

2017 DAMAGE PREVENTION CASE STUDIES



MN OFFICE of PIPELINE SAFETY

A division of the Minnesota Department of Public Safety

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Function of MNOPS

- **MNOPS is part of the MN Department of Public Safety**
- **MNOPS has two main functions**
 - **Inspect natural gas & hazardous liquid pipelines in MN**
 - **Enforcing the State One Call Law – MS216D and MN Rule 7560**



Today's Agenda

Case Studies

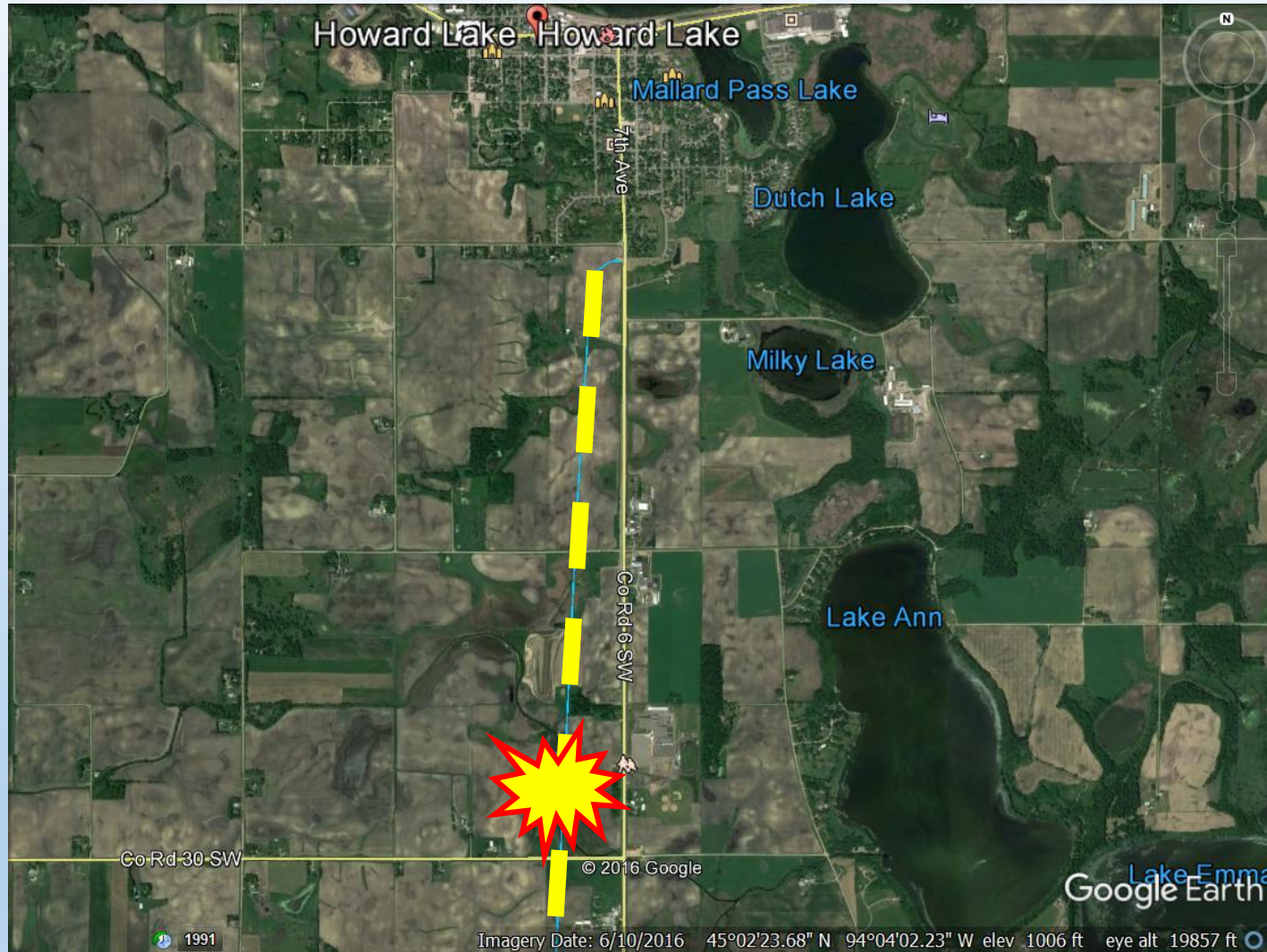


Share & Learn



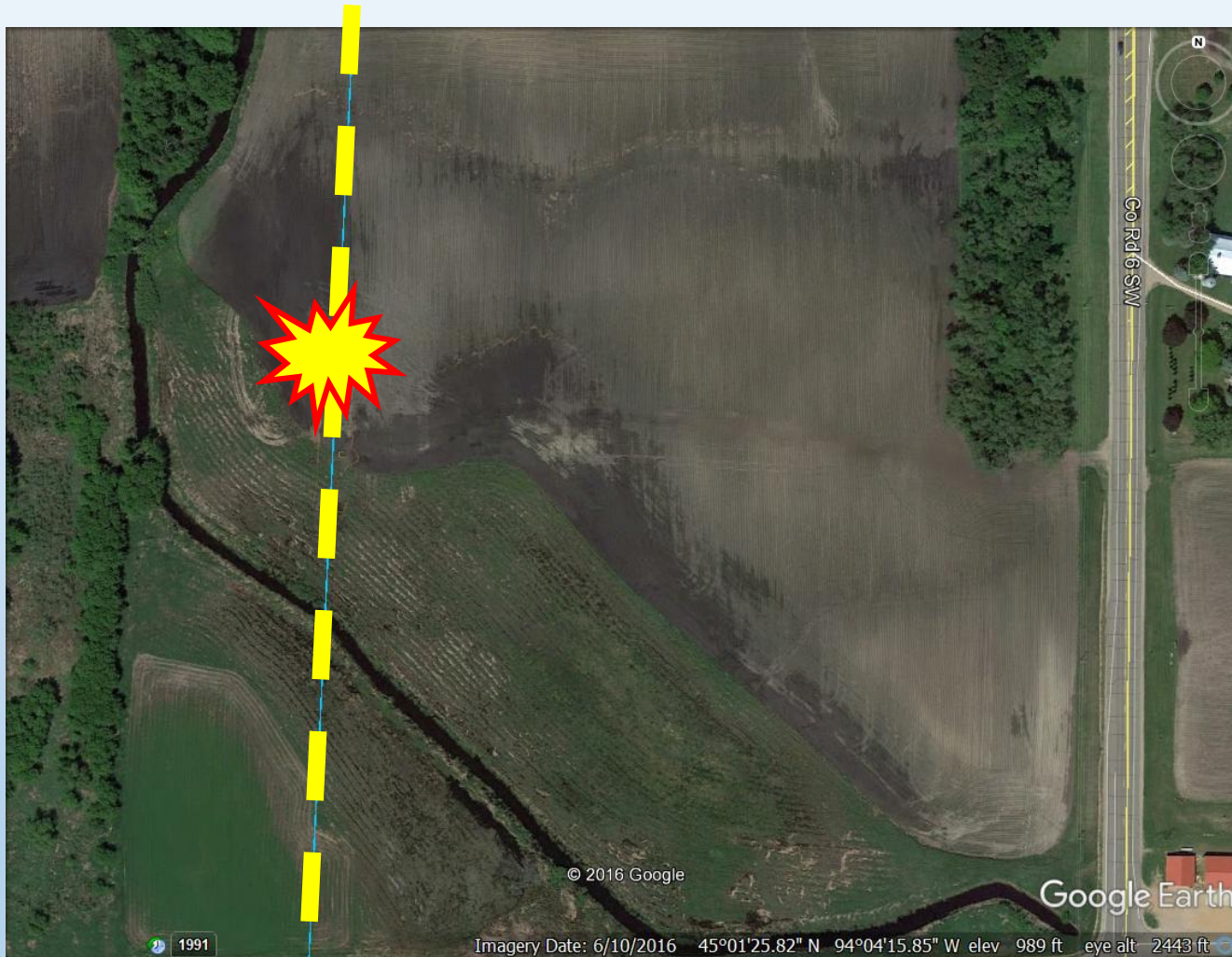
Q&A

Case Study: Gas Transmission Line Damage



Rural Gas Transmission Line Release

Case Study: Gas Transmission Line Damage



- **3" Steel Natural Gas Transmission Line**
- **Howard Lake Area**
- **7,000+ MCF Gas Release Before Bypass Installed**

Case Study: Gas Transmission Line Damage

Per MS216D.06 - Damage to Facility; Subd 1. –
– Notice; Repair (page 72):

(a) If any damage occurs to an underground facility or its protective covering, the excavator **shall notify the operator promptly**..... If the damage results in the escape of any flammable, toxic, or corrosive gas or liquid or endangers life, health, or property, the excavator responsible **shall immediately notify the operator and the 911 public safety answering point**

Case Study: Gas Transmission Line Damage

Per MS216D.06 - Damage to Facility; Subd 1. –
– Notice; Repair (page 72):

(b) **An excavator shall delay backfilling in the immediate area** of the damaged underground facilities until the damage has been investigated by the operator, unless the operator authorizes otherwise. The repair of damage must be performed by the operator or by qualified personnel authorized by the operator.

(c) An excavator who knowingly damages an underground facility, and who does not notify the operator as soon as reasonably possible or who backfills in violation of paragraph (b), **is guilty of a misdemeanor.**

Case Study: Gas Transmission Line Damage



20-ft High Flume



Pipe Flattened



2-in by 1/16-in Crack

Case Study: Gas Transmission Line Damage



Damaged Section



Crest of Bend

Case Study: Gas Transmission Line Damage

- **Generally 30-in of Ground Cover**
- **20-in of Ground Cover at Damage Site**
- **2 – Stopples and Bypass Used for Repair**
- **37-ft of Pipeline Replaced**
- **No Interruption of Service - Four Cities at Risk**
- **Repairs Required 4-days**



Case Study: Gas Transmission Line Damage



Stopple/Bypass



Replaced Section



New Block Valve

Close Call – 4 Cities Almost Lost Gas

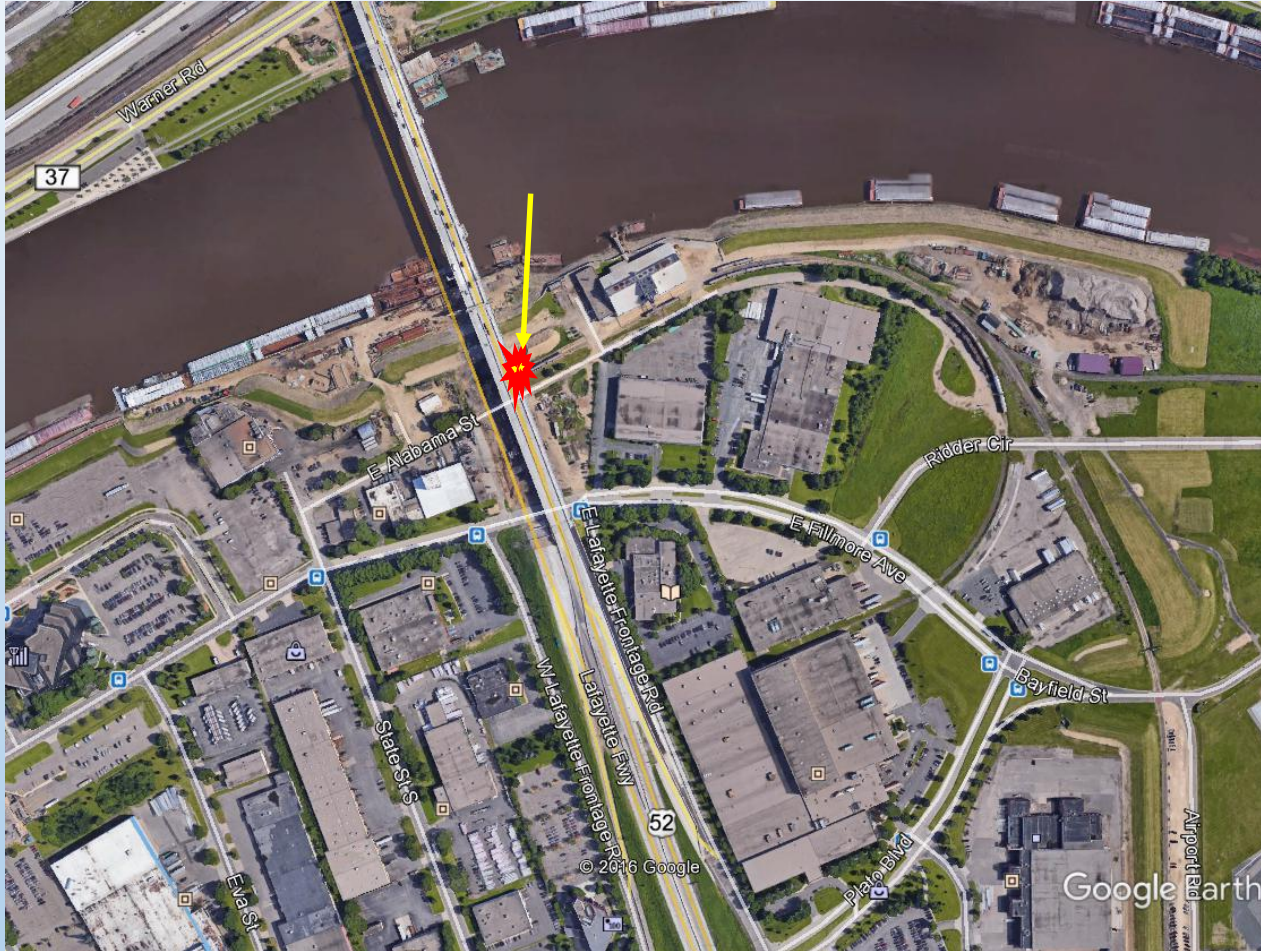
Case Study: Gas Transmission Line Damage

Conclusion

- Unreported damages are an incident waiting to happen
- Must report damages to the utility operator per state law
- Not reporting and covering damage is a misdemeanor



Case Study: Gas Main Hit



- St. Paul Industrial Area
- 4" Polyethylene Natural Gas Main, 22-66 psi
- Local Business Evacuated (16 people)
- Media Onsite
- Street Traffic Blocked off

3rd Party Gas Main Hit While Excavating for New Pond

Case Study: Gas Main Hit



- GSOC Ticket Submitted 9/4
- Work Date 9/9
- Expiration Date 9/23
- Damage Date 9/28
- No Refresh Request
- Marks Not Maintained

3rd Party Gas Main Hit While Excavating for New Pond

Case Study: Gas Main Hit

Gas Leak Prompts Evacuations In St. Paul

September 28, 2015 11:20 AM

Filed Under: [Gas Leak](#), [St. Paul](#), [St. Paul Fire Department](#)



(credit: St. Paul Fire Department)



ST. PAUL, Minn. (WCCO) — Authorities are on the scene of a gas leak after a line was struck near the [new](#) Lafayette Bridge in St. Paul.



BLOG
STP

Xcel Energy and fire crews respond to St. Paul gas leak; Leak stopped

[Hitlers Deathbed Confession](#)



Did Adolf Hitler Make This Shocking Confession In The Seconds Before His Death? Go to pro1.naturalhealthresponse.com

By **Nicole Norfleet** | SEPTEMBER 28, 2015 — 12:17PM

Local Media Coverage

Case Study: Gas Main Hit



Property of United States Infrastructure Corporation
Photo taken on 9/10/2015 12:16:18 PM

**Northerly View - Initial
Locates 9/10**



Property of United States Infrastructure Corporation
Photo taken on 9/28/2015 11:55:20 AM

**Northerly View - Post
Damage Locates 9/28**

Case Study: Gas Main Hit



Property of United States Infrastructure Corporation
Photo taken on 9/10/2015 12:11:40 PM

**Southerly View - Initial
Locates 9/10**



Property of United States Infrastructure Corporation
Photo taken on 9/28/2015 11:55:04 AM

**Southerly View - Post
Damage Locates 9/28**

Case Study: Gas Main Hit

Per MS216D.04 Subd. 4 – Locating Underground Facility; Excavator Or Land Surveyor. (page 70):

(c) The **notice is valid for 14 calendar days** from the start time stated on the notice. If the activity will continue after the expiration time, then the person responsible for the activity shall serve an additional notice at least 48 hours, excluding Saturdays, Sundays, and holidays, before the expiration time of the original notice, **unless the excavator makes arrangements** with the operators affected to periodically verify or refresh the marks,

Case Study: Gas Main Hit

Per MS216D.04 Subd. 4 – Locating Underground Facility; Excavator Or Land Surveyor. (page 71):

(d) The excavator is responsible for reasonably protecting and preserving the marks until no longer required for proper and safe excavation near the underground facility. If the excavator has reason to believe the marks are obliterated, obscured, missing, or incorrect, the excavator shall notify the facility operator or notification center in order to have an operator verify or refresh the marks.

Case Study: Gas Main Damage



**3rd Party
Excavation Damage**

Case Study: Gas Main Hit



Gas Main Repairs

Case Study: Gas Main Hit

Lessons Learned

- **Keep GSOC Ticket Current**
- **Maintain Marks**
- **Request Refresh Marking When Obscured**
- **Hand Dig Within Tolerance Zone**

Summary

- ✓ **Call or Click Before You Dig**
- ✓ **Verify Locate Marks**
- ✓ **Dig With Caution**
- ✓ **Be Aware of Your Surroundings**

Case Study: Locate Markings



APWA Code Requirement

Case Study: Locate Markings

Background

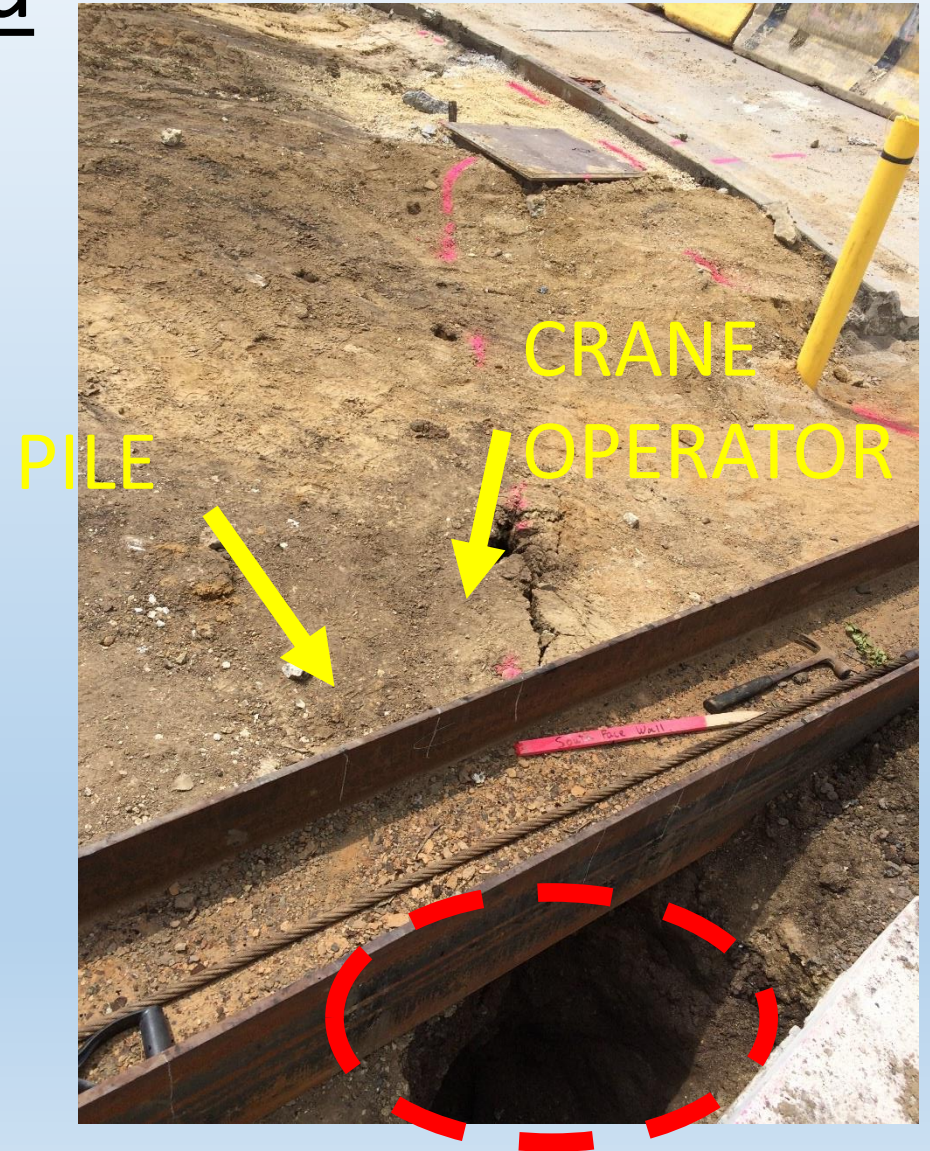
- Driving piles for shoring
- Working near intersection
- Had a Valid Locate Ticket
- Two person crew; one crane operator and one person on the ground
- Crew member on the ground had looked for locate marks prior to starting work



Case Study: Locate Markings

Background

- Crane operator begins driving first pile
- After three hammer blows intersections lights start flashing
- Stop work and expose hole made by pile
- Find cut traffic wire
- Start to notice a lot of pink paint around work area



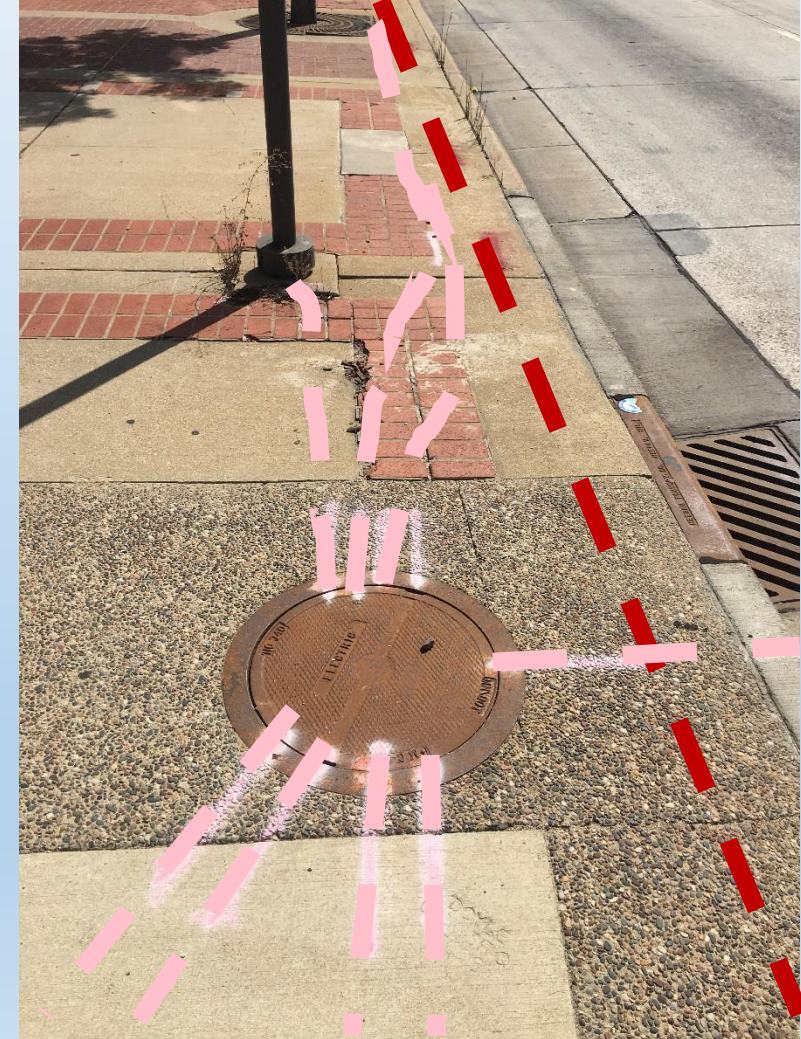
Case Study: Locate Markings

Pink Paint



Case Study: Locate Markings

Investigation Around Site



Case Study: Locate Markings

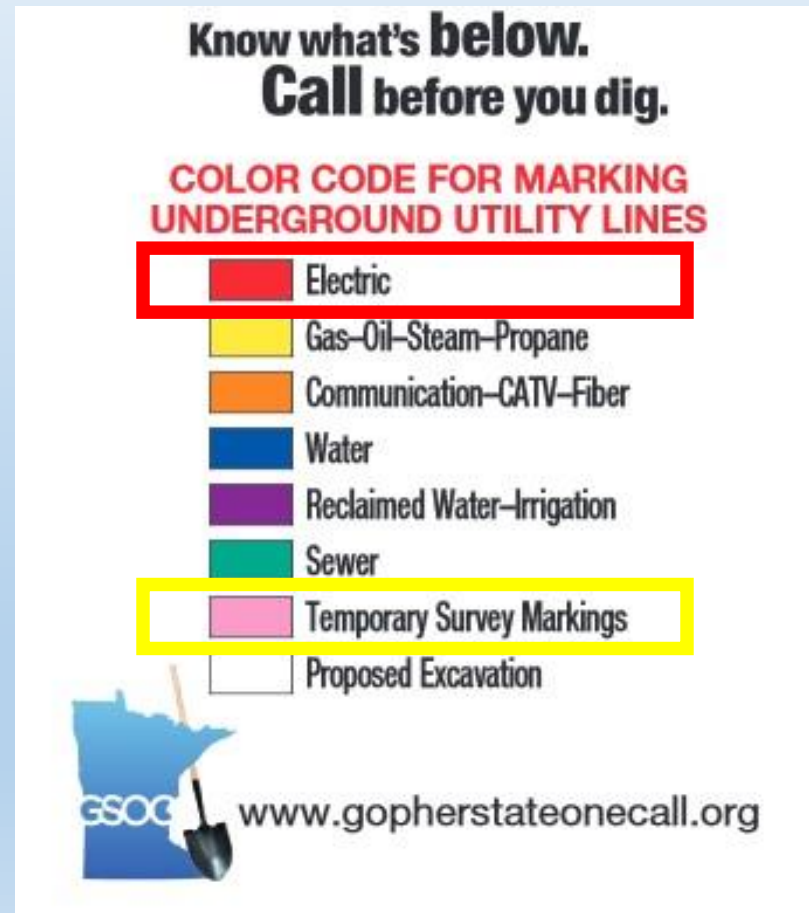
What is required by law?

Per MS216D.04 Subd 3(d). - Locating Underground Facility; operator (page 69):

Markers used to designate the approximate location of underground facilities must follow the **current color code standard used by the American Public Works Association.**

Case Study: Locate Markings

What does Pink Paint Represent?

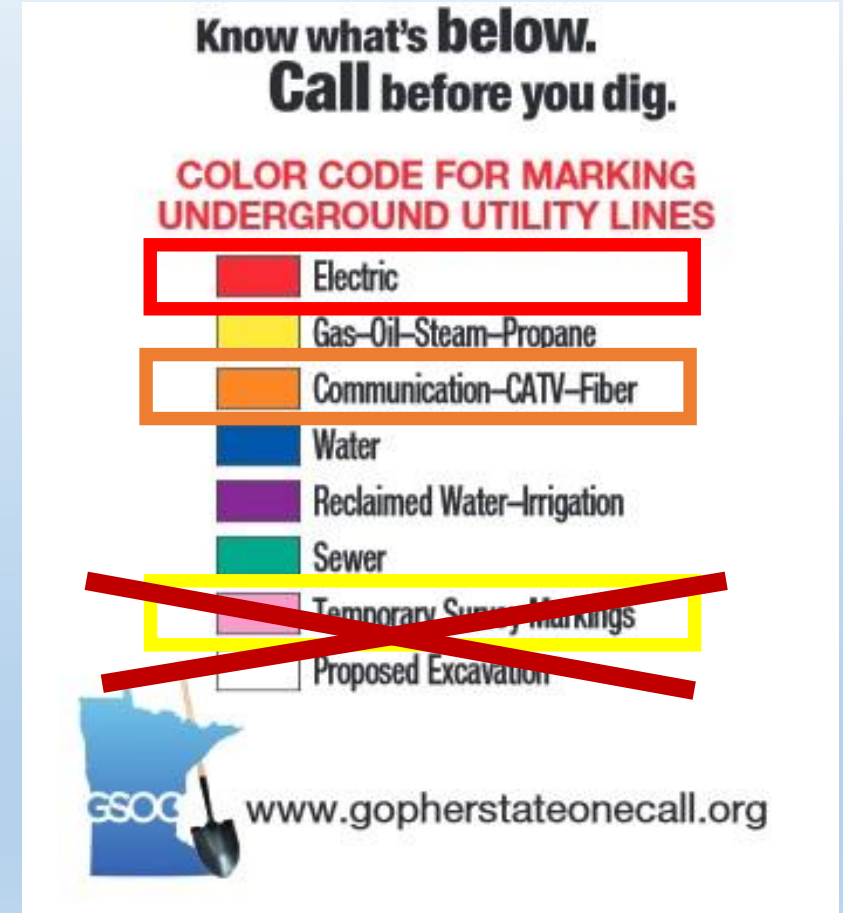


Case Study: Locate Markings

Conclusion

- Utility was marking traffic signal wires with pink paint to distinguish between electrical lines
- Surveying onsite was using pink paint per APWA standard
- The excavator was not looking for pink paint because it doesn't represent a utility

This resulted in.....



Case Study: Locate Markings

Results

- Downtime for Excavator
- Traffic signal lost function increasing traffic
- Cost to repair cut traffic signal line
- Violation sent to Utility by MNOPS



Case Study: Locate Markings

Lessons Learned

- Follow state law – APWA Color Code when marking utilities
- Be aware of surroundings when excavating



Case Study: Electrical Damage



Roadway Improvements

Case Study: Electrical Damage



Installing Storm Sewer

Case Study: Electrical Damage



Electrical Secondary Line Hit by Shovel

Case Study: Electrical Damage



Worker Was Jolted Out of the Hole

Case Study: Electrical Damage

Lessons Learned

- Have a valid ticket, even when using hand tools
- Dig carefully around marked utilities



Case Study: Missing Marks

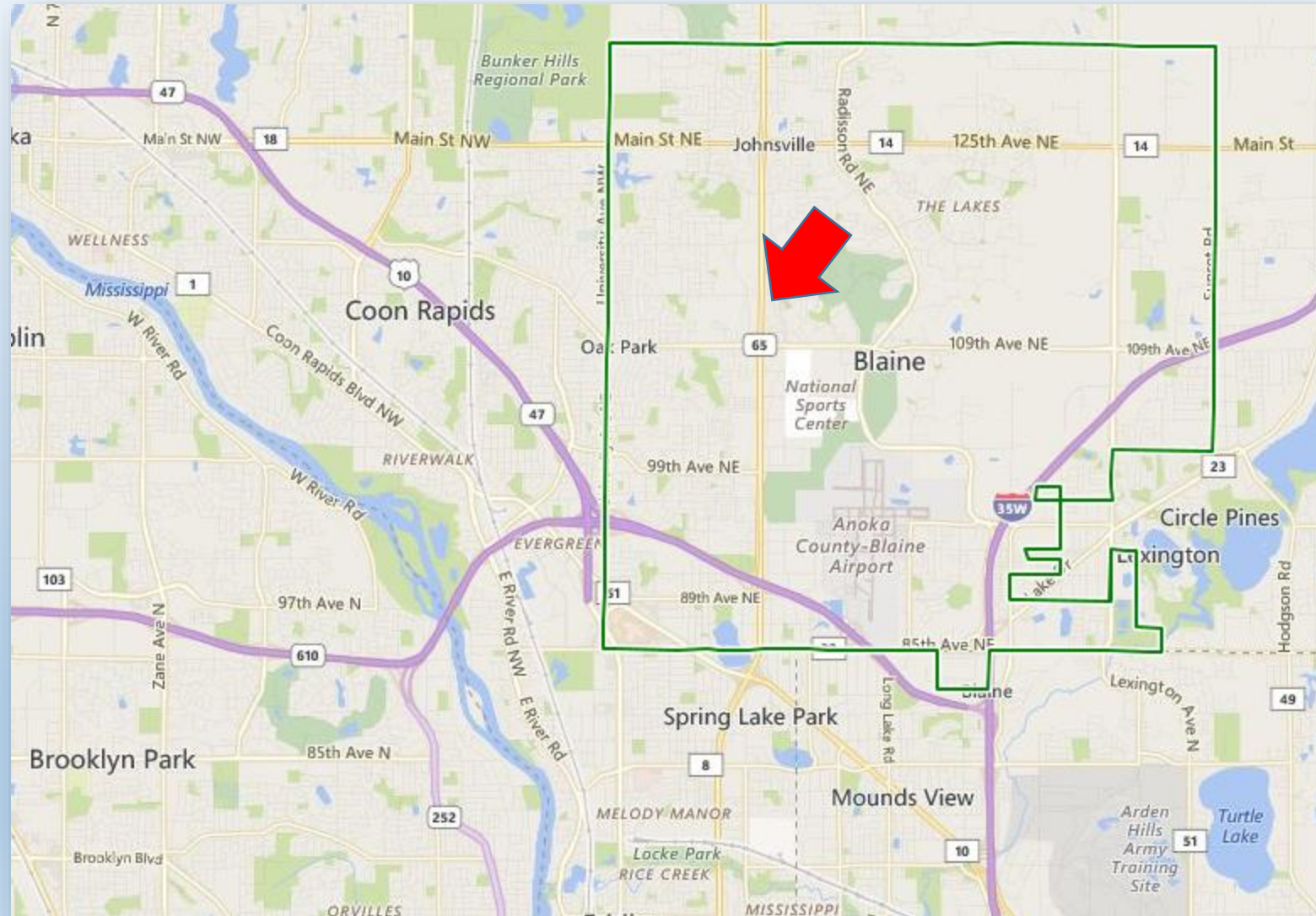


Case Study: Missing Marks



Excavating via HDD

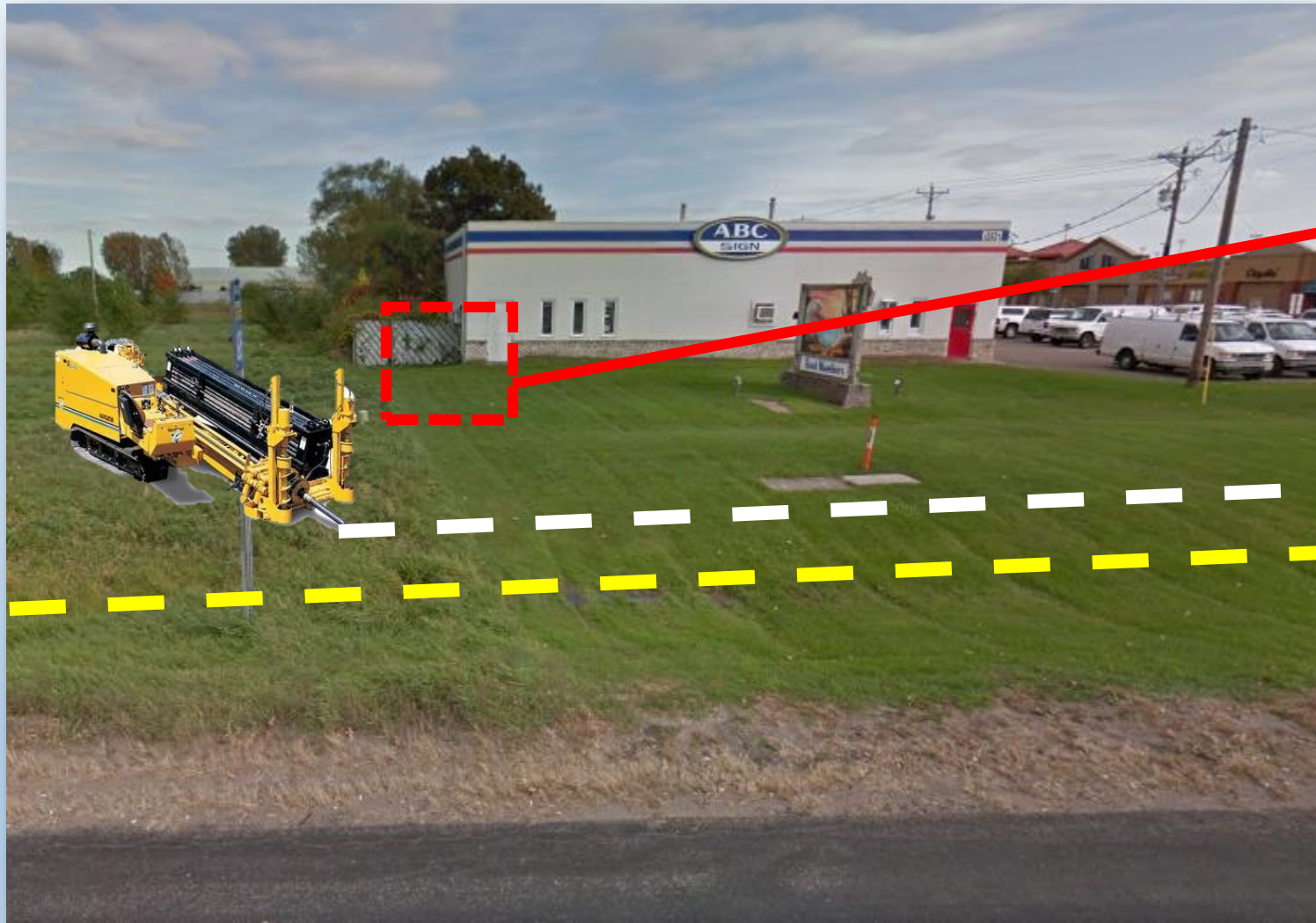
Case Study: Missing Marks



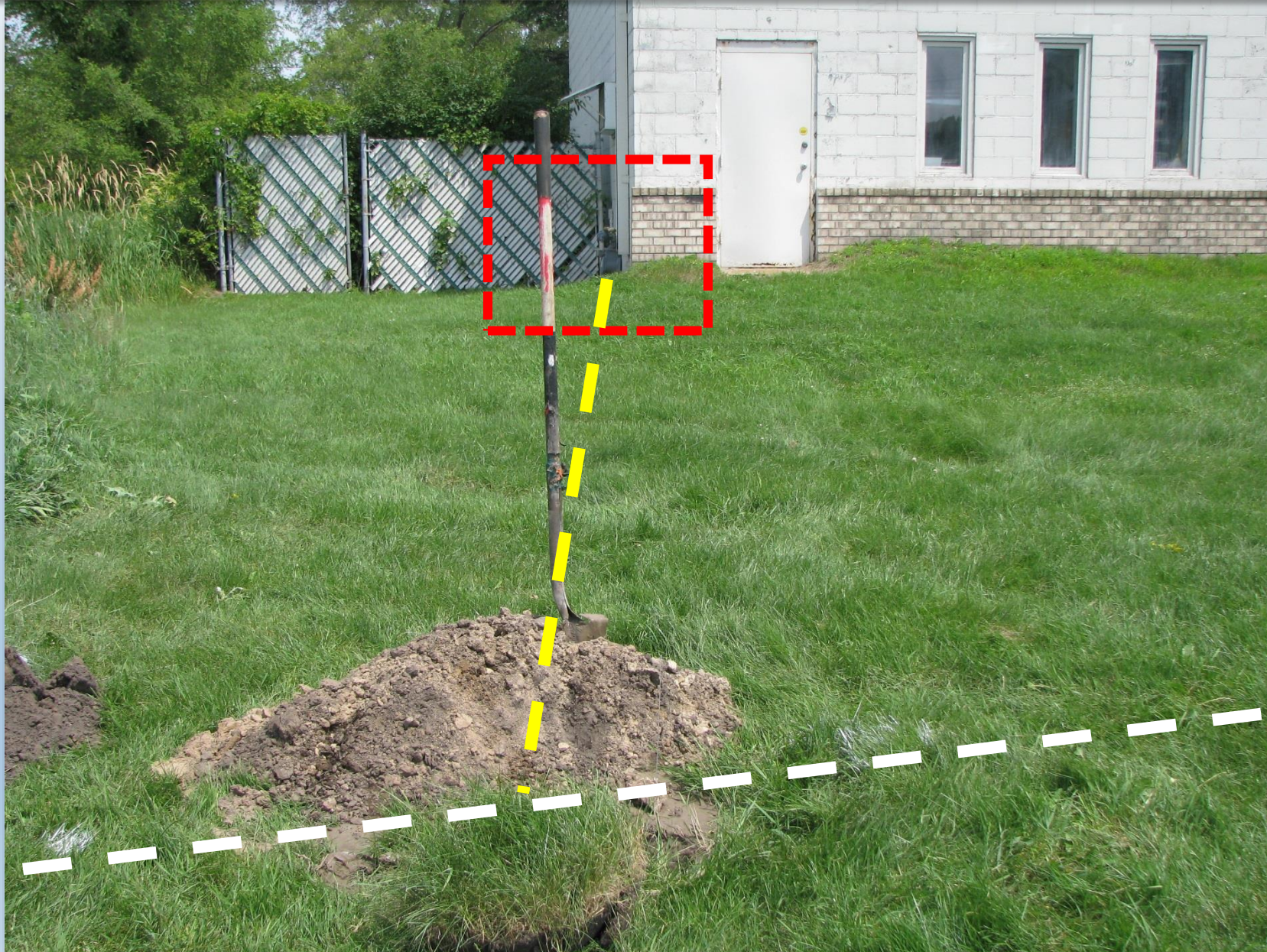
Case Study: Missing Marks



Case Study: Missing Marks



Case Study: Missing Marks



Case Study: Missing Marks

What is required by law?

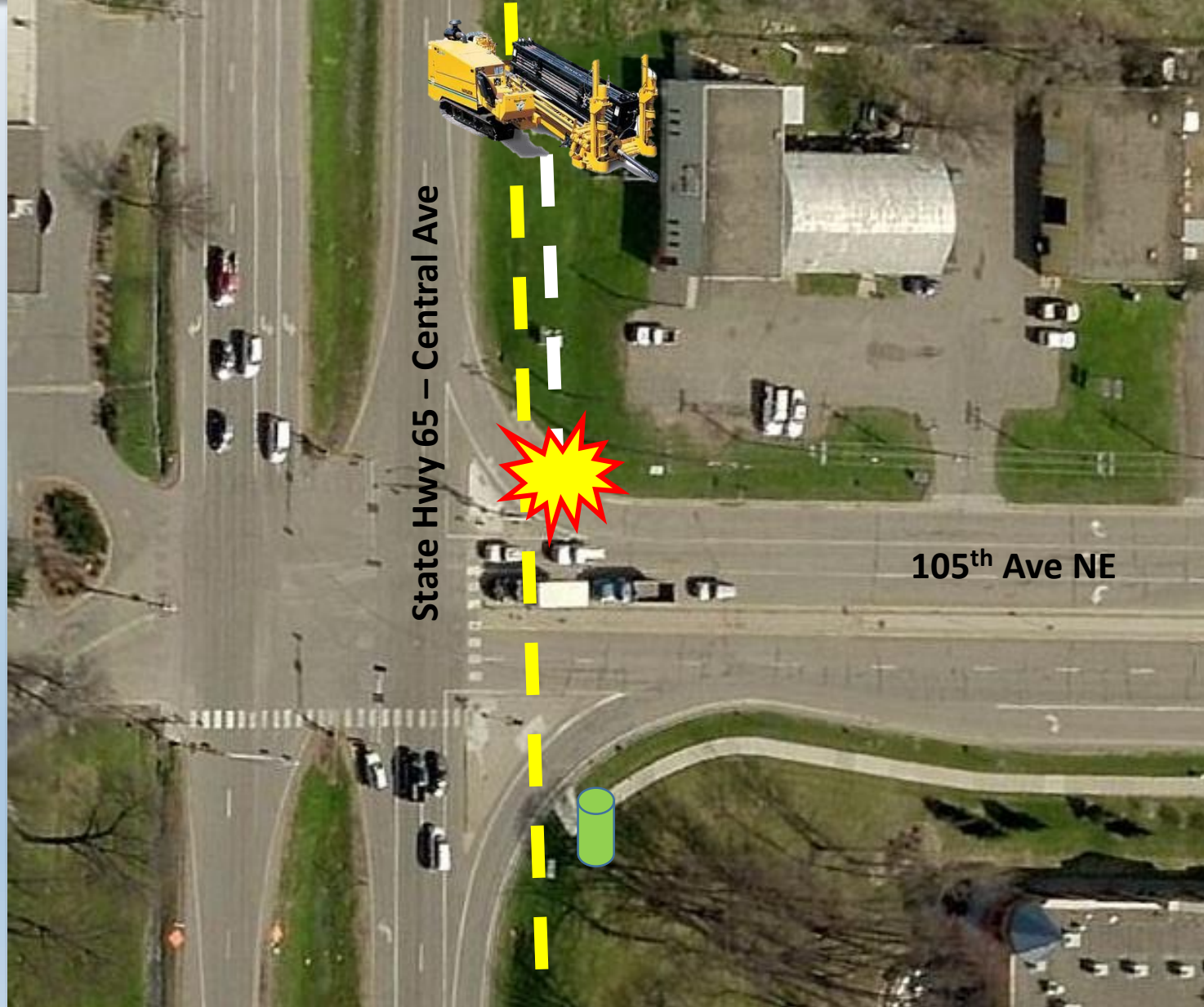
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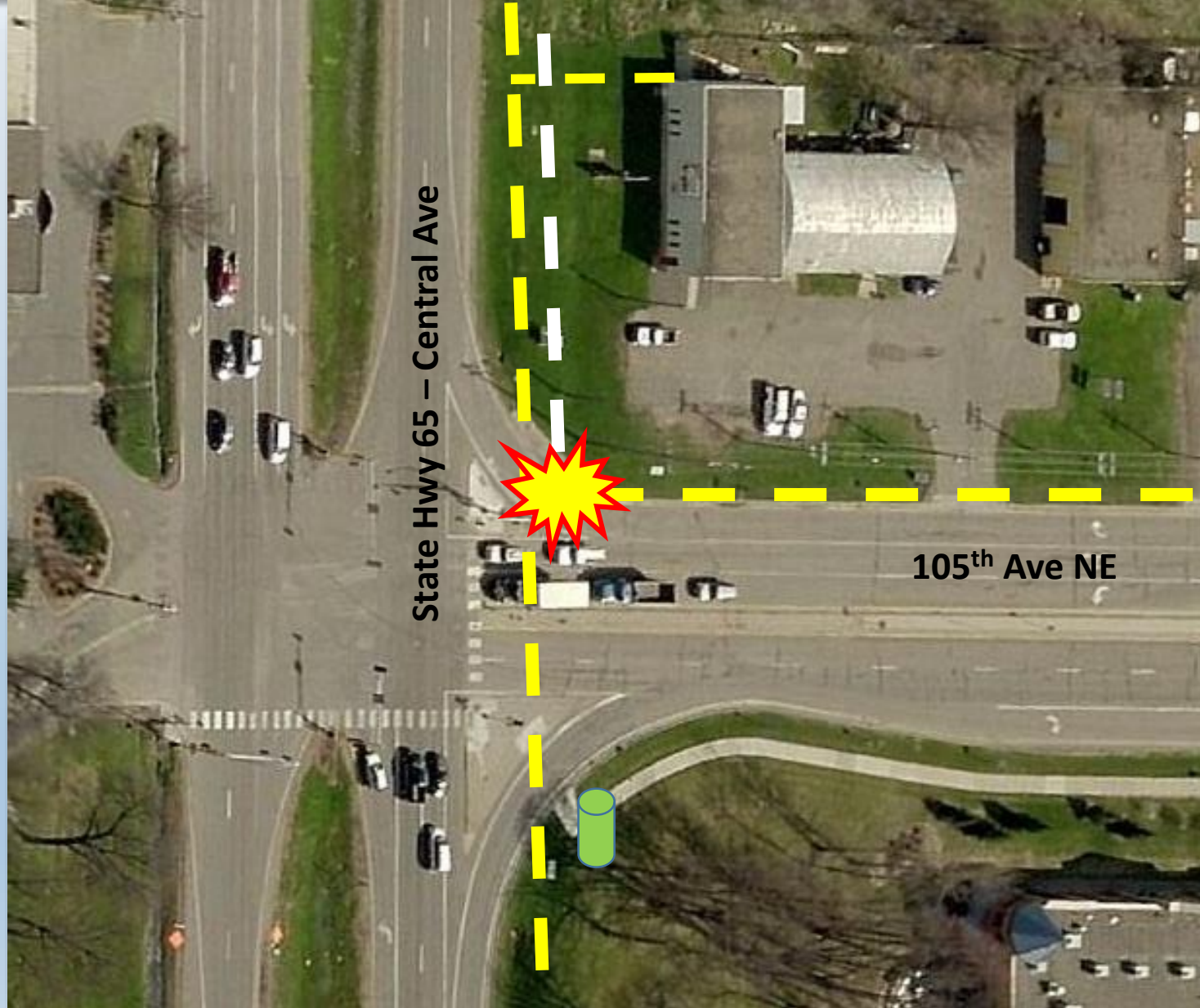
Case Study: Missing Marks



Case Study: Missing Marks



Case Study: Missing Marks



Case Study: Missing Marks



Case Study: Missing Marks



Case Study: Missing Marks

Conclusion

- **Utility did not mark all of their facilities in the scope of the GSOC ticket**
- **Excavator discovered missing marks, attempted to resolve on their own**
- **Excavator hit & damaged unmarked gas main**
- **If you notice marks missing or obscure, contact the facility owner!**

Summary

✓ If It's Not Clear – **STOP** & ASK!



QUESTIONS?



Thank You!



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