MOUNT HOLYOKE COLLEGE
EXCAVATION POLICY
September 2011

Purpose

According to the Occupational Safety and Health Administration (OSHA), the fatality rate for excavation work is 112% higher than the rate for general construction. Trenching and excavation hazards include cave-ins, asphyxiation, toxic fumes, drowning, electrocution and explosions. In compliance with 29 CFR 1926 Subpart P and 520 CMR 14.00, which took effect March 1, 2009, Mount Holyoke College has developed this policy to ensure that employees know the proper procedures to keep themselves and others safe while doing this type of work.

Procedures

1. All underground utility installations, such as water, sewer, phone lines, etc. will be identified prior to making any excavation. An excavation is defined as any man-made cut, cavity, trench, or depression in an earth surface formed by earth removal.
2. Call Dig Safe (1-888-DIG-SAFE) at least 72 hours prior to the date any type of digging work is scheduled to start. Indicate the excavation site with white spray paint or other marker prior to calling Dig Safe.
3. A permit is required prior to making a trench that is 3 feet or greater. The permit must be posted in plain view at the trench site. A trench is defined as an excavation which is narrow in relation to its length, made below the surface ground in excess of 3 feet below grade and the depth of which is, in general, greater than the width, but the width of the trench, as measured at the bottom, is no greater than 15 feet.
4. Permits are issued by the Town of South Hadley Department of Public Works (DPW) Engineering Division: 10 Industrial Drive, South Hadley, MA (413) 538-5033. The information that will be required to obtain a permit is found in 520 CMR 14.03 (3) and (4).
5. Permits are not required prior to making a trench in an emergency situation; however, a permit application must be completed with the permitting authority, the Town of South Hadley DPW, no later than the next business day. An emergency is defined as an unforeseen condition in which the safety of the public is in imminent danger because of a threat to life or health, or where immediate correction is required to restore essential public utility service.
6. Employees in an excavation that is 5 feet or deeper will be protected from cave-ins, material falling or rolling into the excavation, and from collapse of adjacent structures by a protective system consisting of support systems, sloping and benching systems, shield systems or other systems that provide protection. Some of these methods require that the soil and rock deposits at the excavation site be classified before proceeding. Soil classification

requirements are found in 29 CFR 1926 Subpart P Appendix A. A guide to selecting which protective system to use for excavations that are 20 feet deep or less is found in 29 CFR1926 Subpart P Appendix F.

- Support System: a structure, such as underpinning, bracing or shoring, which provides support to an adjacent structure, underground installation or the sides of an excavation. Specific requirements are found in 29 CFR 1926.652(c) and (e).
- Sloping System: a method used during the formation of an excavation in which the sides of the excavation are inclined away from the excavation to prevent cave-ins. The angle of the incline varies depending on soil type, environmental conditions, and load application. Specific requirements are found in 29 CFR 1926.652(b) and (f) and 1926 Subpart P Appendices A and B.
- Benching System: a method used during the formation of an excavation in which the sides of the excavation form one or a series of horizontal steps, usually with vertical or near vertical surfaces between levels. Specific requirements are found in 29 CFR 1926.652(b) and (f) and 1926 Subpart P Appendices A and B.
- Shield System: a structure that is able to withstand the forces imposed on it by a cave-in and is commonly called a “trench box.” These structures can be permanent or can be portable and moved as work progresses. Specific requirements are found in 29 CFR 1926.652(c) and (g).
- Shoring System: a structure consisting of sheeting, cross braces, uprights and wales that support the sides of an excavation to prevent cave-ins. The structure can be a metal hydraulic, mechanical or timber shoring system. Specific requirements are found in 29 CFR 1926.652(c) and 1926 Subpart P Appendices A, C, D and E.

7. Protective systems are not required ONLY when the following conditions are met:
   - The excavation is made entirely in stable rock; or
   - The excavation is less than 5 feet in depth and the competent person determines that there is no potential for cave-in.
8. Protective systems must be designed by a registered Professional Engineer (PE) for excavations that are more than 20 feet in depth.
9. Materials and equipment used for protective systems must be free from damage and defects and must be used according to the manufacturer’s recommendations. In the event that this equipment is damaged or the competent person cannot ensure that it is safe to use, it will be removed from service until a registered PE inspects and approves it.
10. Employees at the edge of an excavation that is 6 feet or more in depth will be protected from falling by guardrail systems or fences. Barricades will be used when the excavation is not readily seen due to vegetation or other visual barrier.
11. Employees at the edge of a pit, well, shaft or similar excavation 6 feet or deeper will be protected by guardrail systems, fences, barricades or covers.

12. Employees will be protected from exposure to falling loads. Employees are not allowed to be below loads being handled by lifting or digging equipment.
13. Egress from excavations that are 4 feet deep or more will be installed in the form of stairways, ramps, ladders or equivalent. Lateral travel distance to egress cannot exceed 25 feet and must be unobstructed. Ladders must extend 3 feet above the top of the trench.
14. When employees and/or equipment must cross over excavations, walkways will be provided. Walkways will be equipped with guardrails when they are 6 feet or higher above lower levels.
15. Employees exposed to vehicular traffic must wear warning vests.
16. When mobile equipment is operated adjacent to an excavation, or when it must approach an excavation and the driver does not have a clear, unobstructed view of the excavation, a warning system consisting of barricades, hand or mechanical signals or stop logs will be in place.
17. Where a hazardous atmosphere could reasonably be expected to exist, atmospheric testing and the other requirements of the Mount Holyoke College Confined Space Program must be followed. Contractors must follow their own Confined Space procedures.
18. Mount Holyoke College employees are not allowed to enter excavations where a hazardous atmosphere exists. Contractors entering such excavations must ensure that emergency rescue equipment, consisting of breathing apparatus, safety harness and line, or a basket stretcher are readily available and attended while in use.
19. Employees entering bell-bottom pier holes, a type of shaft or footing excavation in which the bottom is made larger than the cross section above to form a belled shape, or similar deep and confined footing excavations must wear a harness and lifeline.
20. Employees cannot work in excavations where water is accumulating or has accumulated unless precautions, such as support or shield systems to protect from cave-ins, water removal equipment to control the level of water, or a safety harness and lifeline are in place to protect the employees.
21. If water removal equipment is in use, it must be monitored by a competent person to ensure proper, safe operation.
22. If excavation work interrupts streams or other natural surface water drainage, diversion ditches, dikes or other suitable means will be used to ensure adequate drainage in areas adjacent to the excavation, as well as prevent water from entering the excavation.
23. If the stability of adjoining buildings, walls or other structures is endangered by excavation operations, shoring, bracing or underpinning support systems must be in place to prevent the excavation from caving in and to ensure stability of the structure.
24. Excavation below or near any retaining wall or structure's foundation that could pose a hazard to employees is not allowed unless an underpinning support system is in place, the excavation is in stable rock, a registered PE determines that the structure is far enough away to be unaffected by the excavation or a PE determines that the work will not pose a hazard to employees.

25. Sidewalks, pavements and structures will not be undermined unless a support system or another method of protection is in place to protect employees from the structure's collapse.
26. Materials, such as excavated materials (spoils) or equipment must be kept at least 2 feet from the edge unless adequate retaining devices are in place to keep materials from falling into the excavation.
27. If loose rock or soil could fall or roll into the excavation, preventative measures, such as scaling to remove loose material, installation of barricades at intervals that will stop/contain falling material or other equivalent protection will be in place.
28. Any time an employee must use a harness and lifeline, the lifeline must be separate from any lines used for equipment or materials and must be attended at all times while the employee is in the excavation.
29. Harnesses, lifelines and other fall protection equipment must meet the requirements specified in the Mount Holyoke College Fall Protection policy. Contractors must supply their own safety equipment and follow their own Fall Protection procedures.
30. Measures must be taken to protect the general public when a trench will be unattended to prevent accidental or intentional unauthorized entry.
31. Unattended trenches will be covered with ¾-inch thick steel metal plates or secured with 6-foot tall portable protective barriers constructed around the entire perimeter of the excavation. Barriers must be clearly marked on all sides with signs that read "Danger – Do Not Enter - Authorized Personnel Only." Covers and barriers will meet the requirements specified in 520 CMR 14.04(3).
32. Continuous personal monitoring or backfilling the trench work site while unattended can be used as methods of protecting the general public in place of covers and barriers.
33. Any requirements for protecting the general public specified by the South Hadley DPW trench permit must be complied with.
34. The requirements specified in 520 CMR 14.04(2) will be followed in the event that Mount Holyoke College will be making a trench in a public way.
35. Any serious injury or fatality occurring at a trench work site must be reported to the Massachusetts State Police within one hour. Troop B of the State Police patrols the western part of the State and their headquarters are located at 555 North King Street, Northampton, MA (413) 584-3000. The site surrounding the trench must be immediately secured and not altered in any way, except by a public authority or as necessary to preserve life, property or to remove the injured person. Except for these instances, no one can alter or enter the site until the Massachusetts Department of Public Safety grants authorization.
36. The competent person will inspect excavations, adjacent areas and all equipment prior to the start of each shift and again if there is a change in conditions, such as a rainstorm or other occurrence that could cause a cave-in or create hazards.
37. If, at any time, there is evidence of potential for cave-in, protective system failure, or any other hazardous condition, employees will be immediately removed until the condition is corrected or appropriate safety precautions are

implemented. If, at any time, there is potential for danger to the general public, work will stop until safety issues are addressed.

Location

This policy applies to all properties owned or controlled by Mount Holyoke College where any type of excavation work must be done.

Responsibility

Facilities Management personnel are responsible for performing the work described in this policy. Only employees with a Hoisting License granted by the Massachusetts Department of Public Safety can operate excavation equipment, such as bobcats and bucket loaders. On site, the competent person is responsible for employee safety and adherence to the College policy. The competent person is an employee that is capable of identifying existing and predictable hazards in the surroundings, or working conditions that are unsanitary, hazardous, or dangerous to employees, and who has the authorization to take prompt corrective measures to eliminate them. The competent person must be able to demonstrate that he/she has been trained and is knowledgeable in the use of protections for the general public and the requirements of the regulations. The Facilities Management Assistant Directors oversee the departments performing this work.

Contractors

Contractors hired by Mount Holyoke College for excavation work must follow their own written program. Contractors must comply with all applicable regulations and are responsible for securing their own permits prior to starting work. At all times, contractors are expected to conduct themselves in a way that ensures the safety of the entire Mount Holyoke College community.

Training

Employees that perform excavation work must be trained to ensure that they understand the requirements of OSHA 1926.650 Subpart P (Excavations) and 520 CMR 14.00 (Excavation and Trench Safety). Training topics should include recognition of hazards, egress requirements, cave-in prevention, protection from fall hazards, soil analysis, protecting the general public, as well as inspection and use of equipment to be used. Employees will be retrained if they demonstrate a lack of understanding or knowledge retention pertaining to excavation safety. Retraining will also be conducted if workplace changes or equipment changes render previous training obsolete. Training records must be provided to the Office of Environmental Health and Safety.

Program Review

This program will be reviewed periodically by the Facilities Management Director and Assistant Directors and the Office of Environmental Health and Safety to ensure compliance with applicable regulations. Additionally, our work practices will be reviewed during projects performed throughout the year to determine if procedures outlined in this policy are adhered to and if there is new information or guidelines that can be implemented to improve our Excavation Policy and other safety practices.

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