



~~Standard Classification for~~ Building Floor Area Measurements for Facility Management¹

This standard is issued under the fixed designation E 1836; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

~~1.1 This classification provides a systematic basis for categorising how floor area in buildings is measured for certain specified purposes, such as facility management, occupant requirements, space planning, or strategic facility planning.~~

~~1.2 This classification does not specify what measurements must be conducted.~~

~~1.3~~

1.1 This practice provides a definitive procedure for measuring and classifying floor area in buildings for use in facility management, specifying occupant requirements, space planning, and for strategic facility planning.

1.2 This practice specifies the sequence in which to measure floor area.

1.3 This practice is applicable to owned, rented, and leased buildings.

1.4 Use Annex A1 may be used to classify floor area in one or more specific functional types of building, such as offices, laboratory, or manufacturing buildings and building-related facilities.

~~1.4 This classification can be applied to owned, rented and leased buildings.~~

1.5 The classification in to measure floor area in office facilities. The measurement practice in Annex A1 is not intended for use in lease negotiations with owners of commercial office buildings or related properties. For that purpose, users are referred to the American National Standard published by the American National Standards Institute under the designation ANSI Z65.1 may also be suitable for use in other functional types of building which include offices, such as research, laboratory, or manufacturing buildings and building-related facilities.

1.5 The practice in Annex A1 is not intended for use in lease negotiations with owners of commercial office buildings or related properties. For that purpose, refer to the American National Standard published by the American National Standards Institute under the designation ANSI/BOMA Z65.1-1996 and commonly known as the ANSI-BOMA standard.

~~1.6 This classification is not intended for, and is not suitable for, use for regulatory purposes, nor for fire hazard assessment nor for fire risk assessment.~~

~~1.7 This classification, developed for use within North America, is similar to the ISO 9836 Performance standards in building—Definition and calculation of area and space indicators.~~

1.8 This classification contains the following information in the sections indicated:

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~~1.6 This practice is not intended for and not suitable for use for regulatory purposes, fire hazard assessment, and fire risk assessment.~~

1.7 This practice was developed for use within North America and includes some rules comparable to ISO 9836 Performance Standards in Building—Definition and Calculation of Area and Space Indicators.

1.8 This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

¹ This classification practice is under the jurisdiction of ASTM Committee E06 on Performance of Buildings and is the direct responsibility of Subcommittee E06.25 on Whole Buildings and Facilities.

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2. Referenced Documents

2.1 ASTM Standards:

E631 Terminology of Building Constructions²

E1480 Terminology of Facility Management (Building-Related)²

E1664 Classification for the Serviceability of an Office Facility for Layout and Building Factors² 631 Terminology of Building Constructions

2.2 ANSI Standard:³

ANSI Z65.1–96 Standard Method for Measuring Floor Area in Office Buildings—ANSI/BOMA Z65.1–1996 Standard Method for Measuring Floor Area in Office Buildings

2.3 ISO Standards:⁴

ISO 9836 Performance Standards in Building—Definition and Calculation of Area and Space Indicators

3. Terminology⁵

3.1 Definitions:

3.1.1 *building, n, vt*—(1) a shelter comprising a partially or totally enclosed space, erected by means of a planned process of forming and combining materials; (2) the act or process of constructing. **E631**

3.1.2 *facility floor, n*—a physical setting used to serve a specific purpose.

3.1.2.1 *Discussion*—A facility may be within a building, or a whole building, or a building with its site and surrounding environment; or it may be a construction that is not a building. The term encompasses both the physical object and its use.

E631—*in a building, supporting structure (generally horizontal) and constituting the bottom level of each story. E 631⁶*

3.1.2 For standard definitions of additional terms applicable to this practice, see Terminology E 631.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 The descriptions of terms listed below also appear in Annex A1. Definitions of Terms Specific to This Standard:

3.2.1 *amenity area, n*—portion of a building that provides a convenience to an occupant or occupants of a building or group of buildings.⁷

3.2.1.1 *Discussion*—In general, occupancy codes and regulations do not govern these areas, although there may be codes and regulations that relate to their specific uses.

3.2.2 *building projection assignable area, n*—a convector, baseboard heating unit, radiator, or other building element located in the interior of a building adjacent to a wall that prevents the use of that space for furniture, equipment, circulation, or other functions.—portion of the plannable area on a floor that can be assigned to occupant groups or functions.

3.2.3 *building, n*—contiguous and undivided shelter comprising a partially or totally enclosed space, erected by means of a planned process of forming and combining materials.⁷

3.2.4 *dominant portion, n*—the inside surface of the outside wall, as defined in ANSI/BOMA Z65.1–1996.⁸

3.2.4.1 *Discussion*—ANSI/BOMA Z65.1–1996 specifies when to consider the inside surface of the window glass as the dominant portion to measure to, and when to measure to some other part of the outside wall. [5889d468/astm-e1836-08](https://doi.org/10.2556/6750astm-e1836-08)

3.2.5 *excluded area, n*—fully enclosed spaces with adequate clear headroom that, for some reason, are not intended for or are not suitable for occupancy by people or equipment, but not spaces that are temporarily unusable due to flood, fire damage, construction, or renovation activity:

3.2.5.1 *Discussion*—*portion of a floor within a building that is not suitable for occupancy by people or equipment.*⁷

3.2.5.1 *Discussion*—Examples of excluded areas are unfinished attic spaces, attic spaces without unobstructed access, damp or flooded basements, and confined spaces requiring permits for entry.

3.2.4—*While excluded areas may meet the criteria of adequate clear headroom there is owner/landlord documentation which indicates that these areas are to be excluded from floor interior gross area calculations. Examples of excluded areas include but*

² Annual ASTM Book of Standards, Vol 04.11.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Effective June 21, 1989, is available from American National Standards Institute, 11 W. 42nd St., 13th Floor, New York, NY 10036.

³ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

⁴ This acknowledges the cooperation of the International Facility Management Association (IFMA) and its Standards Committee on the development of this standard.

⁴ Available from International Organization for Standardization (ISO), 1, ch. de la Voie-Creuse, Case postale 56, CH-1211, Geneva 20, Switzerland, <http://www.iso.ch>.

⁵ Certain definitions of terms in this practice were agreed in 2007 by a Working Group established jointly by the Building Owners and Managers Association (BOMA) International and the International Facility Management Association (IFMA). Certain terms were derived from referenced ASTM standards or from referenced ANSI standard, or from published IFMA documents. Ownership of copyright to specific terms is indicated by footnotes. Certain terms are quoted from other ASTM standards, in which case the ASTM source is identified at the end of the definition.

⁶ Information such as this, inserted at the end of a definition, gives the number of a standard from which this definition was quoted or derived. If a number follows a dash at the end of this information, it indicates the year of approval of the standard.

⁷ Copyright is shared with BOMA International.

⁸ In the 1996 edition, which is copyright by BOMA, the dominant portion is defined as the inside face of the portion of the wall which is window glass where it is more than 50 % of the vertical distance from finished floor to finished ceiling, and elsewhere as the inside face of the outside wall, or of a pilaster or column attached to the outside wall where they occur. Note that the reader is cautioned that the dominant portion is not defined as a part of this ASTM standard. Instead, ANSI/BOMA Z65.1–1996 is developed by and subject to the authority of BOMA International, which may change it from time to time at its sole option.

are not limited to unfinished attic areas, attic areas with obstructed access, damp or flooded basements, and confined areas requiring permits for entry. Areas temporarily unusable due to flood, fire damage, construction or renovation activity are not excluded areas.⁷

3.2.6 exterior gross area, n—the area of the floor measured to the outside face of the walls that enclose the floor(s) of the building.

3.2.6.1 Discussion—Areas which are not enclosed, such as patios and balconies, are not part of exterior gross area. Cornices, pilasters, buttresses, and so forth that extend beyond the wall face are disregarded. The exterior gross area of a basement space includes the area measured to the outside face of basement or foundation walls.

3.2.7 finished surface, n—a wall, ceiling, or floor surface, including glass, as prepared for tenant or occupant use, excluding the thickness of any special surfacing materials such as panelling, furring strips, and carpet.

3.2.5 interstitial area—inside face of a wall, window, ceiling, or floor that is provided as part of the base building for the general use of occupants, excluding the thickness of any special surfacing materials applied to meet the particular needs of specific occupants.⁹

3.2.8 floor area, n—the area of load-bearing surfaces, located above or below occupied building floors, that are not available for general occupancy due to inadequate clear headroom, but may contain building mechanical or electrical systems predominantly serving adjacent floors or provide access to such systems.—area in the horizontal plane of the bottom level of a story or stories in a building.

3.2.9 interior encroachment, n—base building element that is located inside a building, not on an outer wall, and that prevents the use of the floor area for furniture, equipment, circulation, or other occupant function.⁹

3.2.10 interior gross area, n—portion of the floor(s) that is totally enclosed within the dominant portion.⁹

3.2.11 interior parking, n—totally or partially enclosed area that is within a building and that is normally used to circulate and station vehicles.¹⁰

3.2.12 interstitial floor area, n—area of load-bearing surfaces located above or below occupied building floors that is not available for general occupancy.⁷

3.2.12.1 Discussion—Interstitial floor area is often not available for occupancy due to inadequate clear headroom. Typically interstitial floor area contains building mechanical or electrical systems predominantly serving adjacent floors or to provide access to such systems.

3.2.13 major vertical penetration, n—opening in a floor that serves a building or system distribution function.⁷

3.2.14 matrix, n—a grid-like array of elements.¹¹

3.2.15 occupant, n—of a building, one who has certain legal rights to or legal control over the premises occupied.⁹

3.2.15.1 Discussion—An occupant may be a tenant in a building or the owner of a building.

3.2.16 occupant void area, n—opening in a floor created for the specific benefit of an occupant.¹⁰

3.2.16.1 Discussion—Examples of occupant void areas are private elevators, communicating stairs within tenant premises, and the opening in the floor above in tenant rooms that are multi-story in height.

3.2.17 perimeter encroachment, n—base building element or restricted area that is located inside the dominant portion of a building on the outer wall and that prevents the use of the floor area for furniture, equipment, circulation, or other occupant function.⁹

3.2.18 plannable gross area, n—portion of a floor that is totally enclosed within the interior face of perimeter encroachments at the floor plane and where there are no perimeter encroachments enclosed at the inside finished surface of the exterior walls.¹⁰

3.2.19 polygon, n—closed plane figure made up of several line segments that are joined together.¹²

3.2.20 primary circulation area, n—minimum path on a floor for access to egress stairs, elevator lobbies, toilet rooms, refuge areas, building lobbies, and entrances.⁹

3.2.21 restricted area, n—portion of floor area that would normally be available for use by an occupant, but the occupant is limited from using the area, either by regulatory authority or from a governing document.⁹

3.2.22 restricted headroom, n—large portion of a floor that does not have sufficient clear, unobstructed headroom to conform to local building codes or that has headroom less than that required for occupancy.

3.2.22.1 Discussion—Restricted headroom is primarily intended to exclude large areas such as low attics and crawlspaces from being defined as “floors.” It also establishes, in a sloped ceiling attic or sloped exterior wall, where the effective outer wall is located. Restricted headroom does not apply to reduced or no headroom conditions (that is, walls, columns, stairs, door headers, limited piping, railings, alcoves, and so forth) typically found on a floor, unless they are part of an overall restricted headroom condition.

3.2.23 secondary circulation area, n—portion of a floor required for access to some subdivision of a floor, that does not serve

⁹ ASTM copyright is shared with BOMA International.

¹⁰ New term for which copyright is shared by ASTM and BOMA International.

¹¹ This practice is under the jurisdiction of ASTM Committee E06 on Performance of Buildings and is the direct responsibility of Subcommittee E06.25 on Whole Buildings and Facilities.

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¹² *Bagatrix Math Glossary*, s.v. “polygon,” http://www.bagatrix.com/glossary/math_glossary_p.htm (accessed April 1, 2008).

all occupants on a floor and that is not defined as primary circulation area.

3.2.24 *service area, n*—portion of a building that provides services that enable occupants to work in a building.

3.2.24.1 *Discussion*—Service areas make it possible to accommodate occupants within a building without violating existing building codes and occupancy controls, or both.¹³

3.2.25 *unassigned area, n*—portion of the plannable area on a floor that is not assigned to occupant groups or functions.¹⁰

3.2.25.1 *Discussion*—Unassigned area includes all plannable area that cannot be classified as either assignable area, or restricted area, or occupant void, or interior encroachment, or secondary circulation. Examples are: (1) small areas between furniture panels and columns where furniture does not fit; and (2) area set aside to install future workstation or other functions.

3.2.26 *usable area, n*—portions of a building that can be classified as tenant area or amenity area.¹⁴

3.2.27 *void area, n*—absence of a floor inside the dominant portion where a floor might otherwise be expected or measured, that is typically in the plane of the upper floors of multi-story atria or lobbies, light wells, auditoria or the area adjacent to a partial-floor mezzanine.

4. Significance and Use

4.1 This classification practice can be used to facilitate comparison of areas that have been measured but it does not specify what measurements must be conducted.

4.2 This classification practice can be used in space programming and forecasting of space requirements.

4.3 This classification practice can be used to classify areas for internal cost accounting purposes.

4.4 This classification practice can be used to compare space use between organizations.

5. Basis for Classification—Basis of Practice

5.1 The basis for classification of floor area measurements for certain functional types of building is contained in Annex A1.

5.2 In the future, additional annexes are expected to be added to this document to classify floor area measurements in other functional types of building and to compare floor area classifications for different purposes or from different countries.

5.3 Task groups of E06.25 exist to develop other annexes to this classification, for some other functional types of building, and to enable comparison to area measurements from other jurisdictions, including Japan and Europe.

5.4 A method for estimating the effect of building loss features is contained in Classification E1664.

6. Report

NOTE 1—In the future, additional annexes are expected to be added to this practice to contain the classifications for floor area measurements in other functional types of building and to compare measurements of floor area for different purposes or from different countries.

6. Measurement Procedure and Report

6.1 Annex A1 gives guidance for reporting measurements for certain functional types of building for those purposes stated in Section provides a procedure for measuring floor area and for reporting such measurements for certain functional types of building for those purposes stated in Section 1.

6.2 When reporting floor area that has been categorised in accordance with the guidance in

6.2 When reporting floor area, measured in accordance with the procedure in Annex A1, identify the method that was used and note any exceptions to its methods. Where possible, the extent of variation shall be assessed and stated as an estimate. note any exceptions to the prescribed method. Where possible, also assess the extent of variation and state as an estimate.

7. Keywords

7.1 area; building; building floor area; facility; facility management; floor area; measurement; occupant requirement

ANNEX

ANNEXES

(Mandatory Information)

A1. CLASSIFICATION OF BUILDING FLOOR AREA MEASUREMENTS IN OFFICES, RESEARCH, LABORATORY, AND MANUFACTURING BUILDINGS AND BUILDING-RELATED FACILITIES⁴
A1. PRACTICE FOR MEASUREMENT IN OFFICE FACILITIES AND RELATED FUNCTIONAL TYPES OF BUILDINGS SUCH AS RESEARCH, LABORATORY, AND MANUFACTURING BUILDINGS AND BUILDING-RELATED FACILITIES

A1.1 Introduction

A1.1.1 This annex describes standard methods of measuring facility floor areas in office, research, laboratory, and manufacturing

¹³ Terms from BOMA and ASTM standards were used as the starting point to develop this term. The copyright of this term is shared by ASTM and BOMA.

¹⁴ Term in the BOMA standard used as the starting point to develop this term. BOMA shares the copyright with ASTM.

buildings. The purpose is to provide consistent terms and definitions for floor area measurements to facilitate comparison of space measurements among different organizations.

A1.1.1 The purpose of Annex A1 is to provide consistent terms, definitions, and measurement procedures for floor area measurements to facilitate comparison of measurements among different organizations and for financial chargeback.

A1.2 Scope

A1.2.1 This annex of the classification is applicable to measurement of space in both leased and owner-occupied buildings. The document is applicable to office, research, laboratory, and manufacturing buildings.

A1.2.2 This annex of the classification is intended for use by facility managers and occupants of buildings and building-related facilities. It is suitable for such purposes as strategic facility planning, space management, and internal chargeback to occupant organizations.

A1.2.3 This annex of the classification is not intended for use in lease negotiations with owners of commercial office buildings or related properties. For that purpose, users are referred to the American National Standard published by the American National Standards Institute under the designation ANSI Z65.1 and commonly known as the ANSI-BOMA standard.

A1.2.4 The scope of this annex includes the following categories of floor area measurement. The relationships among them are listed in A1.2.5 and are diagrammed in

A1.2.1 Use Annex A1 to measure floor area in office facilities. This measurement practice may also be suitable for use in other functional types of building which include offices, such as research, laboratory, or manufacturing buildings and building-related facilities.

A1.2.2 Annex A1 is applicable to the measurement of space whether owned or leased.

A1.2.3 Annex A1 is intended for use by facility managers and occupants of building and facilities. It is suitable for such purposes as strategic planning, space management, and internal chargeback to occupant organizations.

A1.2.4 Annex A1 gives rules for measurement for use in facility management, space planning, and chargeback to occupant units.

A1.2.5 Annex A1 is not intended for use in lease negotiations with owners of commercial office buildings or related properties. For that purpose, refer to the American National Standard published by the American National Standards Institute under the designation ANSI/BOMA Z65.1–1996, and commonly known as the ANSI-BOMA standard.

A1.3 Relationships Between Categories of Floor Area

A1.3.1 This annex includes four categories of floor area: Exterior Gross Area, Interior Gross Area, Plannable Gross Area, and Plannable Area. (Refer to Fig. A1.1.)

A1.3.2 These four categories of floor area, and the elements (sub-categories of floor area) within each of these four categories, relate one to the other in the following ways:

A1.3.2.1 Interior Gross Area is equal to Exterior Gross Area less Dominant Portion to Exterior Gross Area, Excluded Areas, Interstitial Areas, Restricted Headroom Areas, and Interior Parking Areas.

A1.3.2.2 Plannable Gross Area is equal to Interior Gross Area less Perimeter Encroachments.

A1.3.2.3 Plannable Area is equal to the sum of the following areas: Restricted Areas, Interior Encroachments, Occupant Void Areas, Unassignable Areas, Assignable Areas, and Secondary Circulation.

A1.4 Rules for Measurement

A1.4.1 Measurements shall include only floor areas that are totally enclosed within a building. Climate conditions and construction practices will dictate the degree of weather tightness typical for exterior walls in a local area. Basements, enclosed porches, penthouses, mechanical equipment rooms, lobbies, mezzanines, corridors, interior parking, and enclosed loading docks are included. Spaces outside the exterior walls or without a roof covering are not included in the floor area measurement. A space, such as balcony, which has a roof or ceiling but is not fully enclosed, is not included.

A1.4.2 For space planning and chargeback, measure the *plannable gross area* and the various elements of floor area within the *plannable gross area*. However, there are likely to be instances when additional measurements may be needed. Therefore, elements of floor area shown in Fig. A1.1 under the *exterior gross area* and the *interior gross area* are described to give context to the cascade of relationships from the gross exterior to the plannable area. However, to ensure correct measurement of elements outside the *plannable gross area* will require using the procedures contained in ANSI/BOMA Z65.1–1996.

A1.4.2.1 *building exterior gross area*, measures all floor areas on all levels of a building. The measurement indicates total constructed space and is useful for building efficiency and construction cost comparisons.

A1.4.2.2 *facility interior gross area*, is the measurement of area at the floor surface plane as it intersects the exterior wall.

A1.4.2.3 *facility rentable area*, is useful as a consistent basis for comparison with other buildings. The calculation is applicable to both leased buildings and owner-occupied buildings. Facility rentable area as defined in this classification is not necessarily the basis for lease agreements.

A1.4.2.4 *facility usable area*, calculates the portion of a building or floor area used for secondary circulation and to house personnel, furniture, and equipment. Facility usable area is a measurement for programming, planning, and allocating space.

A1.4.2.5 *facility assignable area*, measures the portion of a floor or building used to house personnel, furniture, and equipment.

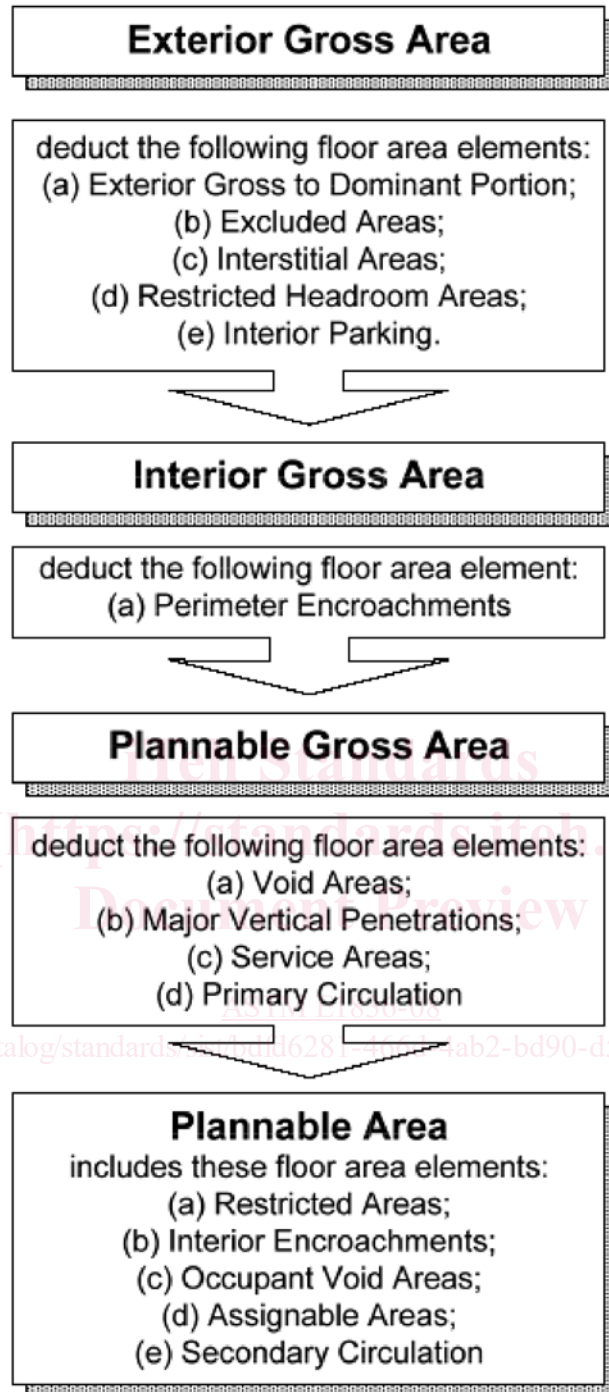


FIG. A1.1 Floor Area Relationships

Facility assignable area is useful for *detailed* programming, planning, allocating, and layout of space.

A1.2.5 Relationships among Floor Area Measurements

A1.4.3 All measurements shall be made along the plane of the floor to the points where floors and walls intersect.

A1.4.4 In the case of a sloped floor measure the floor area in the horizontal plane as depicted on a floor plan.

A1.4.5 Stair landings shall not count as floor area, but as part of the stair.

A1.4.6 The finished surface of a wall normally consists of gypsum wallboard, glass, plaster, concrete, brick, or masonry units. Special wall materials used to surface a wall are furring strips, paneling or casework, tile, mirrors, and any materials referred to as “wall coverings” or “window coverings” that are applied over base building finished walls or windows.

A1.4.7 The finished surface of an exterior window shall be the glass surface that is in direct contact with the interior environment of the building.

A1.4.8 The finished surface of a floor is the top of a deck, typically concrete or wood, without special surfacing materials that are applied over the base building finished floor, such as carpeting, tile, resilient flooring, or any materials referred to as “floor coverings.”

A1.4.9 The finished surface of a ceiling is typically the underside of acoustical tile, plaster, gypsum, wallboard, or similar surface. In the absence of a continuous ceiling surface, measurement to the finished surface of the ceiling shall be to the bottom of any suspended ceiling grid, or, if no ceiling grid exists, to the lower of (1) the underside of exposed building structure elements or (2) the lowest general level of the bottom of light fixtures (not including up-lighting), air diffusers, sprinkler heads or similar base building fixtures that are suspended below the underside of building structural elements, or (3) the typical ceiling height established by the intended building design; provided that a finished ceiling height as designed does not create a restricted headroom condition.

A1.4.10 Restricted headroom is typically 2.0 to 2.3 m (6.5 to 7.5 ft) or less. This category is primarily intended to exclude large areas such as low attics and crawlspaces from being defined as “floors.” It also establishes, in a sloped ceiling attic or sloped exterior wall, where the effective outer wall is located. The category of restricted headroom does not apply to places with reduced or no headroom conditions (that is, walls, columns, stairs, door headers, limited piping, railings, alcoves, and so forth) typically found on a floor, unless they are part of an overall restricted headroom condition.

A1.4.11 Exterior Gross Area—Measured Elements:

$$\begin{aligned}
 & \text{Facility interior gross area} \\
 = & \\
 & \text{Building exterior gross area—Exterior walls} \\
 & \text{Facility rentable area} \\
 = & \\
 & \text{Facility interior gross area—Major vertical penetrations, interior parking, and void areas} \\
 & \text{Facility usable area} \\
 = & \\
 & \text{Facility rentable area—Building core and service area and primary circulation} \\
 & \text{Facility assignable area} \\
 = & \\
 & \text{Facility usable area—Secondary circulation}
 \end{aligned}$$

A1.3 Terminology

A1.3.1 building projection—a convector, baseboard heating unit, radiator, or other building element located inside a building adjacent to a wall that prevents the use of that space for furniture, equipment, circulation, or other functions.

A1.3.2 excluded area—fully enclosed spaces with adequate clear headroom that, for some reason, are not intended for or are not suitable for occupancy by people or equipment, but not spaces that are temporarily unusable due to flood, fire damage, construction, or renovation activity.

A1.3.2.1 Discussion—Examples of excluded areas are unfinished attic spaces, attic spaces without unobstructed access, damp or flooded basements, and confined spaces requiring permits for entry.

A1.3.3 finished surface—a wall, ceiling, or floor surface, including glass, as prepared for tenant or occupant use, excluding the thickness of any special surfacing materials such as panelling, furring strips, and carpet.

A1.3.4 interstitial area—the area of load-bearing surfaces, located above or below occupied building floors, that are not available for general occupancy due to inadequate clear headroom but may contain building mechanical or electrical systems predominantly serving adjacent floors or provide access to such systems.

A1.4 Floor Area Measurement Guidelines

A1.4.1 The following guidelines apply to all space categories:

A1.4.1.1 Measurements—All measurements shall be made along the plane of the floor to the points where floors and walls intersect.

A1.4.1.2 Clear Headroom—Floor area that does not have sufficient clear, unobstructed headroom to conform to local building codes or that has headroom less than that required for occupancy (typically 2.0 to 2.3 m (6.5 to 7.5 ft)) shall not be included in any floor area measurement.

A1.4.1.2.1 Discussion—Floor area under objects such as pipes, ductwork, and equipment that are physically attached to the building and that obstruct the zone between the floor and the height above the floor for required headroom is considered obstructed. Where an area with sufficient clear headroom can only be accessed through an obstructed area, then the area with clear headroom is also considered obstructed area.

A1.4.1.3 Floor Area—This standard includes only areas that are totally enclosed within the building. Climate conditions and construction practices will dictate the degree of weather tightness typical for exterior walls in a local area. Basements, enclosed porches, penthouses, mechanical equipment rooms, lobbies, mezzanines, corridors, interior parking, and enclosed loading docks are included. Spaces outside the exterior walls or without a roof covering are not included in the floor area measurement. Interstitial areas and excluded areas are not included in floor area measurement.

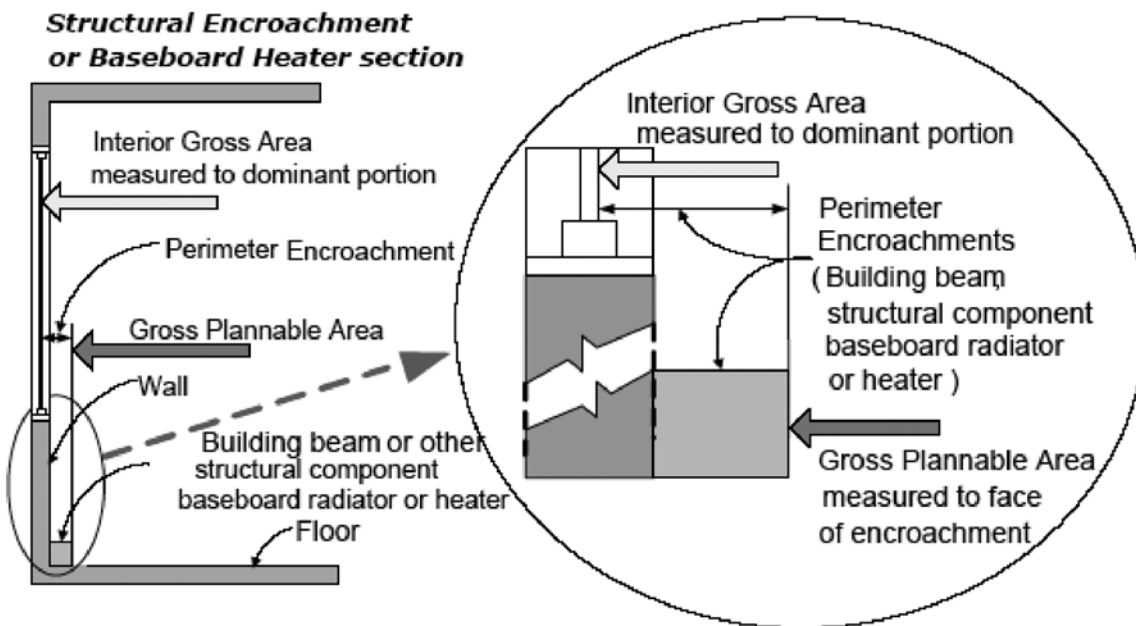


FIG. A1.3 Structural Encroachment or Baseboard Heater Section

A1.4.1.4 Void Areas—The floor areas of rooms more than one story in height and having void areas on upper floors, such as atria, light wells, or lobbies, are included in the area measurement. Major vertical penetrations are not considered void areas.

A1.4.1.5 Exterior Bridges and Tunnels—Totally enclosed, constructed areas connecting two or more buildings. Exterior bridges and tunnels shall be assigned to one building or apportioned between buildings.

A1.4.1.6 Tenant Support Area—The floor area of a tenant used to support operations of the tenant and not available for use by any other tenant nor the building. Examples include tenant photocopier rooms, computer rooms, mailrooms, etc.

A1.4.1.7 Reporting Exceptions—If an organization chooses to exclude building columns and projections from the calculation of facility usable or facility assignable areas, this practice should be noted when reporting area measurement. If the alternate method of calculating building core and service area as shown in

A1.4.11.1 Exterior Gross to Dominant Portion—Building exterior gross area is the sum of the floor areas on all levels of a building that are totally enclosed within the building. When users of this practice also use the ANSI/BOMA standard, measure building exterior gross area to the outside face of exterior walls, disregarding canopies, cornices, pilasters, buttresses, balconies that are not fully enclosed and that extend beyond the wall face, and courtyards that are enclosed by walls but have no roof. A balcony that is not fully enclosed is not included in the exterior gross area even if it does not extend beyond the line of the outside wall face. The building gross area of basement space includes the area measured to the outside face of basement or foundation walls.

(1) If Property Line is Within a Building—If the property line lies within a building wall that is common with an adjoining building, measure the building exterior gross area to the property line. If the property line does not lie within a building wall but the wall is structurally common with an adjoining building, measure building exterior gross area to the center of the structural portion of the common wall.

A1.4.11.2 Exterior Bridges and Tunnels —Exterior tunnels bridges and tunnels which are totally enclosed constructed areas connecting two or more buildings are included in the interior building gross area but are not included in the gross plannable area. Assign exterior bridges and tunnels to one building or apportion between buildings.

A1.4.11.3 Excluded Areas— Measure each excluded area. While excluded areas may meet the criteria of adequate clear headroom, if there is owner/landlord documentation that indicates that these areas are to be excluded from the gross interior floor area calculations then measure each excluded area and deduct from the exterior gross area. Examples of excluded areas include, but are not limited to, unfinished attic areas, attic areas with obstructed access, damp or flooded basements, and confined areas requiring permission for entry. Areas temporarily unusable due to flood, fire damage, construction, or renovation activity are *not* excluded areas.

A1.4.11.4 Interstitial Areas—Measure the areas of load-bearing surfaces that are located above or below occupied building floors and that are not available for general occupancy.

A1.4.11.5 Restricted Headroom Areas —Measure each restricted headroom area. These are large portions of a floor that do not have sufficient clear, unobstructed headroom to conform to local building codes or that has headroom less than that required for occupancy, typically 2.0 to 2.3 m (6.5 to 7.5 ft).

A1.4.11.6 Interior Parking—Interior parking that is totally enclosed within the building is included in exterior gross area but is not included in the gross plannable area.

A1.4.12 Interior Gross Area—Measured Elements:

A1.4.12.1 This practice can be used to determine the Interior Gross Area, which will be consistent with the measurement methodology within the ANSI/BOMA Z65.1–1996 Standard. To facilitate use of both standards, measure and calculate the total floor area taken up with perimeter encroachments while determining the interior gross area.

A1.4.12.2 *Perimeter Encroachments*—Measure the base building elements or restricted areas that are located inside the dominant portion of a building on the outer wall and that prevent the use of the floor area for furniture, equipment, circulation or other occupant function. (Dominant Portion is defined in ANSI/BOMA Z65.1–1996.¹⁵) Perimeter encroachments include but are not limited to: (1) window sills; (2) building projections such as convector, baseboard heating unit, radiator, or other building element that is located in the interior of a building and adjacent to a perimeter building wall that prevents the use of that space for furniture, equipment, circulation, or other functions; (3) horizontal floor area between adjacent encroachments where such area is 12 in. (304.8 mm) or less (such as the distance between a perimeter column and adjacent curtain wall HVAC distribution device); (4) structural columns located on the perimeter of the building or within 12 in. (304.8 mm) or less of the inside finished surface of the perimeter wall.

A1.4.12.3 Figs. A1.2-A1.5 each demonstrates how to measure perimeter encroachments. Each figure shows a different combination of building features at a perimeter wall.

A1.4.12.4 The first example in Fig. A1.2 illustrates a perimeter encroachment at a windowsill. Measure the area of the encroachment from the inside face of the dominant portion to the inside face of the exterior building wall.

A1.4.12.5 In Fig. A1.3 is used, this should also be noted.

A1.5 Building Exterior Gross Area

A1.5.1 Building exterior gross area is the sum of the floor areas on all levels of a building that are totally enclosed within the building (see Fig. A1.4). Measure building exterior gross area to the outside face of exterior walls, disregarding canopies, cornices, pilasters, buttresses, balconies that extend beyond the wall face, and courtyards that are enclosed by walls but have no roof. The building gross area of basement space includes the area measured to the outside face of basement or foundation walls.

A1.4.12.6 Fig. A1.4). Measure building exterior gross area to the outside face of exterior walls, disregarding canopies, cornices, pilasters, buttresses, balconies that extend beyond the wall face, and courtyards that are enclosed by walls but have no roof. The building gross area of basement space includes the area measured to the outside face of basement or foundation walls.

A1.5.2 If the property line lies within a building wall that is common with an adjoining building, measure the building exterior gross area to the property line. If the property line does not lie within a building wall but the wall is structurally common with an adjoining building, measure building exterior gross area to the center of the structural portion of the common wall.

A1.5.3 Exterior bridges and tunnels that are totally enclosed, constructed areas connecting two or more buildings are included in building exterior gross area.

A1.6 Facility Interior Gross Area

A1.6.1 Facility interior gross area is building exterior gross area less the thickness of exterior walls.

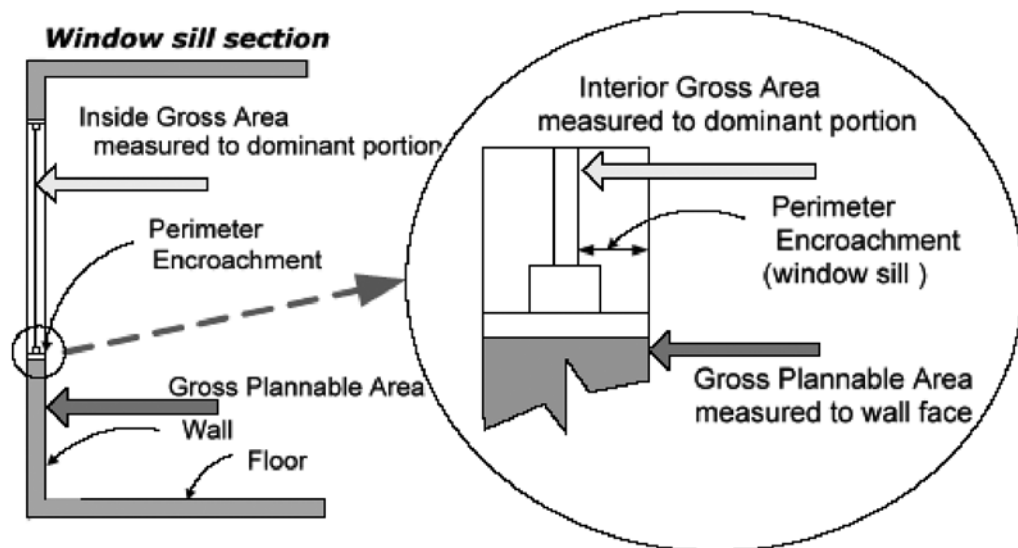


FIG. A1.2 Perimeter Encroachment at a Window Sill

¹⁵ In the 1996 edition, which is copyright by BOMA, the dominant portion is defined as the inside face of the portion of the wall which is window glass where it is more than 50 % of the vertical distance from finished floor to finished ceiling, and elsewhere is the inside face of the outside wall, or of a pilaster or column attached to the outside wall where they occur. Note that the reader is cautioned that ANSI/BOMA Z65.1–1996 is developed by and subject to the authority of BOMA International, which may change it from time to time at its sole option. It is not defined as a part of this ASTM standard.

Convactor, Air Handling Unit or large sill section

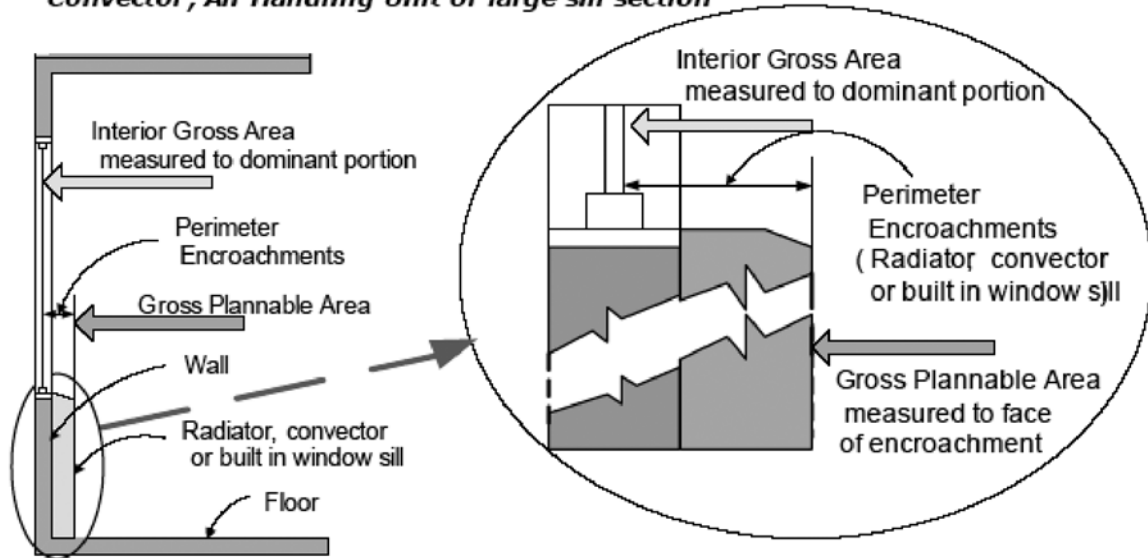


FIG. A1.4 Perimeter Encroachment Radiator, Convactor, or Built In Window Sill

Section including a HVAC element located away from the wall restricting the use of space

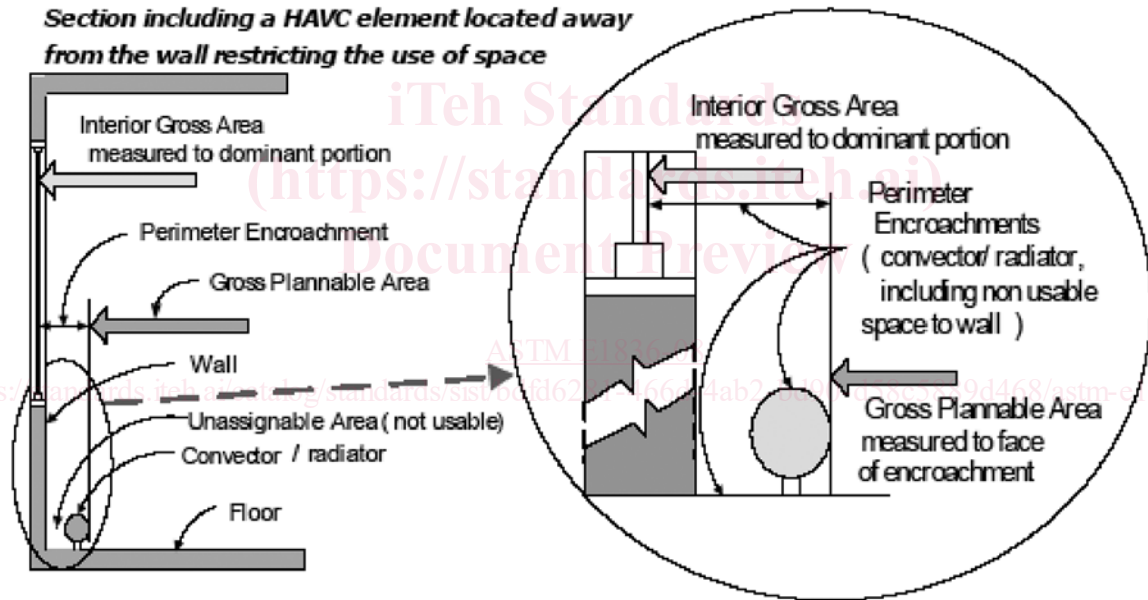


FIG. A1.5 HVAC Element is Located Away from Wall Restricts Use of Floor Area

A1.7 Exterior Walls

A1.7.1 Exterior walls are measured at the intersection of the plane of the finished floor and the finished interior surface of the walls.

A1.8 Facility Rentable Area

A1.8.1 Facility rentable area is useful as a consistent basis of comparison with other buildings (see is an example of an encroachment due to a distribution system for heating, ventilating, or air conditioning (HVAC). Measure the area of the encroachment from the inside face of the dominant portion to the inside face of the HVAC radiator.

A1.4.12.7 The example in Fig. A1.5). Facility rentable area can be calculated for any building, whether leased or owner-occupied. Facility rentable area as defined in this classification is not necessarily the basis for lease agreements.

A1.8.2 Facility rentable area is calculated by measuring the major vertical penetrations, interior parking, and void areas and subtracting their total area from facility interior gross area. For sloping walls, floor area measurements will be made at the intersection of the plane of the finished floor.

A1.8.3 The areas of columns and building projections are included in facility rentable area. Excluded from facility rentable area are exterior walls, major vertical penetrations, interior parking, and void areas.