

Designed and built nearly simultaneously, a new office building enhances a Cedar Rapids Growth corridor, turning a vacant lot into premium office space and facilitating expansion.



# Rapid RISE

BY MATT BARRON, PE, AARON DAVIS AND MARK SEABOLD

Mike Fager/Fisheye Photography

**CEDAR RAPIDS' NORTHWEST QUADRANT** is ripe for growth.

The area features the national headquarters for Transamerica Life Insurance and many other office-commercial complexes and is near the growing Edgewood neighborhood. Owner/developer Hunter Companies recognized the potential for the area and decided to build a \$12 million, 67,000-sq.-ft, multi-story office building with first-floor retail and restaurant space.

The anchor tenant for the building was quickly secured: Berthel Fisher, a financial services company that employs 85 full-time staff members who serve approximately 700 representatives nationwide. Named for its anchor tenant, the Berthel Fisher Financial Center is an L-shaped building split in two using an expansion joint at the corner. Half of the building—36,000 sq. ft—is Berthel Fisher's three-story office, including an adjacent, limestone-clad single-story restaurant; the other half is a low-slung, two-story brick-clad mixed-use space with retail on the first floor and additional office space on the second floor. The building's design can accommodate an expansion of up to 15,000 sq. ft in the future as Berthel Fisher continues to grow.

## Staying On Pace

Berthel Fisher had wanted to move its national headquarters back to Cedar Rapids from nearby Marion, Iowa, for more than two years, and the company's desire to get into the space as quickly as possible fast-tracked the construction project and mandated a tight deadline of less than one year from design to occupancy. With speed playing such a factor, the structure had to be designed before the rest of the building. A rough version of the frame was designed, followed by a detailed version of the foundation. After construction was under way, the frame was modified to include floor and roof framing.

Rooftop mechanical units were selected and laid out after the building's structural steel was fabricated and built, creating a working atmosphere similar to an existing building—i.e., the ability to make changes was very limited. But the flexibility provided by 23 steel KCS joists above the three-story office space and an additional seven KCS joists over the restaurant allowed for mechanical unit location flexibility so the project could move forward without delays—despite the fact that design and construction were happening concurrently. In situations like these, where exact locations of point loads aren't yet



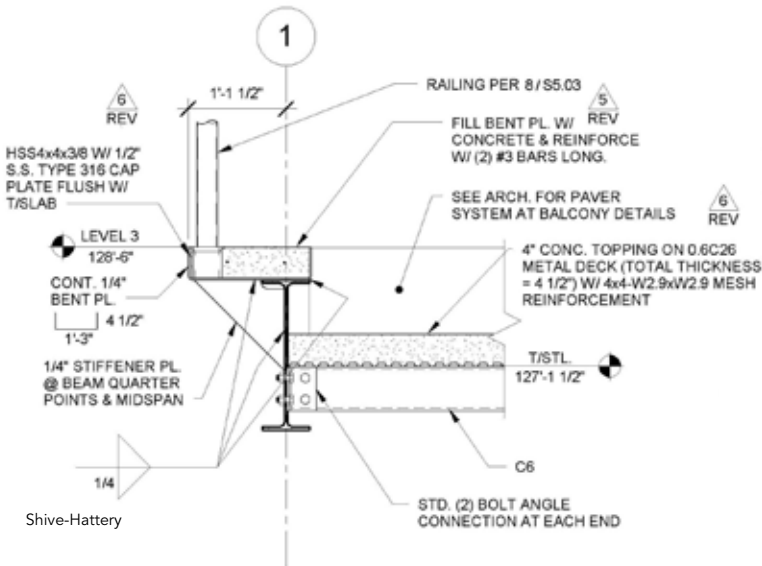
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- ▲ The three-story portion, under construction.
- ▼ The stair uses exposed structural steel.

- ▲ The 67,000-sq.-ft building mixes office, retail and restaurant space.
- ▲ Roughly half of the building—36,000 sq. ft—is Berthel Fisher's office.
- ▼ Balcony framing at the north wall.

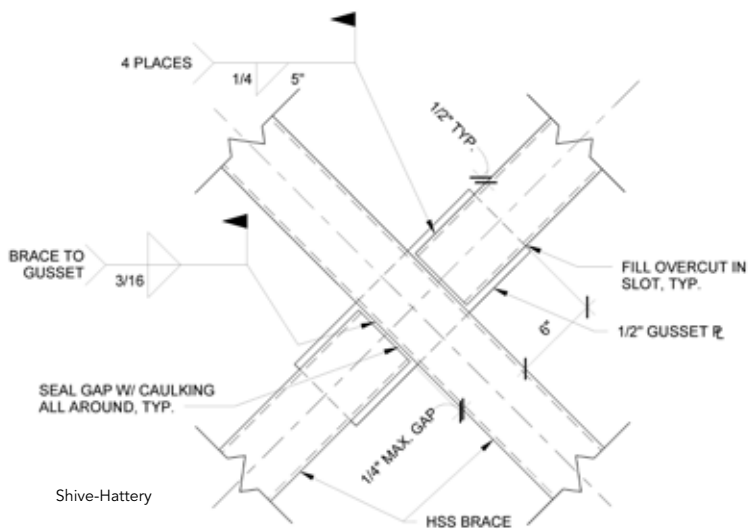


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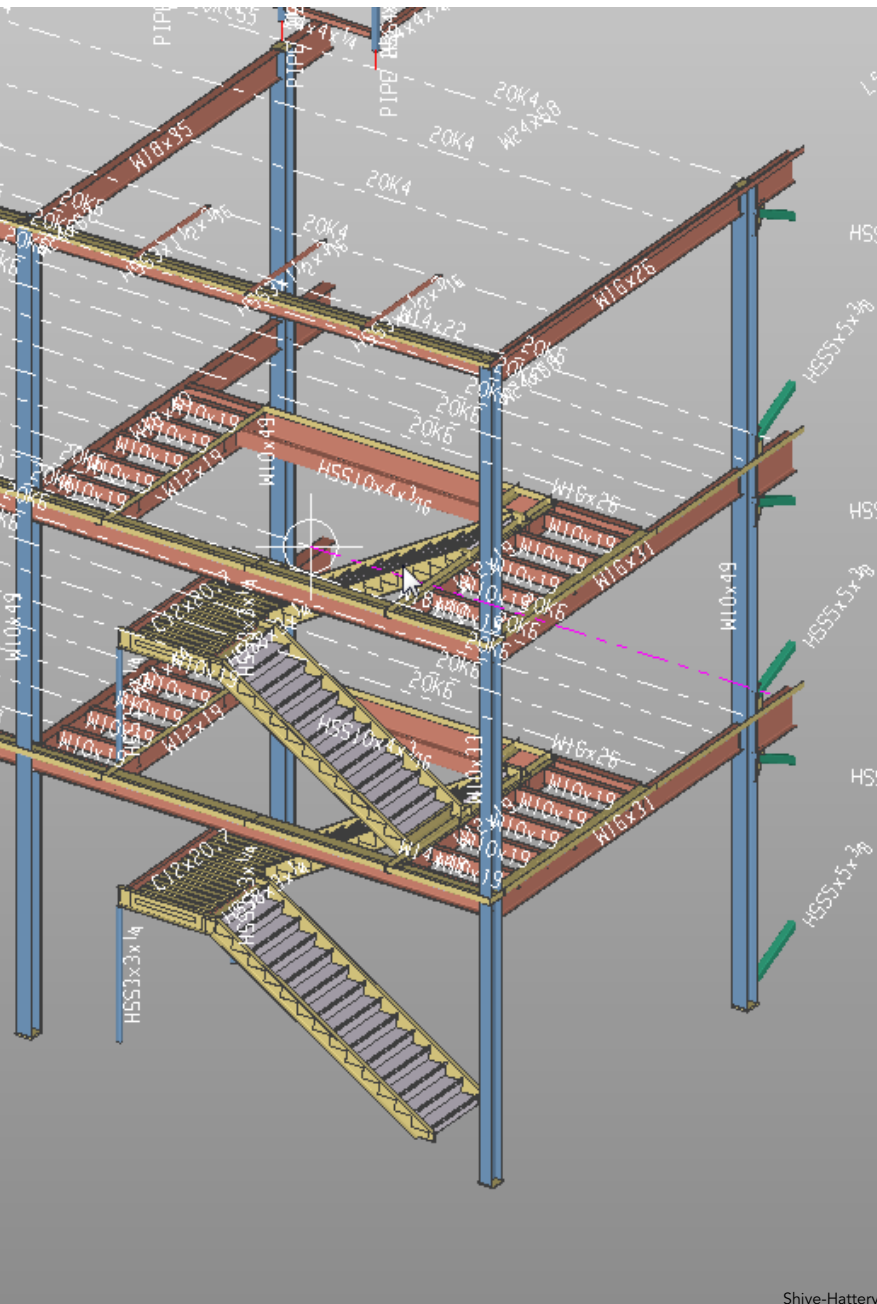


◀ A detail of an X-brace intersection.



▲ The X-bracing was typically HSS5×5×3/8.

◀ A model of the stair in Berthel Fisher's space.



available or known, the joists provide the flexibility necessary to keep construction progressing with limited information.

### Open-Office Design

To maintain maximum building flexibility, Hunter Companies originally hoped for a rigid frame design: a system of columns and beams connected through fully and/or partially restrained moment connections. Using this design, columns are attached to beams with no releases at the joint, and flexure, which induces shears and moments into the beams, columns and their moment-connected joints, helps resist loads. However, after Shive-Hattery completed a cost analysis, it was determined that using steel X-bracing would save between 40% and 50% as compared to a pinned base rigid frame. In addition to saving money, this decision allowed the project team to leave the structural steel exposed, specifically in Berthel Fisher's space.

Exposed lateral X-bracing in the breakroom, four exposed painted columns and even exposed beams were all left untouched to communicate an open feel that matched the company's personality. Use of the braced frames meant sleeker exposed structural members, an aesthetic that could then be echoed in building elements like the stair and handrail designs as well as other finishes. Additionally, the increased stiffness of the system allows for increased energy performance of the glass curtain wall system, ultimately lowering utility bills. The braced frames are all exterior bays, directly behind the full-height glass curtain wall system, which allowed the team to incorporate large amounts of glass on all levels of the building, offering tenants sweeping views of a nearby golf course and the surrounding Cedar Rapids area.

The X-bracing was typically HSS5×5×3/8 and columns were mostly W10, ranging from W10×33 to W10×68. Some W12×65 columns were used in the two-story portion where rigid frames were necessary.



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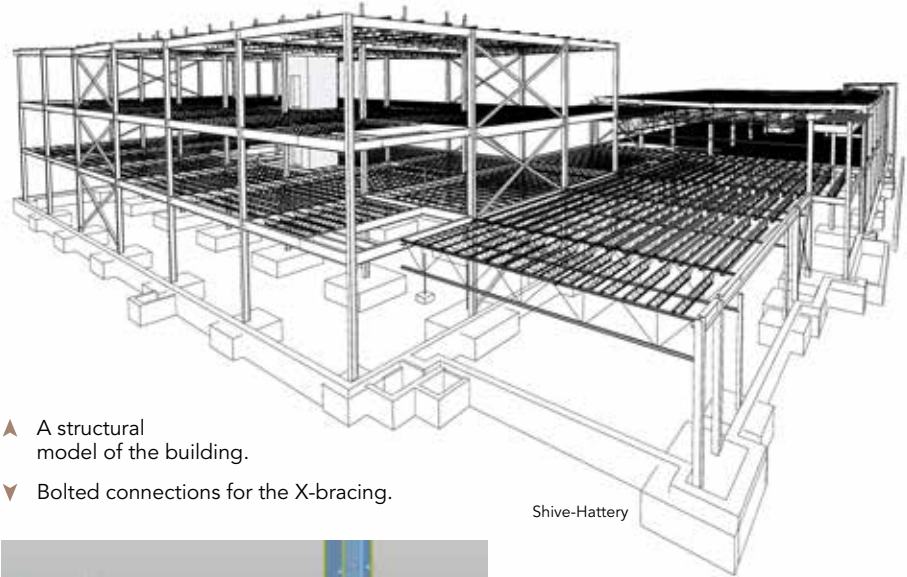
▲ The X-bracing in the breakroom during construction.

Beams were W18 to W24 depending on location, and there were also 44-in. and 48-in. joist girders used at spans over 35 ft. The braced bays were typically 26 ft in length with a 15-ft first-floor height and a 13.5-ft height for the second and third floors.

The building's two asymmetrical sections are separated by an expansion joint to reduce torsion and twisting, which eliminated the need for larger member sizes, and the long-span open bays of 35 ft and 40 ft incorporate nine joists. One particular span carries an elevated gym space, which required extra structural damping in terms of stiffness and mass. The framing system also allowed for easy incorporation of a high-end paver system—essentially elevated concrete blocks that sit on pedestals—into the patio areas. As the flooring underneath the pavers is sloped for drainage, the flooring needed to be recessed in order to maintain a level walking surface, and the steel framing allowed the project team to easily and cleanly create recessed floors and establish level transitions from inside the building to the outdoor patio areas.

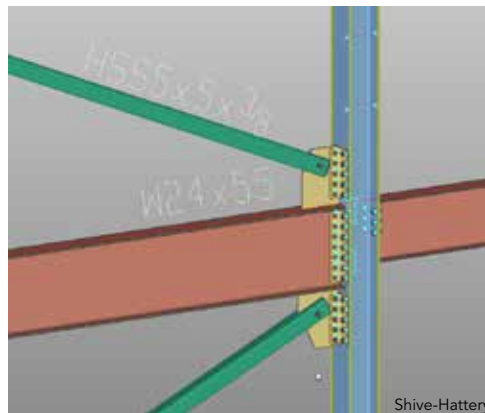
### Planning for the Future

Berthel Fisher requested that its space be designed with the ability to add a sizable addition to the east side of the building in the future, and structural steel made it feasible (and economical) to design the framing so that the east wall's curtain wall and architectural elements can be removed for expansion. A similar forward-thinking process was used when planning the single-story restaurant roof, which is designed to function as a rooftop patio in the future and would require another means of egress. The steel joists were laid out so that the



▲ A structural model of the building.  
▼ Bolted connections for the X-bracing.

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roof can easily be cut and a section of steel can be removed, thus allowing for easy installation of an extra stairway when needed.

With its new headquarters, Berthel Fisher hopes to continue recruiting top-notch employees and offer them a high-quality work environment that's close to high-end shopping and restaurants and just a few minutes from several residential neighborhoods—all in a wide-open office space that offers plenty of exposure to its structure and tenants. ■

#### Owner, Developer and General Contractor

Hunter Companies, Cedar Rapids, Iowa

#### Architect and Structural Engineer

Shive-Hattery, Cedar Rapids and Iowa City, Iowa

#### Steel Fabricator and Detailer

Design Build Structures, Peosta, Iowa

