



LEED SILVER

TCF BANK STADIUM

- Project Type:** Stadium
- Location:** Minneapolis, Minn.
- Owner:** University of Minnesota
- Architect:** Populous (formerly HOK Sport), Kansas City, Mo., with Architectural Alliance and Studio Five Architects, Inc., both Minneapolis, Minn.
- Engineer:** Vanderweil Engineers, Boston, Mass.
- Contractor:** M.A. Mortenson Company, Minneapolis, Minn.
- Structural Precast:** Hanson Structural Precast Midwest, Maple Grove, Minn.
- Architectural Precast:** Gage Brothers Concrete Products Inc., Sioux Falls, N. Dak.
- Precast Pipe:** Hanson Pipe and Precast, Apple Valley, Minn.



OVERVIEW

Home to the Golden Gopher football team and the University of Minnesota marching band, the TCF Bank Stadium opened in September 2009 and was the first LEED-certified stadium in the country.

The state-of-the-art facility houses a 10,000-seat student section, three levels of private suites and boxes, 59 loge mini suites, 1,492 indoor and outdoor premium club seats, press boxes, and handicap seating. Also included is a monster scoreboard, a wraparound LED ribbon board, team store, a 6,500-square-foot band rehearsal room, two club rooms, restaurants, bars, a Minnesota Tribal Nations Plaza, Native American Memorials, a Veterans tribute, and a Hall of Fame gallery.

Beneath the stands is a 60-yd-long, football-shaped Golden Gopher locker room. In the middle of the floor, at the center of this ultra modern space, is a giant letter "M." Above, in the locker room ceiling is another large letter "M." This one can be programmed to pulse to music.

The new open-air, horseshoe-style stadium seats 50,805, but is designed for future expansion to seat 80,000 by adding seating levels above the current stands. Sited so that the bowl opens to views of downtown Minneapolis, the stadium is part of a 75-acre expansion of the Twin Cities campus. Plans call for 10 new academic buildings by 2015. A future Central Corridor light rail transit line is expected to run near the stadium.

Populous was the architect of record. Design was done in conjunction with Architectural Alliance and Studio Five Architects, Inc. both of Minneapolis, Minn. Vanderweil Engineers was the engineer of record and the MEP engineer.

"It was a wonderful accomplishment to achieve LEED Silver designation," says Myron Chase, AIA LEED AP, project architect with Populous. "We worked together as a team. But it wouldn't have happened if the university had not put forth the initiative. The university had a high standard to maintain. They wanted a green facility with a collegiate brick façade. Brick is prominent on the campus and on adjacent athletic facilities. They also wanted a horseshoe shaped structure that would open to planned buildings and the potential rail hub."

The exterior of the new stadium features thin brick inlaid, precast concrete wall panels. The brick façade complements the campus environment and is reminiscent of the old Memorial Stadium, which was nicknamed "The Brick House." Columns and arched portals encircle most of the stadium.

5 MONTHS

Time saved off the construction schedule with precast construction

95 PERCENT

Amount of construction materials that were produced locally

95 PERCENT

Amount of construction waste that was recycled and diverted from landfill



New Golden Gopher facility was the first LEED-certified stadium in the country.

Photo: Gage Brothers Concrete Products Inc.



Exterior façade features thin brick inlay, precast concrete wall panels.

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Walls, ceiling, floors, roof, glass, the entire building envelope met or exceeded energy requirements.

Photo: Gage Brothers Concrete Products Inc.

"The original documents consisted of approximately 1,200 architectural trim pieces that complimented a conventional stadium [built of] full size brick with block back-up," explains Tom Kelley, president, Gage Brothers Concrete Products Inc. "After our first review and budget estimate, we decided to start a dialog on how converting the exterior envelope to thin-set brick would not only save time and money, but would be the 'green' thing to do. Thin-set brick consumes 1/6 the energy of a full-size brick. Additionally, the minimal site disruption of a 5-month precast erection job versus some 14 months of laying block and brick was a huge environmental plus for the project.

"When all was said and done, we saved the project over 3 million dollars plus 5 months off the schedule."

PRECAST CONCRETE'S CONTRIBUTION TO SUSTAINABLE CONSTRUCTION PRACTICES

Sustainable Sites:

A storm-water management system captures rainwater and routes it to an underground filtering system beneath nearby grassy areas, which then drain into the Mississippi River. The system includes retention ponds, impervious pavement and bioswales. The latter double as security barriers.

Additional LEED points were obtained from the available bike storage and by the nearby location of public transit systems, which reduced surface parking requirements. The project also features water-efficient landscaping and a white roof to reduce the heat island effect.

Water Efficiency:

All water is pre-sewer filtered before it enters the sewer system. The project incorporates low-flow plumbing fixtures that will save an estimated 560,000 gallons of water per year.

Energy & Atmosphere:

The local utility bundled packages documenting estimated energy costs and pay back time for various design options. The building energy systems were commissioned and the project's energy performance was optimized. With the precast concrete construction selected, the entire building envelope—walls, ceiling, floors, roof, glass—met or exceeded energy requirements. R-values for the structure are listed as R-20 roof, R-15 walls, and R-10 floors.

The stadium shares mechanical equipment with nearby facilities.

Materials & Resources:

Stadium construction utilized over 1,800 pieces or 180,000 sq. ft. of brick clad precast and 1,100 pieces or 60,000 sq. ft. of architectural precast cladding, as well as precast concrete columns, beams, stadia risers, stairs, raker beams, and spandrels. Use of factory-produced precast concrete components was a key element in obtaining sustainable credits for specifying regional materials, emphasizing recycled content, and reducing construction waste.

In all, 95% of the materials used were manufactured in Minnesota; 97% of the steel used in the construction was from recycled steel; and 95% of the construction waste was recycled.

Indoor Environmental Quality:

Energy-efficient lighting with motion sensors is used throughout the facility. All finish products, including paints, carpeting and plywood, were low-VOC emitting materials.

Innovation & Design Process

Located on campus, the stadium boasts nearly 1,000 different ways that a person could reach it by public transportation on any given day. 



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