

32. Electrocution

A **27-year-old** construction laborer and signaler was electrocuted by 7.6 kV when a crane's main hoist line came in contact with an overhead power line. The victim's employer was the general contractor for a project to upgrade systems at a water treatment plant to allow for increase in the flow capacity of the plant. At the beginning of the project, the overhead transmission lines were de-energized and visible grounding lines were evident. However, the local utility was told that all crane work was completed at the site so they re-energized the overhead power lines three days before the fatal incident. The victim's crew consisted of a signaler (the victim), a tag line man and rigging helper, and the crane operator (the project superintendent). Their objective was to rig and load onto a trailer two piles of sheet metal that had been used for shoring on the excavation part of the project so this sheet metal could be removed from the site. The sheet metal was 38 feet long and five feet-by-eight inches wide and weighted up to 2,000 pounds. Diagonal holes on the ends of the sheet metal were used to rig to the crane with metal separator cables and yellow lifting straps. The crane operator boomed out and placed the main hoist above the overhead transmission lines and then swung the crane around so the crew could attach the separator cables and yellow lifting straps to the hook block. The victim, acting as a signal person, grabbed the metal separator cables with his back to the overhead transmission lines. He then gave the cable down signal to the crane operator, but did not give the boom down signal. Despite only receiving one signal and knowing the overhead transmissions lines were energized, the crane operator lowered the main hoist line with the hook block and then lowered the boom of the crane to make it easier on the rigging crew to attach the lifting strap hooks to the sheet metal pilings. As the boom of the crane was lowered, the crane's main hoist line came into contact with the overhead transmission lines and became energized. Since the victim was holding both the metal spreader cables, he became the path to ground and received a fatal electrical shock. He fell to the ground still holding the ends of the metal separator cables in his hands. He was transported to a medical center but was pronounced deceased.

Citations as Originally Issued

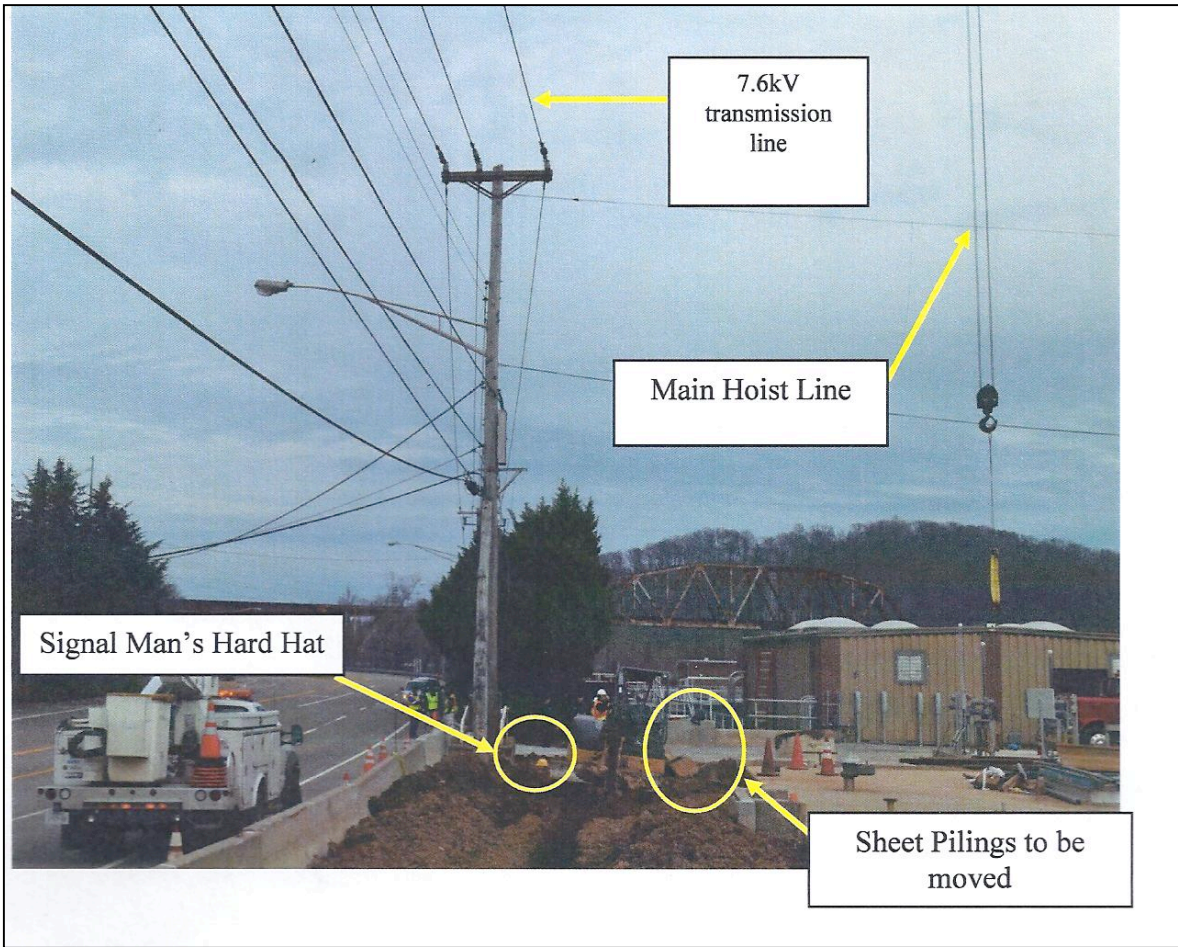
A complete inspection was conducted of the worksite. Thus, some of the items cited may not directly relate to the fatality

Citation 1

Item 1a 1926.1408(a)(1)	Before beginning equipment operations, the employer did not identify the work zone by either demarcating boundaries or defining the work zone as the area 360 degrees around the equipment, up to the crane's maximum radius.
Item 1b 1926.1408(a)(2)	Before beginning equipment operations, the employer did not determine if any part of the equipment, load line, or load (including rigging and lifting accessories), if operated up to the equipment's maximum radius in the work zone, could get closer than 20 feet to a power line and if so, follow the requirements to de-energize and ground the line or to maintain a required clearance distance.
Item 2 1926.1408(e)	The employer did not assume that all power lines were energized unless the utility owner/operator confirmed that the power line had been and continued to be de-energized and visibly grounded at the worksite.

Item 3a 1926.1408(g)(1)(i)	The employer did not train each crane operator and crew member assigned to work with the equipment on the procedures to be followed in the event of electrical contact with a power line.
Item 3b 1926.1408(g)(1)(ii)	The employer did not train each crane operator and crew member that power lines are presumed to be energized when the utility owner/operator had not confirmed that the power lines had been de-energized and grounds were not visibly installed.
Item 3c 1926.1408(g)(1)(iii)	The employer did not train each crane operator and crew member that power lines are presumed to be uninsulated unless the utility owner/operator or a registered engineer who is a qualified person with respect to electrical power transmission and distribution confirmed that a line is insulated.
Item 3d 1926.1408(g)(1)(iv)	The employer did not train each crane operator and crew member on the procedures to be followed to properly ground equipment and limitations of grounding.
Item 4 1926.1425(c)(3)	The employer did not ensure that when employees were engaged in hooking, unhooking or guiding the load, or in the initial connection of a load to a component or structure and are within the fall zone, that the materials were rigged by a qualified rigger.
Item 5 1926.1430(b)	The employer did not train each employee who was assigned to work as a signal person on the qualifications to be a signal person.
Item 6 1926.1430(c)(2)	During the four-year phase-in period for operator certification or qualification, the employer did not train each operator who had not yet been certified or qualified to operate the crane.

See Photos on Next Page



Metal spreader cables the victim was holding