

Túnel do Bolhão

Oporto, PT



Case Study



Property Owner

Câmara Municipal do Porto



Main Contractor

TEIXEIRA DUARTE



Project Manager

MC2E - Consultores de Engenharia, Lda.



Architect

Nuno Valentim, Arq.



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

- Reduce 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.

500 m²

Stravibase
SEB

