

## Appendix C. Building Area Overview

Within the context of the Corporate Equipment and Facilities System, information on buildings is developed to provide a database of building physical and functional characteristics and measurements. Appendix C is intended to provide the definitional and procedural framework within which building areas of various kinds are to be calculated and descriptive information is to be recorded so that building data can be accumulated and reported for basic space inventory and analysis purposes.

In addition to building area measurements which are required input (e.g., basic gross area, covered unenclosed gross area) to the corporate facilities building file, several other building area measurements (e.g., mechanical area, custodial area) are described and recommended for maintenance in campus records in order to permit a systematic determination and reporting of the required data elements and to provide a more comprehensive and uniform database of overall building area measurements.

### *Definition of "Building"*

A "building" is defined as a roofed structure for permanent or temporary shelter of persons, animals, plants, materials, or equipment. The building inventory may encompass many different types of structures, including marine and space structures (e.g., satellites, whether staffed or not); research vessels; aquarium structures; and trailers that are not on wheels and are used for offices, research, residences, storage, etc.

### **Buildings to be Included**

The inventory should include buildings that are under the jurisdiction or control of the institution's governing board, regardless of their location. (See next section for buildings to be excluded.) Where the institution occupies space in buildings not owned by the institution or that is shared with other tenants, include in the inventory only that portion of the building leased or controlled by the institution and its prorata share of gross, assignable area and nonassignable area (see definitions below).

Institutions will normally exclude various minor structures from their inventory based on various criteria (e.g., insignificant size, unusable condition). Separate, minor structures should be included in the inventory if *all* of the following criteria are met:

1. They are attached to a foundation;
2. They are roofed;
3. They are serviced by a utility, exclusive of lighting; and
4. They are a source of significant maintenance and repair activities.

Following these guidelines, an example of a minor structure to be included in a building inventory is a traffic control or information booth, roofed, attached to a concrete pad, with lights and at least one other utility service (e.g., electrical outlet for heater or computer, telecommunications service), and on a regular maintenance schedule. An example of a separate structure not meeting the above criteria is a bus shelter, roofed, and attached to the concrete sidewalk, but with only lights.

Institutions may choose to include certain separate, minor structures that do not meet all of the above criteria in their inventories because of requirements to manage and maintain such facilities. (An example would be a covered, unenclosed field building which is used as a hay shed.) The inclusion of such facilities permits the space to be assignable to specific functions, disciplines, and organizational units. (See also *Building Measurement Terms and Definitions* in this appendix.)

## **Buildings to be Excluded**

The following types of buildings are excluded from the inventory:

1. Regents' assets (e.g., property holdings used as investments);
2. Hospitals not owned by the institution, except for any space in the hospital leased or controlled by the institution;
3. Public schools not owned by the institution, but used for practice teaching;
4. Federal contract research centers (e.g., Livermore Lab);
5. Overseas campuses;
6. Facilities on wheels (e.g., mobile clinics). "Fixed" mobile facilities, however, are reportable (e.g., relocatable buildings, "mobile homes" on blocks);
7. Marine vessels (Exception: Marine vessels are included in the building file with '1' Basic Gross Square Foot when required to account for equipment assigned to them.)

## **Other Plant Assets**

For management purposes, institutions are encouraged to inventory all physical plant assets, including infrastructure components, in the Plant Asset file, which is broader in scope than the facilities inventory database. (See Appendix E, *OMP Overview*, for discussion of special handling of non-building plant assets in the facilities inventory for OMP purposes.) Examples include utility distribution systems (e.g., heating, cooling, power, water, wells and waste disposal) and support facilities which provide access or safety related services (e.g., roads, campus lighting).

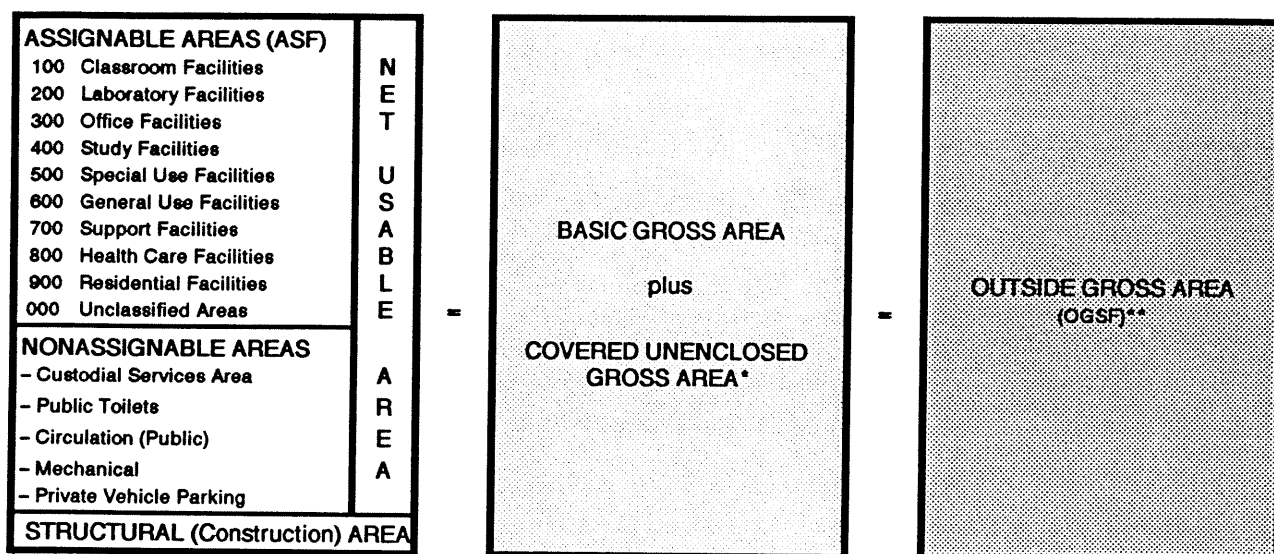
## **Degree of Accuracy Conventions**

The following degree-of-accuracy conventions apply to all facilities area computations:

|                               |                                              |
|-------------------------------|----------------------------------------------|
| <b>Area of Dimension</b>      | 10 feet 7-1/4 inches by 32 feet 7-1/2 inches |
| <b>Round to</b>               | 10 feet 7 inches by 32 feet 8 inches         |
| <b>Computed square feet</b>   | 10.58 feet x 32.67 feet = 345.65 feet        |
| <b>Reportable square feet</b> | 346 feet                                     |

## Building Measurement Terms and Definitions

In a building inventory, it is important to be able to determine the amount of space that can be assigned to people or programs (i.e., assignable area). However, buildings necessarily contain other types of space as well (e.g., nonassignable area, structural area). The sum of assignable area, nonassignable area, and structural area, plus any covered unenclosed area, equals a building's outside gross area. The relationships between these types of space are illustrated below and defined in the following pages.



\* Covered Unenclosed Gross Area includes assignable, nonassignable, and structural (construction) areas which are covered and unenclosed and which are neither reported as Basic Gross Area nor Special OMP areas (swimming pools, stadia, developed roof/deck areas).

\*\* Calculation of Outside Gross Area OGSF 50 (California) = Basic Gross + 50% Covered Unenclosed Gross  
 OGSF 100 (Federal) = Basic Gross + 100% Covered Unenclosed Gross

Below are building-related data elements with an indication as to whether or not they are required input (data elements) to the Corporate Equipment and Facilities (CEFA) System.

### Assignable Area

Required corporate room file data element.

### Nonassignable Area

Not a corporate requirement. *Nonassignable Area* is the sum of custodial, public toilet, circulation, mechanical and private vehicle parking (structure) areas.

### Custodial Services Area

Not a corporate requirement but required as part of Janitorized Area; campuses should maintain data locally.

### Public Toilet Area

Not a corporate requirement but required as part of Janitorized Area; campuses should maintain data locally.

|                                      |                                                                                                                                                                                                                                                                     |              |
|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| <b>Circulation Area</b>              | Not a corporate requirement but required as part of Janitorized Area; campuses should maintain data locally.                                                                                                                                                        | not any more |
| <b>Mechanical Area</b>               | Not a corporate requirement but required as part of Janitorized Area; campuses should maintain data locally.                                                                                                                                                        |              |
| <b>Private Vehicle Parking Area</b>  | Not a corporate requirement but is required as part of Unrelated Gross Area; campuses should maintain data locally.                                                                                                                                                 | not any more |
| <b>Net Usable Area</b>               | Not a corporate requirement. <i>Net Usable Area</i> is the sum of Assignable and Nonassignable Areas.                                                                                                                                                               |              |
| <b>Structural Area</b>               | Not a corporate requirement. <i>Structural Area</i> is Basic Gross Area less Net Usable Area. Structural Area is also known as Construction Area.                                                                                                                   |              |
| <b>Basic Gross Area</b>              | Required corporate building file data element. <i>Basic Gross Area</i> is the sum of Assignable, Nonassignable, and Structural Areas.                                                                                                                               |              |
| <b>Covered Unenclosed Gross Area</b> | Required corporate building file data element.                                                                                                                                                                                                                      |              |
| <b>Outside Gross Area</b>            | Not a corporate requirement; the system calculates Outside Gross Area using campus-supplied Basic Gross and Covered Unenclosed Gross data.                                                                                                                          |              |
| <b>Unfinished Gross Area</b>         | Required corporate building file data element, but not required for any building area calculations.                                                                                                                                                                 |              |
| <b>Unrelated Gross Area</b>          | Required corporate building file data element and is used for calculation of Maintained Area. <i>Unrelated Gross Area</i> is the sum of Private Vehicle Parking Area plus its prorated share of Structural Area.                                                    |              |
| <b>Developed Roof/Deck Area</b>      | Not a corporate requirement, but is required as part of Janitorized Area. See Appendix E, <i>OMP Overview</i> , for discussion of General and Special Developed Roof/Deck Area.                                                                                     |              |
| <b>Special Area</b>                  | Required corporate building file data element and is used solely for the calculation of Janitorized and Maintained Areas. <i>Special Area</i> is the sum of Room Use Codes A10, A20, and A30. See Appendix E, <i>OMP Overview</i> , for discussion of Special Area. |              |

Although not all the data elements defined in this appendix are required corporate data elements, these definitions are included to clarify and provide guidelines for the most commonly used types of data collected and compiled on buildings. These guidelines are intended to establish a common standard for the recommended minimum amount of data to be included in a campus building inventory in order to provide a database that is usable for both intra-institutional and inter-institutional purposes. These guidelines do not preclude local campus collection of additional building data or inclusion of other types of structures in the facilities inventory.

## Assignable Area

**Definition:** The sum of all floor or surface areas of a building assigned to, or available for assignment to, an occupant or user, including every type of space functionally usable by an occupant or user.

**Description:** The amount of space that can be used for programs (functions) or assigned to occupants is known as the *Assignable Area*. The Assignable Area of a room is the area measured within the interior walls of the room. Included are the space subdivisions of the ten major room use categories for assignable space that are used to accomplish the institution's mission: classrooms, laboratories, office facilities, study facilities, special use facilities, general use facilities, support facilities, health care facilities, residential facilities, and unclassified areas. See Appendix B, *Room Use Codes and Definitions*, for room code values and definitions; Appendix C, *Building Area Overview*, for discussion of the relationship between assignable and other building areas; and Appendix D, *Definitions Checklist*, for specific and unusual situations.

Measured in terms of assignable square feet (ASF),

*Total Assignable Area* = Sum of the Ten Room Use Categories of Assignable Space

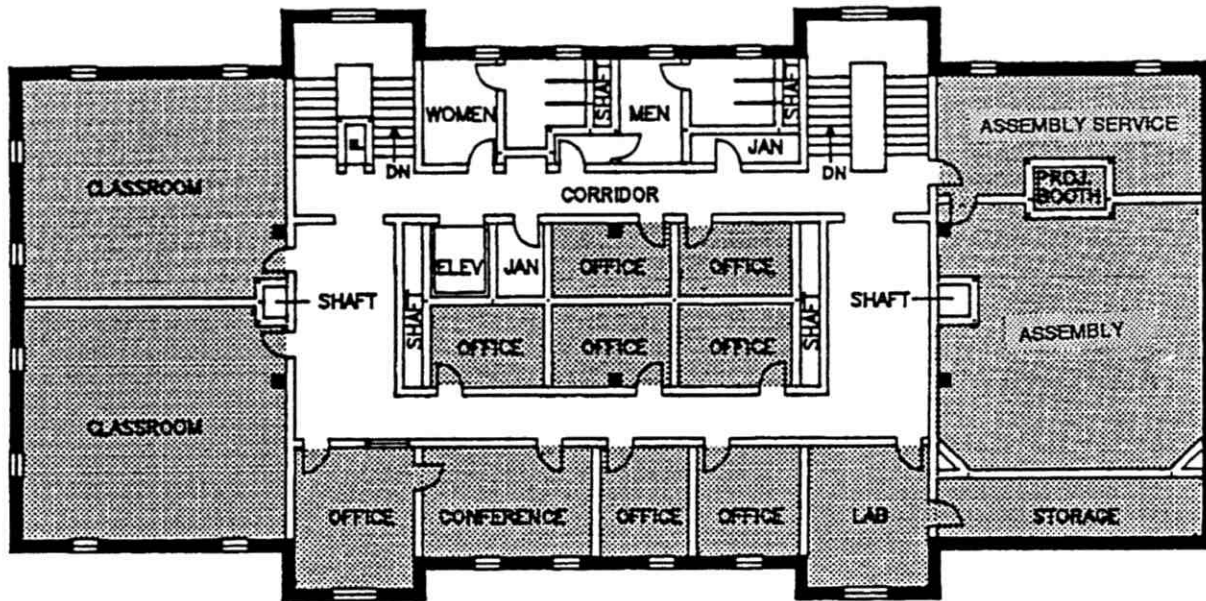
**Basis for Measurement:** Assignable area is computed by physically measuring or scaling measurements from the *inside* faces of surfaces that form the boundaries of the designated areas. Exclude areas having less than a six-foot, six-inch (6'6") clear ceiling height unless the criteria of a separate structure are met (refer to the section on *Buildings to be Included*, above.) (See architectural drawing of Assignable Area on next page.)

**Exclusions:** Deductions should not be made for necessary free-standing columns or architectural and structural projections. Areas defined as custodial, public toilet, circulation, and mechanical are excluded.

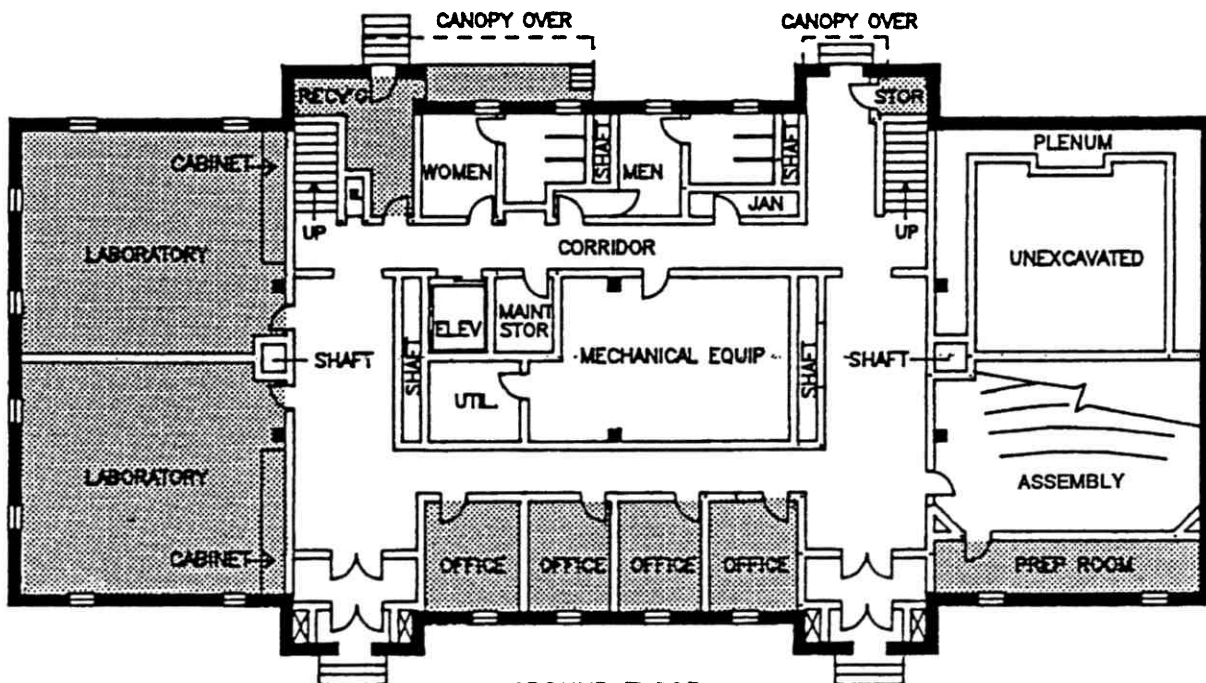
**Note:** Although OMP areas (Room Use Codes A10, A20, A30, and A90) are nonassignable areas, campuses should record the actual amount of *nonassignable area* in the ASF data field using one of the A00 room use codes. The A00 room use codes are used only for OMP analysis and are not included in any room analyses or reports.

| CALCULATION OF ASSIGNABLE AREA                               |                              |
|--------------------------------------------------------------|------------------------------|
| Line No.                                                     | ROOM USE CATEGORIES          |
| 1.                                                           | 100 – Classroom Facilities   |
| 2.                                                           | 200 – Laboratory Facilities  |
| 3.                                                           | 300 – Office Facilities      |
| 4.                                                           | 400 – Study Facilities       |
| 5.                                                           | 500 – Special Use Facilities |
| 6.                                                           | 600 – General Use Facilities |
| 7.                                                           | 700 – Support Facilities     |
| 8.                                                           | 800 – Health Care Facilities |
| 9.                                                           | 900 – Residential Facilities |
| 10.                                                          | 000 – Unclassified Areas     |
| TOTAL ASSIGNABLE AREA<br>(Sum of lines 1+2+3+4+5+6+7+8+9+10) |                              |

Drawing: Assignable Area



FIRST FLOOR



GROUND FLOOR

Courtesy of MIT/OFMS

Most likely ventilation and whatever cooling or heating that results from all of the ducting going through the area. It will consist of walkways throughout the area with equipment coming up through the ceiling below. It would be somewhat akin to putting down planks in the attic of your house so you could get around. The question is, should this space on this level be considered GSF as long as the ceiling area is 6'6" or higher?

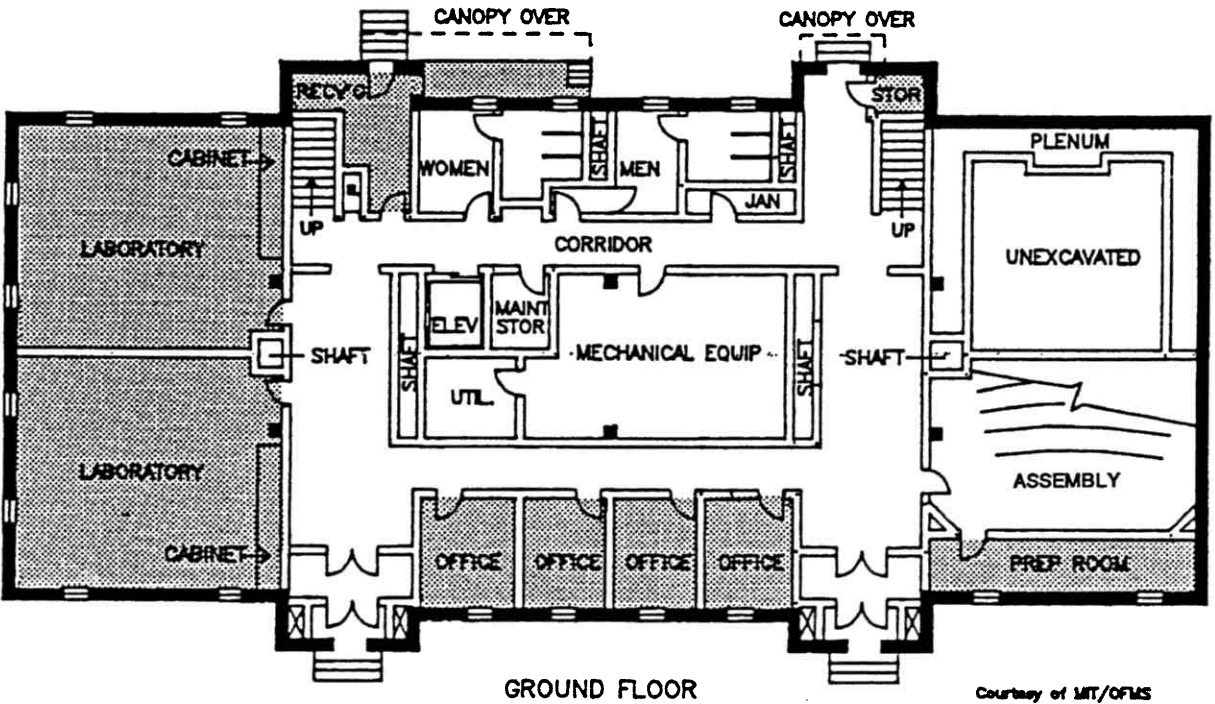
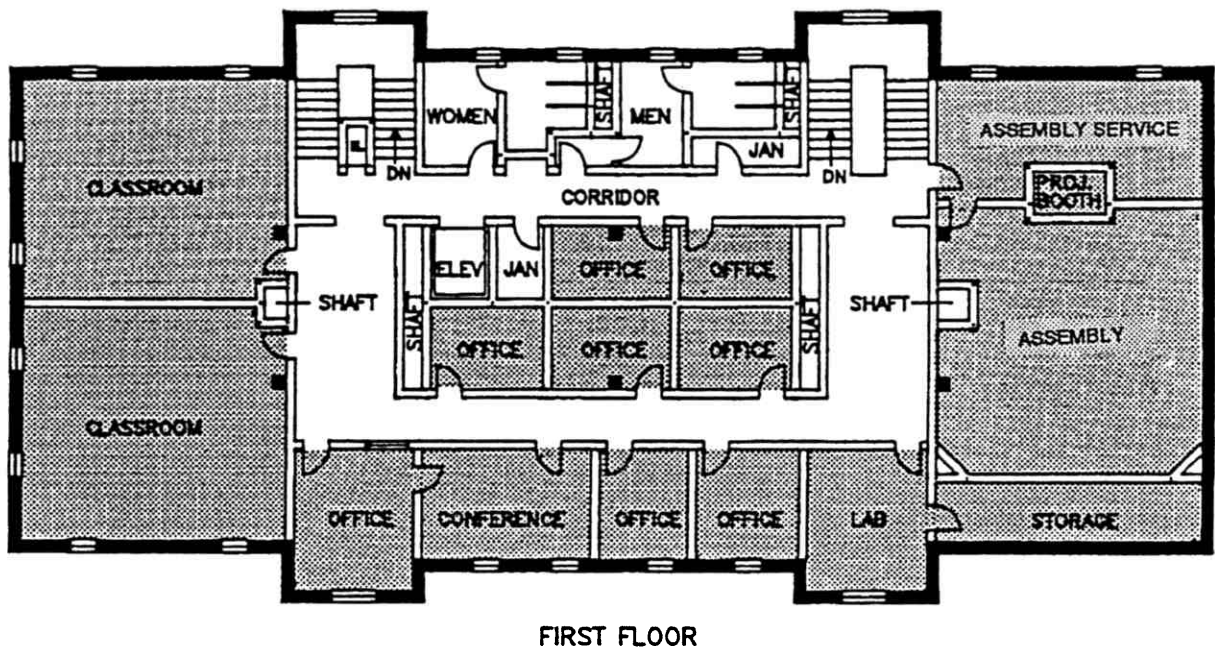
My inclination is to include the entire area that is 6'6" or higher as a "floor" since its whole purpose is to allow maintenance people a way to maintain the equipment. However, one might also argue that only the walkways should be counted since they are the only areas that have a real floor. One might also argue that since it is not in regular conditioned space, it shouldn't be counted at all. Then again, basement mechanical space isn't really conditioned much if any either.

Do you have any insight on such space?

Thanks for your help.

Jerry

Drawing: Assignable Area



Courtesy of MIT/OFMS



## Nonassignable Area

There are various kinds of areas within a building that are essential but which are not assigned directly to support programs: Custodial Services Area, Public (General Access) Toilet Area, Circulation (Public) Area, and Mechanical Area. These four building area measurements are not required corporate facilities system input specifications; however, these measurements are necessary in order to calculate the janitorized area of a building and, thus, should be collected and recorded in campus building files. These four data elements, along with Private Vehicle Parking Area, constitute *Nonassignable Area*.

Private Vehicle Parking Area, the fifth component of Nonassignable Area, is the area used for private vehicle access, circulation, and parking. Private Vehicle Parking Area plus its structural area equals Unrelated Gross Area, which is a required CEFA data element. (See pages C.14 and C.20 for discussion of parking area measurements.)

Nonassignable area is defined as the sum of all areas on all floors of a building not available for assignment to an occupant or specific use, but necessary for the general operation of a building.

Measured in terms of nonassignable square feet,

*Nonassignable Area* = Custodial + Public Toilet + Circulation + Mechanical + Parking

For the nonassignable OMP-related areas (Room Use Codes A10, A20, A30, and A90), campuses should record these areas as though they were assignable areas; however, the *pseudo-ASF* would be used only for OMP purposes and not in any room use analysis.

| CALCULATION OF NONASSIGNABLE AREA |             |                                                             |
|-----------------------------------|-------------|-------------------------------------------------------------|
| Required<br>by CEFA?              | Line<br>No. | NONASSIGNABLE DATA ELEMENTS                                 |
| No                                | 1.          | Custodial Services Area                                     |
| No                                | 2.          | Public (General Access) Toilet Area                         |
| No                                | 3.          | Circulation (Public) Area                                   |
| No                                | 4.          | Mechanical Area                                             |
| No*                               | 5.          | Private Vehicle Parking Area                                |
|                                   |             | <b>TOTAL NONASSIGNABLE AREA</b><br>(Sum of lines 1+2+3+4+5) |

\* Private Vehicle Parking Area plus its prorated share of structural area equals Unrelated Gross Area, which is a required CEFA data element.

### ***Custodial Services Area***

**Definition:** The sum of all areas on all floors (that portion of the basic gross and covered unenclosed gross area) of a building used for building protection, care, maintenance, and operation.

**Description:** Includes janitor closets or similarly small cleanup spaces, interior incinerator rooms, custodial toilets, maintenance material storage areas, trashrooms exclusively devoted to the storage of non-hazardous waste created by the building occupants as a whole, and other specialized custodial facilities which are usable only for building maintenance.

**Basis for Measurement:** Custodial Services Area is computed by measuring from the *inside* face of walls and partitions. (See architectural drawing of Custodial Services and Public Toilet areas on next page.)

**Exclusions:** Deductions should not be made for necessary building columns and minor projections. Areas defined as central physical plant shops, custodial offices or locker rooms, interior loading and receiving docks, special purpose storage or maintenance rooms (e.g., linen closets and housekeeping rooms in residence halls), and private rest rooms are considered assignable areas and therefore should not be included.

**Note:** For reconciliation purposes, campuses are advised to track and maintain separate records for Custodial Areas which exist in typical buildings having Basic Gross areas *and* in covered unenclosed facilities.

### ***Public Toilet Area***

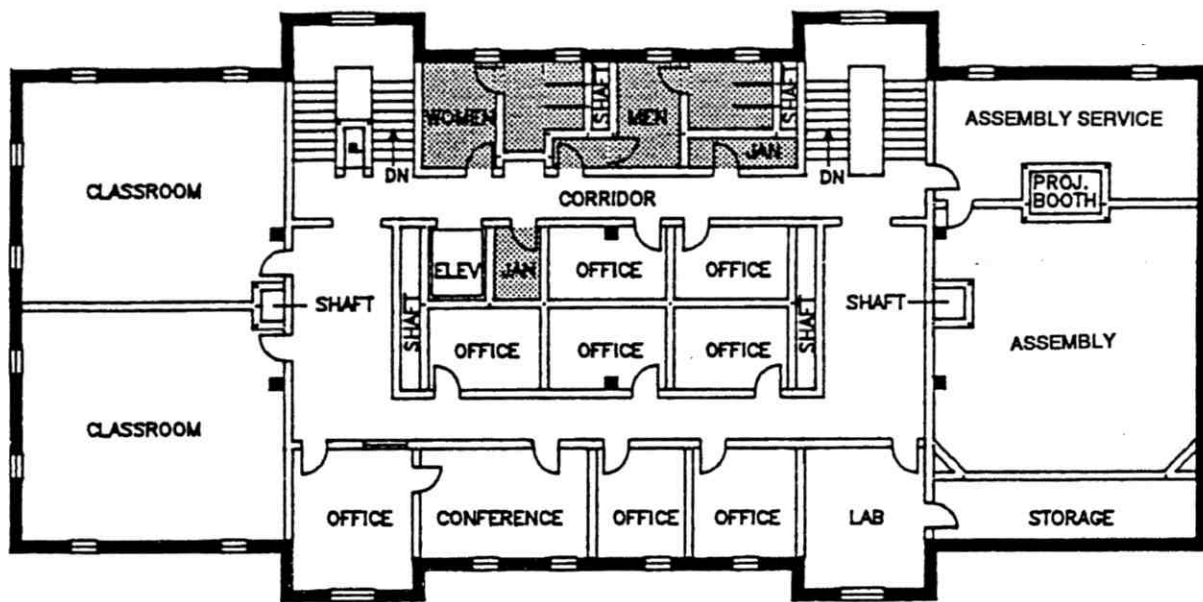
**Definition:** That portion of basic gross area devoted to nonassignable public or general access toilet facilities.

**Description:** Includes public or general access toilet rooms, including cot rooms and vestibules.

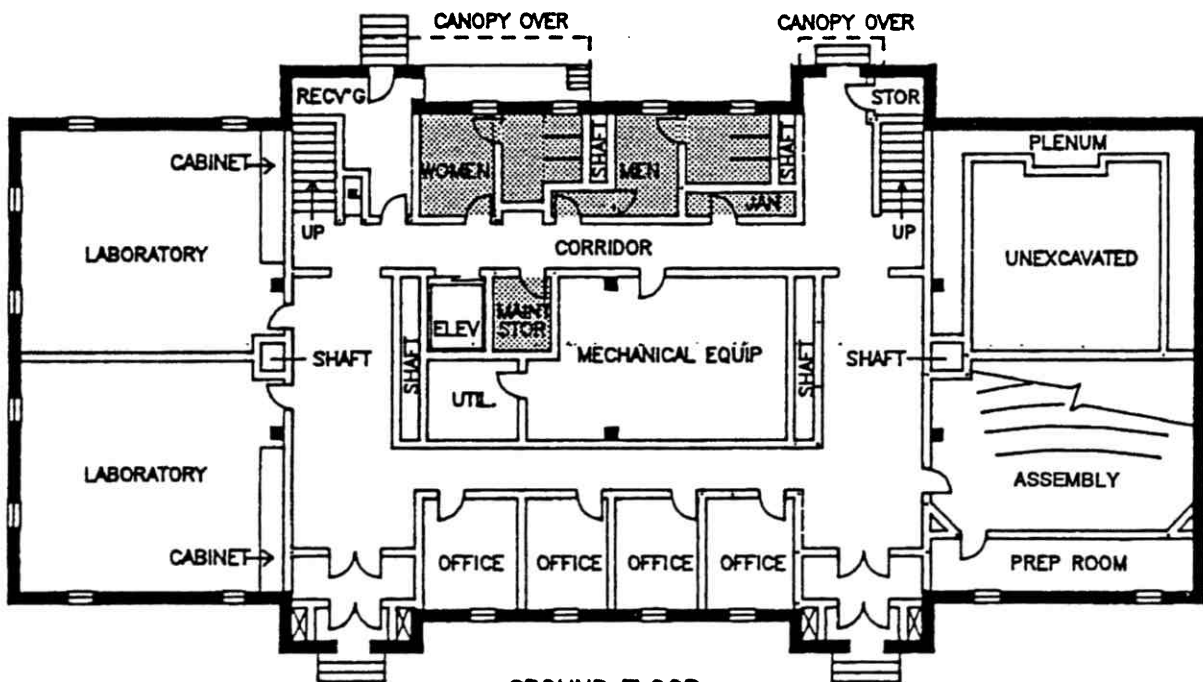
**Basis for Measurement:** Public toilet area is computed by measuring from the *inside* face of walls and partitions which enclose such areas. (See architectural drawing of Custodial Services and Public Toilet areas on next page.)

**Exclusions:** Private and custodial toilet rooms. Private toilet rooms include rest room areas for residence hall and apartment occupants, clinic outpatients, hospital inpatients, executive suites, instructional and research activities (e.g., controlled environment laboratories and gymnasias), washrooms and showers for academic activities or performers, etc.

Drawing: Custodial Services and Public Toilet Areas



FIRST FLOOR



GROUND FLOOR

Courtesy of MIT/OFMS

## ***Circulation Area***

**Definition:** The sum of all areas on all floors (that portion of the basic gross and covered unenclosed gross area) of a building, both within and without the environmentally controlled envelope, which is required for physical access to some subdivision of space, whether physically bounded by partitions or not, *exclusive* of private vehicle parking areas.

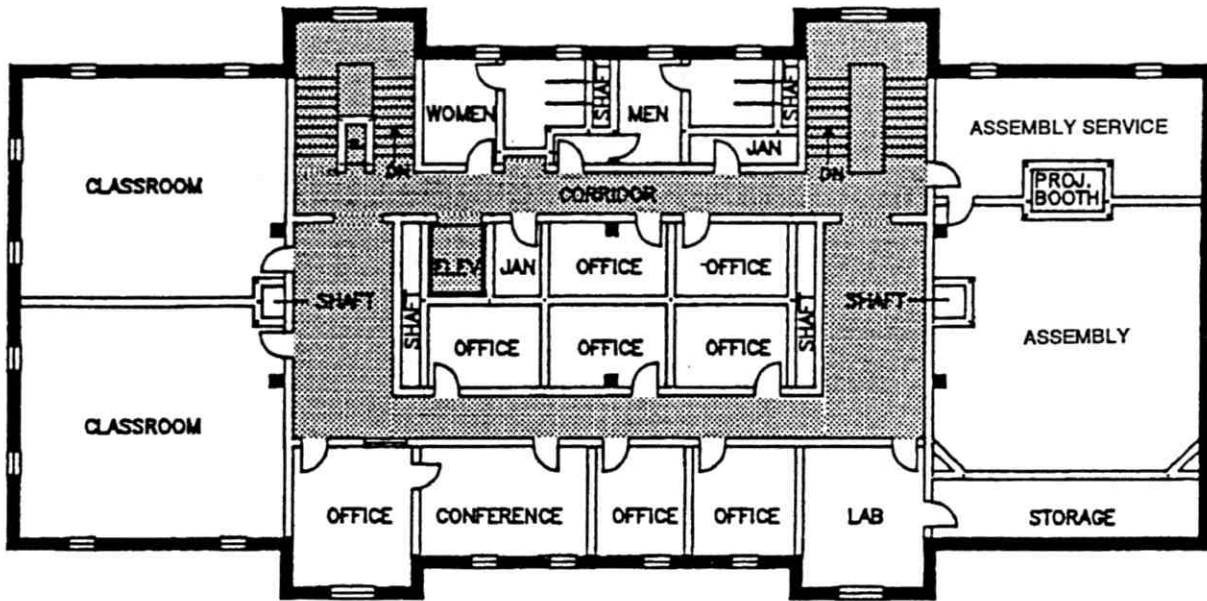
**Description:** Included should be, but is not limited to, corridors (access: public, private, and service), elevator shafts, escalators, stairs, stair halls, fire and smoke towers, lobbies for general circulation (e.g., public, entrance, elevator) that do not serve operational functions such as reception and waiting, public vestibules, pedestrian tunnels and bridges, and loading platforms or docks within the environmentally controlled envelope serving various departments within the building (except when required for operational reasons and thus, included in assignable area). Any part of a loading dock that is not covered is to be excluded from both circulation area and the gross building area. A covered unenclosed loading dock which is also used for central storage should be regarded as assignable area and coded as central storage (720).

**Basis for Measurement:** Circulation area is computed by physically measuring or scaling measurements from the *inside* faces of walls or partitions which enclose horizontal spaces used for circulation; or, when such spaces are not enclosed by walls or partitions, measurements shall be taken from imaginary lines which conform as nearly as possible to the established circulation pattern of the building. Vertical circulation space shall be counted at each floor. Within an assignable facility (e.g., library), allow 6'0" strip for circulation in front of public-use facilities such as elevators and public toilets. (See architectural drawing of Circulation Area on next page.)

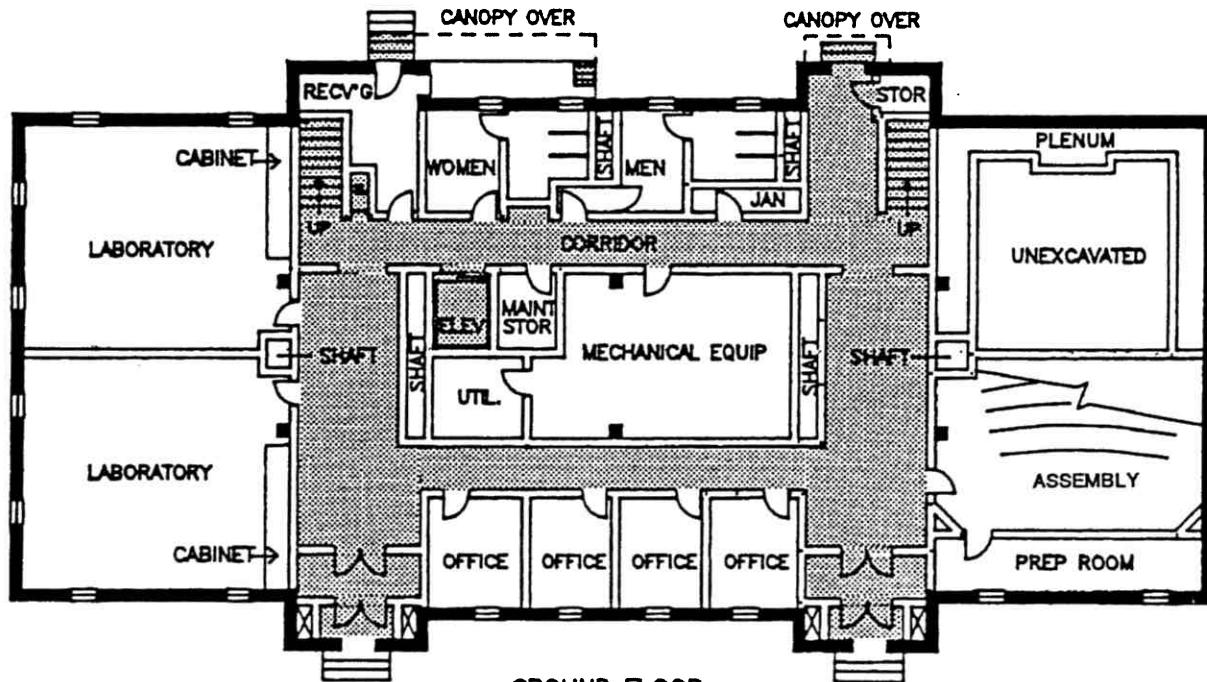
**Exclusions:** Deductions should not be made for necessary building columns and minor projections. When determining corridor areas, only spaces required for public access should be included. Restricted access private circulation aisles used only for circulation within an organizational unit's suite of rooms, auditoria, or other working areas; uncovered circulation areas at grade; and uncovered unenclosed that are paved should not be included. *Private vehicle storage, circulation and access areas are also excluded* (see definition of *Private Vehicle Parking Area* on page C.14). *areas*

**Note:** For reconciliation purposes, campuses are advised to track and maintain separate records for Circulation Areas which exist in typical buildings having Basic Gross areas *and* in covered unenclosed facilities.

Drawing: Circulation Area



FIRST FLOOR



GROUND FLOOR

Courtesy of MIT/OFMS

## ***Mechanical Area***

**Definition:** The sum of all areas on all floors (that portion of basic gross and covered unenclosed gross area) of a building which houses the mechanical equipment, utility services, and shaft areas for the building. In separate central plant or utility services buildings or structures, all areas devoted to mechanical services, either for the building itself or for service to other buildings, are to be reported as mechanical area. (See also Appendix E, *OMP Overview*, for special handling of utility services buildings.)

**Description:** Included are mechanical areas such as central utility plants; service closets (meter, electrical, television, communication); boiler, chiller, generator or other rooms; mechanical and electrical equipment rooms; fuel rooms; elevator equipment rooms; air duct shafts; service chutes; stacks; of air ducts, pipe shafts, mechanical service shafts, service chutes, and areaways.

mention  
Heating/Water  
irrigation?

**Basis for Measurement:** Mechanical area is computed by physically measuring or scaling measurements from the *inside* faces of walls or partitions, or shafts, which enclose such areas. Vertical shaft areas shall be counted at each floor. (See architectural drawing of Mechanical Area on next page.)

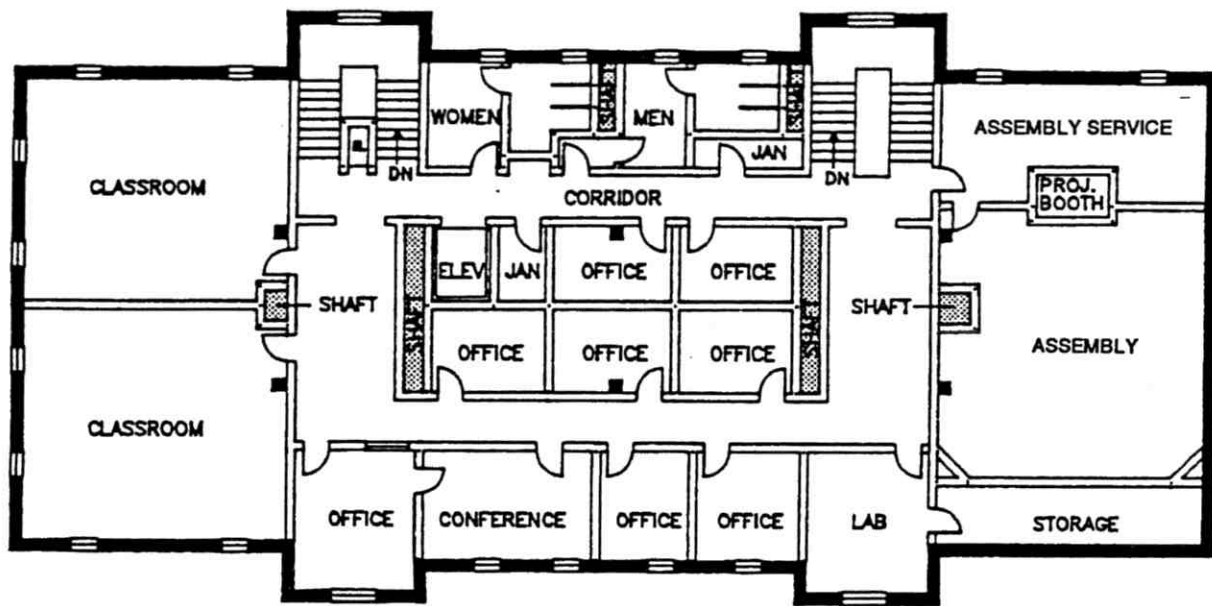
**Exclusions:** Deductions should not be made for necessary building columns or architectural and structural projections. Areas designated as private toilets (which are assignable service rooms to primary rooms) are not included.

**Note:** For reconciliation purposes, campuses are advised to track and maintain separate records for Mechanical Areas which exist in typical buildings having Basic Gross areas *and* in covered unenclosed facilities.

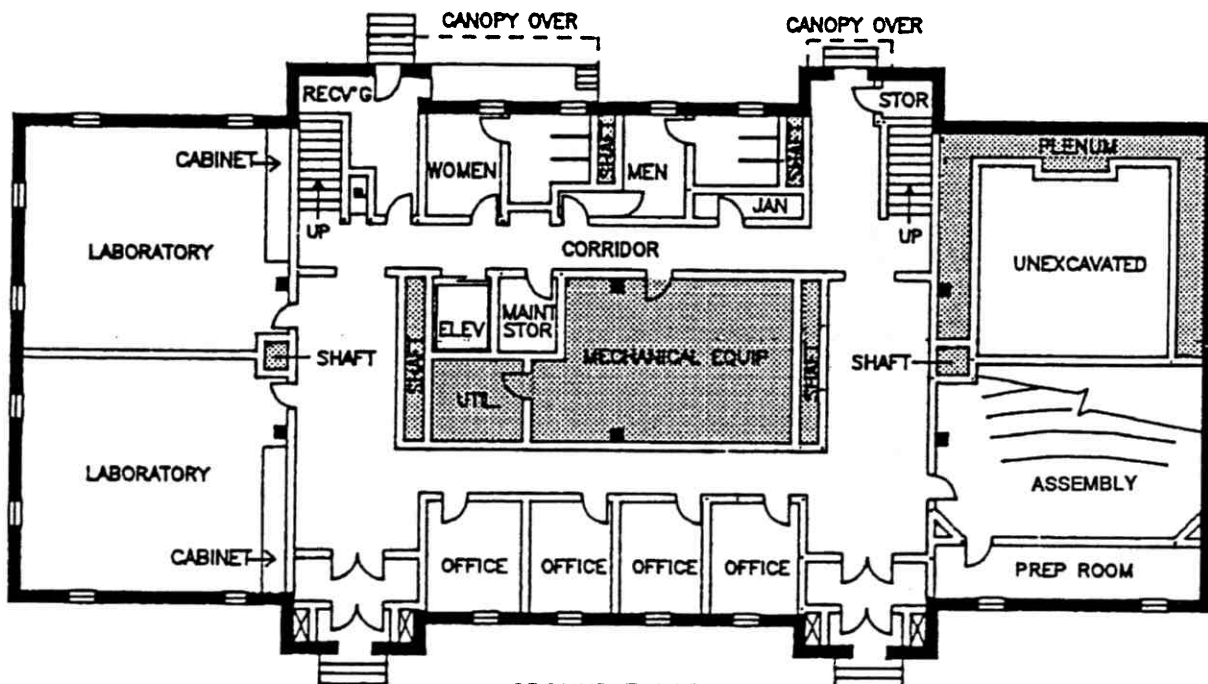
For utility services buildings which may nominally have no assignable area, campuses should 1) record the room number, 2) record the room use code of that room as Room Use Code A90-Nonassignable Space, 3) reflect a *pseudo-ASF* amount by recording the true or actual amount of *nonassignable* area in the ASF data field, 4) provide the facilities department name (e.g., Physical Plant, Facilities Management) to which the room is assigned, and 5) assign an appropriate program classification code (e.g., 7.2.05.00).

obsolete

Drawing: Mechanical Area



FIRST FLOOR



GROUND FLOOR

Courtesy of MIT/OFMS

## Paul Hanchock

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**From:** Paul Hanchock  
**Sent:** Friday, January 11, 2008 9:57 AM  
**To:** 'Terry Macy'  
**Subject:** Parking  
**Attachments:** Att8-AppCFIG-bldg.doc; Santa Monica Hospital Parking.xls; UCLA Parking Structure 7.xls

Good morning Terry,

I have a bit of information for you that may help clarify your inventory of the new structure. You're certainly on the right track already, but there are a couple of refinements you should know.

Most important, I found a Word file of the section of Joanne's training manual that revises the methods of calculating building area. Although the training sessions only occurred at LA and SD, it would appear that Joanne distributed the information somehow, since Suzi was able to convey it to you. If you ever find out how, I'd be interested to find out.

Unrelated Gross Area is (I hope) gone for good. It wasn't a way of recording parking but rather a separate measure of gross area that applied only to parking structures. It consisted of Private Vehicle Parking Area plus the associated structural area (i.e. the exterior walls). I can't see any logical benefit from treating parking structures differently, so I'm glad we've reformed the calculations.

Unrelated Gross Area was measured from the exterior face of the walls; Nonassignable Parking is measured from the inside face of the walls. Note that both these measures presuppose the existence of walls. Most of the parking structures I've seen have a low parapet wall at each level, presumably to restrain cars from rolling off the edge of the slab and killing pedestrians below. That seems to count as "enclosure," even though there's no environmentally controlled envelope. Hence the designation of area in parking structures as Basic Gross rather than Covered ~~enclosed~~. *Unenclosed*.

Within the structure, you'll count only vertical circulation area (stairwells and elevator shafts) which removes floor area from use for parking; horizontal circulation doesn't count. This seems to be the consequence of defining Nonassignable Parking Area to include "access, circulation, and parking." Perhaps this restriction will seem less strange when you consider that we don't count the aisles within classrooms, labs, and auditoria as circulation space.

It's possible for parking structures to have covered unenclosed area if it occurs outside the parking area, for example a canopy over an entrance or loading dock. It's also possible for a parking structure to have other types of nonassignable area, such as mechanical space or toilets, within the structure. It's even possible for parking structures to include assignable area, so long as there's no overlap with the parking area. I presume, though, that a booth for a parking attendant would be regarded as nonassignable parking ("access") rather than assignable space for the Parking Office.

I'm attaching a couple of area summaries for parking structures at UCLA. That campus is the master of this arcane sub-specialty, since they've got over 7 million square feet of parking structures. Their figures seem consistent with what I've deduced from the texts, so I guess you can use them as a model. Note that the calculation of RevOGSF50 looks peculiar because it excludes parking, leaving very little else. Similarly, NASFXP is a calculation of a building's nonassignable area excluding parking.

If you still have questions, let me know and we can dig some more.



### ***Private Vehicle Parking Area***

**Definition:** That portion of the building which is used for private vehicle access, circulation, and parking, whether in parking or non-parking buildings or structures.

**Description:** Includes all relevant areas exclusively or primarily serving private vehicle parking.

**Basis for Measurement:** Private Vehicle Parking Area is computed by measuring from the *inside* faces of walls or partitions which enclose such areas. Vertical circulation space should be counted at each floor. Top, unroofed floors of parking structures are included, *only if* used for parking.

**Exclusions** Institutional vehicle maintenance and service areas, as well as areas for storage of physical plant or farm operations service vehicles and motorized equipment, are counted as assignable area (see Room Use Codes 570-Field Building and 750/755-Vehicle Storage). Surface parking lots contiguous or related to buildings are excluded and, therefore, not reported as part of Unrelated Gross Area.

#### **Notes:**

1. Parking structures are *not* considered Covered Unenclosed Gross Area. Campuses should record measurements for parking structures and relevant parking areas as Basic Gross and Unrelated Gross Areas.
2. Unrelated Gross Area is the sum of Private Vehicle Parking Area plus its prorated share of Structural (Construction) Area. Private Vehicle Parking Area represents the *usable* portion of Unrelated Gross Area. See the definition of *Unrelated Gross Area* in this appendix (page C.20) for reporting private parking areas in the facilities inventory.
3. For reconciliation purposes, campuses are advised to track and maintain separate records for Private Vehicle Parking Areas which exist in parking structures and in buildings having basic gross areas.

### **Net Usable Area**

**Net Usable Area** is defined as 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. In other words, the aggregate interior area of a building which is known as the *Net Usable Area*, is the sum of Assignable Area (the sum of the ten assignable major room use categories) and Nonassignable Area (the sum of custodial, public toilet, circulation, mechanical, and private vehicle parking areas).

| CALCULATION OF NET USABLE AREA           |                                                                                                                                                               |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Line                                     | USE-RELATED CATEGORY                                                                                                                                          |
| 1.                                       | ASSIGNABLE AREA: Sum of the Ten Major Room Use Categories (000-900)                                                                                           |
| 2.                                       | NONASSIGNABLE AREA: Sum of the Five Areas of Nonassignable Space<br>(custodial services, public rest rooms, circulation, mechanical, private vehicle parking) |
| TOTAL NET USABLE AREA (Sum of lines 1+2) |                                                                                                                                                               |

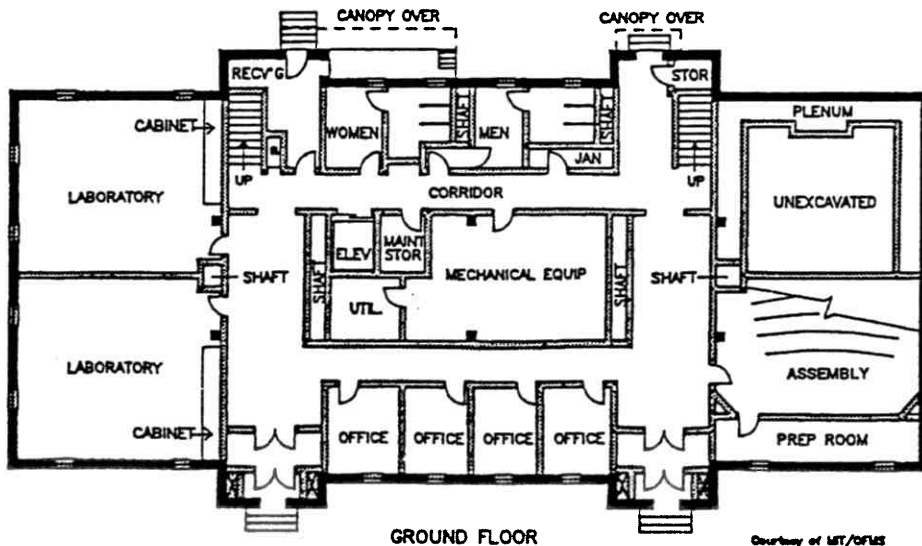
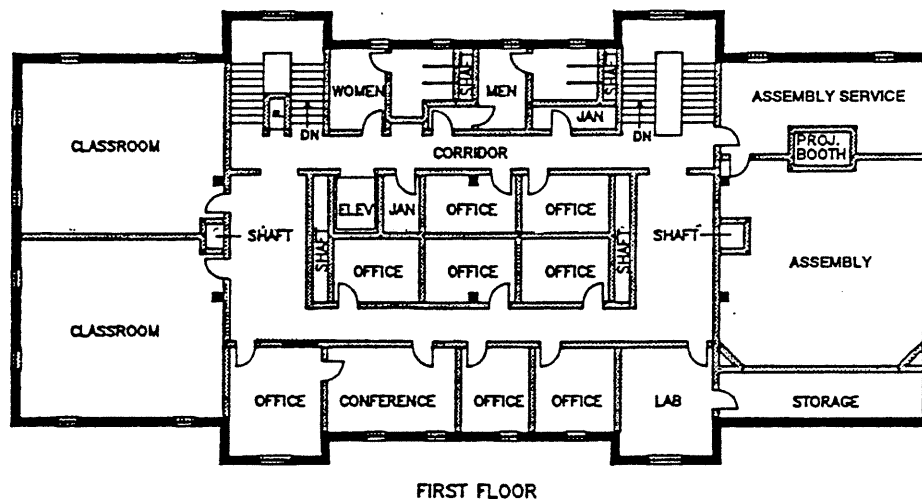
## Structural Area

**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. Structural Area is also known as *Construction Area*.

**Description:** The difference between the exterior of the building and the interior or Net Usable Area is the *Structural Area*, the floor area upon which the exterior and interior walls sit and the unusable areas in attics and basements. 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.

**Basis for Measurement:** Precise computation by direct measurement is not possible under these definitions. Structural area may be calculated as Basic Gross Area less the Net Usable area of a building. (See architectural drawing of Structural Area below - the grey and black walls are the structural areas.)

Drawing: Structural Area



Courtesy of MIT/OFMS

## Basic Gross Area

**Definition:** The sum of all areas, finished and unfinished, on all floors of an enclosed structure (that is, within the environmentally controlled envelope), for all stories or areas which have floor surfaces.

**Description:** In addition to all the internal floored spaces obviously covered above, basic gross area should include the following: excavated basement areas and developed attics; mezzanines and penthouses; garages and parking structures; enclosed porches; inside balconies (used for operational functions); vertical circulation with and without floors (counted at each floor); mechanical and electrical shafts (counted at each floor); piers (structures only; count surface area of decking); and unfinished areas (e.g., unfinished basements or attics with floor surfaces).

**Basis for Measurement:** Basic Gross Area is computed by physically measuring or scaling measurements from the *outside* faces of exterior walls, disregarding architectural and structural projections (e.g., cornices, pilasters, buttresses) which extend beyond the wall faces. Within the envelope, vertical circulation area, whether floored or not, and vertical mechanical and electrical shafts should be counted at each floor. Vertical mechanical and electrical shafts located outside the envelope should be included as though they were inside the envelope. Also included are parking structures; include the top, unroofed floors of parking structures *only if* used for parking. (See architectural drawing of Basic Gross Area on next page.)

on outer wall

**Exclusions:** *Excludes covered unenclosed areas, except for parking structures.* Covered unenclosed parking structures report basic gross area and unrelated gross area, but no covered unenclosed gross area.

rooftop swimming pools

Basements or attics without floor surfaces; all areas open to the weather (such as uncovered porches or balconies, courts, lightwells, surface parking lots, playing fields); portions of upper floors eliminated by rooms or lobbies that rise above single-floor ceiling height; areas having less than a six-foot six-inch (6'6") clear ceiling height unless they can be properly designated and used as mechanical or custodial areas or the criteria of a separate structure are met. (See the section on *Buildings to be Included*, page C.1, in this appendix.)

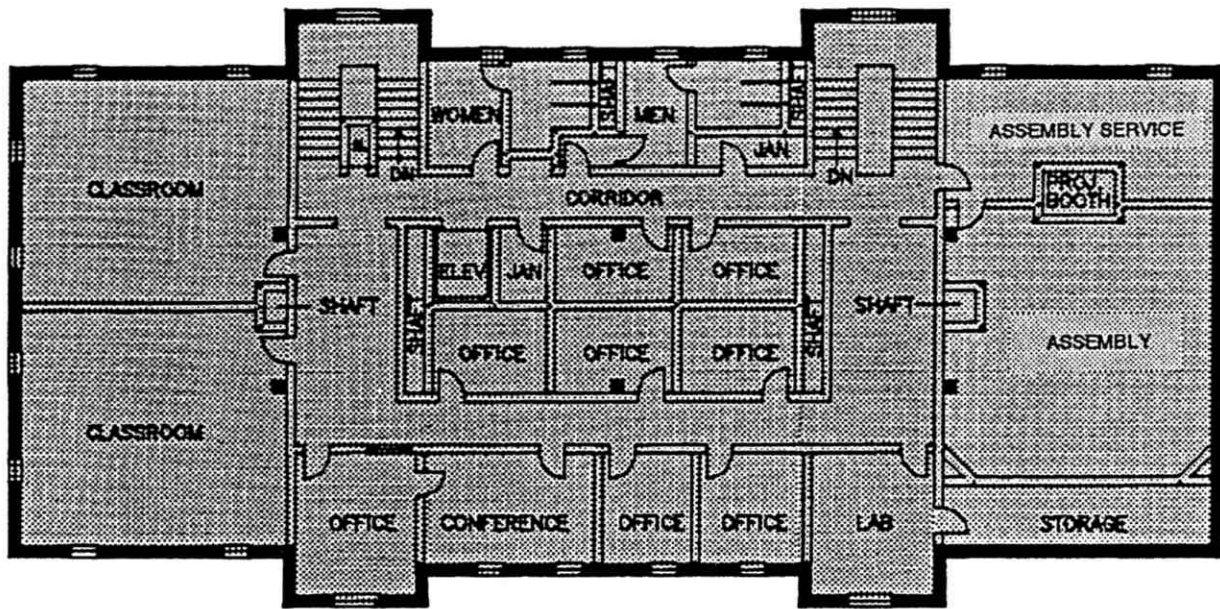
**Note:** For leased facilities, report the amount of square feet contained in the lease agreement as the Basic Gross Area; typically the square footage in the lease agreement will be the Net Rentable Square Feet, which includes the Assignable Area being leased plus a prorata share of the nonassignable area (e.g., public circulation areas, rest rooms).

6/11/02

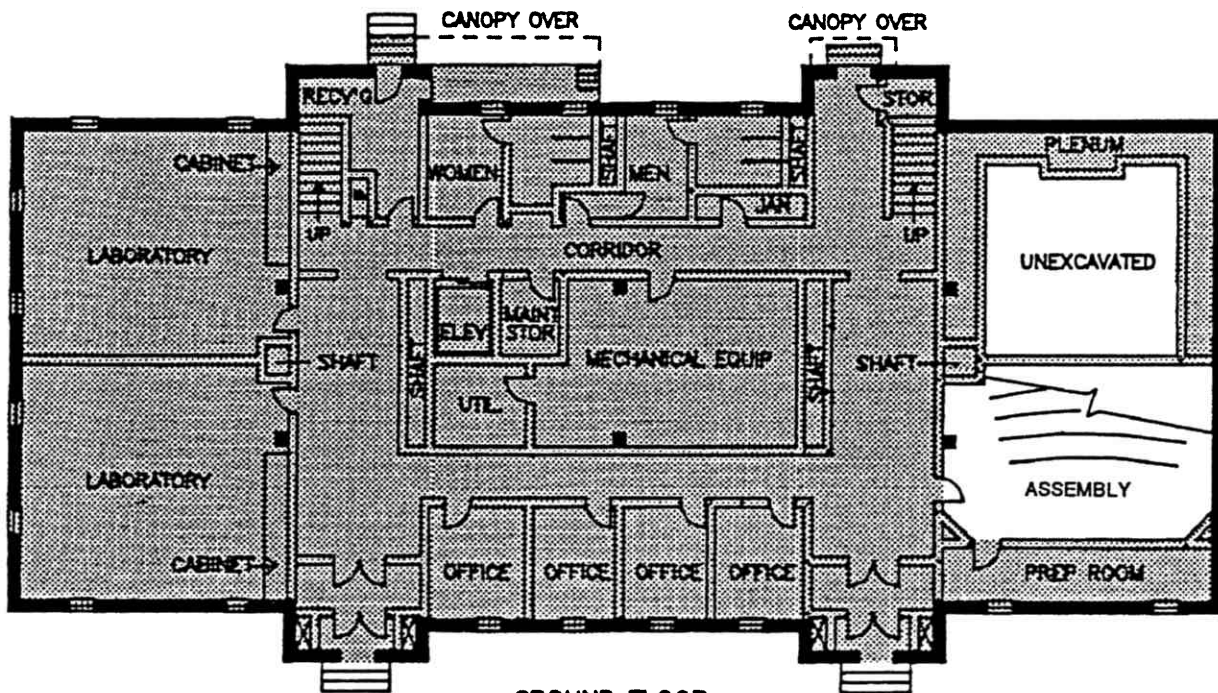
Spoke with Wayne (UCRA) about basement space less than 6'6" wide. I think it's structural area but should be a part of Basic Gross Area, not an excluded area.

It is not part of net usable area but is basic gross.

Drawing: Basic Gross Area



FIRST FLOOR



GROUND FLOOR

Courtesy of MIT/OFMS

## Covered Unenclosed Gross Area

**Definition:** The sum of all covered or roofed areas of a building located *outside* of the enclosed structure; i.e., the environmentally controlled envelope, for all stories or areas which have floor surfaces.

**Description:** Includes covered, unenclosed corridors, walkways, porches, balconies, loading docks, bridges and arcades. The covered, unenclosed gross area of a building may contain nonassignable areas (i.e., custodial, public toilet, circulation, or mechanical areas) or assignable areas (e.g., central storage, central receiving). An example of covered unenclosed gross area with *nonassignable* area contained therein would be a covered, unenclosed walkway entrance to a building. The interior portion (or area within the *phantom* walls) of the structure would be recorded in the campus system as Circulation Area. The Circulation Area plus the Structural Area would equal the Covered Unenclosed Gross Area. An example of covered unenclosed gross area with *assignable* area contained therein would be a covered unenclosed central campus receiving area. The interior portion (or area within the *phantom* walls) of the structure would be recorded in the room file with the measured amount of assignable area and with the area classified as Room Code 760-Central Service.

**Basis for Measurement:** Covered unenclosed area is computed by measuring from the *outside* faces of the envelope and the outside faces of the building or edge of roof canopies provided floor surface or pavement extends to the drip line. Deductions shall not be made for free-standing columns or architectural and structural projections.

**Exclusions:** Parking structures or the portion of buildings for which there are private vehicle parking areas are not considered Covered Unenclosed Gross Area. Campuses should report private vehicle parking areas as part of Basic Gross Area and Unrelated Gross Area.

## Outside Gross Area

Outside Gross Area is a system calculation based on campus-supplied Basic Gross Area and Covered Unenclosed Gross Area data. The corporate facilities database maintains two methods for calculating Outside Gross Area: *OGSF100* and *OGSF50*.

**OGSF100**, known as the *Federal* method, is used for data verification and editing purposes (e.g., to ensure the total assignable area of a building does not exceed the total gross area of a building) and for responding to Federal facilities surveys and inter-institutional data exchanges. Measured in terms of outside gross square feet,

$$OGSF100 = \text{Basic Gross} + 100\% \text{ Covered Unenclosed Area}$$

**OGSF50** is the method most often used by the University of California to report Gross Area. This data element is used when reporting Gross Area for capital and space planning and design purposes (e.g., development of capital budgets and preparation of project planning guides), for calculating Maintained Area for operation and maintenance of plant purposes, and for responding to State reporting requirements.

Measured in terms of outside gross square feet,

$$OGSF50 = \text{Basic Gross Area} + 50\% \text{ of the reported Covered Unenclosed Area}$$

### *Efficiency Ratio*

A primary use of Outside Gross Area data by capital planners and architects is for computing the *Efficiency Ratio* of a building. The Efficiency Ratio may be defined as the ratio of total Assignable Area to total Outside Gross Area of a building. It is calculated by dividing the Assignable Area by OGSF50 (OGSF50 = Basic Gross Area plus one-half of the reported value for Covered Unenclosed Gross Area).

$$\text{Efficiency Ratio} = \text{Assignable Area} / (\text{Basic Gross} + 50\% \text{ Covered Unenclosed Gross})$$

See the section, *Building Area Calculation Tables* (Tables 1A, 1B, and 2), in this appendix for sample calculations of Outside Gross Area, Net Usable Area, Structural Area, and Efficiency Ratio.

## Unfinished Gross Area

**Definition:** The sum of all floor areas of an enclosed structure (i.e., within the environmentally controlled envelope) which are not usable or assignable in their present state of completion.

**Description:** Unfinished Gross Area is a part of and is to be included in Basic Gross Area. Includes unfinished floors or portions of floors; unfinished basements with floor surfaces.

**Basis for Measurement:** Unfinished Gross Area is computed by measuring from the outside faces of the envelope and the inside faces of walls and partitions.

**Exclusions:** Unfinished spaces with less than 6'6" clear headroom; unfinished basements without floor surfaces.

## Unrelated Gross Area

**Definition:** The total measure of any gross floor area which is associated with private vehicle access, circulation, and parking. This required corporate facilities data element is used to calculate Maintained Area.

**Description:** Unrelated Gross Area is the portion of Outside Gross Area that is associated with private vehicle parking areas and the prorated share of Structural Area. Unrelated Gross may refer to an entire structure, where the structure is used primarily for private vehicle access, circulation, and parking (i.e., parking structures), or to portion(s), level(s), or area(s) of any building, where private vehicle parking areas are incidental to the predominant use of the building.

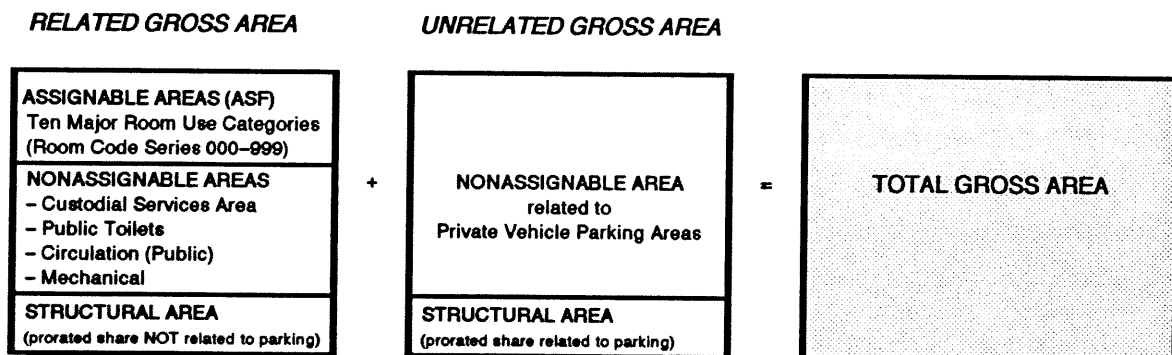
**Basis for Measurement:** Unrelated Gross Area is computed by measuring from the *outside* face of walls which enclose floor areas used for private vehicle parking. In other words,

$$\text{Unrelated Gross Area} = \text{Private Vehicle Parking Area} + \text{Prorated Structural Area}$$

For CEFA reporting purposes, parking structures containing *no* assignable areas are reported *only* in the facilities building file. In this case, the Unrelated Gross Area will equal the Outside Gross Area of the building. For mixed use buildings which contain assignable, nonassignable, and private vehicle parking areas, the Unrelated Gross Area will be the portion (or subset) of Outside Gross Area related to Private Vehicle Parking Area and its prorated share of structural area. Refer to Sample Tables 3A and 3B in this appendix for calculation of Unrelated Gross Area.

**Exclusions:** Institutional vehicle maintenance and service areas, as well as areas for storage of physical plant or farm operations service vehicles and motorized equipment, are counted as assignable area (see Room Use Codes 570-Field Building and 750/755-Vehicle Storage). Surface parking lots contiguous or related to buildings are not reportable as Unrelated Gross Area. Deductions shall not be made for free-standing columns or architectural or structural projections.

### RELATIONSHIP BETWEEN RELATED GROSS AREA AND UNRELATED GROSS AREA



## Building Area Calculation Tables

Although the tables shown on these next pages are not submitted to the Office of the President, they are included in this appendix to simplify the understanding and development of building area data for reporting in the corporate facilities system.

Tables 1A (without covered unenclosed gross area) and 1B (with covered unenclosed gross area) calculate the Outside Gross Area of a building using the OGSF100 and OGSF50 methods. Table 2 shows the calculations of Net Usable Area, Structural Area, and Efficiency Ratio. Tables 3A (with no covered unenclosed gross area) and 3B (with covered unenclosed gross area) demonstrates the calculation of Unrelated Gross Area for structures containing parking areas for private vehicles.

**SAMPLE TABLE 1A  
CALCULATION OF OUTSIDE GROSS AREA  
For Buildings WITHOUT Covered Unenclosed Areas**

**BUILDING NAME:**

**CAAN #:**

| Required by CEFA? | Line No. | PHYSICAL CATEGORY                                     | ACTUAL AREA | WEIGHT FACTOR | OGSF 100 FEDERAL METHOD | WEIGHT FACTOR | OGSF 50 CALIFORNIA METHOD |
|-------------------|----------|-------------------------------------------------------|-------------|---------------|-------------------------|---------------|---------------------------|
| Yes               | 1.       | Basic Gross Area                                      | 100,000     | 1.0           | 100,000                 | 1.0           | 100,000                   |
| Yes               | 2.       | Covered Unenclosed Gross Area                         | 0           | 1.0           | 0                       | 0.5           | 0                         |
| System Calculated | 3.       | <b>TOTAL OUTSIDE GROSS AREA</b><br>(Sum of lines 1+2) |             |               | 100,000                 |               | 100,000                   |

**SAMPLE TABLE 1B  
CALCULATION OF OUTSIDE GROSS AREA  
For Buildings WITH Covered Unenclosed Areas**

**BUILDING NAME:**

**CAAN #:**

| Required by CEFA? | Line No. | PHYSICAL CATEGORY                                     | ACTUAL AREA | WEIGHT FACTOR | OGSF 100 FEDERAL METHOD | WEIGHT FACTOR | OGSF 50 CALIFORNIA METHOD |
|-------------------|----------|-------------------------------------------------------|-------------|---------------|-------------------------|---------------|---------------------------|
| Yes               | 1.       | Basic Gross Area                                      | 100,000     | 1.0           | 100,000                 | 1.0           | 100,000                   |
| Yes               | 2.       | Covered Unenclosed Gross Area                         | 5,000       | 1.0           | 5,000                   | 0.5           | 2,500                     |
| System Calculated | 3.       | <b>TOTAL OUTSIDE GROSS AREA</b><br>(Sum of lines 1+2) |             |               | 105,000                 |               | 102,500                   |



**SAMPLE TABLE 2**  
**CALCULATION OF NET USABLE AND STRUCTURAL AREAS, AND EFFICIENCY RATIO**  
**For Buildings WITHOUT Private Vehicle Parking Areas**

**BUILDING NAME:**

**CAAN #:**

| Required<br>by CEFA? | Line<br>No. | USE-RELATED CATEGORY                                                      | OGSF100 | OGSF 50 |
|----------------------|-------------|---------------------------------------------------------------------------|---------|---------|
| System<br>Calculated | 1.          | OUTSIDE GROSS AREA (from Table 1B, line 3)                                | 105,000 | 102,500 |
| Yes                  | 2.          | Assignable Area (per room records)                                        | 65,000  | 65,000  |
| No                   | 3.          | Nonassignable: Custodial Services Area                                    | 1,575   | 1,575   |
| No                   | 4.          | Nonassignable: Public Toilet Area                                         | 3,675   | 3,675   |
| No                   | 5.          | Nonassignable: Circulation Area                                           | 21,000  | 21,000  |
| No                   | 6.          | Nonassignable: Mechanical Services Area                                   | 5,250   | 5,250   |
| No                   | 7.          | Nonassignable: Private Vehicle Parking Area                               | 0       | 0       |
| No                   | 8.          | NET USABLE AREA (Sum of lines 2+3+4+5+6+7)                                | 96,500  | 96,500  |
| No                   | 9.          | STRUCTURAL (Construction) AREA *<br>(OGSF100 Line 1 minus OGSF100 line 8) | 8,500   | 8,500   |
| No                   | 10.         | EFFICIENCY RATIO (ASF/OGSF50)<br>(OGSF50 Line 2 divided by OGSF50 line 1) | N/A     | 0.63    |

\* The Structural Area, as well as the assignable and nonassignable areas, of a building will be the same regardless of whether the OGSF100 or OGSF50 method is used. The sum of assignable, nonassignable, and structural areas will always be equal to or greater than the OGSF50 amount because one-half of the covered unenclosed gross area has been deducted.

**SAMPLE TABLE 3A**  
**CALCULATION OF UNRELATED GROSS AREA**  
For Parking Structures With No Covered Unenclosed Gross Area

**BUILDING NAME:**

**CAAN #:**

| Required by CEFA? | Line No. | USE-RELATED CATEGORY                                                             | OGSF100 | OGSF 50 |
|-------------------|----------|----------------------------------------------------------------------------------|---------|---------|
| System Calculated | 1.       | <b>OUTSIDE GROSS AREA (from Table 1A, line 3)</b>                                | 100,000 | 100,000 |
| Yes               | 2.       | Assignable Area (per room records)                                               | 0       | 0       |
| No                | 3.       | Nonassignable: Custodial Services Area                                           | 0       | 0       |
| No                | 4.       | Nonassignable: Public Toilet Area                                                | 0       | 0       |
| No                | 5.       | Nonassignable: Circulation Area                                                  | 0       | 0       |
| No                | 6.       | Nonassignable: Mechanical Services Area                                          | 0       | 0       |
| No*               | 7.       | Nonassignable: Private Vehicle Parking Area                                      | 85,000  | 85,000  |
| No                | 8.       | <b>NET USABLE AREA (Sum of lines 2+3+4+5+6+7)</b>                                | 85,000  | 85,000  |
| No                | 9.       | <b>STRUCTURAL (Construction) AREA**</b><br>(OGSF100 Line 1 minus OGSF100 line 8) | 15,000  | 15,000  |
| No                | 10.      | <b>EFFICIENCY RATIO (ASF/OGSF50)</b><br>(OGSF50 Line 2 divided by OGSF50 Line 1) | N/A     | 0.00    |
| Yes               | 11.      | <b>CALCULATION OF UNRELATED GROSS AREA</b>                                       |         |         |
|                   | a.       | Private Vehicle Parking Area (line 7)                                            | 85,000  | 85,000  |
|                   | b.       | Parking Area as a percentage of Net Usable Area<br>(line 11a divided by line 8)  | 100.0%  | 100.0%  |
|                   | c.       | Prorated share of Structural Area (line 9 x line 11b)                            | 15,000  | 15,000  |
|                   | d.       | <b>TOTAL UNRELATED GROSS AREA (Line 11a + Line 11c)</b>                          | 100,000 | 100,000 |

\* Private Vehicle Parking Area plus its prorated share of structural area equals Unrelated Gross Area, which is a required CEFA data element.

\*\*The Structural Area, as well as the assignable and nonassignable areas, of a building will be the same regardless of whether the OGSF100 or OGSF50 method is used. The sum of assignable, nonassignable, and structural areas will always be equal to or greater than the OGSF50 amount because one-half of the covered unenclosed gross area has been deducted.

**SAMPLE TABLE 3B**  
**CALCULATION OF UNRELATED GROSS AREA**  
For Mixed Use Buildings With Incidental Private Vehicle Parking Areas

**BUILDING NAME:**

**CAAN #:**

| Required<br>by CEFA? | Line<br>No. | USE-RELATED CATEGORY                                                             | OGSF100 | OGSF 50 |
|----------------------|-------------|----------------------------------------------------------------------------------|---------|---------|
| System<br>Calculated | 1.          | <b>OUTSIDE GROSS AREA (from Table 1B, line 3)</b>                                | 105,000 | 102,500 |
| Yes                  | 2.          | Assignable Area (per room records)                                               | 42,000  | 42,000  |
| No                   | 3.          | Nonassignable: Custodial Services Area                                           | 1,700   | 1,700   |
| No                   | 4.          | Nonassignable: Public Toilet Area                                                | 5,000   | 5,000   |
| No                   | 5.          | Nonassignable: Circulation Area                                                  | 21,000  | 21,000  |
| No                   | 6.          | Nonassignable: Mechanical Services Area                                          | 6,000   | 6,000   |
| No*                  | 7.          | Nonassignable: Private Vehicle Parking Area                                      | 20,000  | 20,000  |
| No                   | 8.          | <b>NET USABLE AREA (Sum of lines 2+3+4+5+6+7)</b>                                | 95,700  | 95,700  |
| No                   | 9.          | <b>STRUCTURAL (Construction) AREA**</b><br>(OGSF100 Line 1 minus OGSF100 line 8) | 9,300   | 9,300   |
| No                   | 10.         | <b>EFFICIENCY RATIO (ASF/OGSF50)</b><br>(OGSF50 Line 2 divided by OGSF50 Line 1) | N/A     | 0.41    |
| Yes                  | 11.         | <b>CALCULATION OF UNRELATED GROSS AREA</b>                                       |         |         |
|                      | a.          | Private Vehicle Parking Area (line 7)                                            | 20,000  | 20,000  |
|                      | b.          | Parking Area as a percentage of Net Usable Area<br>(line 11a divided by line 8)  | 20.9%   | 20.9%   |
|                      | c.          | Prorated share of Structural Area (line 9 x line 11b)***                         | 1,944   | 1,944   |
|                      | d.          | <b>TOTAL UNRELATED GROSS AREA (Line 11a + Line 11c)</b>                          | 21,944  | 21,944  |

\* Private Vehicle Parking Area plus its prorated share of structural area equals Unrelated Gross Area, which is a required CEFA data element.

\*\*The Structural Area, as well as the assignable and nonassignable areas, of a building will be the same regardless of whether the OGSF100 or OGSF50 method is used. The sum of assignable, nonassignable, and structural areas will always be equal to or greater than the OGSF50 amount because one-half of the covered unenclosed gross area has been deducted.

\*\*\*Report actual Structural Area for private vehicle parking areas, if available.