

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: December 29, 1978

Forwarded to:

Mr. T. M. Torson
President
Torson Construction Company
9222 East 47th Street
Kansas City, Missouri 64133

SAFETY RECOMMENDATION(S)

P-78-76 through -78

At 1:30 p.m., c.d.t., on June 12, 1978, a 10-inch natural gas pipeline owned by the Gas Service Company (gas company) was struck and ruptured by excavation equipment during construction of a sewer in Kansas City, Missouri. The natural gas, at more than 110-psig pressure, escaped from a 5-inch-long hole in the pipeline. At 3:15 p.m., the gas ignited while two gas company employees were cleaning the pipe with hand tools before installing a pipe repair clamp. Both men were burned seriously. 1/

One week before the accident, a gas company inspector had accurately located the pipeline with an electronic pipe locator. He placed two yellow location flags over it, 75 feet apart, one on each side of the sewer easement. On the day of the accident, the Torson Construction Company (contractor) planned to grade the sewer easement in the area where the plans showed the sewer crossing the pipeline. About 7 a.m., the contractor's superintendent instructed an equipment operator to dig a 5-foot-deep and 15-foot-wide "bench" along the centerline of the sewer with a large diesel Caterpillar tractor, Model 977 Highloader, from which a medium-size backhoe could excavate down to the planned 20-foot depth of the sewer. The equipment operator was shown the location flag on the east side of the sewer right-of-way but not the other location flag or the permanent pipeline markers, which were partly obscured by weeds on the pipeline right-of-way.

1/ For more detailed information read "Pipeline Accident Report -- The Gas Service Company Natural Gas Pipeline Rupture and Fire, Kansas City, Missouri, June 12, 1978" (NTSB-PAR-78-5).

At 11:30 a.m., the superintendent called the gas company and asked how deep the pipeline was buried at the crossing. The gas company engineer taking the call said that although the company's newer pipelines are buried about 30 inches deep, he did not know the exact depth of the 48-year-old pipeline. He suggested that the superintendent talk to the gas company dispatcher and request that an inspector be sent to the job site to determine the exact depth. The superintendent did not call the dispatcher as recommended because a large backhoe, the primary piece of excavating equipment, was being used more than 100 feet from the crossing, and would not arrive at the crossing that day. About 2 hours later, the highloader struck and ruptured the pipeline at a depth of 24 inches.

The construction specifications stated that it was the contractor's responsibility to "verify the location, elevation, and dimensions of all known or suspected underground obstructions ahead of the work . . ." The gas company had located its pipeline twice before the accident. The first time was on March 15, 1978, when it exposed the pipeline to install weld reinforcement sleeves. The second time was on June 6, 1978, when the gas company staked the line. Each time, the contractor and the gas company could have begun to coordinate their activities and to establish the exact location and cover of the pipeline.

When the gas company excavated the pipeline and installed the weld reinforcement sleeves, the contractor should have marked the exact location and cover of the pipeline for future reference. A long delay in backfilling provided ample opportunity for the contractor either to measure the 24-inch pipeline depth and locate the pipeline or to arrange to have the gas company install temporary pipeline markers over the pipeline. The delay in backfilling also provided the consulting engineer ample time to determine precise elevations on the exposed pipeline and change the profile drawings that showed the erroneous 3 1/2-foot cover measurement.

Apparently, there was a lack of communications between the operator and the superintendent as to how close the highloader should come to the pipeline. The superintendent had placed an iron stake on the centerline of the sewer approximately at the pipeline crossing and said that he had told the equipment operator on the highloader to stop 5 feet before the stake. The equipment operator said that he thought his instructions were to excavate up to the stake. A labor helper or line spotter standing over the pipeline could have kept the bucket 5 feet from the pipeline location. An even better way of protecting the pipeline would have been to dig test holes over the gas pipeline to determine its exact horizontal and vertical locations, as called for in the construction specifications.

Therefore, the National Transportation Safety Board recommends that the Torson Construction Company:

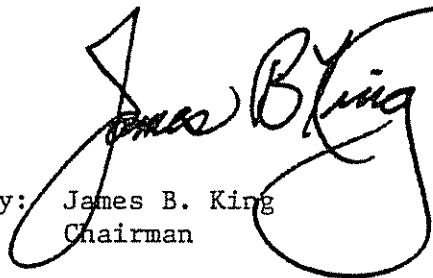
Protect pipelines to be crossed during construction by verifying the location, elevation, and dimensions of all known or suspected underground obstructions ahead of the work and by reviewing all requirements in the specifications with its field supervisor. (Class II, Priority Action) (P-78-76)

Establish an early liaison with the gas company before commencement of construction projects and coordinate the field activities of the construction crews to afford maximum protection of pipeline facilities. (Class II, Priority Action) (P-78-77)

Require its employees to precisely establish the horizontal and vertical locations of gas pipelines by means of hand-excavated test holes before allowing heavy excavation equipment in the area of a pipeline crossing. (Class II, Priority Action) (P-78-78)

KING, Chairman, DRIVER, Vice Chairman, McADAMS and HOGUE, Members, concurred in the above recommendations.

By: James B. King
Chairman

A large, stylized handwritten signature in black ink, appearing to read "James B. King". The signature is written over the typed name and title.