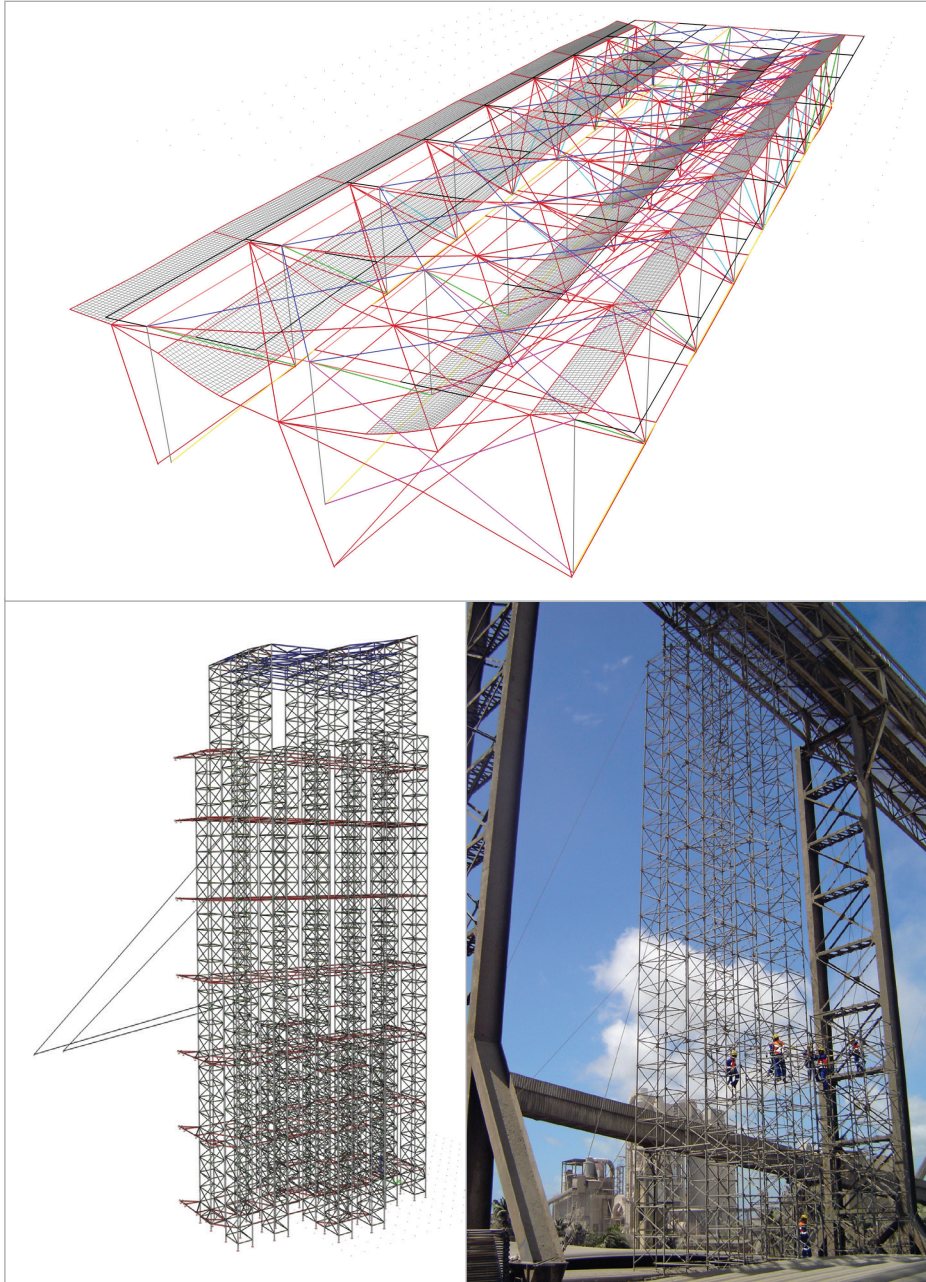


Shoring Structure for a Cement Transportation System - Nordeste, Brazil



Characterisation

In this project an exceptional structure was used: a 40-m-high tubular tower, 48 mm diameter posts, diagonals and bars, stiffened by spatial tubular trusses with the diameter of 48 mm coupled with the towers by braces; composed of eight stayed cables with the diameter of 12.7 mm.

Modelling technique and analysis

For the first phase of the analysis, a model of the transporter structure was made using finite elements of bars and plates simulating the frames of the steel and carrier base. The model was loaded with self-weight, wind and live load, and then submitted to a linear static analysis. The support of the first structure was defined between this structure and adjacent steel columns - the support could be changed if necessary, depending on the transporter maintenance needs, as well as the beam support that makes the transition between the transporter and the shoring towers.

The reactions of this first model were then transferred to a second numerical model that simulated the behaviour of the shoring structure, composed of tubular towers, frames and stayed cables. This model was loaded with self-weight and wind. The geometric imperfections derived from the assembly phase were considered on the model according to the national standard code.

The second numerical model was submitted to a static analysis, geometric non-linear, using the Newton-Raphson method for the solution to the equations.

About Scia Engineer

Scia Engineer was the best solution found to attend to our focus: scaffolding structures connected with infrastructure and industrial projects. The main benefit was accurate results and fast and easy modelling. Scia Engineer ensured a new level of quality and precision of scaffolding projects, which allowed for efficient and cheaper projects.

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In 1969, the engineer João Ricardo Mendes returned from France to revolutionise the way to design and build tubular structures. The engineering concepts acquired during the years of study, combined with work experience in the largest company in the French sector, were essential to transform his office into one of the most respected companies in the industry.

Founded in Recife in October 1969, Estub was a pioneer in the development of tubular structures. In 1975 a partnership with Entrepose started that lasted about 12 years and allowed to bring to Brazil a bit of European technology, which has been carefully adapted to the reality of the internal market.

Through large projects such as subways, dams and bridges, the brand could be consolidated by demonstrating technical and executive competence.

Project information

Owner	Cement Manufacturer Company
Architect	Estub Sistemas Construtivos
General Contractor	Cement Manufacturer Company
Engineering Office	Estub Sistemas Construtivos
Location	Nordeste, Brazil
Construction Period	10/2012 to 02/2013

Short description | Shoring Structure for a Cement Transportation System

In this project an exceptional structure was used: a 40 m-high tubular tower, 48 mm diameter posts, diagonals and bars, stiffened by spatial tubular trusses with the diameter of 48 mm coupled with the towers by braces; composed of eight stayed cables with the diameter of 12.7 mm.

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