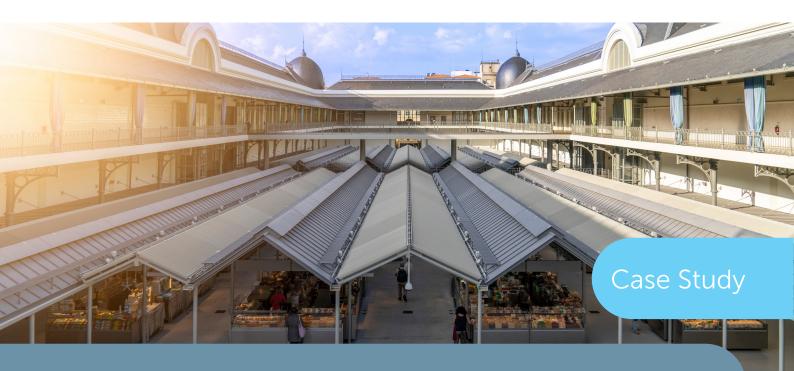
# Túnel do Bolhão Oporto, PT







**Property Owner** Câmara Municipal do Porto



Main Contractor TEIXEIRA DUARTE

**Project Manager** MC2E - Consultores de Engenharia, Lda.



Architect Nuno Valentim, Arg.

### Structural Engineer JCT - Consultores de Engenharia, Lda.

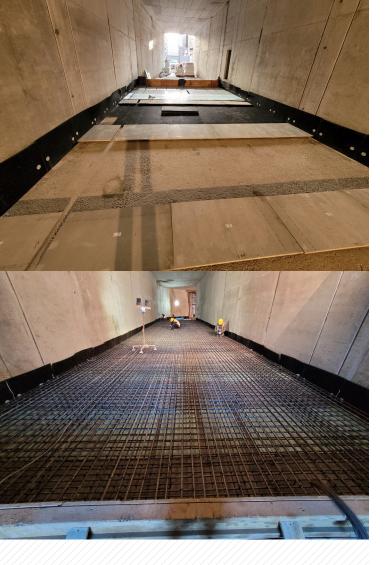
## **OVERVIEW**

Túnel do Bulhão was designed and constructed as part of the extensive rehabilitation of the Mercado do Bolhão, a historic market in Oporto that dates back to 1839. The tunnel connects the streets of the Commercial Athenaeum of Oporto and Alexandre Braga, passing beneath Formosa Street and a residential block. Its primary function is to facilitate vehicle traffic for market deliveries, enabling efficient loading and unloading without disrupting street-level traffic.

The tunnel's design focused on minimizing structural vibrations and noise, which can be a concern with increased car and truck traffic servicing the market. To address this, specialized infrastructure solutions were implemented to protect the surrounding residential buildings from the impacts of tunnel operations.

#### **Stravibase SEB**

- Structural elastomer bearings used for Building Base Isolation.
- Comprise a series of elastomer pads laminated to formwork on one or both sides.
- These bearings are designed to meet natural frequencies between 6 Hz and 20 Hz. The elastomer pads are custom made and manufactured in a variety of dimensions to accommodate acoustic design loads up to 10 MPa.



## SOLUTION

To ensure optimal performance and safety, various infrastructures were isolated based on their specific load requirements.

This was achieved using Stravibase SEB, which is designed to maintain a natural frequency of 8 Hz.

The project design load for this solution was 9,300 kN.

## AT A GLANCE

#### CHALLENGES

- Reduze structural vibrations and noise generated by car traffic in the tunnel to avoid disturbing the residential block above.
- Need of high performance isolations systems adapted to different load range.

#### BENEFITS

- Custom made isolation system optimized to the technical specifications.
- Long-lasting and maintenance-free structural solution.

REUTENBEEK 9-11, 3090 OVERIJSE, BELGIUM T +32 2 687 79 07 / F +32 2 687 35 52 INFO@CDM-STRAVITEC.COM / WWW.CDM-STRAVITEC.COM 500 m<sup>2</sup> Sravibase SEB

