



# RINGSCAFF

## EDGAR CARDOSO BRIDGE

### FIGUEIRA DA FOZ

PORTUGAL

#### ABOUT TUBOS VOUGA

Tubos Vouga – Sistemas de Engenharia S.A. was founded in 1966 as a scaffolding service provider for the building and shipyard industries, later expanding into shoring for large-scale projects. The company is a well-established name in its field, with extensive experience across civil engineering and a wide range of industrial sectors. By continuously following technical developments and maintaining high standards in safety and quality, Tubos Vouga has built a strong reputation for delivering reliable, engineered access solutions.

More information:  
[www.tubosvouga.pt](http://www.tubosvouga.pt)

#### PROJECT QUICK FACTS

- **Project:** Rehabilitation of the Edgar Cardoso cable stayed bridge
- **Duration:** 35 months (Nov 2022 – Oct 2025)
- **Main works:** Replacement of stay cables and renewal of reinforced concrete surfaces
- **Scaffolding system:** ~600 tonnes of RINGSCAFF modular scaffolding
- **Key challenge:** Phased tower access and high-altitude suspended structures
- **Planning support:** Precision 3D modelling for alignment & logistics



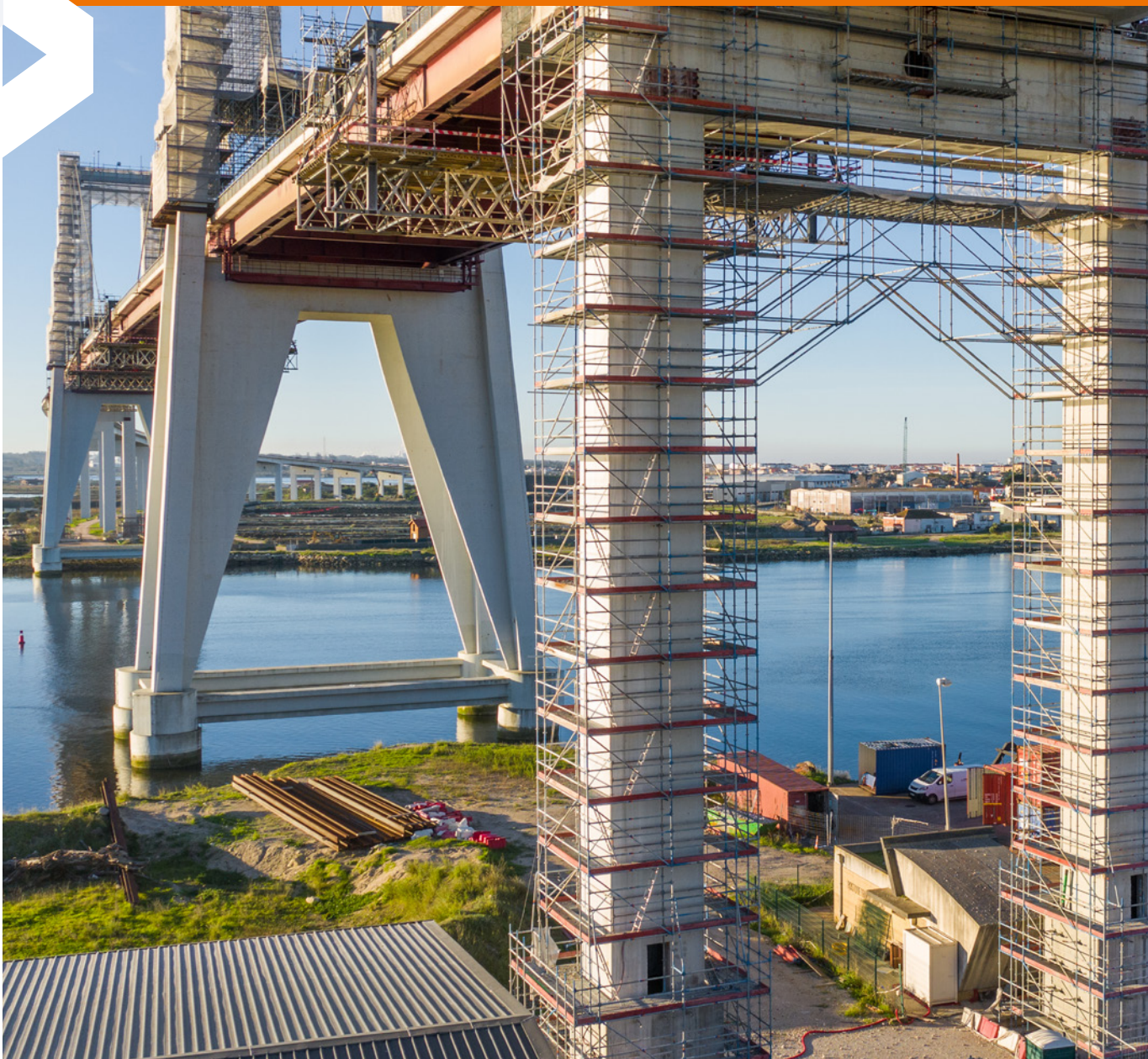
## > ABOUT THE PROJECT

### A LANDMARK BEYOND ROUTINE REHABILITATION

The Edgar Cardoso Bridge in Figueira da Foz, Portugal, represents a key milestone in the country's infrastructure history as its first cable-stayed bridge. And like many structures exposed to time and weather, it eventually needed more than routine maintenance.

The rehabilitation spanned nearly three years and focused on replacing the stay cables and renewing the reinforced concrete surfaces. But to make that possible, one thing had to come first: safe, reliable access to every single part of the structure, no matter how complex or how high.

On behalf of Infraestruturas de Portugal (IP), Tubos Vouga delivered a scaffolding solution using RINGSKAFF that made exactly that possible.





## SCAFFOLDING CHALLENGE

### ACCESS WITHOUT COMPROMISING STRUCTURAL BALANCE

Working on a cable-stayed bridge is inherently complex. Its design relies on a finely balanced interaction between towers, deck, and tensioned stay cables, meaning that any intervention must be carefully planned to maintain structural stability while ensuring safe access to exposed and hard-to-reach areas.

Across the Edgar Cardoso Bridge, this meant providing continuous access to towers, transition piers, and access viaducts, while enabling multiple activities to run in parallel including cable replacement, surface treatment, and inspections.

The towers proved particularly demanding. The upper sections required long-term access for cable works, while lower areas followed a different schedule. This called for a scaffolding concept capable of adapting to varying timelines within the same structure.

On the access viaducts, the work was made more challenging by the complex shape of the deck, the presence of external post-tensioning cables, and the need to operate at height, often above active road and rail traffic.

Logistically, the project was equally demanding. Limited storage space on site required precise coordination of material deliveries, aligned closely with the erection sequence.



## ENGINEERING SOLUTION TAILORED SCAFFOLDING FOR COMPLEX DEMANDS

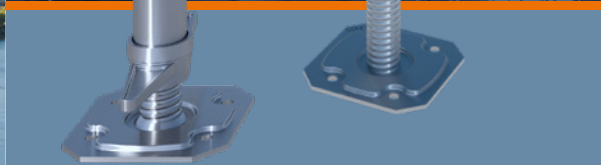
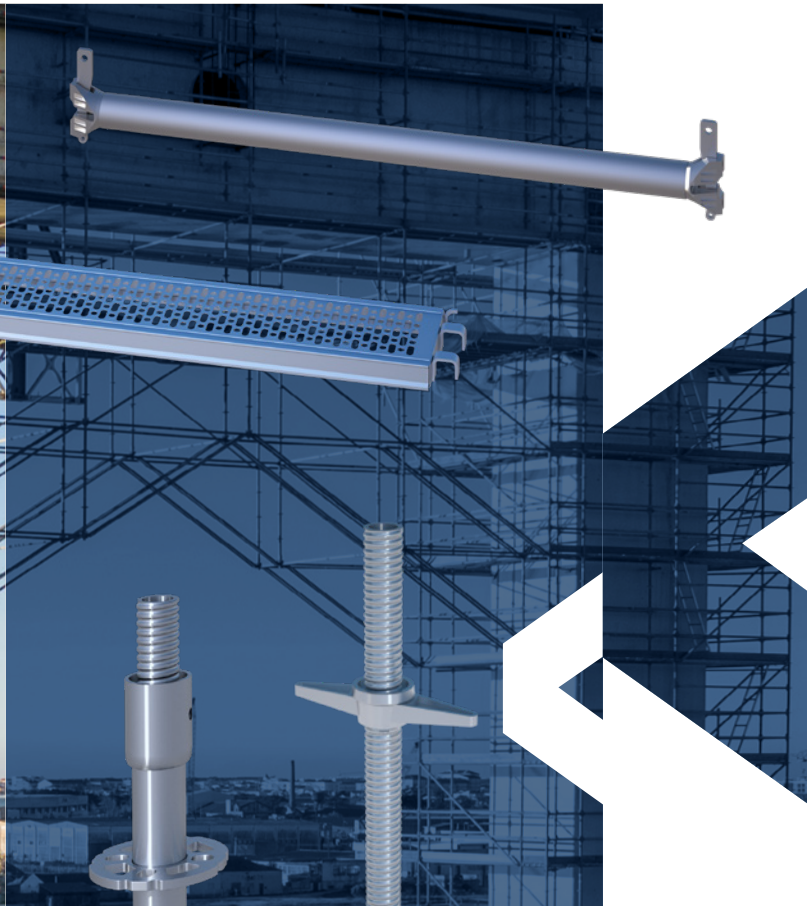
To meet these requirements, the scaffolding concept was developed with a strong focus on adaptability, structural independence, and efficient execution. Approximately 600 tonnes of RINGSKAFF were installed across the bridge, configured to respond to the specific demands of each structural area rather than applying a one-size-fits-all solution.

On the North and South Towers, the scaffolding was divided into two independent sections. The upper section, required for extended access during cable replacement, was supported by metal profiles fixed directly to the bridge deck. This approach allowed long-term use without affecting the lower structure and contributed to a more efficient use of materials.

A suspended walkway was integrated at the top of the towers to enable precise work on the upper beam. Its installation required careful alignment and levelling to ensure a consistent connection between both sides of the structure. For the access viaducts, suspended scaffolding solutions were developed to accommodate the complex geometry and existing structural elements. Truss systems, supported by tension members and interconnected for stability, provided a reliable working platform despite the challenging conditions.

To optimise both safety and efficiency, these truss structures were pre-assembled at ground level and then lifted into position by crane. This significantly reduced the time spent working under suspended conditions while maintaining a controlled and predictable assembly process.

Throughout the project, detailed 3D planning supported material management, sequencing, and coordination. This proved essential in maintaining progress and efficiency, particularly given the limited storage space available on site.



## RINGSKAFF FACTS

RINGSKAFF is one of the most widely recognised modular scaffolding systems worldwide. Known for its exceptional versatility and stability, RINGSKAFF has been independently tested and certified by numerous industry experts and institutions.

- **Quick and easy assembly** thanks to the proven Ringlock connection system
- **High durability** with a load capacity of up to 6.0 kN/m<sup>2</sup>
- **Dual-purpose use** as scaffolding and/ or shoring system
- **Efficient handling** with easy stacking, fewer loose parts, and lower transport costs
- **Certified compatibility** with other leading modular scaffolding systems



## ➤ ABOUT SCAFOM-RUX

Scafom-rux is a global manufacturer, distributor, and rental provider of high-quality scaffolding and shoring systems. Our dedicated team understands the unique demands of professionals across industries such as construction, events, oil & gas, mining, and shipbuilding.

By combining industry insight with technical expertise, we help you find the best solution for even the most complex scaffolding projects – worldwide.

### *Planning a challenging project?*

*We're here to support you:*

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For more information about our full product range and services, visit: [www.scafom-rux.com](http://www.scafom-rux.com)

STRONGER. **TOGETHER.**



Watch the project video here!

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