

ALTOS® Cable with FastAccess® Technology

AEN 146, Revision: 2

This Applications Engineering Note (AE Note) addresses the mechanical and environmental robustness of Corning Optical Communication's ALTOS® Cable with FastAccess® Technology.

Background

With global bandwidth demand at an all-time high, the need for field personnel has grown, resulting in an increase in the number of inexperienced craftspeople performing cable installation, splicing, termination, and testing. Cable sheath removal can be cumbersome, sometimes requiring specialized tools and many man hours if multiple sheath removals are required. Completely removing the sheath and accessing the buffer tubes for splicing or termination can sometimes take double-digit minutes for experienced craftspeople and even longer for the inexperienced. In addition, cable stripping can be both risky and dangerous to the craftspeople as well as the cable itself. End- and mid-span sheath removals can sometimes result in damaged buffer tubes and broken fibers if proper training is not provided to inexperienced craftspeople.

Corning's continuous strive for innovation has led to the development of ALTOS® Cable with FastAccess® Technology that can decrease sheath removal time up to 50% for both experienced and inexperienced installers while dramatically reducing overall risk to the installer and cable. FastAccess™ Technology, coupled with revolutionary gel-free technologies, distinguishes ALTOS® Cable as one of the easiest-to-strip cable products in the industry.

Industry and Characterization Testing

ALTOS® Cable with FastAccess® Technology is designed to withstand all the forces encountered in outside plant installations. Ensuring long-term reliability of these cables is done through rigorous testing according to, and sometimes exceeding, industry standards, along with multiple field trials and installations. Mechanical and environmental tests performed according to ICEA S-87-640 include hot bend, cold bend, crush, cyclic flex, impact, twist, temperature cycling, cable aging, and water penetration. Corning conducted several characterization tests that exceeded industry requirements, yet the mechanical integrity of the cable was maintained. All tests passed optical attenuation criteria and caused no splitting or cracking of the cable jacket.

Installation Testing

Corning has also run ALTOS® Cable with FastAccess® Technology through installation tests, verifying the condition of installed cable plant using typical outside plant installation methods. Corning has created a “wringer” apparatus capable of pulling cables over common outside plant installation hardware while monitoring tension and fiber attenuation. A diagram of the apparatus can be seen in Figure 1.

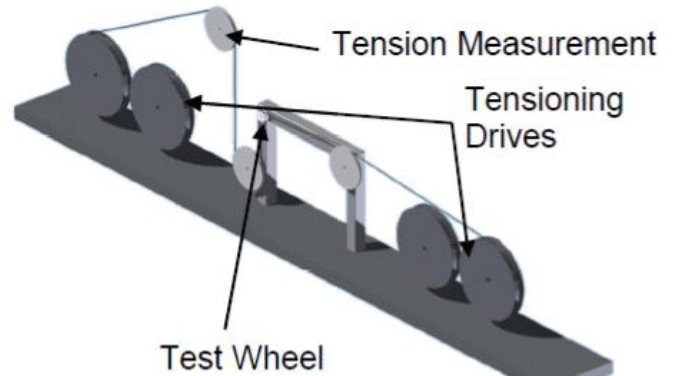


Figure 1: “Wringer” Test Apparatus

The test wheel can be interchanged between different diameter pulling sheaves and fiber optic lip rollers. ALTOS® Cable with FastAccess® Technology passed the wringer test with no damage to the cable or cable core at maximum rated pulling tension and using installation sheaves with radius 15 times the outside diameter of the cable under test.

ALTOS® Cable with FastAccess® Technology has not just succeeded in the lab, but has also been installed without failure in actual outside plant environments. In addition to numerous customer field trials, Corning installed ALTOS® cable with FastAccess® Technology at our outdoor installation test facility. These installations included jetting, pulling, and aerial placement to subject the cable to constant UV radiation.



Figure 2: Corning Outdoor Test Facility

The purpose of the cable installation trials was to confirm laboratory tests that the cable jacket could easily survive the rigors of an outside plant installation. The jetting installation was performed by placing the cable through one full loop of 1” duct, a distance of 3,636 feet (see Appendix). The route followed was in the shape of a figure-eight, from manhole one to two and back to manhole one. The duct was coupled at manholes 2, 3, and 4 to form a continuous loop. The full length of cable was removed from the duct by pulling, and then jetted again to simulate a full 7,272 foot installation. There was no damage to the cable jacket, and the cable jet maintained close to a 250 foot per minute speed during the full install.

ALTOS® Cable with FastAccess® Technology also meets the closure sealing requirements of Telcordia GR-771 when installed in Corning’s SCF closures, meaning no expected downtime due to moisture ingress or ice in splice cases.

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Conclusion

Corning has built its reputation by being a global leader in technology and innovation in fiber optic cable and connectivity. This innovation is continued with ALTOS® cables with FastAccess® Technology, allowing installers to strip cables 50% faster while using common tools carried by most craftspeople. These cables have surpassed all industry specifications in the lab and in the field, proving Corning as the continued leader in quality.

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Appendix

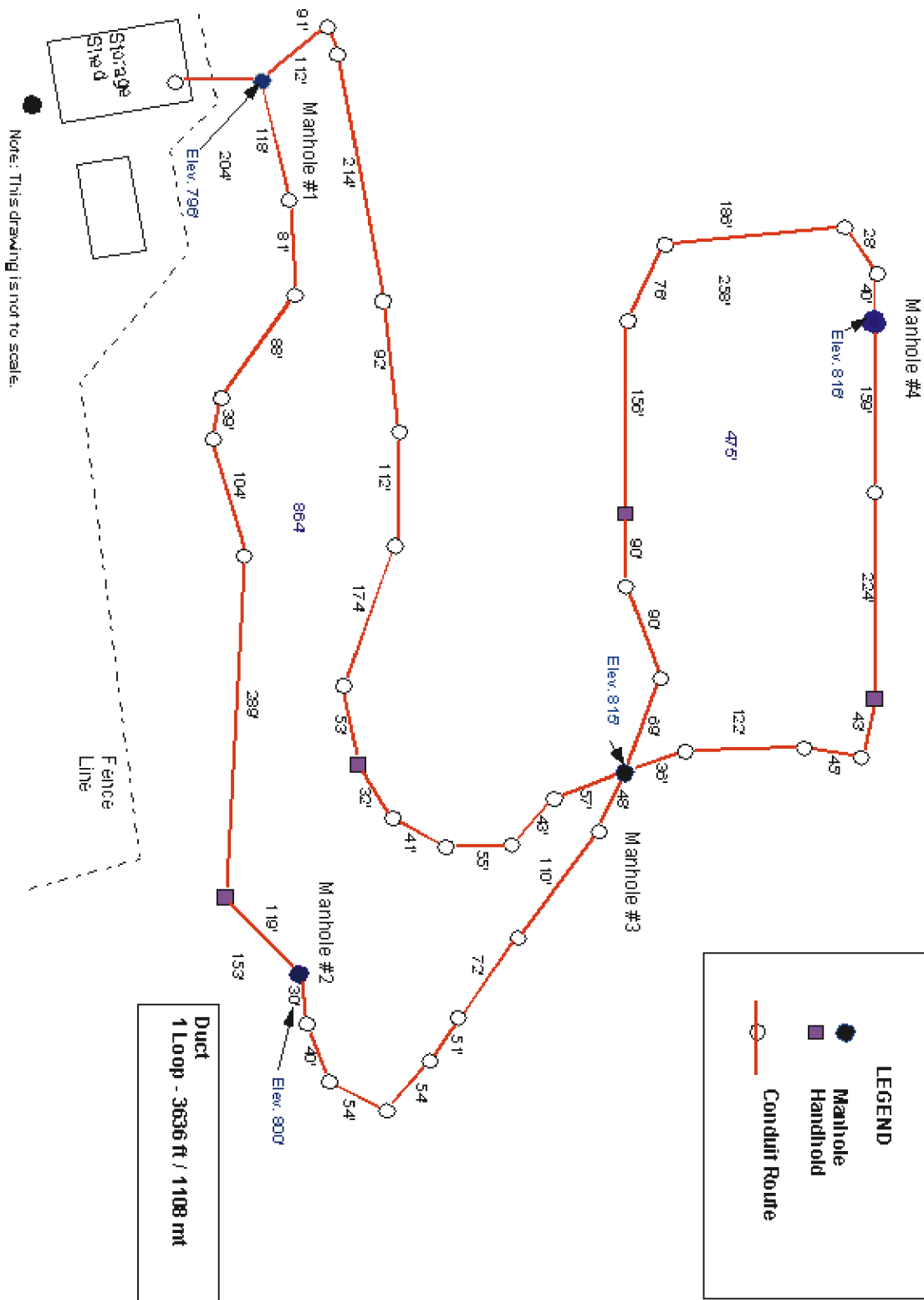


Figure A: Corning's Outdoor Test Facility Duct Layout

