THE DAVID RUBENSTEIN FORUM

The David Rubenstein Forum is a 97,000-sf multi-purpose meeting facility, nestled on the iconic South Side campus of the University of Chicago. The striking ten-story building is located at the intersection of 60th Street and Woodlawn Avenue, and features a modern design with stunning views of the surrounding campus, Chicago skyline, and Lake Michigan. Named after David M. Rubenstein, a University of Chicago Law School graduate, and member of the University's Board of Trustees, the Forum provides the University with a variety of unique meeting spaces able to accommodate a wide range of audiences.

Figure 1 – Image of Completed Construction

Figure 2 – Zinc Metal Panel and Glass Facade Elements

The architect's "stacked-boxes" design incorporates a mixture of precise angles and rectangular forms cantilevering off one another harmoniously up the towering structure. The superstructure is primarily comprised of post-tensioned concrete slabs and beams that bear on reinforced concrete walls and columns. The building's exterior is clad in zinc metal panel and incorporates full height glass on the North and South faces. Cold-formed steel framing supports the zinc metal panel at soffit conditions, sloped parapets, and "picture frames" surrounding the full height glass. Cold-formed steel framing was required at several other locations where zinc metal panel was unable to attach to reinforced concrete walls and columns.

Several challenging aspects factored into the engineering and design of the cold-formed steel framing. Coordination of the cold-formed steel attachment to the post-tensioned concrete presented the greatest initial challenge. Post-installed anchors were not a viable option, due to the risks of jeopardizing post-tensioned strands within the concrete. The issue was resolved by utilizing a Halfen embedment rail system.
The Halfen system is a cast-in-place alternative fastening system that allows for additional adjustability when necessary, due to the inherent construction tolerances of poured concrete. Careful planning allowed the cold-formed steel framing to anchor securely to the Halfen system with a simple, yet strong, cold-formed clip angle and bolt assembly.

Figure 3 - Post-tensioned Concrete Formwork showing Halfen Embedment Rail System

Figure 4 - Cold-formed Steel Framing

The zinc metal panel system relied upon the cold-formed steel backup framing for attachment purposes. Attachment points were needed where the zinc metal panels conjoined to form a triangular point. Tight design constraints would not allow the use of traditional cold-formed steel profiles at all framing locations. Where tight angles were required, 16 gauge sheet steel nosing was fabricated and installed to reach-out and form the desired angle. Anchored to the adjacent cold-formed steel framing, the sheet steel nosing provided suitable attachment for the zinc metal panels, as they came together from opposing sides, to create the angle. In a similar fashion, light gauge sheet steel was utilized between the cold-formed steel frames, where metal panel joints needed to align with vertical mullions of the glazing system.

The fast-paced construction schedule of this project contributed to designing and engineering the cold-formed steel framing to enable pre-fabrication opportunities, wherever possible. The soffits, sloped parapets, and upper portions of the “picture frames” were pre-fabricated off-site, as cold-formed steel frames, which were quickly and easily installed on site.

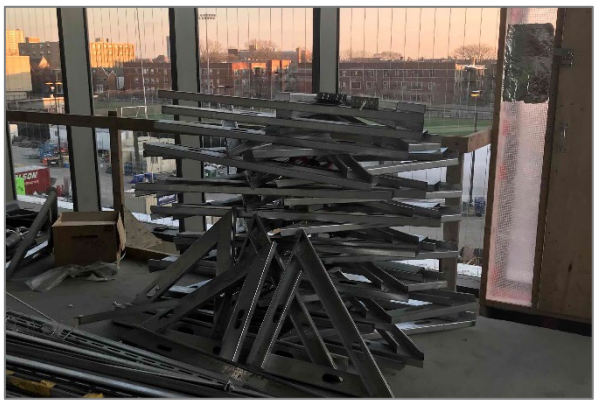

Figure 5 - Cold-formed Steel Frames

BIM (building information modeling) was utilized to ensure the cold-formed steel framing and structural connections were fully coordinated with the building’s superstructure and intricate façade systems. A full-set of highly detailed layout drawings were produced from the BIM model for the cold-formed steel contractor’s use.