SIMPSONS TOWER PROJECT

The inaugural Scaffold & Access Industry Association (SAIA) Mast Driven Hoists and Platforms Project of the Year award and the Innovation Project of the Year award were presented to Klimer Platforms, Inc. for the Simpsons Tower Project in Toronto, Ontario, Canada. This project led to Klimer's new tag line, "Nothing is out of reach."

By Megan Russell

A combination of engineering excellence, installation expertise, and proficient planning proved this tower retrofit project to be unique and complex. The project required innovative thinking and quick response to change, while challenging minds and muscles.

The Simpsons Tower, standing at 472 feet since 1968, is an iconic, mid-century building in Toronto's downtown core. The Canadian department store, Hudson's Bay Company, along with other high fashion retailers occupy the tower on one of the busiest intersections in the city. Approximately 78,000 pedestrians cross this intersection in a 24-hour period, a challenging environment to move over 750,000 pounds of material from ground level to an elevated staging area.

In March 2014, Klimer was approached by General Contractor D.F. Pray to submit a proposal for a full access and material handling solution, as the tower was in need of exterior structural upgrades and a complete façade restoration and overcladding. Access around the entire perimeter of the tower was required. Klimer's project scope was to design a material handling and access plan for the general contractor to use in their requests for proposals for the major trades. In working with D.F. Pray, it became evident that the logistics of offloading trucks and getting the material to where it needed to be installed was critical to the success of the project. Collectively, D.F. Pray and Klimer developed a plan which included a hoisting method, material pathways, staging platform, and mast climbers. The project was awarded to D.F. Pray that summer.

The Solution

The access and material handling solution involved 10 KPM-8 mast-climbing work platforms (MCWPs) to provide multi-trade access to all sides of the tower, on multiple elevations. All 10 MCWP's were custom layouts, as lengths of the platforms were limited by the changing building profile and had to reach a height of 450 feet, which also required specially designed, high-capacity mast sections. Ten different custom tie-in types were required

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to adapt to the different elevations on the building's exterior. The tie-ins could not bear on precast panels and in some cases had to go through panels or windows to floor slabs. They also could not interfere with new façade anchor locations. Equally important to the mast climbers, Klimer proposed using a transport platform to move the material from street level up to the raised staging area. The custom transport platform was specifically designed with 15-foot custom ramps to accommodate the exact size of the curtain wall panels.

To keep sidewalks open for pedestrians, a 14-foot-high by 15-foot-wide clearance was required, eliminating any disruption of street or pedestrian traffic, a requirement made by the City of Toronto. To achieve this, engineers designed frames above sidewalks that supported masts as well as vertical supports anchored to building columns, all the while being mindful of the underground utility vaults.

Arguably the most significant concept of the proposal was the staging-area design. Due to limited space on the ground, there was no available space to receive and store materials to support the project. Klimer's solution involved creating a 110-foot by 40-foot staging area above the tower's ninth-floor roof for site offices, material storage, and restoration preparation. The roof's structural integrity was not designed to bear this kind of weight, meaning that to achieve adequate weight loads the design needed to increase the roof capacity from 27 pounds per square foot to 100 pounds per square foot. Five column ends and five building columns were the only support available as the weight could not bear directly on the roof. Using corrugated web I- beams, a custom frame was engineered to hang from the building columns, reducing the overall weight of the frame.

The Challenges

The installation of the 10 machines began in September 2015 and was completed in September 2016. Site conditions were a continual challenge in planning and organizing delivery and movement of equipment and required that many of the materials be moved manually. Installation requirements versus daily

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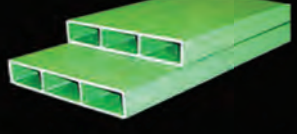

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production on the jobsite drove delivery requirements and the delivery schedule. There was a limited area on a roof level for material storage that would have to be replenished each day or week to sustain production, depending on the work completed. Equipment was required to be offloaded quickly with or without use of a forklift. Product would be pre-loaded at Klimer facilities during normal business hours, following a loading plan to maximize unloading efficiency, and then be delivered, unloaded and staged throughout the night. All structural steel was set without the use of a crane. Drive units were set on the far end of the beams and were transferred to locations across an I-beam rail system.

The project required mast-climbers on all elevations, which meant once the materials were successfully delivered to the staging area, they then needed to be moved to all other locations. Five mast-climbers were installed above structural sidewalk bridges to keep sidewalks open

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to pedestrians, and five mast-climbers were suspended from columns of the building with welded support brackets and supported above adjacent buildings. Multiple trades will continue to utilize the mast climbers and transport platforms for the next couple of years.

In September 2016, Klimer hosted a tour of the project with their technical sales team and regional general managers from other locations. The team shared the vision from proposal stage to installations stage, from drawings to reality. During this tour, Klimer's new tagline was brought to life: "Nothing is out of reach." •

About the Author

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