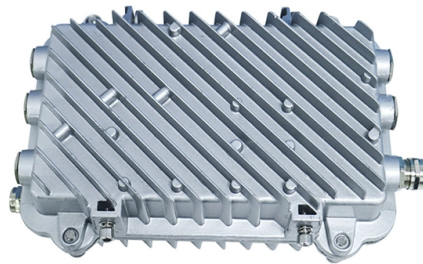


Bridge pillars and trellises



Overview

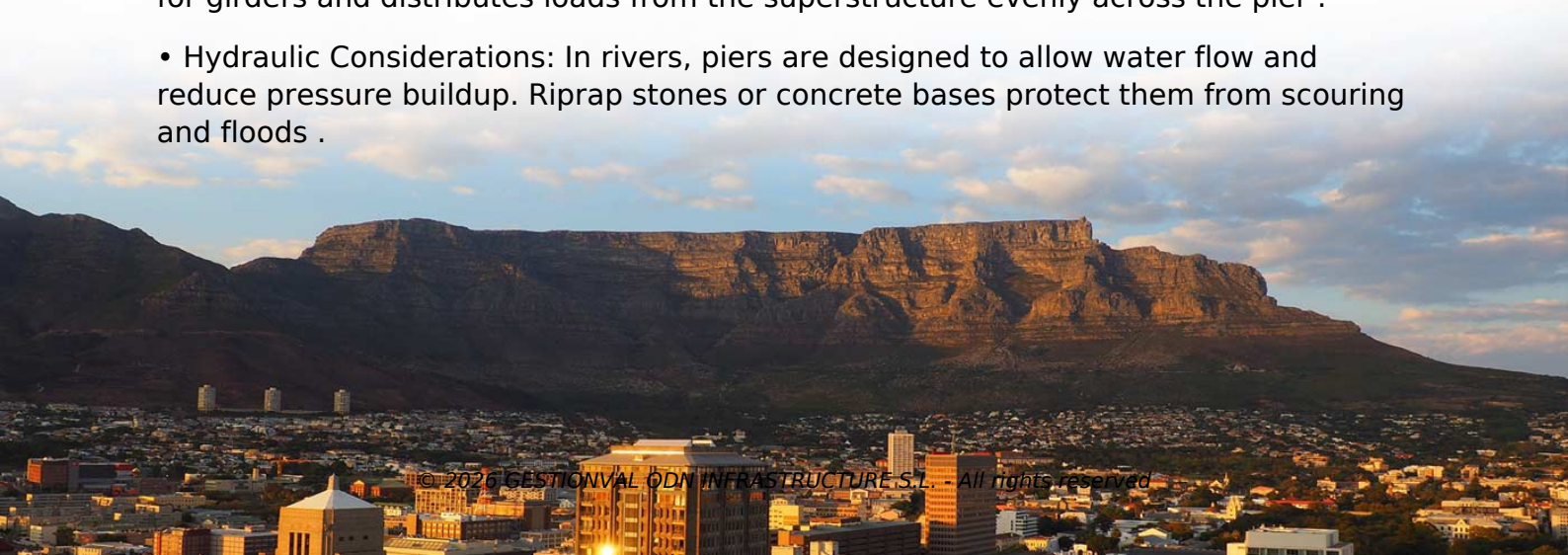
Parts of a Bridge: Components & Functions Explore bridge parts including deck, piers, abutments, and bearings. Learn the role of each How Do Bridge Pillars.

Key Takeaways

Bridge pillars (piers) support the bridge superstructure and transfer loads to the foundation, while trellises (trusses) are structural frameworks that distribute forces efficiently across spans. Bridge Pillars (Piers)

Bridge pillars, also known as piers, are vertical structures that support the bridge deck and superstructure, transferring loads down to the foundation . They are essential for multi-span bridges, especially over rivers or valleys, where a single span cannot cover the distance. Key aspects include:

- Construction: Piers are often built using reinforced concrete or steel and may be founded on piles, caissons, or spread footings depending on soil and water conditions .
- Pier Caps: The top of a pier, called a pier cap or headstock, provides a seating area for girders and distributes loads from the superstructure evenly across the pier .
- Hydraulic Considerations: In rivers, piers are designed to allow water flow and reduce pressure buildup. Riprap stones or concrete bases protect them from scouring and floods .



- Design Factors: Pier shape and size depend on aesthetics, site constraints, and load requirements. They must resist bending, shear, and compressive forces from traffic and environmental loads .

Trellises (Trusses)

Trellises in bridge engineering usually refer to truss structures, which are frameworks of interconnected triangles that efficiently distribute loads:

- Function: Trusses transfer forces from the deck to the piers or abutments, reducing bending moments in beams and allowing longer spans with less material .
- Design: Trusses can be made of steel or timber and are often used in the superstructure of bridges. The triangular configuration ensures stability and distributes tension and compression forces effectively .
- Applications: Common in both pedestrian and vehicular bridges, trusses can be seen in through-truss, deck-truss, and cantilever designs, providing both structural efficiency and aesthetic appeal .

Integration of Pillars and Trellises

In a typical bridge:

- Piers support the vertical loads and act as anchor points for the superstructure.
- Trusses or trellises span between piers, distributing loads and resisting bending and shear forces.
- Together, they create a stable, durable bridge capable of handling traffic, wind, and environmental stresses . Understanding the interplay between pillars and trellises is crucial for designing bridges that are both strong and efficient, ensuring safety and longevity while optimizing material use.

Article Content

Cable Stayed Bridge – Types, Components and Construction

A cable-stayed bridge is a type of bridge where the deck is directly supported by cables connected to one or more

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This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

