7.4.3.8.4 as follows:

7.4.3.8.4 Ventilation Control. Within 20 minutes of all occupants leaving the guest room, ventilation and exhaust fans shall be automatically turned off, or ~~*isolation devices*~~ isolation devices serving each guest room shall automatically shut off the supply of *outdoor air* to the room and shut off exhaust air from the guest room. In conjunction with the *automatic* ventilation shutoff, an *automatic* preoccupancy purge cycle shall provide *outdoor air* ventilation as specified in Section 8.3.9.

Modify Section 8.3.3 (a)(1) as follows:

8.3.3 Filtration and Air Cleaner Requirements

a. Particulate matter: The following requirements shall apply in all buildings.

1. Wetted surfaces: Particulate matter filters or air cleaners having a minimum efficiency reporting value (MERV) of not less than 8 where rated in accordance with ANSI/ASHRAE Standard 52.2, or not less than Coarse 90% where rated in accordance with ISO 16890, shall be provided upstream of all cooling coils or other devices with wetted surfaces through which air is supplied ~~to an *occupiable space*~~. These requirements supersede the requirements in ASHRAE Standard 62.1, Section 5.5.

2. Particulate matter removal: Particulate matter filters or air cleaners shall be provided in accordance with Standard 62.1, Sections 6.1.4.1 and 6.1.4.2, with the following modification. Such filters or air cleaners shall have a MERV of not less than 13 as rated in accordance with ASHRAE Standard 52.2, or not less than ePM1-50% as rated in accordance with ISO 16890.

Exception to (a): In health care facilities, the particulate filter requirements of ASHRAE/ASHE Standard 170 shall apply.

Modify Section 9.4.1 as follows:

9.4.1 Environmental Product Declarations (EPDs). EPDs shall be submitted for *building products* that together represent not less than 25% of the total estimated costs of all *building products* ~~*permanently installed*~~ permanently installed in the *building project,* or not fewer than 30 EPDs, and such that items (a) through (d) below are satisfied. EPDs submitted shall

a. represent *building products* that are ~~*permanently installed*~~ permanently installed at the time of issuance of the certificate of occupancy,
b. represent *building products* from not fewer than ten different manufacturers,
c. represent not fewer than 20 different *building products*, and
d. include any *building products* with a value that exceeds 5% of the total cost of all *building products* ~~*permanently installed*~~ permanently installed in the *building project*.

A value of 45% of the estimated total construction cost shall be permitted to be used in lieu of the total cost of all *building products* ~~*permanently installed*~~ permanently installed in the *building project*.

Modify Section 9.5.1 as follows:

9.5.1 Reduced Impact Materials. The *building project* shall comply with any two of the following: Sections 9.5.1.1, 9.5.1.2, 9.5.1.3, or 9.5.1.4. Calculations shall only include materials ~~*permanently installed*~~ permanently installed in the project. A value of 45% of the total construction cost shall be permitted to be used in lieu of the actual total cost of materials.