

Steel Construction

Elevated floor design becomes a steel engineering challenge

N PROCTER
RESPONDENT

A Canadian college's elevated floor design is a challenge for steel engineers working on the project.

The new student services centre at Durham College's is sited on the Oshawa, Ont. campus.

A portion of the building elevated on long concrete beams giving the appearance of table legs holding up the top.

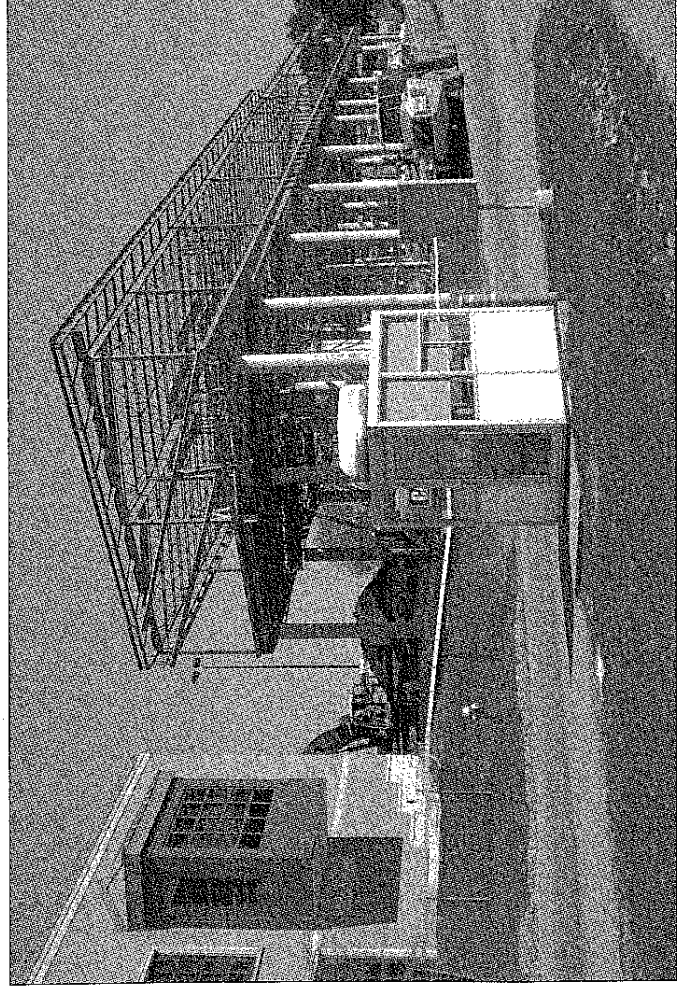
It is more unusual than most jobs," said Chris Palin, partner with CPE Structural Consultants Ltd., the structural engineers on the job. He added that the job is unusual, partly because of tight schedule and largely thanks to the creative design.

Steel was selected over concrete for the structure of the building because of economics and the unusual shape, which features a 15-by-metre section of the new centre raised on five-to-11-metre columns above grade, said Palin.

A 10-metre-wide utility trench below the building had much to do with the building's elevated design. "Few buildings are constructed above underground corridors because of its accessibility to the servicing corridor," said the structural engineer.

There is also the danger that in an emergency, a watermain bursts, for example, water could flood occupied space above it. The elevated floor — which rests on 23 columns — was a steel engineering challenge.

It consists of a steel deck and concrete slab supported by steel joists and beams.



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The elevated floor of the Durham College student services centre is a design solution to a 10-metre-wide utility service trench running below, allowing access and providing a precaution against damage from flooding.

The steel frame of the raised floor has an irregular beam layout in the section directly above the service trench.

"With the service core running askew through the site we couldn't really pick a regular framing pattern to use for the whole building," said Palin.

As a result, some of the steel members span up to 50 feet and are 32 inches deep.

The steel beams and joists were sized carefully to meet vibration criteria, he pointed out.

Such long spans are unusual in conventional designs, which generally incorporate close column spacings for economy, Palin added.

"Concrete wasn't an option because the height of the floor off-grade would have made it difficult to a 1,500 square-foot-canopy

projecting off the roof eight metres above.

"To try and form a canopy in concrete at that height would have been very difficult," he said.

Another challenge facing the structural engineer and the steel erector was the tight schedule of the design-build project.

Structural work commenced prior to design completion.

Tresman Steel Industries Ltd., the fabricator/erector, required about 300 tons of steel to complete the job.

"(It was) a very simple, but heavy design," said Stefano Trentin, Tresman's project manager.

"There were lots of big beams (major ones that weighed in excess of two-three tonnes to carry the loads)."

Construction Briefs

Edmonton-based Stantec has signed letter of intent to acquire QuadraTec, a 50-person consulting company in St. John's, Newfoundland and Labrador.

QuadraTec was incorporated in 1993 as a mechanical and electrical engineering firm that operates in the Newfoundland and Labrador market.

"Newfoundland and Labrador has a significant growth in the demand for its natural resources, which in turn provided opportunities for investments in upgrading much of the province's infrastructure, such as in the health care and education sectors," said Gomes, Stantec president and chief executive officer.

Capital Plan

Vancouver City Council recently considered a \$337 million capital

safe cycling infrastructure.

Wal-Mart expansion

Wal-Mart Canada has announced it will open 40 new grocery supercentres in 2011, including stores in Manitoba and Quebec. Wal-Mart estimates it will invest \$500 million remodeling, expanding, and adding new locations and will create 9,200 new store and construction jobs. Wal-Mart currently has 323 stores in Canada, and 164 of those stores are already supercentres.

Three new stores will open in Manitoba and three in Quebec. In total ten new stores will open across Canada and some existing stores will be upgraded to include the new grocery stores. Supercentre locations already exist in Alberta, British Columbia and Ontario. The new stores will range in size from 79,000 square feet to 200,000 square feet.

JOC NEWS SERVICE

Limiting corporate liability

A recent B.C. case provides a valuable lesson for construction and development companies or other corporate groups that use various corporate entities to carry out their business.

Allnorth Consultants Limited v. Tercon Construction Ltd. involved the operations of the Tercon Group of Companies, with respect to a mining project at Pine Valley.

Tercon Construction Limited (TCL) had been contracted to complete and operate the mine, and it subcontracted the surveying work to Allnorth Con-

sultants, an engineering firm. The Tercon Group subsequently incorporated a new company, Tercon Mining PV Ltd. (TM), which took over all of TCL's obligations relating to the mine, including the contract with Allnorth. The soup hit the fan when the owner of the mine and, as a result, TM, became insolvent. Pursuant to a resulting insolvency proposal, Allnorth received payments from the trustee of Tercon Mining.

However, the amount received wasn't sufficient to meet the debt owed, so Allnorth sued Tercon Construction Ltd. for the remaining amount due under their original contract. The court found that Tercon Construction Ltd. bore the onus of establishing that it was not liable for the invoices and that TCL was required to establish that Allnorth was aware of and consented to the establishment of a new contract with Tercon Mining.

Unfortunately for TCL, the only evidence that it expressly did so was by way of an internal company policy, which provided that suppliers were to be given notice of the change. There was, however, no written record of Allnorth or of any other supplier having been advised of the new role of Tercon Mining.

In addition, no one at Tercon Construction Ltd. was able to recall actually providing notice. In other words, there was evidence of a policy, but no evidence of its observance.

The court further found that Allnorth's invoices, which continued to be addressed to Tercon Construction Ltd. rather than Tercon Mining, was evidence that Allnorth was not aware of the change.

In addition, the failure of Tercon Construction Ltd. to return the misaddressed mail to Allnorth was found to be further evidence that the company was not in fact implementing its policy of notifying suppliers of the change.

The court therefore held that Tercon Construction Ltd. was liable for the unpaid invoices of Allnorth.

This case is a useful reminder that if the purpose of a separate corporate vehicle is to contain liability to a particular one (say ABC 2011 Ltd.), it must be made patently clear to all that they are in fact contracting with ABC 2011 Ltd. and not one or another of the companies within the related group.

The failure to expressly and comprehensively do so may lead to attracting unwanted liability to other related entities within the group of companies.

Norm Streu is the chief operating officer of the LMS Reinforcing Steel Group and former chair of the Vancouver Regional Construction Association. Norm is also a member of the Journal of Commerce Editorial Advisory Board. Chris Hirst is a partner and the leader of the Construction & Engineering Group, Alexander Holburn Beaudin & Lang LLP. This article was prepared with the assistance of Michelle Bourbonnais, articulated student.