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Excavation, Trenching & Shoring Safety

EXCAVATION, TRENCHING & SHORING SAFETY

Excavations must be shored or sloped or benched before entering according to OSHA regulations.

All excavations must have safe access ways and be properly barricaded and shall have a flashing light barricade at night. Spoil dirt may be used to barricade one side of a ditch or similar excavation. All dirt must be piled at least 3' back from edge of the excavation and must be at least 3' high when used as a barricade where required.

Check all excavation walls before entering and after a heavy rain or thaw. Check shoring daily or more often in extremely wet weather.

The area must be cleared and approved by the GHB representative prior to the start of excavation. For work with an existing operating area, see Section 700.4

Nobody is permitted in an excavation while equipment is working next to the edge.

If you hit an "active" gas line. Immediately turn OFF the equipment and evacuate.
Dial 911. As a result of dialing 911, the Fire Company is dispersed to the site immediately.

TRENCHING AND EXCAVATION PROGRAM

1.0 PURPOSE

Trenching and excavation work is not often performed directly by employees of Gordon H. Baver, Inc. The most frequent projects involving this type of work include smaller emergency situations or smaller planned replacement projects. More extensive emergencies and substantial replacement projects are typically performed by outside contractors. Because of the significant danger in performing this type of work as well as the difficulties associated with performing trenching and excavation on a non-routine basis, Gordon H. Baver, Inc. employees are expected to approach all such work tasks with a great deal of caution. These policies and procedures are designed to give all employees the assistance needed to perform this type of work safely. They are based upon generally accepted "best practices" as well as the current Occupational Health and Safety Administration's (OSHA) Construction Industry Standard for Trenching and Excavation found at Code of Federal Regulations (CFR) 1926 Subpart P.

The primary responsibility for assuring that these policies and procedures are implemented rests with management staff of Gordon H. Baver, Inc., including the General Superintendent, the Safety Chair, the Field Superintendent, the, and/or any additional management staff who may be assigned supervisory responsibilities. These employees are expected, by virtue of their supervisory authority, to periodically observe and review the actions of the employees under their direction and take corrective action when they observe or are aware of any employee who is not following these procedures or who may be engaging in unsafe work practices. They are also expected to set an example for their subordinates and comply with these policies and procedures. Finally, they are expected to interpret these policies and procedures when necessary and seek the direction of the Safety Chair if they are not certain. The Safety Chair is further responsible to seek the advice and counsel of Gordon H. Baver, Inc. Board of Directors when issues of implementation and interpretation arise that he/she is not able to determine independently

In addition to the responsibilities of the management staff noted above, all employees of Gordon H. Baver, Inc. are expected to comply with the following policies and procedures to the best of their ability at all times. Should they observe a work task where these policies are not being properly implemented, they are expected to bring the situation to the attention of their immediate supervisor as soon as possible.

Willful failure to follow these policies and procedures by any employee of Gordon H. Baver, Inc. will be cause for disciplinary action up to and including dismissal in accordance with the current labor contract and/or current personnel policy manual. A copy of these policies and procedures will be kept at each work location. All employees will be given an opportunity to read and review these policies and procedures at the time of hire. A copy of these policies and procedures will be provided to the employee upon request. In addition, all new hires will receive the current copy of Gordon H. Baver, Inc. Employee Handbook, which summarizes the main points of these policies and procedures as well as provides important information about expected safe work practices with regards to trenching and excavation work.

2.0 DEFINITIONS

For purposes of these policies and procedures, the following definitions will apply:

Aluminum Hydraulic Shoring – a pre-engineered shoring system comprised of aluminum hydraulic cylinders (crossbraces) used in conjunction with vertical rails (uprights) or horizontal rails (wales). Such a system is designed specifically to support the sidewalls of an excavation and prevent cave-ins.

Benching (benching system) - a method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.

Excavation – any man-made cut, cavity, trench, or depression in an earth surface formed by earth removal.

Protective System – a method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of adjacent structures. Protective systems include support systems, sloping and benching systems, shield systems, and other systems that provide the necessary protection.

Shield (shield system) – a structure that is able to withstand the forces imposed on it by a cave-in and thereby protect employees within the structure. Shields can be permanent structures or can be designed to be portable and moved along as work progresses. Shields used in trenches are usually referred to as “trench boxes” or “trench shields”

Shoring (shoring system) – a structure such as a metal hydraulic, mechanical or timber shoring system that supports the sides of an excavation and which is designed to prevent cave-ins.

Sloping (sloping system) – a method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins. The angle of the incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads.

Trench (trench excavation) – a narrow excavation made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench, measured at the bottom, is not greater than 15 feet.

3.0 SPECIFIC EXCAVATION REQUIREMENTS

The following list of excavation requirements must be met on all trenching and excavation projects:

- Each excavation project where Gordon H. Baver, Inc. employees may be exposed to dangers due to needing to enter a trench or excavation or from work tasks in and around an excavation area will require the ongoing presence of a Gordon H. Baver, Inc. management employee who has the necessary skills and abilities to identify existing and predictable hazards in the work area which are dangerous to Gordon H. Baver, Inc. employees. This management employee has the authorization to take prompt corrective measures to eliminate any hazards and to stop work if necessary to protect employees until the hazards can be corrected and must be present at all times when employees are in the excavation.
- All surface encumbrances that create a hazard to employees must be removed or supported as necessary to safeguard employees.
- Prior to beginning excavation work, the estimated location of utilities, such as sewer, telephone, fuel, electric, water lines or any other underground installations must be determined. In Pennsylvania the use of the Pennsylvania One-Call System is in operation and should be used. In situations where less than 24 hours is available to make the necessary contacts and establish the location of underground installations, trenching and excavation may proceed, but only with the utmost caution and as long as some manner of detection equipment is utilized to locate the underground installations.
- Following the opening of an excavation and the uncovering of underground installations, some means of protecting, supporting or removing the installations must be utilized for the duration of the excavation.
- A stairway, ladder, ramp or other means of safe egress must be used in excavations that are four feet or more in depth. The means of egress must also be positioned so that no employees must travel more than 25 lateral feet to a means of egress.
- When structural ramps are used to provide a means of egress for employees in the excavation, they must be designed by a person whose skills and experience qualify them to do so. The designer of the ramp must also be present at the excavation site and be able to take all necessary corrective measures to protect employees while the ramps are being used.
- Employees who are exposed to vehicular traffic during an excavation must wear warning vests or some other suitable garments that are marked or made with high-visibility material.
- Employees are not permitted to be underneath loads handled by lifting or digging equipment. All mobile equipment that is being operated adjacent to an excavation that does not have a clear and direct view of the edge of the excavation must utilize a warning system such as a barricade or stop log.
- Any excavation that may be expected to either be oxygen deficient (less than 19.5% oxygen) or contain any other hazardous atmosphere and is greater than 4 feet in depth, must be tested prior to any employee entering. The testing shall take the form and type as that which is required under the Gordon H. Baver, Inc. policies and procedures for working within Permit-Required Confined Spaces (PRCS).

Should the testing reveal an oxygen deficient or hazardous atmosphere, the space must be treated as a PRCS and all policies and procedures must be followed, including the use of a permit and assignment of participant responsibilities.

- Gordon H. Baver, Inc. employees are not permitted to work in excavations where there is accumulated water or in excavations where water is accumulating unless appropriate precautions have been taken to protect employees. This may include special support or shield systems, water removal, or the use of a safety harness or lifeline. If water removal equipment is being utilized, the person directing the operation of that equipment must be experienced in its use.
- If an excavation disrupts the natural drainage of surface water, diversions ditches, dikes or other suitable means must be used to prevent the surface water from entering the excavation and to properly drain the areas adjacent to the excavation.
- Excavations subject to runoff from heavy rains must be inspected by the Gordon H. Baver, Inc. management staff person whose experience and skills qualifies them to make appropriate judgments as to the ongoing safety of entering the excavation.
- When the stability of adjacent structures, buildings, or walls is or may be endangered by the excavation work, support systems such as shoring, bracing, or underpinning must be used to ensure the stability of the structures for the protection of the employees. Excavation below the level of the base or footing of any foundation or retaining wall is not permitted unless a support system is provided to protect employees or the excavation is in stable rock. If neither of these criteria is met, a registered professional engineer (P.E.) can make a determination that the structure is sufficiently removed so that it is unaffected by the excavation activity or that the work activities do not pose a hazard to employees. Sidewalks, pavements, and other structures may not be undermined unless a support system or another method of protection is provided.
- Employee must be protected at all times from loose rock or soil that could fall or roll from the excavation face. Methods used to achieve this protection include scaling to remove loose material, installation of protective barricades, or some other equivalent means. All materials or equipment that pose a hazard of falling into the excavation must be kept at least 2 feet from the edge of the excavation or some type of retaining device must be employed.
- Daily inspections of the excavation, adjacent areas and protective systems must be made by a Gordon H. Baver, Inc. management employee who possesses the skills and abilities to dealing with excavation work. This inspection must be completed at least at the beginning of each shift and as needed throughout the shift. In addition, inspections must be performed after every rainstorm or other hazard occurrence. Any evidence of a hazard that could endanger employees requires that all work be stopped and employees be removed from the trench and excavation area until the hazard can be corrected.
- When employees are required to cross over excavations, walkways must be provided. When the depth of the excavation exceeds 6 feet, guardrails must be provided.

4.0 REQUIREMENTS FOR PROTECTIVE SYSTEMS

Gordon H. Baver, Inc. will provide a trench box as a protective system as required. Any excavation that is deeper than 4 feet requires the use of the trench box at all times when employees may need to enter the excavation. This is true even if the excavation is in stable rock or there appears to be no danger of a cave-in. The trench box used by Gordon H. Baver, Inc. must have the capacity to

resist, without failure, all loads that are intended or could reasonably be expected to be applied or transmitted to the system. In addition, the trench box utilized must conform to the requirements established in 29 CFR 1926.652(c).

All materials and equipment utilized for protective systems and shields must be free from damage and defects that might impair their proper function and must be used in a manner that is consistent with the recommendations of the manufacturer. Any material or equipment that is damaged must be examined by the Gordon H. Baver, Inc. management employee in charge of the project to evaluate its suitability for continued use. If found to be unsuitable, the material or equipment in question must be removed from service until a P.E. can approve it for re-use.

All support system members must be securely connected together to prevent sliding, falling, kickouts, or other predictable failure. Removal of protective systems must begin at the bottom of the excavation and all members must be released slowly to determine whether any indications of possible failure occur. Backfilling must progress together with removal of the support systems.

Employees are not permitted in trench boxes when they are being installed, removed or moved vertically. Excavations of material of less than 2 feet beneath the bottom of a shield is permitted, but only if the shield is designed to resist the forces calculated for the full depth of the trench and there are no indications while the trench is open of a possible loss of soil from behind or below the bottom of the shield.

5.0 SOIL CLASSIFICATIONS

These requirements are to be applied for certain sloping or benching system designs or when timber shoring or aluminum hydraulic systems shoring is being utilized.

6.0 ANNUAL SAFETY REVIEW OF WORKPLACES

Along with the General Manager, all management staff that has the requisite skills and abilities to supervise excavation projects will be responsible for an annual review of the use of these policies and procedures. This review will be done via a formal review of these policies and procedures as well as a detailed look at any incidents or problems that are reported during the previous year by those employees supervising or participating in trenching and excavation work. In addition, the portions of the Employee Handbook and/or Standard Operating Procedures (SOPs) pertaining to trenching and excavation will be reviewed. When changes occur to the policies and procedures, the Employee Handbook, or the SOPs, management staff will be responsible to assure that all employees are given the new information and have the opportunity to be trained in the changes that affect the performance of their duties.