-Sample-

Excavation and Trenching Program

Prepared by:

Midwest Builders’ Casualty

Safety programs are most effective when they are designed to meet the specific and individual needs of each company. This safety program does not constitute a complete and comprehensive safety program. The intent of this safety program is to encourage the development of individual company specific program by providing a sample format and suggested wording for program components.

This safety program is not intended to be an exhaustive treatment of the subject, and should not be interpreted as precluding other procedures which would enhance the safety of your place of work or project sites.

Midwest Builders’ Casualty makes no guarantee, warranty or assurance, expressed or implied that this safety program will insure compliance or is in compliance with requirements of any OSHA regulation or any other law or regulation dealing with safety as it pertains to employees or the safety regulations as it pertains to hazardous substances and/or the work environment.
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### Appendix

- Excavation Checklist   1-A
EXCAVATION AND TRENCHING PROGRAM

POLICY

Any work activity that results in exposure of employees to cave-ins from material that could fall or roll from an excavation face or into an excavation, from collapse of adjacent structures, or from atmospheres Immediately Dangerous to Life and Health (IDLH) which could threaten the safety and health of any worker will be properly identified and controlled. It should be noted that excavations include trenches.

SCOPE

All excavations and trenches will be assessed by a competent person to insure that employees and subcontractors will not be exposed to danger that results from excavation or trench cave-in or other physical hazards associated with these activities.

DEFINITIONS

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

_Competent Person_ – One who is capable of identifying existing and predictable hazards in the surroundings, or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has _authorization_ to take prompt corrective measures to eliminate them.

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

_Hazardous Atmosphere_ – An atmosphere which by reason of being explosive, flammable, poisonous, corrosive, oxidizing, irritating, oxygen deficient, toxic, or otherwise harmful, may cause death, illness, or injury.

_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.

_Shoring_ – (Shoring System) a structure such as 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 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.

_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.
PROCEDURES

1. All surface encumbrances that are located as to create a hazard to employees shall be removed or supported, as necessary, to safeguard employees.

2. All federal, state, and local regulations shall be complied with and special attention and compliance given to 29 CFR 1926. 650, 651, and 652.

3. Underground utility installations, such as electrical lines, fuel lines, communication lines, water lines, sewer lines, or any other underground installations that reasonably may be expected to be encountered during excavation work shall be determined prior to opening an excavation or trench. When excavations approach the estimated location of the underground installations, the exact location shall be determined by safe and acceptable means.

4. Contact one-call services when available. One-call services are available that will notify utilities that are in the area of our intention to excavate. Upon contact with this service, you will be provided a confirmation number that shall be documented, along with the time, date, and the name of the contact person. It is important that you ask the one-call service if there are any utilities in the area that they do not represent. If there are utilities not represented by the one-call service, these utilities shall also be contacted. Request for locates must be made 2-10 working days in advance and may be made by calling the appropriate telephone number listed below:

   **MISSOURI** 1-800-DIG-RITE (1-800-344-7483)
   **KANSAS** 1-800-DIG-SAFE (1-800-344-7233)

5. While the excavation is open, underground installations shall be protected, supported, or removed as necessary to protect employees.

6. Structural ramps that are used solely by employees as a means of access or egress from an excavation shall be designed by a competent person qualified in structural design and shall be constructed as designed.

7. The sides of excavations or trenches 5 feet (1.52m) or more in depth, or less than 5 feet (1.52) in unstable soil shall be shored, braced, sloped, or otherwise supported by means of sufficient strength to protect the employees within them.

8. A registered professional engineer shall design the sloping, shoring, benching, or shielding method for an excavation greater than 20 feet in depth.

9. Employees shall be protected from excavated or other materials or equipment that could pose a hazard by falling or rolling into excavation. Protection shall be provided by placing and keeping such materials or equipment at least 2 feet (.61m) from the edge of the excavation, or a retaining device(s) must be provided.

10. A stairway, ladder, or other safe means of egress shall be located in an excavation or trench that is 4 feet (1.22m) or more in depth so as to require no more than 25 feet (7.62m) of lateral travel for employees. When a ladder is utilized it must be secured and extended 3 feet above the edge of the excavation or trench.

11. Employees exposed to public vehicular traffic shall be provided with, and shall wear, warning vests or other suitable garments marked with or made of reflectorized or high-visibility material.
12. No employees shall be permitted underneath loads handled by lifting or digging equipment. Employees shall be required to stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials.

13. When mobile equipment is operating adjacent to an excavation, or when such equipment is required to approach the edge of an excavation, and the operator does not have a clear and direct view of the edge of the excavation, a warning system shall be utilized such as barricades, hand or mechanical signals, or stop logs. If possible, the grade should be away from the excavation.

14. All contractors and sub_contractors shall prevent exposure of employees to harmful levels of atmospheric contaminants and assure acceptable atmospheric conditions.

15. Where oxygen deficiency or a hazardous atmosphere exists or could reasonably be expected to exist, the atmospheres in the excavation shall be tested before employees enter excavations greater than 4 feet (1.22m) in depth.

16. Adequate prevention shall be taken to prevent employee exposure to atmospheres containing less than 19.5 percent oxygen and other hazardous atmospheres. These precautions include providing proper respiratory protection or ventilation.

17. Adequate precautions shall be taken such as providing ventilation, to prevent employee exposure to an atmosphere containing a concentration of a flammable gas in excess of 10 percent of the Lower Flammable Limit (LFL).

18. When controls are used that are intended to reduce the level of atmospheric contaminants to acceptable levels, testing shall be conducted as often as necessary to ensure that the atmosphere remains safe.

19. Emergency rescue equipment, such as breathing apparatus, a safety harness and line, or a basket stretcher shall be readily available where hazardous atmospheres exist or may reasonably be expected to develop during work in an excavation. This equipment shall be attended when in use.

20. Employees entering bell-bottom pier or other similar deep and confined footing excavations, shall wear a harness with a lifeline securely attached to it. The lifeline shall be separate from any line used to handle materials and shall be individually attended at all times while the employee wearing the lifeline is in the excavation.

21. Employees shall not work in excavations in which there is accumulated water, or in excavations in which water is accumulating, unless adequate precautions have been taken to protect employees against all hazards posed by water accumulation. Special precautions necessary to protect employees adequately vary with each situation, but could include special support or shield systems to protect from cave-ins, water removal to control the level of accumulating water, or use of safety harness or lifeline.

22. Where the stability of adjoining buildings, walls, or other structures is endangered by excavation operations, support systems such as shoring, bracing or underpinning shall be provided to ensure the stability of such structures for the protection of employees.

23. Excavation below the level of the base or footing of any foundation, retaining wall, sidewalk, pavement, or appurtenant structure shall not be allowed unless proper safeguards are taken to protect employees from danger.
24. Each employee in an excavation shall be protected from cave-ins by an adequate protective system designed in accordance with the requirements of 29 CFR 1926.652 including appendices A, B, C, D, E, and F to subpart P.

25. On a daily basis an “Excavation Checklist Appendix 1-A” should be completed by a competent person to document inspections of excavations, the adjacent areas, and all protective systems for evidence of a situation that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions. Inspections shall be conducted prior to the start of work and as needed throughout the shift. Inspections shall also be made after every rainstorm or other hazard-increasing occurrence. When evidence of any hazardous conditions is discovered by the competent person, exposed employees shall be removed from the hazardous area until the necessary precautions have been taken to ensure their safety.

26. Where employees are required or permitted to cross over excavations, walkways or bridges with standard guardrails shall be provided.

27. Adequate barrier physical protection shall be provided at all open excavations. All wells, pits, shafts, and other like excavations shall be barricaded or covered.
EXCAVATION CHECKLIST  
(To be completed by a "Competent Person")

<table>
<thead>
<tr>
<th>COMPETENT PERSON:</th>
<th></th>
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<tbody>
<tr>
<td>SITE LOCATION:</td>
<td></td>
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<tr>
<td>DATE:</td>
<td></td>
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<tr>
<td>TIME:</td>
<td></td>
</tr>
<tr>
<td>SOIL CLASSIFICATION:</td>
<td>EXCAVATION DEPTH:</td>
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<tr>
<td>TYPE OF PROTECTIVE SYSTEM USED:</td>
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</table>

1. GENERAL INSPECTION OF THE JOB SITE
   - A. Excavations, adjacent areas, and protective systems inspected by a competent person daily prior to the start of work?
   - B. Competent person has the authority to remove workers from excavation immediately?
   - C. Surface encumbrances removed or supported?
   - D. Employees protected from loose rock or soil that could pose a hazard by falling or rolling into the excavation?
   - E. Hard hats are worn by all employees?
   - F. Spoils, materials, and equipment set at least 2 feet from the edge of the excavation?
   - G. Barriers provided at all remotely located excavations, wells, pits, shafts, etc.?
   - H. Walkways and bridges over excavations 6 feet or more in depth are equipped with standard guardrails and toeboards?
   - I. Warning vest or other highly visible clothing provided and worn by all employees exposed to public vehicular traffic?
   - J. Employees required to stand away from vehicles being loaded or unloaded?
   - K. Warning systems established and utilized when mobile equipment is operating near the edge of the excavation?
   - L. Employees are prohibited from going under suspended loads?
   - M. Employees are prohibited from working on the faces of sloped or benched excavations above other employees?

2. UTILITIES
   - A. Utility companies contacted and/or utilities located?
   - B. Exact location of utilities marked?
   - C. Underground installations protected, supported, or removed when excavation is open?

3. MEANS OF ACCESS AND EGRESS
   - A. Lateral Travel to means of egress is no greater than 25 feet in excavations, 4 feet or more in depth?
   - B. Ladders used in excavations secured and extended 3 feet above the edge of the trench?
   - C. Structural ramps used for equipment designed by a registered professional engineer (RPE)?
<table>
<thead>
<tr>
<th>ACCESS AND EGRESS (Continued)</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>D. Ramps constructed of materials of uniform thickness, cleated together on the bottom, equipped with non-slip surface?</td>
<td></td>
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<tr>
<td>E. Employees protected from cave-in when entering or exiting the excavation?</td>
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</table>

**4. WET CONDITIONS**

| A. Precautions taken to protect employees from the accumulation of water? |     |    |
| B. Water removal equipment monitored by a competent person? |     |    |
| C. Surface water or runoff diverted or controlled to prevent accumulation in the excavation? |     |    |
| D. Inspections made after every rainstorm or other hazard-increasing occurrence? |     |    |

**5. HAZARDOUS ATMOSPHERE**

| A. Atmosphere within the excavation tested where there is a reasonable possibility of an oxygen deficiency, combustible or other contaminant exposing employees to a hazard? |     |    |
| B. Adequate precautions taken to protect employees from exposures to an atmosphere containing less than 19.5% oxygen and/or to other hazardous atmospheres? |     |    |
| C. Ventilation provided to prevent employees' exposure to an atmosphere containing flammable gas in excess of 10% of the lower explosive limit of the gas? |     |    |
| D. Testing conducted often to ensure that the atmosphere remains safe? |     |    |
| E. Emergency equipment, such as breathing apparatus, safety harness and lifeline, and/or basket stretcher readily available where hazardous atmospheres could or do exist? |     |    |
| F. Employees trained to use personal protective and other rescue equipment? |     |    |
| G. Full body harness and lifeline used and individually attended when entering bell bottom or other deep confined excavations? |     |    |

**6. SUPPORT SYSTEMS**

| A. Materials and/or equipment for support systems selected based on soil analysis, trench depth, and expected loads? |     |    |
| B. Materials and equipment used for protective systems inspected and in good condition? |     |    |
| C. Materials and equipment not in good condition have been removed from service? |     |    |
| D. Damaged materials and equipment used for protective systems inspected by a registered professional engineer (RPE) after repairs and before being placed back into service? |     |    |
| E. Protective systems installed without exposing employees to the hazard of cave-ins, collapses, or threats of being struck by materials or equipment? |     |    |
| F. Members of support system securely fastened to prevent failure? |     |    |
| G. Support systems provided to insure stability of adjacent structures, buildings, roadways, sidewalks, walls, etc. |     |    |

**NOTES:**

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