

## Whole Building Physical Characteristics

The BASE study collected data from 100 randomly selected buildings in 37 cities in 25 States. Ownership of the BASE buildings was primarily split between private and commercial (n=41) and government (n=44), the remaining 15 buildings were classified as academic. Most of the BASE study buildings were classified as being in urban surroundings (73%). Twenty-three percent were in suburban surroundings and 4% were in rural surroundings.

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**BASE Buildings Physical Characteristics: General Building Characteristics (Construction Dates, Floor Areas, Number of Occupants)**

	Year Building Was First Completed	Year of Latest Building Addition <sup>1</sup>	Occupied Floor Area (m <sup>2</sup> ) <sup>2,3</sup>	Gross Floor Area (m <sup>2</sup> ) <sup>2</sup>	Number of Building Occupants
Number of Buildings Reporting	100	34	99	100	100
Mean (Arithmetic)	1961	1972	16,380	24,756	1,020
Standard Deviation	31	26	18,461	27,852	1,110
Minimum	1850	1906	629	1,665	87
10th Percentile	1908	1928	2,256	3,680	178
25th Percentile	1953	1965	5,061	7,362	304
50th Percentile	1972	1985	8,477	13,964	705
75th Percentile	1983	1990	21,271	27,880	1,200
90th Percentile	1988	1995	35,912	65,072	2,257
Maximum	1996	1996	98,474	134,195	6,500

**Notes:**

<sup>1</sup>Summary data are based on those buildings that reported having major building additions constructed after completion of the original building structure. There were 34 buildings that reported building additions.

<sup>2</sup>Conversion: 1 m<sup>2</sup> equals 10.764 ft<sup>2</sup>.

<sup>3</sup>One building did not report an occupied floor area.

**Variable Descriptions:**

**Year Building Was First Completed** is the year in which the building construction was first completed or the year in which the building was first occupied.

**Year of Latest Building Addition** is the year in which the last major renovation or addition occurred such as a new wing or new floor.

**Occupied Floor Area** includes spaces in the building that are typically occupied. Generally, these include tenanted office space, conference rooms, auditoriums, laboratory space, retail areas, file and record storage areas, etc. This value typically excluded mechanical rooms, utility closets, stairwells, elevator shafts, janitorial closets, common hallways, atriums, restrooms, currently vacant office space, etc.

**Gross Floor Area** is the total floor area within the building footprint, including all parking areas integral to the building structure. Integral parking would be underground or above-grade parking within the building footprint.

**Number of Building Occupants** refers to the total number of people, employees and visitors, that occupy the building during normal business hours.

**BASE Buildings Physical Characteristics: Building Occupancy Profiles - Number of Days Per Week Building is Occupied**

Number of Days Per Week Building is Occupied	Number of Buildings Reporting
One	0
Two	0
Three	0
Four	0
Five	50
Six	26
Seven	24
Total Number of Buildings Reporting	100

Variable Description:

***Number of Days per Week Building is Occupied*** refers to the number of days per week that the building is normally occupied.

**BASE Buildings Physical Characteristics: Building Occupancy Profiles - Number of Hours Per Weekday and Weekend Day Building is Occupied**

	Number of Hours Per Weekday Building is Occupied	Number of Hours Per Weekend Day Building is Occupied <sup>1</sup>
Number of Buildings Reporting	100	99
Mean (Arithmetic)	11	4
Standard Deviation	4	7
Minimum	5	0
10th Percentile	9	0
25th Percentile	9	0
50th Percentile	10	0
75th Percentile	12	6
90th Percentile	15	13
Maximum	24	24
<b>Notes:</b>		
<sup>1</sup> Number of hours per weekend day was not reported for one building.		

Variable Descriptions:

***Number of Hours per Weekday Building is Occupied*** refers to the number of hours per weekday that the building is normally occupied.

***Number of Hours per Weekend Day Building is Occupied*** refers to the number of hours per weekend day that the building is normally occupied.

**BASE Buildings Physical Characteristics: Distribution of Building Floors - Below Grade and Above Grade**

	Number of Floors Below Grade <sup>1</sup>	Number of Floors Above Grade
Number of Buildings Reporting	74	100
Mean (Arithmetic)	1	9
Standard Deviation	1	10
Minimum	0	1
10th Percentile	0	2
25th Percentile	1	3
50th Percentile	1	5
75th Percentile	1	10
90th Percentile	2	20
Maximum	8	53

Notes:

<sup>1</sup>Summary data are based on those buildings that reported having floors below grade. Seventy-four of the 100 buildings reported below grade floors.

Variable Descriptions:

**Number of Floors Above Grade** is the total number of floors at or above the grade level in the building. If a floor was partially above grade, the floor was counted as above grade if the majority of the floor area was above grade.

**Number of Floors Below Grade** is the total number of floors below the grade level in the building. If a floor was partially below grade, the floor was counted as below grade if the majority of the floor area was below grade.

**BASE Buildings Physical Characteristics: Floor Space Usage - Primary and Secondary Usage Categories**

Floor Space Usage	Number of Floors <sup>1</sup>	
	Primary Use	Secondary Use
Assembly	18	44
Food service	1	7
Foyer/reception	2	28
Laboratory	8	26
Mechanical	35	39
Multi-Use	50	96
Office	745	48
Parking	51	2
Retail	13	20
Other	61	73
Storage	20	19
Vacant	39	82
<b>Total Number of Floors Reported</b>	<b>1043</b>	<b>484</b>

**Notes:**

<sup>1</sup>For all 100 buildings, the total number of floors with a primary use category was 1,043 floors. Further, of the 1,043 floors, 484 reported at least one secondary use category.

**Variable Descriptions:**

**Primary Use** is the use category occupying the majority of the floor area on a given floor.

**Secondary Use** is the use category occupying the majority of the remaining percentage of floor area on a given floor.

The following use categories apply:

**Assembly** includes any area where large numbers of people are likely to gather (e.g. court rooms, conference rooms, auditoriums, etc).

**Food Service** includes areas where food is prepared, cooked, served, purchased or consumed.

**Foyer/Reception** includes areas where people enter the building or an area of the building where visitors are met.

**Laboratory** includes areas used to complete scientific experiments or tests.

**Mechanical** includes areas where systems supporting the building are housed.

**Multi-Use** includes areas that are used for two or more uses.

**Office** includes areas that are used for office type activities.

**Other** includes areas that are used for purposes not specified.

**Packing/Shipping** includes areas where goods such as packages and mail are sent out and received.

**Parking** includes areas inside the building used for parking of automobiles.

**Retail** includes areas where goods are sold to the consumer.

**Storage** includes areas where goods and equipment are saved for future use.

**Vacant** includes areas that are not occupied with equipment, furniture or occupants.

**BASE Buildings Physical Characteristics: Basic Site Characteristics - Rural, Suburban, and Urban**

Basic Site Characteristics	Number of Buildings Reporting
Rural	4
Suburban	23
Urban	73
Total Number of Buildings Reporting	100

Variable Descriptions:

**Basic Site Characteristics** refers to the geographical characteristic of the city where the building is located.

The following use categories apply:

**Rural** refers to residential areas away from the city.

**Suburban** refers to an outlying part of the city or a residential area adjacent to the city.

**Urban** refers to the core of the city .

**BASE Buildings Physical Characteristics: Detailed Site Characteristics - Neighboring Land Uses**

Detailed Site Characteristics, Neighboring Land Uses	Number of Buildings Reporting
Agricultural	1
Industrial	3
Commercial	73
Residential	15
Near Urban	5
Other	3
Total Number of Buildings Reporting	100

Variable Descriptions:

**Detailed Site Characteristics** refers to the dominant land use influence within a one kilometer radius of the study building site.

The following use categories apply:

**Agricultural** refers to areas with crops and orchards as well as livestock grazing. Responses are relevant only for those buildings with a site characterization of rural.

**Industrial** refers to areas with product-oriented establishments such as manufacturing and utilities.

**Commercial** refers to areas with service-oriented establishments such as retail businesses and restaurants.

**Residential** refers to areas with single or multi-family homes without a dominating industrial or commercial influence. Responses are relevant only for those buildings with a site characterization of urban or suburban. Because most areas include some residential use, this category is used in the absence of a dominating industrial or commercial use.

**Near Urban** refers to areas that are close enough to an urban center to be affected by that urban area. Responses are relevant only for those buildings with a site characterization of rural.

**Other** refers to areas that are not otherwise defined.



**BASE Buildings Physical Characteristics: Primary Exterior Wall Construction Materials**

Exterior Wall Construction Materials	Number of Buildings Reporting <sup>1</sup>
Glass and Metal Curtain Wall	15
Masonry	46
Precast Concrete Panels	27
Stone Panels	8
Exterior Insulation Finish System	1
Siding on Frame Construction	1
Metal Building System	2
Other	3
Total Number of Buildings Reporting	100
<p><u>Notes:</u>  <sup>1</sup>Number of buildings within column may add up to greater than the total number of buildings if some buildings reported more than one primary material.</p>	

Variable Descriptions:

**Exterior Wall Construction Materials** describes the primary materials used in the building's exterior wall construction.

The following use categories apply:

**Glass and Metal Curtain Wall** refers to a wall construction material made up of glass and metal framing.

**Masonry** refers to a construction material defined as brick, stone or stone block.

**Precast Concrete Panels** refers to a wall construction material comprised of pre-fabricated concrete panels hoisted on to the structure to form the outside walls.

**Stone Panels** refers to a face made of large sections of stone that are mechanically fastened to the structural frame.

**Exterior Insulation Finish System** refers to a facade that includes an insulation board that is covered with mesh and an acrylic polymer top coat.

**Siding on Frame Construction** refers to a facade that is installed in strips and layers that are attached to a sub base.

**Metal Building System** refers to a facade that is made of metal sheets that are mechanically fastened to the structural steel.

**Other** refers to a facade not otherwise defined.

**BASE Buildings Physical Characteristics: Primary Roof Construction Materials**

Roof Construction Materials	Number of Buildings Reporting <sup>1</sup>
Built-Up Roof	49
Single-Ply Membrane	45
Inverted Membrane	1
Shingles	3
Metal	5
Other	3
Total Number of Buildings Reporting	100
<u>Notes:</u> <sup>1</sup> Number of buildings within column may add up to greater than the total number of buildings if some buildings reported more than one primary material.	

Variable Descriptions:

**Roof Construction Materials** describes the primary materials used in the construction of the building's roof.

The following use categories apply:

**Built-up roof** refers to plies of asphalt-impregnated sheets adhered together with hot asphalt.

**Single-ply membrane** refers to a roof system made of flexible sheets of compounded synthetic materials that are manufactured in a factory and installed by mechanically attaching or adhering the material directly to the sub roof or insulation material.

**Inverted membrane** refers to a roof system where the membrane is adhered directly to the sub roof and insulation is installed on top of the membrane.

**Shingles** refers to a roof system where small flat sections of material (wood, asphalt, slate, etc.) are applied in layers over a membrane on the roof sheeting.

**Metal** refers to a roof system where metal sheets are mechanically fastened to the roof.

**Other** refers to a roof system not otherwise defined.

**BASE Buildings Physical Characteristics: Window Glazing Elements**

Window Glazing Elements	Number of Buildings Reporting <sup>1</sup>
Single	42
Double	55
Other	2
Total Number of Buildings Reporting	99
<u>Notes:</u> <sup>1</sup> Number of buildings reporting a glazing type was 99. One building was not equipped with windows.	

Variable Descriptions:

**Window Glazing elements** describe the primary type of window pane used in the building.

The following categories apply:

**Single** refers to window glazing that have only one pane of glass between indoors and outdoors.

**Double** refers to window glazing that have two panes of glass that sandwich either air or an insulating gas to provide additional layers between indoors and outdoors.

**Other** refers to a glazing type not otherwise defined.

**BASE Buildings Physical Characteristics: Buildings with Operable Windows**

Buildings with Operable Windows	Number of Buildings Reporting <sup>1</sup>
Yes	44
No	55
Total Number of Buildings Reporting	99

Notes:

<sup>1</sup>This table was compiled by assigning “yes” to any building that indicated an operable window percentage of greater than 0. Specifically, 44 buildings indicated a percentage of operable windows greater than 0; while 55 buildings indicated 0% operable windows. Ninety nine buildings reported a response for operable window percentages. One building was not equipped with windows.

Variable Description:

***Buildings with Operable Windows*** describes the number of BASE buildings that had operable windows.