

Let There Be Light: Oklahoma City Federal Campus

At the turn of the century, glass in buildings served a different purpose than in modern times. With little or no electricity, glass was essential to harvest daylight, which served as a luminous energy source. The new Oklahoma City Federal Campus, which replaces the Alfred P. Murrah Building destroyed in the 1995 terrorist bombing, harkens back to this concept, with vast expanses of glass welcoming sunlight into the building. Yet the vast expanses of glass in the new Federal Building also meet another, more modern, design challenge.

Stronghold in Disguise

"Security was paramount when designing the campus, but we also wanted to create a sense of openness in a sustainable building," says lead designer, Carol Ross Barney of Ross Barney + Jankowski, the Chicago-based architectural firm that designed the Federal Campus. "The extensive use of glass in the building design allowed us to accomplish all these objectives. We wanted a safe, but not prison-like building."

The design of the new 181,000 square foot, three-story building, which opened in December, 2003, sits in a transition zone between the Central Business District and the North Downtown neighborhood in Oklahoma City. The building embodies a balance between solidity and openness by contrasting the primary street elevations of exposed concrete and punched windows with large protected areas of curtain wall at the angled southeast and northwest faces and in the sweeping elliptical court-yard. Striking colonnades complete the urban rectangular footprint, separating the building from the street and creating physical and emotional security. Because of the liberal use of glass, the building looks nothing like the stronghold it is. After the bombing of the Alfred Murrah building and subsequent bombings around the world, the use of blast resistant windows was thrust to the forefront in the design of government buildings. More than 75 percent of the injuries related to the Oklahoma City bombing were due to flying or falling glass.

Blast-Resistant Glazing Provides Peace of Mind

"Without compromising the open and inviting look and feel of the building, we needed to ensure the Federal Campus provided a safe and secure environment for its occupants. The need for high performance security glazing was evident," explains Ross Barney. Glazing contractors Masonry Arts, who also designed, fabricated and installed replacement windows in the Pentagon, selected blast resistant laminated glass, made with Saflex® protective polyvinyl butyral (PVB)



PROJECT FACTS

PROJECT

Oklahoma City Federal Campus

LOCATION

Oklahoma City, Oklahoma

ARCHITECTURAL FIRM

Ross Barney + Jankowski Architect

GLASS FABRICATOR

Masonry Arts Inc., Bessemer, Alabama

LAMINATED GLASS INTERLAYER

Saflex®, a unit of Solutia Inc., St. Louis, Missouri

COMPLETION DATE

December 2003



As the world's leading interlayer, Saflex is found in nearly 50 percent of laminated architectural and automotive glazing applications globally. In fact, Saflex interlayer is used to protect some of the world's most precious treasures, including the US Constitution, the Mona Lisa, and the Louvre. When it comes to critical applications where safety, security, sustainability and acoustic performance are a primary concern, automotive designers and architects' first choice is Saflex interlayer.

project profile (cont.)

interlayer. Saflex is bonded with heat and pressure between two panes of glass. The glazing configuration was used in the design of both the curtain wall and punched windows in the new Federal Campus. Upon impact from a bomb explosion, the glass itself may crack, but the fragments tend to adhere to the Saflex protective interlayer and the glass tends to remain in its frame. Because the glass stays in place, protection from flying glass is provided to people both inside and outside the building.

"To resist the blast loads, the architect chose galvanized steel as the exposed, structural framing components for the windows and curtain wall system," asserts Robert Grosze Sr. Project Manager of Masonry Arts. "What was really unique to this project design was the decision to expose the concrete and steel framework." Typically, structural components are concealed behind applied finishes on the façade. "We knew the Oklahoma City community wanted a secure, robust building. The exposure of these fundamental components was a way to visually enhance the secure elements of the building, while still maintaining the open feel of the space that the architects had conceptualized."



symbol of the Oklahoma City bombing. Says Almon-Kok, "I learned firsthand how dangerous glass can be. I have testified before Congress on the need for safer buildings. I have seen what security measures have been taken in constructing the Federal Campus and I wouldn't hesitate to put my own children in the building."

Architectural Glazing Design to Meet Security Goals

The trend toward more glass usage in building design has increased the need for additional protection. Recently developed glazing and fram-

ing techniques, including structural blast performance and the long life cycle of laminated glass, allow the use of more glass in buildings without sacrificing comfort or protection. A risk assessment should be conducted prior to designing a facility where a blast hazard is a potential concern to determine the level of protection desired to meet the building project security goals.

About Saflex

Over 75 years ago, the originators of the Saflex business started an entirely new industry based on the belief that glass could be made better through lamination. While glass was a common material in 1927, it typically occupied relatively small spaces in buildings. Through lamination and the introduction of Saflex protective interlayers, architects and automotive designers were empowered to rethink their traditional approach to glazing design.

Photography by: Brad J. Goldberg

Protecting People First

Perhaps the greatest testimony to the extraordinary measures taken to ensure the highest possible safety standards in the design and construction of the Federal Campus comes from Aren Almon-Kok, founder of Protecting People First Foundation (PPFF). Almon-Kok is the mother of Baylee Almon, one of 19 children killed in the 1995 terrorist attack. The photograph of Baylee's lifeless body being carried from the debris in the arms of a fireman became a world-recognized

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ARCHITECTURAL GLAZING SOLUTIONS CENTRE

The Saflex Architectural Glazing Solutions Centre (AGSC) is an international network that provides a comprehensive range of services to support architects and designers throughout the world. The AGSC can provide technical support, literature, master specs, testing data and samples, as well as, glass fabricator and manufacturer referrals. The AGSC also offers AIA CEU courses.

NORTH AMERICA

Saflex Architectural
Glazing Solutions Centre
575 Maryville Centre Drive
St. Louis, MO 63141
T: 1-314-674-1000
F: 1-877-674-1236
Toll Free: 1-877-674-1233
E-mail: glazin@solutia.com

SOUTH AMERICA

Solutia Brasil Ltda
Rua Gomes de Carvalho 1306, 6 Andar
Vila Olimpia
Sao Paulo / SP
CEP: 04547-005
Brasil
T: +55-11-3146-1800
F: +55-11-3146-1816
E-mail: arquitetura@solutia.com

EUROPE/AFRICA

Solutia Europe S.A., N.V.
Parc Scientifique Fleming
Rue Laid Burniat, 3
B-1348 Louvain-La-Neuve
Belgium
T: +32-10-48-12-27
E-mail: films-archi@solutia.com

ASIA-PACIFIC

Solutia Singapore Pte Ltd
AGSC
101 Thomson Road
#19-01/02 United Square
Singapore 307591
T: +65-6357-6190
F: +65-6357-6194
E-mail: asia-agsc@solutia.com

