



Nebraska Utility Requires Underground Solution

KBR Rural Public Power District Chooses Kerite High Voltage Power Cable

KBR Rural Public Power District in Ainsworth, NE, is one of 32 rural electric power systems in Nebraska, and one of 1,000 electric power systems in the US. KBR is a non-profit public distribution utility with a service area of over 5,000 square miles in north-central Nebraska, serving over 4,000 customers. As part of a system upgrade and an anticipated increase in load requirements, KBR needed to replace an old 1930's vintage line exiting the substation off of South Main Street. This line normally feeds three of the KBR western substations, but the new circuit would be a tie line to five of their substations: Sears, Highland Grove, Johnstown, Wood Lake and the Marsh Lake substation.

Considering options

While doing the initial engineering work to design the upgrade, KBR reviewed the antiquated 35kV overhead line. After exiting the substation, the circuit passed over the laydown yard of a local, expanding manufacturing company, who for years had worked around the overhead power lines with their forklifts and heavy equipment. KBR quickly realized that simply replacing the existing overhead circuit was not a viable option, given how busy the laydown yard was and the safety concerns of having the power lines overhead. This left KBR with two options: reroute the circuit around the area of the laydown yard, or replace the overhead line with underground cable.

As a more cost-effective and less complex option than rerouting the circuit, KBR decided to go with an underground solution, using Kerite high-voltage underground power cable. They also hired Kerite Cable Services to help with the circuit design, installation, termination, and testing.

“Because of the increased activity in the yard, sticking with overhead was not an option. And given the complications of rerouting the circuit, underground was the only option that made sense for us,” says Brad Waits, the KBR Supervisor on the project. “Kerite underground cable is some of the best in the business. And their Kerite Cable Services that they also



Installation of the riser pole adjacent to the substation.

bring to the table – it’s a one-stop-shop solution that really fit the bill. That was key for us.”

Going underground

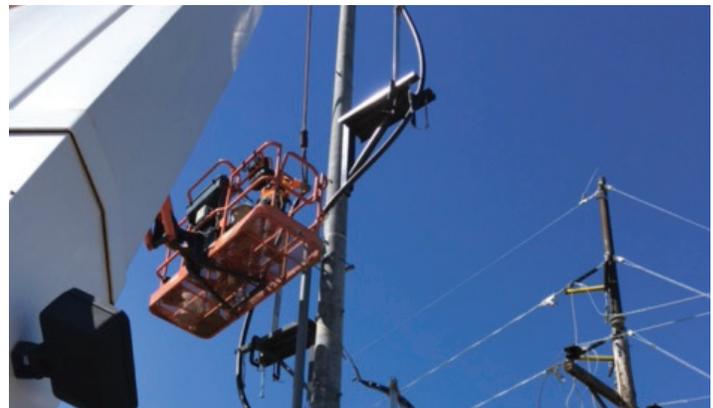
Kerite Cable Services managed and provided expertise and oversight to the entire project, and brought in their longstanding partner Anderson & Wood Construction Company as a subcontractor to help with the actual installation. The plan called for the installation of two precast concrete riser poles – one at the near side of the laydown yard, adjacent to the substation, and the other on the far side of the laydown yard. To upgrade the capacity of the existing 35kV overhead line, KBR chose a single Kerite 750kcmil AL 69kV high-voltage underground cable, with each phase 850 feet in length. The team dug a 600 foot trench to connect the two risers, within which the team ran the circuit, and on each riser pole custom-manufactured termination arms were installed to secure the cable.

Ready to go; ready for more

The installation was performed during a two week window, with an outage lasting only a day. Once the installation was complete, the cable was terminated and tested at 170kV DC, and the circuit was ready to go live. KBR is currently running the new circuit at only 35kV, but the 69kV capacity is there to handle increased demand, as anticipated in the future.



Termination brackets being installed on one of the two pre-cast riser poles.



Termination work.



The 600 foot trench housed the 3 phases of the 69kV cable.