



CFSEI
COLD-FORMED STEEL
ENGINEERS INSTITUTE

2017 CFSEI DESIGN EXCELLENCE AWARD WINNER

**FIRST PLACE/RESIDENTIAL – EXCEL ENGINEERING, INC. –
COLLEGETOWN TERRACE BUILDING 7, ITHACA, NY**

Collegetown Terrace Building 7
120 Valentine Place
Ithaca, NY 14850

Completed: April 2017
Construction Cost: \$40 Million

Owner: Novarr Mackesey Development
Architect of Record: Ikon.5 Architects
Engineer of Record for Structural Work:
Robert Sillman Associates



Photo by John C. Lowery, Inc.

Cold-Formed Steel Specialty Engineer: Greg Wilkum, Excel Engineering, Inc.

Cold-Formed Steel Specialty Contractor: Norm Aidun, John C. Lowery, Inc.

Award Entry Submitted by: Greg Wilkum, Excel Engineering, Inc.

Project Summary

Collegetown Terrace is a student apartment rental complex near Cornell University. Building 7 is the third stage in a multi-building complex situated on a 12-acre site with a combined estimated cost of \$70 million. Building 7 is the largest structure on the site and the largest residential building in Tompkins County, with a sweeping radius that moves in and out and stretches out more than 600 feet. The apartments include dorm-style rooms, studios, and two- and three-bedroom apartments, with a total of 247 units and 344 bedrooms. Collegetown Terrace offers a covered parking garage, fitness center, and a free shuttle bus to the university.

The construction type is a lower precast plank parking garage with a four- or five-level light gage load-bearing structure above for the apartments. The interior partition walls are load-bearing studs that support the light gage floor and roof joists. The joists support a metal deck and gypcrete floor system. The elevator and stair shafts are constructed with masonry. Cold-formed X-braces at the apartment level provide lateral stability for the building. The exterior of the lower parking garage is constructed with cold-formed steel.

The exterior of the building makes a unique statement. Its fiber cement siding, glass, stone, cement board stucco and stamped and formed metal shingles accentuated by bright colors make the building's large sweeping curves hard to miss.

Design Challenges

The sweeping curves presented a design challenge for the straight cold-formed steel framed members. The solution was pie-shaped rooms with interior bearing partition walls that came together or walked apart from each other. The floor joists then ran between these bearing walls. Since nothing was perpendicular, a rim track was attached to the side of the bearing walls at each floor level. The different joist lengths were then cut to fit



Photo by John C. Lowery, Inc.

at each room and clipped into the rim track. The rim track was designed to span and transfer loads from the joist to the walls. This allowed greater flexibility for the contractor installing the joists since they did not need to align with a wall stud.

The next challenge was to merge the floor joists to the exterior walls. The exterior walls formed a radius and walked away from the last straight floor joist. There could be as much as a 2.5-foot-gap between the joist and the exterior wall from the radius of the building. A detail was

developed to attach small joists or blocking perpendicular to the last floor joist that was run and clipped to the exterior wall stud. This last joist and blocking were then covered with continuous gage metal. The gage metal was run and sandwiched between the top track of the wall below and the bottom track of the wall above and also covered the last blocking and last joist. This sheet metal helped transfer in the wind load reactions from the exterior wall into the floor diaphragm and the blocking helped supply the necessary rigidity.

The project demonstrates that even with a complex shape, there are many design options available to create unique profiles with straight light gage steel framing members. Working with the contractor and design professionals, innovative solutions can be found for challenging designs.

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Photo by Excel Engineering, Inc.