TOWER PLAZA

For more than two decades, Lee Jasinski, President of Jasman Truss and Panel Technologies, Whitmore Lake, Michigan, has built his company's reputation on tackling the most difficult projects imaginable. Jasman's portfolio of complex, high-profile steel panel, truss and finishes work is replete with engineering and logistical challenges that would cause most specialty contractors to throw up their hands and say, "it can't be done." Through it all, Jasinski's dedication to pioneering pre-fabrication and new building systems has remained undeterred by the highly cyclical economy of eastern Michigan.

"We began pre-fabrication/panelization twenty years ago, when it was not trendy to do so," Jasinski states. "Over the years we've refined our facility and our processes and really pushed the envelope with respect to claddings and finishes. The result has been some very unique projects that have stretched the bounds of what can built in the factory."

A hallmark of Jasman's drive to innovation is their design staff's creativity in utilizing existing products in entirely new applications. The Tower Plaza project in Ann Arbor, Michigan is a shining example of such innovation and creativity.

The 26 story Tower Plaza, the tallest building in Ann Arbor, contains condominium units for the nearby University of Michigan population. The Tower, originally constructed in 1969, was suffering from a gradual water infiltration and damage due to a leaking curtain wall system. The building's entire south façade would have to be stripped down to the concrete superstructure and replaced with a completely new curtain wall system to remediate the problem. Enter Jasman Truss Technologies with an innovative, cost savings solution.

According to Lee Jasinski, "We teamed up with American Glass and Metals Company, Smith Group (the architect) and O'Neal Construction (the construction manager) to address the challenges Tower Plaza presented.

"The original design called for a structural steel tube support system, which required special hoistingequipment. We proposed using pre-fabricated Aegis steel trusses. We knew this type of system would be lighter and could be installed manually, and, by pre-fabricating the sections in our shop, we knew we could keep up with the retrofit schedule. The truss design could also be easily anchored to the existingpiers."

Project Name:	**Tower Plaza Ann Arbor, Michigan**
Architect/Engineer	**Smith Group Michigan**
Ultra-Span Truss Manufacturer:	**Jasman Truss and Panel Whitmore Lake, Michigan**
General Contractor:	**O'Neal Construction Michigan**

Betsy Baird, AIA, Construction Manager for O'Neal Construction, picks up the story from there:

"I had the privilege of being the Project Manager, not as the Architect but as the Construction Manager, for re-cladding the tallest building between Detroit and Chicago – Tower Plaza. As the fellow turning it over to me said, 'It's all set, there is just one sub, and the job should run itself.' Hardly. This project took a dedicated team– the SmithGroup forensic studio, a forward thinking board of directors, a very patient property manager (Kramer Triad Management), a Project Superintendent with drive and ambition, smart subcontractors – Jasman Truss Technologies with American Glass and Metals Corporation – and a ton perseverance."

AFTER WITH FACADE LIFT

Baird continued, "The building was built in the late 60s with concrete shear walls and curtain wall between each bay. The glass curtain wall was set

VISION GLASS ON 2/SPANDREL ON THIRD FLOOR

back from the ends of the shear walls about 18 inches. Operable casement style units were integral with the curtain wall. There was opaque spandrel glass at the floor lines up to about three feet above the finished floor elevation; it concealed the view from the street of the heat piping in the cabinets. "

The first thing considered was the scope of work. The project had to be divided into two phases for budgetary reasons – north and south. Due to the exposure, the south was in worse shape and would be completed first.

Next, the team determined that they would work from bottom to top. Jasman designed the cold formed trusses to span between the shear walls. The spandrel glass on Level 3 was removed from the outside, steel clips were bolted to the concrete, and the trusses positioned and anchored in place. This was the structural system to support the load of the curtain wall.

Pushing the envelope in the use of cold formed trusses is nothing new for Rich Simmons, Lead Truss Designer at Jasman Truss, and Tower Plaza was no exception.

"This project required more than 200 individual trusses and presented some very unique design challenges," Simmons commented. "By value-engineering the support system using Aegis trusses, we were able to substantially reduce the weight of the components our laborers had to handle. This in turn allowed us to speed installation as well as reduce the size of the climber we used as our work platform."

The new frames and spandrels were installed to the structural system, then the frames and vision glass. This process would then repeat again at Floors 4 through 26. Working up was the logical method. Weather protection on the top of the new curtain wall had to be installed at the end of each work day.

The existing frame and vision glass were left in place while the trusses and curtain wall were installed. The work proceeded until the exterior was significantly underway and then the interior work started.

According to Darren Cordes, Jasman's superintendent, it took only 5 months for all 26 floors of the south façade to be retrofitted with a brand new, water-tight façade, supported by Aegis cold formed steel trusses.

AEGIS COLD-FORMED TRUSSES PROVIDED THE STRUCTURAL FRAMEWORK FOR THE NEW FACDE

The Interior portion of Jasman's work included removing the existing glass, cutting the old frames out, filling the 18" gap at the floor line, installing insulation and taping it with a vapor retardant tape at the back of the spandrel panels.

Project Challenges

There are only three challenges on every project – budget, schedule and quality. The rule is you get two. A budget was established and accepted – therefore had to be adhered to. The building had leaked for many years and therefore any leak would be unacceptable. A schedule had to accommodate student move-in, professional practices, and the sleeping habits of students.

None of the contractors had ever undertaken a project like this. Not with regard to detailing, budgeting, bidding, scheduling, planning, staging or building! Nonetheless, they forged ahead with a plan of attack.

The first challenge of the project was designing the actual system. SmithGroup consulted with a variety of glazing experts to develop design ideas. They developed a performance specification and provided the criteria to be met. For instance, the engineers performed a wind load study to determine the maximum force on the building. This exceeded the code minimum requirement so that number was to be used for wind loading. Interestingly, the highest number was not at the top of the building – it was at the roof level of St. Mary's church next door, at about the sixth floor.

There were challenges along the way – each impacting budget, schedule, quality or some combination thereof. Those challenges included:

SAFETY – Working up and down a twenty-six story building is daunting. Weekly safety meetings were held. Job specific practices were reviewed, harnesses and hard hats were 100% required. O'Neal Construction signed up for a voluntary MIOSHA inspection to determine if there was anything that could have possibly been overlooked. As a result of this diligence, there was only one lost work day during the entire span of the project.

THE CLIMBER – The original climbing equipment company went out of business the week before they were to arrive on site! In a mad scramble a Canadian company stepped up and made the date. This equipment had a different layout – the east stage came right down on the fire hydrant! A steel frame to support that entire platform and maintain accessibility to the hydrant had to be engineered and built on site.

2" BUILDING LEAN – Right out of the gate, a building survey indicated that the upper eastern most six floors had a 2" lean – outward. This meant that tolerances had to be skinnied up, trim had to accommodate more adjustment and everything below would need to get 2" further away from the building. Details for the whole building had to be modified except for those in the leaning zone.

SEQUENCE – The climbing platform was secured to the building every three floors. Weather protection at the clips had to be continually maintained and the interior finishes could not be done until the demobilization of the climber. As it was dismantled, the bolt holes had to be patched, the glass installed, and then the interior work could proceed.

The Ann Arbor Tower Plaza re-cladding project demonstrates how a team of high quality, dedicated professionals, utilizing creativity and thinking "outside the box", can accomplish stellar results. And, even though Aegis cold formed trusses are most typically found in new commercial and institutional construction, trailblazing fabricators like Jasman Truss and Panel Technologies are finding new, exciting, and innovative uses in the retrofit and remediation market.

Aegis Metal Framing, LLC is the leading provider of pre-fabricated cold-formed steel truss and panel systems, and services for commercial, institutional and residential construction. Aegis provides a complete line of cold formed steel framing (also known as light gauge steel framing) including the UltraSpan® truss system, TradeReady® products (floor joists, headers, Spazzer bars) and WallSolutions™ pre-fabricated panels. For more information about cold formed steel applications and case studies like this one, please visit the company website at www.aegismetalframing.com.