

HANGING BY A THREAD

by RICHARD BRIGHTLING

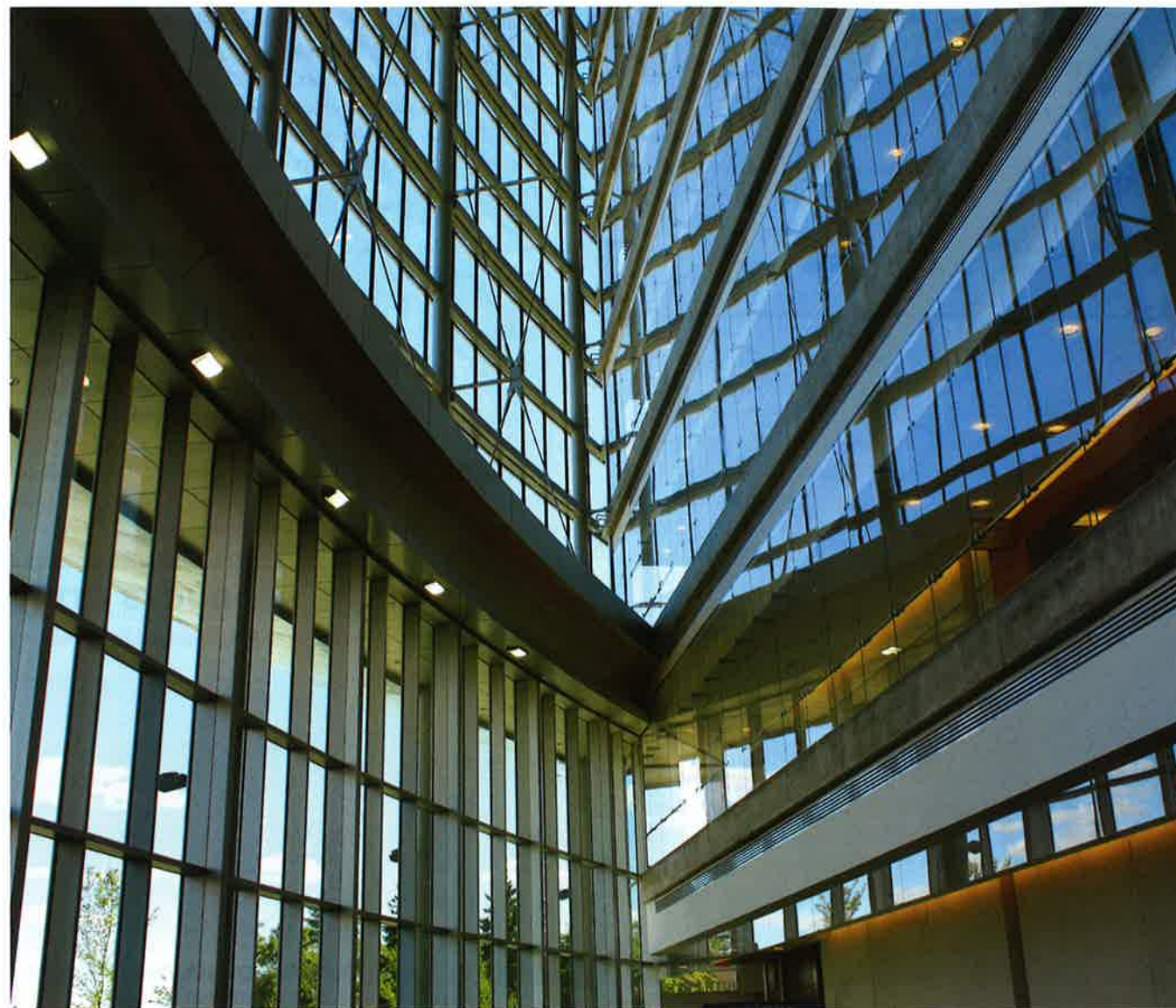


Photo credit: Division 8 Consulting

This Edmonton health clinic is a marvel of modern glass engineering.

Conic design – these are two words that are often associated with the highest profile buildings in our communities but rarely associated with public health facilities. However, in the case of the recently constructed Kaye Edmonton Clinic, the client's bold vision of "a leading, state-of-the-art enabler of integrated, patient-centred care, education and research" opened the door to an equally bold design response. Dialog was engaged to design a new clinic capable of achieving the client's vision on

every level. In doing so, this would enable the world-class ambitions of the Kaye Clinic itself.

A key feature of the overall design is an expansive curving glass wall, rising seven stories to a height of 30 meters enveloping a large, light-filled atrium. The design intent was ambitious. The atrium and its glass wall began as an unreserved embrace of natural light, view, and ventilation; the building's eyes and lungs as well as a demonstration of the client's commitment to the physical and mental well being of its patients. The atrium also serves as the ultimate way-finding device, helping patients and visitors orient themselves when they first enter the building or find their way to an upper floor. From the perspective of the University of Alberta campus, of which the clinic is a major cornerstone, the curved glazed atrium helps anchor the primary access to the campus on one of the city's main thoroughfares.

To keep the atrium as visually light as possible, slender steel columns were used as structural support. These steel columns were requested to be minimal in size, thus a system was needed to help carry the positive and negative wind loads on the facade's expansive glass elevation. To achieve this glass feature, Stella Custom Glass Hardware was engaged to handle the required design, assist with engineering and design/manufacture/supply the glass hardware required to achieve the design team's vision.

With a system pre-engineered by Dialog's team of architects and engineers, Stella, Dialog, and Erdevicki Structural Engineering created a bow-truss cable support system. This is a proven but technically complex concept capable of holding and supporting the weight of the more than three hundred IGU units required for the feature elevation.

Stella began its mandate by building a scale model of the proposed structure to reaffirm the integrity of the proposed design and its component parts. After con-

siderable testing, final glass specifications were calculated and finalized by glass engineers, Division 8 Consulting.

The system called for a two-part cable truss working together to create a vertical bow-shaped configuration with the ends of each cable anchored at roof and ground floor. To achieve the required bows, horizontal compression struts were used. Each cable is 36 mm in diameter and tested to 945 kN (capable of lifting the equivalent load of two fully-loaded tractor trailer loads). Large clevises (weighing 13 kg each) attach to the end of cables and connect to anchor plates in the roof and floor.

When installed, the cables were pre-tensioned to 254 kN per cable. The talented installation teams from Edmonton-based Specialty Glazing and Wayward Steel Fabricators (overseen by general contractor PCL) made this engineering feat a successful reality.

To hold the glass in place, Stella designed an adjustable edge support bracket. Over 1,200 brackets are bolted to the horizontal mullion to the glass units, eliminating the need to drill holes in the glass. The glass IGUs are 2,200 mm high by 1,300mm wide with a makeup of 10/10 tempered glass, argon filled and with low-E coating.

The same team also collaborated on a visually minimal glass screen/guard on levels surrounding atrium.

Completed in 2012, it proudly showcases Canada's highest cable truss system facilitating a simply amazing light-filled atrium. In this day and age of computer graphics, architectural concepts can be made to look highly appealing. In the case of the Edmonton Clinic South, it is fair to say that the finished building looks even better than the original concept drawing. The Kaye Edmonton Clinic has turned the city's desire for world class design into a reality. A building where patients have lauded not only its design, but the feeling of well being that its concept has created for all to see and enjoy. •



Photo credit: Erdevicki Structural Engineering

The design called for a light, transparent look, so Stella, Dialog and Erdevicki designed a bow-and-truss support system capable of supporting three hundred IGUs. The horizontal compression struts seen here are capable of holding up the weight of two fully loaded tractor trailers, each.

Point-supported hardware
Stella Custom Glass Hardware
Architect
Dialog
Structural engineering
Erdevicki Structural Engineering
Glass engineering
Division 8 Consulting
Glazing contractors
Specialty Glazing Systems
Glass fabricators/suppliers Viracon
Steel fabrication
Wayward Steel Fabricators
General contractor
PCL Constructors
Owner
Alberta Infrastructure and Alberta Health Services
Double sealed IGU specification
1 5/16-inch overall thickness, 10 mm clear VE-2M low-E #2/ fully tempered outer lite, black stainless steel spacer bar, argon gas fill, silicone seal, 10 mm clear fully tempered inner lite

ABOVE: The Kaye Edmonton Clinic's point-supported wall creates a sweeping interior space from which the entire layout of the building is visible. Visitors can almost see where they need to go without directions. Daylighting is absolutely maximized.