**BURJ KHALIFA**

Burj Khalifa ("[Khalifa](https://en.wikipedia.org/wiki/Khalifa_bin_Zayed_Al_Nahyan%22%20%5Co%20%22Khalifa%20bin%20Zayed%20Al%20Nahyan) Tower"), known as Burj Dubai before its inauguration, is a [skyscraper](https://en.wikipedia.org/wiki/Skyscraper) in [Dubai](https://en.wikipedia.org/wiki/Dubai), [United Arab Emirates](https://en.wikipedia.org/wiki/United_Arab_Emirates). It is the [tallest man-made structure in the world](https://en.wikipedia.org/wiki/List_of_tallest_buildings_and_structures_in_the_world), standing at 829.8 m (2,722 ft). Construction began on 6 January 2004. The tower's architecture and engineering were performed by [Skidmore, Owings and Merrill](https://en.wikipedia.org/wiki/Skidmore%2C_Owings_and_Merrill) of [Chicago](https://en.wikipedia.org/wiki/Chicago), with [Adrian Smith](https://en.wikipedia.org/wiki/Adrian_Smith_%28architect%29) as chief architect, and [Bill Baker](https://en.wikipedia.org/wiki/William_F._Baker_%28engineer%29) as chief structural engineer.

The building's design incorporates cultural and historical elements particular to the region such as the spiral minaret. The Y-shaped plan is ideal for residential and hotel usage, with the wings allowing maximum outward views and inward natural light. As the tower rises from the flat desert base, there are 27 [setbacks](https://en.wikipedia.org/wiki/Setback_%28architecture%29) in a spiralling pattern, decreasing the cross section of the tower as it reaches toward the sky and creating convenient outdoor terraces. At the top, the central core emerges and is sculpted to form a finishing spire. At its tallest point, the tower sways a total of 1.5 m (4.9 ft).

Burj Khalifa uses the bundled [tube](https://en.wikipedia.org/wiki/Tube_%28structure%29) design. To support the unprecedented height of the building, the engineers developed a new structural system called the buttressed core, which consists of a hexagonal core reinforced by three buttresses that form the ‘Y' shape. This structural system enables the building to support itself laterally and keeps it from twisting.

The spire of Burj Khalifa is composed of more than 4,000 tonnes of structural steel. The cladding system is designed to withstand Dubai's extreme summer temperatures, and consists of 142,000 m2 of reflective [glazing](https://en.wikipedia.org/wiki/Glazing_%28window%29), and aluminium and textured [stainless steel](https://en.wikipedia.org/wiki/Stainless_steel) [spandrel](https://en.wikipedia.org/wiki/Spandrel) panels with vertical tubular fins. The [architectural glass](https://en.wikipedia.org/wiki/Architectural_glass) provides solar and thermal performance as well as an anti-glare shield for the intense desert sun, extreme desert temperatures and strong winds. In total the glass covers more than 174,000 m2.

The Burj Khalifa's water system supplies an average of 946,000 L of water per day through 100 km of pipes. An additional 213 km of piping serves the fire emergency system, and 34 km supplies chilled water for the air conditioning system.

Over 45,000 m3 of concrete, weighing more than 110,000 [tonnes](https://en.wikipedia.org/wiki/Tonne) were used to construct the concrete and steel foundation, which features 192 piles; each pile is 1.5 metre diameter x 43 m long, buried more than 50 m (164 ft) deep. Burj Khalifa's construction used 330,000 m3 of concrete and 55,000 tonnes of steel [rebar](https://en.wikipedia.org/wiki/Rebar), and construction took 22 million man-hours.

The consistency of the concrete used in the project was essential. It was difficult to create a concrete that could withstand both the thousands of tonnes bearing down on it and [Persian Gulf](https://en.wikipedia.org/wiki/Persian_Gulf) temperatures that can reach 50 C. To combat this problem, the concrete was not poured during the day. Instead, during the summer months ice was added to the mixture and it was poured at night when the air is cooler and the humidity is higher. A cooler concrete mixture cures evenly throughout and is therefore less likely to set too quickly and crack.

The opening of Burj Khalifa was held on 4 January 2010. A 304-room Armani Hotel, the first of four by [Armani](https://en.wikipedia.org/wiki/Armani), occupies 15 of the lower 39 floors. The [sky lobbies](https://en.wikipedia.org/wiki/Sky_lobby) on the 43rd and 76th floors house swimming pools. Floors through to 108 have 900 private residential [apartments](https://en.wikipedia.org/wiki/Apartment).

The highest outdoor observation deck in the world is on the 148th floor at 555 m (1,821 ft), the second observation deck, named At the Top, is on the 124th floor, at 452 m.

A total of 57 elevators and 8 escalators are installed. The elevators have a capacity of 12 to 14 people per cabin, the fastest rising and descending at up to 10 m/s (33 ft/s) for double-deck elevators.

Corporate offices and suites fill most of the remaining floors, except for a 122nd, 123rd and 124th floor where the Atmosphere restaurant, sky lobby and an indoor and outdoor observation deck is located respectively.

(Encyclopedia Wikipedia)