



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: December 15, 2000

In reply refer to: P-00-24

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The National Transportation Safety Board is an independent Federal agency charged by Congress with investigating transportation accidents, determining their probable cause, and making recommendations to prevent similar accidents from occurring. We are providing the following information to urge your organization to take action on the safety recommendation in this letter. The Safety Board is vitally interested in this recommendation because it is designed to prevent accidents and save lives.

This recommendation addresses procedures for safe excavation near underground utilities. The recommendation is derived from the Safety Board's investigation of the natural gas pipeline rupture, explosion, and fire in Bridgeport, Alabama, on January 22, 1999,¹ and is consistent with the evidence we found and the analysis we performed. As a result of this investigation, the Safety Board has issued seven safety recommendations, one of which is addressed to Alabama One Call. Information supporting this recommendation is discussed below. The Safety Board would appreciate a response from you within 90 days addressing the actions you have taken or intend to take to implement our recommendation.

On January 22, 1999, while digging a trench behind a building at 406 Alabama Avenue, a backhoe operator damaged a 3/4-inch steel natural gas service line and a 1-inch water service line, both of which were underground. This resulted in two leaks in the natural gas service line, which was operated at 35 psig. One leak occurred where the backhoe bucket had contacted and pulled the natural gas service line. The other was a physical separation of the gas service line at an underground joint near the meter, which was close to the building. Gas migrated into the building at 406 Alabama Avenue, where it ignited about 10:02 a.m. An explosion followed, destroying three buildings: 404, 406, and 408 Alabama Avenue. Other buildings within a two-block area of the explosion were significantly damaged. Three fatalities, five serious injuries,² and one minor injury resulted from this accident.

¹ For additional information, read Pipeline Accident Brief—*Natural Gas Pipeline Rupture, Explosion, and Fire, Bridgeport, Alabama, January 22, 1999* (NTSB/PAB-00/01).

² According to the Jackson County Coroner, on March 23, 2000, 14 months and 1 day after the accident, one of the seriously injured persons died as a result of injuries sustained in the explosion. In accordance with 49

The National Transportation Safety Board determined that the probable cause of the accident was the failure of R&B to establish and follow safe procedures for excavation activities, resulting in damage to a 3/4-inch gas service line, and the failure of the Utilities Board of the City of Bridgeport (Utilities Board) to provide appropriate emergency response to the resulting natural gas leak.

The owner of R&B told investigators that the owner of 408 Alabama Avenue had hired R&B to dig a trench from an electric pole behind 404 Alabama Avenue to his building for an underground electric service cable. The owner of R&B told investigators that he had not planned beforehand to dig the trench to 408 Alabama Avenue on the morning of the accident and that he did not call Alabama Line Location Center, Inc. (now known as Alabama One Call). However, when a part-time employee, who had operated a backhoe for R&B in the past, arrived at the R&B office the morning of January 22 looking for work, the owner of R&B decided to have the employee dig the trench that day.

The owner of R&B was a full-time employee of the Utilities Board at the time of the accident. He and a Utilities Board coworker, who was the acting supervisor of the Utilities Board field personnel on the morning of the accident, told Safety Board investigators that on the way to work that morning, they located and marked the gas and water service lines for the trenching activity. The owner of R&B told investigators that blue paint was used to mark both service lines because that was the only paint that they had.³ Upon their arrival the day after the explosion, Safety Board investigators could not find any blue or other line markings on the ground at the accident scene. Representatives from the Alabama Public Service Commission and the Alabama State Fire Marshals Office also did not observe any markings on the ground when they arrived at the accident scene within hours of the explosion.

The R&B backhoe operator arrived at the excavation site some time after 8:15 a.m. While digging the trench, the backhoe operator damaged the underground gas and water service lines to 406 Alabama Avenue, resulting in leaks in the water and gas service lines. About 9:15 a.m., the owner of 408 Alabama Avenue went to the Utilities Board office at 513 Alabama Avenue and reported the excavation damage. He then returned to the excavation site. The General Manager of the Utilities Board said the owner of 408 Alabama Avenue reported that the water line and possibly the gas line were damaged.

At the time of the accident, R&B did not have written procedures for excavating near the underground utility lines. Recognizing that damages to underground facilities are usually preventable, and most frequently occur due to a breakdown in the damage prevention process, Government and industry have been working to identify and validate existing best practices for preventing damage to underground facilities. The resulting *Common Ground* study of one-call systems and damage prevention best practices⁴ discusses, among other best practices, the need to

Code of Federal Regulations (CFR) 830.2, his injuries continue to be classified as “serious” for reporting purposes. 49 CFR 830.2 defines fatal injury as “any injury which results in death *within 30 days* of the accident.”

³ The Superintendent of the Utilities Board told Safety Board investigators that the Utilities Board uses yellow paint to mark gas lines and blue paint to mark water lines.

⁴ *Common Ground: Study of One-Call Systems and Damage Prevention Best Practices*, U.S. Department of Transportation, Research and Special Programs Administration, Office of Pipeline Safety, Washington, D.C., August 1999. The *Common Ground* study, as authorized by the *Transportation Equity Act for the 21st Century* (TEA 21), was prepared by more than 160 individuals representing a wide range of interests, organizations, and

“call before you dig.” The study recommends, “Unless otherwise specified in state law, the excavator calls the one-call center at least two working days and no more than ten working days prior to beginning excavation.”⁵ It also recommends that an excavator observe a “tolerance zone” that includes the width of the facility plus 18 inches on either side and asks that excavators exercise reasonable care when excavating within the tolerance zone to protect the underground facilities.

The events leading up to this accident illustrate that R&B was deficient both in its preparation and in its execution of the excavation work. R&B failed to call Alabama One Call. In addition, the gas line was either marked with the wrong color or not marked at all. There was no evidence that R&B instructed its backhoe operator to use reasonable care in excavating methods (for example, hand digging). The Safety Board concludes that using one-call procedures not only ensures that utilities are marked properly, but also establishes accountability on the part of companies marking and digging near utilities for their work methods.

Therefore, the Safety Board makes the following safety recommendation to Alabama One Call:

Publicize the circumstances of the January 22, 1999, accident in Bridgeport, Alabama, and use the lessons learned from the accident to increase public awareness of the importance of using the Center’s one-call number before beginning any excavation work and of the safety hazards associated with underground utilities. (P-00-24)

The Safety Board also issued safety recommendations to the Research and Special Programs Administration, the Alabama Public Service Commission, the Utilities Board of the City of Bridgeport, and R&B Construction. In your response to the recommendation in this letter, please refer to P-00-24. If you need additional information, you may call (202) 314-6120.

Chairman HALL and Members HAMMERSCHMIDT, GOGLIA, BLACK, and CARMODY concurred in this recommendation.

Original Signed

By: Jim Hall
Chairman

viewpoints on preventing damage to underground utilities. A nonprofit organization, the Common Ground Alliance, has been formed to implement the best practices discussed in the *Common Ground* study.

⁵ Alabama State law is similar to this recommendation.