Abandoned Underground Utilities
The "Un-Seen Elephant in the Corner"

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In Memory of
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What’s the Problem?

- More Utilities are being buried underground today than ever before.
- Typically it is cheaper to bury, particularly when using directional drilling.
- Once buried, utilities are typically less susceptible to damage than if placed on the surface.
- Many local and state ordinances, if they exist at all, are vague when it comes to establishing requirements for the future of abandoned utilities.

![Image of buried utilities and abandoned gas main]

- Abandoned 20” 1904 Cast Iron Gas Main, 24” Cover
- Active 1914 Century Clay Duct System
- Active 1986 20” Steel Gas Main
- Hole Drilled in Abandoned Gas Main
- 2014 Emerson Ave S Project, Audit of Trenches at Station 0+09.34
What's the Problem?

New Water Line was being installed and Abandoned Electric and/or Communication was Cut

Resulted in Project Delays:  
- Who is the Owner?  
- Is/Are they Live?  
- Are Other “Live” Lines Nearby

What's the Problem?

Storm Water Vault being installed Abandoned Electric and/or Communication Cut

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The Elephant in the Room

- In many areas, particularly metropolitan areas, the area beneath the surface is becoming extremely crowded with utilities
- Technological advances have made underground burial cheaper and quicker than in the past. Deregulation of the telecommunications industry and the increasing uses for fiber-optic cable have all increased the demand for underground space
- Lacking strong legislative requirement, most obsolete underground utilities are typically abandoned in place by the owner who has no economic incentive to do otherwise
Lack of Effective Regulation

- Most Local and State ordinances are too vague about how abandoned underground facilities are to be dealt with going forward
- It seems that very few understand or care about the problems that are caused by the presence of these abandoned facilities, similar to the junk that’s abandoned in outer-space!

So what are the problems?

- Usable available underground space is reduced
- Repair of adjacent facilities is hindered
- Can be a source of contamination of the soil if not properly purged and cleaned upon abandonment
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- Can create confusion when attempting to locate active lines
- Can cause excavation downtime due to the unknown status of the line

What some states are doing...

Arizona DOT-
"Abandonment of Utility Facilities means the decision by the utility to no longer use its facilities and notification of such decision to the Arizona Department of Transportation. Abandonment shall not be construed to mean any changes in ownership of the facility".

Review of abandonment proposals -
"The utility submits information to ADOT that clearly shows the cost of removal would far exceed the public benefit".
What some states are doing...

Arizona Continued -

- State law says the facility owner is still responsible to maintain locations on their mapping and mark the locations of facilities abandoned after 1988 in response to an AZ811 locate request. Also AZ811 is required to have a process in place to send qualified personnel to a job site to determine if an unmarked and uncovered facility is active or abandoned. They first attempt to identify the owner. If no owner is identified, a team of qualified personnel determines whether or not it should be windowed to determine its status. Even when it is identified as abandoned, there is still a question of whether a contractor can remove it or work around it.
- The month of June, 2014, required 289 attempts to verify with only 21 unresolved and the project required redesign.

What some states are doing...

California -

"If the abandoned line is under asphalt and integrity of the highway structure must be maintained, we require the abandoned line to either be removed or filled with slurry or sand. If the line was used for water or other non hazardous material, it is often crushed in place by the contractor".

What some states are doing...

Connecticut -

"In the event the public service company/municipality is granted permission in writing by the State to abandon in place a contaminated facility, the public company/municipality will retain ownership of the facility. The public company/municipality shall be responsible for all costs associated with releases from facilities that are abandoned in place".

What some states are doing...

**Hawaii** -
“HDOT currently has a “no abandonment” policy where we require removal of any facility that is requested to be abandoned. Our Director may grant a waiver to the policy, but in doing so the applicant must enter into an agreement that covers future liabilities and obligations”.

What some states are doing...

**Michigan** -
“Michigan DOT does allow abandonment of facilities within the ROW. We only allow a utility to place a utility line out of service. This is intended to indicate that the utility company is still the owner of the facility and is still required to maintain records for future transportation improvements and remove the line at their cost if necessary”.

What some states are doing...

**Minnesota** -
*Above ground facilities:* "If a utility owner discontinues use of an above ground facility, the facility shall be entirely removed from the ROW within one year after its use is discontinued".

*Underground facilities:* "If a utility owner discontinues use of an underground facility but desires to leave it in place on the ROW, written approval to do so shall be obtained from Mn/DOT and a record shall kept in the utility owner’s permanent files in order that such facility may be accurately located in the field".
What some states are doing...

**New York** -
“The utility shall remain responsible for all abandoned lines. The Department on reasonable notice may require the removal of abandoned facilities and restoration of the ROW, when necessary to avoid interference with the operation, maintenance or reconstruction of the highway”.

What some states are doing...

**Pennsylvania** -
“Pipelines with a 200mm (8 inches) inside diameter or greater with less than 1m (3 feet) in depth from finished roadway and shoulder grades, which are to be abandoned within highway ROW, must be purged of all product, backfilled with a flowable fill, capped and sealed. This requirement may be waived for pipelines of same size but in excess of 1m (3 feet) depth from finished roadway if approval is obtained from District Office”.

What some states are doing...

**Wisconsin** -
*Above ground facilities*: “If a utility discontinues use of an above ground facility, the facility shall be entirely removed from the ROW within one year after it’s use is discontinued”.

*Underground facilities*: “The Department shall not require a utility to physically remove and abandoned underground facility so long as a permanent record of it is maintained, and if it does not prevent the construction or modification of any highway improvement and/or structure. Abandoned appurtenant facilities such as manholes and pull boxes shall be filled in or removed”.

What some states are doing...

Wisconsin, Pierce County -

- 5-1.6 Abandoned Utility
- Unless otherwise approved by the Engineer, an existing underground utility or associated appurtenances no longer being used to provide service shall be removed from the right of way.
- If a replaced or abandoned utility or appurtenances are being requested to remain in place in the existing right-of-way, discussions will be held with the Engineer as to how to preserve the right of way for future use.

What some states are doing...

Wisconsin, Pierce County Continued-

- If abandoned utilities are allowed to remain in the right-of-way, an executed agreement between the Utility and the County will be developed based upon the discussions. The agreement shall include, but will not necessarily be limited to, the following:
  - The Utility Company shall remain the owner of the abandoned utility and appurtenances.
  - The Utility Company shall be required to retain the responsibility for the removal, any mitigation as a result of the removal, and ultimate disposal of the abandoned utility facilities and appurtenances should they be in conflict with future construction activities within the County right-of-way.
  - The Utility Company shall provide an “As-Built” survey of the abandoned utility and appurtenances within 90 days of the date of the work completion.

What some states are doing...

Additional agencies with “Abandoned Utilities” policies:

- Florida
- Indiana
- Kentucky
- Missouri
- Oregon
- Texas
- Virginia
- Common Ground Alliance
Policies

- The one common thread among most states’ practices/policies is that the facility owner retains ownership of the line and therefore responsibility for locating it. Ownership does not cease when you abandon a facility in place. This “retained ownership” also ensures that if the abandoned line should need to be removed to facilitate new construction, the original owner retains the cost of removal or relocation. (See Article in this month’s Reporter)
- “If you are going to avoid the expense of removing a line when retiring it or taking it of the tax roles, you still bear the expense of locating it when necessary”.

The “Quick Fix”

- With the advent of Horizontal Directional Drilling in the early 1990’s it quickly became easy to “go deep” to avoid existing buried utilities
- This quick fix has left us now with the “deep zone” full of utility lines ... some so deep they are very difficult or impossible to locate/designate
- Which brings us full circle back to the underground being full - now at ALL depths

Costs Involved

- The simplest solution would seem to be to require the removal of abandoned facilities by the owner - however since these facilities are often buried below pavement or other impediments, the removal costs would be significant and the public would pay in the end
- Instead of removal therefore the facilities are left in place and typically increase the cost to install other new lines.
- Such an increase is often needed to acquire additional ROW and to cover the potential costs of hitting un-marked abandoned lines
Costs Involved

The irony of the situation is that in areas with the most buried facilities, those which would benefit most from removal of abandoned facilities, congestion or other factors makes the cost of removal so expensive as to be impractical.

Dangers

One of the obvious dangers that arises from abandoned (and many times unmarked) facilities is the real possibility of a locator in the field finding the abandoned facility thinking that it’s the live facility. Or worse, designating and marking the live facility as abandoned. Depending on the type of facility involved this could result in a minor incident (a project delay) or a major event resulting in someone seriously injured or worse.

Dangers

Adding to the danger of abandoned and unmarked utilities is the fact that many utilities will remove their abandoned lines from their inventory/mapping in a cost cutting effort so as to not be taxed on that line.

Contractors and locators can "work with" an abandoned line IF they know it is there. Not having that information can cause major problems.
If a line must be abandoned in place, here is one method of finding it ...

Electronic Marker System

Using Marker Ball Technology to Distinguish an Abandoned Line vs. Live Line
Repurposing

- In 1985, Williams Telecommunications Company pioneered the idea of using decommissioned pipelines between Kansas City and Des Moines and between Omaha and Chicago as conduit for fiber-optic cables. The result of this very successful experiment was an 11,000 mile digital network which encouraged long distance competition.
- Today, Williams Communication Group has over 40,000 miles of network and broadband network architecture and is the largest source for video, data and voice communications.

Repurposing

- However, facility records MUST reflect the details of the repurposed line. What looks like a gas line may be fiber-optics!

Removal

- Abandoned lines can be successfully removed from our Rights-of-Way ... only if there are adequate incentives and/or disincentives to do so. Maybe a leasing fee charged on abandoned lines would serve as that incentive?
- At some point in the near future removal of unused facilities must become common practice rather than a "good idea"
Our intent is not to provide absolute solutions but rather to “sound the alarm” that abandoned utilities are a problem that cannot be pushed to the back burner indefinitely. Defined policies, procedures and most of all ACTION must be implemented to begin solving this problem that will not go away.

Questions?  
Ideas?  
Suggestions