



The BT Tower

In 1954 a system of broadband and microwave radio links was proposed to meet the expected growth of the long distance telephone and television networks between London and the provinces. The solution was a striking addition to London's skyline.



BT Tower in 1966
(TCB 346/T 648)

It was planned that such a system could be used on routes from London to Birmingham, Portsmouth, Bristol, Norwich, Brighton and Dover.

Two options were considered: the first was a ring of radio stations on the outskirts with broadband links extended to central London by cable; the second was a single radio station near the centre.

A ring of stations would involve no special technical difficulties, but a central station would need a building with adequate ground and obstacle clearance for the radio paths for the foreseeable future.

The Royal Fine Art Commission objected to building a tower on the grounds it would obstruct the views of better buildings, but their objection was not sustained.

The proposal for a high tower in central London was preferred, partly to avoid the traffic problems that would be caused by cable-laying but mainly because it would be impractical to find a number of suitable high-ground sites around London.

Once the decision had been taken, finding a site did not present a serious problem: the Museum telephone exchange in Howland Street was a focal point both for telecommunications systems and for the network of vision cables in London. Space was available for a tower in a yard of Cleveland Mews and the design and construction problems could be solved along with the extension of Museum telephone exchange.

The 189 metre high tower was designed by a team led by Eric Bedford, chief architect of the Ministry of Public Buildings and Works with senior architect, Mr G R Yeats.

Bedford was pleased with the tower's blend of form and function. "If the tower has achieved anything as a piece of design, this lay in the fact that an honest attempt had been made to meet the functional requirements and to combine these with the simple principle of slenderness, accepting the structure that emerged rather than attempting to impose any preconceived notion of what a tower should look like."
(Architect and Building News, 1967)



Construction

The main building contractors were Peter Lind and Company. When construction began in 1961, a borehole survey of the site revealed a tricky problem. There was hard chalk suitable for supporting foundations beneath the blue London clay but it was 53 metres down. It was decided to look for an alternative way of supporting the massive 13,000 tonne structure.

An Italian firm came to the rescue, laying a concrete raft on the clay, some eight metres below ground level. The raft measures around 27 metres square, is one metre thick and reinforced with six layers of steel cables. On it sits a seven metre tall reinforced concrete pyramid with a flat top. The raft and pyramid together provide the foundations and, on top of them, a hollow reinforced concrete shaft runs from near enough ground level, right up through the centre of the tower.

This is the backbone of the whole structure which, together with a collar connecting it to the adjacent four-storey building, gives the tower its stability.

It was impractical to use scaffolding during construction so use was made of a climbing crane which rose with the tower as it was being built. The crane was later dismantled and lowered from the top of the tower by its own winch.

As excessive swaying would interfere with the working of the microwave radio systems wind tunnel tests were used to evolve a method of construction that would not permit the tower to sway more than 20cm either way in winds of up to 160km/hour (100mph).

In line with other tall buildings, the structure expands and contracts with the temperature. The tower can be as much as 23cm shorter in the winter than it is in the summer.



BT Tower under construction, 1964 (TCB 346/T 174)

The widest part of the tower is the 34th floor, 158 metres above ground level. The outer part of the floor is a three metre wide revolving segment that takes approximately 22 minutes to complete one revolution (a speed of 0.17 km/h).

The revolving floor was designed by Ransomes and Rapier, Ipswich in conjunction with the Ministry of Public Building and Works. Ransomes and Rapier also designed the revolving stage of the London Coliseum theatre.

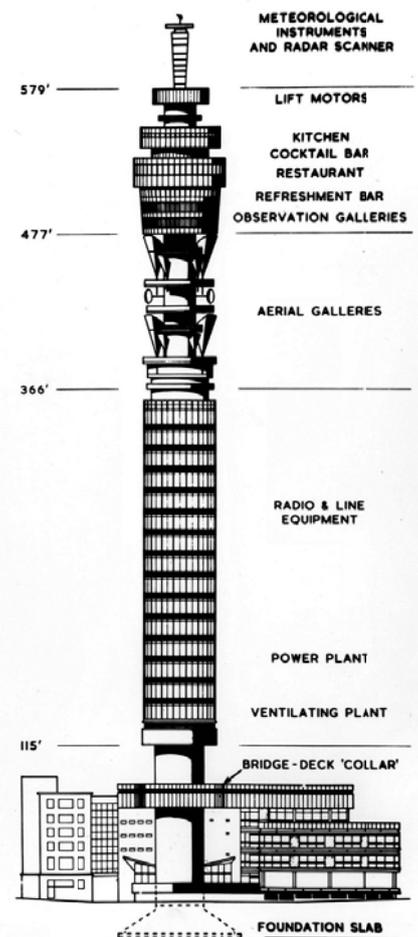


Diagram of the tower's floors, 1960s (TCB 346/T 823)



What's in a name?

A staff competition to provide a name for the new building was announced in the Post Office Magazine in 1962 with the promise of a £10 prize. It announced "names must be memorable, short, easy to say, and should express something of the purpose of the tower" and later issues carry some of the suggestions – Pointer, Spindle, Liaiser and Telebeacon.

However when the building opened after more than four years of construction work – at a cost of £2.5 million, (£9million including equipment) - it was known as the Post Office Tower.

Open for business

The tower was opened for operations on 8 October 1965



by Prime Minister Harold Wilson.

Opening by Harold Wilson, 1965 (TCB 477/08-10-65)

The visitors' book records an official visit by Queen Elizabeth II on 17 May 1966 when she toured the tower, met staff and took tea in the 34th floor revolving restaurant. Two days later the restaurant and viewing galleries were open to public by Postmaster General, Tony Benn.

The Top of the Tower restaurant and cocktail bar was managed by Butlins and had a menu boasting "strawberries, whether in season or not".



Diners in the tower's restaurant, 1966 (TCB 346/T 849c)

The restaurant was exclusive and many more people visited the tower's observation gallery to look at London's famous landmarks from a viewpoint three times higher than Nelson's column, with more than 50,000 visiting in the first three weeks.

The tower's entrance hall featured a plastic mural designed by Henry and Joyce Collins showing the key role that the building played in Britain's telecommunications network, and the pool passed as visitors departed was quickly adopted as a wishing fountain.

In the shop, tower souvenirs proved incredibly popular with 1,500 plastic tower models sold in just two weeks.



Souvenir postcard (TCG 263/13)

At 4:30am on 31 October 1971, a bomb exploded in the male toilets on the 31st floor (no-one ever claimed responsibility for hiding the device). No-one was injured in the blast but the physical damage took two years to repair. It was decided that public access to all areas was no longer viable and the restaurant closed in 1980 when the contract expired (by this time, more than 4.5 million people had visited the tower).



Bomb damage, 1971 (TCB 346/T 833)

Since 1984 the 34th floor tower suite has been used for BT's corporate hospitality and as the venue for charity events such as telethons.

In October 2009 an information band was wrapped around the tower's 36th and 37th floors with a message and pyrotechnics to celebrate 1000 days to go to the London 2012 Olympic Games.

The screen has since been used to carry Valentine's Day and Remembrance day messages, and carried the Queen's first ever tweet sent at the opening of the BT sponsored 'Information Age' communications gallery at the Science Museum in 2014.



Recognition

Despite the BT Tower being one of most recognisable and conspicuous buildings in London, it was classed as an official secret until fairly recently. Taking or possessing photos of the BT Tower was technically an offence under the Official Secrets Act, and in line with its “secret” status, this 189 metre London landmark was also omitted from all Ordnance Survey maps until the mid 1990s.

Kate Hoey MP, speaking in Parliament in February 1993 said: “Hon. Members have given examples of seemingly trivial information that remains officially secret. An example that has not been mentioned, but which is so trivial that it is worth mentioning, is the absence of the British Telecom tower from Ordnance Survey maps. I hope that I am covered by parliamentary privilege when I reveal that the British Telecom tower does exist and that its address is 60 Cleveland Street, London” (Hansard).

In November 2001, BT Tower was declared a national monument by English Heritage “to ensure the architecture of Britain’s communications revolution is preserved.

BT Tower was given Grade II listed status in 2003 acknowledging its place as a cultural and architectural icon of Harold Wilson’s “White Heat of Technology”.

Alongside the formal recognition, the tower has also been a popular feature in contemporary culture with appearances in Dr Who, The Goodies and the Eagle and Dan Dares magazines.

The BT Tower has also helped charities to raise millions of pounds. The Disasters Emergency Committee has staged many appeals from the building whilst celebrities and BT volunteers have collected huge sums for televised appeals including Children in Need, Comic Relief and Sport Relief.

Preserving the stories

The history of the BT Tower is well documented in the files, films, photographs, journals and objects preserved at BT Archives. The collection can be searched at www.bt.com/archivesonline

Of particular note, is a unique photographic record predominately of the tower’s construction, containing over 900 images (BT Archives finding number TCB 346).

Contemporary films of the tower can be downloaded at www.bt.com/archives.

If you have visited or worked at BT Tower please add your story to www.connected-earth.com/memories.



BT Tower at dawn, 1985
(TCB 417/E 80309)



BT Tower Facts

Height	189 metres (620 feet) including 12 metre London Weather Centre radar mast on top
Weight	13,000 tonnes, including 95 tonnes of high tensile steel in the base and 685 tonnes of mild steel on the structure
Structure	A hollow central shaft of reinforced concrete, from which floors are cantilevered out, houses two lifts, emergency staircase, electricity and telecommunications cables, ventilation ducts and water and sanitary pipes
Glass	4600 square metres (50,000 square ft) much of which is anti-sun glass which gives the building its green colour
Anti-sway	Designed not to sway more than 20cm or one third of a degree each way in winds of up to 160km/h (100 mph)
Foundations	Sunk to 7.3 metres to rest on hard blue London clay. A concrete raft, reinforced with steel cable, supports a concrete pyramid on which the structure rests
Lift speeds	Six metres per second – just over 30 seconds to reach the top
Revolving floor	The tower suite conference area 158 metres (520 feet) above ground level revolves 2.5 each hour. Nylon-tyred wheels running on inner and outer circular rails support the rotating structure which weighs 30 tonnes
Communications	57 microwave aerials were used for transmissions to other towers and masts. These were removed in 2011, and most of the work is now done by fibre optic cable



BT Tower Timeline

1954	Proposal for a system of broadband microwave radio links to meet demands of expected telecommunications traffic increase
1961	Building work on the BT Tower was started
1965	BT Tower opens for operations by Prime Minister, Harold Wilson
1966	After an official visit by Queen Elizabeth II, BT Tower is opened to the public use by Postmaster General, Tony Benn
1971	Bomb explodes on viewing galleries, which are subsequently closed to the public
1973	Building restoration completed
1980	Lease on restaurant, run by Butlins, expires and restaurant closes
1984	Former restaurant reopens as the BT Tower suite
1990s	BT Tower starts to be published on London maps
2001	English Heritage declares the BT Tower to be a national monument
2003	The Government confers Grade II listed building status on the BT Tower
2009	BT Tower launches the 1000 day countdown to the 2012 Olympics
2011	The familiar microwave dishes and horns are removed from the BT Tower
2012	BT Tower played a high profile role in celebrating the London 2012 Olympic and Paralympic Games
2013	A 360 degree photograph taken from the roof of the BT Tower entered the record books as the world's biggest panoramic photograph
2014	The first ever tweet sent by Queen Elizabeth II, at the opening of the BT sponsored 'Information Age' gallery at the Science Museum, was displayed on the BT Tower LED information band
2015	The BT Tower information band carried a congratulatory message on the Queen becoming the longest ever reigning monarch