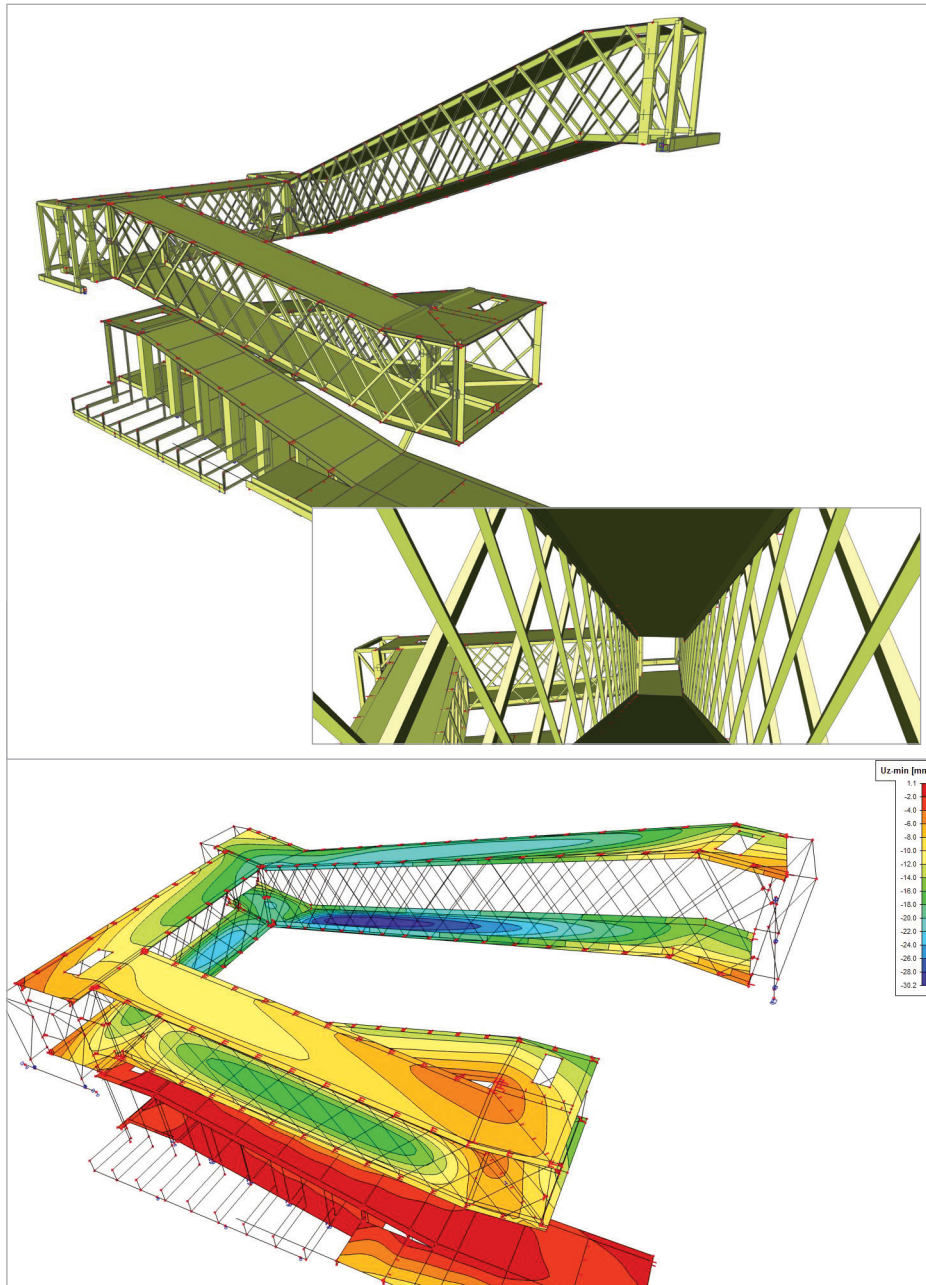


## Tubes at the 'De Grote Post' Cultural Centre - Oostende, Belgium



The listed post office, designed by Gaston Eysselinck in 1953, is being converted into a dynamic cultural centre. Situated between the old building (1953) and the new rear edifice, 25 m-long transparent tubes guide the public into the various rooms in the buildings and animate the outside space, an amphitheatre beyond which the tubes are suspended. The tubes allow the original structure of the building to be as visible as possible. They are constructed from a single material: the floor and roof slabs in solid steel plate appear to be stitched together with a fine steel thread. The solid steel is also the surface finish so that the tubes look the same from every side.

By choosing a dense mesh work of diagonal elements, the thickness of the steel plates and posts could be reduced to a minimum.

At the points of junction between the diagonals and the plates, tight Vierendeel cells transfer the transversal forces of the trusses.

The sewing stitches form oblique elements which, together with the floor slabs and roof sheeting, form the horizontal compression and tension components of a one-storey-high structural frame. The oblique posts are separated into two crisscross layers and give the façades a checkered pattern. The posts evolve from thick square tubes on each layer into thin steel plates which clearly demonstrate the forces at work over the length of the posts. When in one layer the posts are in tension, the cross posts in the other layer are in compression. The transition from tension to compression allows the thickness of the stitching, the steel thread, to vary in the two layers. Through smaller stitches, the size of the steel posts can be reduced to form a close-knit pattern that is used architecturally.

At the connections of the tubes to the existing buildings slide bearings avoid forces created by thermal expansion, to pass on the existing buildings.

The tubes were compiled as four bridges to one entire unit. Each tube was prefabricated in a steel atelier and lifted as one piece over the buildings. Despite the total weight of 40 tonnes per tube and its manageable sizes,

the assembly had to be done with great precision. Because of the height of the surrounding buildings and the small street from where the operation took place, it was no easy feat. Therefore, the assembly could not take place with wind speeds of more than 25 km/h.

The added value of Scia in this project was the possibility to create a global 3D model of the entire construction. An accurate determination of the section models resulted in a very precise dimensioning of the steel elements. We used the steel control function to check the stability of the posts.

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studieburomouton bvba

Studieburomouton was founded in mid-2002 and created through the independent practice of architect-engineer Guy Mouton. Studieburomouton is a structural design office that has acquired a special position within the Flemish architectural landscape. Conducting a stability study for a design goes much further than simply calculating a given situation. The office is ready to be involved in the architect's very earliest design stage. Its main aim is to provide a stability study in which the interaction with the architect strengthens the design. The main endeavour of Studieburomouton is to arrive together with the designers at an intrinsically superior design process and structure. Studieburomouton does not envisage architecture and stability as separate entities but as a powerfully expressed consolidation among partners that creates a superior final project.

## Project information

Owner	City of Ostend
Architect	B-architecten
General Contractor	MBG-Strabag
Engineering Office	Studieburomouton
Location	Oostende, Belgium
Construction Period	12/2010 to 12/2012

## Short description | Tubes at the 'De Grote Post' Cultural Centre

In the beating heart of the former post office transparent tubes link the old building with the new rear building. The tubes are constructed from a single material: the floor and roof slabs in solid steel plate appear to be stitched together with a fine steel thread. The stitches form together with the floor slabs and roof sheeting the horizontal compression and tension components of a one-storey-high structural frame. The posts, evolved from thick square tubes on each layer into thin steel plates, clearly demonstrate the forces at work over the length of the posts.

