Bridges

Iwakurojima Bridge, Japan

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Rama VIII Bridge, Thailand

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Cable-Stayed Bridges in Action

Cable-Stayed Bridges

- Modern, increasingly popular choice
- Able to span long lengths ~ 1200m
- Strong structures
- Example: Millau Viaduct in southern France, completed in 2004

Millau Viaduct, France

R. Oettle

Construction

Outward construction in stages

- Towers constructed first
- Deck constructed outwards from the towers little by little
- Forces and structure balanced by symmetric construction
- Cables transfer the force from weight of deck to ground
- The cables must be placed accurately so that they each take some of the force and the bridge stays stable

Flint & Neill Partnership

Construction

Two-part construction

- All towers built first
- Deck is pushed out from one tower, across the gap to reach the next tower, and so on until it reaches the other end of the bridge
- The deck is kept in place by the cables which help transfer the forces to the supports in the ground

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Millau Viaduct

Millau Viaduct

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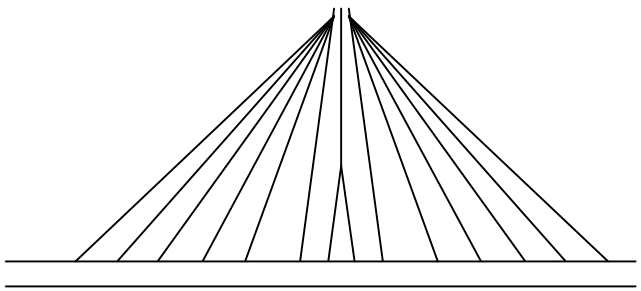
Types of Cable-Stayed Bridge
Fan

- Fan bridges: all cables are connected at one point at the top of the tower
- Limit on the number of cables that can be connected at one point (the top of the tower)
- Generally fairly small bridges since limited number of cables



Passerelle Bridge, Strasbourg *Traroth*, Licensed under the GNU Free Documentation License
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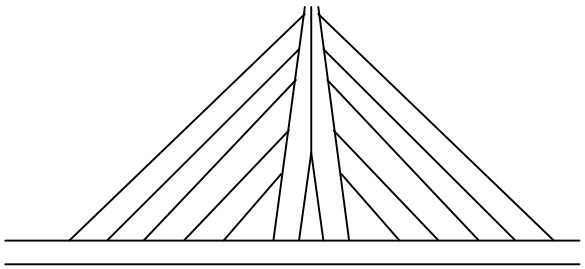
Types of Cable-Stayed Bridge
Harp

- Harp bridges: cables are connected at different points down the tower
- No difficulty in fitting in lots of cables down the tower
- Generally longer and larger than fan bridges
- Can carry heavier loads since they have more cable



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Leonard P.Zakim Bridge, Boston