Introduction: A bridge is a structure providing a passage over an obstacle without using the way beneath.

There are many different designs of bridge that all serve unique purposes and apply to different situations. Designs of bridges vary depending on the function of the bridge, the nature of the terrain where the bridge is constructed and anchored, the material used to make it, and the funds available to build it.

History: The first bridges were made by nature itself — as simple as a log fallen across a stream or stones in the river.

The Arkadiko Bridge is one of four Mycenaean corbel arch bridges part of a former network of roads, designed to accommodate chariots, between Tiryns to Epidauros in the Peloponnese, in Greece. Dating to the Greek Bronze Age (13th century BC), it is one of the oldest arch bridges still in existence and use.

The Arkadiko Bridge in Greece (13th century BC), one of the oldest arch bridges in existence.

The greatest bridge builders of antiquity were the ancient Romans.[4] The Romans built arch bridges and aqueducts that could stand in conditions that would damage or destroy earlier designs. Some stand today. An example is the Alcántara Bridge, built over the river Tagus, in Spain. The Romans also used cement, which reduced the variation of strength found in natural stone. One type of cement, called pozzolana, consisted of water, lime, sand, and volcanic rock. Brick and mortar bridges were built after the Roman era, as the technology for cement was lost then later rediscovered.

Types of Bridges:

Bridges can be categorized by different ways.

According to Flexibility:

1. Fixed Span Bridge
2. Moveable Span Bridge

According to Bridge Flow:

1. Deck Bridge
2. Through Bridge
3. Semi Through Bridge

According to Inter Span Relation:

1. Simply Supported Bridge
2. Cantilever Bridge

According to Shape:

1. Slab Bridge
2. Beam Bridge
3. Girder Bridge
4. Truss Bridge
5. Arch Bridge
6. Suspension Bridge
7. Cable Stayed Bridge

Elaboration:

According to Flexibility:

Fixed Span Bridge: Most Bridges are fixed meaning they have no moving parts and stay in one place until they fail or are demolished.

Jamuna Bridge(June-1998): 5th largest Bridge in the world in terms of volumetric discharge.

A railroad bridge with 4.8km length having 100m longest span.

Moveable Span Bridge: Temporary bridges, such as Bailey bridges, are designed to be assembled, and taken apart, transported to a different site, and re-used. They are important in military engineering, and are also used to carry traffic while an old bridge is being rebuilt. Movable bridges are designed to move out of the way of boats or other kinds of traffic, which would otherwise be too tall to fit. These are generally electrically powered.

Michigan Avenue Bridge(14th May 1920)

Above the river of Chicago in Illinoise,USA

Design: Double-leaf, double-deck, fixed counterweight, trunnion bascule bridge

122m length with 27.97m width , 78m longest span between trunnions and 67m between piers,4.9m clearance below.

Drawbridge at the fort of Ponta da Bandeira; Lagos, Portugal

Tower Bridge (built 1886–1894) is a combined bascule and suspension bridge in London which crosses the River Thames. This bridge having 244m length, 61m longest span.

Clearance below : 8.6 metres (28 ft) (closed)42.5 metres (139 ft) (open)(mean high water spring tide)

The Rolling Bridge(2005) is a type of curling movable bridge completed in 2004 as part of the Grand Union Canal office & retail development project at Paddington Basin, London.

This is for pedestrian movements only.

This 12m bridge build by Triangular steel segments, hydraulic actuators, lightweight deck ..etc

Swing Bridge: BNSF Railway bridge across the Columbia River at Portland, Oregon, showing the swing-span section turning.

Transporter Bridge

Rendsburg High BridgeRendsburger Hochbrücke (1913)

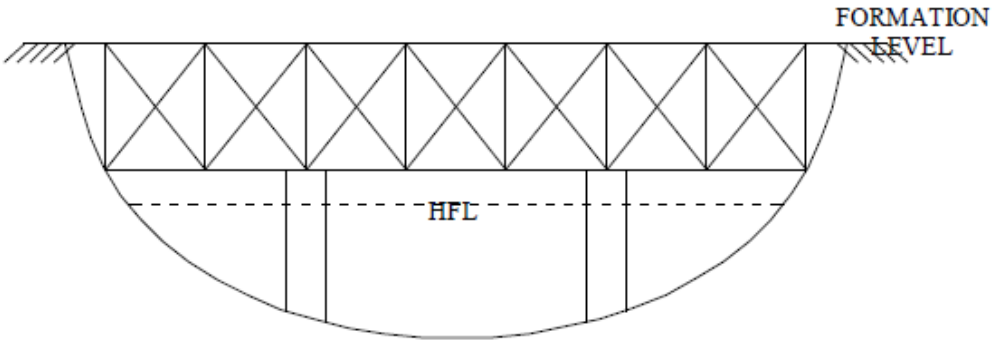
2486m long , 68m height and having 140m longest span.

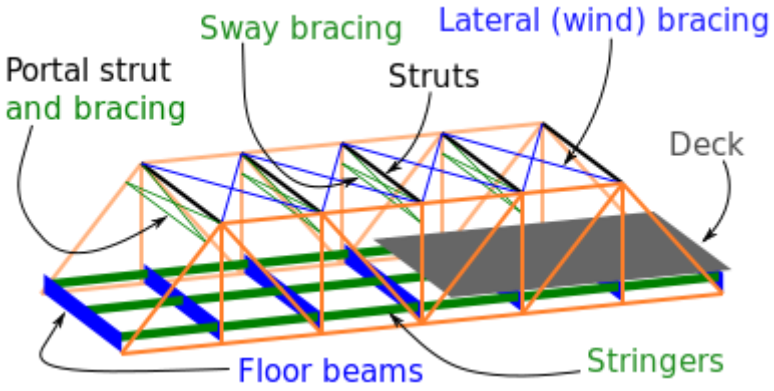
Build by Steel.

Submerge Bridge

According to Bridge Flow:

Deck Bridge: A bridge deck or road bed is the roadway, or the pedestrian walkway, surface of a bridge. It is not to be confused with any deck of a ship. The deck may be of concrete, wood which in turn may be covered with asphalt concrete or other pavement. The concrete deck may be an integral part of the bridge structure (T-beam structure) or it may be supported with I-beams or steel girders (floor beams). The deck may also be of wood, or open steel grating.





San Francisco–Oakland Bay Bridge(Double-decked suspension spans)

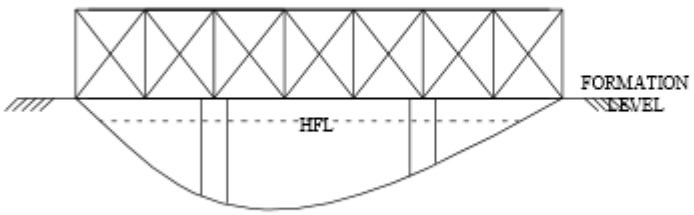
West Span: November 12, 1936; 76 years ago East Span: September 2, 2013; 52 days ago

Length: 4.46 miles (7.18 km)excluding approaches

Width: 5 traffic lanes totaling 17.5m

Through Bridge:

In the through type bridges, the decking is supported by the bottom flange of the main supporting girders provided on either side.



Through Bridge

The Burrard Bridge(1932)

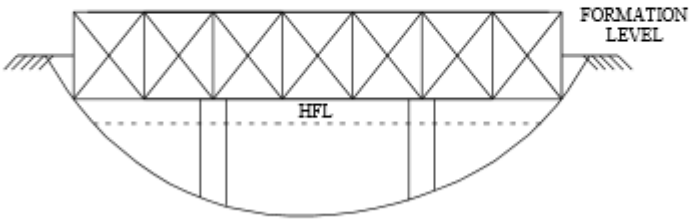
Vancouver, British Columbia, Canada.

The Burrard Bridge(1932)

Vancouver, British Columbia, Canada.

Semi Through Bridge:

The semi-through bridge has its deck midway and the deck load is transmitted to the girder through the web of the girder. In this also, the main girders are on either side of deck.



Semi-through Bridge

Chaotianmen Bridge(2009)

Yangtze River,Chongqing, China

The continuous steel truss arch bridge with tie girders has a main span of 552m and a total length of 1,741m.

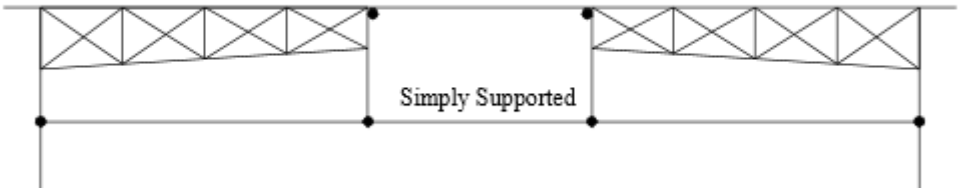
Bayonne Bridge(November 15, 1931)

Connects Bayonne, New Jersey with Staten Island, New York carrying NY 440 and NJ 440.

The fifth-longest steel arch semi-through bridge in the world.

Simply Supported Bridge:

Generally width of bridge is divided into number of individual spans. For each span, the load carrying member is simply supported at both ends. The plate girder and truss girders are used as this type of bridges. They are suitable at places where uneven settlements of foundations are likely to take place.



Khilgaon Fly-over

Continuous Bridge:

In continuous bridges spans are continuous over two or more supports. They are statically indeterminate structures. They are useful when uneven settlement of supports does not take place. In continuous bridges the bending moment anywhere in the span is considerably less than that in case of simply supported span. Such reduction of bending moment ultimately results in the economic section for the bridge. In continuous bridges the stresses are reduced due to negative moments developed at pier or supports. Thus continuous span bridges have considerable saving compared to simply supported bridge construction.

Kingston–Rhinecliff Bridge(February 2,1957; 56 years ago)

The Kingston–Rhinecliff Bridge or George Clinton Memorial Bridge is a continuous under-deck truss bridge that carries NY 199 across the Hudson River in New York State north of the City of Kingston and the hamlet of Rhinecliff.

Total Length: 2375m

According to Shape:

Slab Bridge:

Beam Bridge:

A footbridge using beams over a stream in Dordogne, France

Girder Bridge:

Dunn Memorial Bridge

Steel girder bridge

The Dunn Memorial Bridge, officially known as the Private Parker F. Dunn Memorial Bridge, carries US 9 and US 20 across the Hudson River between Albany, New York and Rensselaer, New York. Completed in 1967 to replace an earlier span bearing the same name, the highway bridge has a steel girder design. It is named for Parker F. Dunn, an Albany native who was posthumously awarded the Medal of Honor for his service in World War I and is the southernmost toll-free road crossing of the Hudson.

Multiple Plate Girder Bridge

Across Iowa River,USA

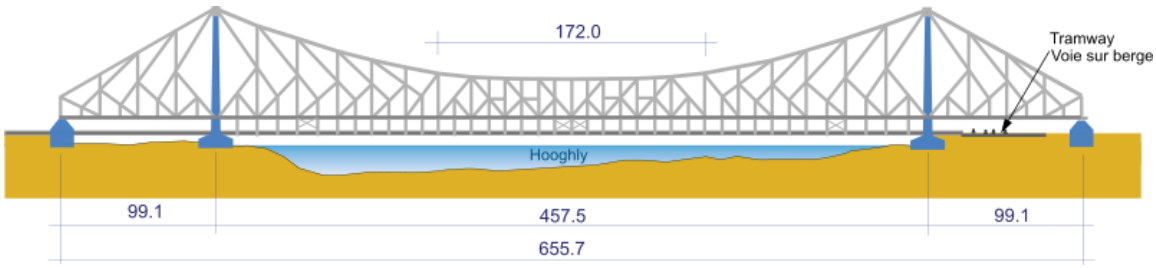
Swanport Box Bridge

Swanport Bridge is a road bridge on Highway 1 in South Australia, spanning the Murray River approximately 4 km southeast of Murray Bridge. Constructed in 1979, the bridge connects the communities of Murray Bridge and Tailem Bend.

Truss Bridge:

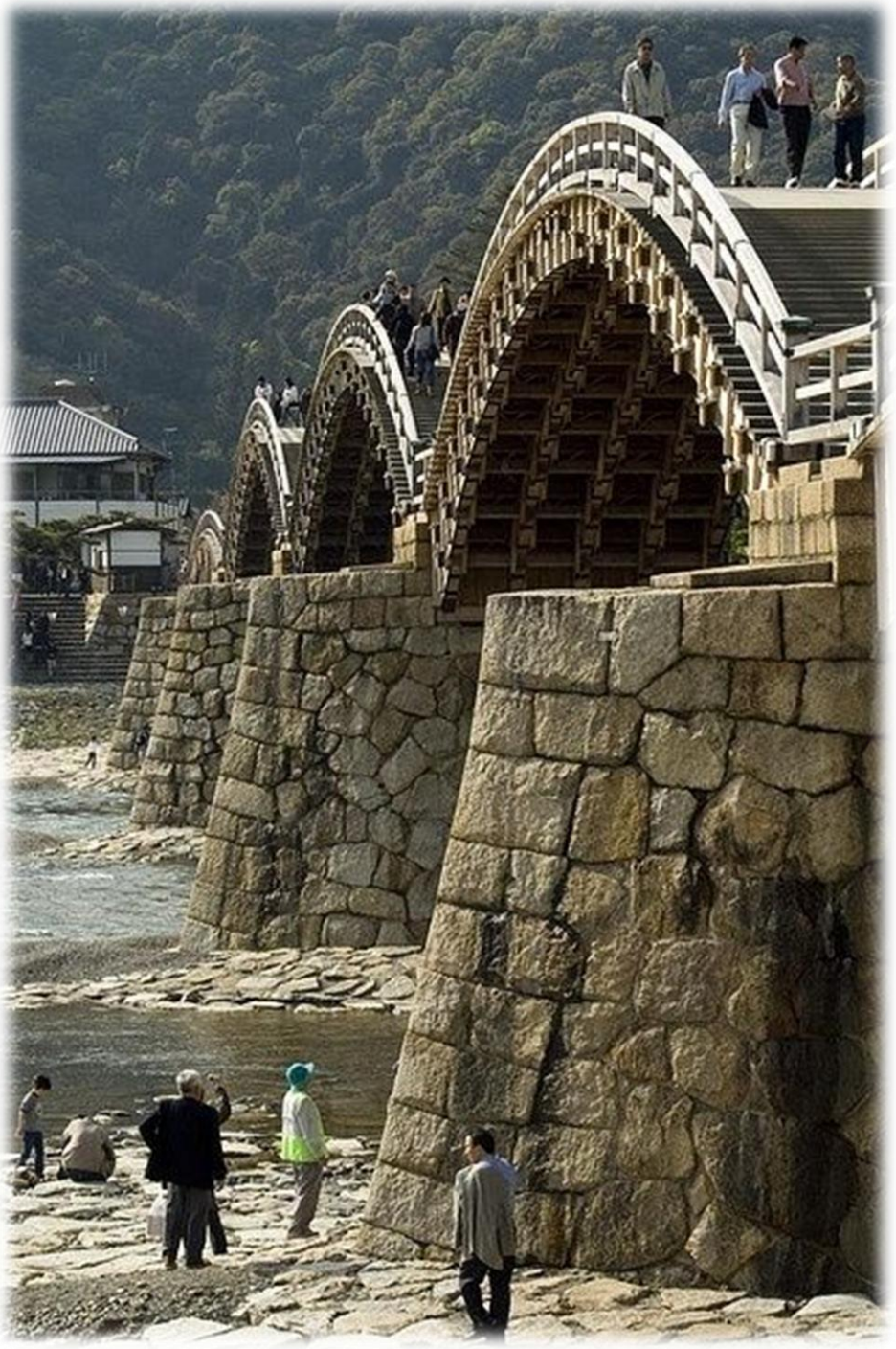
Hardinge Bridge is a steel railway truss bridge over the river Padma located in western Bangladesh. It is named after Lord Hardinge, who was the Viceroy of India from 1910 to 1916. The bridge is 1.8 kilometers (1.1 mi) long.

The Howrah Bridge is a cantilever truss bridge with a suspended span over the Hooghly River in West Bengal, India. Commissioned in 1943, the bridge was originally named the New Howrah Bridge, because it replaced a pontoon bridge at the same location linking the two cities of Howrah and Kolkata (Calcutta). On 14 June 1965 it was renamed Rabindra Setu, after the great Bengali poet Rabindranath Tagore, who was the first Indian and Asian Nobel laureate. It is still popularly known as the Howrah Bridge.



Arch Bridge:

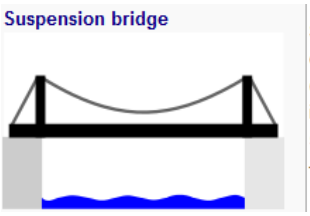
Arch Bridges are Aesthetically Beautiful.



The Old Samurai Bridge, Japan

The Alcántara Bridge (also known as Puente Trajan at Alcantara) is a Roman stone arch bridge having 194m length built over the Tagus River at Alcántara, Spain between 104 and 106 AD by an order of the Roman Emperor Trajan in 98. It bears the inscription Pontem perpetui mansurum in saecula (I have built a bridge which will last forever) on the archway over the central pier.

Suspension Bridge:



Suspension bridges are suspended from cables. The earliest suspension bridges were made of ropes or vines covered with pieces of bamboo. In modern bridges, the cables hang from towers that are attached to caissons or cofferdams. The caissons or cofferdams are implanted deep into the floor of a lake or river. Sub-types include the simple suspension bridge, the stressed ribbon bridge, the underspanned suspension bridge, the suspended-deck suspension bridge, and the self-anchored suspension bridge.

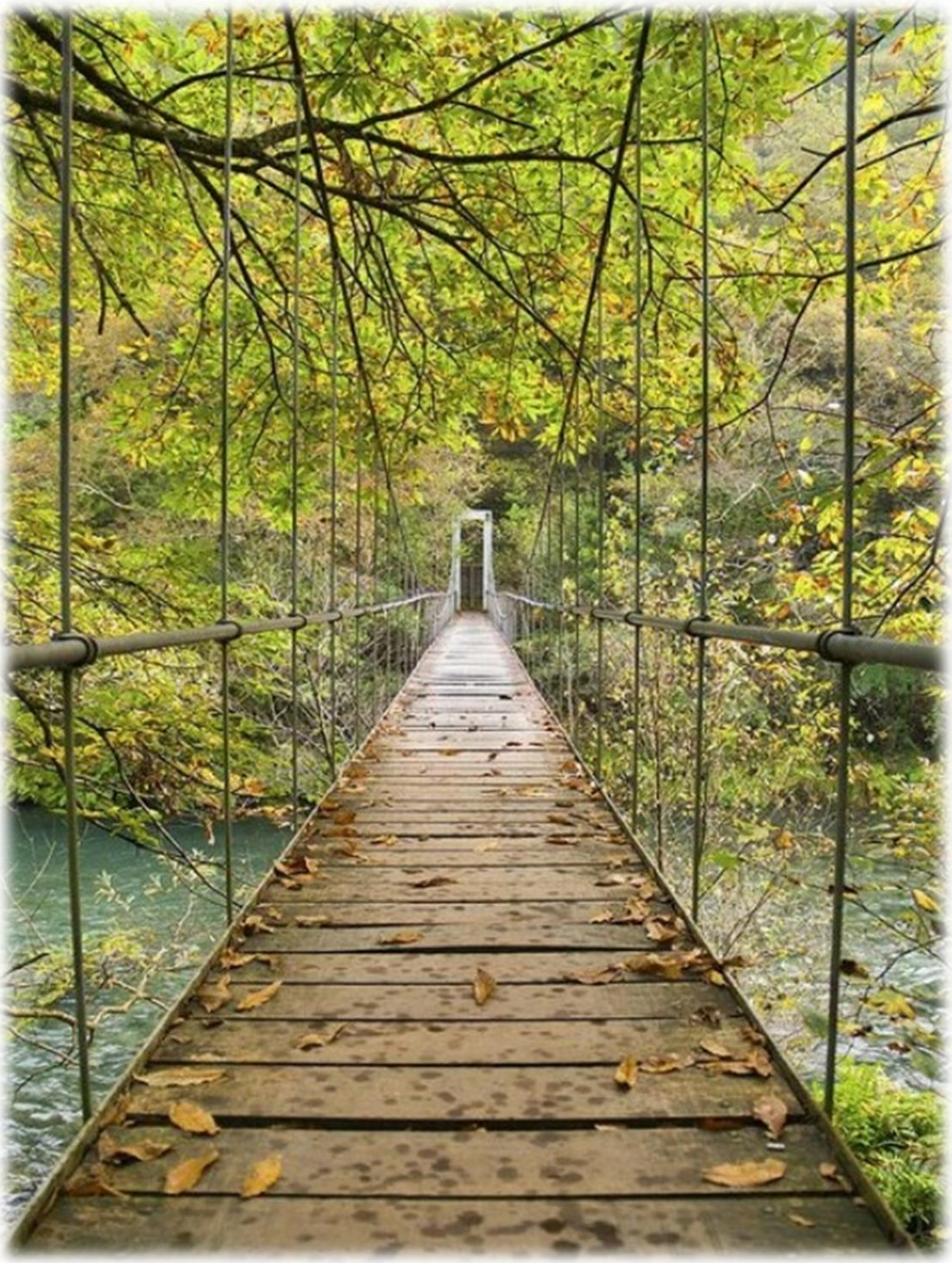
The longest suspension bridge in the world is the 3,909 m (12,825 ft) Akashi Kaikyō Bridge in Japan.

George Washington Bridge,USA

October 24, 1931; 82 years ago (upper level)

August 29, 1962; 51 years ago (lower level)

Spider Bridge , South Africa



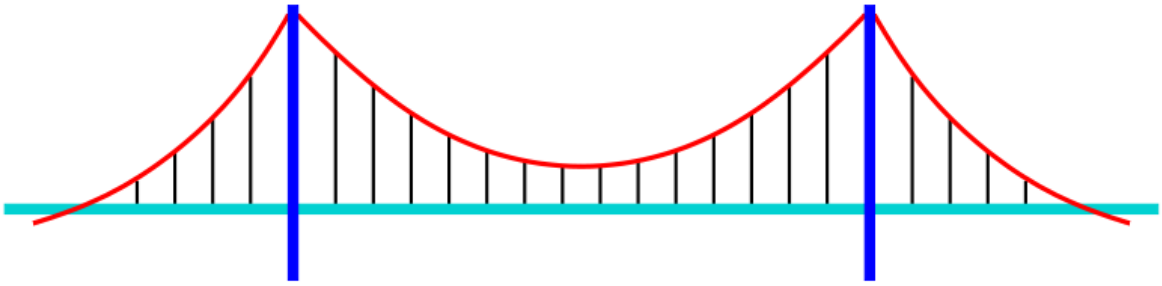
This plank suspending bridge is in Spain

Akashi Kaikyō Bridge,Japan(1998)

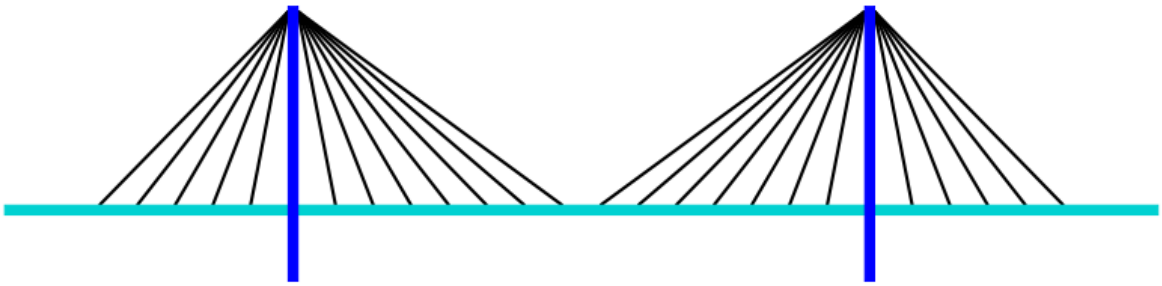
The Akashi Kaikyō Bridge also known as the Pearl Bridge, links the city of Kobe on the mainland of Honshu to Iwaya on Awaji Island, in Japan. It crosses the busy Akashi Strait (Akashi Kaikyō in Japanese). It carries part of the Honshu-Shikoku Highway.Since its completion, in 1998, the bridge has the longest central span of any suspension bridge in the world, at 1,991 metres (6,532 ft)It is one of the key links of the Honshū-Shikoku Bridge Project, which created three routes across the Inland Sea.

Scary Suspended Bridge

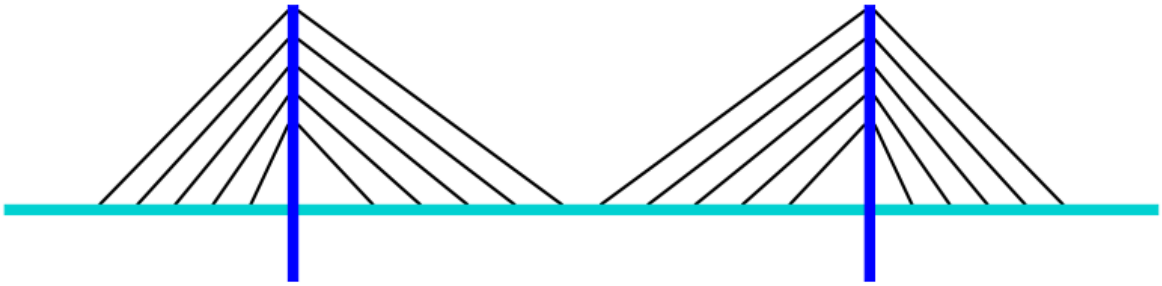
Cable Stayed Bridge: A cable-stayed bridge has one or more towers (or pylons), from which cables support the bridge deck.There are two major classes of cable-stayed bridges: harp and fan.



Suspension Bridge



Cable Stayed Bridge(FAN)



Cable Stayed Bridge(HARP)

ANZAC Bridge,Sydne,Australia(1995)

The ANZAC Bridge or Anzac Bridge (both forms are used by the Roads and Traffic Authority), replacing the earlier Glebe Island Bridge, is a large cable-stayed bridge spanning Johnstons Bay between Pyrmont and Glebe Island (part of the suburb of Rozelle) in proximity to the central business district of Sydney, Australia. The bridge forms part of the Western Distributor leading from the Sydney CBD and Cross City Tunnel to the suburbs of the Inner West and Northern Sydney.

Total Length: 806m

Abdoun Bridge,Amman,Jordan

Wadi-Al-Leban Bridge(1997) Riyadh, Saudi Arabia

Length: 763m

Russky Bridge(2012),Russia

The Russky Bridge is a bridge built across the Eastern Bosphorus strait, to serve the Asia-Pacific Economic Cooperation that took place in Vladivostok in 2012. The bridge connects the mainland part of the city (Nazimov peninsula) with Russky Island, where the main activities of the summit took place. The bridge was completed in July 2012 and opened by Russian Prime Minister Dmitry Medvedev. On September 3, 2012, the bridge was officially given its name.

This is the longest cable stayed bridge in the world having total length of 1104m

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