EVERY CONSTRUCTION PROJECT has its challenges, as any engineer and contractor will attest. But some, such as the Seton Women’s Center in Austin, Texas, stand unique in their complexity.

The overriding challenge was that there was only one open space available on the 20-acre campus. That meant the new Women’s Center had to be carefully squeezed into the opening between the existing nine-story Seton Medical Center hospital and an adjacent medical office building.

“This six-floor, 128,000-sq.-ft addition is shoehorned between two existing facilities,” said Dan Vickers, an architect and project manager for Seton Network Facilities. “The existing facilities are askew to the city grid. The new addition matched the city grid, which led to skewed connections at the interface point with the Women’s Center. This was the only solution within our master plan to accommodate the need for growth, given the previous additions to the campus.”

But solving the geometric part of the puzzle was only the first part of the solution. Complicating the construction project was the requirement that the adjacent hospital remain open as a 24-hour facility, including ambulance and helicopter traffic, which demanded critical construction scheduling and reduced construction work areas on premises.

Capping the list of project challenges was a design that called for the Women’s Center to cantilever 85 ft over the two-story Emergency Services department on the southwest corner of the Medical Center.

Facing these unique construction considerations, the general contractor understood that it was critical to engage in early discussions with specialty subcontractors for material procurement, fabrication and erection of the steel superstructure.
Getting a head start on the cooperative effort pays off for the Seton Women’s Center.

The answer was to use a program called Fast-Frame offered by Gerdau Ameristeel. The program brought together a steel mill, a steel fabricator, a connection engineer, and a steel erector, all of whom were allowed to work closely with the Engineer of Record. The philosophy behind the Fast-Frame approach is simple: Bring in the specialty steel contractor team in a design-assist role as early as possible to evaluate ways to optimize the cost and schedule of the delivered steel structure, and to address project specific goals. Because the program is led by the steel producer, the team is able to ensure optimal material selection, with guaranteed material pricing for the duration of the project, and on time delivery of material to the fabricator.

The integrated team examines trade-offs between material costs, fabrication labor costs and field labor costs. Each project brings a differ-

A new entrance and lobby in the existing hospital was constructed, accessed by a driveway below the Women’s Center addition.

Cantilevered trusses were assembled and stacked with dunnage on the fifth floor of the building during construction. Pictured are ironworkers from Deem Steel Erectors.

Cranes lift one of two trusses into position after assembly on the fifth floor of the Women’s Center during construction. The two cantilevered trusses connected to create the southeast corner of the new building, with three levels of framing hanging below the trusses.

Ironworkers in personnel lifts guide the south wall truss into position. Note the back gusset plate already in position on the column at left, facilitating the bolt-up connection.

Matthew Gomez, P.E., S.E., is the Gerdau Ameristeel Fast-Frame National Sales Manager. The company is the second largest mini-mill steel producer in North America, with annual manufacturing capacity of approximately 12 million tons of mill finished steel products. Through its vertically integrated network of mini-mills, scrap recycling facilities, and downstream operations, Gerdau Ameristeel serves customers throughout the U.S. and Canada.
Women’s Center progress drawings to develop value engineering options.

Conditions, project schedule, budget constraints, chords, with HSS sections for the vertical tractor for evaluation, and a target was set for the team to offer alternate solutions that had the design was still in development, many of the members were still open 24/7. and from the participants’ perspective, building an integrated, committed team—incorporating the steel mill, fabricator, detailer and connection engineer—very early in the process was a huge step in the right direction.

“The integrated project team made this project successful,” said Greg Griffin, project manager for general contractor Rogers-O’Brien. “The complexities of this project were such that early involvement of the steel team helped solve a lot of issues.”

Architect Dan Vickers, Seton Network Facilities’ project manager, summed up his impressions of the project delivery team with high praise. “I like establishing relationships with good companies you trust,” Vickers said. “Despite the proximity of existing facilities and other hidden conditions, the construction of the Women’s Center was very successful. We brought in this team for their expertise and they delivered a great project.”

The first area targeted for optimization dealt with the construction of the two major trusses that would be used to support the cantilevered southeast corner of the building. The original design used wide-flange sections as the top and bottom truss chords, with HSS sections for the vertical and diagonal members.

“There can often be a big difference between how it looks on paper and how it’s fabricated, delivered and erected,” said Greg Griffin, project manager for general contractor Rogers-O’Brien. “An integrated team brings into the picture all of the professionals who know best how the project comes together properly.”

One example involved the truss design. “The engineer determined the truss configuration and load requirements,” Griffin said, “then the steel team came in with new designs for the trusses and connections.”

The connections originally were envisioned as gusset plates, shop welded to the wide-flange members and field welded into notched ends of the HSS members, which required a significant amount of shop time. Lastly, the truss members would be field-assembled and welded into place. However, because of the tight site conditions, the field assembly had to be done within a short period of time.

“It was a tight fit on the construction site, which made scheduling and sequencing of material delivery very important,” said Denny Dinsmore, Rogers-O’Brien’s senior field superintendent. “There was no room on the campus to store material. We needed a sequence that allowed us to handle each piece a minimum amount of times.”

The completed Women’s Center building, seen from the north, is defined by a silver/blue cladding. Below the building is a drive, accessing a new entrance to the hospital (to the left).
Other areas led to additional cost savings and schedule improvements, including:

- Reducing the number of column splices, which added weight but cut fabrication and erection time and costs.
- Revising work points where multiple members met at skewed connections, which improved constructability and reduced fabrication and erection time and costs.
- Revising the HSS support framing to be wide-flange beams for a pedestrian bridge that connects to the existing medical office building, with the same benefits as changing the trusses.
- Revising the floor framing to minimize the number of different member sizes in a typical bay. That allowed the detailer to simplify the shop drawings, reduced retooling in the shop, and simplified the erection planning. It also allowed the mill to provide material in bundle quantities and to nest the lengths more effectively, resulting in reduced waste.

“It was a team effort,” Griffin said. “There are benefits when everyone comes together early, and throughout the project; it will more likely be a successful project, and we can give the owner the best value for the money.”

And thanks to the integrated approach, the savings on this project can be quantified. By the end of construction, the integrated delivery team identified approximately $210,000 of value engineering savings for the $3.4 million steel portion of the project.

Owner
Seton Healthcare Network, Austin, Texas

Architect
STG Architects, Austin, Texas

Structural Engineer
Datum Engineers, Austin, Texas (AISC Member)

Connection Engineer
Structural Solutions, Inc., Fort Worth, Texas (AISC Member)

Steel Erector
Deem Erectors, Longview, Texas (SEAA Member)

Steel Fabricator
Crist Industries Inc., Fort Worth, Texas (AISC Member)

General Contractor
Rogers – O’Brien Construction, Austin, Texas

Structural Software
SDS/2, RISA-3D, RAM Steel