

photo credit Steve LeBlanc

707 Fifth Tower in downtown Calgary

Sophisticated curved glass meets stringent energy targets

The new 707 Fifth “AAA” office tower in downtown Calgary, Alberta, features a distinctive, curved glass appearance with high energy-efficiency and a comfortable interior. The project is designed to achieve LEED® Gold certification through the Canadian Green Building Council. In spite of the cold climate, the 27-story, 564,000-square-foot (52,400m²) building met this stringent energy performance target by featuring Technoform’s high performance warm edge spacer in the triple-glazed, curtain wall system.

Challenge:

World-renowned architects Skidmore, Owings and Merrill (SOM) designed the unique building’s façade to combine convex and concave forms to shape elliptical and undulating elevations. The floor-to-ceiling glass is designed to maximize internal daylighting and comfort, minimize unwanted solar heat gain and heat loss, and provide panoramic views of the city and the Rocky Mountains.

The thermal performance requirements included a stringent whole unit U-factor of 0.16 btu/hr.ft².°F (0.91 W/m²K).

The project’s construction manager, EllisDon, worked closely with glazing designer and manufacturer, Contract Glaziers West Inc., to meet this challenge. “The façade had a geometry of both concave and convex radius glazing, as well as the east and west elevations’ inverted slope from ground level to the top of the building. All flat and curved glass had to match in color and performance as per the design specifications,” explained Contract Glaziers West’s Steve LeBlanc.

Clarity Architectural Products introduced Tianjin North Glass (TNG) to the 707 Fifth project team as the preferred supplier for the building envelope, capable of fabricating the sophisticated, bent, multi-pane, insulating glass in custom shapes, large sizes and at the high level of quality specified. TNG was one of the few glass manufacturers

willing to accept the challenge of producing insulating glass units (IGUs) with custom low-e coatings, such that they looked the same whether in the concave or convex orientation.

Solution:

A custom, high-performance, unitized, structurally glazed, thermally broken aluminum-framed curtain wall system was designed, manufactured, and installed to precise specifications, in order to bring the challenging vision to reality.

The curtain wall relies on TNG’s state-of-the-art, bent, triple-pane IGUs with two low-e coatings. Technoform’s bendable, yet rigid and durable, plastic hybrid stainless steel (PHSS) warm edge spacer separates the three panes of glass, creating an insulating barrier at the perimeter of the IGU to improve thermal performance. This combination of high-performance components allows the IGUs to meet the project’s high thermal performance requirements and achieve the overall energy-saving, sustainability goals. Furthermore, the color was specified in black to have the spacer virtually disappear into the window system without any perimeter reflection.

“TNG proposed Technoform’s spacer due to its unique combination of durability, high thermal performance and bend-

“Due to Technoform’s industry reputation as a leader in providing thermal IGU spacers, thermal breaks and isolators, the product was readily accepted in the design.”

Steve LeBlanc, Contract Glaziers West Inc.



ability, providing the ideal product solution for this high-end glass unit,” explained Dirk Schulte, formerly with TNG. Technoform’s PHSS spacer serves as the standard for TNG and its large, premium insulating glass products.

“Using Technoform’s spacer for this application came from a recommendation by the Tianjin North Glass team,” said Contract Glaziers West’s Steve LeBlanc. “We affirmed their preferred spacer solution via our thermal modelling for the project, thus establishing that it would provide the performance values we required.”

LeBlanc continued, “Due to Technoform’s industry reputation as a leader in providing thermal IGU spacers, thermal breaks and isolators, the product was readily accepted into the design. Overall, with the two layers of high-performance low-e and the warm edge spacers provided, we were able to achieve the wall performance desired by the design team and consultants.”

Schulte complimented the solution: “Technoform’s hybrid spacer, made of engineered plastic and a strong supporting stainless steel cover, has been extremely helpful to smoothly fabricate the curved and triple-insulating units with concave and convex shaped bends – without incorporating any additional stresses around the perimeter edge seal of the insulating glass panes.”

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In total, TNG supplied 220,000 square feet (20,400 m²) of glass to Contract Glaziers West, which fabricated the curtain wall in its Windsor, Ontario, facility then transported the system to Calgary for installation on the project.

TNG produced the units, working closely with Clarity’s inspection team. “The owner required a 100 percent inspection of fabricated glass, which TNG accepted and welcomed to prove the high level of production quality and workmanship on the final glass. Clarity managed to keep all the loose ends together to develop, produce, inspect and deliver a tailor-made product at the highest aesthetic and quality standards,” said Schulte.

“The ease of handling Technoform’s spacers for flat and curved glass units streamlined the production process to an efficient output of units per day in order to meet the high expectations of the client on quality, schedule and delivery time,” he praised.

The project was completed on time for a grand opening in April 2017. Total construction costs are estimated at \$200 million.

“Overall this was a challenging, yet highly successful project, with a unique vision that all team members collaborated well on in bringing it to fruition,” concluded LeBlanc.

Project: 707 Fifth

Location: 707 5th St. SW, Calgary, AB T2P 0Y3 Canada

Architect: Skidmore, Owings & Merrill LLP (SOM); Chicago

Construction Manager: EllisDon Corporation; London, Ontario

Glazing system designer & manufacturer: Contract Glaziers West Inc.

Glazing system manufacturer’s representative: Clarity Architectural Products

Glass fabricator: Tianjin North Glass

Product: Technoform’s PHSS warm edge spacer

