

The New 140 m Long Glass Canopy at the Heart of Paris

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Abstract

The Fondation Cartier pour l'art contemporain will open in 2025 its new location on the heart of Paris; a renovated building formally known as Le Louvre des Antiquaires next to the Louvre museum. The façade, designed by Ateliers Jean Nouvel with the assessment of T/E/S/S atelier d'ingénierie, and built by Bellapart, strikes for its dimensions and the variety of constructive solutions adopted, including large dimension glass modules, anti-burglary swing doors, sliding doors or glass floors. The most visible part of the project is a glass canopy that spans for over 140 m along the rue Saint Honoré. The canopy is composed of 84 laminated glass panels of variable width (ranging from 1119 mm to 3050 mm) and 3493 mm high. Each panel incorporates 4 holes where point fixings are attached and fixed to the stainless steel supporting structure, which simultaneously functions as a rainwater drainage system. The structure is composed by an upper continuous profile, and an intermediate gutter-shaped profile from which the downpipes-struts emerge to the columns of the building. The weight of the struts is in part supported by the glass panels, making the glass structural. An extensive testing plan according to the French standards has been designed in order to contrast the calculations. The testing carried out include two full-scale mock-ups to analyse the behaviour of the canopy against the wind loads and against accidental impacts as well as its post-breakage behaviour. The results of the testing plan where then compared to the results of the numerical analysis and structural calculations, validating the resistance and robustness of the design. This paper presents an overall view of the project and a detailed analysis of the glass canopy, with a focus on the static scheme adopted, the structural design and verifications, and the testing performed to corroborate the design.

The full paper will be published in the Glass Performance collection of the Glass Structures & Engineering journal (Springer).

Keywords

Glass canopy, Structural laminated glass

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