

Teamwork Creates Recipe for Success

Owners, designers, and precasters work collaboratively to create a “total-precast” concrete office building that transforms a building into a carefully crafted business tool

— Craig A. Shutt



The new headquarters for Gordon Foods Service in Wyoming, Mich., was designed to reflect a traditional style using local materials to reflect the company's long-standing culture and history. A precast concrete structural system from one precaster and architectural precast concrete panels from another provided the personalized look the owners wanted. Photo: Craig Van Wieren.

Early collaboration between the precasters and the design team was a key to creating a functional and efficient high performance precast concrete structure for the Gordon Food Service Home Office in Wyoming, Mich. “It is rare to sit side by side with all members of the design/construction team and make all the decisions needed to create a 100-plus-year building,” says Kevin Diekevers, facilities manager for Gordon Food Service. “The entire process was a collaborative, energizing event.”

The new building reflects the culture and history of a business that opened its doors in the 19th century. The building used precast concrete for the structural system and as part

of the building's enclosure system. This combination is sometimes referred to as total-precast. The structure uses local materials to create a blend of traditional appearance and high-tech systems with an emphasis on employee interaction and the environment. Achieving these goals took close communication among the team, which included two precast concrete manufacturers.

The 384,000-square-foot facility features two rectilinear wings, two and three stories tall, that meet at an angle at a central three-story lobby. The 50,000-square-foot ‘Connector’ atrium features a lounge and other amenities to encourage employees to interact and collaborate. The first floor of the west building and Con-

necter provide the majority of the customer-related venues, including a test kitchen with three fully equipped commercial kitchens. The remaining spaces feature offices that are laid out in an open-plan system.

The design derived from an extensive discovery process that began with the design team from the architectural firm, Integrated Architecture, meeting with a variety of company leaders and employees. It also included input, review, and critique from corporate-construction experts, who manage the construction of corporate warehouses, stores, and distribution centers.

Those meetings were distilled into key metrics that informed and shaped the building's design and

PROJECT SPOTLIGHT

Gordon Food Service Home Office

Location: Wyoming, Mich.

Project Type: Corporate office building

Size: 384,000 square feet

Cost: Contact contractor for cost

Architect: Integrated Architecture, Grand Rapids, Mich.

Owner: Gordon Food Service, Wyoming, Mich.

Structural Engineer: JDH Engineering, Grandville, Mich.

Contractor: Dan Vos Construction Company, Inc., Ada, Mich.

PCI-Certified Precaster (structural): Kerkstra Precast, Grandville, Mich.

PCI-Certified Precaster (architectural): Gate Precast Co., Winchester, Ky.

Precast Specialty Engineer: Ericksen Roed & Associates, Saint Paul, Minn.

Precast Components: Columns, inverted tee beams, rectangular beams, hollow-core planks, solid planks, and solid panels.



sustainability goals and set the tone from the beginning. “When we were invited to be a part of this project, the customer wanted an open space that was inviting to collaboration” explains John DeBlaay, vice president/project executive for Dan Vos Construction Co.

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as a team holistically to look at the building as a living environment not only for our employees but for our guests,” says Diekevers. “This collaborative approach allowed us to save both time and money.”

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The team blended materials and emphasized natural lighting, says Scott Vyn, director of design for Integrated Architecture. “Precast concrete, metal panels, and glass combine to create a modern, understated facility that embodies the unassuming corporate culture of one of the largest family-held corporations in the nation,” he notes. “Utilizing a thin building footprint and orienting the structure east-west on the site allowed natural light to flow deep into the core and ensured all work zones have a visual connection to the out-of-doors.”

The layout of the two wings and atrium also helped reduce the building’s scale, he explains. The two main building masses are linked by the light-filled Connector, which serves as a transitional space housing a lunch room, living room and one of several collaboration zones.

“Functional and efficient, GFS’s new headquarters is more than a building; it is a carefully crafted business tool,” Vyn says. “Reflecting and

embodying the GFS culture, it offers a friendly, energetic, business-focused environment illustrating the value GFS places on each employee while continually reinforcing cornerstone ideals that are etched in glass, painted on walls, and shared across the organization.”

Total Precast Structure

The facility’s total precast concrete structural system, which includes columns, inverted tee beams, hollowcore planks, and solid architectural panels, provided 40-foot open bays that added flexibility to office layouts and more interaction among employees. The openness was enhanced by the installation of a raised-floor HVAC system, which was aided by the precast concrete structural framing. “Using precast concrete hollowcore rather than steel was 20% less expensive and saved months of construction time,” says DeBlaay.

The structural system was cast with self-consolidating concrete, which provided an exceptionally smooth finish, says Greg Kerkstra, CEO for Kerkstra Precast. “The finish allowed for exposed structural elements, which did not require covering with ceiling tile or drywall.”

A key benefit was precast concrete’s inherent fire resistance, DeBlaay notes. The designers wanted to leave the interior structure exposed as much as possible, and a steel frame would have required adding fire proofing to the structure to achieve a one-hour fire rating. The natural fire rating provided by the precast concrete structure supported the creation



The 384,000-square-foot facility features two rectilinear wings, two and three stories tall, that meet at an angle at a central three-story lobby. The 50,000-square-foot 'Connector' atrium includes a rooftop plantings. Photo: Craig Van Wieren.

of simple, clean ceiling lines while saving time and material costs. The precast concrete also provided a required fire wall between the wings at the connector, which consists primarily of steel with some glass curtain wall.

The precast concrete elevator core and stair towers provide lateral stability for the building, allowing the precast concrete column and beam spacings to be stretched throughout the building. "With the elevator core and the stair towers providing key lateral support, the anchorage at the base was critical to building stability," explains Don Akhurst, project engineer with JDH Engineering, the structural engineer on the project.

Another significant benefit came from the precast concrete's mass, which helped dampen vibrations that the design team was concerned might arise. "With a very open floor plan with very few interior walls, we wanted to avoid what happens in lightly framed buildings, where the effects of floor vibration can be noticed in water ripples in coffee cups and wiggling computer monitors and can be felt by office workers as people walk by in the nearby aisles," says Akhurst. "Those systems have some 'bounce' to them, and the design team didn't want to have that happen in this building."

To ensure the precast concrete

framing provided sufficient stiffness to avoid that issue, JDH worked with Kerkstra to adjust the precast concrete beams to increase the floor stiffness. "Once we agreed on where the damping numbers should be, we experienced no issues," Akhurst says. "That was important with the long spans that we were using."

Raised Flooring Installed

The framing stiffness was critical, as the designers wanted to install a raised floor HVAC and utility system that offered flexibility for moving offices and left the ceiling areas high and exposed. The precast concrete planks were set into place with no topping, and the flooring was installed using that as a base.

The precast structural solution fit well with the raised access-floor design. "Utilizing the hollowcore, we were able to achieve a clean, high-interior ceiling, which brings natural light deep into the building," Vyn says. "The precast structural system also provided a cost-effective platform for support of the raised access floor system."

The main HVAC ducts run in vertical chases at the perimeter and then branch off into smaller "highways" of air-distribution that run beneath the floor, he explains. That allowed 12-foot

ceilings that remained exposed, showing the precast concrete finish. "It creates a better ambiance in the offices to put the mechanical systems in the floor and leave the ceiling open."

"Eliminating the need for a topping on the planks was a key cost savings," DeBlaay says. "It saved a lot of time and material, which also helped speed up the project."

Speed was essential, as the new building was bringing together 1,200 employees from several locations who couldn't miss their move-in date. "We had a deadline we knew we had to meet," DeBlaay says.

Two Precasters Team Up

Having the structural and architectural precast concrete systems cast in climate-controlled manufacturing environments as site work was conducted ensured the building's enclosure was completed quickly. "Speed was a big plus for using the precast concrete system," DeBlaay says. Splitting the precast concrete components between the structural system, from Kerkstra, and the architectural cladding panels, fabricated by Gate Precast Company, provided no difficulty, he notes.

Important to the design process was the precasters' joint decision to contract one precast specialty engi-



The total-precast concrete structural system provided open 40-foot bays that allowed flexibility in laying out offices. Photo: Kerkstra Precast.



The precast concrete design proved to be 20% less expensive and saved months of construction time compared to a steel frame. Photo: Kerkstra Precast.

neer on the project. Ericksen Roed & Associates of Saint Paul, Minn., served as the precast specialty engineer for both the structural and architectural precast components. "Through enhanced coordination between both precasters, and one design engineer, we were able to design the entire total precast system effortlessly," says Jim Lewis, director of architectural precast systems for Gate Precast.

The erection of the pieces from the two precasters went smoothly, with no issues arising thanks to close communication among the construction team. Site disturbance was minimized by casting the precast concrete components off site and delivering them as needed. "Kerkstra's plant is only 10 miles from the site, so there were no issues with transportation," says Akhurst.

The finish for the architectural panels was worked out with corporate officials through lengthy discussions about their culture, history, and

future. "Precast panels employed on the building's exterior provide a consistent, low maintenance, clean aesthetic that is in keeping with the overall design intent, a welcoming, cost-effective, long-lasting, people-friendly facility," Vyn says

Aesthetically, precast provided the flexibility for varying the color and textures to replicate the desired appearance. A buff finish was created using an acid-wash with complementary aggregates. It allowed for a richer color and smooth texture, which was used on the majority of the panels. To complement but contrast with this design, the lower panels feature a deep gray concrete mix that was acid washed to give the appearance of a dark granite.

Durability and long-term performance were critical elements in the factors that company executives outlined, Vyn notes. The building was designed, using precast concrete and other long-life materials, to exceed a 100-year service life.

Sustainability

Some of the initial site work involved drilling 400-foot-deep wells on the campus to maximize use of renewable energy. The 300 wells, which took four months to install, make the site one of the largest geo-thermal fields in Michigan. Mechanical and utility systems added to the sustainable features, including the underfloor HVAC. The system delivers 152,000 CFMs that provide static pressure for the 238,000 square feet of raise flooring. All employees have individual controls for air flow and temperature at their stations.

The building has been planned for future expansion, with space to the south designated for a future addition, as well as needed revisions as the company grows. Phone and data cabling are centralized in two designated rooms on each floor with independently controlled cooling systems, allowing them to connect to revamped systems as needed. Two large generators were installed at the east end of the property to keep the building and its systems operational even during a complete power failure. The LED lighting is controlled via motion and building-management systems to reduce energy use. Rainwater also is collected and reused.

The building has been submitted for LEED certification. "Numerous sustainable strategies, including building envelope commissioning, under-floor air delivery achieved through a raised access floor, and with geo-thermal heating and cooling, combine to achieve efficiencies that are designed to exceed ASHRAE by 46%," Vyn says.

The precast concrete will aid in achieving that goal through its use of local materials and local manufacturing, reductions of waste and site congestion, the use of recycled materials, and the thermal mass of the 8- to 10-inch panels, which will aid with energy efficiency.

"I absolutely love the open and exposed precast structure and consistent look of the exterior," says GFS's Diekevers. "On behalf of the Gordon Food Service team, we thank the design and construction team for an incredible structure and job well done!" 

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