



Staking University: The Missing Link

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“Recognizing the importance of the proper use of locating equipment has caused a shift in the industry...” -J. Maloney

Throughout my career in pipeline construction and maintenance, I have struggled to find that missing link in damage prevention. I recently discovered that missing link while attending Staking University. Over time, and across multiple right-of-ways for multiple clients, we’ve fine tuned the training for excavators to include: how to safely dig, details of machinery used, how to safely cross utilities, how to bore near and around them, working near parallel utilities, potholing and utilizing 811—among other topics. These best practices and implemented company policies have worked and have contributed to reduced utility strikes.

However, there was a missing link, a piece of the puzzle I really didn’t see until recently. What was I missing? It turns out it was the actual understanding of the locating equipment itself. Interviewing locators on right-of-ways, we found many didn’t know their equipment’s capabilities, nor how to dissect a problem when losing signal in disturbed areas, congested areas, or areas with complex underground utilities and structures. Understanding the nuts and bolts of this problem answers where we are weak in the damage prevention world. Recognizing the importance of the

proper use of locating equipment has caused a shift in the industry, where we are seeing contractors utilize 3rd party locators or are begin to train locators internally to verify markings.

In recent years, pipeline contractors have become more involved in carrying out their own locates as a contingency to 811. The need for an additional locate has become an increasingly common practice, because it allows contractors a second opinion. It also allows for the locate attempt on private utilities and utilities not part of 811 state programs, and it serves as an opportunity to plan work more efficiently.

When a pipeline contractor encounters an underground utility that was not located, it can cause immediately danger to life or health (IDLH) to the operator and surrounding crew, and in addition, substantial delays in construction. More often than not, an underground utility contact is not the fault of the contractor. Understanding how and why this is true allows for damage prevention and safety professionals to further understand why data analytics on a voluntary basis does not help workers on the front end. While data is one part of damage prevention, it alone is not the answer.



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Planet Underground films Staking U locators in training at a nearby pipeline facility (pre-COVID).

Engaging in the teaching of technical hard skills through Staking University and utilizing helpful free mobile technology such as the Safe Excavator app (www.safeexcavator.com) makes the difference on projects. Often the contractor has carried out their due diligence with the information that was made available to them and still hit underground utilities due to uncontrollable external factors. An additional locate helps reduce the external factors that often lead to hits and ruptured utilities. While not a bullet proof preventative measure, the need for these additional resources are growing and here's why.

Locating Today: Quantity Vs. Quality

First, let's take a look at the current climate in the locating industry. Calling 811 is the very first action project management carries out. This is done to calculate equipment needed to safely excavate, where to excavate, the allowable workspace, amount of materials and manpower needed. The accuracy of these locates is critical to the safety of crews who will be working off these locates and their associated markings. Here lies the one problem when we talk about accuracy. To provide an accurate locate takes time and patience, especially in congested work locations. The locating industry associates profits on how many tickets are cleared. This results in a stack of 811 tickets (aka one-call tickets) submitted by contractors that are needed to be cleared as quickly as possible by the contracted locator. This takes speed. But patience and time are needed for a complete accurate locate.

The concept of the locating business contradicts what's needed to encourage and support locates that are of quality. Instead, the industry is built on quantity. In addition, there is often a significant turnover rate with locators in the industry related to compensation packages or poor management. This high turnover rate severs working relations built between contractors and takes away experience and knowledge of certain utilities and specific locations that locator had with a company or common congested work area. This endangers contractors when that excavator bucket enters the ground.

We have found successful locator professionals who work for organizations who heavily invest in their employees. This could include, although is not limited to, multi-skilled technicians such as the locator professional who also learns survey skills to increase his or her awareness. Understanding accurate utility mapping through well-defined learning management systems is key to elevating a locator's skills and maintaining competent personnel. We've also seen success in mentor/mentee programs that very clearly define levels of progressions. While these practices are encouraged and do offer improvements to the industry, it does not replace the need for a national certification that should include basic utility training. While many locate contractors go above and beyond in training their employees internally, there needs to be more focus on better training on the actual instruments the locator uses in the field. This is what Staking University has provided to the damage prevention world.

Location: American Locator Headquarters
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Setting Standards for Locator Training

In my opinion, the lack of experience many locators have is due to there being no national standard certification process. Currently, training within locating companies involves field training with another locator and some in-house comprehension assessments, however no standard certification or training exist. In 2020, can you believe that? To even touch a pipeline in the United States, a pipeliner needs extensive proven field experience, American Petroleum Institute (API) certifications, National Association of Corrosion Engineers International (NACE) certifications, background checks, multiple operator qualifications, and client specific training, in addition to having your resume submitted and validated before even stepping on a client's right-of-way to begin work.

Locators carry just as much responsibility as the constructing general contractor, and locators are equally important in the technical process of planning, maintaining and constructing underground infrastructure. The craft of locating is very demanding and technical and needs to be recognized as an elevated profession amongst other industries. The complex challenges and working environments contractor locators must navigate are critical to every step in the construction process that follows them. Understanding instrumentation, above ground structures, and having the ability to troubleshoot in complex work locations is absolutely vital to the safety and success of construction activities that rely on the accuracy of locates where paint and flags hit the ground.

What could a national certification program include?

1. A basic and advanced level of utility training modules
2. Method to determine locator has received training
3. Compensation adjustments tied to levels of training successfully completed
4. A type of database or registry listing qualified locators for contractors to draw from or request
5. Mobile training to broaden audience involvement and provide on the job resources for troubleshooting

A better trained and experienced locator equals safer work sites, increased productivity, and dramatic improvement in the first step in damage prevention, the locate itself. We need to recognize locating as an elevated craft due to its significant importance to contractor safety.

Repercussions of Inaccurate Locates

Working with equipment operators over the years, I can share with you that working relationships and morale are worth millions. Relationships build underground critical infrastructure. Having trust and morale on a crew is the key to success and breeds productivity. Words can't explain the feeling you have when you contact an underground pipeline without rupturing it. Contacting



Increasingly congested locates in urban settings present a technical challenge for locators.

any pressurized pipeline can be easily fatal, and the couple times it happened to me, I thought I had just faced off with the grim reaper. It's not uncommon for an operator to leave their machine after an occurrence like this, because there is a personal understanding of the power pipelines hold. To release that power often ends in eulogies. This may be the most personal reason why it's so important locator competency includes a good understanding of their instrument and above ground structures, and that they have the ability to troubleshoot in complex congested locates.

The Missing Link: Equipment Training

In closing, let's return to that missing link and Staking University. The point we'll make here will be well defined and clear. There are many components to damage prevention. They include, although are not limited to, heavy equipment awareness, job site hazard assessments, understanding of utilities and how they work, designated spotter/operator roles and responsibilities, and calling 811 which involves the dispatch of a locator professional. All but the last mentioned (calling 811) occur after the locate has been completed by the locator. You can see the locator is the first line of defense. The role of the locator is arguably the most important part of the equation, because the latter of the work stems from the locator's marks. So, the missing link can be boiled down to the locators' ability to use their equipment. This is where Staking University (the missing link) comes in.

During my time at Staking University, I quickly discovered why we contacted abandoned, private or live utilities constructed in close proximity to, or inside, a shared trench. It's the proper use of (or lack of) the instrument that impacts the accuracy in locates. We've found utilities over the years that were mismarked well over 18 inches. We've found utilities that were mislocated at points of intersect (PI's) just because the skills to troubleshoot were not there and markers were used to complete locates instead of good instrument reading with troubleshooting. This is what Staking University answers in the industry and answers successfully. At Staking University, you'll learn the nuts and bolts of:



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- Properly utilizing locating equipment
- Understanding peak and null
- Determining the shape of the transmitter's energy
- What influences current flow
- How to properly assess the current level

Understanding the principles of electromagnetics helps increase locator competency and accuracy tremendously. The instructors' knowledge of the equipment is nothing short of impressive. They teach you, “If you see this, try this. If you encounter this, look at this. When this happens, check this.” They also teach proper ergonomics with the machines which dramatically impacts the usefulness of the antennas that are inside of these machines.

Lessons are learned in the field which helps with the comprehension of the knowledge itself. The hands-on lessons practiced in the field are in real world settings. What you learn can be applied to help difficult locates in downtown Chicago, The Bakken in North Dakota, west Texas, or historical Boston and Philadelphia. The hard skills learned can be applicable for any job site. The better

the locator understands his or her instrumentation, the less underground utility contacts. Staking University really does tie all the components of a comprehensive practical damage prevention program together.

Staking University is a great example of what improves the industry. Learning the hard skills that can be applied to right-of-ways is where change occurs—not data analytics, voluntary reporting, or pay to play marketing gimmicks. Hard skills that employees can utilize to make job sites safer is where the rubber meets the road. Its proactive, not reactive. If you haven't taken one of these classes and you're in the damage prevention line of work, take it, and bring back the education to your organization. It will only elevate the effectiveness of your damage prevention efforts. Staking University is a good example of a program that drives progress in a difficult industry, field tested and field approved. ★



This article is dedicated to the memory of Roy Edwards, for his contributions to the Enbridge Ground Disturbance and Safety programs utilized throughout the United States. Thank you for making our industry better.