**MONUMENTS I VISITED**

**Taj Mahal**

The Taj Mahal,  ('Crown of the Palace') is an ivory-white marble [mausoleum](https://en.wikipedia.org/wiki/Mausoleum) on the southern bank of the river [Yamuna](https://en.wikipedia.org/wiki/Yamuna) in the Indian city of [Agra](https://en.wikipedia.org/wiki/Agra). It was commissioned in 1632 by the [Mughal emperor](https://en.wikipedia.org/wiki/Mughal_Empire) [Shah Jahan](https://en.wikipedia.org/wiki/Shah_Jahan) (reigned from 1628 to 1658) to house the tomb of his favourite wife, [Mumtaz Mahal](https://en.wikipedia.org/wiki/Mumtaz_Mahal); it also houses the tomb of Shah Jahan himself. The tomb is the centrepiece of a 17-hectare (42-acre) complex, which includes a [mosque](https://en.wikipedia.org/wiki/Mosque) and a guest house, and is set in formal gardens bounded on three sides by a [crenelated](https://en.wikipedia.org/wiki/Crenellated) wall.

Construction of the mausoleum was essentially completed in 1643, but work continued on other phases of the project for another 10 years. The Taj Mahal complex is believed to have been completed in its entirety in 1653 at a cost estimated at the time to be around 32 million [rupees](https://en.wikipedia.org/wiki/Rupee), which in 2020 would be approximately 70 billion rupees (about [U.S. $](https://en.wikipedia.org/wiki/United_States_dollar)916 million). The construction project employed some 20,000 artisans under the guidance of a board of architects led by the court architect to the emperor, [Ustad Ahmad Lahauri](https://en.wikipedia.org/wiki/Ustad_Ahmad_Lahauri).

The Taj Mahal was designated as a [UNESCO](https://en.wikipedia.org/wiki/UNESCO) [World Heritage Site](https://en.wikipedia.org/wiki/World_Heritage_Site) in 1983 for being "the jewel of Muslim art in India and one of the universally admired masterpieces of the world's heritage". It is regarded by many as the best example of [Mughal architecture](https://en.wikipedia.org/wiki/Mughal_architecture) and a symbol of India's rich history. The Taj Mahal attracts 7–8 million visitors a year and in 2007, it was declared a winner of the [New 7 Wonders of the World](https://en.wikipedia.org/wiki/New_7_Wonders_of_the_World) (2000–2007) initiative.

**Construction**

The Taj Mahal is built on a parcel of land to the south of the walled city of Agra. Shah Jahan presented Maharajah Jai Singh with a large palace in the centre of Agra in exchange for the land. An area of roughly 1.2 hectares (3 acres) was excavated, filled with dirt to reduce seepage, and levelled at 50 metres (160 ft) above riverbank. In the tomb area, wells were dug and filled with stone and rubble to form the [footings](https://en.wikipedia.org/wiki/Foundation_(engineering)) of the tomb. Instead of lashed [bamboo](https://en.wikipedia.org/wiki/Bamboo), workmen constructed a colossal brick scaffold that mirrored the tomb. The scaffold was so enormous that foremen estimated it would take years to dismantle.

The Taj Mahal was constructed using materials from all over India and Asia. It is believed over 1,000 elephants were used to transport building materials. It took the efforts of 22,000 labourers, painters, embroidery artists and stonecutters to shape the Taj Mahal. The translucent white marble was brought from [Makrana](https://en.wikipedia.org/wiki/Makrana), Rajasthan, the jasper from [Punjab](https://en.wikipedia.org/wiki/Punjab_region), [jade](https://en.wikipedia.org/wiki/Jade) and [crystal](https://en.wikipedia.org/wiki/Crystal) from China. The [turquoise](https://en.wikipedia.org/wiki/Turquoise) was from [Tibet](https://en.wikipedia.org/wiki/Tibet) and the [Lapis lazuli](https://en.wikipedia.org/wiki/Lapis_lazuli) from [Afghanistan](https://en.wikipedia.org/wiki/Afghanistan), while the [sapphire](https://en.wikipedia.org/wiki/Sapphire) came from [Sri Lanka](https://en.wikipedia.org/wiki/Sri_Lanka) and the [carnelian](https://en.wikipedia.org/wiki/Carnelian) from [Arabia](https://en.wikipedia.org/wiki/Arabia). In all, twenty-eight types of precious and semi-precious stones were inlaid into the white marble.

According to the legend, Shah Jahan decreed that anyone could keep the bricks taken from the scaffold, and thus it was dismantled by peasants overnight. A 15-kilometre (9.3 mi) tamped-earth ramp was built to transport marble and materials to the construction site and teams of twenty or thirty oxen pulled the blocks on specially constructed wagons.[[40]](https://en.wikipedia.org/wiki/Taj_Mahal#cite_note-FOOTNOTECarroll197364-40) An elaborate [post-and-beam](https://en.wikipedia.org/wiki/Post-and-beam) pulley system was used to raise the blocks into desired position. Water was drawn from the river by a series of purrs, an animal-powered rope and bucket mechanism, into a large storage tank and raised to a large distribution tank. It was passed into three subsidiary tanks, from which it was piped to the complex.

The plinth and tomb took roughly 12 years to complete. The remaining parts of the complex took an additional 10 years and were completed in order of minarets, mosque and jawab, and gateway. Since the complex was built in stages, discrepancies exist in completion dates due to differing opinions on "completion". Construction of the mausoleum itself was essentially completed by 1643 while work on the outlying buildings continued for years. Estimates of the cost of construction vary due to difficulties in estimating costs across time. The total cost at the time has been estimated to be about 32 million Indian rupees, which is around 52.8 billion Indian rupees ($827 million US) based on 2015 values.

## Architecture and design

The Taj Mahal incorporates and expands on design traditions of [Persian](https://en.wikipedia.org/wiki/Persian_architecture) and earlier Mughal architecture. Specific inspiration came from successful [Timurid](https://en.wikipedia.org/wiki/Timurid_dynasty) and [Mughal](https://en.wikipedia.org/wiki/Mughal_Empire) buildings including the [Gur-e Amir](https://en.wikipedia.org/wiki/Gur-e_Amir) (the tomb of Timur, progenitor of the Mughal dynasty, in [Samarkand](https://en.wikipedia.org/wiki/Samarkand)), [Humayun's Tomb](https://en.wikipedia.org/wiki/Humayun%27s_Tomb) which inspired the [Charbagh](https://en.wikipedia.org/wiki/Charbagh) gardens and [hasht-behesht (architecture)](https://en.wikipedia.org/wiki/Hasht-behesht_(architecture)) plan of the site, [Itmad-Ud-Daulah's Tomb](https://en.wikipedia.org/wiki/Itmad-Ud-Daulah%27s_Tomb) (sometimes called the Baby Taj), and Shah Jahan's own [Jama Masjid](https://en.wikipedia.org/wiki/Jama_Masjid,_Delhi) in [Delhi](https://en.wikipedia.org/wiki/Delhi). While earlier Mughal buildings were primarily constructed of red [sandstone](https://en.wikipedia.org/wiki/Sandstone), Shah Jahan promoted the use of white marble inlaid with [semi-precious stones](https://en.wikipedia.org/wiki/Semi-precious_stones). Buildings under his patronage reached new levels of refinement.

### **Tomb**

The tomb is the central focus of the entire complex of the Taj Mahal. It is a large, white marble structure standing on a square [plinth](https://en.wikipedia.org/wiki/Plinth) and consists of a symmetrical building with an [iwan](https://en.wikipedia.org/wiki/Iwan) (an arch-shaped doorway) topped by a large dome and [finial](https://en.wikipedia.org/wiki/Finial). Like most Mughal tombs, the basic elements are Persian in origin.

The base structure is a large multi-chambered cube with [chamfered](https://en.wikipedia.org/wiki/Chamfer) corners forming an unequal eight-sided structure that is approximately 55 metres (180 ft) on each of the four long sides. Each side of the iwan is framed with a huge [pishtaq](https://en.wikipedia.org/wiki/Pishtaq) or vaulted archway with two similarly shaped arched balconies stacked on either side. This motif of stacked pishtaqs is replicated on the chamfered corner areas, making the design completely symmetrical on all sides of the building. Four [minarets](https://en.wikipedia.org/wiki/Minarets) frame the tomb, one at each corner of the plinth facing the chamfered corners. The main chamber houses the false [sarcophagi](https://en.wikipedia.org/wiki/Sarcophagi) of Mumtaz Mahal and Shah Jahan; the actual graves are at a lower level.

The most spectacular feature is the marble dome that surmounts the tomb. The dome is nearly 35 metres (115 ft) high which is close in measurement to the length of the base and accentuated by the cylindrical "drum" it sits on, which is approximately 7 metres (23 ft) high. Because of its shape, the dome is often called an [onion dome](https://en.wikipedia.org/wiki/Onion_dome) or amrud (guava dome). The top is decorated with a [lotus](https://en.wikipedia.org/wiki/Nelumbo_nucifera) design which also serves to accentuate its height. The shape of the dome is emphasised by four smaller domed [chattris](https://en.wikipedia.org/wiki/Chhatri) (kiosks) placed at its corners, which replicate the onion shape of the main dome. The dome is slightly asymmetrical. Their columned bases open through the roof of the tomb and provide light to the interior. Tall decorative spires (guldastas) extend from edges of base walls, and provide visual emphasis to the height of the dome. The [lotus](https://en.wikipedia.org/wiki/Nelumbo_nucifera) motif is repeated on both the chattris and guldastas. The dome and chattris are topped by a gilded finial which mixes traditional Persian and Hindustani decorative elements.

The main finial was originally made of gold but was replaced by a copy made of gilded [bronze](https://en.wikipedia.org/wiki/Bronze) in the early 19th century. This feature provides a clear example of integration of traditional Persian and Hindu decorative elements.[[18]](https://en.wikipedia.org/wiki/Taj_Mahal#cite_note-FOOTNOTE%E2%80%98_Taj!%E2%80%99_EXTERIORS-18) The finial is topped by a moon, a typical [Islamic motif](https://en.wikipedia.org/wiki/Crescent#Pre-Islamic_and_Islamic_uses) whose horns point heavenward.

The minarets, which are each more than 40 metres (130 ft) tall, display the designer's penchant for symmetry. They were designed as working minarets— a traditional element of mosques, used by the [muezzin](https://en.wikipedia.org/wiki/Muezzin) to call the Islamic faithful to prayer. Each minaret is effectively divided into three equal parts by two working balconies that ring the tower. At the top of the tower is a final balcony surmounted by a [chattri](https://en.wikipedia.org/wiki/Chattri) that mirrors the design of those on the tomb. The chattris all share the same decorative elements of a lotus design topped by a gilded finial. The minarets were constructed slightly outside of the plinth so that in the event of collapse, a typical occurrence with many tall constructions of the period, the material from the towers would tend to fall away from the tomb.

### **Exterior decorations**

The exterior decorations of the Taj Mahal are among the finest in Mughal architecture. As the surface area changes, the decorations are refined proportionally. The decorative elements were created by applying paint, [stucco](https://en.wikipedia.org/wiki/Stucco), stone inlays or carvings. In line with the Islamic prohibition against the use of anthropomorphic forms, the decorative elements can be grouped into either [calligraphy](https://en.wikipedia.org/wiki/Calligraphy), abstract forms or vegetative motifs. Throughout the complex are [passages](https://en.wikipedia.org/wiki/Sura) from the [Qur'an](https://en.wikipedia.org/wiki/Qur%27an) that comprise some of the decorative elements. Recent scholarship suggests that Amanat Khan chose the passages.

The calligraphy on the Great Gate reads "O Soul, thou art at rest. Return to the Lord at peace with Him, and He at peace with you." The calligraphy was created in 1609 by a calligrapher named [Abdul Haq](https://en.wikipedia.org/wiki/Abdul_Haq). Shah Jahan conferred the title of "Amanat Khan" upon him as a reward for his "dazzling virtuosity." Near the lines from the Qur'an at the base of the interior dome is the inscription, "Written by the insignificant being, Amanat Khan Shirazi." Much of the calligraphy is composed of florid [thuluth](https://en.wikipedia.org/wiki/Thuluth) script made of [jasper](https://en.wikipedia.org/wiki/Jasper) or black marble inlaid in white marble panels. Higher panels are written in slightly larger script to reduce the skewing effect when viewed from below. The calligraphy found on the marble [cenotaphs](https://en.wikipedia.org/wiki/Cenotaph) in the tomb is particularly detailed and delicate.

Abstract forms are used throughout, especially in the plinth, minarets, gateway, mosque, jawab and, to a lesser extent, on the surfaces of the tomb. The domes and vaults of the sandstone buildings are worked with [tracery](https://en.wikipedia.org/wiki/Tracery) of [incised painting](https://en.wikipedia.org/wiki/Incised_painting) to create elaborate geometric forms. [Herringbone](https://en.wikipedia.org/wiki/Opus_spicatum) inlays define the space between many of the adjoining elements. White inlays are used in sandstone buildings, and dark or black inlays on the white marbles. Mortared areas of the marble buildings have been stained or painted in a contrasting colour which creates a complex array of geometric patterns. Floors and walkways use contrasting [tiles](https://en.wikipedia.org/wiki/Tile) or blocks in [tessellation](https://en.wikipedia.org/wiki/Tessellation) patterns.

On the lower walls of the tomb are white marble [dados](https://en.wikipedia.org/wiki/Dado_(architecture)) sculpted with realistic [bas relief](https://en.wikipedia.org/wiki/Bas_relief) depictions of flowers and vines. The marble has been polished to emphasise the exquisite detailing of the carvings. The dado frames and archway [spandrels](https://en.wikipedia.org/wiki/Spandrel) have been decorated with [Pietro dura](https://en.wikipedia.org/wiki/Pietra_dura) inlays of highly stylised, almost geometric vines, flowers and fruits. The inlay stones are of yellow marble, jasper and jade, polished and levelled to the surface of the walls.

### **Interior decoration**

The interior chamber of the Taj Mahal reaches far beyond traditional decorative elements. The inlay work is not Pietro dura, but a [lapidary](https://en.wikipedia.org/wiki/Lapidary) of precious and semiprecious gemstones. The inner chamber is an octagon with the design allowing for entry from each face, although only the door facing the garden to the south is used. The interior walls are about 25 metres (82 ft) high and are topped by a "false" interior dome decorated with a sun motif. Eight pishtaq arches define the space at ground level and, as with the exterior, each lower pishtaq is crowned by a second pishtaq about midway up the wall. The four central upper arches form balconies or viewing areas, and each balcony's exterior window has an intricate screen or [jali](https://en.wikipedia.org/wiki/Jali) cut from marble. In addition to the light from the balcony screens, light enters through roof openings covered by chattris at the corners. The octagonal marble screen or jali bordering the cenotaphs is made from eight marble panels carved through with intricate pierce work. The remaining surfaces are inlaid in delicate detail with semi-precious stones forming twining vines, fruits and flowers. Each chamber wall is highly decorated with dado bas-relief, intricate lapidary inlay and refined calligraphy panels which reflect, in little detail, the design elements seen throughout the exterior of the complex.[[](https://en.wikipedia.org/wiki/Taj_Mahal#cite_note-FOOTNOTEAl%C4%AB_J%C4%81v%C4%ABd2008309-26)

Muslim tradition forbids elaborate decoration of graves. Hence, the bodies of Mumtaz and Shah Jahan were put in a relatively plain crypt beneath the inner chamber with their faces turned right, towards [Mecca](https://en.wikipedia.org/wiki/Mecca). Mumtaz Mahal's [cenotaph](https://en.wikipedia.org/wiki/Cenotaph) is placed at the precise centre of the inner chamber on a rectangular marble base of 1.5 by 2.5 metres (4 ft 11 in by 8 ft 2 in). Both the base and [casket](https://en.wikipedia.org/wiki/Casket) are elaborately inlaid with precious and semiprecious gems. Calligraphic inscriptions on the casket identify and praise Mumtaz. On the lid of the casket is a raised rectangular lozenge meant to suggest a writing tablet. Shah Jahan's cenotaph is beside Mumtaz's to the western side and is the only visible asymmetric element in the entire complex. His cenotaph is bigger than his wife’s but reflects the same elements: a larger casket on a slightly taller base precisely decorated with lapidary and calligraphy that identifies him. On the lid of the casket is a traditional sculpture of a small pen box.

The pen box and writing tablet are traditional Mughal [funerary](https://en.wikipedia.org/wiki/Funerary) icons decorating the caskets of men and women respectively. [The Ninety-Nine Names of God](https://en.wikipedia.org/wiki/Names_of_God_in_the_Qur%27an) are calligraphic inscriptions on the sides of the actual tomb of Mumtaz Mahal. Other inscriptions inside the crypt include, "O Noble, O Magnificent, O Majestic, O Unique, O Eternal, O Glorious... ". The tomb of Shah Jahan bears a calligraphic inscription that reads; "He travelled from this world to the banquet-hall of Eternity on the night of the twenty-sixth of the month of [Rajab](https://en.wikipedia.org/wiki/Rajab), in the year 1076 [Hijri](https://en.wikipedia.org/wiki/Islamic_calendar)."

**Lion Monument**

The Lion Monument  or the Lion of Lucerne, is a [rock relief](https://en.wikipedia.org/wiki/Rock_relief) in [Lucerne](https://en.wikipedia.org/wiki/Lucerne), [Switzerland](https://en.wikipedia.org/wiki/Switzerland), designed by [Bertel Thorvaldsen](https://en.wikipedia.org/wiki/Bertel_Thorvaldsen) and hewn in 1820–21 by Lukas Ahorn. It commemorates the [Swiss Guards](https://en.wikipedia.org/wiki/Swiss_Guard) who [were massacred in 1792 during the French Revolution](https://en.wikipedia.org/wiki/10_August_(French_Revolution)), when revolutionaries stormed the [Tuileries Palace](https://en.wikipedia.org/wiki/Tuileries_Palace) in [Paris](https://en.wikipedia.org/wiki/Paris). It is one of the most famous monuments in Switzerland, visited annually by about 1.4 million tourists. In 2006 it was placed under Swiss monument protection.

[Mark Twain](https://en.wikipedia.org/wiki/Mark_Twain) praised the sculpture of a mortally wounded [lion](https://en.wikipedia.org/wiki/Lion) as "the most mournful and moving piece of stone in the world

## Background

From the early 17th century, a [regiment](https://en.wikipedia.org/wiki/Regiment) of [Swiss Guards](https://en.wikipedia.org/wiki/Swiss_mercenaries#Service_in_the_French_army) had served as part of the [Royal Household](https://en.wikipedia.org/wiki/Maison_du_Roi) of France. On 6 October 1789, King [Louis XVI](https://en.wikipedia.org/wiki/Louis_XVI_of_France) had been forced to move with his family from the [Palace of Versailles](https://en.wikipedia.org/wiki/Palace_of_Versailles) to the [Tuileries Palace](https://en.wikipedia.org/wiki/Tuileries_Palace) in Paris. In June 1791 he tried to [flee to Montmédy](https://en.wikipedia.org/wiki/Flight_to_Varennes) near the frontier, where troops under royalist officers were concentrated. In the 1792 [10th of August Insurrection](https://en.wikipedia.org/wiki/10_August_(French_Revolution)), revolutionaries stormed the palace. Fighting broke out spontaneously after the Royal Family had been escorted from the Tuileries to take refuge with the [Legislative Assembly](https://en.wikipedia.org/wiki/Legislative_Assembly_(France)). The Swiss Guards ran low on ammunition and were overwhelmed by superior numbers. A note written by the King half an hour after firing had commenced has survived, ordering the Swiss to retire and return to their barracks. Delivered in the middle of the fighting, this was only acted on after their position had become untenable.

Of the Swiss Guards defending the Tuileries, more than six hundred were killed during the fighting or massacred after surrender. An estimated two hundred more died in prison of their wounds or were killed during the [September Massacres](https://en.wikipedia.org/wiki/September_Massacres) that followed. Apart from about a hundred Swiss who escaped from the Tuileries, the only survivors of the regiment were a 300 strong detachment which, with the King's authorization, had been sent to Normandy to escort grain convoys a few days before August 10. The Swiss officers were mostly amongst those massacred, although Major [Karl Josef von Bachmann](https://en.wikipedia.org/wiki/Karl_Josef_von_Bachmann) — in command at the Tuileries — was formally tried and [guillotined](https://en.wikipedia.org/wiki/Guillotine) in September, still wearing his red uniform coat. Two surviving Swiss officers achieved senior rank under [Napoleon](https://en.wikipedia.org/wiki/Napoleon).

## Mark Twain on the monument

The Lion lies in his lair in the perpendicular face of a low cliff—for he is carved from the [living rock](https://en.wikipedia.org/wiki/Rock-cut_architecture) of the cliff. His size is colossal, his attitude is noble. His head is bowed, the broken spear is sticking in his shoulder, his protecting paw rests upon the lilies of France. Vines hang down the cliff and wave in the wind, and a clear stream trickles from above and empties into a pond at the base, and in the smooth surface of the pond the lion is mirrored, among the water-lilies.  
  
Around about are green trees and grass. The place is a sheltered, reposeful woodland nook, remote from noise and stir and confusion—and all this is fitting, for lions do die in such places, and not on granite pedestals in public squares fenced with fancy iron railings. The Lion of Lucerne would be impressive anywhere, but nowhere so impressive as where he is.

— Mark Twain, [*A Tramp Abroad*](https://en.wikipedia.org/wiki/A_Tramp_Abroad), 1880

**Great Wall of China**

The **Great Wall of China** is the collective name of a series of [fortification](https://en.wikipedia.org/wiki/Fortification) systems generally built across the historical northern borders of [China](https://en.wikipedia.org/wiki/China) to protect and consolidate territories of [Chinese states](https://en.wikipedia.org/wiki/Ancient_Chinese_states) and [empires](https://en.wikipedia.org/wiki/Imperial_China) against [various nomadic groups](https://en.wikipedia.org/wiki/Eurasian_nomads) of the steppe and their polities. Several walls were being built from as early as the 7th century BC by ancient Chinese states; selective stretches were later joined together by [Qin Shi Huang](https://en.wikipedia.org/wiki/Qin_Shi_Huang) (220–206 BC), the first emperor of China. Little of the Qin wall remains. Later on, many successive dynasties have built and maintained multiple stretches of border walls. The most well-known sections of the wall were built by the [Ming dynasty](https://en.wikipedia.org/wiki/Ming_dynasty) (1368–1644).

Apart from defence, other purposes of the Great Wall have included [border controls](https://en.wikipedia.org/wiki/Border_control), allowing the imposition of duties on goods transported along the [Silk Road](https://en.wikipedia.org/wiki/Silk_Road), regulation or encouragement of trade and the control of immigration and emigration. Furthermore, the defensive characteristics of the Great Wall were enhanced by the construction of watch towers, troop barracks, garrison stations, signalling capabilities through the means of smoke or fire, and the fact that the path of the Great Wall also served as a transportation corridor.

The frontier walls built by different dynasties have multiple courses. Collectively, they stretch from [Liaodong](https://en.wikipedia.org/wiki/Liaodong_Peninsula) in the east to [Lop Lake](https://en.wikipedia.org/wiki/Lop_Lake) in the west, from the present-day [Sino–Russian border](https://en.wikipedia.org/wiki/China%E2%80%93Russia_border) in the north to Taohe River in the south; along an arc that roughly delineates the edge of Mongolian steppe. A comprehensive archaeological survey, using advanced technologies, has concluded that the walls built by the Ming dynasty measure 8,850 km (5,500 mi). This is made up of 6,259 km (3,889 mi) sections of actual wall, 359 km (223 mi) of trenches and 2,232 km (1,387 mi) of natural defensive barriers such as hills and rivers. Another archaeological survey found that the entire wall with all of its branches measures out to be 21,196 km (13,171 mi). Today, the defensive system of the Great Wall is generally recognized as one of the most impressive architectural feats in history.

### **Early walls**

The Chinese were already familiar with the techniques of [wall-building](https://en.wikipedia.org/wiki/Wall) by the time of the [Spring and Autumn period](https://en.wikipedia.org/wiki/Spring_and_Autumn_period) between the 8th and 5th centuries BC. During this time and the subsequent [Warring States period](https://en.wikipedia.org/wiki/Warring_States_period), the states of [Qin](https://en.wikipedia.org/wiki/Qin_(state)), [Wei](https://en.wikipedia.org/wiki/Wei_(state)), [Zhao](https://en.wikipedia.org/wiki/Zhao_(state)), [Qi](https://en.wikipedia.org/wiki/Qi_(state)), [Han](https://en.wikipedia.org/wiki/Han_(state)), [Yan](https://en.wikipedia.org/wiki/Yan_(state)), and [Zhongshan](https://en.wikipedia.org/wiki/Zhongshan_(state)) all constructed extensive fortifications to defend their own borders. Built to withstand the attack of small arms such as swords and spears, these walls were made mostly by stone or stamping earth and gravel between board frames.

King Zheng of [Qin](https://en.wikipedia.org/wiki/Qin_(state)) conquered the last of his opponents and unified China as the [First Emperor](https://en.wikipedia.org/wiki/First_Emperor) of the [Qin dynasty](https://en.wikipedia.org/wiki/Qin_dynasty) ("Qin Shi Huang") in 221 BC. Intending to impose centralized rule and prevent the resurgence of feudal lords, he ordered the destruction of the sections of the walls that divided his empire among the former states. To position the empire against the [Xiongnu](https://en.wikipedia.org/wiki/Xiongnu) people from the north, however, he ordered the building of new walls to connect the remaining fortifications along the empire's northern frontier. "Build and move on" was a central guiding principle in constructing the wall, implying that the Chinese were not erecting a permanently fixed border. Transporting the large quantity of materials required for construction was difficult, so builders always tried to use local resources. Stones from the mountains were used over mountain ranges, while [rammed earth](https://en.wikipedia.org/wiki/Rammed_earth) was used for construction in the plains. There are no surviving historical records indicating the exact length and course of the Qin walls. Most of the ancient walls have eroded away over the centuries, and very few sections remain today. The human cost of the construction is unknown, but it has been estimated by some authors that hundreds of thousands, if not up to a million, workers died building the Qin wall. Later, the [Han](https://en.wikipedia.org/wiki/Han_Dynasty), the [Northern Dynasties](https://en.wikipedia.org/wiki/Northern_Dynasties) and the [Sui](https://en.wikipedia.org/wiki/Sui_Dynasty) all repaired, rebuilt, or expanded sections of the Great Wall at great cost to defend themselves against northern invaders. The [Tang](https://en.wikipedia.org/wiki/Tang_Dynasty) and [Song](https://en.wikipedia.org/wiki/Song_Dynasty) dynasties did not undertake any significant effort in the region. Non-Han dynasties also built their border walls: the [Xianbei](https://en.wikipedia.org/wiki/Xianbei)-ruled [Northern Wei](https://en.wikipedia.org/wiki/Northern_Wei), the [Khitan](https://en.wikipedia.org/wiki/Khitan_people)-ruled [Liao](https://en.wikipedia.org/wiki/Liao_dynasty), [Jurchen](https://en.wikipedia.org/wiki/Jurchen_people) [Jin](https://en.wikipedia.org/wiki/Jin_dynasty_(1115%E2%80%931234)) and the [Tangut](https://en.wikipedia.org/wiki/Tangut_people)-established [Western Xia](https://en.wikipedia.org/wiki/Western_Xia), who ruled vast territories over Northern China throughout centuries, all constructed defensive walls but those were located much to the north of the other Great Walls as we know it, within China's province of [Inner Mongolia](https://en.wikipedia.org/wiki/Inner_Mongolia) and in [Mongolia](https://en.wikipedia.org/wiki/Mongolia) itself.

### **Ming era**

The Great Wall concept was revived again under the [Ming](https://en.wikipedia.org/wiki/Ming_Dynasty) in the 14th century, and following the Ming army's defeat by the [Oirats](https://en.wikipedia.org/wiki/Oirats) in the [Battle of Tumu](https://en.wikipedia.org/wiki/Battle_of_Tumu). The Ming had failed to gain a clear upper hand over the [Mongolian](https://en.wikipedia.org/wiki/Mongol) tribes after successive battles, and the long-drawn conflict was taking a toll on the empire. The Ming adopted a new strategy to keep the nomadic tribes out by constructing walls along the northern border of China. Acknowledging the Mongol control established in the [Ordos Desert](https://en.wikipedia.org/wiki/Ordos_Desert), the wall followed the desert's southern edge instead of incorporating the bend of the [Yellow River](https://en.wikipedia.org/wiki/Yellow_River).

Unlike the earlier fortifications, the Ming construction was stronger and more elaborate due to the use of bricks and stone instead of rammed earth. Up to 25,000 watchtowers are estimated to have been constructed on the wall. As [Mongol raids](https://en.wikipedia.org/wiki/Mongol_invasions) continued periodically over the years, the Ming devoted considerable resources to repair and reinforce the walls. Sections near the Ming capital of Beijing were especially strong. [Qi Jiguang](https://en.wikipedia.org/wiki/Qi_Jiguang) between 1567 and 1570 also repaired and reinforced the wall, faced sections of the ram-earth wall with bricks and constructed 1,200 watchtowers from Shanhaiguan Pass to Changping to warn of approaching Mongol raiders. During the 1440s–1460s, the Ming also built a so-called "Liaodong Wall". Similar in function to the Great Wall (whose extension, in a sense, it was), but more basic in construction, the Liaodong Wall enclosed the agricultural heartland of the [Liaodong](https://en.wikipedia.org/wiki/Liaodong) province, protecting it against potential incursions by Jurched-Mongol Oriyanghan from the northwest and the [Jianzhou Jurchens](https://en.wikipedia.org/wiki/Jianzhou_Jurchens) from the north. While stones and tiles were used in some parts of the Liaodong Wall, most of it was in fact simply an earth dike with moats on both sides.

Towards the end of the Ming, the Great Wall helped defend the empire against the [Manchu](https://en.wikipedia.org/wiki/Manchu) invasions that began around 1600. Even after the loss of all of [Liaodong](https://en.wikipedia.org/wiki/Liaoning), the Ming army held the heavily fortified [Shanhai Pass](https://en.wikipedia.org/wiki/Shanhai_Pass), preventing the Manchus from conquering the Chinese heartland. The Manchus were finally able to cross the Great Wall in 1644, after Beijing had already fallen to [Li Zicheng](https://en.wikipedia.org/wiki/Li_Zicheng)'s rebels. Before this time, the Manchus had crossed the Great Wall multiple times to raid, but this time it was for conquest. The gates at Shanhai Pass were opened on May 25 by the commanding Ming general, [Wu Sangui](https://en.wikipedia.org/wiki/Wu_Sangui), who formed an alliance with the Manchus, hoping to use the Manchus to expel the rebels from Beijing. The Manchus quickly seized Beijing, and eventually defeated both the rebel-founded [Shun dynasty](https://en.wikipedia.org/wiki/Shun_dynasty) and the [remaining Ming resistance](https://en.wikipedia.org/wiki/Southern_Ming_dynasty), establishing the [Qing dynasty](https://en.wikipedia.org/wiki/Qing_dynasty) rule over all of China.

Under Qing rule, China's borders extended beyond the walls and [Mongolia was annexed](https://en.wikipedia.org/wiki/Dzungar%E2%80%93Qing_Wars) into the empire, so constructions on the Great Wall were discontinued. On the other hand, the so-called [Willow Palisade](https://en.wikipedia.org/wiki/Willow_Palisade), following a line similar to that of the Ming Liaodong Wall, was constructed by the Qing rulers in Manchuria. Its purpose, however, was not defence but rather to prevent Han Chinese migration into Manchuria.[[37]](https://en.wikipedia.org/wiki/Great_Wall_of_China#cite_note-37)

### Foreign accounts

None of the [Europeans](https://en.wikipedia.org/wiki/Europeans_in_Medieval_China) who visited China or Mongolia in the 13th and 14th centuries, such as [Giovanni da Pian del Carpine](https://en.wikipedia.org/wiki/Giovanni_da_Pian_del_Carpine), [William of Rubruck](https://en.wikipedia.org/wiki/William_of_Rubruck), [Marco Polo](https://en.wikipedia.org/wiki/Marco_Polo), [Odoric of Pordenone](https://en.wikipedia.org/wiki/Odoric_of_Pordenone) and [Giovanni de' Marignolli](https://en.wikipedia.org/wiki/Giovanni_de%27_Marignolli), mentioned the Great Wall.

The North African traveller [Ibn Battuta](https://en.wikipedia.org/wiki/Ibn_Battuta), who also visited China during the [Yuan dynasty](https://en.wikipedia.org/wiki/Yuan_dynasty) c. 1346, had heard about China's Great Wall, possibly before he had arrived in China. He wrote that the wall is "sixty days' travel" from Zeitun (modern [Quanzhou](https://en.wikipedia.org/wiki/Quanzhou)) in his travelogue [Gift to Those Who Contemplate the Wonders of Cities and the Marvels of Travelling](https://en.wikipedia.org/wiki/Rihla). He associated it with the [legend of the wall](https://en.wikipedia.org/wiki/Gates_of_Alexander) mentioned in the [Qur'an](https://en.wikipedia.org/wiki/Qur%27an), which [Dhul-Qarnayn](https://en.wikipedia.org/wiki/Dhul-Qarnayn) (commonly associated with [Alexander the Great](https://en.wikipedia.org/wiki/Alexander_the_Great)) was said to have erected to protect people near the land of the rising sun from the savages of [Gog and Magog](https://en.wikipedia.org/wiki/Gog_and_Magog). However, Ibn Battuta could find no one who had either seen it or knew of anyone who had seen it, suggesting that although there were remnants of the wall at that time, they were not significant.

Soon after Europeans reached Ming China by ship in the early 16th century, accounts of the Great Wall started to circulate in Europe, even though no European was to see it for another century. Possibly one of the earliest European descriptions of the wall and of its significance for the defence of the country against the "[Tartars](https://en.wikipedia.org/wiki/Tartars)" (i.e. Mongols) may be the one contained in [João de Barros](https://en.wikipedia.org/wiki/Jo%C3%A3o_de_Barros)'s 1563 Asia. Other early accounts in Western sources include those of [Gaspar da Cruz](https://en.wikipedia.org/wiki/Gaspar_da_Cruz), [Bento de Goes](https://en.wikipedia.org/wiki/Bento_de_Goes), [Matteo Ricci](https://en.wikipedia.org/wiki/Matteo_Ricci), and Bishop [Juan González de Mendoza](https://en.wikipedia.org/wiki/Juan_Gonz%C3%A1lez_de_Mendoza), the latter in 1585 describing it as a "superiors and mighty work" of architecture, though he had not seen it. In 1559, in his work "A Treatise of China and the Adjoining Regions", Gaspar da Cruz offers an early discussion of the Great Wall. Perhaps the first recorded instance of a European actually entering China via the Great Wall came in 1605, when the Portuguese Jesuit brother [Bento de Góis](https://en.wikipedia.org/wiki/Bento_de_G%C3%B3is) reached the north western [Jiayu Pass](https://en.wikipedia.org/wiki/Jiayu_Pass) from India. Early European accounts were mostly modest and empirical, closely mirroring contemporary Chinese understanding of the Wall, although later they slid into hyperbole, including the erroneous but ubiquitous claim that the Ming Walls were the same ones that were built by the First Emperor in the 3rd century BC.

When China opened its borders to foreign merchants and visitors after its defeat in the [First](https://en.wikipedia.org/wiki/First_Opium_War) and [Second Opium Wars](https://en.wikipedia.org/wiki/Second_Opium_War), the Great Wall became a main attraction for tourists. The [travelogues](https://en.wikipedia.org/wiki/Travelogue_(literature)) of the later 19th century further enhanced the reputation and the mythology of the Great Wall.

Before the use of bricks, the Great Wall was mainly built from rammed earth, stones, and wood. During the Ming, however, bricks were heavily used in many areas of the wall, as were materials such as tiles, [lime](https://en.wikipedia.org/wiki/Lime_(mineral)), and stone. The size and weight of the bricks made them easier to work with than earth and stone, so construction quickened. Additionally, bricks could bear more weight and endure better than rammed earth. Stone can hold under its own weight better than brick but is more difficult to use. Consequently, stones cut in rectangular shapes were used for the foundation, inner and outer [brims](https://en.wiktionary.org/wiki/brim), and gateways of the wall. [Battlements](https://en.wikipedia.org/wiki/Battlement) line the uppermost portion of most of the wall, with defensive gaps a little over 30 cm (12 in) tall, and about 23 cm (9.1 in) wide. From the parapets, guards could survey the surrounding land. Communication between the army units along the length of the Great Wall, including the ability to call reinforcements and warn [garrisons](https://en.wikipedia.org/wiki/Garrisons) of enemy movements, was of high importance. Signal towers were built upon hill tops or other high points along the wall for their visibility. Wooden gates could be used as a trap against those going through. Barracks, stables, and armoires were built near the wall's inner surface.

**Statue of Unity**

The Statue of Unity is a [colossal statue](https://en.wikipedia.org/wiki/List_of_tallest_statues) of Indian statesman and [independence](https://en.wikipedia.org/wiki/Indian_independence_movement) activist [Sardar Vallabhbhai Patel](https://en.wikipedia.org/wiki/Sardar_Vallabhbhai_Patel) (1875–1950), who was the first Deputy Prime Minister and Home minister of independent [India](https://en.wikipedia.org/wiki/India) and adherent of [Mahatma Gandhi](https://en.wikipedia.org/wiki/Mahatma_Gandhi) during the non-violent [Indian Independence movement](https://en.wikipedia.org/wiki/Indian_Independence_movement). Patel was highly respected for his leadership in uniting 562 [princely states of India](https://en.wikipedia.org/wiki/Princely_states_of_India) with a major part of the former [British Raj](https://en.wikipedia.org/wiki/British_Raj) to [form the single Union of India](https://en.wikipedia.org/wiki/Political_integration_of_India). The statue is located in the state of [Gujarat](https://en.wikipedia.org/wiki/Gujarat), [India](https://en.wikipedia.org/wiki/India). It is the world's [tallest statue](https://en.wikipedia.org/wiki/List_of_tallest_statues) with a height of 182 metres (597 ft). It is located on a [river](https://en.wikipedia.org/wiki/River) facing the [Sardar Sarovar Dam](https://en.wikipedia.org/wiki/Sardar_Sarovar_Dam) on the river [Narmada](https://en.wikipedia.org/wiki/Narmada) in the [Kevadiya colony](https://en.wikipedia.org/wiki/Kevadiya), 100 kilometres (62 mi) southeast of the city of [Vadodara](https://en.wikipedia.org/wiki/Vadodara) and 150 kilometres (93 mi) from [Surat](https://en.wikipedia.org/wiki/Surat).

The project was first announced in 2010 and the construction of the statue started in October 2013 by [Larsen & Toubro](https://en.wikipedia.org/wiki/Larsen_%26_Toubro), with a total construction cost of Rs 2,989 crores. It was designed by Indian sculptor [Ram V. Sutar](https://en.wikipedia.org/wiki/Ram_V._Sutar), and was inaugurated by [Indian Prime Minister](https://en.wikipedia.org/wiki/List_of_Prime_Ministers_of_India) [Narendra Modi](https://en.wikipedia.org/wiki/Narendra_Modi) on 31 October 2018, the 143rd anniversary of Patel's birth

[Narendra Modi](https://en.wikipedia.org/wiki/Narendra_Modi) first announced the project to commemorate Vallabhbhai Patel on 7 October 2013 at a press conference to mark the beginning of his 10th year as [The Chief Minister of Gujarat](https://en.wikipedia.org/wiki/List_of_chief_ministers_of_Gujarat). At the time, the project was dubbed, "Gujarat's tribute to the nation".

A separate Society named Sardar Vallabhbhai Patel Rashtriya Ekta Trust (SVPRET) has been formed under the Chairmanship of Chief Minister, [Government of Gujarat](https://en.wikipedia.org/wiki/Government_of_Gujarat), to ensure seamless execution of the entire project.

An outreach drive named the Statue of Unity Movement was started to support the construction of the statue. It helped collect the iron needed for the statue by asking farmers to donate their used farming instruments. By 2016, total 135 metric tonnes of scrap iron had been collected and about 109 tonnes of it was used to make the foundation of the statue after processing. A marathon entitled Run For Unity was held on 15 December 2013 in [Surat](https://en.wikipedia.org/wiki/Surat) and in [Vadodara](https://en.wikipedia.org/wiki/Vadodara) in support of the project

**Features**

The Statue of Unity is the world's tallest statue at 182 metres (597 ft). It rises 54 metres (177 ft) higher than the previous record holder, the [Spring Temple Buddha](https://en.wikipedia.org/wiki/Spring_Temple_Buddha) in China's [Henan](https://en.wikipedia.org/wiki/Henan) province. The previous tallest statue in India was the 41 m (135 ft) statue of [Hanuman](https://en.wikipedia.org/wiki/Hanuman) at the [Paritala Anjaneya Temple](https://en.wikipedia.org/wiki/Paritala_Anjaneya_Temple) near [Vijayawada](https://en.wikipedia.org/wiki/Vijayawada) in the state of [Andhra Pradesh](https://en.wikipedia.org/wiki/Andhra_Pradesh). The statue can be seen within a 7 km (4.3 mi) radius.

The monument is constructed on a river island named Sadhu Bet, 3.2 km (2.0 mi) away from and facing the [Narmada Dam](https://en.wikipedia.org/wiki/Narmada_Dam) downstream. The statue and its surroundings occupy more than 2 hectares (4.9 acres), and are surrounded by a 12 km (7.5 mi) long artificial lake formed by the Garudeshwar [weir](https://en.wikipedia.org/wiki/Weir) downstream on the Narmada river.

The statue is divided into five zones of which only three are accessible to the public. From its base to the level of Patel's shins is the first zone which has three levels and includes an exhibition area, mezzanine and roof. Zone 1 contains a memorial garden and a museum. The second zone reaches up to Patel's thighs, while the third extends up to the viewing gallery at 153 metres. Zone 4 is the maintenance area while the final zone comprises the head and shoulders of the statue.

The museum in zone 1 catalogues the life of Sardar Patel and his contributions. An adjoining audio-visual gallery provides a 15-minute presentation on Patel and describes the tribal culture of the state. The concrete towers which form the statue's legs contain two elevators each. Each lift can carry 26 people at a time to the viewing gallery in just over 30 seconds. The gallery is located at a height of 153 metres (502 ft) and can hold up to 200 people.

**Gateway of India**

The Gateway of India is an arch-monument built in the early twentieth century in the city of [Mumbai](https://en.wikipedia.org/wiki/Mumbai), in the [Indian](https://en.wikipedia.org/wiki/India) state of [Maharashtra](https://en.wikipedia.org/wiki/Maharashtra). It was erected to commemorate the landing in December 1911 at [Apollo Bunder](https://en.wikipedia.org/wiki/Apollo_Bunder), Mumbai (then Bombay) of [King-Emperor](https://en.wikipedia.org/wiki/Emperor_of_India) [George V](https://en.wikipedia.org/wiki/George_V) and [Queen-Empress Mary](https://en.wikipedia.org/wiki/Mary_of_Teck), the first British monarch to visit India. At the time of the royal visit, the gateway was not yet built, and a cardboard structure greeted the monarch. The foundation stone was laid in March 1913 for a monument built in the [Indo-Saracenic](https://en.wikipedia.org/wiki/Indo-Saracenic) style, incorporating elements of 16th-century Marathi architecture. The final design of the monument by architect [George Wittet](https://en.wikipedia.org/wiki/George_Wittet) was sanctioned only in 1914, and construction was completed in 1924. The structure is a [triumphal arch](https://en.wikipedia.org/wiki/Triumphal_arch) made of [basalt](https://en.wikipedia.org/wiki/Basalt), which is 26 metres (85 feet) high.

After its construction, the gateway was used as a symbolic ceremonial entrance to British India for important colonial personnel. It has been called a symbol of "conquest and colonisation" commemorating British colonial legacy. The gateway is also the monument from where the last British troops left India in 1948, following Indian independence. It is located on the waterfront at an angle, opposite the [Taj Mahal Palace and Tower Hotel](https://en.wikipedia.org/wiki/The_Taj_Mahal_Palace_Hotel) and overlooks the [Arabian Sea](https://en.wikipedia.org/wiki/Arabian_Sea). Today, the monument is synonymous with the city of Mumbai, and is amongst its prime tourist attractions. The gateway is also a gathering spot for locals, street vendors, and photographers soliciting services. It holds significance for the local Jewish community as it has been the spot for [Hanukkah](https://en.wikipedia.org/wiki/Hanukkah) celebrations, with the lighting of the [menorah](https://en.wikipedia.org/wiki/Menorah_(Hanukkah)), since 2003. There are five jetties located at the gateway, of which two are used for commercial ferry operations.

The gateway was the site of a [terror attack in August 2003](https://en.wikipedia.org/wiki/25_August_2003_Mumbai_bombings), when there was a bomb blast in a taxi parked in front of it. Access to the gateway was restricted after people congregated at its premises following the [2008 Mumbai terror attacks](https://en.wikipedia.org/wiki/2008_Mumbai_attacks), in which the Taj Hotel opposite the gateway and other locations in its vicinity were targeted.

In March 2019, the Maharashtra state government proposed a four-step plan to develop the location for the convenience of tourists, following a direction issued by the state governor in February 2019.

**History**

The gateway was built to commemorate the arrival of George V, Emperor of India and Mary of Teck, Empress consort, in India at Apollo Bunder, Mumbai (then Bombay) on 2 December 1911 prior to the [Delhi Durbar of 1911](https://en.wikipedia.org/wiki/Delhi_Durbar); it was the first visit of a British monarch to India. However, they only got to see a cardboard model of the monument, as construction did not begin until 1915. The foundation stone for the gateway was laid on 31 March 1913 by then governor of Bombay, [Sir George Sydenham Clarke](https://en.wikipedia.org/wiki/Sir_George_Sydenham_Clarke) with the final design of [George Wittet](https://en.wikipedia.org/wiki/George_Wittet) for the gateway sanctioned in August 1914. Before the gateway's construction, Apollo Bunder used to serve a native fishing ground. Between 1915 and 1919 work continued at the Apollo Bunder to reclaim the land on which the gateway was to be built, along with the construction of a sea wall. [Gammon India](https://en.wikipedia.org/wiki/Gammon_India) had undertaken construction work for the gateway. Its foundations were completed in 1920 while construction was finished in 1924. The gateway was opened to the public on 4 December 1924 by then viceroy, [Rufus Isaacs, 1st Marquess of Reading](https://en.wikipedia.org/wiki/Rufus_Isaacs,_1st_Marquess_of_Reading). Following Indian independence, the last British troops to leave India, the First Battalion of the [Somerset Light Infantry](https://en.wikipedia.org/wiki/Somerset_Light_Infantry), passed through the gateway with a 21-gun salute, as part of a ceremony on 28 February 1948, signalling the end of the [British Raj](https://en.wikipedia.org/wiki/British_Raj).

N. Kamala, professor at [Jawaharlal Nehru University](https://en.wikipedia.org/wiki/Jawaharlal_Nehru_University), refers to the gateway as a "jewel in the crown" and a "symbol of conquest and colonisation". The monument commemorates the legacy of British colonial rule, namely the first visit of a British monarch to India and its use as an entry point for prominent colonial personnel into British India. Today the gateway is synonymous with the city of Mumbai. Since its construction, the gateway has remained amongst the first structures visible to visitors arriving in Bombay by the sea.

Since 2003, the gateway has been the location for the local Jewish community to light the menorah for Hanukkah celebrations every year. This ritual was started by [Rabbi Gavriel Noach Holtzberg](https://en.wikipedia.org/wiki/Gavriel_Holtzberg) of the chabad in Mumbai (located in [Nariman House](https://en.wikipedia.org/wiki/Nariman_House)). It also became a site for prayers following the 2008 Mumbai terror attacks which targeted, amongst others, Nariman House. Rabbi Holtzberg lost his life in the 2008 terror attacks.

**Design and architecture**

The gateway's arch has a height of 26 metres (85 feet) with its central dome being 15 metres (49 feet) in diameter. The monument is built of yellow basalt and reinforced concrete. The stones were sourced locally while the perforated screens were brought in from [Gwalior](https://en.wikipedia.org/wiki/Gwalior). The monument faces towards the Mumbai Harbour. There are four turrets on the structure of the gateway, and there are steps constructed behind the arch of the gateway which lead to the Arabian Sea. The monument features intricate stone [latticework](https://en.wikipedia.org/wiki/Latticework) (also known as the [jali](https://en.wikipedia.org/wiki/Jali) work). The Scottish architect, [George Wittet](https://en.wikipedia.org/wiki/George_Wittet) combined elements of the [Roman triumphal arch](https://en.wikipedia.org/wiki/Roman_triumphal_arch) and 16th-century architecture of Gujarat. The architecture also combines indigenous architectural elements with elements of Islamic architecture, known as the Indo-Saracenic. The harbour front was realigned in order to make an esplanade, which would sweep down to the centre of the town. On each side of the arch, there are large halls with the capacity to hold 600 people. The cost of the construction was ₹21 lakhs (two million one hundred thousand rupees), borne by the then government. Due to a paucity of funds, the approach road was never built. Hence, the gateway stands at an angle to the road leading up to it.

In February 2019, Seagate Technology and CyArk embarked on a mission to digitally record and preserve the gateway, by digital scanning and archiving of the monument. The images and data collected will be used to make photo-real three-dimensional models. This is a part of CyArk's international programme for digitally preserving heritage monuments. It involves aerial surveys conducted with terrestrial laser scanning (LiDAR), drones, and [photogrammetry](https://en.wikipedia.org/wiki/Photogrammetry) exercises. The drawings and three-dimensional models will inform any future reconstruction works

**India Gate**

The India Gate (originally the All India War Memorial) is a war memorial located astride the [Rajpath](https://en.wikipedia.org/wiki/Rajpath), on the eastern edge of the "ceremonial axis" of [New Delhi](https://en.wikipedia.org/wiki/New_Delhi,_India), formerly called Kingsway. It stands as a memorial to 70,000 soldiers of the [British Indian Army](https://en.wikipedia.org/wiki/British_Indian_Army) who died in between 1914–1921 in the [First World War](https://en.wikipedia.org/wiki/World_War_I), in France, [Flanders](https://en.wikipedia.org/wiki/Flanders), [Mesopotamia](https://en.wikipedia.org/wiki/Mesopotamia), [Persia](https://en.wikipedia.org/wiki/Persia), [East Africa](https://en.wikipedia.org/wiki/East_Africa), [Gallipoli](https://en.wikipedia.org/wiki/Gallipoli) and elsewhere in the Near and the Far East, and the [third Anglo-Afghan War](https://en.wikipedia.org/wiki/Third_Anglo-Afghan_War). 13,300 servicemen's names, including some soldiers and officers from the United Kingdom, are inscribed on the gate. Designed by Sir [Edwin Lutyens](https://en.wikipedia.org/wiki/Edwin_Lutyens), the gate evokes the architectural style of the [triumphal arch](https://en.wikipedia.org/wiki/Triumphal_arch) such as the [Arch of Constantine](https://en.wikipedia.org/wiki/Arch_of_Constantine), in Rome, and is often compared to the [Arc de Triomphe](https://en.wikipedia.org/wiki/Arc_de_Triomphe) in Paris, and the [Gateway of India](https://en.wikipedia.org/wiki/Gateway_of_India) in Mumbai.

Following the [Bangladesh Liberation war](https://en.wikipedia.org/wiki/Bangladesh_Liberation_war) in 1972, a structure consisting of a black marble plinth with a reversed rifle, capped by a war helmet and bounded by four eternal flames, was built beneath the archway. This structure, called [Amar Jawan Jyoti](https://en.wikipedia.org/wiki/Amar_Jawan_Jyoti) (Flame of the Immortal Soldier), has since 1971 served as India's [tomb of the unknown soldier](https://en.wikipedia.org/wiki/Tomb_of_the_Unknown_Soldier). India Gate is counted amongst the largest war memorials in India and every [Republic Day](https://en.wikipedia.org/wiki/Republic_Day_(India)), the [Prime Minister](https://en.wikipedia.org/wiki/Prime_Minister_of_India) visits the gate to pay their tributes to the Amar Jawan Jyoti, following which the Republic Day parade starts. The memorial-gate is also a popular spot for protests by the [civil society](https://en.wikipedia.org/wiki/Civil_society) in New Delhi.

**History**

The India Gate was part of the work of the [Imperial War Graves Commission](https://en.wikipedia.org/wiki/Imperial_War_Graves_Commission) (I.W.G.C), which came into existence in December 1917 for building war graves and memorials to soldiers who were killed in the First World War The foundation stone of the gate, then called the All India War Memorial, was laid on 10 February 1921, at 16:30, by the visiting [Duke of Connaught](https://en.wikipedia.org/wiki/Prince_Arthur,_Duke_of_Connaught_and_Strathearn) in a ceremony attended by Officers and Men of the British Indian Army, [Imperial Service Troops](https://en.wikipedia.org/wiki/Imperial_Service_Troops), the Commander in Chief, and [Chelmsford](https://en.wikipedia.org/wiki/Frederic_Thesiger,_1st_Viscount_Chelmsford), the viceroy. On the occasion, the viceroy is reportedly to have said, "The stirring tales of individual heroism, will live for ever in the annals of this country", and that the memorial which was a tribute to the memory of heroes, "known and unknown", would inspire future generations to endure hardships with similar fortitude and "no less valour". The Duke also read out a message by the King, which said, "On this spot, in the central vista of the Capital of India, there will stand a Memorial Archway, designed to keep", in the thoughts of future generations, "the glorious sacrifice of the officers and men of the British Indian Army who fought and fell". During the ceremony, the [Deccan Horse](https://en.wikipedia.org/wiki/Deccan_Horse), 3rd Sappers and Miners, [6th Jat Light Infantry](https://en.wikipedia.org/wiki/6th_Jat_Light_Infantry), [34th Sikh Pioneers](https://en.wikipedia.org/wiki/34th_Sikh_Pioneers), [39th Garhwal Rifles](https://en.wikipedia.org/wiki/39th_Garhwal_Rifles), [59th Scinde Rifles (Frontier Force)](https://en.wikipedia.org/wiki/59th_Scinde_Rifles_(Frontier_Force)), [117th Mahrattas](https://en.wikipedia.org/wiki/117th_Mahrattas), and [5th Gurkha Rifles](https://en.wikipedia.org/wiki/5th_Gurkha_Rifles) (Frontier Force), were honoured with title of "Royal" in recognition of the distinguished services and gallantry of the British Indian Army during the Great War".

Ten years after the foundation stone laying ceremony, on 12 February 1931, the memorial was inaugurated by [Lord Irwin](https://en.wikipedia.org/wiki/Lord_Irwin), who on the occasion said "those who after us shall look upon this monument may learn in pondering its purpose something of that sacrifice and service which the names upon its walls record." In the decade between the laying of foundation stone of the memorial and its inauguration, the rail-line was shifted to run along the [Yamuna river](https://en.wikipedia.org/wiki/Yamuna_river), and the [New Delhi Railway Station](https://en.wikipedia.org/wiki/New_Delhi_Railway_Station) was opened in 1926.

The gate, which is illuminated every evening from 19:00 to 21:30, today serves as one of Delhi's most important tourist attractions. Cars travelled through the gate earlier, until it was closed to traffic. The Republic Day Parade starts from [Rashtrapati Bhavan](https://en.wikipedia.org/wiki/Rashtrapati_Bhavan) and passes around the India Gate. India gate is also a popular spot for civil society protests in New Delhi, with historical protests being against the [Nirbhaya rape case](https://en.wikipedia.org/wiki/2012_Delhi_gang_rape), [Unnao rape case](https://en.wikipedia.org/wiki/Unnao_rape_case), and the [anti-corruption movement](https://en.wikipedia.org/wiki/2011_Indian_anti-corruption_movement), inter alia.

In 2017, the India Gate was twinned with the [Arch of Remembrance](https://en.wikipedia.org/wiki/Arch_of_Remembrance) in [Leicester](https://en.wikipedia.org/wiki/Leicester), England, another Lutyens war memorial, following a very similar design but on a smaller scale. In a ceremony, India's high commissioner to the United Kingdom laid a wreath at the arch in Leicester and the British high commissioner to India laid one at the India Gate

**Design and structure**

The memorial-gate was designed by Sir Edwin Lutyens, who was not only the main architect of New Delhi, but a leading designer of war memorials. He was a member of the I.W.G.C., and one of Europe's foremost designers of war graves and memorials. He designed sixty-six war memorials in Europe, including the highly regarded cenotaph, in London, in 1919, the first national war memorial erected after World War I, for which he was commissioned by [David Lloyd George](https://en.wikipedia.org/wiki/David_Lloyd_George), the British prime minister. The memorial in New Delhi, like the [Cenotaph in London](https://en.wikipedia.org/wiki/The_Cenotaph,_Whitehall), is a secular memorial, free of religious and "culturally-specific iconography such as crosses". Lutyens according to his biographer, Christopher Hussey, relied on "elemental mode", a style of commemoration based on "universal architectural style free of religious ornamentation".

The India gate, which has been called a "creative reworking of the Arc de Triomphe" has a span of 30 feet, and lies on the eastern axial end of Kingsway, present day Rajpath, the central vista and main ceremonial procession route in New Delhi. The 42-metre (138-foot)-tall India gate, stands on a low base of red Bharatpur stone and rises in stages to a huge moulding. The shallow domed bowl at the top was intended to be filled with burning oil on anniversaries but this is rarely done. The memorial-gate hexagon complex, with a diameter of about 625 metres, covers approximately 306,000 m² in area

**Konark Sun Temple**

Konark Sun Temple (Surya Mandira) is a 13th-century CE [Sun](https://en.wikipedia.org/wiki/Surya) temple at [Konark](https://en.wikipedia.org/wiki/Konark) about 35 kilometres (22 mi) northeast from [Puri](https://en.wikipedia.org/wiki/Puri) on the coastline of [Odisha, India](https://en.wikipedia.org/wiki/Odisha,_India). The temple is attributed to king [Narasimhadeva I](https://en.wikipedia.org/wiki/Narasimhadeva_I) of the [Eastern Ganga Dynasty](https://en.wikipedia.org/wiki/Eastern_Ganga_Dynasty) about 1250 CE.

Dedicated to the Hindu Sun God [Surya](https://en.wikipedia.org/wiki/Surya), what remains of the temple complex has the appearance of a 100-foot (30 m) high chariot with immense wheels and horses, all carved from stone. Once over 200 feet (61 m) high, much of the temple is now in ruins, in particular the large [shikara](https://en.wikipedia.org/wiki/Vimana_(architectural_feature)) tower over the sanctuary; at one time this rose much higher than the [mandapa](https://en.wikipedia.org/wiki/Mandapa) that remains. The structures and elements that have survived are famed for their intricate artwork, iconography, and themes, including erotic [kama](https://en.wikipedia.org/wiki/Kama) and [mithuna](https://en.wikipedia.org/wiki/Mithuna) scenes. Also called the Surya Devalaya, it is a classic illustration of the Odisha style of Architecture or [Kalinga Architecture](https://en.wikipedia.org/wiki/Kalinga_Architecture) .

The cause of the destruction of the Konark temple is unclear and remains a source of controversy. Theories range from natural damage to deliberate destruction of the temple in the course of being sacked several times by Muslim armies between the 15th and 17th centuries. This temple was called the "Black Pagoda" in European sailor accounts as early as 1676 because its great tower appeared black. Similarly, the [Jagannath Temple](https://en.wikipedia.org/wiki/Jagannath_Temple) in Puri was called the "White Pagoda". Both temples served as important landmarks for sailors in the Bay of Bengal. The temple that exists today was partially restored by the conservation efforts of British India-era archaeological teams. Declared a UNESCO world heritage site in 1984, it remains a major pilgrimage site for Hindus, who gather here every year for the [Chandrabhaga](https://en.wikipedia.org/wiki/Chandrabhaga_beach) [Mela](https://en.wikipedia.org/wiki/Mel%C4%81) around the month of February

### **Ancient texts**

The oldest surviving Vedic hymns, such as hymn 1.115 of the [Rigveda](https://en.wikipedia.org/wiki/Rigveda), mention Surya with particular reverence for the "rising sun" and its symbolism as dispeller of darkness, one who empowers knowledge, the good, and all life. However, the usage is context specific. In some hymns, the word Surya simply means sun as an inanimate object, a stone, or a gem in the sky (Rigvedic hymns 5.47, 6.51 and 7.63) while in others it refers to a personified deity. In the layers of [Vedic](https://en.wikipedia.org/wiki/Vedas) texts, Surya is one of the several trinities along with [Agni](https://en.wikipedia.org/wiki/Agni) and either [Vayu](https://en.wikipedia.org/wiki/Vayu) or [Indra](https://en.wikipedia.org/wiki/Indra), which are presented as an equivalent icon and aspect of the Hindu metaphysical concept called the [Brahman](https://en.wikipedia.org/wiki/Brahman).

In the [Brahmanas](https://en.wikipedia.org/wiki/Brahmana) layer of Vedic literature, Surya appears with [Agni](https://en.wikipedia.org/wiki/Agni) (fire god) in the same hymns. Surya is revered for the day, and Agni for its role during the night. According to Kapila Vatsyayan, the concept of a Surya–Agni relationship evolves, and in later literature Surya is described as Agni representing the first principle and the seed of the universe. It is in the Brahmanas layer of the Vedas, and the [Upanishads](https://en.wikipedia.org/wiki/Upanishad) that Surya is explicitly linked to the power of sight, and to visual perception and knowledge. He is then internalized and said to be the eye, as ancient Hindu sages suggested abandonment of external rituals to gods in favour of internal reflection and meditation of the gods within, in one's journey to realize the Atman (soul, self) within, in texts such as the [Brihadaranyaka Upanishad](https://en.wikipedia.org/wiki/Brihadaranyaka_Upanishad), [Chandogya Upanishad](https://en.wikipedia.org/wiki/Chandogya_Upanishad), [Kaushitaki Upanishad](https://en.wikipedia.org/wiki/Kaushitaki_Upanishad), and others.

The [Mahabharata](https://en.wikipedia.org/wiki/Mahabharata) epic opens its chapter on Surya by reverentially calling him the "eye of the universe, soul of all existence, origin of all life, goal of the [Samkhyas](https://en.wikipedia.org/wiki/Samkhya) and [Yogis](https://en.wikipedia.org/wiki/Yogi), and symbolism for freedom and spiritual emancipation". In the Mahabharata, [Karna](https://en.wikipedia.org/wiki/Karna) is the son of Surya and an unmarried princess named [Kunti](https://en.wikipedia.org/wiki/Kunti). The epic describes Kunti's difficult life as an unmarried mother, then her abandonment of Karna, followed by her lifelong grief. Baby [Karna](https://en.wikipedia.org/wiki/Karna) is found and then adopted, and grows up to become one of the central characters in the great battle of [Kurukshetra](https://en.wikipedia.org/wiki/Kurukshetra_war) where he fights his half-brothers.

### **Konark in texts**

Konark, also referred to in Indian texts by the name Kainapara, was a significant trading port by the early centuries of the common era. The current Konark temple dates to the 13th century, though evidence suggests that a sun temple was built in the Konark area by at least the 9th century. Several Puranas mention Surya worship centers in Mundira, which may have been the earlier name for Konark, Kalapriya (Mathura), and [Multan](https://en.wikipedia.org/wiki/Multan_Sun_Temple) (now in Pakistan). The Chinese Buddhist pilgrim and traveler [Hiuen-tsang](https://en.wikipedia.org/wiki/Xuanzang) (also referred to as Xuanzang) mentions a port city in Odisha named Charitra. He describes the city as prosperous, with five convents and "storeyed towers that are very high and carved with saintly figures exquisitely done". Since he visited India in the 7th century, he could not have been referring to the 13th-century temple, but his description suggests either Konark or another Odisha port city already featuring towering structures with sculptures.

According to the [Madala Panji](https://en.wikipedia.org/wiki/Madala_Panji), there was at one time another temple in the region built by Pundara Kesari. He may have been Puranjaya, the 7th-century ruler of the [Somavasmi Dynasty](https://en.wikipedia.org/wiki/List_of_rulers_of_Orissa#Somavasmi_Dynasty).

### **Construction**

The current temple is attributed to [Narasimhadeva I](https://en.wikipedia.org/wiki/Narasimhadeva_I) of the [Eastern Ganga Dynasty](https://en.wikipedia.org/wiki/Eastern_Ganga_Dynasty), r. 1238–1264 CE– . It is one of the few Hindu temples whose planning and construction records written in Sanskrit in the Odiya script have been preserved in the form of palm leaf manuscripts that were discovered in a village in the 1960s and subsequently translated. The temple was sponsored by the king, and its construction was overseen by Siva Samantaraya Mahapatra. It was built near an old Surya temple. The sculpture in the older temple's sanctum was re-consecrated and incorporated into the newer larger temple. This chronology of temple site's evolution is supported by many copper plate inscriptions of the era in which the Konark temple is referred to as the "great cottage".

According to James Harle, the temple as built in the 13th century consisted of two main structures, the dance mandapa and the great temple (deul). The smaller mandapa is the structure that survives; the great deul collapsed sometime in the late 16th century or after. According to Harle, the original temple "must originally have stood to a height of some 225 feet (69 m)", but only parts of its walls and decorative mouldings remain.

**Chittor Fort**

The Chittor Fort or Chittorgarh is one of the largest forts in [India](https://en.wikipedia.org/wiki/India). It is a [UNESCO World Heritage Site](https://en.wikipedia.org/wiki/UNESCO_World_Heritage_Site). The fort was the capital of [Mewar](https://en.wikipedia.org/wiki/Mewar) and is located in the present-day town of [Chittor](https://en.wikipedia.org/wiki/Chittor). It sprawls over a hill 180 m (590.6 ft) in height spread over an area of 280 ha (691.9 acres) above the plains of the valley drained by the Berach River. The fort precinct has several historical palaces, gates, temples and two prominent commemorative towers.

Beginning in the 7th century, the fort was controlled by the [Mewar Kingdom](https://en.wikipedia.org/wiki/Mewar_Kingdom). From the 9th to 13th centuries, the fort was ruled by [Paramara dynasty](https://en.wikipedia.org/wiki/Paramara_dynasty). In 1303, the Turkic ruler of Delhi, [Alauddin Khalji](https://en.wikipedia.org/wiki/Alauddin_Khalji) defeated Rana Ratan Singh's forces at the fort. In 1535 Bahadur Shah, the Sultan of [Gujarat](https://en.wikipedia.org/wiki/Gujarat), defeated Bikramjeet Singh and took the fort. In 1567 Akbar defeated [Maharana Udai Singh II](https://en.wikipedia.org/wiki/Maharana_Udai_Singh_II)'s troops. The fort's defenders sallied forth to charge the attacking enemy but were not able to succeed. Following these defeats, the men committed saka, where they would ritually march to the battlefield expecting certain death; while the women are said to have committed [jauhar](https://en.wikipedia.org/wiki/Jauhar) or mass self-immolation, an example of which was led by [Rani Karnavati](https://en.wikipedia.org/wiki/Rani_Karnavati) on 8 March 1535 CE. The rulers, soldiers, noblewomen, and commoners considered death preferable to the mass rape and pillaging that was thought to occur following to surrender to the Sultanate forces.

## History

Chittorgarh (garh means fort) was originally called Chitrakut. It is said to have been built by the local Maurya ruler [Chitrangada Maurya](https://en.wikipedia.org/wiki/Chitrangada_Mori). According to one legend, the name of the fort is derived from its builder. Another folk legend attributes the construction of fort to the legendary hero [Bhima](https://en.wikipedia.org/wiki/Bhima): it states that [Bhima](https://en.wikipedia.org/wiki/Bhima) struck the ground here, which resulted in water springing up to form a large reservoir. The water body allegedly formed by Bhima is an artificial tank called Bhimlat Kund. Several small Buddhist stupas dated to 9th century based on the script were found at the edge of Jaimal Patta lake.

The [Guhila](https://en.wikipedia.org/wiki/Guhilas_of_Medapata) ruler [Bappa Rawal](https://en.wikipedia.org/wiki/Bappa_Rawal) is said to have captured the fort in either 728 CE or 734 CE. One account states that he received the fort in [dowry](https://en.wikipedia.org/wiki/Dowry). According to other versions of the legend, Bappa Rawal captured the fort either from the [mlechchhas](https://en.wikipedia.org/wiki/Mlechchhas) or the [Moris](https://en.wikipedia.org/wiki/Mori_Rajputs). Historian [R. C. Majumdar](https://en.wikipedia.org/wiki/R._C._Majumdar) theorizes that the Moris (Mauryas) were ruling at Chittor when the Arabs (mlechchhas) invaded north-western India around 725 CE. The Arabs defeated the Moris, and in turn, were defeated by a confederacy that included Bappa Rawal. R. V. Somani theorized that Bappa Rawal was a part of the army of [Nagabhata I](https://en.wikipedia.org/wiki/Nagabhata_I). Some historians doubt the historicity of this legend, arguing that the Guhilas did not control Chittor before the reign of the later ruler Allata. The earliest Guhila inscription discovered at Chittor is from the reign of Tejasimha (mid-13th century); it mentions "Chitrakuta-maha-durga" (the great fort of Chittor).

### **Siege of 1303**

In 1303, the [Delhi Sultanate](https://en.wikipedia.org/wiki/Delhi_Sultanate) ruler [Alauddin Khalji](https://en.wikipedia.org/wiki/Alauddin_Khalji) led an army to conquer Chittor, which was ruled by the [Guhila](https://en.wikipedia.org/wiki/Guhila_dynasty) king [Ratnasimha](https://en.wikipedia.org/wiki/Ratnasimha). Alauddin captured Chittor after an eight-month-long siege. According to his courtier [Amir Khusrow](https://en.wikipedia.org/wiki/Amir_Khusrow), he ordered a massacre of 30,000 local Hindus after this conquest. Some later legends state that Alauddin invaded Chittor to capture Ratnasimha's beautiful queen [Padmini](https://en.wikipedia.org/wiki/Rani_Padmini), but most modern historians have rejected the authenticity of these legends. The legends also state that Padmini and other women committed suicide by [jauhar](https://en.wikipedia.org/wiki/Jauhar) (mass self-immolation). Historian [Kishori Saran Lal](https://en.wikipedia.org/wiki/Kishori_Saran_Lal) believes that a jauhar did happen at Chittor following Alauddin's conquest, although he dismisses the legend of Padmini as unhistorical. On the other hand, historian [Banarsi Prasad Saksena](https://en.wikipedia.org/wiki/Banarsi_Prasad_Saksena) considers this jauhar narrative as a fabrication by the later writers, because Khusrow does not mention any jauhar at Chittor, although he has referred to the jauhar during the [earlier conquest of Ranthambore](https://en.wikipedia.org/wiki/Siege_of_Ranthambore_(1301)).

Alauddin assigned Chittor to his young son Khizr Khan (or Khidr Khan), and the Chittor fort was renamed "Khizrabad" after the prince. As Khizr Khan was only a child, the actual administration was handed over to a slave named Malik Shahin.

### **Rana Hammir and successors**

Khizr Khan's rule at the fort lasted till 1311 AD and due to the pressure of [Rajputs](https://en.wikipedia.org/wiki/Rajputs) he was forced to entrust power to the Sonigra chief Maldeva who held the fort for 7 years. [Hammir Singh](https://en.wikipedia.org/wiki/Maharana_Hammir), usurped control of the fort from Maldeva and Chittor once again regained its past glory. Hammir, before his death in 1364 AD, had converted [Mewar](https://en.wikipedia.org/wiki/Mewar) into a fairly large and prosperous kingdom. The dynasty (and clan) fathered by him came to be known by the name [Sisodia](https://en.wikipedia.org/wiki/Sisodia) after the village where he was born. His son Ketra Singh succeeded him and ruled with honour and power. Ketra Singh's son Lakha who ascended the throne in 1382 AD also won several wars. His famous grandson [Rana Kumbha](https://en.wikipedia.org/wiki/Rana_Kumbha) came to the throne in 1433 AD and by that time the [Muslim](https://en.wikipedia.org/wiki/Muslim) rulers of Malwa and Gujarat had acquired considerable clout and were keen to usurp the powerful Mewar state.

### **Rana Kumbha and clan**

There was resurgence during the reign of Rana Kumbha in the 15th century. Rana Kumbha, also known as Maharana Kumbhakarna, son of Rana Mokal, ruled Mewar between 1433 AD and 1468 AD. He is credited with building up the Mewar kingdom assiduously as a force to reckon with. He built 32 forts (84 fortresses formed the defense of Mewar) including one in his own name, called [Kumbalgarh](https://en.wikipedia.org/wiki/Kumbalgarh). His brother Rana Raimal assumed the [reins](https://en.wikipedia.org/wiki/Rein) of power in 1473. After his death in May 1509, Sangram Singh (also known as Rana Sanga), his youngest son, became the ruler of Mewar, which brought in a new phase in the history of Mewar. [Rana Sanga](https://en.wikipedia.org/wiki/Rana_Sanga), with support from Medini Rai (a Rajput chief of Alwar), fought a valiant battle against [Mughal](https://en.wikipedia.org/wiki/Mughal_Empire) emperor [Babar](https://en.wikipedia.org/wiki/Babur) at [Khanwa](https://en.wikipedia.org/wiki/Kanwa) in 1527. He ushered in a period of prestige to Chittor by defeating the rulers of Gujarat and also effectively interfered in the matters of [Idar](https://en.wikipedia.org/wiki/Idar). He also won small areas of the Delhi territory. In the ensuing battle with [Ibrahim Lodi](https://en.wikipedia.org/wiki/Ibrahim_Lodi), Rana won and acquired some districts of [Malwa](https://en.wikipedia.org/wiki/Malwa). He also defeated the combined might of Sultan Muzaffar of Gujarat and the Sultan of Malwa. By 1525 AD, Rana Sanga had developed Chittor and Mewar, by virtue of great intellect, valour, and his sword, into a formidable military state. But in a decisive battle that was fought against Babar on 16 March 1527, the Rajput army of Rana Sanga suffered a terrible defeat and Sanga escaped to one of his fortresses. But soon thereafter in another attack on the [Chanderi fort](https://en.wikipedia.org/wiki/Chanderi_fort) the valiant Rana Sanga died and with his death the Rajput confederacy collapsed.

### **Siege of 1535**

[Bahadur Shah](https://en.wikipedia.org/wiki/Bahadur_Shah_of_Gujarat) who came to the throne in 1526 AD as the Sultan of Gujarat besieged the Chittorgarh fort in 1535. The fort was sacked and, once again the medieval dictates of chivalry determined the outcome. Following the escape of the Rana, his brother Udai Singh and the faithful maid Panna Dhai to Bundi, it is said 13,000 Rajput women committed jauhar (self-immolation on the funeral pyre) and 3,200 Rajput warriors rushed out of the fort to fight and die.

### **Siege of 1567**

The final [Siege of Chittorgarh](https://en.wikipedia.org/wiki/Siege_of_Chittorgarh_(1567%E2%80%931568)) came 33 years later, in 1567, when the [Mughal](https://en.wikipedia.org/wiki/Mughal_Empire) Emperor [Akbar](https://en.wikipedia.org/wiki/Akbar) attacked the fort. Akbar wanted to conquer Mewar, which was being ruled by [Rana Uday Singh II](https://en.wikipedia.org/wiki/Udai_Singh_II).

Shakti Singh, son of the Rana who had quarreled with his father, had run away and approached Akbar when the later had camped at [Dholpur](https://en.wikipedia.org/wiki/Dholpur) preparing to attack Malwa. During one of these meetings, in August 1567, Shakti Singh came to know from a remark made in jest by emperor Akbar that he was intending to wage war against Chittor. Akbar had told Shakti Singh in jest that since his father had not submitted himself before him like other princes and chieftains of the region, he would attack him. Startled by this revelation, Shakti Singh quietly rushed back to Chittor and informed his father of the impending invasion by Akbar. Akbar was furious with the departure of Shakti Singh and decided to attack Mewar to humble the arrogance of the Ranas.

In September 1567, the emperor left for Chittor, and on 20 October 1567, camped in the vast plains outside the fort. In the meantime, Rana Udai Singh, on the advice of his council of advisors, decided to go away from Chittor to the hills of [Gogunda](https://en.wikipedia.org/wiki/Gogunda) with his family. [Jaimal](https://en.wikipedia.org/wiki/Jaimal) and [Patta](https://en.wikipedia.org/wiki/Patta_Sisodia) were left behind to defend the fort along with 8,000 Rajput warriors and 1,000 musketeers under their command. Akbar laid siege to the fortress, which lasted for 4 months.

On 22 February 1568, Jaimal was killed by a musket shot fired by Akbar himself. Jauhar was committed in the houses of Patta, Aissar Das, and Sahib Khan. Next day the gates of the fort were opened, and Rajput soldiers rushed out to fight the enemies. In the ensuing battle, 8,000 Rajputs were killed alongside 20,000–25,000 civilians and Chittor was conquered.

## Mughal–Rajput peace treaty of 1616

In 1616, after a treaty between [Jahangir](https://en.wikipedia.org/wiki/Jahangir) and [Amar Singh](https://en.wikipedia.org/wiki/Amar_Singh_I), Chittorgarh was given back to [Amar Singh](https://en.wikipedia.org/wiki/Amar_Singh_I) by Jahangir.

**Opera House**

The Sydney Opera House is a multi-venue [performing arts centre](https://en.wikipedia.org/wiki/Performing_arts_center) at [Sydney Harbour](https://en.wikipedia.org/wiki/Sydney_Harbour) in [Sydney](https://en.wikipedia.org/wiki/Sydney), [New South Wales](https://en.wikipedia.org/wiki/New_South_Wales), Australia. It is one of the 20th century's most famous and distinctive buildings.

Designed by Danish architect [Jørn Utzon](https://en.wikipedia.org/wiki/J%C3%B8rn_Utzon), but completed by an Australian architectural team headed up by Peter Hall, the building was formally opened on 20 October 1973 after a gestation beginning with Utzon's 1957 selection as winner of an international design competition. The [Government of New South Wales](https://en.wikipedia.org/wiki/Government_of_New_South_Wales), led by the [premier](https://en.wikipedia.org/wiki/Premier_of_New_South_Wales), [Joseph Cahill](https://en.wikipedia.org/wiki/Joseph_Cahill), authorised work to begin in 1958 with Utzon directing construction. The government's decision to build Utzon's design is often overshadowed by circumstances that followed, including cost and scheduling overruns as well as the architect's ultimate resignation.

The building and its [surrounds](https://en.wiktionary.org/wiki/surrounds) occupy the whole of [Bennelong Point](https://en.wikipedia.org/wiki/Bennelong_Point) on [Sydney Harbour](https://en.wikipedia.org/wiki/Port_Jackson), between [Sydney Cove](https://en.wikipedia.org/wiki/Sydney_Cove) and [Farm Cove](https://en.wikipedia.org/wiki/Farm_Cove,_New_South_Wales), adjacent to the [Sydney central business district](https://en.wikipedia.org/wiki/Sydney_central_business_district) and the [Royal Botanic Gardens](https://en.wikipedia.org/wiki/Royal_Botanic_Gardens,_Sydney), and close by the [Sydney Harbour Bridge](https://en.wikipedia.org/wiki/Sydney_Harbour_Bridge).

The building comprises multiple performance venues, which together host well over 1,500 performances annually, attended by more than 1.2 million people. Performances are presented by numerous performing artists, including three resident companies: [Opera Australia](https://en.wikipedia.org/wiki/Opera_Australia), the [Sydney Theatre Company](https://en.wikipedia.org/wiki/Sydney_Theatre_Company) and the [Sydney Symphony Orchestra](https://en.wikipedia.org/wiki/Sydney_Symphony_Orchestra). As one of the most popular visitor attractions in Australia, the site is visited by more than eight million people annually, and approximately 350,000 visitors take a guided tour of the building each year. The building is managed by the [Sydney Opera House Trust](https://en.wikipedia.org/wiki/Sydney_Opera_House_Trust), an agency of the New South Wales State Government.

On 28 June 2007, the Sydney Opera House became a [UNESCO](https://en.wikipedia.org/wiki/UNESCO) [World Heritage Site](https://en.wikipedia.org/wiki/World_Heritage_Site), having been listed on the (now defunct) [Register of the National Estate](https://en.wikipedia.org/wiki/Register_of_the_National_Estate) since 1980, the [National Trust of Australia](https://en.wikipedia.org/wiki/National_Trust_of_Australia) register since 1983, the [City of Sydney](https://en.wikipedia.org/wiki/City_of_Sydney) Heritage Inventory since 2000, the [New South Wales State Heritage Register](https://en.wikipedia.org/wiki/New_South_Wales_State_Heritage_Register) since 2003, and the [Australian National Heritage List](https://en.wikipedia.org/wiki/Australian_National_Heritage_List) since 2005. Furthermore, the Opera House was a finalist in the [New7Wonders of the World](https://en.wikipedia.org/wiki/New7Wonders_of_the_World) campaign list.

### **Completion and cost**

The Opera House was formally completed in 1973, having cost [$](https://en.wikipedia.org/wiki/Australian_dollar)102 million. H.R. "Sam" Hoare, the Hornibrook director in charge of the project, provided the following approximations in 1973: Stage I: podium Civil & Civic Pty Ltd approximately $5.5m. Stage II: roof shells M.R. Hornibrook (NSW) Pty Ltd approximately $12.5m. Stage III: completion The Hornibrook Group $56.5m. Separate contracts: stage equipment, stage lighting and organ $9.0m. Fees and other costs: $16.5m.

The original cost and scheduling estimates in 1957 projected a cost of [£](https://en.wikipedia.org/wiki/Australian_pound)3,500,000 ($7 million) and completion date of 26 January 1963 ([Australia Day](https://en.wikipedia.org/wiki/Australia_Day)). In reality, the project was completed ten years late and 1,357% [over budget](https://en.wikipedia.org/wiki/Over_budget) in real terms.

### **Strike and Workers' Control**

In 1972, a construction worker was fired, leading the [BLF](https://en.wikipedia.org/wiki/Builders_Labourers_Federation) affiliated workers to demand his rehiring and a 25% wage increase. In response to this, all the workers were fired, and in revenge the workers broke into the construction site with a crowbar and brought their own toolboxes. [Workers' control](https://en.wikipedia.org/wiki/Workers%27_control) was applied to the site for 5 weeks as the construction workers worked 35 hours a week with improved morale, more efficient organization and fewer people skipping work. The workers agreed to end their work-in when management agreed to give them a 25% wage increase, the right to elect their foremen, four weeks annual leave and a large payment for their troubles.

## Utzon and his resignation

Before the Sydney Opera House competition, Jørn Utzon had won seven of the 18 competitions he had entered but had never seen any of his designs built. Utzon's submitted concept for the Sydney Opera House was almost universally admired and considered groundbreaking. The Assessors Report of January 1957, stated:

The drawings submitted for this scheme are simple to the point of being diagrammatic. Nevertheless, as we have returned again and again to the study of these drawings, we are convinced that they present a concept of an Opera House which can become one of the great buildings of the world.

For the first stage, Utzon worked successfully with the rest of the design team and the client, but, as the project progressed, the Cahill government insisted on progressive revisions. They also did not fully appreciate the costs or work involved in design and construction. Tensions between the client and the design team grew further when an early start to construction was demanded despite an incomplete design. This resulted in a continuing series of delays and setbacks while various technical engineering issues were being refined. The building was unique, and the problems with the design issues and cost increases were exacerbated by commencement of work before the completion of the final plans.

After the 1965 election of the Liberal Party, with [Robert Askin](https://en.wikipedia.org/wiki/Robert_Askin) becoming [Premier of New South Wales](https://en.wikipedia.org/wiki/Premier_of_New_South_Wales), the relationship of client, architect, engineers and contractors became increasingly tense. Askin had been a "vocal critic of the project prior to gaining office." His new Minister for Public Works, [Davis Hughes](https://en.wikipedia.org/wiki/Davis_Hughes), was even less sympathetic. [Elizabeth Farrelly](https://en.wikipedia.org/wiki/Elizabeth_Farrelly), an Australian architecture critic, wrote that:

at an election night dinner party in Mosman, Hughes' daughter Sue Burgoyne boasted that her father would soon sack Utzon. Hughes had no interest in art, architecture or aesthetics. A fraud, as well as a philistine, he had been exposed before Parliament and dumped as Country Party leader for 19 years of falsely claiming a university degree. The Opera House gave Hughes a second chance. For him, as for Utzon, it was all about control, about the triumph of homegrown mediocrity over foreign genius.

Differences ensued. One of the first was that Utzon believed the clients should receive information on all aspects of the design and construction through his practice, while the clients wanted a system (notably drawn in sketch form by Davis Hughes) where architect, contractors, and engineers each reported to the client directly and separately. This had great implications for [procurement](https://en.wikipedia.org/wiki/Procurement) methods and cost control, with Utzon wishing to negotiate contracts with chosen suppliers (such as Ralph Symonds for the plywood interiors) and the New South Wales government insisting contracts be [put out to tender](https://en.wikipedia.org/wiki/Call_for_bids).

Utzon was highly reluctant to respond to questions or criticism from the client's Sydney Opera House Executive Committee (SOHEC). However, he was greatly supported throughout by a member of the committee and one of the original competition judges, [Harry Ingham Ashworth](https://en.wikipedia.org/w/index.php?title=Harry_Ingham_Ashworth&action=edit&redlink=1). Utzon was unwilling to compromise on some aspects of his designs that the clients wanted to change.

Utzon's ability was never in doubt, despite questions raised by Davis Hughes, who attempted to portray Utzon as an impractical dreamer. Ove Arup actually stated that Utzon was "probably the best of any I have come across in my long experience of working with architects" and: "The Opera House could become the world's foremost contemporary masterpiece if Utzon is given his head."

In October 1965, Utzon gave Hughes a schedule setting out the completion dates of parts of his work for stage III. Utzon was at this time working closely with [Ralph Symonds](https://en.wikipedia.org/w/index.php?title=Ralph_Symonds&action=edit&redlink=1), a manufacturer of [plywood](https://en.wikipedia.org/wiki/Plywood) based in Sydney and highly regarded by many, despite an Arup engineer warning that Ralph Symonds's "knowledge of the design stresses of plywood, was extremely sketchy" and that the technical advice was "elementary to say the least and completely useless for our purposes." Australian architecture critic Elizabeth Farrelly has referred to Ove Arup's project engineer Michael Lewis as having "other agendas". In any case, Hughes shortly after withheld permission for the construction of plywood prototypes for the interiors, and the relationship between Utzon and the client never recovered. By February 1966, Utzon was owed more than $100,000 in fees. Hughes then withheld funding so that Utzon could not even pay his own staff. The government minutes record that following several threats of resignation, Utzon finally stated to Davis Hughes: "If you don't do it, I resign." Hughes replied: "I accept your resignation. Thank you very much. Goodbye."

Utzon left the project on 28 February 1966. He said that Hughes's refusal to pay him any fees and the lack of collaboration caused his resignation and later famously described the situation as "Malice in Blunderland". In March 1966, Hughes offered him a subordinate role as "design architect" under a panel of executive architects, without any supervisory powers over the House's construction, but Utzon rejected this. Utzon left the country never to return.

Following the resignation, there was great controversy about who was in the right and who was in the wrong. [The Sydney Morning Herald](https://en.wikipedia.org/wiki/The_Sydney_Morning_Herald) initially opined: "No architect in the world has enjoyed greater freedom than Mr Utzon. Few clients have been more patient or more generous than the people and the Government of NSW. One would not like history to record that this partnership was ended by a fit of temper on the one side or by a fit of meanness on the other." On 17 March 1966, the Herald offered the view that: "It was not his [Utzon's] fault that a succession of Governments and the Opera House Trust should so signally have failed to impose any control or order on the project ... his concept was so daring that he himself could solve its problems only step by step ... his insistence on perfection led him to alter his design as he went along."

The Sydney Opera House opened the way for the immensely complex geometries of some modern architecture. The design was one of the first examples of the use of [computer-aided design](https://en.wikipedia.org/wiki/Computer-aided_design) to design complex shapes. The design techniques developed by Utzon and Arup for the Sydney Opera House have been further developed and are now used for architecture, such as works of [Gehry](https://en.wikipedia.org/wiki/Gehry) and [blobitecture](https://en.wikipedia.org/wiki/Blobitecture), as well as most reinforced concrete structures. The design is also one of the first in the world to use [araldite](https://en.wikipedia.org/wiki/Araldite) to glue the precast structural elements together and proved the concept for future use.

It was also a first in mechanical engineering. Another Danish firm, [Steensen Varming](https://en.wikipedia.org/wiki/Steensen_Varming), was responsible for designing the new air-conditioning plant, the largest in Australia at the time, supplying over 600,000 cubic feet (17,000 m3) of air per minute, using the innovative idea of harnessing the harbour water to create a water-cooled heat pump system that is still in operation today.

## Architectural design role of Peter Hall

After the resignation of Utzon, the Minister for Public Works, Davis Hughes, and the Government Architect, Ted Farmer, organised a team to bring the Sydney Opera House to completion. The architectural work was divided between three appointees who became the Hall, Todd, Littlemore partnership. David Littlemore would manage construction supervision, Lionel Todd contract documentation, while the crucial role of design became the responsibility of Peter Hall.

Peter Hall (1931–1995) completed a combined arts and architecture degree at Sydney University. Upon graduation a travel scholarship enabled him to spend twelve months in Europe during which time he visited Utzon in [Hellebæk](https://en.wikipedia.org/wiki/Helleb%C3%A6k). Returning to Sydney, Hall worked for the Government Architect, a branch of the NSW Public Works Department. While there he established himself as a talented design architect with a number of court and university buildings, including the Goldstein Hall at the University of New South Wales, which won the [Sir John Sulman Medal](https://en.wikipedia.org/wiki/Sir_John_Sulman_Medal) in 1964.

Hall resigned from the Government Architects office in early 1966 to pursue his own practice. When approached to take on the design role, (after at least two prominent Sydney architects had declined), Hall spoke with Utzon by phone before accepting the position. Utzon reportedly told Hall: he (Hall) would not be able to finish the job and the Government would have to invite him back. Hall also sought the advice of others, including architect Don Gazzard who warned him acceptance would be a bad career move as the project would "never be his own".

Hall agreed to accept the role on the condition there was no possibility of Utzon returning. Even so, his appointment did not go down well with many of his fellow architects who considered that only Utzon should complete the Sydney Opera House. Upon Utzon's dismissal, a rally of protest had marched to Bennelong Point. A petition was also circulated, including in the Government Architects office. Peter Hall was one of the many who had signed the petition that called for Utzon's reinstatement.,

When Hall agreed to the design role and was appointed in April 1966, he imagined he would find the design and documentation for the Stage III well advanced. What he found was an enormous amount of work ahead of him with many aspects completely unresolved by Utzon in relation to seating capacity, acoustics and structure. In addition Hall found the project had proceeded for nine years without the development of a concise client brief. To bring himself up to speed, Hall investigated concert and opera venues overseas and engaged stage consultant Ben Schlange and acoustic consultant Wilhelm Jordan, while establishing his team. In consultation with all the potential building users the first Review of Program was completed in January 1967. The most significant conclusion reached by Hall was that concert and opera were incompatible in the same hall. Although Utzon had sketched ideas using plywood for the great enclosing glass walls, their structural viability was unresolved when Hall took on the design role. With the ability to delegate tasks and effectively coordinate the work of consultants, Hall guided the project for over five years until the opening day in 1973.

A former Government Architect, Peter Webber, in his book Peter Hall: the Phantom of the Opera House, concludes: when Utzon resigned no one was better qualified (than Hall) to rise to the challenge of completing the design of the Opera House.

## Opening

The Sydney Opera House was formally opened by Queen [Elizabeth II](https://en.wikipedia.org/wiki/Elizabeth_II), [Queen of Australia](https://en.wikipedia.org/wiki/Queen_of_Australia) on 20 October 1973. A large crowd attended. Utzon was not invited to the ceremony, nor was his name mentioned. The opening was televised and included fireworks and a performance of [Beethoven](https://en.wikipedia.org/wiki/Ludwig_van_Beethoven)'s [Symphony No. 9](https://en.wikipedia.org/wiki/Symphony_No._9_(Beethoven)).

**Burj Khalifa**

The Burj Khalifa known as the Burj Dubai prior to its inauguration in 2010, 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). With a total height of 829.8 m (2,722 ft) and a roof height (excluding [antenna](https://en.wikipedia.org/wiki/Antenna_(radio)), but including a 244 m spire) of 828 m (2,717 ft), the Burj Khalifa has been the [tallest structure](https://en.wikipedia.org/wiki/List_of_tallest_structures) and [building](https://en.wikipedia.org/wiki/List_of_tallest_buildings) in the world since its [topping out](https://en.wikipedia.org/wiki/Topping_out) in 2009.

Construction of the Burj Khalifa began in 2004, with the exterior completed five years later in 2009. The primary structure is reinforced concrete. The building was opened in 2010 as part of a new development called [Downtown Dubai](https://en.wikipedia.org/wiki/Downtown_Dubai). It is designed to be the centrepiece of large-scale, [mixed-use development](https://en.wikipedia.org/wiki/Mixed-use_development). The decision to construct the building is based on the government's decision to diversify from an oil-based economy, and for Dubai to gain international recognition. The building was originally named Burj Dubai but was renamed in honour of the ruler of [Abu Dhabi](https://en.wikipedia.org/wiki/Abu_Dhabi) and president of the United Arab Emirates, [Khalifa bin Zayed Al Nahyan](https://en.wikipedia.org/wiki/Khalifa_bin_Zayed_Al_Nahyan); Abu Dhabi and the UAE government lent Dubai money to pay its debts. The building broke numerous height records, including its designation as the [tallest building](https://en.wikipedia.org/wiki/List_of_tallest_buildings) in the world.

Burj Khalifa was designed by [Adrian Smith](https://en.wikipedia.org/wiki/Adrian_Smith_(architect)), of [Skidmore, Owings & Merrill](https://en.wikipedia.org/wiki/Skidmore,_Owings_%26_Merrill), whose firm designed the [Willis Tower](https://en.wikipedia.org/wiki/Willis_Tower) and [One World Trade Centre](https://en.wikipedia.org/wiki/One_World_Trade_Center). [Hyder Consulting](https://en.wikipedia.org/wiki/Hyder_Consulting) was chosen to be the supervising engineer with NORR Group Consultants International Limited chosen to supervise the architecture of the project. The design is derived from the [Islamic architecture](https://en.wikipedia.org/wiki/Islamic_architecture) of the region, such as in the [Great Mosque of Samarra](https://en.wikipedia.org/wiki/Great_Mosque_of_Samarra). The Y-shaped tripartite floor geometry is designed to optimize residential and hotel space. A [buttressed central core and wings](https://en.wikipedia.org/wiki/Buttressed_core) are used to support the height of the building. Although this design was derived from [Tower Palace III](https://en.wikipedia.org/wiki/Samsung_Tower_Palace_3_%E2%80%93_Tower_G), the Burj Khalifa's central core houses all vertical transportation with the exception of egress stairs within each of the wings. The structure also features a cladding system which is designed to withstand Dubai's hot summer temperatures. It contains a total of 57 elevators and 8 escalators.

At a certain point in the architectural and engineering process, the original Emaar developers experienced financial problems, and required more money and economic funding. [Sheikh Khalifa](https://en.wikipedia.org/wiki/Khalifa_bin_Zayed_Al_Nahyan), the ruler of the United Arab Emirates, granted monetary aid and funding, hence resulting in the changing of the name to "Burj Khalifa". The concept of profitability derived from building high density developments and malls around the landmark have proven successful. Its surrounding malls, hotels and condominiums in Downtown Dubai have generated the most revenue from the project as a whole, while the Burj Khalifa itself made little or no profit.

Critical reception to Burj Khalifa has been generally positive, and the building has received many awards. However, there were complaints concerning migrant workers from [South Asia](https://en.wikipedia.org/wiki/South_Asia) who were the primary building labour force. These cantered on low wages and the practice of confiscating passports until duties were complete. Several suicides were reported.

**Architecture and design**

The tower was designed by Skidmore, Owings and Merrill (SOM), which also designed the [Willis Tower](https://en.wikipedia.org/wiki/Willis_Tower) (formerly the Sears Tower) in [Chicago](https://en.wikipedia.org/wiki/Chicago) and the [One World Trade Centre](https://en.wikipedia.org/wiki/One_World_Trade_Center) in [New York City](https://en.wikipedia.org/wiki/New_York_City). Burj Khalifa uses the bundled [tube](https://en.wikipedia.org/wiki/Tube_(structure)) design of the [Willis Tower](https://en.wikipedia.org/wiki/Willis_Tower), invented by [Fazlur Rahman Khan](https://en.wikipedia.org/wiki/Fazlur_Rahman_Khan). Due to its tubular system, proportionally only half the amount of steel was used in the construction, compared to the [Empire State Building](https://en.wikipedia.org/wiki/Empire_State_Building). Khan's contributions to the design of tall buildings have had a profound impact on architecture and engineering. It would be difficult to find any worldwide practices in the design of tall buildings that have not been directly or indirectly influenced by his work. The design is reminiscent of [Frank Lloyd Wright](https://en.wikipedia.org/wiki/Frank_Lloyd_Wright)'s vision for [The Illinois](https://en.wikipedia.org/wiki/The_Illinois), a mile-high skyscraper designed for Chicago, as well as Chicago's [Lake Point Tower](https://en.wikipedia.org/wiki/Lake_Point_Tower). When [Adrian Smith](https://en.wikipedia.org/wiki/Adrian_Smith_(architect)) was conceiving the project at SOM, he looked out his office window toward Lake Point Tower's curved three wing layout, "There's the prototype", he said. According to Strabala, Burj Khalifa was designed based on the 73 floor [Tower Palace Three](https://en.wikipedia.org/wiki/Tower_Palace_Three_Tower), an all-residential building in [Seoul](https://en.wikipedia.org/wiki/Seoul). In its early planning, Burj Khalifa was intended to be entirely residential.

Subsequent to the original design by Skidmore, Owings and Merrill, Emaar Properties chose Hyder Consulting to be the supervising engineer and NORR Group Consultants International Ltd to supervise the architecture of the project. Hyder was selected for their expertise in structural and [MEP](https://en.wikipedia.org/wiki/Architectural_engineering#Mechanical,_electrical,_and_plumbing_(MEP)) (mechanical, electrical and plumbing) engineering. Hyder Consulting's role was to supervise construction, certify the architect's design, and be the engineer and architect of record to the UAE authorities. NORR's role was the supervision of all architectural components including on-site supervision during construction and design of a 6-story addition to the office annex building for architectural documentation. NORR was also responsible for the architectural integration drawings for the Armani Hotel included in the Tower. Emaar Properties also engaged [GHD](https://en.wikipedia.org/wiki/GHD_Group), an international multidisciplinary consulting firm, to act as an independent verification and testing authority for concrete and steelwork.

The design is derived from [Islamic architecture](https://en.wikipedia.org/wiki/Islamic_architecture). As the tower rises from the flat desert base, there are 27 [setbacks](https://en.wikipedia.org/wiki/Setback_(architecture)) in a spiral pattern, decreasing the cross section of the tower as going upward and creating convenient outdoor terraces. These setbacks are arranged and aligned in a way that minimizes vibration wind loading from eddy currents and vortices. 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).

The spire of Burj Khalifa is composed of more than 4,000 tonnes (4,400 short tons; 3,900 long tons) of structural steel. The central pinnacle pipe weighs 350 tonnes (390 short tons; 340 long tons) and has a height of 200 m (660 ft). The spire also houses communications equipment. This 244-metre spire is widely considered [vanity height](https://en.wikipedia.org/wiki/Vanity_height), since very little of its space is usable. Without the spire, Burj Khalifa would be 585 meters tall. This was reported in a [Council on Tall Buildings and Urban Habitat](https://en.wikipedia.org/wiki/Council_on_Tall_Buildings_and_Urban_Habitat) study, which notes that the empty spire "could be a skyscraper on its own". Such a skyscraper, if located in Europe, would be the 11th tallest building on that continent.

In 2009, architects announced that more than 1,000 pieces of art would adorn the interiors of Burj Khalifa, while the residential lobby of Burj Khalifa would display the work of [Jaume Plensa](https://en.wikipedia.org/wiki/Jaume_Plensa).

The cladding system consists of 142,000 m2 (1,528,000 sq ft) of more than 26,000 reflective glass panels 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. The glass covers more than 174,000 m2 (1,870,000 sq ft) in area. The Burj's typical curtain wall panels measure 4'6" wide by 10'8" high and weigh about 800 pounds each, with wider panels near the building’s edges and taller ones near the top.

The exterior temperature at the top of the building is thought to be 6 °C (11 °F) cooler than at its base.

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 hotel was supposed to open on 18 March 2010, but after several delays, it finally opened to the public on 27 April 2010. The corporate suites and offices were also supposed to open from March onwards, yet the hotel and observation deck remained the only parts of the building which were open in April 2010.

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) (which, according to the developer, sold out within eight hours of being on the market). An outdoor [zero-entry swimming pool](https://en.wikipedia.org/wiki/Zero-entry_swimming_pool) is located on the 76th floor of the tower. Corporate offices and suites fill most of the remaining floors, except for the 122nd, 123rd and 124th, where the Atmosphere restaurant, sky lobby and an indoor and outdoor observation deck are located, respectively. In January 2010, it was planned that Burj Khalifa would receive its first residents from February 2010.

The building has 57 elevators and 8 escalators. 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. However, the world's fastest single-deck elevator still belongs to [Taipei 101](https://en.wikipedia.org/wiki/Taipei_101) at 16.83 m/s (55.2 ft/s). Engineers had considered installing the world's first triple-deck elevators, but the final design called for [double-deck elevators](https://en.wikipedia.org/wiki/Double-deck_elevator). The double-deck elevators are equipped with entertainment features such as LCD displays to serve visitors during their travel to the observation deck. The building has 2,909 stairs from the ground floor to the 160th floor.

## Development

Construction began on 6 January 2004, with the exterior of the structure completed on 1 October 2009. The building officially opened on 4 January 2010 and is part of the 2 km2 (490-acre) [Downtown Dubai](https://en.wikipedia.org/wiki/Downtown_Dubai) development at the 'First Interchange' along [Sheikh Zayed Road](https://en.wikipedia.org/wiki/Sheikh_Zayed_Road), near Dubai's main business district. The tower's architecture and engineering were performed by [Skidmore, Owings & Merrill](https://en.wikipedia.org/wiki/Skidmore,_Owings_%26_Merrill) of [Chicago](https://en.wikipedia.org/wiki/Chicago), with [Adrian Smith](https://en.wikipedia.org/wiki/Adrian_Smith_(architect)) as chief architect, and [Bill Baker](https://en.wikipedia.org/wiki/William_F._Baker_(engineer)) as chief structural engineer. The primary contractor was [Samsung C&T](https://en.wikipedia.org/wiki/Samsung_C%26T) of [South Korea](https://en.wikipedia.org/wiki/South_Korea).

## Conception

Burj Khalifa was designed to be the centrepiece of a large-scale, mixed-use development to include 30,000 homes, nine hotels (including [The Address Downtown Dubai](https://en.wikipedia.org/wiki/The_Address_Downtown_Dubai)), 3 hectares (7.4 acres) of parkland, at least 19 residential skyscrapers, the [Dubai Mall](https://en.wikipedia.org/wiki/Dubai_Mall), and the 12-hectare (30-acre) artificial Burj Khalifa Lake. The decision to build Burj Khalifa was reportedly based on the government's decision to diversify from an oil-based economy to one that is service, and tourism based. According to officials, it was necessary for projects like Burj Khalifa to be built in order to garner more international recognition, and hence investment. "He (Sheikh [Mohammed bin Rashid Al Maktoum](https://en.wikipedia.org/wiki/Mohammed_bin_Rashid_Al_Maktoum)) wanted to put Dubai on the map with something really sensational," said Jacqui Josephson, a tourism and VIP delegations executive at [Nakheel Properties](https://en.wikipedia.org/wiki/Nakheel_Properties). The tower was known as Burj Dubai ("Dubai Tower") until its official opening in January 2010. It was renamed in honour of the ruler of [Abu Dhabi](https://en.wikipedia.org/wiki/Emirate_of_Abu_Dhabi), [Khalifa bin Zayed Al Nahyan](https://en.wikipedia.org/wiki/Khalifa_bin_Zayed_Al_Nahyan); Abu Dhabi and the federal government of UAE lent Dubai tens of billions of US dollars so that Dubai could pay its debts – Dubai borrowed at least $80 billion for construction projects. In the 2000s, Dubai started diversifying its economy but it suffered from an economic crisis in 2007–2010, leaving large-scale projects already in construction abandoned.