**Environmentally Friendly MICRO-TRENCHING**
*Streamlining broadband cable installation*
**By Donna Mills**

Business and residential areas' ever increasing need to place more fiber in more places is causing departments of transportation, municipalities and utility companies to re-evaluate deployment methods.

Traditional trenching projects often cause major disruption to vehicular and pedestrian traffic patterns in congested urban areas, plaguing utilities and DOTs with coordinating construction-related project schedules.

Conventional trenching methods for underground fiber deployment typically create four-inch to six-foot-wide trenches, two to three feet deep. This process necessitates extended lane closures and coordinated work zones and timetables. To complicate matters, the cuts—filled with temporary asphalt-patching material after laying cable—tend to deteriorate (sometimes rapidly), creating potholes, bumps and other damage to pavement.

Managers of municipalities—tasked with balancing consumers' needs today while enabling economic development to serve their interests into the future—are looking for less encumbering methods for installation of broadband cable.

Micro-trenching is an option growing in world-wide popularity that lowers the impact on the environment, minimizes traffic interference, increases safety and lowers the bottom line. In many cases, the cost of micro trenching is less than half the cost of traditional trenching or boring.

The process has encountered resistance from some municipal authorities who are unfamiliar and uncomfortable with shallow-depth fiber network deployments, putting America well behind the rest of the world in broadband deployment. More than 50 U.S. cities, however, including San Diego and Boston, have embraced the micro-trenching method.

The truth of the matter is, properly documented and installed micro-trenched networks are as durable and safe as any other buried utility—with several notable advantages.

Micro-trenched networks are engineered to avoid interfering with key utilities. The innovative process makes a narrow cut (less than an inch wide and from six to 12 inches deep) into the pavement without damaging or disrupting existing infrastructure. A micro-trench is difficult to see by the casual observer once properly reinstated and backfilled.

A micro-trench is just wide and deep enough to accommodate a "micro conduit." Micro-conduits hold up to seven channels for seven cables—vertically stacked on top of each other. This technological advancement replaces rounder, fatter bundling found in traditional cable installations.

The conduits are installed well below the depth needed for future road-way resurfacing, which generally removes only the top two inches of material during construction. Additionally, the shallower network trenching does not disrupt the road base subgrade material as does traditional trenching.

The micro-trench is backfilled with either super grout compound or an approved Type II joint and crack sealer. These flexible sealing materials prevent new potholes from forming, and eliminate jarring to vehicles traveling across traditional over-filled utility cuts.

Advances in blade manufacturing have now produced the stronger, narrower saw blade used in micro-trenching. The blade is air-cooled—assisted by the use of high volume, advanced filtration vacuum systems—which eliminate the need and mess of traditional pavement cutters cooled by water. These and other innovations have facilitated downsizing of the equipment and trenching attachments previously required, and have shortened project timelines.

The beauty of micro-trenching is the ability to quickly install utility cables with minimal damage to the pavement, allowing DOTs to reinstate traffic patterns often within hours—instead of days or months—of starting a project. The narrow trench is restored as the network is being built, resulting in extremely low impact to the community.

While not as extensively deployed as conventional trenching methods at this time, micro-trenching is gaining recognition. It appears to be a less expensive and safer process, less demanding of resources and kinder to the environment, pedestrians and fast-moving vehicles.

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