Automated Temperature Monitoring Streamlines Frozen Pipe Prevention on Construction Site

Frozen pipes are an inevitable concern in buildings as temperatures drop in the winter months. But when you're talking about construction sites where portions of a building's exterior are exposed to extreme cold, the concern levels and potential for damage rise.

Marcus Construction, a Minnesota-based provider of design-build services for the commercial, industrial and agricultural markets, is no stranger to this scenario. In the fall, they started work on a facade replacement project for a four-story health clinic originally built in the mid-20th century. With the clinic remaining in operation throughout, the project involved removing all of the building's existing brick and replacing it with metal paneling. As the brick was removed, a lot of plenum space – housing water and sprinkler system lines – was exposed to extreme winter temperatures.

"If we were to have a frozen water line, it would have been really bad for the clinic," noted Taylor Marcus, the vice president of operations at Marcus Construction. "We'd be looking at pipes bursting, water everywhere and shutdowns."

While heaters were added to the temporary shelters on the job site to prevent pipes from freezing, Marcus Construction needed to be able to monitor the conditions on-site to verify proper temperatures were being maintained. With the CORIS temperature monitoring system, the team found a convenient way to keep tabs on temperatures and be alerted of potential issues — whether on or off the job site.

The exterior of the health clinic during renovation.

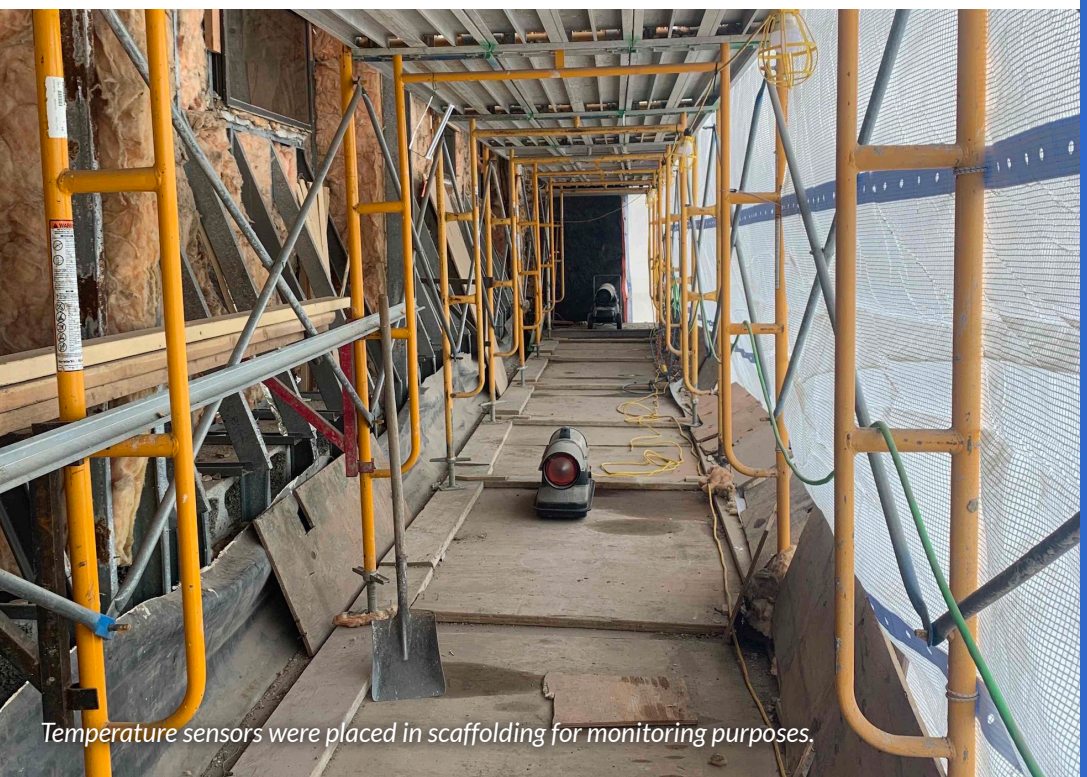
Moving Away from Manually Based Temperature Monitoring

Prior to implementing the CORIS system, Marcus Construction relied on a team — a superintendent, project managers and a safety director — to manually monitor on-site temperatures. With the need to have personnel present for temperature checks, this approach caused inconvenience for staff while creating more room for issues to arise.

"There was the unknown when you weren't on the job site," Taylor said. "You didn't know what the temperature was or if a heater failed or ran out of gas."

By providing 24/7 temperature monitoring of the job site via cloud-based software, CORIS eliminated guesswork and provided full monitoring coverage and confidence.

CORIS system setup and configuration on the job site was simple. With the CORIS Gateway plugged in inside the clinic in a central location, battery-operated sensors were zip-tied to the scaffolding, as well as to structural elements in the plenum space. This effectively created two different monitoring areas on-site: one in the temporary shelter and one in the plenum space.



Temperature sensors were placed in scaffolding for monitoring purposes.

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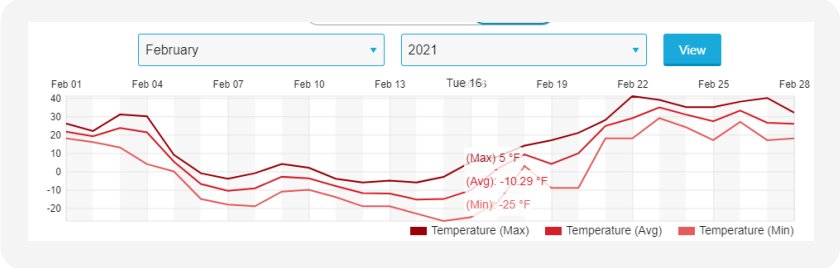
CORIS sensors were strategically placed throughout every floor of the building, with sensors placed to the east, west and central to the scaffolding. The Marcus team knew that certain points on the job site were more vulnerable to exterior elements — for instance, the corners that featured debris chutes — and sensor placement accounted for this.

"It was a really nice system where we could pinpoint where a failure may be," Taylor said. "Instead of just knowing that it was getting colder in the construction site, we knew where a failure might be before we even arrived on-site."

Having set benchmarks for temperature excursions amid harsh winter conditions, Taylor and his team received alerts when temperatures reached below an acceptable range. An escalation scale was set up for the temperature excursion alerts, so notifications transitioned from an email, to a text, to a phone call based on the severity of the issue.



A chart showing the temperatures the construction team dealt with in February 2021.

Alongside the benefits of the CORIS system, Taylor was pleased with the support he received throughout the engagement. For instance, CORIS monitored sensor response times on the construction site — when they noticed a sensor with a slow response time or no response, they would proactively send Marcus Construction a replacement without the team having to ask. Together, these elements left a positive impression on Taylor and have paved the way for future collaboration.

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Contact CORIS

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- Taylor Marcus,
VP of Operations,
Marcus Construction

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