

Humber College New Three-Storey Academic Building

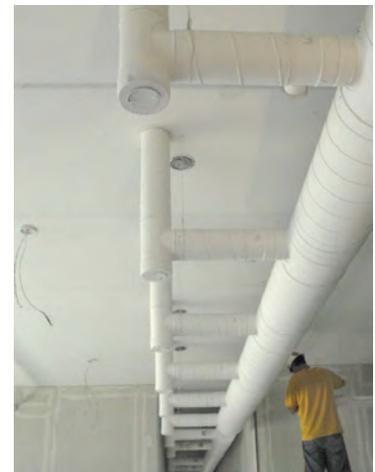


Toronto, Ontario

Approximately 6,970 sq m (75,000 sq ft) of 254 mm (10 in) and 305 mm (12 in) hollow core slabs were used for the three levels of this new academic building. The building will be a mix of classrooms and office space, with the second floor being all classrooms.



heating and cooling system developed in Sweden. TermoDeck uses hollow core concrete slabs to distribute air that takes advantage of the thermal mass of the building for heating and cooling. Up to 70% of the heating or cooling of rooms is accomplished by radiation, directly heating or cooling the occupants with the stored thermal mass, rather than conditioning the air around them.



1

The schedule allowed less than two weeks between floors. This schedule was accommodated by manufacturing the hollow core slabs off-site, ready to be delivered exactly when the floor and roof slabs were required, keeping disruptions at the job site to a minimum.

William Weima, Architect with Barry Bryan Associates, said this building

was built on an incredibly low budget mostly during harsh winter conditions. The high ceilings add a spacious atmosphere without the usual suspended ceilings. The building is very well insulated all around: under the floors, within the walls and on the roof, to save energy.

The HVAC system of this building utilizes TermoDeck®, a radiant

Humber College New Three-Storey Academic Building



TermoDeck in combination with hollow core slabs can create an environmentally sound building, with an extremely efficient, cost-effective method of heating and cooling. This method also provides the added benefits of improved indoor air quality, ventilation, and comfort by constantly importing fresh, clean air into the building and exhausting old, stale air.



Jack Laken, President of TermoDeck Canada, said the mechanical system uses 100% fresh air, whereas conventional systems can use as little as 10 to 15%. The result is constant temperature control in the building,

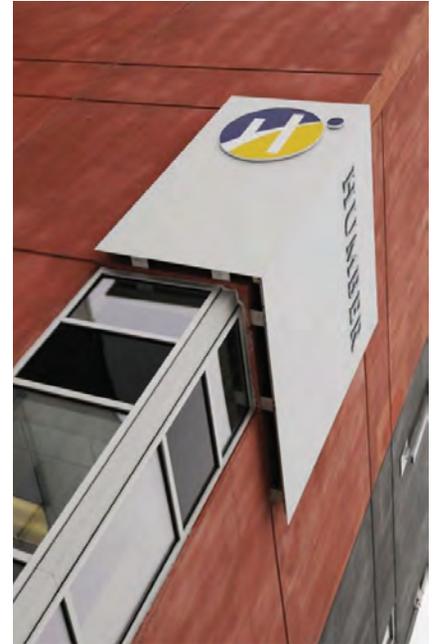
without the introduction of blasts of hot or cold air that occur with normal forced air systems.

The system can also assist in achieving LEED® environmental certification points, and can help a building qualify for higher levels of certification.

Hollow core concrete floor and roof slabs can retain warm or cold air for extended periods, serving as heat sinks that can be charged overnight, depending on what the weather is like outside. This active use of concrete's thermal mass can mean big energy savings and healthier workspaces if incorporated into commercial and institutional building design.

In the winter, the hollow core slabs can store the energy generated by occupants, lighting and equipment. This strategy is especially effective in educational settings, where large numbers of students may be located

in specific rooms for an hour or more at a time. This was among the incentives that convinced the designers of Toronto's Humber College to choose hollow core slabs and TermoDeck for the new three-storey Academic Building.



CREDITS:

Architect/Engineer: Barry Bryan Associates (1991) Ltd.

Mechanical Engineer: LKM Engineers, a Division of SNC-Lavalin

Contractor: Graham

Construction and Engineering Energy Consultant: TermoDeck Canada

Precaster: Prestressed Systems Inc.