

## CHAPTER 4

### BUILDING DEFINITIONS AND DATA ELEMENTS

This chapter provides the technical definitions, measurement procedures, and coding structures for building data elements. The interrelationships between these components of building area are illustrated by the conceptual framework in Figure 1. The technical definitions and codes for the room use categories are found in Chapter 5.

#### Definitions Of Building Areas<sup>7</sup>

The definitions and procedures provided in this chapter are intended to clarify and provide guidelines for the most commonly used types of data to be collected and compiled on buildings. These guidelines are based on the definitions and standards established during the 1960s for the Federal Construction Council and published by the National Academy of Sciences. The Federal Construction Council standards were intended for use by federal agencies, but they have been widely adopted and used by colleges and universities.

The definitions and guidelines in this chapter attempt to clarify and update some of the earlier standards by providing additional guidance on how to interpret and apply measurement procedures. The guidelines also are intended to establish a common standard for the minimum amount of data to be included in a building inventory in order to provide a database that is usable for both intra-institutional and inter-institutional purposes. *Institutions are not precluded by these guidelines from collecting additional building data or from including other types of structures in their facilities inventory.*

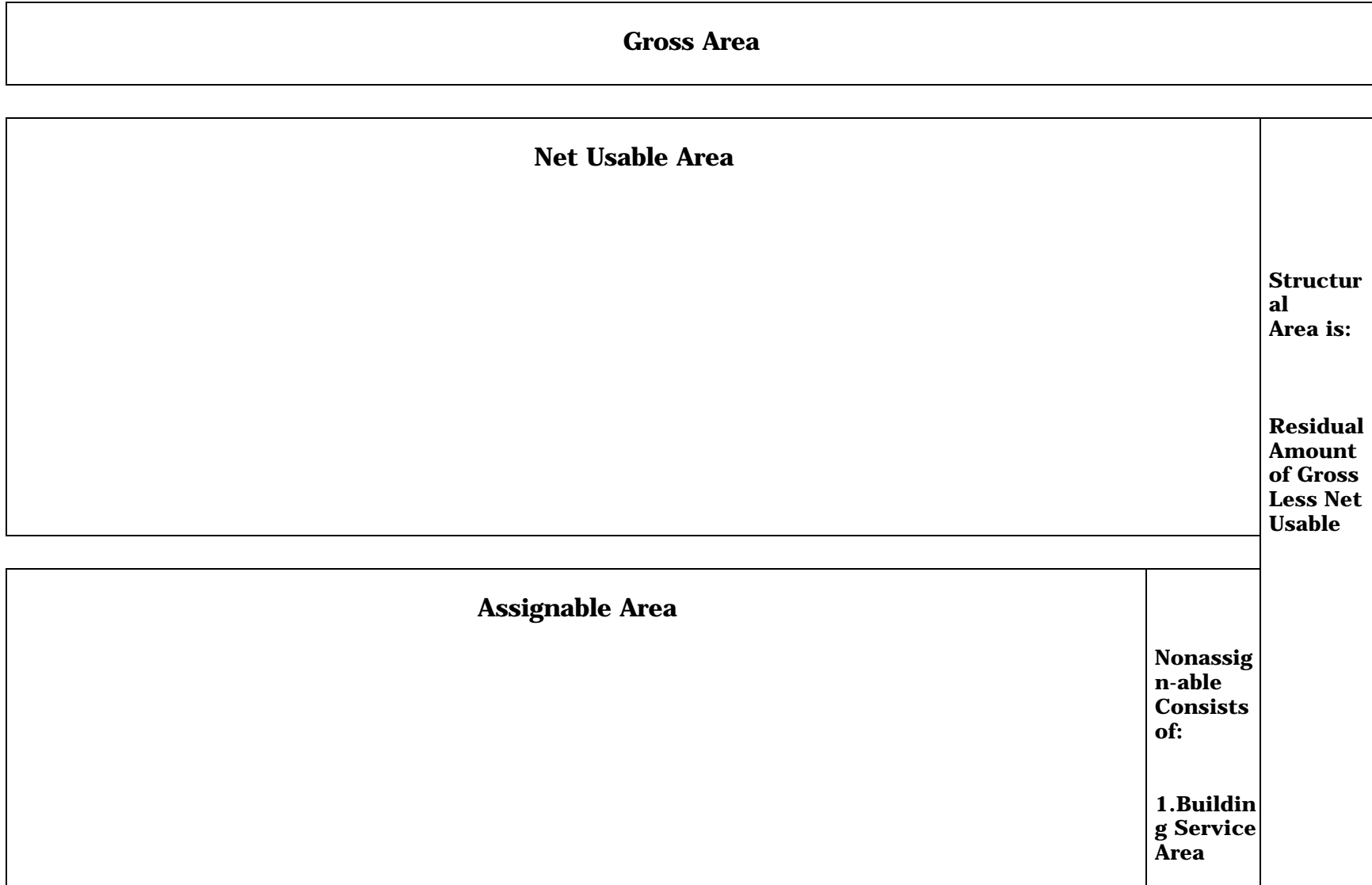
#### 1. Gross Area

- A. *Definition:* The sum of all areas on all floors of a building included within the outside faces of its exterior walls, including floor penetration areas, however insignificant, for circulation and shaft areas that connect one floor to another.
- B. *Basis for Measurement:* Gross area is computed by physically measuring or scaling measurements from the outside faces of exterior walls, disregarding cornices, pilasters, buttresses, etc., which extend beyond the wall faces. Exclude areas having less than a six-foot, six-inch clear ceiling height unless the criteria of a separate structure are met. (See the sections in Chapter 2 on buildings to be included in the inventory.)

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<sup>7</sup>Source: Federal Construction Council Technical Report No. 50 (Publication 1235), *Classification of Building Areas*, National Academy of Sciences, Building Research Advisory Board.

**FIGURE 1: Conceptual Framework for Analyzing Building Space**



										<b>2.Circulation Area</b>
										<b>3.Mechanical Area</b>
<b>Classified By:</b>										
<b>1. Room Use Category</b>										
<b>Classroom</b>	<b>Laboratory</b>	<b>Office</b>	<b>Study</b>	<b>Special Use</b>	<b>General Use</b>	<b>Support</b>	<b>Health Care</b>	<b>Residential</b>	<b>Unclassified</b>	
<b>2. Academic Discipline, Institutional Unit Assignment, or Program</b>										
<b>Categories Determined by Institution</b> (For external data sharing and reporting, a "crosswalk" to the NCES Classification of Instruction Programs is recommended.)										
<b>3. Standard Functional Codes</b>										
<b>Instruction</b>	<b>Research</b>	<b>Public Service</b>	<b>Academic Support</b>	<b>Student Services</b>	<b>Institutional Support</b>	<b>Physical Plant O &amp; M</b>	<b>Auxiliary Enterprises</b>	<b>Independent Operations</b>	<b>Hospitals</b>	

Measured in terms of gross square feet (GSF),

$$\text{Gross Area} = \text{Net Usable Area} + \text{Structural Space.}$$

- C. *Description:* In addition to all the internal floored spaces obviously covered above, gross area should include the following: excavated basement areas; mezzanines, pent-houses, and attics; garages; enclosed porches, inner or outer balconies whether walled or not, if they are utilized for operational functions; and corridors whether walled or not, provided they are within the outside face lines of the building, to the extent of the roof drip line. The footprints of stairways, elevator shafts, and ducts (examples of building infrastructure) are to be counted as gross area on each floor through which they pass.
- D. *Limitations:* Exclude open areas such as parking lots, playing fields, courts, and light wells, or portions of upper floors eliminated by rooms or lobbies that rise above single-floor ceiling height.
- E. *Exception:* Include top, unroofed floor of parking structures where parking is available. (See the section on Parking Structures at the end of this chapter.)

## 2. **Assignable Area (Net Assignable Square Feet — NASF)**

- A. *Definition:* The sum of all areas on all floors of a building assigned to, or available for assignment to, an occupant or specific use.
- B. *Basis for Measurement:* Assignable area is computed by physically measuring or scaling measurements from the inside faces of surfaces that form the boundaries of the designated areas. Exclude areas having less than a six-foot, six-inch clear ceiling height unless the criteria of a separate structure are met. (See the section, Buildings To Be Included, in Chapter 2.)

Measured in terms of assignable square feet (ASF),

$$\text{Assignable Area} = \text{Sum of Area Designated by the Ten Assignable Major Room Use Categories.}$$

- C. *Description:* Included should be space subdivisions of the ten major room use categories for assignable space — classrooms, labs, offices, study facilities, special use, general use, support, health care, residential and unclassified—that are used to accomplish the institution's mission.
- D. *Limitations:* Deductions should not be made for necessary building columns and projections. Areas defined as building service, circulation, mechanical, and structural should not be included.

## 3. **Nonassignable Area**

- A. *Definition:* The sum of all areas on all floors of a building not available for assignment to an occupant or for specific use, but necessary for the general operation of a building.
- B. *Basis for Measurement:* Nonassignable Area is computed by physically measuring or scaling measurements from the inside faces of surfaces that form the boundaries of the designated areas. Excludes areas having less than six-foot, six-inch clear ceiling height unless the criteria of a separate structure are met.  
  
Measured in terms of area,  
  
*Nonassignable Area = Sum of the Area Designated by Three Nonassignable Room Use Categories.*
- C. *Description:* Included should be space subdivisions of the three nonassignable room use categories—building service, circulation and mechanical—that are used to support the building's general operation.
- D. *Limitations:* Deductions should not be made for necessary building columns and projections. Areas defined as assignable should not be included.

#### 4. **Building Service Area**

- A. *Definition:* The sum of all areas on all floors of a building used for custodial supplies, sink rooms, janitorial closets, and for public rest rooms. (NOTE: Building service area includes all areas previously classified as custodial area. Building service area also includes public rest rooms that were previously classified as mechanical area. Building Service Area does not include assignable areas (e.g., areas classified as 730-Central Storage and 870-Central Supplies are not part of Building Service Area).
- B. *Basis for Measurement:* Building service area is computed by physically measuring or scaling measurements from the inside faces of surfaces that form boundaries of the designated areas. Exclude areas having less than a six-foot, six-inch clear ceiling height unless the criteria of a separate structure are met.
- C. *Description:* Included should be janitor closets or similarly small cleanup spaces, maintenance material storage areas, trashrooms exclusively devoted to the storage of nonhazardous waste created by the building occupants as a whole, and public toilets.

- D. *Limitations:* Deductions should not be made for necessary building columns and minor projections. Areas defined as central physical plant shop areas, or special purpose storage or maintenance rooms, such as linen closets and housekeeping rooms in residence halls, should not be included. Does not include private rest rooms.

## 5. **Circulation Area**

- A. *Definition:* The sum of all areas on all floors of a building required for physical access to some subdivision of space, whether physically bounded by partitions or not.
- B. *Basis for Measurement:* Circulation area is computed by physically measuring or scaling measurements from the inside faces of surfaces that form the boundaries of the designated areas. Exclude areas having less than a six-foot, six-inch clear ceiling height unless the criteria of a separate structure are met.
- C. *Description:* Included should be, but is not limited to, public corridors, fire towers, elevator lobbies, tunnels, bridges, and each floor's footprint of elevator shafts, escalators and stairways. Receiving areas, such as loading docks, should be treated as circulation space. Any part of a loading dock that is not covered is to be excluded from both circulation area and the gross building area. A loading dock which is also used for central storage should be regarded as assignable area and coded as central storage (730). Also included are corridors, whether walled or not, provided they are within the outside facelines of the buildings to the extent of the roof drop line.
- D. *Limitations:* Deductions should not be made for necessary building columns and minor projections. When determining corridor areas, only spaces required for public access should be included. Restricted access private circulation aisles used only for circulation within an organizational unit's suite of rooms, auditoria, or other working areas should not be included.

## 6. **Mechanical Area**

- A. *Definition:* The sum of all areas on all floors of a building designed to house mechanical equipment, utility services, and shaft areas.
- B. *Basis for Measurement:* Mechanical area is computed by physically measuring or scaling measurements from the inside faces of surfaces that form the boundaries of the designated areas. Exclude areas having less than six-foot, six-inch clear ceiling height unless the criteria of a separate structure are met.
- C. *Description:* Included should be mechanical areas such as central utility plants, boiler rooms, mechanical and electrical equipment rooms, fuel rooms, meter and communications closets, and each floor's footprint of air ducts, pipe shafts, mechanical service shafts, service chutes, and stacks.

- D. *Limitations:* Deductions should not be made for necessary building columns and projections. Areas designated as private toilets are not included.

## 7. **Net Usable Area**

- A. *Definition:* The sum of all areas on all floors of a building either assigned to, or available for assignment to, an occupant or specific use, or necessary for the general operation of a building.
- B. *Basis for Measurement:* Net usable area is computed by summing the assignable area and the nonassignable area.

Measured in terms of net usable square feet (NUSF),

$$\text{Net Usable Area} = \text{Assignable Area} + \text{Nonassignable Area.}$$

- C. *Description:* Included should be space subdivisions of the ten assignable major room use categories and the three nonassignable space categories.
- D. *Limitations:* Deductions should not be made for necessary building columns and projections. Areas defined as structural should not be included.

## 8. **Structural Area**<sup>8</sup>

- A. *Definition:* The sum of all areas on all floors of a building that cannot be occupied or put to use because of structural building features.
- B. *Basis for Measurement:* Precise computation by direct measurement is not possible under these definitions. It is determined by calculating the difference between the measured gross area and the measured net usable area.

Measured in terms of area,

$$\text{Structural Area} = \text{Gross Area} - \text{Net Usable Area.}$$

- C. *Description:* Examples of building features normally classified as structural areas include exterior walls, fire walls, permanent partitions, unusable areas in attics or basements, or comparable portions of a building with ceiling height restrictions, as well as unexcavated basement areas.

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<sup>8</sup>Referred to as "construction area" in TR-50.

## **Parking Structures**

Due to the absence of guidance in previous editions of this manual, parking structures or decks are classified differently by institutions across the country. Because these structures may represent a large portion of campus facilities space, the specific method for classifying these areas can have significant impacts on campus-level statistics. For interinstitutional comparisons and surveys, it is recommended that parking structure data, if considered important to the study, be maintained and reported separately on a predefined and agreed upon basis. Three different methods of classifying parking structures currently prevail:

### **1. Classification With Assignable And Gross Square Footage**

This method determines statistics for the structure which are commensurate with all other major inventoried campus buildings (i.e., assignable space, gross square footage, estimated replacement cost, etc.). Standard nonassignable areas (building service, circulation, and mechanical) are appropriately classified, and parking space square footage is assigned the 740-Vehicle Storage Facility room use code. Other standard assignable areas (offices, etc.) are classified with the appropriate room use codes. Ramps and other driving areas are classified as nonassignable circulation areas; upper level unroofed parking areas are classified as assignable (see 740) space.

### **2. Classification With Gross Square Footage Only**

Many institutions maintain only building-level data for parking structures and do not classify parking areas as assignable space. Instead, parking areas are classified as nonassignable space. Standard assignable areas within the parking structure, such as offices, may be appropriately classified. Only the gross area recorded within the building file becomes a significant square footage statistic. Institutions may also maintain parking structure data separately from the formal building and room inventory files.

### **3. Classification With Neither Gross Nor Assignable Square Footage**

Under this system, parking decks are considered as part of the campus infrastructure and are managed with other "parking facilities." As a result, they are not classified as buildings, and neither gross nor assignable square footage data for these structures is defined within the campus building or room inventories. As with buildings, stadium seating, unroofed swimming pools, radio/TV towers, etc., parking decks are classified as a separate subcategory of "structure."