



Gas Pipe Hit



Synopsis

- At or around 2200 hours, the excavator struck an 8-inch steel main gas-line (natural gas).
- Approximately 2.27 million cubic feet (MMCF) of natural gas was released.
- The gas pipe:
 - Steel
 - 0.188 inch wall thickness
 - No Cathodic Protection
 - The condition of coating was good.
 - Nominal gas pressure at or around 45 pound per square inch (psig)
 - Maximum Allowable Operating Pressure (MAOP) was at or around 60 psig.
 - None to light external rust with no pitting on the surface.
- Pipe failure due to external force impact (an augur).
- Work was to install new guardrails along the State Route under the jurisdiction and contracted by the Caltrans.



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Setting

- An urban city
 - Elevation of 860 feet
 - Typical temperature of 73 degrees Fahrenheit
 - 7 miles per hour West headed wind
 - 55% humidity
 - Approximately 80,000 residents as of 2017
 - Two ways state route
- On the date of incident
 - Cloudy
 - Zero precipitation
 - 58 to 71 degrees Fahrenheit
 - Clear visibility
 - Wind was calm



Incident roadside



After the Hit

- Excavator cleared the site of its crews
- The road was closed for both directions
- Operator was notified; 911 was called
- Next day, approximately 40 personnels from multiple agencies with their equipment and vehicles at the scene
- On day two of the incident at or around 1740 hours, there were approximately 22 operator crews on the scene working on the repair
- On the day three of the incident at or around 0630 hours, the gas line was repaired and backfill started
- Costed the operator approximately \$213,820 including repairs and lost gas to the atmosphere



Investigation

- Operator:
 - An augur punctured a hole on an 8 inch steel gas pipe buried approximately 5 to 6 feet below the surface
 - A hole of approximately 2 to 4 inch and circumferential damage centered at or around the centerline of the pipe looking directly from the top was created
 - Upon arrival, the operator measured over 500 parts per million (ppm) gas particles in the immediate surrounding air within spread area of 0 to 5 feet.
 - No vegetation damage was observed
 - Proximity to the nearest building was approximately 4 to 20 feet
 - Environmental impact was unknown and was not available
 - The damaged portion of the pipe was sectioned off and a new section was welded in for repair
 - Operator had taken in the damaged section of the pipe under its custody
 - Operator promised a full cooperation with the investigation



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- Excavator:
 - Super Intendent:
 - Contradicting in his statements
 - Did not see locator marks after getting clear from the locator
 - Stayed well beyond tolerance zone from the locator marks
 - For internal report, speak to their project manager
 - Project Manager:
 - For internal report, speak to their vice president
 - Vice President:
 - Never was able to speak to him
 - Dealt with VP through his support staff
 - Contacted by excavator's insurer for insurer's report
 - After a month of no response, Investigator informed VP through his staff that "I will take no response as a response". Within 24 hours, I received an internal report from the Excavator



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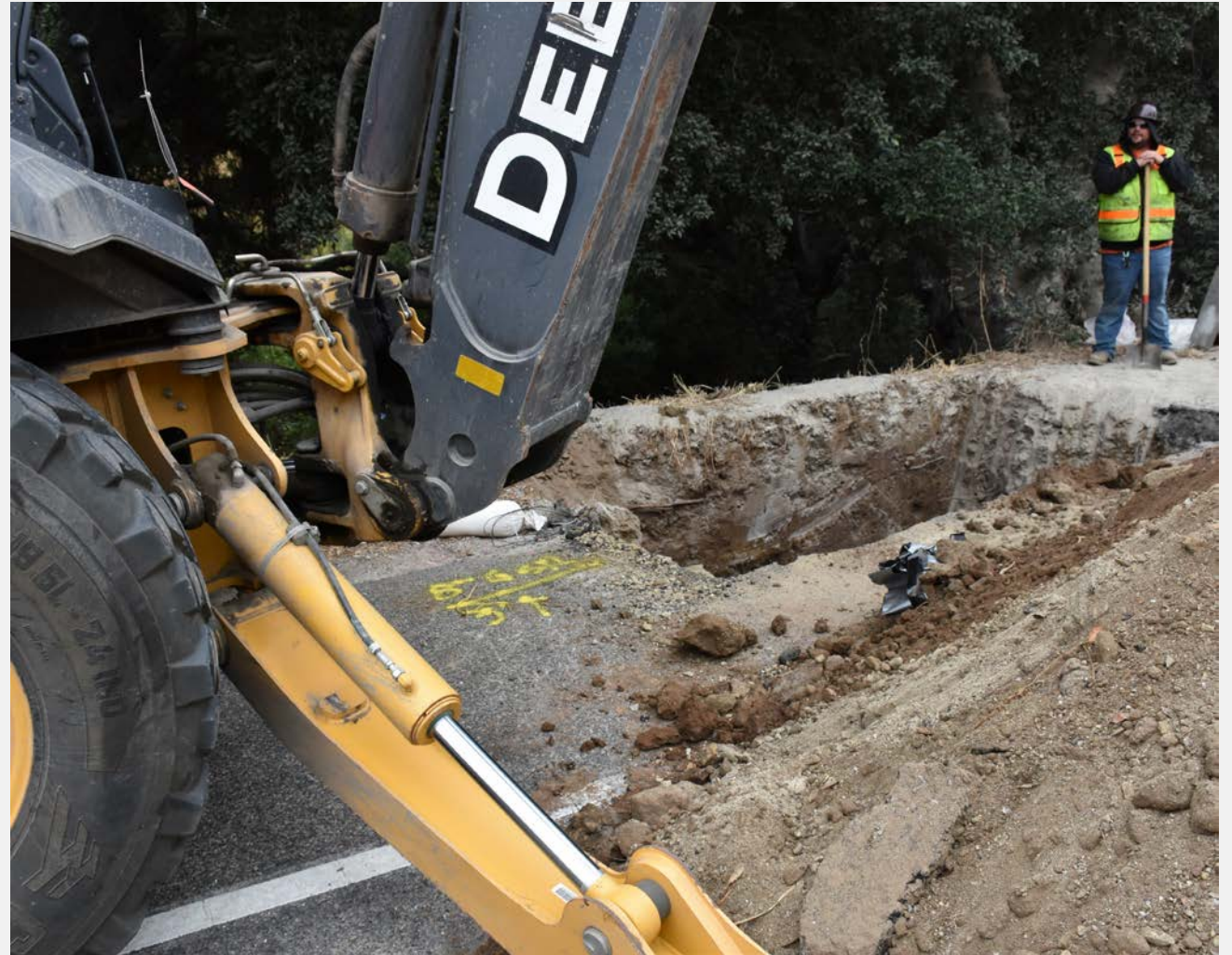
- California Public Utilities Commission (CPUC):
 - Contact with field Utility Engineer at the incident site
 - Contact with the management of CPUC Gas & Reliability Unit for its report
 - Working on it
 - Will be available once ready
 - Never got it



- Interview with the Operator Locator:
 - Site was not delineated
 - Contacted Excavator for further information
 - Told to reference off from the old guardrails
 - Marked the location
 - Mark completed and entered as such on Korterra System.



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Hole dug up for repair



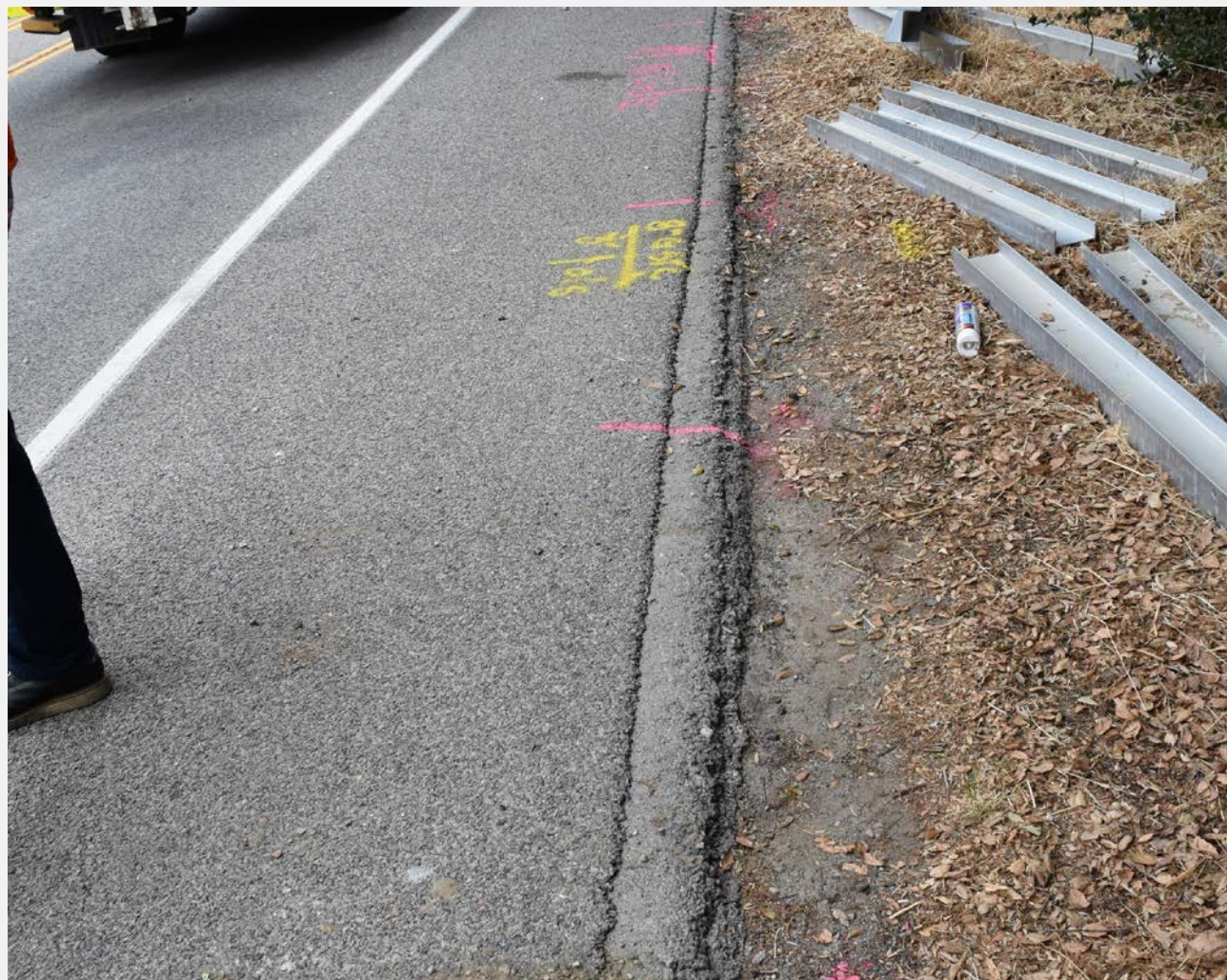
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Repaired pipe



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Pink interval marks for Excavator to dig holes for guardrail posts



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Excavator's pink mark sprayed over existing operator mark



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Gas pipe running right below the edges where asphalt meets the dirt



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Operator locator mark at or near the edges where asphalt meets the dirt and Excavator pink marker with "T" where a hole should be dug up for guardrail posts





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New guardrails installed on the side of road where the asphalt meets the dirt but the gas pipe below offset away from the edge at this particular area





Identified violations of 4216

After the incident, new guardrails remain uninstalled at the edge where asphalt meets the dirt as the gas pipe runs right below it





Violations

It is determined that the excavator failed to delineate the excavation area and this might have been a contributing factor to the incident.

- **4216.2.** (a) Before notifying the appropriate regional notification center, an excavator planning to conduct an excavation shall delineate the area to be excavated. If the area is not delineated, an operator may, at the operator's discretion, choose not to locate and field mark until the area to be excavated has been delineated.



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It is determined that the excavator either ignored or was unaware of the locator marks indicating a gas pipe running along its planned excavation site. This was a significant contributing factor to the incident.

- **4216.4.** (a) (1) Except as provided in paragraph (2), if an excavation is within the tolerance zone of a subsurface installation, the excavator shall determine the exact location of the subsurface installations in conflict with the excavation using hand tools before using any power-driven excavation or boring equipment within the tolerance zone of the subsurface installations. In all cases the excavator shall use reasonable care to prevent damaging subsurface installations.
- **4216.6.** (a) (1) Any operator or excavator who negligently violates this article is subject to a civil penalty in an amount not to exceed ten thousand dollars (\$10,000).



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It is determined that the excavator failed to hand dig to verify existence of the pipe line near its excavation site. This was a significant contributing factor to the incident.

- **4216.7.** (a) If a subsurface installation is damaged by an excavator as a result of failing to comply with Section 4216.2 or 4216.4, or subdivision (b) of Section 4216.3, or as a result of failing to comply with the operator's requests to protect the subsurface installation as specified by the operator before the start of excavation, the excavator shall be liable to the operator of the subsurface installation for resulting damages, costs, and expenses to the extent the damages, costs, and expenses were proximately caused by the excavator's failure to comply.

GAS HIT

Quick Facts

- Occurred at or about 1100 hours
- Valid DigAlert ticket
- Work: Trench to install a conduit for a communication company
- Residential area
- Area was properly delineated per excavator
- Utilities/third party locator marks

Rocksaw

Trench to install a
conduit for a
communication
company



Cut was about 6
feet parallel from
the sidewalk

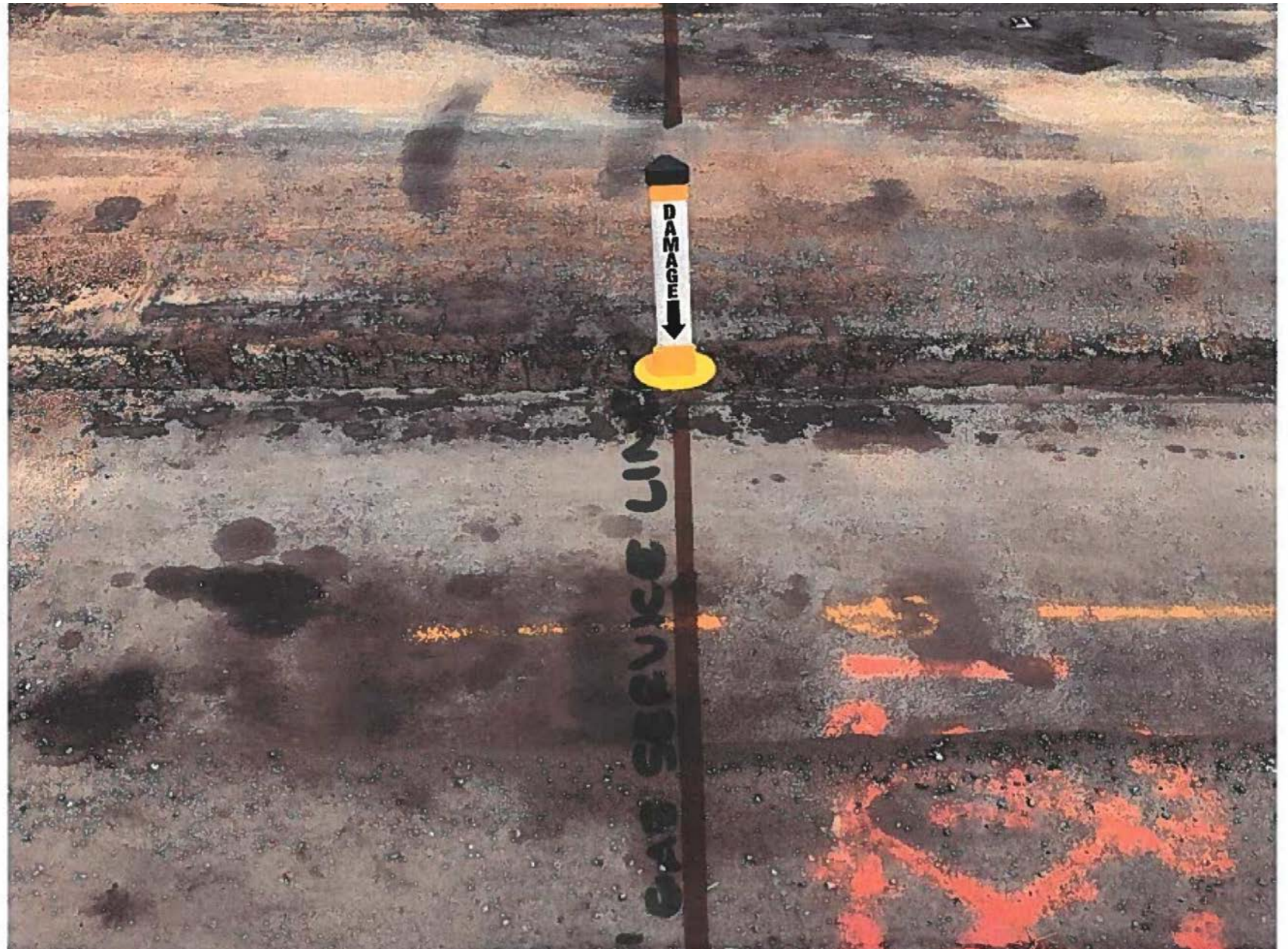


½ inch plastic
service gas line
was damaged

Excavation was
about 36 inches
deep



Hit was about
32 inches from
the closest
marked gas
line



Impact

- One home was evacuated
- Gas flow stopped in 3 hours
- Gas restored at 600 hours the next morning
- 19 hours of service outage
- 12 Households were affected
- Estimated loss of gas: \$2,200

Parties Involved

- Excavator
- Gas company
- Third party locator

- Both the excavator and the gas company indicated that the damaged gas service line was unmarked
- No discrepancy as to the delineation
- Tentatively scheduled to interview the third party locator
- Gas company has requested to be present during the interview