Q&A With Colin Garner, Wolf Line Construction

Do's and Don'ts of Aerial Fiber

Aerial fiber deployments are attractive because they are less expensive than underground deployments, but there can be hidden traps. Here's some advice about doing aerial right.

Wolf Line Construction, based in Castle Rock, Washington, specializes in installing fiber optic cable for FTTH and other applications in the energized space on transmission lines and distribution lines. As broadband, smart grids and advanced wireless networks are built out in rural areas, electric utility poles will become increasingly valuable resources for deployers, including electric utilities. Recently, **Broadband Communities** had the opportunity to speak with Colin Garner, partner and vice president for project management at Wolf Line Construction. Following are highlights of that conversation.

BROADBAND COMMUNITIES: *Wolf Line Construction does both aerial and underground fiber construction but specializes in aerial. What are the advantages of aerial construction for deployers?*

COLIN GARNER: First, it is far cheaper to install aerial fiber. Underground installation requires boring or plowing, which is a lot more expensive.

Second, overhead fiber optic construction is more straightforward to plan. When you're placing fiber overhead, you can see and understand the whole network, so you can plan much better. With underground construction, there may be surprises because things that are hidden underground – rocks, water lines, gas lines and so forth – can hamper production.

Colin Garner, Wolf Line Construction

Of course, overhead construction makes sense only if utility poles are already there. If there's no plant, you can't go aerial.

BBC: *What's the difference between the energized space and the non-energized space?*

CG: In general terms, you typically have a neutral wire on the pole, which is the lowest wire associated with the power distribution network. The energized space is everything

above the neutral and down to 6 to 12 inches below it. Forty inches below the neutral is where the non-energized, or communications, space begins. That's where you see the cable for CATV and all the telephone wires.

BBC: *If you're deploying fiber, why would you rather use the energized space? And why would electric utilities allow it?*

CG: The communications space is often congested, and installing cables in it can be complicated. Even if you're trying to install ADSS (all-dielectric self-supporting) cable, which takes up less room, you may not be able to fit it into the communications space. So the alternative is to put it in the energized space.

The key to doing this is to use qualified electrical workers. Utilities will allow workers in the energized space only if they're qualified. (OSHA standards define who is qualified to work in this space.) An electric cooperative or a municipal electric utility may be happy to allow qualified workers for an ISP into the energized space if the ISP will be providing services to its customers.

BBC: *Can you explain the difference between using ADSS cable and using strand and lash for aerial deployments? What are the advantages of ADSS?*

CG: ADSS cable cannot conduct electricity, so it's safer to use in the energized space. It can be used in the communications space as well. In addition, because it has support built in, it can hold itself up without additional support or lashing.

Typically, because there's no need to add hardware or strengthen the pole, ADSS is less expensive. Structural guy wires are already in place for the neutral wire, and that existing support is usually enough for ADSS.

When non-ADSS cable is used, the strand and lash method is needed. In this case, a rigid wire (the strand) is attached to the pole, and the fiber optic cable is lashed to that.

Aerial fiber deployment is usually less expensive than boring or plowing.

It's more expensive and complicated – anchors, pole changes and system improvements can cost millions of additional dollars.

In fact, strand and lash requires so much up-front make-ready cost and stresses the poles so much that co-op and municipally owned power distribution companies should not ever consider it. ADSS is lighter, better for the system and overall much cheaper.

BBC: *Then why does anyone use the strand and lash method?*

CG: It's just a traditional way of doing it in the telecom world. Make-ready is considered a traditional way to start out the construction process. So you could say it's more a tradition than a reason.

ADSS is becoming more popular, though. AFL, OFS, Prysmian and Corning all manufacture ADSS cables now. It's becoming more common in rural broadband buildouts, and we're seeing it at more trade shows. More deployers are willing to consider it as a possibility.

Putting ADSS in the energized space rather than the communications space is a fairly new method. We definitely prefer it.

BBC: *How about overlashing? Is that a viable method?*

CG: Overlashing means adding another cable to a system where existing cable is already lashed. You're just taking wire and wrapping it around what already exists there – piggybacking on it, in other words. That's a great method, and it's economical in some situations. However, in rural areas, there may not be any communications cables to overlash to.

BBC: *Many fiber deployers have run into trouble over the costs, delays and uncertainties of pole attachments. What can be done to solve this problem?*

CG: To solve the problem, you have to plan well, be a good communicator and work with the municipality or cooperative or whoever owns the facilities you're dealing with. The issues are resolvable, but fiber builds are time sensitive. If you run into trouble, it's often because the permitting and planning were not done far enough ahead.

BBC: *You've said that building out a system quickly is more advantageous for utilities than the "bootstrapping" method telcos often use. Why do you consider the full buildout strategy preferable?*

CG: It's a cultural preference – telcos prefer not to spend their capital all at once but to extend their spending over time. Utilities prefer to purchase a whole system, know what the spend is and make their payback on that.

There are other advantages to the utility mindset. For example, small companies can achieve economies of scale in purchasing if they place one big order rather than many small orders. They will also get more competition and more interest from contractors with a bigger scope of work. They'll end up getting a better deal.

That's not to say a utility can't build out a fiber network in priority sequence, but each chunk should be big enough to have some scale, and the company should avoid taking several years to build out the whole system. ❖