

ON THE JOB (Site)

BY GEOFF WEISENBERGER

A firsthand look at
modern steel construction.



THERE'S AN OLD JOKE about Midwestern weather.

“There are two seasons: winter and construction.”

Of course, nowadays we see plenty of year-round construction work in colder climates. This past November, I paid a visit to the site of the Froedtert & the Medical College of Wisconsin's Center for Advanced Care (CFAC) project, designed by Cannon Design and currently under construction on the Froedtert Hospital campus in Wauwatosa, Wisc. (technically fall, yes, but the twenty-something-degree temperature and accompanying strong wind made it feel more like January; luckily it wasn't snowing). The new nine-story, 609,000-sq.-ft facility is part of the vast Milwaukee Regional Medical Center. Roughly five miles west of downtown Milwaukee, the

300-acre campus includes Froedtert Hospital, Ronald McDonald House, Children's Hospital of Wisconsin, Curative Rehabilitation, Medical College of Wisconsin and the BloodCenter of Wisconsin.

Every steel construction project is different, and when you see enough of them, you get a sense of what makes them all similar, how different contractors and erectors work, the challenges with building in different climates and surroundings and how site issues and conditions—and sometimes major design changes—can be addressed or worked around.

In the case of CFAC, for example, the owner decided to add three stories to the current six stories—*while the building was already under construction*. This required quick ordering of mill steel and equally quick fabrication so that erection crews would go from the base structure directly to the added floors. And the construction team, including AISC Member and Certified fabricator and erector Construction Supply and Erection, Inc. (CSE) was still able to meet the erection schedule (from cold to warm to cold again) and budget.

In addition, CFAC is surrounded by other buildings in the middle of the dense complex, ambulance and police roads were required to stay open and normal roads for the general public had to remain undisturbed as well. CSE worked with general contractor Mortenson Construction to help them develop a delivery and erection plan to ensure that the steel package was completed safely and on time.

And it was. The building just topped out last month, and the following photos depict an hour or so in the life of a typical day on the site during the steel erection phase. ■



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◀ Steel erection required two tower cranes. Climbing up to or down from the cab takes about ten minutes, and an operator will routinely stay in the cab for eight or nine hours.

▲ The exterior wall (framing is shown here) will be a combination of high-end curtain wall and metal wall panels. Structural fabricator CSE is also performing the metal wall panel work.



▲ As ground-level space for materials was limited, the laydown area was always on the move, and steel was typically staged on top of each level as the framing and flooring went up. Four to six truck deliveries were made per day, with steel immediately being unloaded and craned to the laydown area.

▼ All braced bay column splices were made using CJP welded connections.



▲ The building was originally designed to be six stories but was expanded to nine.

▼ The 300-acre Milwaukee Regional Medical Center lies roughly five miles west of downtown Milwaukee.





- ▲ The upper, smaller-footprint floors above the nine full floors contain mechanical spaces and additional treatment areas.



- ▲ The project uses roughly 5,400 tons of structural steel, with member sizes ranging from W44x335 to W14x455.
- ▼ CFAC is being connected to another hospital building directly to the north.



- ▲ Welders must keep the steel to temperatures required by AWS D1.1 during the cold Wisconsin weather.
- ▼ Steel inside mechanical shafts was pre-coordinated and incorporated into the 3D model.



- ▲ Some of the braced connections were encased in CMU. A membrane was installed for the fifth floor to seal off the lower floors for interior work while steel erection continued above.
- ▼ All bracing in the structure is accomplished using heavy HSS sections in various arrangements.



- ▲ Dozens of weld passes were required to make even a basic splice connection in the columns.
- ▼ Columns were mounted to cast-in-place base plates up to 7 in. thick. These base plates had welded rebar couplers installed at CSE's plant and were suspended above the formwork during concrete pours for the parking levels below. The columns were then CJP welded to the base plates after erection.





- ▲ General contractor Mortenson created a compact, two-level trailer complex next to the ambulance/police road for its project office and field staff.
- ◀ Mortenson always installs a solid floor every two floors during construction for workers and equipment to use as a platform. The company has a zero-injury policy, which all subcontractors must comply with, stating: "All employees are obligated to conduct their work in a safe manner, to stop work immediately to correct any unsafe condition that is encountered and to take corrective action so that work may proceed in a safe manner."



- ▲ Plastic tarp with temporary wood framing is used to enclose areas from the cold while spray-on fireproofing is applied to the steel.
- ▼ CFAC is being built to free up needed space in the hospital, and the vertical expansion is a response to projected inpatient growth. Scheduled to open this fall, it will create an improved environment for surgical and interventional procedures, heart and vascular care and transplant operations.



- ▲ Steel started going up this past April, and the building topped out in December.
- ▼ Ground-level laydown space was limited to a tight area surrounded by structures on all sides and adjacent to the exit route for emergency vehicles, which had to stay open at all times.

