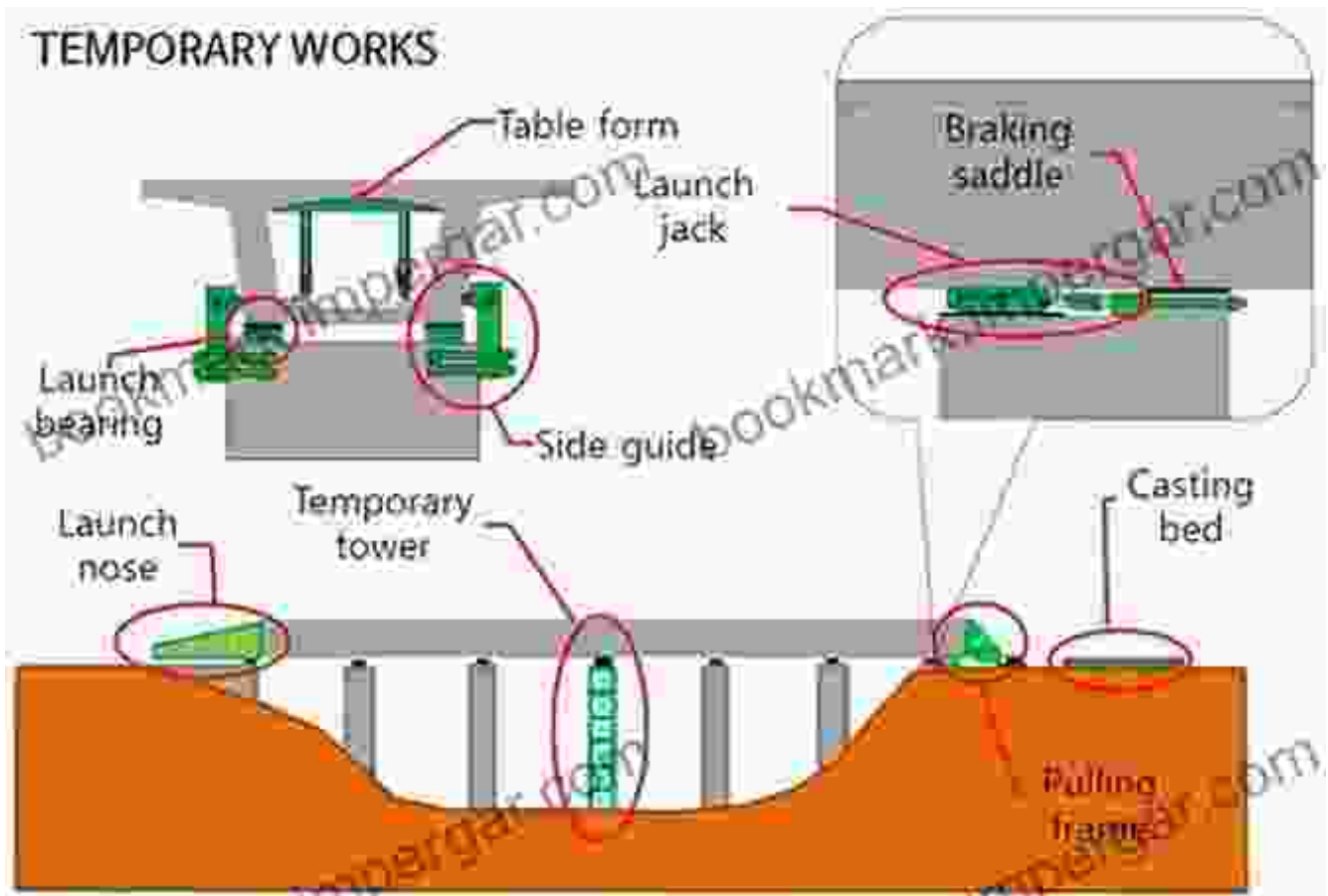


Control Of Construction Stresses In Launched Bridges



Launched bridges are an increasingly popular bridge type due to their efficiency, long spans, and aesthetic appeal. However, the construction of launched bridges can induce significant stresses in the structure, which must be properly managed to ensure the bridge's safety and performance. This article provides a comprehensive guide to the control of construction stresses in launched bridges, covering the following topics:

Understanding Construction Stresses



During construction, launched bridges are subjected to various types of stresses, including:



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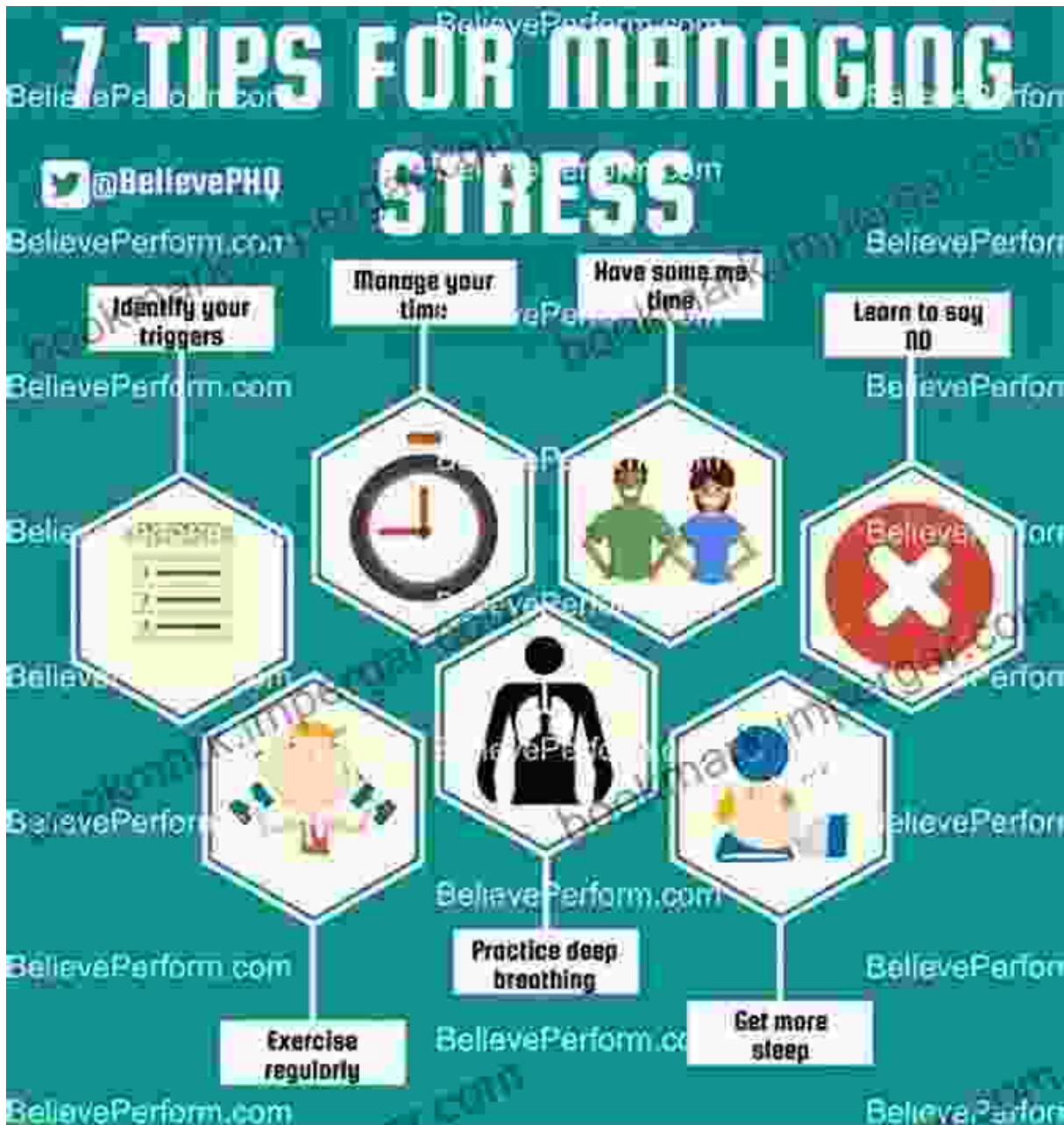
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Language : English
 File size : 5024 KB
 Text-to-Speech : Enabled
 Screen Reader : Supported
 Enhanced typesetting : Enabled
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- Dead loads: The weight of the bridge itself, including the superstructure, substructure, and any construction equipment
- Live loads: Traffic and other moving loads that act on the bridge during operation
- Construction loads: Loads imposed during construction, such as the weight of formwork, scaffolding, and construction equipment
- Thermal stresses: Stresses caused by temperature changes during construction
- Creep and shrinkage stresses: Stresses caused by the long-term deformation of concrete

Methods for Controlling Construction Stresses

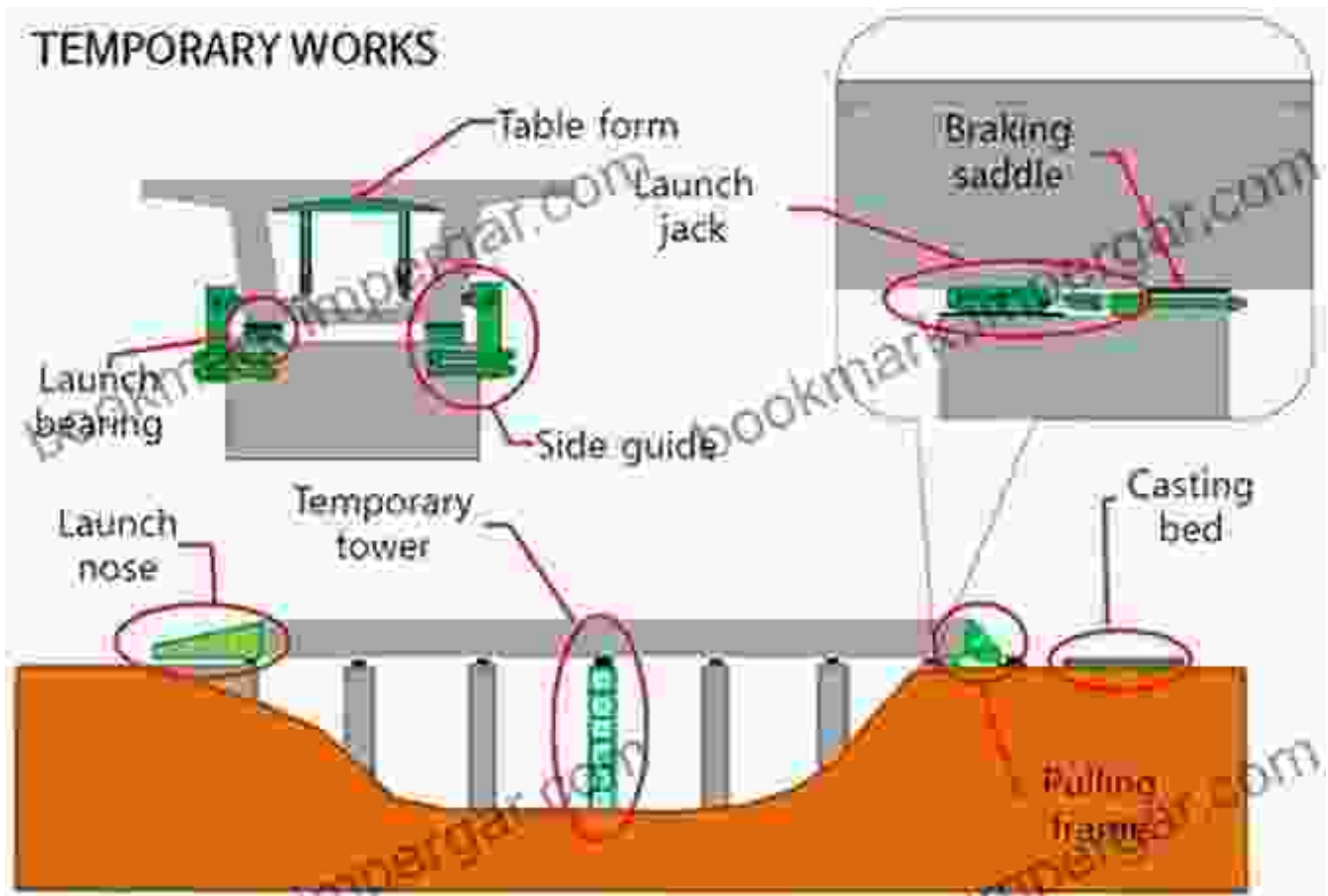


The control of construction stresses in launched bridges involves various techniques, including:

- **Structural design:** The bridge's structural design should be optimized to minimize stresses and ensure the safety and performance of the bridge

- Construction sequencing: The sequence of construction operations should be carefully planned to minimize the accumulation of stresses
- Stress monitoring: Sensors can be installed to monitor stresses in the bridge during construction and provide early warning of potential problems
- Temporary supports: Temporary supports can be used to support the bridge during construction and reduce stresses
- Pre-stressing: Pre-stressing techniques can be used to introduce compressive stresses in the bridge, which can offset tensile stresses caused by construction loads
- Post-tensioning: Post-tensioning techniques can be used to introduce tensile stresses in the bridge after construction, which can counteract creep and shrinkage stresses

Case Studies



The following case studies illustrate successful applications of construction stress control techniques in launched bridges:

- Sidu River Bridge, China: This bridge was constructed using a cantilever launching method, and temporary supports were used to minimize stresses during construction
- Sutong Bridge, China: This bridge was constructed using a segmental launching method, and pre-stressing and post-tensioning techniques were used to control stresses
- Akashi Kaikyo Bridge, Japan: This bridge was constructed using a cantilever launching method, and a sophisticated stress monitoring system was used to ensure the safety of the bridge

The control of construction stresses in launched bridges is a critical aspect of bridge engineering, ensuring the safety and performance of the bridge. By understanding the different types of stresses, implementing effective stress control techniques, and learning from successful case studies, engineers can successfully design and construct launched bridges that are both efficient and durable.



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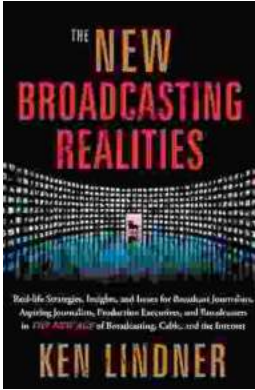
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