

CABLE STAY BRIDGE



3.5 CABLE STAYED BRIDGES

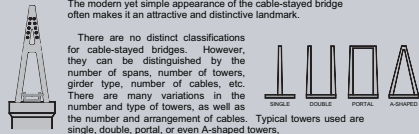
A typical cable stayed bridge is a continuous girder with one or more towers supported by the bridge's foundation. From these towers, cables extend down diagonally (usually to both sides) and support the girder.



Steel cables are extremely strong but very flexible. Cables are very economical as they allow a slender and lighter structure which is still able to span great distances. Though only a few cables are strong enough to support the entire bridge, their flexibility makes them somewhat susceptible to the effects of wind. For longer span cable-stayed bridges, careful studies must be made to ensure stability of the bridge in the wind.

The modern yet simple appearance of the cable-stayed bridge often makes it an attractive and distinctive landmark.

There are no distinct classifications for cable-stayed bridges. However, they can be distinguished by the number of spans, number of towers, girder type, number of cables, etc. There are many variations in the number and type of towers, as well as the number and arrangement of cables. Typical towers used are single, double, portal, or even A-shaped towers.



Cable arrangements also vary greatly. Some typical varieties are mono, harp, fan, and star arrangements. In some cases, only the cables on one side of the tower are attached to the girder, the other side being anchored to a foundation or other counterweight.



Where Are They Used

Cable Stayed Bridges can be used almost anywhere that acceptable foundation conditions allow. The typical span length of cable stayed bridges range from 110 to 480 meters. The longest cable stayed bridge in the world is presently the Tataru Bridge with a main span of 890 m. The articulation of the structure allows for a shallow superstructure with open and uncluttered views from the bridge. The modern yet simple appearance of the cable-stayed bridge makes it an attractive and distinct landmark, making it the bridge type of choice of many agencies today.

3.5.3 What They Typically Cost

The typical cost of a cable stayed bridge ranges from \$4,500 to \$5,000 US per square meter.