



Ferris State University Ice Arena
 Big Rapids, MI

Project: Ferris State University Ice Arena
Location: Big Rapids, MI
Owner: Ferris State University
Contract Type: Firm Fixed Price
Contact: Don Sovinski, Plant Engineer

Background

Ferris State University was founded in 1884. The University has developed a 880-acre campus in Big Rapids, Michigan.

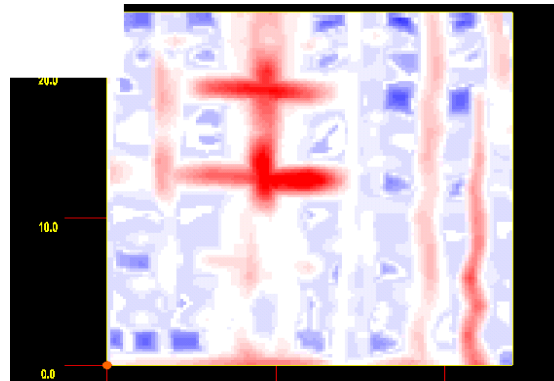
Scope

Ferris State University maintains its own ice rink for the students and due to a change in NCAA regulation, new anchor holes had to be drilled for the goal nets. Ferris State needed to drill four holes, one inch in diameter, through the ice into the concrete slab to anchor the nets in the new location. Of particular concern was the need to locate the chiller pipes below the concrete. If the anchor holes were drilled and penetrated the mechanical conduit, the cost to repair it would be high.

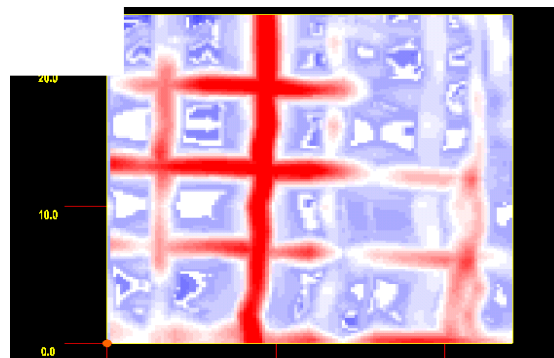
Ferris State decided to avoid the risk of having to melt the ice, chip up the concrete, and repair the chiller pipes if damaged, by calling on Diamond, Inc. to perform a radar survey of the anchor locations.

Technology and Manpower

Radar surveys were performed by Diamond, Inc. using technology engineered and manufactured by Geophysical Survey Systems Inc. The SIR 20 system with onsite 3D capabilities with Radan software technology was used by one Diamond, Inc. technician. The 1500 mHz antenna along with the patented 3D Smart Pad technology to do a 2'x2' 3 dimensional scan of the area identified to be drilled. With the Radan onsite 3D capabilities, removing the layer of steel reinforcement from the image created absolute clarity of the location of the chiller pipes in question.



Above: FSU Ice Arena floor at 3" deep. Rebar begins to appear at the bottom of the slab.

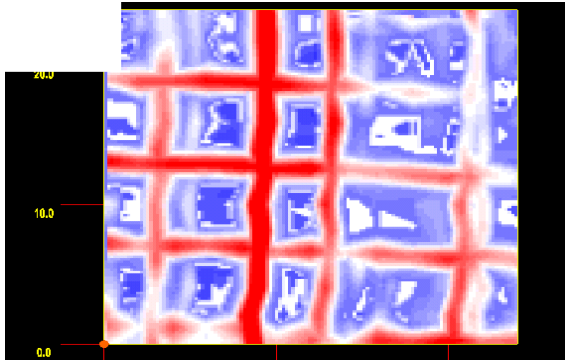


Above: FSU Ice Arena Floor at 3.5" deep. Rebar appears strongly at the bottom of the slab.

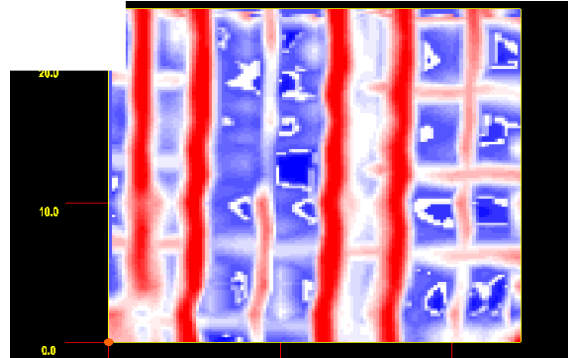
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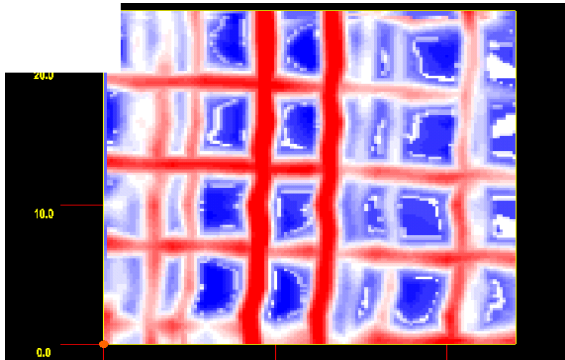
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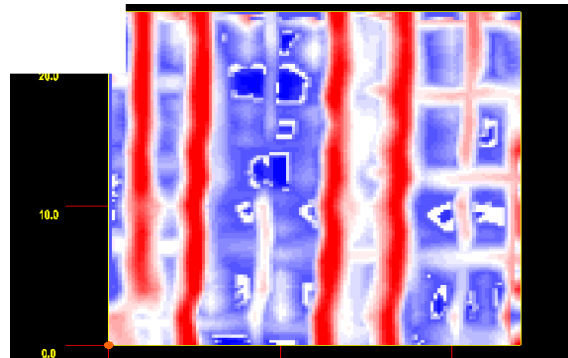
Above: FSU Ice Arena Floor at 4" deep. Rebar is displayed prominently at the bottom of the slab.



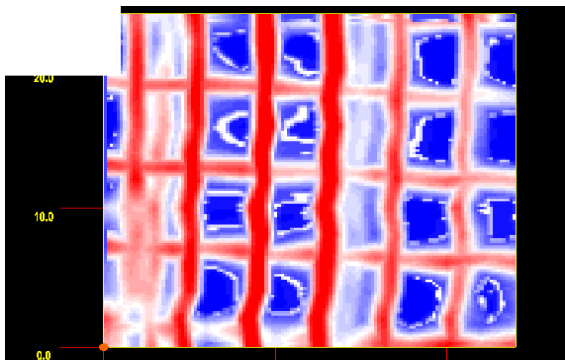
Above: FSU Ice Arena at 5.5" deep. As the slice thickness deepens, chiller pipes become plainly visible.



Above: FSU Ice Arena Floor at 4.5" deep. Secondary contacts begin to appear below the rebar.



Above: FSU Ice Arena at 6" deep. Chiller pipes are located and can easily be avoided when drilling.



Above: FSU Ice Arena Floor at 5" deep. Secondary contacts become more prominent.