



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 categorizing 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 Annex A1 may be used to classify floor area in one or more specific functional types of buildings, 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 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 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.

2. Referenced Documents

2.1 ASTM Standards:

E 1664 Classification for Serviceability of an Office Facility for Layout and Building Factors²

2.2 ANSI Standard:

ANSI Z65.1 – 89 Standard Method for Measuring Floor Area in Office Buildings³

3. Terminology

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.

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

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

3.1.3 Definitions of Terms Specific to This Standard:

3.1.4 The definitions of terms listed also appear in Annex A1.

3.1.5 *building projection, n*—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.

3.1.6 *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.

3.1.6.1 *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.

3.1.7 *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.

3.1.8 *interstitial 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 that may contain building mechanical or electrical systems predominantly serving adjacent floors or provide access to such systems.

4. Significance and Use

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

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

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

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² *Annual Book of ASTM Standards*, Vol 04.07.

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

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

5. Basis for Classification

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 E 1664.

6. Report

6.1 Annex A1 gives guidance for reporting measurements for certain functional types of building for those purposes stated in Section 1.

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

7. Keywords

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

ANNEX

(Mandatory Information)

A1. CLASSIFICATION OF BUILDING FLOOR AREA MEASUREMENTS IN OFFICES, RESEARCH, LABORATORY, AND MANUFACTURING BUILDINGS AND BUILDING-RELATED FACILITIES⁴

A1.1 Introduction

A1.1.1 This annex describes standard methods of measuring facility floor areas in office, research, laboratory, and manufacturing buildings. The purpose is to provide consistent terms and definitions for floor area measurements to facilitate comparison of space measurements among different organizations.

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 diagramed in Fig. A1.1.

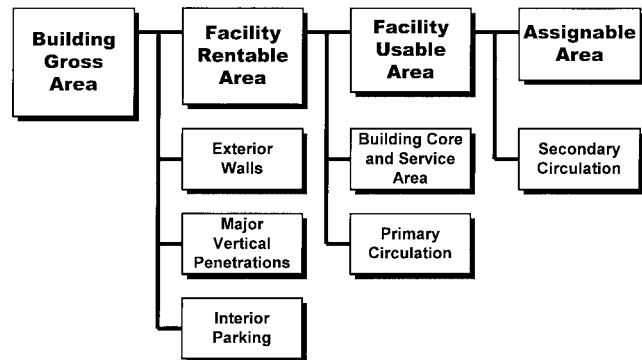


FIG. A1.1 Floor Area Measurement Relationships

A1.2.4.1 *building 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.

A1.2.4.2 *facility rentable area*, is useful as a consistent basis for comparison with other buildings. The measurement 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.

A1.2.4.3 *facility usable area*, measures the portion of a building or floor available for occupants. Facility usable area is a measurement for programming, planning, and allocating space.

A1.2.4.4 *assignable area*, measures the portion of a floor or building used to house personnel, furniture, and equipment. Assignable area is useful for detailed programming, planning, allocating, and layout of space.

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

A1.2.5 Relationships among Floor Area Measurements:

Facility rentable area	=	Gross area – Exterior walls, major vertical penetrations, and interior parking space
Facility usable area	=	Facility rentable area – Building core and service area and primary circulation
Assignable area	=	Facility usable area – Secondary circulation

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 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 that 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 (see Fig. A1.2):

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—Spaces that do not have sufficient clear headroom to conform to local building codes or that have 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.

A1.4.1.3 Floor Area—This standard includes only areas that are totally enclosed within the building envelope. 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 spaces, 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 the floor area measurement.

A1.4.1.4 Void Areas—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 of only the lowest floor, not the upper levels. Major vertical penetrations (utility shafts, elevator shafts, and stairs) are not considered void areas and are included in the measurement of building gross area for each floor through which they pass.

A1.4.1.5 Reporting Exceptions—If an organization chooses to exclude building columns and projections from the calculation of usable or 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 Fig. A1.3 is used, this should also be noted.

A1.5 Building Gross Area

A1.5.1 Building gross area is the sum of the floor areas on all levels of a building that are totally enclosed within the building envelope (see Fig. A1.4). Measure building gross area

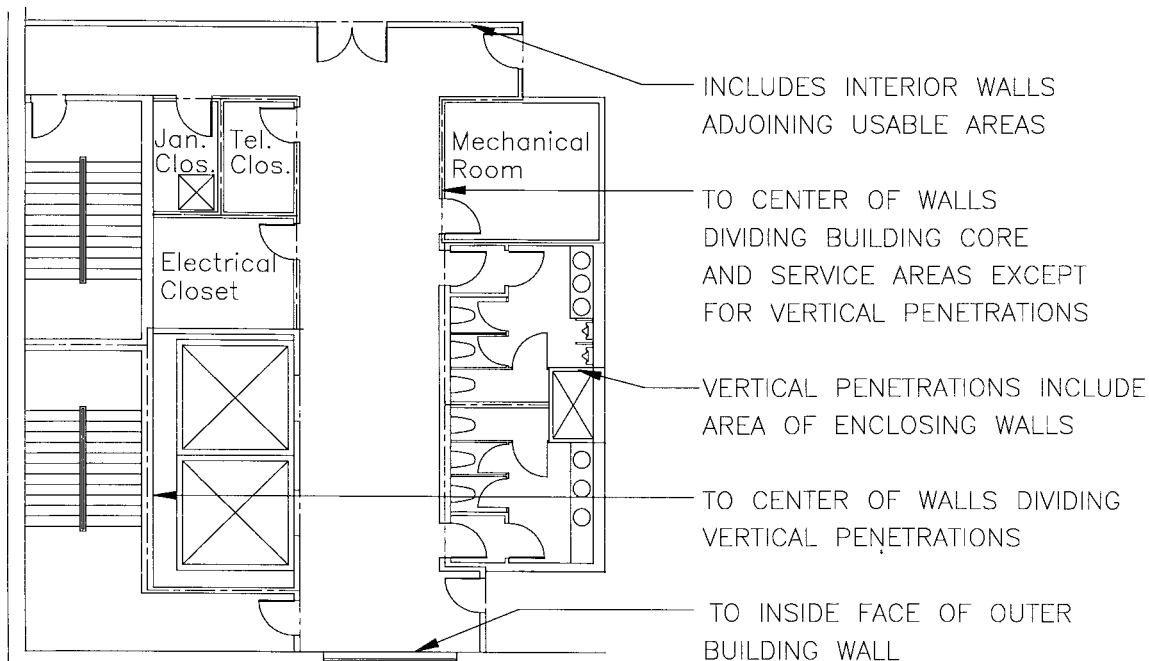


FIG. A1.2 Building Core and Service Areas Using Recommended Area Classification Method

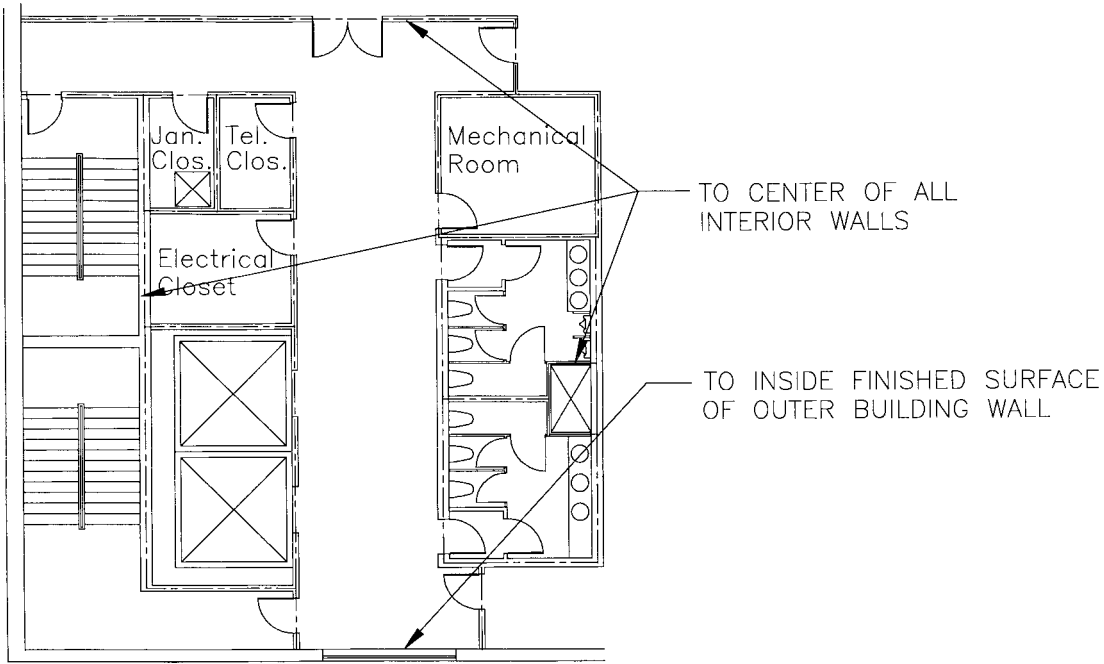


FIG. A1.3 Building Core and Service Areas Using Alternate Area Classification Method

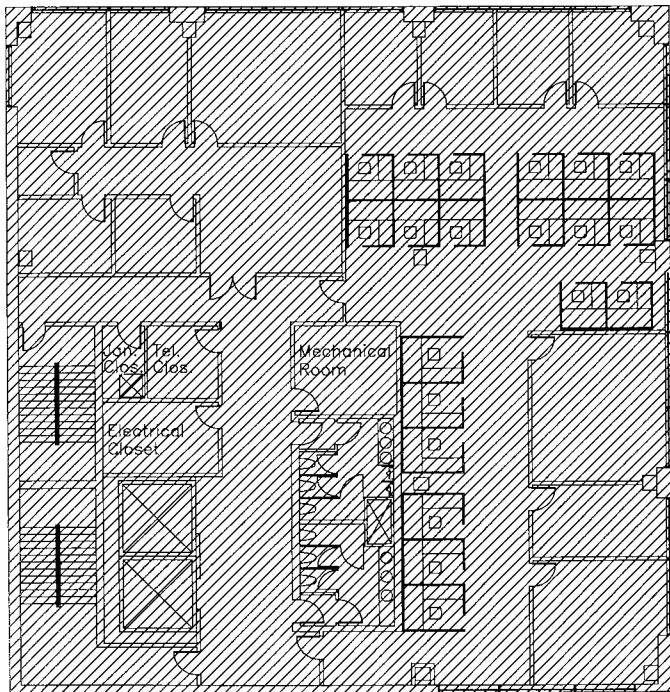


FIG. A1.4 Building Gross Area

to the outside face of exterior walls, disregarding cornices, pilasters, and buttresses, that extend beyond the wall face. 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 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 the gross area to the center of the structural portion of the wall.

A1.5.3 Building inside area is building gross area less the thickness of exterior walls measured to the finished interior surface of the walls.

A1.6 Facility Rentable Area

A1.6.1 Facility rentable area is useful as a consistent basis of comparison with other buildings (see 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.

A1.6.2 Compute the facility rentable area of a floor by measuring to the inside finished surface of the permanent outer building walls, excluding any major vertical penetrations of the floor. For sloping walls, floor area measurements will be made at the floor plane.

A1.6.3 The areas of columns and building projections are included in facility rentable area. Excluded from facility rentable area are exterior walls, major vertical penetrations, and interior parking spaces.

A1.7 Major Vertical Penetrations

A1.7.1 Major vertical penetrations shall include stairs, elevator shafts, flues, pipe shafts, vertical ducts, and their enclosing walls. Stairs and elevator shafts shall be considered major vertical penetrations for all affected floors, even the lowest level at which they originate. Not included in this category are stairs, dumbwaiters, and lifts that do not serve a general building circulation function but exclusively serve a specific tenant. In calculating the area of vertical penetrations, disregard areas less than 0.1 m²(1 ft²).

A1.7.2 This definition of major vertical penetrations is consistent with that given in ANSI Z65.1.

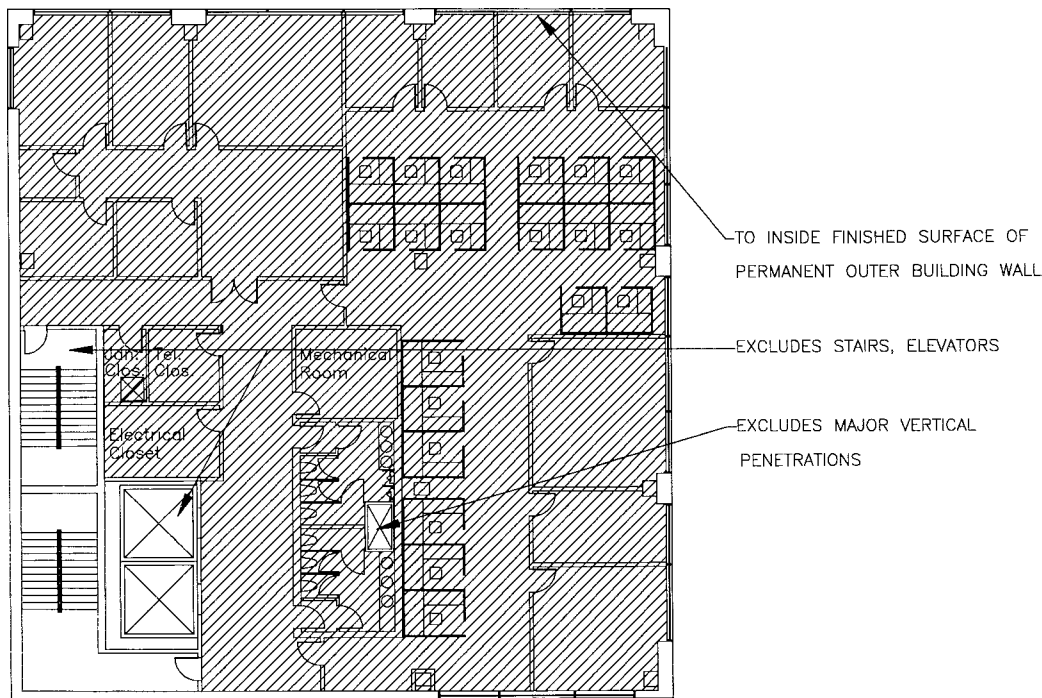


FIG. A1.5 Facility Rentable Area

A1.8 Interior Parking Space

A1.8.1 Parking space that is totally enclosed within the building envelope is included in building gross area but is not included in rentable area.

A1.9 Facility Usable Area

A1.9.1 Facility usable area is the floor area of a facility that can be assigned to occupant groups (see Fig. A1.6). Facility usable area includes the area of interior walls, building columns and projections, and secondary circulation. Facility usable area excludes exterior walls, major vertical penetrations, primary circulation, building core, and building service areas.

A1.9.2 Compute the facility usable area of the floor by measuring to the inside finished surface of the permanent outer building walls and to the finished surface of the walls surrounding major vertical penetrations and building core and service areas.

A1.9.3 When determining the facility usable area of a department or leasehold, measure to the center of the walls dividing the space from adjoining facility usable areas.

A1.10 Building Core and Service Area

A1.10.1 Building core and service area are the floor area of a facility necessary for the operation of the facility and are not available for general occupancy.

A1.10.2 Building core and service areas include the following: building lobbies, mechanical rooms, electrical rooms, telephone rooms, toilet rooms, restrooms, and custodial rooms.

A1.10.3 Mechanical rooms, electrical rooms, or telephone rooms that serve only the special needs of an individual tenant or occupant and are not required for the operation of the building are not part of building core and service area. They shall be included in the facility usable area for the tenant or occupant they serve.

A1.10.4 A toilet room that is considered private (accessible only from a private office or limited in use to a specific group of people) shall be classified as a private toilet room and not included as part of building core and service area. It shall be counted as facility usable area for the tenant or occupant that it serves.

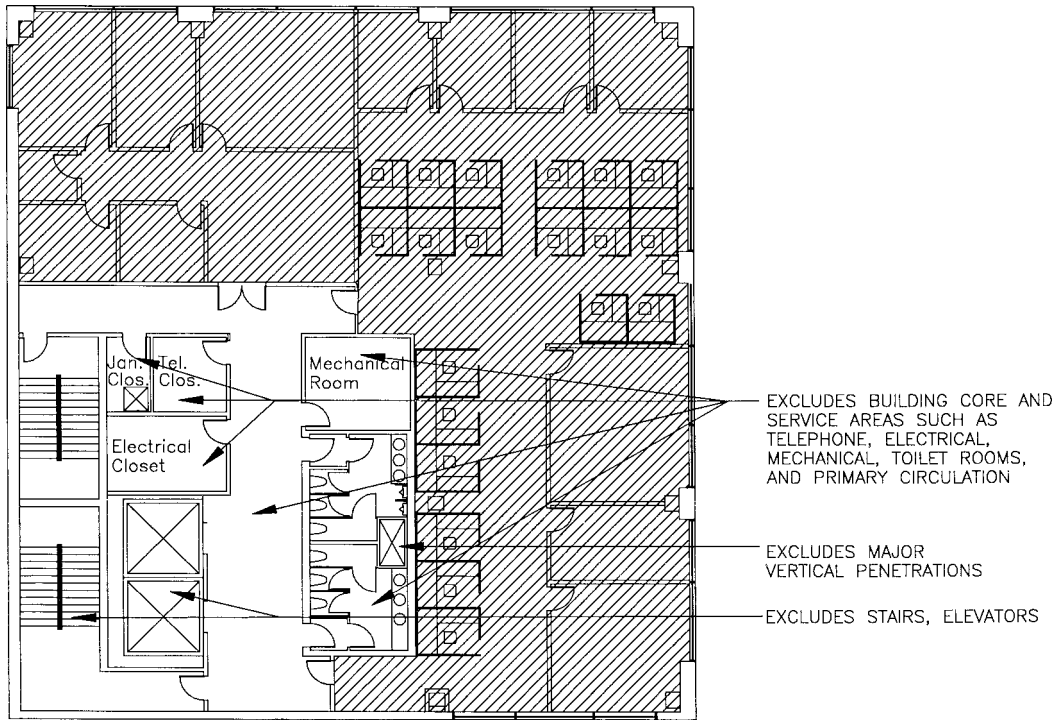


FIG. A1.6 Facility Usable Area

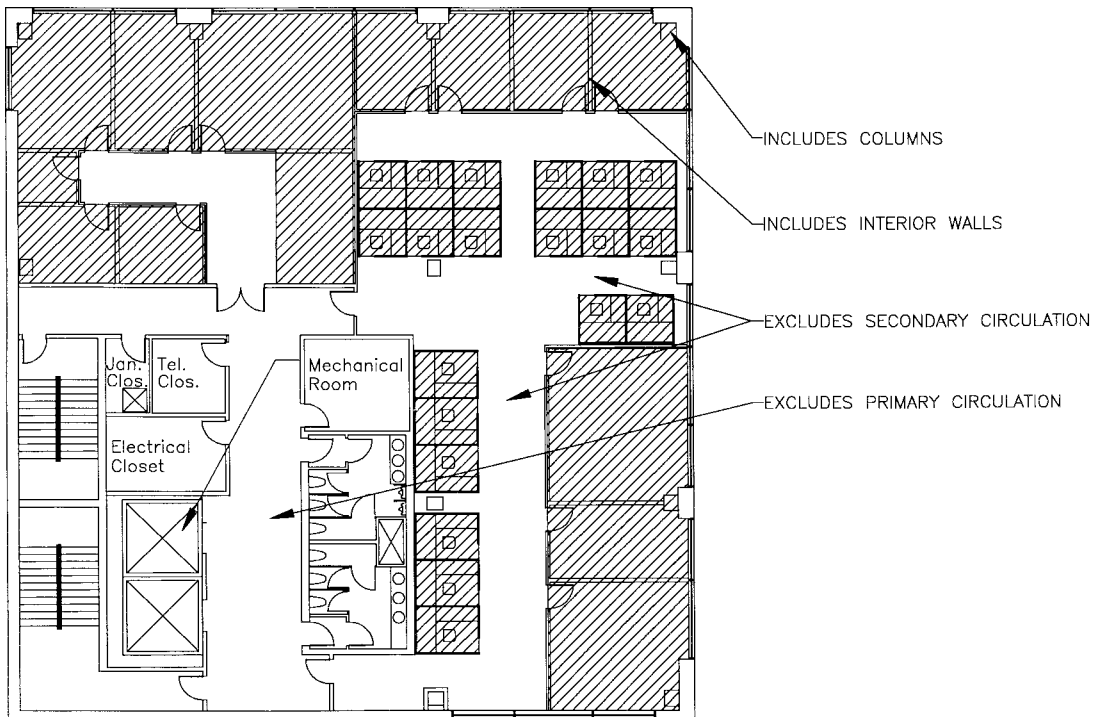


FIG. A1.7 Assignable Area

A1.10.5 Loading docks used as part of the process of a single occupant (a single occupant manufacturing plant) shall not be included as part of building core and service area. Loading docks used for more than one tenant or to service the functions of the building as a whole shall be classified as building service area.

A1.11 Primary Circulation

A1.11.1 Primary circulation area is the portion of a building that is a public corridor or lobby or is required for access by all occupants on a floor to stairs, elevators, toilet rooms, and

building entrances. Primary circulation is determined by identifying the reasonable minimum circulation connecting stairs, elevators, toilet rooms, building entrances, and tenant space entry points on multitenant floors. Bridges, tunnels, and atria that do not meet this strict definition but are not readily used for another purpose may be considered primary circulation. Primary circulation does not necessarily include all circulation required for life safety access and egress. However, if dedicated circulation required for egress can serve no normal secondary circulation function, it shall be considered primary circulation.

A1.11.2 In space layouts where several alternative circulation routes connect stairs, elevators, toilet rooms, and entrances, one route should be designated as primary circulation with the remaining circulation routes designated as secondary circulation. This differentiation is important to ensure validity of measurements for comparison purposes.

A1.12 Building Core and Service Area Measurement Methods

A1.12.1 Two methods for calculating building core and service areas are defined. These methods are similar except in the treatment of wall thicknesses.

A1.12.2 The recommended method is to calculate the area of building core and service spaces by measuring to the center of all interior walls, except in the following cases:

A1.12.2.1 Where a major vertical penetration adjoins a building core and service space, the area of the wall shall be included in the major vertical penetration, or

A1.12.2.2 Where a building core and service space adjoins usable space, the area of the wall shall be included in the area of the building core and service space.

A1.12.3 An alternate method is to measure to the center of the wall and so note when reporting area measurements.

A1.13 Assignable Area

A1.13.1 Assignable area is the portion of facility usable area that can be assigned to occupant groups or functions (see Fig. A1.7). Assignable area includes interior walls, building columns, and projections. Assignable area excludes exterior walls, major vertical penetrations, building core and service areas, primary circulation, and secondary circulation.

A1.13.2 Compute the assignable area of a floor by measuring to the inside surface of the exterior building walls, to the finished surface of walls surrounding major vertical penetrations and building core and service spaces, and to the center of partitions separating assignable area from secondary circulation space.

A1.13.3 When determining the assignable area of the portion of a floor occupied by a department or leasehold, measure to the center of walls separating the space from adjoining assignable areas. In open plan workspace, measure to the center of furniture panels.

A1.14 Common Support Spaces

A1.14.1 Assignable area includes the space devoted to common support services. Common support area is the portion of the usable area not attributed to any one occupant but provides support for several or all occupant groups. Examples of common support spaces are cafeterias, vending areas, auditoriums, fitness facilities, building mail rooms, and first aid rooms. These may be separately identified as a subcategory of assignable area if required.

A1.15 Secondary Circulation Area

A1.15.1 Secondary circulation area is the portion of a building required for access to some subdivision of space, by walls or not, that is not defined as primary circulation.

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