

SETU: A training and decision-making tool to improve safety in excavation and trenching

SETU: Safety in Excavation and Trenching, for yoU – A training and decision-making tool for worker safety in excavation and trenching operations in construction

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Overview

The recent resurgence of trenching and excavation fatalities have emphasized that those activities pose some of the most serious hazards to construction workers. OSHA has long maintained that excavation-related incidents can be prevented, particularly by following its standards for excavation and trenching: 1926 Subpart P. This study argues that although there are proven protective systems and strategies, they have been used inconsistently across the sector. The research team used a mixed methods framework to understand the reasons for this limited adoption, developing two surveys to obtain industry feedback and analyzing OSHA severe injury and fatality data about trenching and excavation. They used their findings to build a training and decision-making application: Safety in Excavation and Trenching, for yoU (SETU). This free, platform-independent tool 1) makes information about trenching safety available on handheld devices, 2) breaks down complex safety ideas and jargon into everyday language, and 3) offers an easy-to-use interface about measures to improve safety requiring no training for adoption.

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Read the report:

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Key Findings

- Based on OSHA data from 2009 to 2021, trenching/excavation incidents resulted in an annual average of more than 33 fatalities.
- More than 60% of the deaths were from three NAICS codes: 237110 (Water and Sewer Line and Related Structures Construction), 238910 (Site Preparation Contractors), and 238220 (Plumbing, Heating, and Air-Conditioning Contractors).
- Of the 389 reported cases of severe injuries in excavation and trench work since 2015, 23% were cave-ins from the unprotected side of trench.
- Survey respondents said incidents occur because of lack of training, negligence, protection system not or incorrectly used, and absence of a competent person. They also suggested that lack of hazard recognition is the primary reason for fatalities.
- The data analysis was used to develop a free, multi-lingual web-based application: Safety in Excavation and Trenching for yoU (SETU). SETU has two main sections: Learn and Protect. *Learn* offers self-study content about key OSHA trenching and excavation standards and soil properties and its characteristics. *Protect* helps workers find the most appropriate protection system for their situation: sloping, shoring, or shielding.
- SETU converts user input into dynamic trench visualizations to provide information about protection systems and assist in job planning.
- When SETU was pilot tested with staff from a general contractor, their consensus was that it was straightforward, intuitive, and precise.



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