

Open for Business

Precast Helps Milwaukee-Area Mall Meet Tight Construction Schedule
By Roger Becker, P.E., S.E.

Located just north of Milwaukee in Glendale, Wis., the nearly 50-year old Bayshore Mall recently underwent a \$150 million renovation, transforming from a 500,000-square-foot shopping mall into the *Bayshore Town Center*: a one million-square-foot commercial, office and residential complex. Originally intended to take three years to complete, the project timeline was significantly reduced to meet the 2006 holiday shopping deadline. From initial planning to finished construction, the entire project was completed in just 22 months and – during almost two years of construction – the mall remained open for business.

Make Room for Parking

The revitalized Bayshore Town Center required more parking spaces than previously achieved through surface lots. A focal point in the early planning stages was finding the best way to incorporate sufficient, eye-pleasing parking accommodations.

It was determined that two distinct, multi-story parking decks would provide more than 1,500 parking spaces. The larger of the two parking decks, the Bayshore Town Center North Parking Structure, would provide over 600,000 square feet of mixed-use space.



Bayshore Town Center North Parking Structure – Opening Day 2006.

The multi-use facility included retail space at the ground level with parking, two parking deck levels, as well as three stories of residential space built atop the parking deck. The skeleton of the North Parking Structure used precast components including hollowcore plank, double tees, IT beams, columns, load- and non load-bearing spandrels, shear walls, light walls and wall panels. There was over 365,000 square feet of architectural and structural precast utilized in this space.

The parking levels of the project were a fairly standard pretopped double tee system with ramping between levels accomplished with a centrally located

speed ramp. To span the 62-foot bay size, 12-foot wide by 30-inch deep double tees with 4-inch thick flanges were used. An interesting challenge for the structure was the inclusion of the residential space built over the parking. A transfer level was required to support the light gage steel residential construction, which had a dead load of approximately 80 psf per level. To still provide the open parking bays below, the transfer level had to also span the 62-foot bay size. Double tees up to 52 inches deep with flanges up to 6 inches thick, were used for the 62-foot span. The double tee widths varied from 8 feet 5 inches to 12 feet, and weighed up to 106,000 pounds. Inverted tee

beams supporting the double tee system were 40 inches wide by 5 feet 6 inches deep, spanning up to 44 feet and weighing as much as 87,000 pounds.

The significant part of the design and detailing challenge was that the light gage steel system resulted in line and concentrated loads localized at bearing walls and columns at openings in bearing walls. Wall loads approached 5000 plf service load, and concentrated loads were as high as 55 kips service load. While the wall loads could be supported on the thicker double tee



Bayshore Town Center North Parking Structure – Erection of parking and residential levels of structure.



Bayshore Town Center North Parking Structure.

flanges, many of the concentrated loads had to be located directly over double tee stems. Clearly, this required careful coordination of the two structural systems.

Timing is Everything

Among the many reasons precast was selected was its ability to be quickly adapted to rapidly changing design specifications.

For instance, while the team was designing the structure and the foundations were started, the top three floors of apartments doubled in size, thereby changing the scope of the project. Further into the project, the front façade changed significantly. Thanks to a highly responsive design/build team, each change was handled quickly and efficiently.

The use of precast products also permitted on-site construction to continue throughout winter. A tightened construction window demanded a fast-paced construction cycle without weather-related interruptions or delays. While the design process began in July 2005, precast production began in late 2005. By July 2006, both parking decks were completed.

While the parking decks met the demand for much-needed parking accommodations, they also added to the overall splendor of the new and revitalized Bayshore Town Center. Most recently, the Bayshore North Parking Structure was recognized by *Wisconsin Builder* as one of Wisconsin's 'Top Projects' in 2006. ■

Roger Becker, P.E., S.E., Vice President of the Precast Division for The Spancrete Group, Inc. has over thirty-four years of structural engineering experience. Mr. Becker is a Registered Professional Engineer in Wisconsin and Ohio and a registered Structural Engineer in Illinois. He is a member of SEA01, PCI and ACI and is also the co-author of the PCI Second Edition Manual for the Design of Hollowcore Slabs.


Project Credits

General Contractor
Corna/Kokosing Construction Co.

Architect
Meachem & Apel Architects, Inc.

Engineer of Record
Jezerinac Geers & Associates, Inc.

Precast Contractor
The Spancrete Group, Inc.





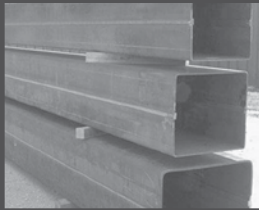
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