

The Council on Tall Buildings and Urban Habitat (CTBUH) developed the international standards for measuring and defining tall buildings, as outlined below, and is recognized as the arbiter for bestowing designations such as the “World’s Tallest Building.”

Tall, Supertall & Megatall Buildings

Tall Buildings

There is no absolute definition of what constitutes a “tall building;” the definition is subjective, considered against one or more of the following categories:

Height Relative to Context

A 14-story building may not be considered a tall building in a high-rise city such as Chicago or Hong Kong, but in a provincial European city or a suburb this may be distinctly taller than the urban norm.



vs.



Proportion

There are numerous buildings that are not particularly high, but are slender enough to give the appearance of a tall building. Conversely, there are numerous big/large-footprint buildings that are quite high, but their size/floor area rules them out of being classed as a tall building.

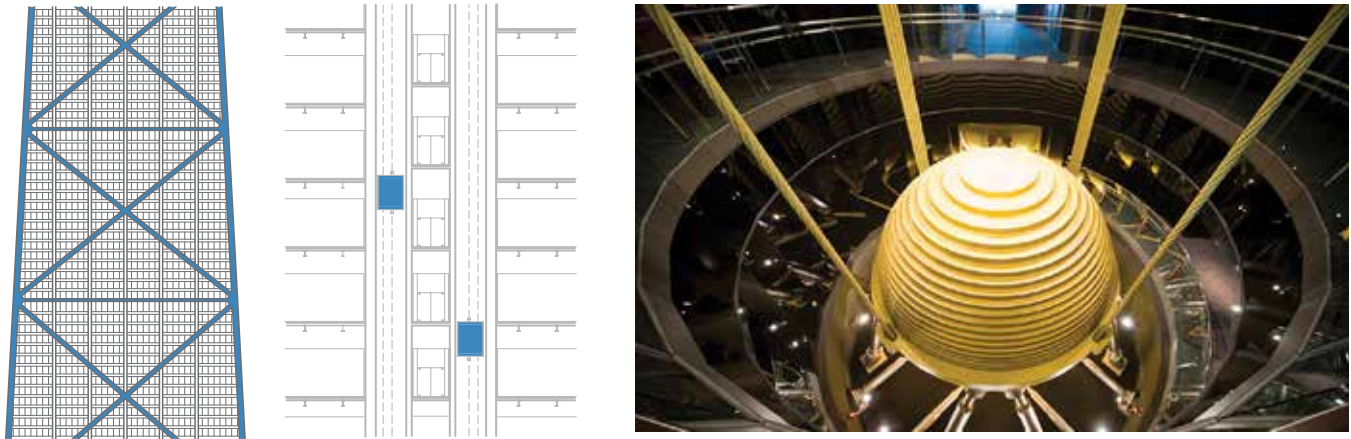


vs.



Embracing Technologies Relevant to Tall Buildings

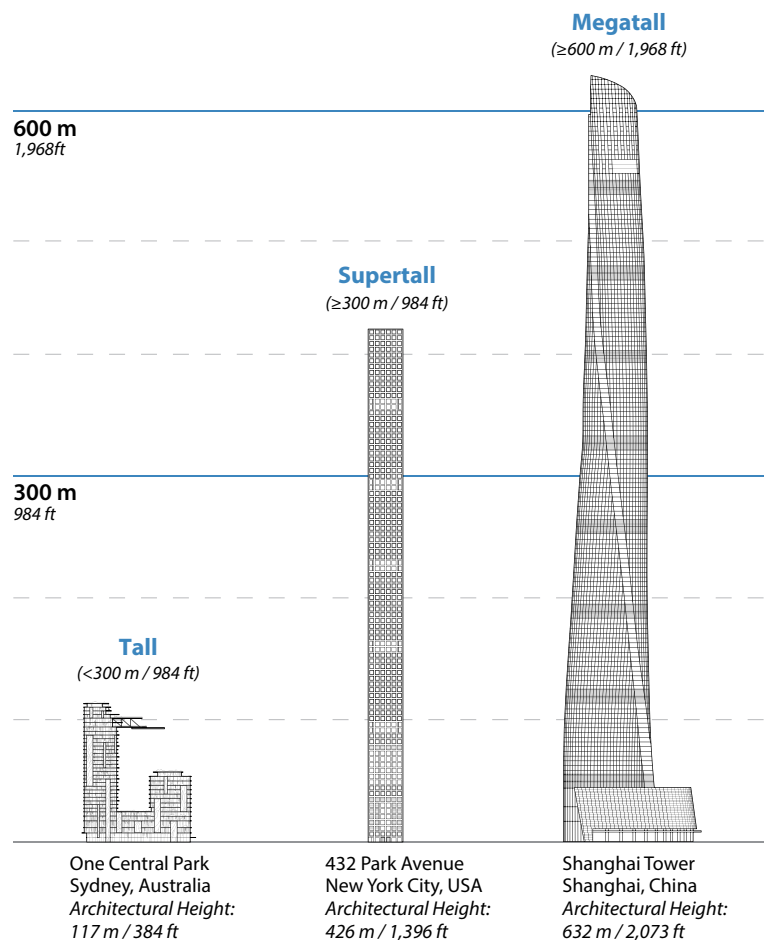
A building containing technologies which may be attributed as being a product of “tall” (e.g., specific vertical transport technologies, structural wind bracing as a product of height, etc.).



If a building can be considered as subjectively relevant to one or more of the above categories, then it can be considered a tall building. Although number of floors is a poor indicator of defining a tall building due to the changing floor to floor height between differing buildings and functions (e.g., office versus residential usage), a building of 14 or more stories – or more than 50 meters (165 feet) in height – could typically be used as a threshold for a “tall building.”

Supertall & Megatall Buildings

Tall buildings that achieve significant heights are classed in two additional sub-groups: A “supertall” is a tall building 300 meters (984 feet) or taller, and a “megatall” is a tall building 600 meters (1,968 feet) or taller. As of today, there are 115 supertalls and only three megatalls completed globally.

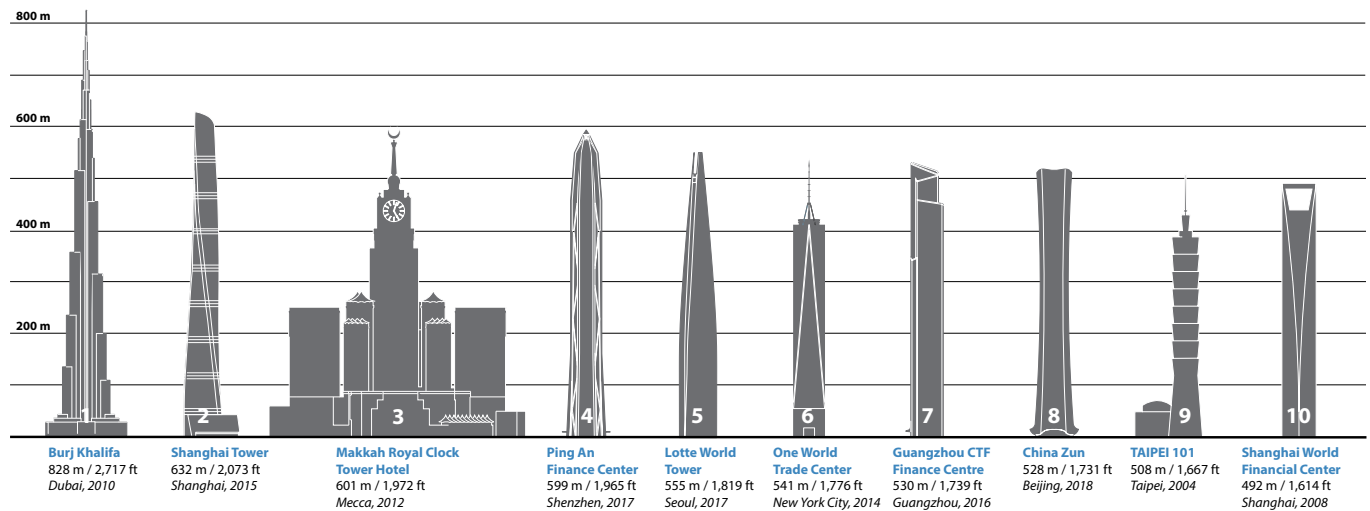


Measuring Tall Building Height

Three height categories are recognized. All categories measure the building from: **The level¹ of the lowest, significant,² open-air,³ pedestrian⁴ entrance to...**

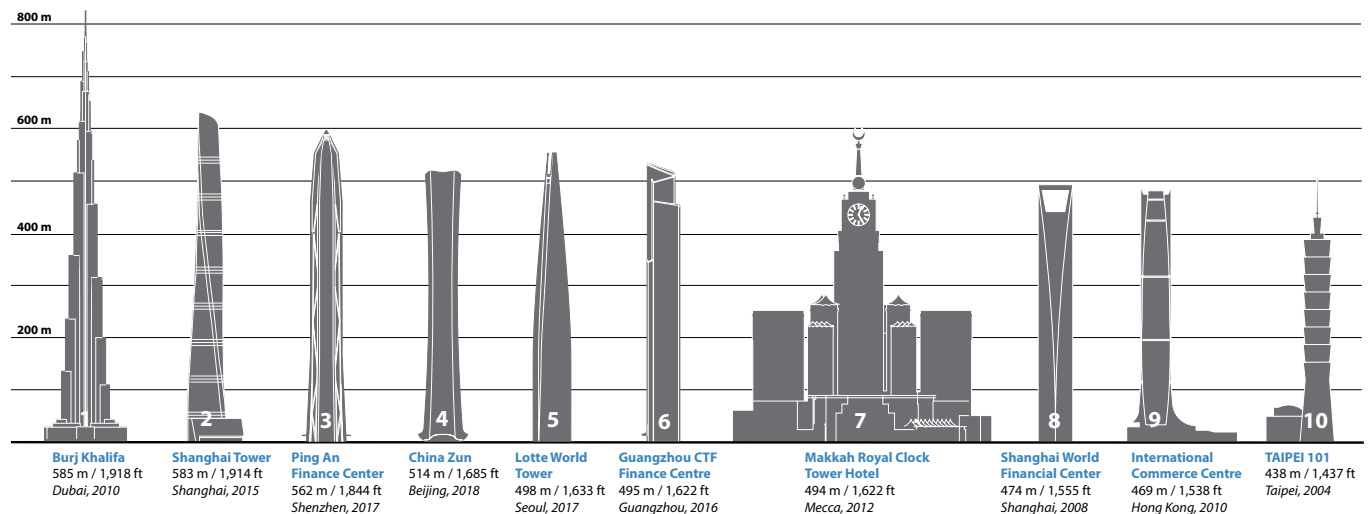
1. Height to Architectural Top

...the architectural top of the building, including spires, but not including antennae, signage, flagpoles or other functional-technical equipment.⁵ This measurement is the most widely utilized and is employed to define the CTBUH rankings of the “World’s Tallest Buildings.”



2. Height to Highest Occupied Floor

...the finished floor level of the highest occupiable⁶ floor within the building.



1 Level: finished floor level at threshold of the lowest entrance door.

2 Significant: the entrance should be predominantly above existing or pre-existing grade and permit access to one or more primary uses in the building via elevators, as opposed to ground-floor retail or other uses that solely relate/connect to the immediately adjacent external environment. Thus, entrances via below-grade sunken plazas or similar are not generally recognized. Also note that access to car park and/or ancillary/support areas are not considered significant entrances.

3 Open-air: the entrance must be located directly off an external space at that level that is open to air.

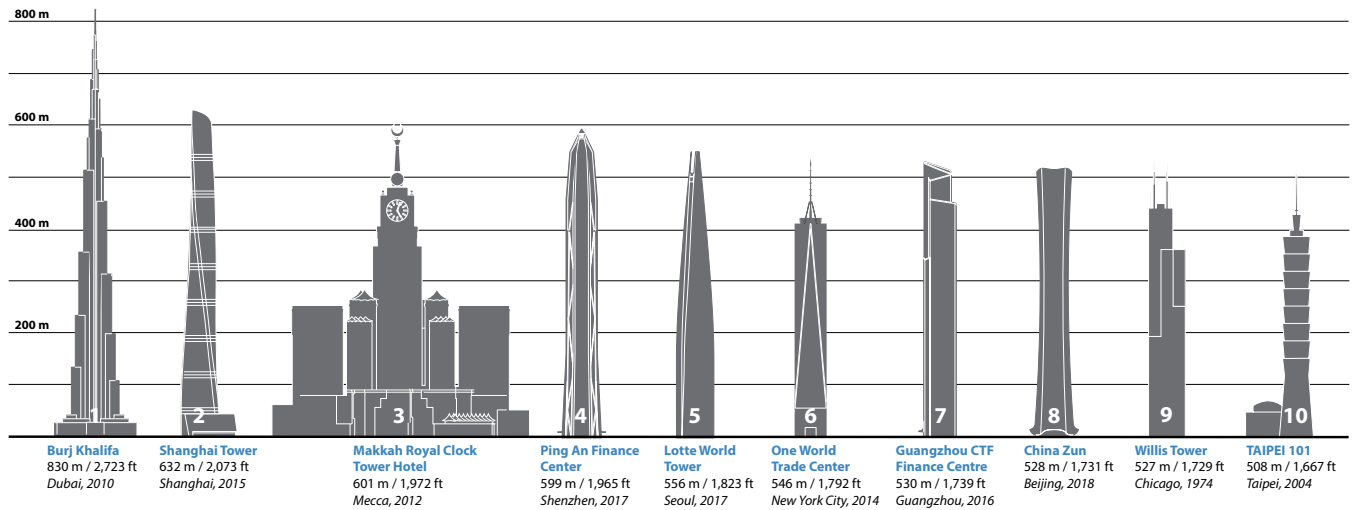
4 Pedestrian: refers to common building users or occupants and is intended to exclude service, ancillary, or similar areas.

5 Functional-technical equipment: this is intended to recognize that functional-technical equipment is subject to removal/addition/change as per prevalent technologies, as is often seen in tall buildings (e.g., antennae, signage, wind turbines, etc. are periodically added, shortened, lengthened, removed and/or replaced).

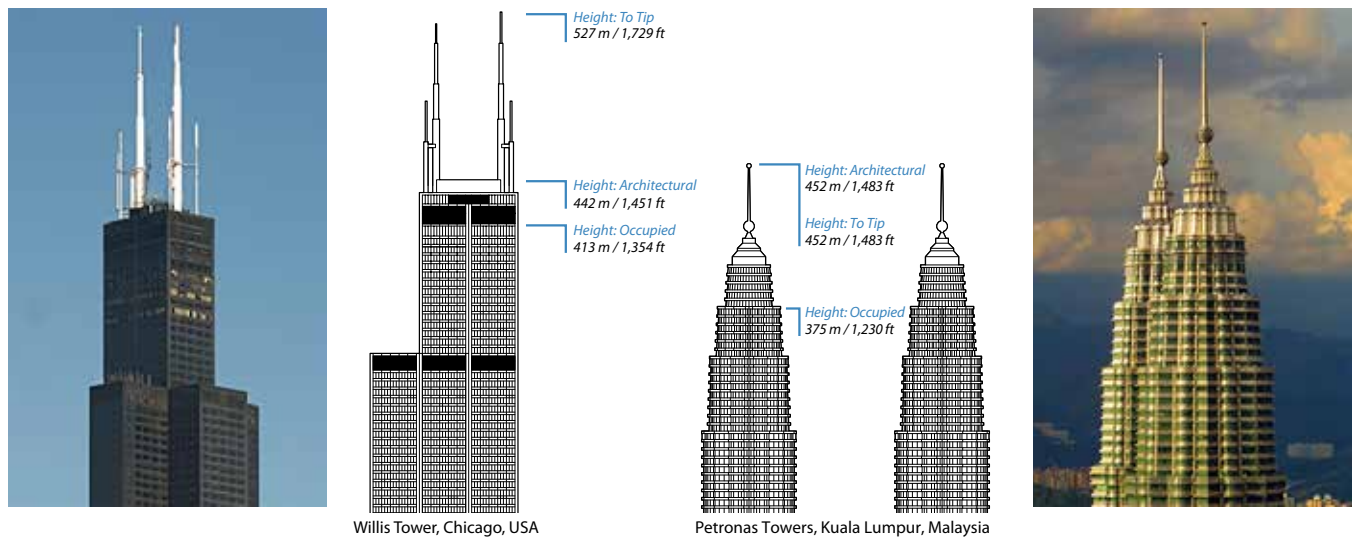
6 Occupiable: this is intended to recognize conditioned space which is designed to be safely and legally occupied by residents, workers, or other building users on a consistent basis. It does not include service or mechanical areas which experience occasional maintenance access, etc.

3. Height to Tip

...to the highest point of the building, irrespective of material or function of the highest element.



Example: Official Heights of Willis vs. Petronas Towers

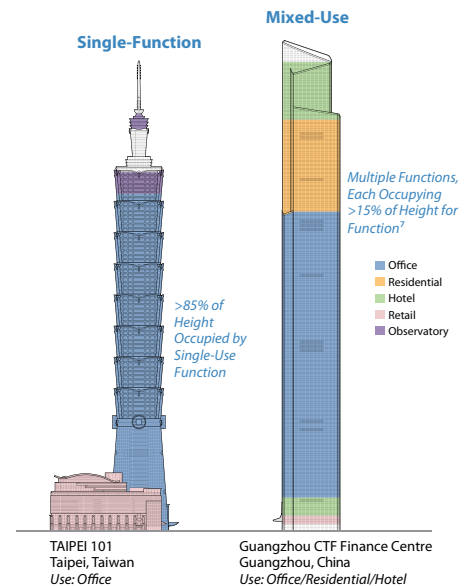


Tall Building Characteristics

Single-function vs. Mixed-use Buildings

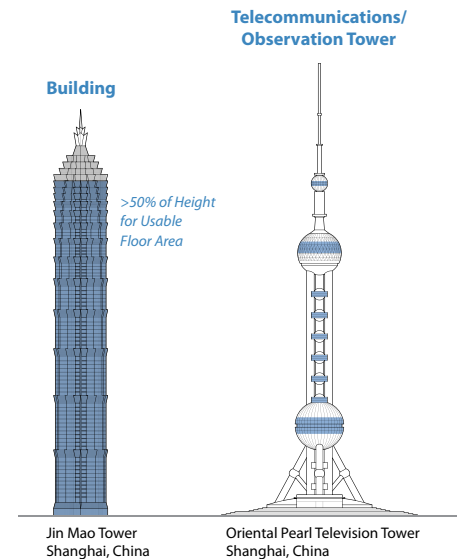
A single-function tall building is defined as one where 85 percent or more of its total height is dedicated to a single function.

A mixed-use tall building contains two or more functions, where each of the functions occupies a significant proportion⁷ of the tower's total space. Support areas, such as car parks and mechanical plant space, do not constitute mixed-use functions. Functions are denoted on CTBUH "Tallest" lists in descending order (e.g., "hotel/office" indicates hotel function above office function).



Building vs. Tower

To be considered a building, at least 50 percent of its height must be occupiable⁶. Telecommunications or observation towers that do not meet the 50 percent threshold are not eligible for inclusion on CTBUH's "Tallest" lists.



Co-Joined Building

A building is a single, co-joined building (as opposed to separate buildings in a complex) when 50 percent or more of the total building height is connected. Exceptions to this 50 percent rule can be made in cases where the form of the building creates a coherent arch, creating a singular architectural expression and thus a co-joined building.



Tokyo Metropolitan Building
Tokyo, Japan



CCTV Headquarters
Beijing, China



The San Remo
New York City, USA

Number of Floors

Includes all above-ground floors, including the ground floor itself, and significant mezzanine floors / major mechanical plant floors, unless they have a significantly smaller floor area than the major floors below. Mechanical penthouses or plant rooms above the general roof area are not counted.

Note: CTBUH floor counts may differ from other published accounts for several reasons. Examples include: It is common in some regions of the world to exclude certain floor numbers (e.g. 4, 14, 24, etc. in Hong Kong); A building's owner/marketing team may number floors to meet its own objectives and are not based on the physical floors present in the building.

⁷This "significant proportion" can be judged as 15 percent or greater of either: (1) the total floor area, or (2) the total building height, in terms of number of floors occupied for the function. However, care should be taken in the case of supertall towers. For example a 20-story hotel function as part of a 150-story tower does not comply with the 15 percent rule, though this would clearly constitute mixed-use.

Building Status

Design Phase

Proposed

A Proposal must fulfill all the following criteria:

- 1) Have a specific site with ownership interests within the building development team
- 2) Have a full professional design team progressing the design beyond the conceptual stage
- 3) Have obtained, or is in the process of obtaining, formal planning consent/legal permission for construction
- 4) Have a full intention to progress to construction and completion

Only projects that have been verified by a credible source (e.g., formal press release, city planning application, etc.) are included as Proposed buildings in CTBUH lists. Due to the changing nature of early-stage designs and client information restrictions, height data for proposals is always considered unconfirmed until the project proceeds into detailed design and construction.

Vision

A Vision is a theoretical design concept for a building which either had no intention of being realized, or is at an early stage of development and does not yet satisfy the criteria of a Proposal.

Competition Entry

A Competition Entry is a design concept for a building that was submitted to an architectural competition for a real project on a real site. Buildings selected as the competition winner will have the status changed, as appropriate, when the project moves into formal proposal, construction, and completion stages. Concepts not selected as the winning design for the competition shall remain classified as competition entries.

Canceled

A building is considered Canceled when it was formally proposed, with an intent to proceed, but did not advance to any stage of construction.

Construction Phase

Under Construction

A building is Under Construction when site clearing has been completed and foundation/piling work has begun.

Structurally Topped Out

A building is Structurally Topped Out when it is under construction and the highest element of the primary structural frame is in place. Architectural features such as parapets, rooftop mechanical screens, or spires may not yet be present.

Architecturally Topped Out

A building is Architecturally Topped Out when it is under construction, structurally topped out, fully clad⁸, and the highest finished architectural elements are in place (e.g., including its spires, parapets, etc.).

Completed

A Completed building must fulfill all the following criteria:

- 1) Topped out structurally and architecturally⁹
- 2) Fully clad⁸
- 3) Open for business, or at least partially occupiable

⁸ The omission of cladding panels to allow fixing of a construction hoist or crane while interior fit-out of some building areas is continuing does not affect the status of "fully clad."

⁹ The topping out architecturally of a building implies that all structural and finished architectural elements are in place.

On Hold

A project is considered On Hold when construction work has been halted, but there is an intent to complete construction to the original design at a future date.

Never Completed

A project is considered Never Completed when construction work was halted and never resumed. The site may go on to accommodate a new building, different to the original design, that may or may not retain the construction of the partially built structure.

Operation Phase

Proposed Renovation

A Proposed Renovation is a plan for a significant change to the function, height, or appearance of an existing building, as opposed to a Building Retrofit which is focused on the upgrade of building systems without significant changes in function, height, or appearance. The status of Proposed Renovation requires a formal design concept created by a full professional design team to be in place, as well as the obtaining or active pursuance of formal planning consent / legal permissions for renovation.¹⁰

Under Renovation

An existing building is Under Renovation when construction work is currently underway which significantly changes the function, height, or appearance of the building.¹⁰

Renovated

A Renovated Building is a building that has completed the construction phase of a renovation to significantly change its function, height or appearance.¹⁰

Under Demolition

A project is considered as Under Demolition when controlled end-of-life demolition is underway and the structure has begun reducing in height.

Demolished

A project is considered as Demolished when it is destroyed through any intended or unintended means – such that the building no longer exists.

¹⁰ Renovation works are distinguished separately from: (1) Retrofits, which may involve extensive work to the building, but do not significantly alter the building's function, height, or appearance; (2) Recladdings, which involve extensive work to the façade of a building, but do not otherwise significantly alter the building's height or appearance; and (3) Redesigns, which only occur when an under-construction building stops construction, only to resume at a later time following a new design that uses the existing above-ground structure of the never-completed project.

Structural Materials

Steel

Both the main vertical/lateral structural elements and the floor spanning systems are constructed from steel. Note that a building of steel construction with a floor system of concrete planks or concrete slab on top of steel beams is still considered a “steel” structure as the concrete elements are not acting as the primary structure.

Reinforced Concrete

Both the main vertical/lateral structural elements and the floor spanning systems are constructed from concrete which has been cast in place and utilizes steel reinforcement bars.

Precast Concrete

Both the main vertical/lateral structural elements and the floor spanning system are constructed from steel reinforced concrete which has been precast as individual components and assembled together on-site.

Timber

Both the main vertical/lateral structural elements and the floor spanning systems are constructed from timber. An all-timber structure may include the use of localized non-timber connections between timber elements. Note that a building of timber construction with a floor system of concrete planks or concrete slab on top of timber beams is still considered a “timber” structure as the concrete elements are not acting as the primary structure.

Mixed-Structure

Utilizes distinct systems, one on top of the other. For example, a steel/concrete indicates a steel structural system located on top of a concrete structural system, with the opposite true of concrete/steel.

Composite

A combination of two or more materials are used together in the main structural elements. Examples include buildings which utilize: steel columns with a floor system of reinforced concrete beams; a steel frame system with a concrete core; concrete-encased steel columns; concrete-filled steel tubes; a timber frame with a concrete core, etc. Where known, the CTBUH database breaks out the materials used in a composite building’s core, columns, and floor spanning separately.

Height & Data Committee

The CTBUH Height and Data Committee was created to establish and, when necessary, refine the official Height Criteria upon which tall buildings are defined and measured. As such, the committee meets on a regular basis to discuss: the latest developments in the tall building industry, possible additions or revisions to the criteria, and occasionally, specific buildings that are particularly complex and which require close evaluation to determine their height and/or categorization in accordance with the established criteria.

To submit an individual building for evaluation or clarification, please complete the form at <http://www.skyscrapercenter.com/submit> or contact skyscrapercenter@ctbuh.org.