

ANSI/BOMA Z65.1-1996

# STANDARD METHOD FOR MEASURING FLOOR AREA IN OFFICE BUILDINGS

An American National Standard  
Approved June 7, 1996 by American National Standards Institute, Inc.

Secretariat  
Building Owners and Managers Association International



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## BUILDING OWNERS AND MANAGERS ASSOCIATION (BOMA) INTERNATIONAL

The premiere trade association of the office building industry, BOMA International is a dynamic international federation of 87 U.S., ten Canadian, and three international associations. Individuals join BOMA through local BOMA associations. Principal members own and/or manage more than 6 billion square feet of commercial office space. Associate members provide the goods and services needed to operate those properties.

Founded in 1907, BOMA International's mission is to actively and responsibly represent and promote the commercial real estate industry's interests through effective leadership and advocacy; the collection, analysis, and dissemination of information; and professional development.

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BOMA's annual Office Building of The Year (TOBY) awards recognize outstanding commercial, corporate, medical, and government office buildings.

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For information on BOMA International membership, research activities, industry representation, seminars, and the annual convention, contact BOMA International at (202) 408-2662 or visit BOMA's home page, <http://www.boma.org>.

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## HISTORY

In 1915, the Building Owners and Managers Association (BOMA) International developed the *Standard Method of Floor Measurement for Office Buildings*. This first *Standard* was readily accepted as a national industry standard and stood for over 35 years without amendment. With the advent of 'block type' building design, a revised *Standard* was adopted by BOMA International in 1952. This was further revised in 1955 to become the American National Standard, of which BOMA International was a cosponsor.

In 1971, the *Standard* was revised to reflect leasing concepts and practices in effect at that time. BOMA International revised the *Standard* in 1980 to further clarify the point to which measurements are taken relative to the exterior wall of a building, and to establish the basic methods for measuring the office area of a given floor. The 1989 review resulted in a French translation and the addition (not officially part of the *Standard*) of a Question and Answer section with the most frequently asked questions about the *Standard*.

This *Standard Method for Measuring Floor Area in Office Buildings* is the result of joint action by participating organizations under the auspices of the American National Standards Institute. It was originally adopted September 15, 1915. Reissued (without change) December 1, 1925. Revised and reissued December 8, 1952. Revised and readopted December 6, 1955, and reissued January 10, 1956. Reprinted April 1963; April 1966; April, 1970. Revised and readopted June, 1971 and reprinted April, 1972; February, 1973; August, 1976. Revised and readopted June, 1980 and reissued August, 1980. Reaffirmed June 21, 1989, and reprinted August 1990. Revised and readopted June 7, 1996.

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An American National Standard implies a consensus of those substantially concerned with its scope and provisions. An American National Standard is intended as a guide to aid the manufacturer, the consumer, and the general public. The existence of an American National Standard does not preclude anyone, whether he/she has approved the standard or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standard. American National Standards are subject to periodic review and users are cautioned to obtain the latest editions.

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## INTRODUCTION

This revised *Standard* is a building-wide method of measurement, allowing spaces that benefit all the building occupants to be measured and allocated on a pro-rata basis. This represents a major change from the previous (1981) edition, which measured office space on a floor-by-floor basis.

The need for such a changed approach was first identified within BOMA International in 1992. While surveys showed that the *Standard* was the most commonly used method of measurement for office buildings, they also documented that it was not being universally applied on a floor-by-floor basis. Buildings constructed during the 1980s tended to incorporate design elements intended to benefit building occupants generally, rather than on a floor-by-floor basis (for example, spacious entrance lobbies with concierge desks, health clubs, daycare facilities, conference centers, etc.). In view of this trend, BOMA's marketplace information indicated a widespread need to fairly account for these building-wide amenities.

Additionally, revision of the *Standard* meets a need for greater clarity in the presentation of concepts and definitions. The previous edition generated too many questions on too many issues to be considered adequate for continued use. These concerns have been thoroughly discussed, and are addressed in a definitive manner here.

In order to produce a revised *Standard* that achieves the aims in a clear and practicable way, various new definitions have been introduced, explaining concepts such as Floor Usable Area, Floor Rentable Area, Floor Common Area, and Building Common Area. With each new term, illustrations were developed to convey the new approach visually.

While additional questions will no doubt arise and further guidance materials may need to be developed, those responsible for the revised *Standard* believe it is a sound document that will meet the needs of architects, space planners, interior designers, engineers, building owners and managers, facility owners and managers, leasing professionals, asset managers, appraisers, and others concerned with the measurement of office space.

The document is designed to be easier to use through the inclusion of two new features: the "Overview of Method" section on page 4, and the "Global Summary of Areas" section on pages 26-27. In addition to familiarizing themselves with the definitions used in the *Standard* (all of which are capitalized for quick recognition), users are encouraged to reference these two sections. The "Overview of Method" outlines the steps needed to measure areas within an office building, while the "Global Summary" enables users to step back and chart the interrelationship of concepts and terms described in the *Standard*.

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## FOREWORD

A standard's purpose is to permit communication and computation on a clear and understandable basis. Another important purpose is to allow comparison of values on the basis of a generally agreed upon method of measurement.

For more than 75 years, BOMA International has sponsored the *Standard Method for Measuring Floor Area in Office Buildings*. The BOMA Standard has been the one accepted and approved by the American National Standards Institute (ANSI). The result is a method of measurement used by building owners, managers, facilities managers, tenants, appraisers, architects, leasing professionals, lending institutions and others to compute the floor area of an office building.

This *Standard* may be used to measure space in both existing and new office buildings. BOMA International urges all its members and others in the office building industry to use the *Standard* to measure office space. Facilities professionals are also encouraged to use the *Standard* in allocating building expenses to various cost centers or for comparing occupancy.

(This Foreword is not officially a part of the *Standard Method for Measuring Floor Area in Office Buildings, ANSI/BOMA Z65.1-1996*.)

## PREFACE

It is not uncommon for an area calculated from the building plans to differ from the area measured on site. It is also not uncommon for a site measurement and calculation by one party to differ from the same measurement and calculation by another party. The calculation for an area, resulting from site measurement by the building owner or manager, is deemed accurate if a re-measurement gives result with variance of two percent (2%) or less. If the variance is greater than two percent (2%), BOMA International recommends that an unbiased professional third party be sought to assist in resolving the matter.

## DEFINITIONS

*FINISHED SURFACE* shall mean a wall, ceiling or floor surface, including glass, as prepared for tenant use, excluding the thickness of any special surfacing materials such as panelling, furring strips and/or carpet.

*DOMINANT PORTION* shall mean the portion of the inside *FINISHED SURFACE* of the permanent outer building wall which is 50% or more of the vertical floor-to-ceiling dimension, at the given point being measured as one moves horizontally along the wall. *DOMINANT PORTION* itself is a vertical measurement between *FINISHED SURFACES* (or a series of vertical measurements), with the number of measurements needed based upon the conditions found along the wall. If, for instance, a window system is 4'-6" (1.372 meters) high and the floor to ceiling dimension is 9'-0" (2.743 meters), the *DOMINANT PORTION* is the inside surface of the glass for the full width of the window system. If, however, the window system is 4'-5" (1.346 meters), the *DOMINANT PORTION* is the inside surface of the wall. In designs of alternating window systems and wall sections, the *DOMINANT PORTION* will move in and out as often as conditions dictate. If no *FINISHED SURFACE* of the permanent outer building wall is 50% or more of the vertical floor-to-ceiling dimension, or if the permanent outer building wall is not vertical, the *DOMINANT PORTION* shall be the inside finished surface of the wall where it intersects the finished floor. In the case of *STORE AREA* with street level frontage, the *DOMINANT PORTION* shall be the building line.

*GROSS BUILDING AREA* shall mean the total constructed area of a building. It is generally not used for leasing purposes.

*GROSS MEASURED AREA* shall mean the total area of a building enclosed by the *DOMINANT PORTION*, excluding parking areas and loading docks (or portions of same) outside the building line. It is generally not used for leasing purposes and is calculated on a floor by floor basis.

*MAJOR VERTICAL PENETRATIONS* shall mean stairs, elevator shafts, flues, pipe shafts, vertical ducts, and the like, and their enclosing walls. Atria, lightwells and similar penetrations above the finished floor are included in this definition. Not included, however, are vertical penetrations built for the private use of a tenant occupying *OFFICE AREAS* on more than one floor. Structural columns, openings for vertical electric cable or telephone distribution, and openings for plumbing lines are not considered to be *MAJOR VERTICAL PENETRATIONS*.

*FLOOR RENTABLE AREA* shall mean the result of subtracting from the *GROSS MEASURED AREA* of a floor the *MAJOR VERTICAL PENETRATIONS* on that same floor. It is generally fixed for the life of the building and is rarely affected by changes in corridor size or configuration.

*USABLE AREA* shall mean the measured area of an *OFFICE AREA*, *STORE AREA*, or *BUILDING COMMON AREA* on a floor. The total of all the *USABLE AREAS* for a floor shall equal *FLOOR USABLE AREA* of that same floor.

*OFFICE AREA* shall mean the area where a tenant normally houses personnel and/or furniture, for which a measurement is to be computed.

*STORE AREA* shall mean the area of an office building suitable for retail occupancy. *STORE AREAS* are included in *FLOOR RENTABLE AREA* and *RENTABLE AREA*.

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*GROSS BUILDING AREA* shall mean the total constructed area of a building. It is generally not used for leasing purposes.

*GROSS MEASURED AREA* shall mean the total area of a building enclosed by the *DOMINANT PORTION*, excluding parking areas and loading docks (or portions of same) outside the building line. It is generally not used for leasing purposes and is calculated on a floor by floor basis.

*MAJOR VERTICAL PENETRATIONS* shall mean stairs, elevator shafts, flues, pipe shafts, vertical ducts, and the like, and their enclosing walls. Atria, lightwells and similar penetrations above the finished floor are included in this definition. Not included, however, are vertical penetrations built for the private use of a tenant occupying *OFFICE AREAS* on more than one floor. Structural columns, openings for vertical electric cable or telephone distribution, and openings for plumbing lines are not considered to be *MAJOR VERTICAL PENETRATIONS*.

*FLOOR RENTABLE AREA* shall mean the result of subtracting from the *GROSS MEASURED AREA* of a floor the *MAJOR VERTICAL PENETRATIONS* on that same floor. It is generally fixed for the life of the building and is rarely affected by changes in corridor size or configuration.

*USABLE AREA* shall mean the measured area of an *OFFICE AREA*, *STORE AREA*, or *BUILDING COMMON AREA* on a floor. The total of all the *USABLE AREAS* for a floor shall equal *FLOOR USABLE AREA* of that same floor.

*OFFICE AREA* shall mean the area where a tenant normally houses personnel and/or furniture, for which a measurement is to be computed.

*STORE AREA* shall mean the area of an office building suitable for retail occupancy. *STORE AREAS* are included in *FLOOR RENTABLE AREA* and *RENTABLE AREA*.

## DEFINITIONS

*BUILDING COMMON AREA* shall mean the areas of the building that provide services to building tenants but which are not included in the *OFFICE AREA* or *STORE AREA* of any specific tenant. These areas may include, but shall not be limited to, main and auxiliary lobbies, atrium spaces at the level of the finished floor, concierge areas or security desks, conference rooms, lounges or vending areas, food service facilities, health or fitness centers, daycare facilities, locker or shower facilities, mail rooms, fire control rooms, fully enclosed courtyards outside the exterior walls, and building core and service areas such as fully enclosed mechanical or equipment rooms. Specifically excluded from *BUILDING COMMON AREA* are *FLOOR COMMON AREAS*, parking space, portions of loading docks outside the building line, and *MAJOR VERTICAL PENETRATIONS*.

*FLOOR USABLE AREA* shall mean the sum of *USABLE AREAS* of *OFFICE AREAS*, *STORE AREAS* and *BUILDING COMMON AREAS* of a floor. The amount of *FLOOR USABLE AREA* can vary over the life of a building as corridors expand and contract and as floors are remodeled.

*FLOOR COMMON AREA* shall mean the areas on a floor such as washrooms, janitorial closets, electrical rooms, telephone rooms, mechanical rooms, elevator lobbies, and public corridors which are available primarily for the use of tenants on that floor.

*FLOOR R/U RATIO* shall mean the conversion factor that, when applied to *USABLE AREA*, gives the *BASIC RENTABLE AREA* of the *OFFICE AREA*, *STORE AREA* or *BUILDING COMMON AREA*.

*BASIC RENTABLE AREA* of an *OFFICE AREA*, *STORE AREA* or *BUILDING COMMON AREA* shall mean the *USABLE AREA* of that *OFFICE AREA*, *STORE AREA* or *BUILDING COMMON AREA* and its share of the *FLOOR COMMON AREAS* on that floor. *BASIC RENTABLE AREA* is determined by multiplying the *USABLE AREA* of that *OFFICE AREA*, *STORE AREA* or *BUILDING COMMON AREA* by the *FLOOR R/U RATIO*. The total *BASIC RENTABLE AREA* of a tenant occupying more than one floor shall be the sum of its *BASIC RENTABLE AREAS* on each floor. The total of all *BASIC RENTABLE AREAS* on a floor shall equal the *FLOOR RENTABLE AREA* of that same floor.

*BUILDING RENTABLE AREA* shall equal the sum of all the *FLOOR RENTABLE AREAS*.

*BUILDING R/U RATIO* shall mean the conversion factor that distributes the *BUILDING COMMON AREA* of a building.

*RENTABLE AREA* shall mean the *USABLE AREA* of an *OFFICE AREA* or *STORE AREA* with its associated share of *FLOOR COMMON AREAS* and *BUILDING COMMON AREAS*. *RENTABLE AREA* is determined by multiplying the *USABLE AREA* of an *OFFICE AREA* or *STORE AREA* by the *R/U RATIO*. The total of all *RENTABLE AREAS* equals the *BUILDING RENTABLE AREA* for the building.

*R/U RATIO* shall mean the conversion factor that, when applied to *USABLE AREA*, gives the *RENTABLE AREA* of the *OFFICE AREA* or *STORE AREA*.



## OVERVIEW OF METHOD

The following steps must be followed to obtain the *RENTABLE AREA* of an *OFFICE AREA* or *STORE AREA*. Please note that an *OFFICE AREA* located in a *STORE AREA* is measured as a *STORE AREA*.

1. Determine, for record keeping, the overall *GROSS BUILDING AREA*.
2. Ascertain the *GROSS MEASURED AREA* of each floor of the building, applying the concepts of *FINISHED SURFACE* and *DOMINANT PORTION*.
3. Establish the *FLOOR RENTABLE AREA* for each floor by deducting from each floor *GROSS MEASURED AREA* the area of its *MAJOR VERTICAL PENETRATIONS*.
4. Measure the *USABLE AREA* of *OFFICE AREAS*, *STORE AREAS* and *BUILDING COMMON AREAS* on each floor to determine each *FLOOR USABLE AREA*.
5. Determine the *FLOOR COMMON AREA* of every floor by subtracting from each *FLOOR RENTABLE AREA* its *FLOOR USABLE AREA*.
6. The *FLOOR COMMON AREA* is allocated to each *USABLE AREA* on that floor by applying that *FLOOR R/U RATIO*. The result is the *BASIC RENTABLE AREA*.
7. The *BUILDING COMMON AREA* is allocated to each *BASIC RENTABLE AREA* by applying the *BUILDING R/U RATIO*. The result is the *RENTABLE AREA*.

Note that the *RENTABLE AREA* can be calculated by applying to the *USABLE AREA* of *OFFICE AREA* and *STORE AREA* the *R/U RATIO* (*BUILDING R/U RATIO X FLOOR R/U RATIO*). See chart on pages 26-27 for a summary of the interrelationship of areas.

## RATIOS AND EQUATIONS

$$FLOOR\ R/U\ RATIO = FLOOR\ RENTABLE\ AREA \div FLOOR\ USABLE\ AREA$$

$$BASIC\ RENTABLE\ AREA = USABLE\ AREA \times FLOOR\ R/U\ RATIO$$

$$BUILDING\ R/U\ RATIO = BUILDING\ RENTABLE\ AREA \div (BUILDING\ RENTABLE\ AREA - BASIC\ RENTABLE\ AREA\ of\ BUILDING\ COMMON\ AREA)$$

$$RENTABLE\ AREA = BASIC\ RENTABLE\ AREA \times BUILDING\ R/U\ RATIO$$

$$R/U\ RATIO = FLOOR\ R/U\ RATIO \times BUILDING\ R/U\ RATIO$$

$$RENTABLE\ AREA = USABLE\ AREA \times R/U\ RATIO$$