



High-risk Electrical Tasks and Contributing Work Factors

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Overview

Electrical construction is recognized as a high-risk trade that accounted for about 8% of all fatalities in the construction industry in 2019. Exposure to electrical hazards is not limited to electricians; other trades, such as laborers, structural metalworkers, and linemen, also experience an increased risk of exposure to such hazards. To implement proper preventive controls to create safer jobsites, identifying high-risk electrical tasks and associated work factors that constitute at-risk working conditions seems to be imperative. However, the construction industry lacks a centralized resource offering this comprehensive information. To fill this gap, the researchers pursued three objectives: (1) identify high-risk electrical tasks, (2) explore work factors leading to incidents and near-misses, and (3) identify applied solutions for each task. This research was carried out in collaboration with 14 electrical contractors.

Key Findings

- Proper lockout/tag-out remains the centerpiece of risk control practices in electrical work.
- Participants in the study identified 10 high-risk electrical tasks. Examples include pulling cables and wires, preventive maintenance, producing openings for conduit and electrical lines, and working on energized electrical equipment.
- Several work factors associated with each high-risk task were identified. Some frequently cited factors include failure to follow lockout/tagout, missing drawings or improper labels, improper ergonomic techniques, striking concealed live lines, and inadequate insulation.
- Applied solutions to improve the quality of hazard recognition were identified, including permanent electrical safety devices, handheld cable locating devices using geospatial technology, other geospatial augmented reality, and proximity warning devices.
- To enhance the quality of pre-task planning in electrical construction, the development of an information management system containing task-specific information and evidence-based controls to mitigate hazards is recommended.

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Read the article:

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