

In 1874 the first fixed crossing across river Hooghly was provided by a pontoon bridge near Howrah railway station. In 1932 the river was bridged further upstream near bridge Dakshineswar by a multispan steel bridge presently known as **Vivekananda Setu** to provide road cum rail link between the Calcutta Port and its hinterland.

In the course of only two decades it was found **Rabindra Setu** & **Vivekananda Setu** were too inadequate to cater to the need of growing trans river communication. The traffic projection up to 1991 clearly indicated the need for a new bridge with three lanes of carriageway in each direction. The estimated volume of traffic towards the end of the century would be 85,000 vehicles per day with peak hour flow of about 8500 vehicles. Hence a high level road bridge at Princep Ghat, a site about 1.5 km downstream of **Rabindra Setu** was conceived.

Now, it is one of the longest stayed girder bridge with composite deck built anywhere in the world. The deck system is designed to be supported by 152 cables from 2 pairs of steel towers resting on R.C.C. cellular piers. The bridge has a main span of 457.20m (1500 ft.) and two end spans for 182.88m (600 ft.) each.

#### Salient features of the bridge

**Type:** Cable stayed girder bridge with composite construction.

**Span arrangement:** One main span of 457.2m with 2 end spans of 182.88m each

**Gradient:** 1 in 25\

**Carriage way:** 2 nos., 3 lane carriageway (12.30m) divided by a median strip 1.70m wide.

**Deck Structure:** R.C. composite deck with built up steel girders. The girder system comprises of two longitudinal I Section plate girders 29.10m apart with a middle longitudinal girder and connecting cross girders at 4.10m c/c. The R.C. composite slab (max.. thickness 230mm) spans between the girders.

**Cables :** Parallel wire cables, formed with 7mm dia wires(U.T.S. 160 kg/sq.mm) and forged steel anchorages with Hi Ammass at the ends are connected to the tower head at one end and to the main girders at the other.

**Definition of work:** All over the world the major problem faced by stayed cable bridges is premature distress of cable wires due to corrosion. To overcome this problem **CICO** entered into a technical collaboration with **Yokohama Rubber Company, Kapan** and **Toshin Kaken, Japan** for protection of the main cables against corrosion. The material used had to be flexible as the rigid material would result in cracking which would lead to corrosion. The material used had to be fire retardant as well. The material thus used was a combination of Polyurethane and Polyutadiene.

