MICHIGAN State FACE Program
Fatality Assessment & Control Evaluation

Construction Fatality Summary

INCIDENT FACTS

REPORTS #:
22MI036 & 22MI037

REPORT DATE:
April 5, 2024

INCIDENT DATE:
April 29, 2022

WORKERS:
58-year-old
67-year-old

INDUSTRY:
New Single-Family Housing Construction

OCCUPATIONS:
Owner
Construction Laborer

EVENT TYPE:
Crushed by

New Holland E57C Compact Excavator

View of the trench after recovery.

Company Owner and Laborer Crushed in Trench Collapse

SUMMARY

A 58-year-old Company Owner and 67-year-old Construction Laborer were killed when the trench they were in collapsed. They were working on a piece of private property prepping the area in the open field to build a pole barn. The open field was located behind the residence. This area was known to flood so the decision was made to install drainpipes. The black corrugated and perforated drainpipes were being run approximately 100 feet from the build site to a low swampy area nearby on the property. They had begun digging the trench and installing the drainpipes two days earlier.

The Company Owner and Laborer were using a New Holland E57C Compact Excavator to dig the 10-foot-deep trench in the loamy soil. The New Holland E57C Compact Excavator is equipped with a 4-cylinder, water cooled, 66.9 horsepower diesel engine, and has an operating weight of approximately 12,000 pounds. It features rubber tracks, a 2.5 mile per hour top speed, a climate-controlled operators cab, and a maximum dig depth of 12 feet, 6 inches with the short arm configuration.

View of the collapsed trench prior to recovery efforts.

The trench being dug for the drainpipes was only one bucket width wide. The sides were straight up and down with no additional support structure, and the spoil piles were placed immediately next to both sides trench. These conditions for a trench are not safe for entry of any employee on the worksite. A supporting system is required for the walls of the trench when digging in materials such as the loamy soil of this case, and spoil piles should be placed at least 2 feet from the edge of excavations.

Due to the process by which this trench was dug, it is hypothesized that the decedents had not planned to enter the trench after digging it. It is unknown why the Company Owner and the Laborer entered the trench. One possible scenario is that one decedent may have fallen into the trench, and the other went in after them to attempt a rescue. On the day of the incident the homeowner, after returning home at approximately 8:15 pm and seeing the Construction Company's truck still onsite, went to check on them. He found the excavator running and the west side of the trench collapsed. He noticed a baseball cap laying on the dirt and when he approached it, he discovered one of the victims underneath.

Dispatch was notified and EMS, police, and several fire departments arrived on scene. A larger excavator was brought in to enlarge the trench and stabilize the sides. After approximately 3 hours the Company Owner and Laborer were recovered. The Company Owner was found buried in a standing position while the Laborer was found laying on his left side with possible evidence of a head injury.

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REQUIREMENTS

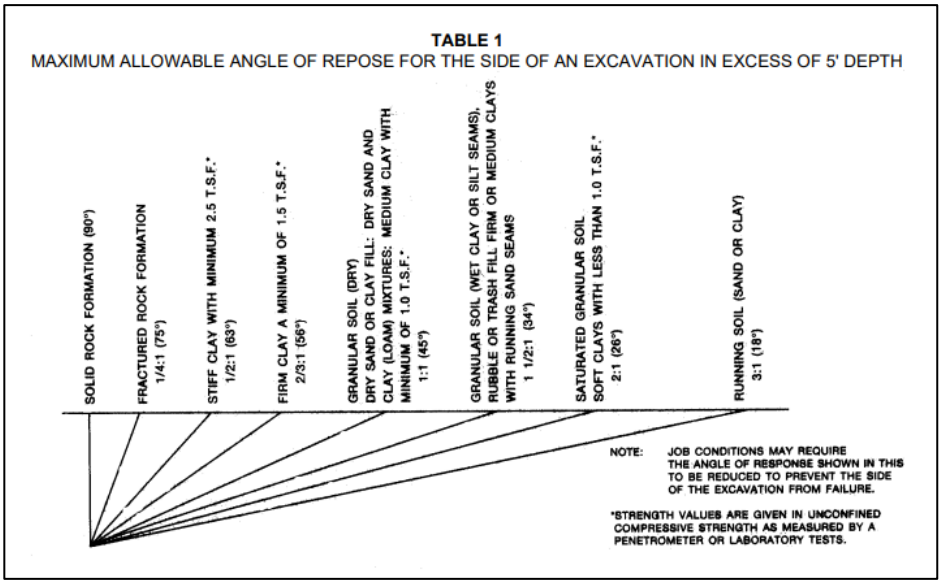
Employers must:

- Ensure that excavations meet requirements for side wall angles based on soil types, support systems, benching, sloping, shielding, and means of entry/exit. See Part 9. Excavation, Trenching, and Shoring
- Ensure a qualified person make ongoing inspections of an excavation or trench. See Part 9. Excavation, Trenching, and Shoring Rule 932 (4)

RECOMMENDATIONS

MIFACE investigators concluded that, to help prevent similar occurrences, employers should:

- Prior to starting work, preplan projects in a way that prioritizes worker safety, including the development of an emergency action plan that describes rescue and medical duties.
- Never enter an unprotected trench. Trenches should be protected from cave-in by an appropriate protective system, such as trench boxes, shields, benching and/or appropriate sloping of trench sides.
- Never enter an uninspected trench. A qualified person should inspect the excavation, adjacent areas, and any supporting systems on a daily basis and ensure the appropriate measures necessary to protect workers are followed.
  - A competent person should analyze and classify the soil type to determine the proper sloping, shoring, or shielding systems for the trench (Table 1).
- Provide a safe way to enter and exit the trench.
- Keep spoil piles at least 2 feet back from edge of trench. The weight of excavated material, or spoils, can contribute to the risk of a cave in.
- Be aware that heavy equipment operating nearby a trench may cause soil distress.
- Do not assume that there will be a warning sign to alert you before a cave-in, or that you will have time to move out of the way. It takes less than 1 second for a trench to collapse.



A diagram outlining the maximum allowable angle of repose for the side of an excavation in various ground materials. From MIOSHA Part 9 Excavation, Trenching, and Shoring.

CITATIONS

No citations were issued by the MIOSHA Construction Safety and Health Division. The deceased was the owner and the laborer was the only employee of the company. The MIOSHA Construction Safety and Health Division identified the following conditions not in compliance:

- CONSTRUCTION STANDARD PART 9. EXCAVATION, TRENCHING, AND SHORING [REF 408.40941(1)]
  - The side of an excavation more than 5 feet deep shall be sloped as prescribed in **Table 1**, unless supported as prescribed in this part.
- CONSTRUCTION STANDARD PART 9. EXCAVATION, TRENCHING, AND SHORING [REF 408.40933(2)]
  - An excavation that an employee is required to enter shall have excavated and other material stored and retained not less than 2 feet from the excavation edge.

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