

"Concrete lifting" replaces need to rip out sunken slabs

by RICHARD GILBERT May 8, 2008 last update:May 9, 2008

A sunken concrete slab at an ice arena in Coquitlam was raised using a non-traditional technique called concrete lifting.

Repairs

A sunken concrete slab at an ice arena in Coquitlam was raised using a non-traditional technique called concrete lifting.

An arena ice surface is installed in a built space, which includes a slab of concrete, through which pipes run. The pipes carry a chilled fluid, which can lower the temperature of the slab so that water sprayed on top of the slab will freeze as a thin layer of ice.

The ice is built up to a thickness of one or two inches by repeated flows of water onto the surface

The concrete slabs underneath the rinks at the Coquitlam Planet Ice have sunk in certain sections, due to settlement of the ground upon which the structure was built.

A rink slab that has settled can become more expensive to operate, because it takes a greater amount of energy to freeze the thicker ice surface ice in the sunken areas.

The owner of the rink was searching for a solution to this situation and the traditional method of repair is to put in a new slab.

"I talked to four different contractors who repair concrete slabs in ice rinks and what they've done is busted out the slab and put in new concrete," said Clive Clarke, client services representative with URETEK Canada Inc.

"We want to get the word out that ice rinks can be fixed using concrete lifting and don't have to be busted out."

The technology to lift concrete slabs has been around for many years.

Holes are drilled through the tilted concrete, and a cement mixture is pumped into these holes under pressure.

As the mixture begins to flow beneath the slab, it exerts pressure and raises the slab.

"We went in and drilled 690 small holes (5/8 inch), between the cooling pipes that run up and down the rink about four inches apart. Next we injected a polymer resin and brought the slab back to within a quarter inch of level." said Clarke.

"The polyurethane is light weight, dense and adds extra insulation around the pipes. So this also makes the rink better."

Clarke said the owners of Planet Ice also decided to lift the perimeter of the slab and the sidewalk outside of the building.

"The whole process took four days of work, from locating the lines, drilling, lifting and clean up. Busting out the slab and replacing it would take a month," Clarke said. "Lifting the slab is about one third of the cost of replacing and repairing the slab."

The project worked so well, that plans are already underway to lift the slabs in another rink at Planet Ice.
May 8, 2008 last update:May 9, 2008