



White Paper

You're Building a Network, Are You Prepared for Damages?

Network Construction & Damage Prevention

Completing the planning, design and permitting phases can be challenging, but the real complexity of bringing a network to life begins with construction.

Are you ready to navigate damages and put best practices into place for damage prevention?

As the demand for fiber networks skyrockets across the U.S., providers are racing to expand their infrastructure. There are still a few more months to capture the full number of homes and businesses offering high-speed fiber services for the first time in 2024, but early estimates suggest it will meet or exceed the 9 million added in 2023¹. Such rapid expansion comes with unique challenges that must be carefully managed to ensure success.

Construction of a fiber network is complex, being a large-scale operation influenced by numerous variables. Providers who successfully deploy fiber networks recognize the need to form construction teams, including employees and vendors, who not only understand the intricacies of network architecture but also adopt a proactive approach to avoid delays that could jeopardize deployment.

One of the most significant challenges during construction is the risk of damage to underground utilities. These damages are dangerous, costly, disrupt production, and often generate negative publicity for providers, even when the damage is unavoidable.

According to the Common Ground Alliance (CGA), damages cost approximately \$30 billion in 2019². With so much at stake, it's crucial that providers and their vendors prioritize damage prevention to minimize costs, improve safety and protect the public reputations of all stakeholders.

1. [Abarinova, M. \(2023, December 11\). More than 50% of U.S. homes now have access to Fiber, FBA says. Fierce-Network.com.](#)
2. [Common Ground Alliance \(CGA\). \(2020, October 14\). Excavation-related damages to utilities cost the U.S. approximately \\$30 billion in 2019. CommonGroundAlliance.com.](#)

What Are Damages?

Damages refer to any strike on an existing utility line or underground facility during construction. This includes water, irrigation, gas, sewer, electrical, stormwater pipes and communication lines. These underground utilities are vulnerable to damage from heavy machinery like plows, trenchers, excavators, horizontal drills, and even hand tools. Strikes can result from the excavator not properly identifying utilities, from inaccurate locating and marking of existing utilities, or when the location of underground utilities isn't verified.

These incidents are financially burdensome, bring project progress to a halt, and can tarnish the provider's public image. More critically, damages pose significant safety risks to both construction crews and the surrounding community, making prevention a top priority.

How Can We Prevent Damages?

1. Communicate with Local Municipalities & Utility Companies: Successful network deployment requires teamwork, so effective communication with local municipalities and utility companies is essential. Utility companies may be unprepared for the high volume of utility locating requests, leading to scheduling delays and potential errors in marking utilities, increasing the risk of damages. Building strong relationships with these stakeholders ensures they understand potential challenges and can facilitate faster solutions, particularly when repairs are needed after a strike.

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2. Utilize Up-to-Date Technology, Such as Ground-Penetrating Radar (GPR):

While electromagnetic locators remain a reliable method for locating utilities, Ground-Penetrating Radar (GPR) has evolved into a valuable and accessible tool for utility verification. Providers using GPR for utility verifications report a reduction in non-preventable damages, with a 99.8% accuracy rate³. By integrating GPR into the locating process, contractors can enhance accuracy and minimize risks during construction.

3. Train Field Crews in Safety Protocols:

Regular safety training and audits are crucial for preventing damages. Field crews must be thoroughly trained in the correct use of equipment, best practices for damage prevention, and emergency protocols in the event of a utility strike.

4. Partner with Experts in Underground

Installation: Selecting a partner with a proven track record in utility construction can significantly decrease costly strikes and delays. They should deeply understand the unique requirements for underground construction, proactively coordinate with other utility providers, identify potential risks, and ensure that all utilities are properly located and marked before breaking ground. Their expertise will streamline the process, minimize errors, and save time and money in the long run.



Best Practice: Ground-Penetrating Radar (GPR)

Ground-penetrating radar emits electromagnetic waves to detect underground structures. After scanning a particular area, the GPR device presents a real-time image that maps out existing infrastructure and buried objects.

While traditional locate methods can only detect metal, GPR is capable of detecting different compositions in every terrain.

With GPR, crews can assess safe areas for burying fiber cable and conduit quickly, allowing for accurate network design in the planning phase and faster locating in the construction phase. This increased efficiency ultimately results in shorter timelines and fewer costs in bringing a network to fruition.

Most importantly, GPR can reduce strike rates and improve safety. With a solid understanding of where existing utility lines are, the risk of hitting a gas or water line greatly decreases, increasing safety for both field crews and local residents.

3. GPRS. (n.d.). [How GPRS Utility Locating Ensures Safe Excavation. GP-Radar.com.](https://www.gpr-radar.com)

While it isn't mandated by law, the industry is trending toward increased adoption of GPR. More contractors are encouraged to use it to minimize risk and damages. As the best practices for utility damage prevention advance, providers and contractors can look forward to fewer damages, safer network deployment, and faster network completion.

About Velox, LLC

A leading provider of contracting services to telecommunications providers, Velox meets the growing need for infrastructure across the country. Based in Huntsville, Alabama, the Velox team provides customers with a seamless experience from network design to fiber construction, emphasizing safety, efficiency, integrity, trust and communication.