**EXCAVATING/TRENCHING AUDIT CHECKLIST**

|  |  |  |
| --- | --- | --- |
| Project:  | Date:  | Time:  |
|  |  |
| Inspector:  | Excavation Location:  |
| Excavation Depth:  | Anticipated Maximum Depth:  |
|  |  |
|  | **Y** | **N** | **Comment** |
| All excavations inspected? |  |  | If no, why not?  |
| Soil type verified for each excavation? |  |  | Indicate Type:  |
| Competent Person identified? |  |  | Name:  |
| PE involved? |  |  | Name:  |

**TRAINING**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Y** | **N** | **Comments** |
| 1. Have employees been trained in hazard recognition and safe work practices associated with excavation work? |  |  |  |
| 2. Have employees been trained in excavation emergency procedures? |  |  |  |

**SURFACE ENCUMBRANCES (Trees, Boulders, Telephone Poles, Heavy Equipment)**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Y** | **N** | **Comments** |
| 1. Are all surface encumbrances posing a threat to employees identified, removed, or supported? |  |  |  |

**UNDERGROUND UTILITIES/INSTALLATIONS**

**(Electric, Gas, Fuel, Product, Water, Telecommunication, Sewer, Lines, etc.)**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Y** | **N** | **Comments** |
| 1. Are utility searches completed and documented? |  |  |  |
| 2. Have the appropriate agencies/client representatives been contacted? |  |  |  |
| 3. Are local permits obtained and on file? |  |  |  |
| 4. If excavation will impinge on underground utilities: Are procedures in place to detect/protect as utilities are neared?Are procedures in place to guard/support exposed utility lines? |  |  |  |

**ACCESS AND EGRESS**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Y** | **N** | **Comments** |
| 1. Are ladders, stairways, or ramps provided every 25 ft. of linear travel in excavations 4 ft. deep or deeper? |  |  |  |
| 2. Are ladders appropriately secured and extend at least 3 ft. above the top landing area? |  |  |  |
| 3. Are personnel and equipment access and egress ramps designed by a Competent Person? |  |  |  |
| 4. Are ramps/runways of two or more structural members joined so as to prevent displacement? |  |  |  |
| 5. Are structural members of ramps/runways of two or more members of uniform thickness? |  |  |  |
| 6. Are the cleats or other appropriate means used to connect runway structural members attached to the bottom of the runway or in a manner to prevent tripping? |  |  |  |
| 7. Are all structural members slip-resistant? |  |  |  |

**EXPOSURE TO VEHICULAR TRAFFIC**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Y** | **N** | **Comments** |
| 1. Are appropriate warning signs or barriers used to protect employees who are exposed to vehicular traffic? |  |  |  |
| 2. Are employees exposed to vehicular traffic provided with and wearing warning vests or other suitable garments marked with or made of reflective or high visibility material? |  |  |  |

**EXPOSURE TO FALLING LOADS**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Y** | **N** | **Comments** |
| 1. Are employees permitted underneath loads handled by lifting or digging equipment? |  |  |  |
| 2. Are employees required to stand away from any vehicle being loaded or unloaded to avoid being stuck by any spillage or falling materials? |  |  |  |
| 3. Operators should remain in the cabs of vehicles being loaded or unloaded only if the vehicles are equipped, according to 29 CFR Part 1926.601(b)(6), to provide adequate protection for the operator during loading/unloading operations. Are said vehicles so equipped? |  |  |  |

**WARNING SYSTEM FOR MOBILE EQUIPMENT**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Y** | **N** | **Comments** |
| 1. Does the operator of mobile equipment operated adjacent to an excavation have a clear and direct view of the edge of the excavation? |  |  |  |
| 2. Is the grade away from the excavation? |  |  |  |
| 3. If not, and if this such equipment is required to approach the edge of an excavation, is a warning system used (barricades, hand or mechanical signals, or stop logs)? |  |  |  |

**HAZARDOUS ATMOSPHERES**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Y** | **N** | **Comments** |
| 1. Is there potential for hazardous atmosphere in excavations? |  |  |  |
| 2. If yes, has the atmosphere in the excavations been tested before employees enter? |  |  |  |
| 3. Is atmosphere monitored at established frequency and documented in Section U, Atmospheric Monitoring Record? |  |  |  |
| 4. Are adequate precautions taken to prevent employee exposure to atmospheres containing less than 19.5% oxygen and other hazardous atmospheres? |  |  |  |
| 5. Are adequate precautions are taken to ensure employee exposure is less than 10% lower exposure limit (LEL)? |  |  |  |
| 6. Is testing conducted as often as necessary to ensure that the atmosphere remains safe? |  |  |  |

**I. EMERGENCY RESCUE EQUIPMENT**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Y** | **N** | **Comments** |
| 1. Is emergency rescue equipment (breathing apparatus, safety harness and line, basket stretcher, etc.) readily available where hazardous atmospheric conditions exist or may the equipment reasonably be expected to be available during work in an excavation? Is equipment attended when in use? |  |  |  |
| 2. Do employees entering bellbottom pier holes or other similar deep and confined footing excavations wear a harness with a lifeline securely attached? Is the lifeline separate from any line used to handle materials, and is it attended at all times while the employee wearing the lifeline is in the excavation? |  |  |  |

**PROTECTION FROM HAZARDS ASSOCIATED WITH WATER ACCUMULATION**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Y** | **N** | **Comments** |
| 1. Do employees work in excavations in which there is accumulated water, or in excavations in which water is accumulating? Have adequate precautions been taken to protect employees against the hazards posed by water accumulation? |  |  |  |
| 2. If water is controlled or prevented from accumulating by the use of water removal equipment, is the water removal equipment and operation monitored by a Competent Person to ensure proper operation? |  |  |  |
| 3. If excavation work interrupts the natural drainage of surface water (such as streams), are diversion ditches, dikes, or other suitable means used to prevent surface water from entering the excavation and to provide adequate drainage of the area adjacent to the excavation? |  |  |  |
| 4. Are excavations subject to runoff from heavy rains inspected by a Competent Person and are they in compliance with paragraphs 29 CFR 1926.651(h)(1) and (h)(2)? |  |  |  |

**STABILITY OF ADJACENT STRUCTURES**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Y** | **N** | **Comments** |
| 1. Are support systems (shoring, bracing, or underpinning) provided to ensure the stability of such structures where the stability of adjoining buildings, walls, or other structures is endangered by excavation operation? |  |  |  |
| 2. Excavation below the level of the base or footing of any foundation or retaining wall is not permitted unless: |  |  |  |
|  - A support system, such as underpinning, is provided to ensure the safety of employees and the stability of the structure. |  |  |  |
|  - The excavation is in stable rock. |  |  |  |
|  - A PE has determined that the structure is sufficiently removed from the excavation so as to be unaffected by the excavation activity. |  |  |  |
|  - A PE has determined that such excavation work will not pose a hazard to employees. |  |  |  |
| 3. Are sidewalks, pavements, and appurtenant structures stable?  If they are undermined, is a support system or another method of protection provided to protect employees from the possible collapse of such structures? |  |  |  |

**PROTECTION OF EMPLOYEES FROM LOOSE ROCK OR SOIL**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Y** | **N** | **Comments** |
| 1. Are employees protected from excavated or other materials or equipment that could pose a hazard by falling or rolling into excavations? |  |  |  |
| 2. Is adequate protection (such as scaling to remove loose material or installation of protective barricades) provided to protect employees from loose rock or soil falling or rolling from an excavation face? |  |  |  |

**INSPECTIONS**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Y | N | Comments |
| 1. Are inspections conducted prior to the start of work and as needed throughout the shift by a Competent Person? |  |  |  |
| 2. Are daily inspections of excavations, the adjacent areas, and protective systems made by a Competent Person for evidence of a situation that could result in possible caveins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions? |  |  |  |
| 3. Are inspections made after every rainstorm or other hazard-increasing occurrence (freezing, thawing, increased vibration, or new traffic pattern)? |  |  |  |
| 4. Are inspections documented? |  |  |  |

**FALL PROTECTION**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Y | N | Comments |
| 1. Are walkways or bridges with standard guardrails provided where employees or equipment are required or permitted to cross over excavations? |  |  |  |
| 2. Are adequate barrier physical protection (sufficient to provide protection for vehicles or pedestrians as appropriate) and lighting provided at all remotely located excavations? |  |  |  |
| 3. Are all wells, pits, shafts, etc., barricaded or covered? |  |  |  |

**PROTECTION OF EMPLOYEES IN EXCAVATIONS**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Y | N | Comments  |
| 1. Each employee in an excavation is protected from caveins by an adequate protective system designed in accordance with paragraphs (b) or (c) of 29 CFR Part 1926.652 unless: |  |  |  |
|  - Excavations are made entirely in stable rock. |  |  |  |
|  - Excavations are less than 5 ft. (1.52 m) in depth and examination of the ground by a Competent Person provides no indication of a potential cavein. |  |  |  |
| 2. Are employees permitted to work on the faces of sloped/benched excavations at levels above other employees except when employees at the lower levels are adequately protected from the hazard of falling, rolling, or sliding material or equipment? |  |  |  |
| 3. Do the protective systems 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? |  |  |  |

**DESIGN OF SLOPING AND BENCHING SYSTEMS**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Y | N | Comments |
| 1. Are slopes and configurations of sloping and benching systems selected and constructed in accordance with the requirements of 29 CFR Part 1926.652: |  |  |  |
|  - Paragraph (b)(1) (slope angles no greater than 1 1/2:1 [75%] or conforms to slopes and configurations required in Appendix B for type C soils)? |  |  |  |
|  - Paragraph (b)(2) (slopes and configurations are according to Appendices A and B)? |  |  |  |
|  - Paragraph (b)(3) (slopes and configurations are according to other published tables that are available onsite)? |  |  |  |
|  - Paragraph (b)(4) (slopes and configurations are designed by a PE and a copy of the design is onsite)? |  |  |  |

**DESIGN OF SUPPORT SYSTEMS, SHIELD SYSTEMS, AND**

**OTHER PROTECTIVE SYSTEMS**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Y | N | Comments |
| 1. Designs of support systems, shield systems, and other protective systems shall be selected and constructed by the employer or a designee and shall be in accordance with the requirements of 29 CFR Part 1926.652: |  |  |  |
|  - Paragraph (c)(1) (designs are based on Appendices A, C, and D)? |  |  |  |
|  - Paragraph (c)(2) (design is in accordance with manufacturer's tabulated data, specifications, or instructions and a copy of the data is onsite.)? |  |  |  |
|  - Paragraph (c)(3) (designs use other tabulated data and a copy of the data is onsite)? |  |  |  |
|  - Paragraph (c)(4) (designed by a PE and a copy of the design is onsite)? |  |  |  |

**INSTALLATION AND REMOVAL OF SUPPORT**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Y | N | Comments  |
| 1. Are members of support systems securely connected together to prevent sliding, falling, kick outs, or other predictable failure? |  |  |  |
| 2. Is installation of a support system closely coordinated with the excavation of trenches? |  |  |  |
| 3. Are support systems installed and removed in a manner that protects employees from caveins, structural collapses, or from being struck by members of the support system? |  |  |  |
| 4. Are individual members of support systems subjected to loads exceeding those they were designed to withstand? |  |  |  |
| 5. Before temporary removal of individual members begins, are additional precautions taken to ensure the safety of employees, such as installing other structural members to carry the loads imposed on the support system? |  |  |  |
| 6. Removal begins at, and progresses from, the bottom of the excavation. Are members released slowly so as to note any indication of possible failure of the remaining members of the structure or possible cavein of the sides of the excavation? |  |  |  |
| 7. Does backfilling progress together with the removal of support systems from excavations? |  |  |  |
| 8. Excavation of material to a level no greater than 2 ft. (.61 m) below the bottom of the members of a support system is permitted only if: - The system is designed to resist the forces calculated for the full depth of the trench. - There are no indications while the trench is open of a possible loss of soil from behind or below the bottom of the support system. |  |  |  |

**SHIELD SYSTEMS**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Y | N | Comments |
| 1. Are shield systems subjected to loads exceeding those the system was designed to withstand? |  |  |  |
| 2. Are shields installed in a manner to restrict lateral or other hazardous movement of the shield in the event of application of sudden lateral loads? |  |  |  |
| 3. Are employees protected from the hazard of caveins when entering or exiting the areas protected by shields? |  |  |  |
| 4. Are employees allowed in areas when shields are being installed, removed, or moved vertically? |  |  |  |
| 5. Excavation of earth material to a level not greater than 2 ft. (.61 m) below the bottom of a shield is permitted only if the shield is designed to resist the forces calculated for the full depth of the trench, and if there are no indications, while the trench is open, of a possible loss of soil from behind or below the bottom of the shield. |  |  |  |

**ADDITIONAL COMMENTS**

**ATMOSPHERIC MONITORING RECORD**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Testing** | **PEL/Action Level** | **Conc./Time** | **Conc./Time** | **Conc./Time** |
| Percent Oxygen | 19.5-23.5% (D) |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Percent LEL | > 10%  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Toxic- | Refer to HASP |  |  |  |
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