



## **CONSTRUCTION ENVIRONMENTAL HEALTH & SAFETY EXHIBIT**

### **EXCAVATION AND TRENCHING**

#### **I. Definitions**

- A. Excavation: Any operation involving digging, blasting, auguring, boring, drilling, pile driving, grading, plowing in, hammering, jacking, trenching, tunneling, demolition, or any other activity involving breaking or displacement of earth below grade.

#### **II. General Requirements**

- A. All excavation and trenching work and practices shall, at a minimum, comply with OSHA29CFR Part 1926.650 through 1926.652, including all appendices, and 520 CMR 14.00.
- B. Each Contractor requiring employees to work in or around excavations is required to have an excavation and trenching safety program, specific to that Contractor's operations, which meets or exceeds the guidelines listed in this Standard. This program shall be part of the Contractor's HASP.
- C. The employer's Competent Person shall ensure that all Employees potentially exposed to excavation or trenching hazards possess the knowledge and skill required to perform the duties for which they are assigned. In addition, a hazard analysis shall be completed prior to any excavation and trenching operations, hazards shall be clearly identified, and hazard controls defined. The hazard analysis shall be reviewed with the work crews prior to the start of work, and where conditions change.

NOTE: Any person(s) working in an unsafe excavation or trench shall be cause for the Foreman or supervisor to immediately halt the operation and conduct re-training, at a minimum. Training or re-training is the responsibility of the employer and must be documented.

#### **III. Pre-Excavation Requirements**

- A. Dig Safe, Inc. shall be contacted prior to excavation, at any depth or by any means, at least three (3) days prior to the anticipated commencement of excavation activities. Notification shall comply with 220CMR99.00 – Commonwealth of Massachusetts Dig Safe Rules, and MGL c.82, s.40 – Dig Safe Law. Dig Safe, Inc. can be contacted at (888) DIGSAFE or at [www.digsafe.com](http://www.digsafe.com).
- B. Prior to excavation, the excavation Contractor shall obtain an excavation permit where applicable from the city or town, in accordance with 520 CMR 14.00, Excavation and Trench Safety.
- C. Utility markings set by the utility owner or company shall be maintained through the completion of excavation activities. Where utility markings will be disturbed or removed as part of the excavation or other construction activities, the Contractor shall establish off-set marks to maintain the exact location of the utility.
- D. Where utility owners or companies do not mark utility locations under the Dig Safe requirements (e.g. private land boundaries, etc.), the Contractor is responsible for accurately determining the location of underground structures and utilities using detection equipment. The use of as-built or utility drawings alone is not considered sufficient for marking underground structures or utilities. The General Contractor shall coordinate with Harvard University Engineering and Utilities, through the HUPM, for excavations at locations where Dig Safe requirements do not apply.
- E. As-built drawings shall include the location of underground structures and utilities, including the location(s) of shut-off valves/switches/devices, and the owners/contact information of these utilities shall be shown on a set of as-built drawings. As-built drawings shall remain in the possession of the Competent Person during all excavation



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activities and shall be immediately produced upon request or during an emergency. As-built drawings shall be submitted to the HUPM upon project completion.

- F. Where the exact location, depth, and/or routing of below-grade utilities or structures is not clearly known, the contractor shall determine its location/depth/routing by non-intrusive methods including, but not limited to, vacuum excavation, hand-digging, or ground penetrating radar.

#### **IV. Excavation Requirements**

- A. The Competent Person shall be present during all excavation activities. The Competent Person is responsible for the following:
1. Soil classification using at least one manual and one visual test, as prescribed in 29CFR Part 1926.650 – Appendix A – Soil Classification. NOTE: Classification of soils is not required if the excavation activities assume the presence of Type C soils.
  2. Pre-excavation determination of the protective systems to be employed during all phases of excavation including sloping/benching, shielding, and/or shoring.
  3. Conducting a formal, documented inspection of the excavation as it progresses, at least once per shift for previously-opened excavations, after each rain or severe weather event, and when existing conditions around the excavation change.
  4. Assessment of potential atmospheric hazards shall be tested before employees enter excavations greater than 4 feet in depth. Where the potential of atmospheric hazards exists, the excavation shall be treated as a confined space, in accordance with the HUEHS Confined Space in Construction Exhibit.
- B. The owner's manual and owner's tabulated data for all shoring and shielding equipment being used shall be kept on the project and shall be produced upon request.
- C. Excavations six (6) feet or greater in depth require fall protection, in the form of guardrails. Guardrails shall be installed as the excavation progresses. Where Employees must enter the area between the guardrails and the edge of the excavation, they shall be protected by a personal fall arrest system. This requirement will not apply to excavations that are sloped 1 1/2: 1 (H: V).
- D. Any trench or excavation greater than three (3) feet in depth shall not be left unattended unless public protection is in place. Public protection shall consist of a continuous barrier not less than six (6) feet high or covers consisting of 3/4" steel plates or equivalent level and secured against accidental displacement. Gaps between barriers or between barriers and the ground must not exceed four (4) inches.
- E. The Contractor shall place detectable warning tape (i.e. metallic) above any newly installed underground installation or utility. The tape shall warn future excavators of the presence of the utility or installation and shall be specific to the type of utility. The warning tape shall be buried above the utility, no closer than twenty-four (24) inches above the top of the ductbank. If the top of the ductbank is less than two feet below grade, a fixed warning system shall be placed at grade. NOTE: Contractual requirements may differ. Where conflicts exist between contract documents and this requirement, the more stringent shall apply.
- F. Where existing underground utilities or installations are exposed or uncovered, the Contractor shall, prior to backfill, replace and/or repair the existing utility warning system (i.e. tape, ductbank markers, etc.) back to its original condition. Where no warning system is encountered during the excavation, the requirements of IV.D above shall apply.
- G. Where excavators are used to hoist materials below the lifting eye, the Contractor or operator shall perform a documented review confirming that the lift is being performed within the capacity of the machine based on configuration (i.e. over blade/blade down),



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lift point height and maximum radius, and that proper rigging equipment is used, rigging is in good condition, and a signal person is identified. Site conditions, including inspection for the presence of overhead power lines, shall be included in the review.

### **V. Reference**

1926 Subpart P, Excavations  
Mass 520 CMR 14.00, Excavation & Trench Safety