



TRANSLUCENT PRE-FABRICATED STRUCTURAL CAST GLASS: A new unitized U-channel assembly

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Abstract

A new type of translucent pre-fabricated structural cast glass modular assembly with high thermal performance, good light transmission and acoustic rating.

The cast glass assembly is made from project specific 404mm wide low-iron U-channel cast glass. The inner and outer channels have different surface finishes – the former to act as a white board and the latter to facilitate auto-cleaning. Two U-channels are unitized into a ‘flange-to-flange’ arrangement and are bonded together with 2-part structural silicone in a bespoke polyamide extrusion. The cast glass assembly can span in excess of 4.2m without intermediate support or vertical mullions, and the overall thickness of the façade is only 144mm.

The assembly represents an innovation in large unitized U-channel cast glass elements that have been fabricated and sealed off-site and installed on-site in modules of 4 channels wide generally, thus maintaining the quality of workmanship (especially the silicone) while facilitating a faster on-site installation than any previous U-channel cast glass façade. Windows with cast glass external louvres are also inserted into the system without additional structural elements.

Keywords: structural glass, pre-fabrication, thermal break, physical testing, mock-ups, translucency, modularisation

1 Introduction

U-channel cast glass is a low-cost cladding material which has been available on the market for over four decades. These u-channels come in a set number of profiles and widths which are broadly homogenous across the four major manufacturers’ world-wide (fig.1). Widths available are generally circa 232mm, 262mm and 330mm. As a general principle, the wider the u-channel the less vertical distance it can span as the depth of the return flanges is reduced. In the last decade, advances in toughening (tempering) processes has improved, but still requires testing to ensure the quality of the toughening.



Figure 1. Various cast glass samples from various manufacturers’ world-wide. Line up on Architect’s terrace. Photo by author.