FIELD REPORT

PE-RT AND HDPE: THE PIPING POWER COUPLE FOR CHILLED AND HOT WATER LINES

New hospital construction calls for reliable hot and chilled piping system.

More Room To Save Lives

When Banner Health acquired the University of Arizona Health Network to form Banner University Medical Center (BUMC), they made a commitment to investing significant time and money on improving the campus in Tucson, Arizona. Part of that overall plan was constructing a new, 11-story tower to replace a 40-year-old portion of the existing hospital on the Tucson campus.

$400 million was slated for the new addition. The 689,000 square foot tower will include 336 private rooms, 22 operating rooms, imaging suits, and public spaces –certainly a much needed enhancement to what is considered one of the nation's top learning medical centers and southern Arizona's only Level 1 Trauma Center.

The hospital hired the joint venture team of Sundt/DPR to construct the tower, as well as an 18,600 square foot, two-story, central utility plant with six boilers, two dual-cell cooling towers, and four chillers. It is equipped to independently feed the new hospital tower with room for future expansion.

When it came to running chilled and hot water lines to the building from the central plant, Sundt/DPR needed a solution that would include the right materials, the best method, and an experienced team to overcome specific job site constraints. GLHN Architects and Engineers designed the project. Longtime partners, ISCO Industries and Rain for Rent, were brought in to provide pipe, fittings, and fusion equipment for the project. R. Directional Drilling came on board to handle the underground installation.

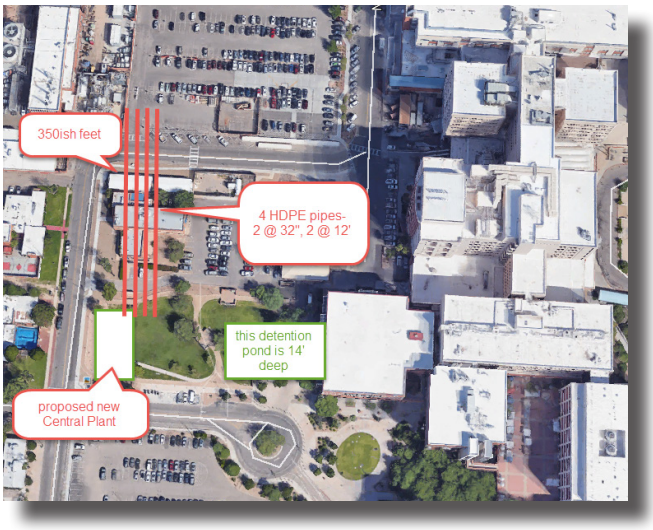
Drilling Through Deep Challenges

There were a couple of unique challenges around this project. Specifically, the location of the build site. As the only Level 1 Trauma Center in the region, it was also critical to keep all traffic patterns around the hospital intact during construction. "The site was located in an extremely congested area with very small workspaces," explained George Jones, Branch Manager for the Tucson Rain for Rent. "The cost associated with an open trench install was not practical. Horizontal directional drilling (HDD) made sense and the use of HDPE was necessary because of existing conditions and the short distance between the central plant and building tie-ins. We had to go as deep as 25 feet and back to surface within a 400-foot distance."

Open trenching 28-feet deep would've added months to the completion time of the project and increased the cost significantly. Derek Reeve, Vice President of RDD agreed with Jones' assessment saying, "HDD was an ideal solution due to the space and the fact that there is an existing building that had to remain occupied until after the new patient tower was erected. HDD allowed us to bore under that building while people were at their desks and place the pipe systems."

HDPE the Only Option for Chilled Water

For the chilled water lines, ISCO provided 960 feet of insulated 30-inch DR11 IPS HDPE pipe. "For this project, reliability and longevity were important factors to consider," said Denise Ernst, sales rep with ISCO. "The flexibility of the pipe, zero-leak rate, and limited maintenance made HDPE the obvious choice for the chilled water lines."

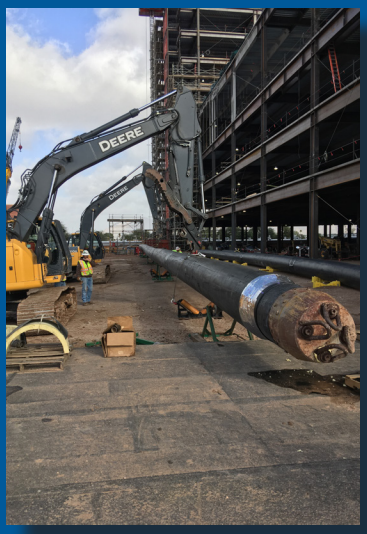


PROJECT
Banner University Medical Center

LOCATION
Tucson, Arizona

THE NEED
Leak-free, corrosion-resistant, and flexible pipe for chilled and hot water lines.

SOLUTION
960 feet of insulated 30-inch DR11 IPS HDPE, 1,380 feet of 18-inch DR9 PE-RT, insulated and with field joint kits, as well as fittings, flanges, pulling heads, fusion equipment, and expertise.



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It was a no-brainer to Reeve, as well. "HDPE is the only logical choice for any water project, in my opinion, due to the service life, ease of installation, and no acceptable leakage," he said. "We would not have been successful without our partners ISCO and Rain for Rent."

Beyond the pipe, the ISCO team provided fabricated fittings, delivery, fusion, on-site support, and quality control assurance. Because of the aforementioned constrained space, ISCO also provided all fusion equipment, including limited access machines. "As with any project, we want to make sure we're developing a well-rounded solution to the specific issues and challenges on each jobsite," explained ISCO sales rep John Mohon. "We fabricated insulated elbows, elbows flanged with ductile iron rings, provided flange adaptors we insulated in the shop, and a pulling head."

Hot New Product for Hot Water

The hot water lines were originally planned with a polypropylene product line, but later adjusted to use PE-RT pipe. "There were a couple of options for the hot water pipe that played into the customer's decision," Jones explained. "Initially, the hot water pipe had long lead times and logistical challenges. The ISCO team made recommendations for a viable alternative pipe that met specification and kept the project on schedule."

PE-RT significantly expands the operations window for polyethylene pipe with pressure ratings up to 180° F. It is capable of handling higher temperatures compared to standard PE4710 products. It can even handle intermittent operating temperatures up to 203°F for some applications. "Both HDPE and PE-RT offer versatility, which is exactly what we needed on this project," said Jones. "The service life and flexibility of the pipe were the perfect match."

ISCO provided 1,380 feet of 18-inch DR9 PE-RT pipe, insulated and with field joint kits, as well as fittings, flanges, and a pulling head.

Hot New Product for Hot Water

RDD spent several weeks planning the bore. They used the Vermeer Bore Aid program for designing HDD bore shots. The planning also involved multiple coordination meetings with Sundt/DPR, ISCO, and Rain for Rent.

When it came time to pull the pipe, RDD used a Vermeer 220x300 SII drill rig with a Digitrak F5 Falcon walkover locating system. "We had to be extremely accurate in the product placement. Once the new building was completed, the existing building will be demolished and a new parking garage structure is to be built. Our precision would allow for caissons to be drilled in the future without risking damage to the chilled and hot water lines," Reeve explained.

Despite the challenging environment, the pulls were completed successfully and kept the project on track for completion in 2019. The team worked together to make sure they solidly planned and executed the finely crafted plan. The new patient tower and central chiller plant will have reliable, durable chilled and hot water lines for decades to come.

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