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## MARIA FARERI CHILDREN'S HOSPITAL WESTCHESTER MEDICAL CENTER

Steel Frames an Uplifting Roofline

**Institutional architecture used to mean serious,** even intimidating buildings that expressed gravity of purpose. The Maria Fareri Children's Hospital in Valhalla, NY, takes this idea and turns it on its head. More whimsical than intimidating, the 260,000-square-foot complex looks like something from a fairy tale. It's a giant dollhouse, with corner towers, steeply pitched roofs and gables, and is obviously designed to help lift the spirits of young patients. But the unexpected design presented the architects and engineers with the challenge of finding a mate-

rial flexible enough to frame the distinctive roofline on time and within budget. Their solution was steel, which also handled the literally weighty requirements of a first class medical facility on the floors below.

"We wanted to promote a child-friendly, home-like feeling while reflecting and respecting the surrounding residential areas," says Arthur Clements, partner-in-charge for Lothrop Associates Architects, which collaborated on the design in a joint venture with the Columbus, OH, office of NBBJ and the New York office of the Syska Hennessy Group. The architects also

**LEFT** Conventional steel framing was used to execute an unconventional design.

**ABOVE** The steeply pitched, whimsical roofline is meant to help lift the spirits of young patients.



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worked with structural engineering firm Korda Nemeth Engineering in Columbus, OH, and Turner Construction on the \$147 million project. "We hoped the design would be a bit more playful than the average hospital," he says. Such considerations were important since the facility is used to treat level-one trauma cases (the most severe conditions and diseases) for the entire lower Hudson Valley region—roughly just north of the Bronx to Poughkeepsie.

Excavation began in 2001, with erection of the building's structural steel framing following in the spring of 2002. The building was completed in the summer of 2004. "We used relatively conventional building techniques to execute an unconventional design," says Nicholas Constantine, a structural engineer with Korda Nemeth. The structural system is a typical moment frame with some fixed bases. Grade 50 steel was used for all primary members, while all of the plates, bents, and other secondary members were 36 ksi.

Keeping the project on schedule while executing the unusual roof and exterior wall specifications presented one of the biggest challenges

to the construction team. The pitched roofs, which are steeper than 45 degrees, were custom designed without any prefabricated trusses, using a combination of rolled steel and tube steel framing of varying thicknesses and weights, up to 24 inches wide, that could carry 55 pounds per square foot. The roof system had to be completed within three months in order to finish the multi-stepped stucco application process on the exterior walls before the year's end. Fortunately, the steel framing system was perfectly suited to this challenge. All of the roof frame members were shop welded and then bolted on site, ensuring a speedy erection. In spite of all the dramatic gables and rooflines, there were no snags during construction. "This building with its unique roof system wouldn't have been possible without the flexibility that the steel frame provided," continues Constantine.

The importance of the pitched roofs and corner towers—unusual for both a building of this kind and steel frame construction—the largest tower of which the architects refer to as "the Witch's Hat," is that it helps to break up the massing of the large, three-story complex, which is

## flexible enough to frame the distinctive roofline on time and within budget. Their solution was steel.

situated on 12 acres. In addition, Clements says, "The scale and texture helps to reinforce the connection to the surrounding neighborhoods. It was important to the client to be good neighbors in addition to providing top quality facilities."

Inside, the steel framing system allowed the architects to carry the idea of neighborhood context onto the walls, floors, and ceilings, muting the gravity of the place. Twenty-eight- to 30-foot spans between vertical members and 12-foot floor-to-floor heights allowed ample space to turn the long corridors into "Main Streets" with storefronts for individual rooms, a gazebo, and even a ceiling suspended train set chugging overhead. The 28 ksi metal decking was sturdy enough to support some fanciful, but weighty, touches—like a 15,000-gallon saltwater aquarium in the main lobby (fish are known to have a calming, therapeutic effect).

Structural steel was equally well suited for framing the more traditional features of this serious hospital for children. Included in this 140-bed facility are 55 medical surgical pediatric beds, an 18-bed pediatric intensive care unit, a 10-bed trauma intensive care unit, an eight-bed

pediatric oncology unit and a neonatal intensive care unit accommodating 44 bassinets. The facility also includes an emergency department with three trauma rooms, a diagnostic radiology unit, and a surgical suite with six operating rooms and two procedure rooms. Most of the patient rooms are private and include pull out couches for visiting family members. "It's important to accommodate families when designing medical facilities for children," says Clements.

The care the architects and engineers took to make this building a warm and fun environment will undoubtedly contribute to the well-being of the small patients staying there. Science continues to prove that laughter is a very powerful medicine—and designers working in tandem with science are potent tools as well. "It was an extremely satisfying project to work on," says Clements. "These kids are strong and have faced a lot, so it's nice to give them a good place to fight the fight." In this building, steel does the heavy lifting on the occupied floors, while allowing the architects to create a whimsical top to the building, so the kids get the best of both the hard and soft side of treatment. ■

**ABOVE LEFT** The steel framing system provides 12-foot floor-to-floor heights and 28- to 30-foot spans between vertical members.

**ABOVE RIGHT** The children's hospital was erected on schedule without disrupting access to the rest of the medical center.

**ABOVE LEFT** All of the roof frame members were shop welded and bolted on site, ensuring a speedy erection.

**ABOVE RIGHT** In order to remain on schedule, the roof framing had to be completed in three months.

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### MARIA FARERI CHILDREN'S HOSPITAL

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