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## 7. Television Tower in New Delhi with Revolving Restaurant at Top (India)

**Owner:** All India Radio (Government of India)

**Consultants:** Gerame, Bangalore, India

**Contractors:** National Buildings Construction Corporation Ltd., (Government of India undertaking)

**Works duration:** 50 months

**Service Date:** November 1988

**Concrete:** 9000 m<sup>3</sup>

**TV Antenna structural steel 100 tonnes**

The overall height of the tower is 235 m including the steel mast of 68 m height.

The outstanding feature of the tower is the most attractive four storied skypod located at a height of 147.5 m. The floor at 150.5 with the diameter of 13.1 m serves as a micro-wave dish platform which will facilitate the live telecast of all the happenings in a radius of nearly 60 km from the tower.

A revolving airconditioned restaurant for nearly 100 people is located at a height of 155 m.

An observation gallery is provided to accommodate about 300 persons at a time at the level of 158.5 m with a diameter of 26.5 m. A service floor is provided at 161.5 m with a diameter of 23.5 m. The steel mast incorporates 3 bands with the first two for the use of Delhi television channel 1 and 2 with the third band specially for F.M. sound transmitting antenna for All India Radio.

### Design

The foundation consists of 279 RCC piles of 50 cm diameter with 125 tonnes load carrying capacity driven to nearly 20 to 22 m depth below the ground level. The tower rests on a pile cap of 32 m diameter with an average thickness of 2.5 m. The shaft diameter varies from 15.7 m at ground level to 6.7 m below the skypod level and its thickness varies from 60 cm bottom to 45 cm top. The maximum diameter of the skypod floor at viewing gallery level is 26.5 m. The transmitter building is founded on a pile cap. The tower has been designed to withstand a maximum wind speed of 206 km per hour and also to resist earthquake forces.

### Construction

The construction of the shaft was carried out for this type of structure varying both in diameter and thickness by using a special Bygging slip form technology for the first time in India. The equipment used was a star beam with 24 yokes, each supported by hydraulic jacks of 6 ton capacity. The mechanical equipment was of Hungarian design and the Hydraulic jack/spindle system was of Swedish origin. Multiple spindles enabled the automatic adjustment of the diameter, thickness, as also the slope of the inner and outer surfaces of the shaft. The concreting was done continuously giving a progress of nearly 2.5 m height per day.

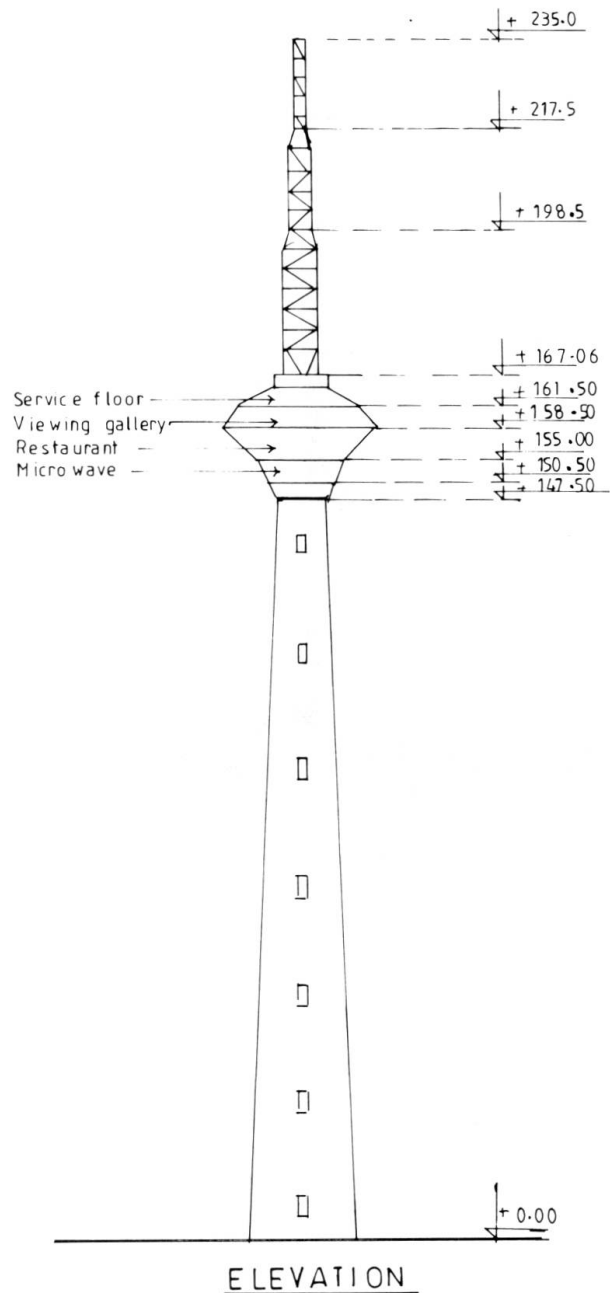


Fig. 1 Television tower elevation

### Precaution

The verticality of the shaft was checked by a laser beam theodolite. Fire fighting arrangements have been fully incorporated in the tower and as a precautionary measure electrical cooking is recommended for the restaurant kitchen. At 7 different levels platforms are provided where the people can get out of the lift with easy access to the open air in emergency cases. Two 13 passengers



*Fig. 2 Television tower view showing partly skypod floor and antenna*

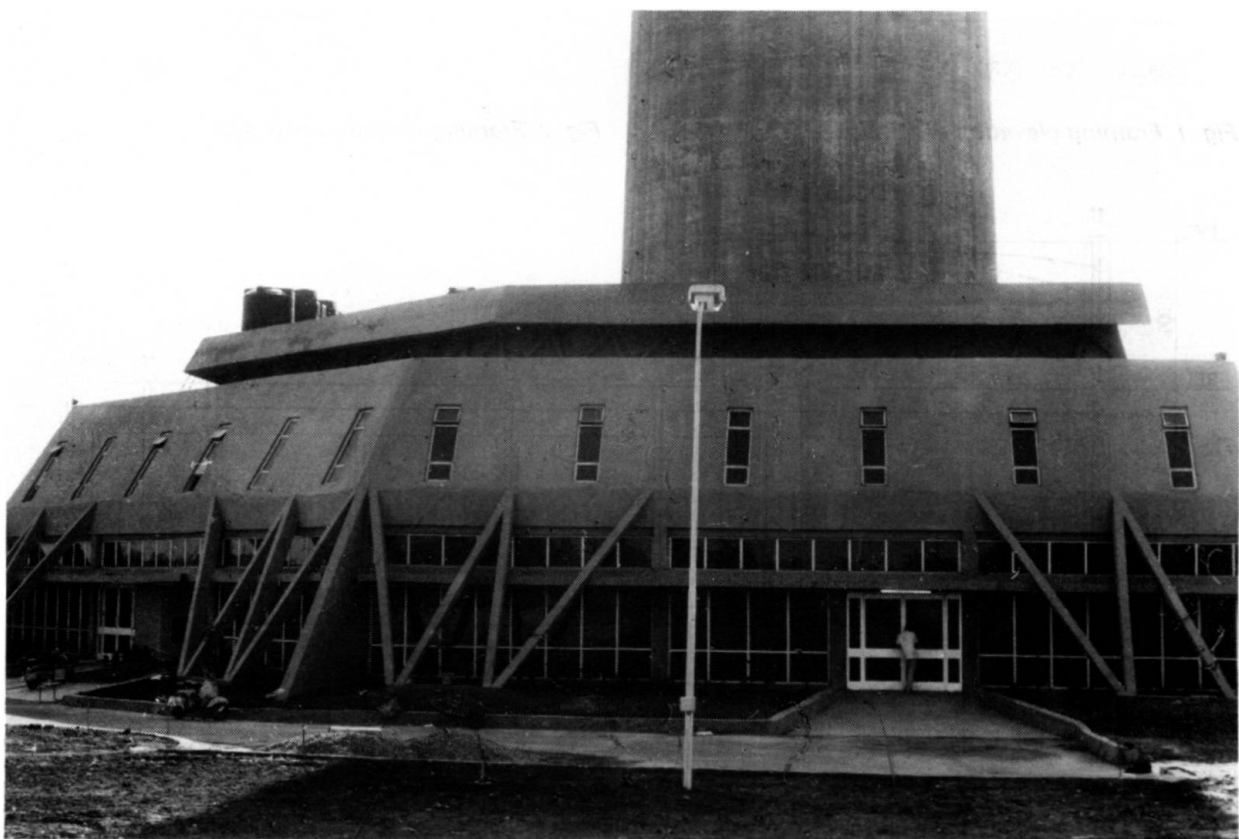


*Fig. 3 Bottom view of skypod floor*

capacity elevators are provided which will transport people to restaurant floor in one minute. A staircase is also provided with 700 steps connecting ground level and skypod floor.

A scheme has been worked out to make this unique tower self-supporting, so that the cost of construction of Rs.40 millions will be retrieved by 1995 through collection of tourist entrance fees. Beyond 1995 All India Radio will earn Rs.3 millions every year without any efforts as a clear profit.

*(H.R. Viswanath)*



*Fig. 4 Transmitter building resting on pile cap*