stella
Custom Glass Hardware

Isabel Bader
Centre for the Performing Arts
Kingston, Ontario

STELLAGLASSHARDWARE.COM

Isabel Bader - Kingston, Ontario

Isabel Bader

Centre for the Performing Arts

"The architectural intent required maximum transparency in the most cost effective way possible whilst offering a high degree of thermal insulation."

The structurally glazed option for the foyers required sealed glass units with laminated glass fins to carry the deadloads from the face glass into the floor structure below.

The approved system comprised stainless steel patch plate brackets mounted onto the glass fins and capable of carrying the weight of each of the individual sealed glass units. Since there were no holes in the glass it was to be retained in place, at the corners and structurally bonded to the glass fins behind the glass to effectively transfer wind loads from the face glass to the fins, and reduce glass deflection. This proved to be a cost effective solution as a result of the reduction of hardware and the elimination of holes in the sealed glass units.

The glass fins are constructed from tempered and laminated glass with multiple layers of glass to provide redundancy in the event that one (or more) of the lites break simultaneously. For this project, two layers of 10mm tempered glass with one PVB layer, 1.52mm thick was considered adequate for the loading conditions.

Since the system was to be "bottom loaded", each fin was retained in stainless steel fin shoes top and bottom with the upper fin shoes allowing vertical movement from the connecting slab above. Vertical stainless steel fin connector splice plates were provided at the joints in the glass and these included flush mounted countersunk, high strength bolts, passing through ferrule bushings that were pre bonded into the glass fins to reduce slop movement between bolts and the glass fins. The stainless steel patch plate and deadload support brackets were integrated into the fin splice. Holes were drilled in the fins to allow support brackets to be bolted directly to the fin.

Project Hardware and Installation

Since the weight of the face glass panels was to be carried by the patch plate deadload brackets, the corners of the glass were cut at 45° and the patch plates had "diamond shaped" nylatron fittings on which the angled corners of the glass could rest. Horizontal and vertical joint width was retained at the typical thickness of 10mm. Due to the glass resting on the patch fitting supports, glass fabrication tolerances to be significantly tighter than traditionally advertised.

The glass fins were delivered to the glazing contractor's shop where ferrule bushings were set into the holes where the splice plates were to be located to ensure a snug fit when installed on site.

Since the system was to be bottom loaded, the fins needed to be installed from the bottom up and this required temporary supports for the fins until they were in place and the face glass fixed in position. Installation of the face glass was carried out from the bottom rows, upwards although this was not specifically required. As each panel was installed against Norton glazing tape, the patch plates were fastened on and held the glass in place. Structural silicone was applied between the inside face of the face glass and the glass fins. When this had cured sufficiently, the butt joints between the panels of glass were sealed for weather resistance.

A customized perimeter channel system was provided to the head, sills and jambs to thermally insulate the system and to facilitate ease of installation through the use of site applied glazing clips and dry, wedge type gaskets. In addition to providing an effective seal, this system also allowed for deflection of the structure above and ease of replacement in the future.

This system was customized specifically for the conditions and requirements of the specific project. Other projects of a similar nature would make use of similar technology but would be designed to meet the specific requirements of each project.

Isabel Bader
Centre for the Performing Arts

stella
Custom Glass Hardware

Stella Custom Glass Hardware Head Office
#105-8218 North Fraser Way
Burnaby, BC V3N 0E9
Canada

P: 604-231-5892
Info@stellaglasshardware.com

Follow Us @Stella_Glass