SFIA

STEEL FRAMING INDUSTRY ASSOCIATION

CASE STUDY

WINTER NO MATCH FOR STEEL

SHERIDAN COLLEGE STUDENT RESIDENCE
TRAFALGAR CAMPUS
OAKVILLE, ONTARIO

Steel Framing Industry Association
513 W. Broad Street Suite 210
Falls Church, VA 22046-3257
P 703.538.1613
F 703.538.1733
CFSteel.org

OVERVIEW

PROJECT

Use
Student residence

Size
6 stories, 186,000 sq.ft.
Housing for 250 students

Completion Date
September 2013

Construction Cost
$25 million

PEOPLE

Owner
Campus Living Centres,
Toronto, ON

Architect
Malhotra Architects,
London, ON

Structural Engineer
Santarelli Engineering,
London, ON

CF Steel Engineer and Fabricator
Magest Building Systems Ltd.,
Stratford, ON

Cold-Formed Steel Fabricator
Nuconsteel (now part of Nucor Corp., Charlotte, NC)

STEEL

150 tons cold-formed steel

33-97 mils steel studs and track

The Trafalgar Campus of Sheridan College's new student residence features load-bearing cold-formed steel installed on concrete foundations poured before winter began.

Cold-Formed Steel Installs During Tough Canadian Winter, Saving College Time and Money

Set in Oakville, on Lake Ontario just west of Toronto, the Trafalgar Campus of Sheridan College is home to 7,500 students. The creative campus offers programs in animation, design, film, television, theater and more.

In late 2012, the college began construction of a student residence. The project would run through a tough Canadian winter.

"It cooled down in December, and we got snow," says Brock Martin, President, Magest Building Systems Ltd., Stratford, Ontario, whose company installed the load-bearing cold-formed steel framing on the project. "But, we were able to maintain our schedule in -10 to -20 degrees Celsius [14 to -4 degrees F] for three months."

By pouring the structure's foundations in the fall and using cold-formed steel framing over the winter, Sheridan College and its public-private partner, Campus Living Centres, saved money — likely hundreds of thousands of dollars in carrying costs, Martin says. How?

SYSTEM ALLOWED FOR AN AUTUMN START

Savings came, Martin says, by starting the project's construction cycle in the fall. By timing construction so that the foundations were poured before winter began, crews were able to install load-bearing wall systems and hollow-core floor and roof joists during the coldest months of the year. This would not have been possible using other systems.

"The foundations were completed before winter kicked in," Martin says. "The general contractor didn't have to supply heat to install the cold-formed steel, which they would have had to do for a masonry or concrete load-bearing system."

Bigger savings came by narrowing the construction cycle.

"They bought a system they knew would meet the schedule through winter," Martin says. "They didn't need a cushion. If they had used masonry or poured concrete, they would

Hollow-core concrete served as a flooring substructure.

Exterior cladding featured panelized cold-formed steel with insulation board. EIFS was added after winter was over.

have had to start their foundations much earlier — months earlier."

As a comparison, Martin says a recent Magest hotel project shaved three months off its construction timeline by using cold-formed steel. He says that at one percent carrying cost per month, the hotel owner saved $300,000 in financing costs alone. The Sheridan College project, he believes, would have experienced similar carrying cost savings.

READY FOR SCHOOL THE FOLLOWING YEAR

By pouring the foundations before winter and using cold-formed steel framing, the project was able to stay ahead of key milestones and meet the project's final deadline.

"We had to be ready for the new school year the following fall," says Bill Hall, Vice President of Operations, London Property Corp., which owns property management company, Campus Living Centres. Campus Living manages housing for 8,500 students in Canada and is the public-private partner with Sheridan College on the student residence.

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"Both the steel and the hollow core are not reliant on weather," Martin says. "They're both cast and fabricated offsite, and they install quickly on site."

Campus Living and Sheridan College also benefitted by having a structural system that could support a variety of exterior claddings.

"Magest provided the load-bearing demising walls 25 to 26 feet and the hollow core spanning over them," Martin says. "Another fabricator supplied the exterior wind walls — cold-formed steel panels later finished with an EIFS [Exterior Insulation Finishing System]."

Panelized cladding saved the owners money.

"They saved in not having to heat the scaffolding needed for an in-situ stucco application," Martin says. "The panels were done in a factory. They were brought to the site and attached by welding clips to plates in the hollow core. It was a great design — speedy and perfect for the winter timeframe."

DELIVERED ON TIME, WITHOUT ISSUE

How do Campus Living Centres and Sheridan College feel about the new student residence?

"The college is very happy it opened on time," Martin says. "And the developer has given us another building."

Cold-formed steel, Martin says, is reliable.

"They knew that by using Magest's cold-formed steel building system, the project would be delivered on time and without issue, which is our standard on every project," he says.

Magest Building Systems did its work when outside temperatures ranged between 14 to -4 degrees Fahrenheit (-10 to -20 degrees Celsius).

DETAILS

STRUCTURE

- Poured concrete
- First to sixth floor cold-formed steel load-bearing wall panels
- Hollow-core concrete transfer floor
- Structural steel used in long-span common areas and the cafeteria

WALL FRAMING

- Stud range: 600S162-33 : 600S250-68 – 800S162-33 : 800S200-97
- Bridging: 150U50-54

JOISTS

- Floor joists: hollow-core concrete
- Roof joists: hollow-core concrete