

Aerial Evolution

Illinois IOC Telco Rebuilds Aerial Plant



By Tom Dewey

Madison Telephone Company of Hamel, Ill., has completed an aerial plant rehab project to minimize trouble calls and bring a recently acquired portion of its network up to performance parity with the balance of Madison facilities.

This independent telco began as a local exchange carrier nearly 75 years ago and has expanded over the decades into a full-service communications provider. The Madison Telephone Company serving area ranges across three rural counties in central Illinois, where it offers long distance service, digital cable television, pay-per-view video, high-speed internet access and web support services.

"We serve five small communities with approximately 6,000 access lines, bringing digital technology and local service and support to rural America," said vice president, Len

Schwartz. "With our fiber optic network, we are able to deliver a range of products and services to both residential and business customers. With our proximity to St. Louis, which is only about 30 miles away, service demand is strong and growing. The percentage of subscribers in our customer base who purchase DSL service exceeds the national average.

"As with all telcos today, both large and small, we are challenged to keep up with rapidly changing technology and deliver competitive services dependably and at affordable prices," he said.

Steve Schwartz, Madison's director of construction services, reports that the operating company added two new communities to its serving area several years ago. "We immediately conducted an upgrade of buried facilities in the new region, replacing all of the pedestals in the network to take



Figure 1: Steve Schwartz manages the company's current aerial plant upgrade.



Figure 2: Madison Telephone Company Vice President Lenny Schwartz watches as lead technician Kris Brissenden uses a 3M™ Dynafel™ Subscriber Loop Analyzer 965DSP to qualify a pair for DSL service.

care of deterioration problems," he said. "We saw a substantial reduction in buried plant problems and subscriber complaints in this area after the rehab, and more recently we began to address similar deficiencies in the aerial plant."

Aerial plant problems were less severe than those posed by the underground plant before the upgrade, he said, but it was

"There were ongoing problems with cracked boots, water entry, and noisy service, as well as loose shield bonds that contributed to noise and poor performance. We needed to get rid of bridge taps to reduce trouble incidents and make the network suitable for DSL service, and it was clear that new closures, shield bonds, splices, and drop wire terminations would be required."

clear that long-term service investment and signal quality would also benefit from an aerial rehab. "The plant was 20 to 30 years old and had

been expanded over the years using closures and splice components from multiple manufacturers. There were ongoing problems with cracked boots, water entry, and

noisy service, as well as loose shield bonds that contributed to noise and poor performance. We needed to get rid of bridge taps to reduce trouble incidents and make the network suitable for DSL service, and it was clear that new closures, shield bonds, splices, and drop wire terminations would be required."

Madison Telephone Company's cable network is 40 percent aerial. There were approximately 600 aerial closures to be replaced in the upgrade process. Management determined that

the work would be done by an outside crew and coordinated to minimize interruptions. Anticipated time for the project was five months, and all the work proceeded on schedule.

He and his team reviewed many products for the aerial plant rehab with the goal of selecting components that would be simple to install, effective at protecting terminations from moisture, and easy to reenter. After researching options, they settled on a single-piece, double-walled, molded polyethylene closure.

"We are using a multi-pair terminating system drop-wire application that is designed to be used with these strand-mounted closures," said Schwartz. "The termination blocks use solder-equivalent, insulation-displacement connectors that don't require stripping and have test access ports for trouble-shooting. The blocks accept older 18.5-gauge steel copper strand conductors on the back side and newer 22- and 24-gauge copper drops on the front. At points where aerial cable splices need to be rebuilt, they are being spliced with discrete connectors or 25-pair modular connectors, depending on pair count."

He reports that once training on installation and splice and drop wire termination was given to the contractor crew, in most cases it takes only about an hour to complete a new aerial closure, including installing the floating shield bond connectors that are part of the closure system. Brief service interruptions have generally been limited to a few customers at a time as service drops are cut and replaced.

The team is finding that many existing aerial boots are infested with insects, birds, or squirrels, and shield bonds are generally in poor condition. As anticipated, it has been necessary to replace the old splices, shield bonds, and drop wire terminations at every closure point.

Madison Telephone Company finds it advantageous to standardize on a closure and termination products from a single supplier, both for initial installation and ongoing main-



Figures 3 and 4: These photos show pairs spliced with 3MTM Scotchlok™ connectors inside a 3M™ SLIC™ aerial terminal. The extension segment (right) snaps into place without tools or fasteners.

tenance. Schwartz expects that as a result, inventory management will be simpler in the future and ongoing aerial closure work will be predictable in terms of materials, methods and tools – and, therefore, more efficient.

“Even though this field upgrade program is still underway, we’re already seeing a major reduction in trouble tickets for the aerial network,” Vice President Len Schwartz said. “Line noise, rain issues, and marginal service problems are being greatly reduced, and this investment is providing positive long-term benefits to both the company and our customers. The population in our service area is continuing to grow, and the optimized condition of our buried and aerial plant allows us to offer subscribers a full range of dependable POTS, Internet services and future digital services at competitive prices.”

Tom Dewey is a freelance writer with 30 years experience writing articles on technical and industrial subjects. His articles have appeared in various publications including telecom, automotive, electronics, chemical, construction, medical, and IT magazines.

Madison Telephone Company is located in Hamel, Illinois and can be reached by calling: 618-633-2267, or visiting www.madisontelco.com. For more information about 3M, visit: www.3M.com/telecommunications.