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VISIONARY THINKING



A triangular canopy and a skewed glass vestibule mark the distinctive entrance to the EMU Convocation Center.

EDWARDS GLASS EXPANDS EMU'S FIELD

By Mary E. Kremposky, Associate Editor

PHOTO BY: JUSTIN MACONOCHE, HEDRICH BLESSING PHOTOGRAPHERS. PHOTO COURTESY OF EDWARDS GLASS CO.

Glass — like no other building material — allows the world to pour into the indoor spaces of our daily lives. Glass is the defining element of Eastern Michigan University's award-winning sports arena and convocation center in Ypsilanti. A striking radius glass and aluminum curtain wall forms the entire north elevation of the 205,000-square-foot building. This stun-

ning concave wall of glass — 24-foot high and 235-foot long — spans the length of a promenade perched above the bowl of the EMU football stadium. Visitors to the center's two-story lobby enjoy a dramatic view through the curtain wall and over the expanse of the stadium — a bowl of bright green turf surrounded at game time by rows of cheering fans.

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The project earned a 1999 Detroit AIA Honor Award, but most football and basketball fans streaming towards the lobby's ticket windows are probably unaware of the effort and labor required to create this unique space. As the project's glass and glazing contractor, Edwards Glass Co. of Livonia helped to select the glass and to design a custom anchoring detail – both geared towards making the glass as transparent and the aluminum framing as unobtrusive as possible.

DETAILS, DETAILS

Edwards' objective was to make their work disappear. The glass itself is a high-performance Low-E product that offered the university a transparent glass with performance equal to or better than tinted or reflective glass, said Jerry Wordhouse, president of the firm. Older Low-E products still have a slight blue tint or reflectivity, but the newer coatings are almost as clear as uncoated glass, added Erik Wordhouse, project manager.

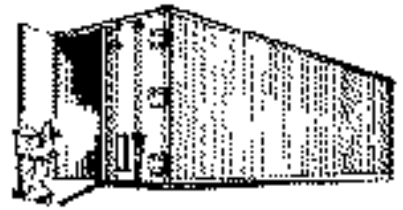
Jerry Wordhouse describes it as a "neat, clean detail" that replaces the conventional anchor detail - usually a heavy, clunky 6-by-6 pair of steel angles anchored to the structural steel with heavy, half-inch bolts. "We were able to accomplish the strength that we needed by simply ...

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OF VISION

welding a threaded rod onto the structure itself, and coming forward in the back of our mullion," Jerry said.

The crew welded a three-quarter inch threaded bolt or rod to the horizontal structural steel beam installed mid-way down the curtain wall. The approximately 5-inch long threaded rod comes forward and is threaded into the back of the vertical mullion. This one threaded bolt per mullion attached at the mid-point of the curtain wall stabilizes the wall for wind load.

The custom anchor detail also helps the crew adjust the mullion to achieve perfect

plumbness. By moving and adjusting the threaded bolt, the glazier can make vertical and lateral adjustments, creating a perfectly plumb and level mullion. "It is easy to anchor it off to the building, but it is not so easy to get it plumb," said Jerry. "As soon as any one of all these mullions starts to tip one way or the other and get out of plumb then the whole wall looks totally distorted. The anchor detail allowed us to incorporate the adjustability that we needed to bring the system into plumbness."

The architect initially specified a unique anchoring approach that would strip the curtain wall of any heavy mechanical connections. Erik Wordhouse devised the detail of this unique anchorage system. Edwards Glass then created a full-size mockup of the custom detail to show the project team. "The mock-up showed exactly how this would operate and how it would look," said Jerry. "I think in the final analysis that convinced everybody we were on the right track."

"...This detail was something unusual, and everybody was sensitive to the liability issues," Jerry continued. "This is actually the structure of the building — it's the exterior wall — and if it failed, we would, of course, have a massive problem on our hands. The detail was thoroughly examined and looked at twice before we went forward. What actually materialized was the culmination of the efforts of many people on the team, with us kind of spearheading the effort."

To further shape this "invisible" curtain wall, the lobby's interior vertical steel columns align with the vertical mullions; the horizontal steel beam midway down the wall perfectly aligns with the respective center line of aluminum framing. The transparent glass, the discreet anchor detail and the alignment of interior columns with the curtain wall frame all ensure the patron a stunning vista of the football field below.

"We tried to turn the stadium into a showpiece," said Erik. The project team certainly succeeded. Besides the glass selection and custom anchor detail, the successful execution of the curtain wall design was the result of the glaziers from Edwards Glass who labored on the project. "The success of this job was truly related to the ability of

the men who were on the job," Erik said. "We had a skilled person fabricating it, and the guys erecting it paid a great deal of attention to detail."

At night, a crown of lights attached to the wall's projecting steel outrigger illuminates the glass wall and the lobby interior. Football fans can view the lit lobby of the convocation center during night games; those attending gala events or basketball games can survey the sweep of the football stadium below.

Minus the steel outrigger and a concrete footer at its base, this magical wall of glass was shaped by the able crew

members of Edwards Glass and by the design input of the project team. Edwards also fabricated and installed the four-and-a-half-foot aluminum insulated panels that rise above the 24-foot, 3-inch wall of glass.

OPEN COMMUNICATION

The design/build team of Rossetti Associates Architects, Barton Malow Company and Barton Malow Design awarded the glass and glazing contract at an early date and fostered a true spirit of cooperation and teamwork. "The structural steel and glass contracts were



High-performance Low-E glass and a custom anchoring detail shape this stunning wall of glass that offers a commanding view of the football field from the lobby interior.

PHOTO BY: JUSTIN MACDONOCHIE, HEDRICH BLESSING PHOTOGRAPHERS. PHOTO COURTESY OF EDWARDS GLASS CO.

awarded at the same time," said Erik, "which allowed the steel contractor to work with us in accommodating the glass support element."

Open communication proved to be as important as the custom anchor detail in keeping the project on pace. Edwards Glass accomplished the job in about six months using two to four men working from fall 1998 to spring 1999. "The cooperation level of the contractor was just phenomenal," Erik said. "...I was allowed unprecedented access to the architects. If I had a question, I would just call Barton Malow, send my question to Argos, and I would have an answer back in minutes. It was unbelievable. I've never seen anything like it.

"...Barton Malow and all of the subcontractors were willing to discuss issues, to work together to resolve problems in order to keep the project moving," Erik

continued. "I think that was the key to this project. There was never at any time any kind of adversarial relationship. Everybody spoke frankly and openly about the issues and the project could then move forward."

This canopy is the only one that I have ever seen — and I've been in this business for almost forty years — where the entire canopy is set off from the structure itself on these support pins ...The canopy is literally floating above the structure below it.

Jerry Wordhouse, president
Edwards Glass Co.

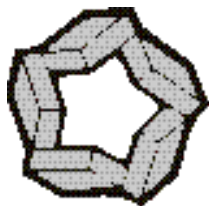
ODD ANGLES

Edwards Glass had to shape other unconventional configurations for this

university showpiece. The building entrance features an oddly angled green canopy and an enclosed glass vestibule that is partially embedded in the building and partially projects out into the front of the structure. These shapes clearly identify the building entrance of this massive complex and add detail and richness to what could have been a dull, institutional monolith.

The translucent green canopy is formed of fiberglass reinforced plastic panels. "The canopy is a very unusual use of that particular material," said Jerry. "It is normally used in vertical applications. The architect was quite creative in using it as a canopy deck."

The 100-by-40-foot almost triangular canopy is propped up like a pup tent by a large steel pole. While most canopies slope downward from the building face, this canopy tilts upward at a



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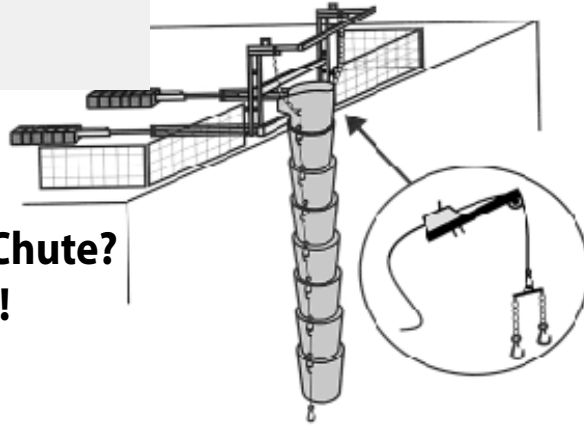
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skewed angle — sloping back towards the building and slanting down to one side.

The canopy floats on a series of steel stand-offs — steel support pins projecting from the surface of T-shaped pieces of steel that form the canopy's support structure. "This canopy is the only one that I have ever seen — and I've been in this business for almost forty years — where the entire canopy is set off from the structure itself on these support pins," Jerry said. "The canopy is literally floating above the structure below it. ...It is very striking and very unusual to have a canopy that stands off about 6 inches above the steel structure." The Edward's crew had to align the canopy's grid of dark lines with the line of the steel stand-offs.

Beneath the tilted canopy is part of the building's glass entry vestibule, formed of storefront and sloped glazing, set in a custom-painted aluminum frame. Edwards Glass custom fabricated both the canopy and the glass vestibule.

The glass-roofed vestibule is built in the shape of a rectangle that "penetrates the mass of the exterior wall on a diagonal formed by the radials of the lobby's north glass wall," according to the Detroit AIA Honor Awards jury. A ceiling panel containing lights and air diffusers visually splits the rectangular vestibule in half on a slanted diagonal, almost forming two triangles. One triangle is embedded in the building interior, penetrating the lobby at a skewed angle; the other triangle projects outside the building on a slanted diagonal. Altogether, the vestibule forms an interesting convergence of angled lines with the tilted canopy directly above.

SAW-TOOTHED WINDOWS

A long row of projecting windows echoes the vestibule's slant. The windows all along the lower level of the east and west elevations project in a saw-toothed pattern from the building's face, adding further dash and flair to this massive sports and convocation center.

"The building exterior — and interior corridor — is basically a large, flat space, but by creating windows in a saw-toothed pattern — the architect gives the building some relief and some texture," Jerry said.

The slanted windows required the Edwards crew to marry together an

assortment of materials, including the galvanized steel forming the interior window soffit and sizeable sill and the custom-painted aluminum window frame directly surrounding the glass.

The radius curtain wall, tilted canopy and vestibule and saw-toothed windows, dispel the "box feeling" common to older and more conventional sports arenas. The architect also added several large round windows to break up the building's mass.

"When you drive up, you aren't overwhelmed by the mass of the structure itself," Jerry said. "The visitor focuses more on these visually attractive elements and does not see a huge auditorium-type structure. I think the architect did a fabulous job of putting together the design elements."

The project's scope also included glazing for all other windows and entrances, the furnishing of hardware, a skylight canopy, handrail glass, suite glass and bullet-resistant teller windows at the tick-

et booth.

The convocation center is one of the more challenging projects the firm has undertaken in recent years. The project's intricacies were "anticipated during the bidding process, ... but it took an incredible amount of coordination and planning to pull it off and keep it on schedule," said Jerry. "The schedule was very, very tight and again I emphasize the cooperation of Barton Malow — it wouldn't have happened in a normal contractor-subcontractor relationship."

Added Erik, "I think design/build team should be complimented for opening up the communications pipeline and respecting the need on a fast-track project to communicate instructions quickly."

Glass is a powerful element in this award-winning center. In business for over forty years, Edwards Glass Co. had the experience and skill to successfully execute this challenging glass and glazing contract. This transparent

wall of glass transforms the center into a signature building that can only add to the university's recruiting efforts and allow students, alumni and visitors the pleasure of viewing a great space.

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- Architect of Record: Barton Malow Design
- Design Builder: Barton Malow Company
- Engineers: Limbach Company – Mechanical/Electrical
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