

Proof of Training (revised January 27, 2017)

Print name: _____ Signature: _____ Date: _____

Excavation and Trenching

Purpose

To protect employees and subcontractors (workers) from the hazards associated with trenches and excavations. This program is closely link to our Ground Disturbance and Bump Testing/Air Sampling Policies. In situations where a hazardous atmosphere is confirmed our Confined Space Policy shall be followed.

Scope

This policy will apply to all work performed by employees and subcontractors including, but not limited to the following activities: construction, installation, demolition, remodeling, relocation, refurbishment, testing, and servicing or maintenance of equipment or machines and at other times when excavation or trenching is required.

Responsibilities

Management (Board of Directors and Project Managers)

Management is responsible for ensuring that the materials (e.g., tools, equipment, personal protective equipment) and other resources (i.e., worker training materials) required to fully implement and maintain this program are readily available where and when they are required. Additionally, management will monitor the effectiveness of the program, provide technical assistance as needed, and review the program bi-annually.

Program Manager

Dave Simpson is responsible for the development, documentation, training and administration of the program. This position carries the responsibility of insuring this program is adhered to and that proper reporting is executed.

Supervisors (Superintendents and Foreman)

Supervisors are responsible for ensuring workers entering excavations or trenches are properly trained and equipped to perform their duties safely. Supervisors are responsible for determining if the conditions are acceptable for excavation/trenching, authorizing the entry and overseeing excavation/trenching operations. That all required inspections, tests, and recordkeeping functions have been performed by the competent person.

Supervisors are responsible for ensuring that a task specific job hazard analysis (JHA), also known as a safe work plan, is developed. The JHA will select, implement and document the appropriate site-specific control measures as defined within this policy. Supervisors will direct the work in a manner that ensures

the risk to workers is minimized, adequately controlled and that practices defined by this policy will be followed. Supervisors are responsible for ensuring Unger Construction employees and subcontractors are following expectations. Supervisors will be held accountable for enforcing the requirements of this program. Undesirable behavior will not resolve itself, therefore supervisors must be directly involved with modifying behaviors inconsistent with program expectations. Supervisors will be held accountable for enforcing Unger Construction's disciplinary program.

Workers (Employees and Subcontractors)

Unger Construction has high expectations and requires safety excellence for each employee, crew, project and for our entire company. Workers are required to follow the minimum procedures outlined in this program. Workers are responsible for knowing the hazards and the control measures established in the JHA. Workers are responsible for using the assigned PPE in an effective and safe manner. Workers are responsible for stopping unsafe acts and correcting unsafe conditions on the spot as soon as they are discovered. Any deviations from this program must be immediately brought to the attention of your supervisor. Workers that choose to conduct themselves in a manner that is inconsistent with these expectations will be held accountable for those decisions and may incur disciplinary actions.

Hazardous Material Survey

Unger Construction requires hazardous materials surveys before demolition or renovation work begins. The survey shall include all of the following: A visual inspection of a facility or a portion thereof for suspect materials, sampling and laboratory analysis of any suspect materials found for the presence of asbestos. The hazardous materials survey will also furnish a written report that includes: a description of the area(s) visually inspected, a detailed description of any suspect material sampled, the results of any laboratory analysis of suspect materials, the method of analysis, and the total amount of asbestos containing material. Typically a floor or roof plan is included with the report to reference the written information visually.

The person conducting the survey must be certified pursuant to OSHA and/or EPA regulations. The survey may be performed by a certified Site Surveillance Technician (SST) under the supervision of a licensed consultant. Note: The survey needs to be kept in a project file so that it can be accessed when working on future projects.

If lead or asbestos have been confirmed to be present employees and subcontractors must follow Unger Construction's Lead and/or Asbestos program. If hazards such as asbestos or lead will be disturbed during remediation, a properly licensed professional must perform the work and follow appropriate regulations.

Job Hazard Assessment (Safe Work Plan)

Unger Construction utilizes JHA's as our means of hazard assessment and establishing a safe work plan. JHA's are performed by supervisors and/or workers. Our library of hazard assessments is maintained on the "S" drive. Before beginning a new task refer to the JHA library, generally speaking all scopes of our work are covered. For situations that have not yet been covered select one that is substantially similar and use it as a baseline. JHA's on the "S" drive are organized by work area and job description. JHA's include strategies for elimination, substitution, engineering and administrative controls. After applying all appropriate reduction and elimination technique, the remaining hazards will be analyzed and the

proper PPE to reduce the hazards will be selected. PPE will be identified for hazards that are in the process of being reduced or eliminated and/or when hazard-reduction efforts are not 100% effective in eliminating the hazards.

For complex or moderate to high hazard tasks, tasks where an additional level of safety planning is needed, the safety director will perform the JHA with the supervisor and workers.

Training

All personnel involved in trenching or excavation work shall be trained in the requirements of this program with assistance from the supervisors. Training shall be performed before employees are assigned duties in excavations.

The training shall include: The work practices that must be followed during excavating or working in excavations. The use of personal protective equipment, shoring, that will typically be required during work in excavations. Procedures to be followed if a hazardous atmosphere exists or could reasonably be expected to develop during work in an excavation. Emergency and non-entry rescue methods, and the procedure for calling rescue services.

Retraining will be performed when work site inspections indicate that an employee does not have the necessary knowledge or skills to safely work in or around excavations, or when changes to this program are made.

Proof of training is available on the "S" drive. The training data base can be sorted by employee name or by subject. This ensures supervisors and employees are able to confirm they have the necessary training and if they don't which employees do. Employees that need training should contact their project manager or superintendent to make arrangements for them to be trained.

Surface Encumbrances

All equipment, materials, supplies, permanent installations (i.e., buildings or roadways), trees, brush, boulders, and other objects at the surface that could present a hazard to employees working in the excavation shall be removed or supported as necessary to protect employees.

Underground Utility Installations

Locating Underground Utilities

Any operation in which earth, rock or other material in the ground (including but not limited to asphalt, pavement, concrete, flatwork or footings) is moved, removed or otherwise displaced by means of tools, equipment (including saw cutting)" is considered an excavation. Any person planning to conduct an excavation shall contact USA North (811) at least 2 full working days (excluding weekends and holidays) but not more than 14 calendar days prior to commencing excavation. When the excavation is within the approximate location of subsurface installations (within 2 feet) the excavator shall determine the exact location of subsurface installations in conflict with the excavation by excavating with hands tools. Once the subsurface installation is exposed, the excavator is responsible for protecting it.

USA North accepts calls for excavation work on public property, private property and military bases. When working on private property, the excavator should determine what facilities belong to the

property owner. In general, ownership of the underground facility transfers to the property owner behind the curb, behind the sidewalk, at the meter.

Five steps to a safe excavation:

- 1) Survey and mark your proposed excavation site.
- 2) Call USA North at least 2 working days before you plan to dig, but not more than 14 calendar days.
- 3) Wait the required time. Have your USA North ticket number on the jobsite.
- 4) Respect the USA North markings; preserve the markings for the duration of the job.
- 5) Dig with care. Hand excavate within 24" of the outside diameter of the utility.

The location of sewer, telephone, fuel, electric, water, or any other underground installations or wires that may be encountered during excavation work shall be determined and marked prior to opening an excavation. Arrangements shall be made as necessary by the competent person with the appropriate utility entity for the protection, removal, shutdown, or relocation of underground installations.

It is difficult to establish the exact location of underground utility installations with survey equipment. When working within 2 feet of a known or suspect underground utility hand digging, pot holing or hydro excavation techniques shall be used to identify the exact location.

Excavation shall be done in a manner that does not endanger the underground installations or the employees engaged in the work. Utilities left in place shall be protected by barricades, shoring, suspension, or other means as necessary to protect employees.

Protection of the Public

Barricades, walkways, lighting, and posting shall be provided as necessary for the protection of the public prior to the start of excavation operations. Guardrails, fences, or barricades shall be provided on excavations adjacent to walkways, driveways, and other pedestrian or vehicle thoroughfares. Warning lights or other illumination shall be maintained as necessary for the safety of the public and employees from sunset to sunrise.

Wells, holes, pits, shafts, and all similar hazardous excavations shall be effectively barricaded or covered and posted as necessary to prevent unauthorized access. All temporary excavations of this type shall be backfilled as soon as possible.

Spoil Piles

Excavation spoils shall be positioned such that the leading edge of the excavation/ trench and the beginning edge of the spoil slope is separated by more than 2 feet.

Access or Egress

Stairs, ladders, or ramps shall be provided at excavation sites where employees are required to enter trench excavations over 4 feet deep. The maximum distance of lateral travel (along the length of the trench) necessary to reach the means of egress shall not exceed 25 feet.

Access and Egress Ladders

When portable ladders are used, the ladder side rails shall extend a minimum of three (3) feet above the upper surface of the excavation. Two or more ladders will be provided where 25 or more employees will be conducting work in an excavation where ladders serve as the primary means of egress, or where ladders serve two-way traffic.

Exposure to Falling Loads

No worker is permitted underneath loads being handled by lifting or digging equipment. Workers are required to stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials. Operators may remain in the cabs of vehicles being loaded or unloaded when the vehicles provide adequate protection for the operator during loading and unloading operations.

Warning System for Mobile Equipment

A warning system shall be used when mobile equipment is operated adjacent to the edge of an excavation if the operator does not have a clear and direct view of the edge of the excavation. The warning system shall consist of barricades, hand or mechanical signals, or stop logs. If possible, the grade should be away from the excavation.

Working Near Vehicles

When trenches or excavations occur within or near public roads a traffic control plan shall be developed that includes traffic control devices (cones, delineators, barriers) and signage (direction control, speed control). In many circumstances flaggers (attendants with slow/stop paddles) will be required.

All workers shall wear high visibility outer wear with reflector markings that ensure the worker stands out from the background and can be seen for at least 1,000 feet

Hazardous Atmospheres

Excavations over 4 feet deep need to be tested to ensure that a hazardous atmosphere does not exist. A hazardous atmosphere could be expected, for example, in excavations in landfill areas, areas where hazardous substances are stored nearby, near areas containing gas pipelines or if internal combustion engines (vehicles, generators, compressors) are operating nearby.

Unger Construction utilizes a 4:1 air sampling/monitor tool to test for the most common contaminants and concerns in confined spaces. The 4:1 air sampling/monitor tool tests for atmospheric oxygen concentration levels and common toxic gases in a confined space. Oxygen and Methane are measured as a percentage. Methane is used to test for flammable or explosive gas, vapor, or mist. Carbon Monoxide and Hydrogen Sulfide are measured in parts per million (PPM). Oxygen levels in a normal fresh air environment will be 21%.

- Oxygen levels are safe if they are between 19.5% - 23.5%.
- Carbon Monoxide (CO) - Permissible exposure limit is 25 ppm.
- Hydrogen Sulfide (H₂S) - Permissible exposure limit is 10 ppm.
- Methane (CH₄) –Permissible exposure limit is 10% of the lower explosive limit (LEL).

All entrants need to be trained and familiar with our Bump Testing/Air Sampling policy. Prior to entering trenches deeper than 4 feet a quality assurance “Bump Test” of the 4:1 monitor must be performed and recorded. Bump Testing uses a calibration gas mixture with known concentrations of gases that will “bump” and confirm each of the 4:1 monitor sensors are performing as expected. All entrants should witness the bump test before entering the trench/excavation.

The initial air sampling profile of the trench/excavation shall test at various levels (e.g., top, middle and bottom of the space). After profiling the atmospheric volume of the confined space the 4:1 monitor shall be placed in the position that will provide the earliest means of warning to workers. For example in spaces where exhaust fumes, that are heavier than air, could drift into and settle in the space the 4:1 monitor shall be positioned near the workers breathing zone. For fumes that are lighter than air the 4:1 monitor shall be positioned above the workers breathing zone.

Continuous monitoring is required throughout the course of the work. Results must be recorded on the air sampling log before entrants enter the space to begin work. Periodic tests must be recorded at least every hour.

Ventilation of the Space

Whenever existing ventilation is insufficient to remove potentially dangerous air contamination or unfavorable contamination could drift into the space due to natural ventilation forced ventilation of the confined space is required. Potentially hazardous atmospheres will require continuous ventilation of the space. Ventilation must be at a rate of at least 4 times the volume of air in the space per hour. Always use mechanical ventilation, fans or ventilators. Make sure the air supply to the ventilator is not contaminated. If using a gas powered ventilation system, do not allow the ventilator to exhaust into the space. Powered industrial equipment, generators and vehicles shall be kept well away from the ventilator to ensure exhaust fumes do not drift or migrate into the air intake system of the ventilator. The ventilator must be placed far enough from the space as to not re-circulate the air from the space, back into the space. There may be no hazardous atmosphere within the space whenever any worker is inside the space.

Continuous forced air ventilation shall be used as follows: A worker may not enter the space until the forced air ventilation has eliminated any hazardous atmosphere. The forced air ventilation shall be so directed as to ventilate the immediate areas where a worker is or will be present within the space and shall continue until all workers have left the space. The air supply for the forced air ventilation shall be from a clean source and may not increase the hazards in the space.

The forced ventilation must be directed to ventilate the immediate area where workers are performing their duties as well as where the workers will be performing their duties. Ribbons or flags shall be attached to the forced ventilation device as a visual indicator of performance. In the event that the ventilation system stops working entrants shall exit the space immediately.

The atmosphere within the space shall be monitored continuously and periodically to ensure that continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere. Readings shall be recorded on the log a minimum of four times a day (example: beginning of shift or entry, after breaks, and after lunch), the results will be recorded. If a hazardous atmosphere is detected during entry: Each worker shall leave the space immediately. The space shall be evaluated to determine how

the hazardous atmosphere developed. Measures shall be implemented to protect workers from hazardous atmosphere before any subsequent entry takes place.

Emergency Response/Rescue

In situations where a hazardous environment is present elements of our Confined Space program will apply. Specifically, attendants, communication and rescue. Whenever hazardous excavations/trenches (hazardous atmosphere or bell bottom style pier holes) are entered each worker shall wear a full body harness connected to a lifeline that extends outside the trench as is monitored by an attendant. This lifeline shall be used for rescue purposes only. Emergency supplies to enable resuscitations and first aid shall be staged near the attendant such that they can be deployed immediately

Fall protection

Each employee working at the edge of an excavation 7 – ½ feet or more deep shall be protected from falling. Fall protection shall include guardrail systems, fences, barricades, covers, or a fall restraint system.

Protection from Water Accumulation Hazards

Workers are not permitted to work in excavations that contain or are accumulating water unless precautions have been taken to protect them from the hazards posed by water accumulation. Precautions may include special support or shield systems to protect from cave-ins, water removal to control the level of accumulating water, or use of safety harnesses and lifelines.

Walkways and Guardrails

Walkways shall be provided where workers or equipment are permitted to cross over excavations. Guardrails shall be provided where walkways, are 7-1/2 feet or more above lower levels.

Stability of Adjacent Structures

Support systems (such as shoring, bracing, or underpinning) shall be used to assure the stability of structures and the protection of employees where excavation operations could affect the stability of adjoining buildings, walls, or other structures.

Excavation below the level of the base or footing of any foundation or retaining wall that could be reasonably expected to pose a hazard to employees shall not be permitted, except when: 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 registered professional engineer has approved the determination that the structure is sufficiently removed from the excavation so as to be unaffected by the excavation activity; or a registered professional engineer has approved the determination that such excavation work will not pose a hazard to employees.

Sidewalks, pavements, and appurtenant structures shall not be undermined unless a support system or other method of protection is provided to protect employees from the possible collapse of such structures.

Protection from Falling Objects and Loose Rocks or Soil

Adequate protection shall be provided to protect employees from loose rock or soil that could pose a hazard by falling or rolling from an excavation face. Such protection shall consist of: scaling to remove loose material; installation of protective barricades, such as wire mesh or timber, at appropriate intervals on the face of the slope to stop and contain falling material; or benching sufficient to contain falling material.

Excavation personnel shall not be permitted to work above one another where the danger of falling rock or earth exists. Employees shall be protected from excavated materials, equipment, or other materials that could pose a hazard by falling or rolling into excavations. Protection shall be provided by keeping such materials or equipment at least 2 feet from the edge of excavations, by use of restraining devices that are sufficient to prevent materials or equipment from falling or rolling into excavations, or by a combination of both if necessary. Materials piled, grouped, or stacked near the edge of an excavation must be stable and self-supporting.

Daily Inspection

The competent person shall conduct daily inspections of excavations, adjacent areas, and protective systems for evidence of a situation that could result in possible cave-ins, failure of protective systems, hazardous atmospheres, or other hazardous conditions. An inspection 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. These inspections are only required when the trench will be or is occupied by employees.

Where the competent person finds evidence of a situation that could result in a possible cave-in, failure of protective systems, hazardous atmosphere, or other hazardous conditions, exposed employees shall be removed from the hazardous area until precautions have been taken to assure their safety.

The competent person shall maintain a written log of all inspections conducted. This log shall include the date, work site location, results of the inspection, and a summary of any action taken to correct existing hazards.

Classification of Soil Types

The soil classification system means a method of categorizing soil and rock deposits in a hierarchy of Stable Rock, Type A, Type B, and Type C, in decreasing order of stability. Stable rock means natural solid mineral matter that can be excavated with vertical sides and remain intact while exposed.

Type A means: cohesive soils with an unconfined, compressive strength of 1.5 ton per square foot (tsf) (144 kPa) or greater. Examples of cohesive soils are: clay, silty clay, sandy clay, clay loam and, in some cases, silty clay loam and sandy clay loam. Cemented soils such as caliche and hardpan are also considered Type A. However, no soil is Type A if: The soil is fissured; or The soil is subject to vibration from heavy traffic, pile driving, or similar effects; or The soil has been previously disturbed; or The soil is part of a sloped, layered system where the layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or greater; or The material is subject to other factors that would require it to be classified as a less stable material.

However, no soil is Type A if: The soil is fissured. The soil is subject to vibration from heavy traffic, pile driving, or similar effects. The soil has been previously disturbed. The soil is part of a sloped, layered system where the layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or greater. The material is subject to other factors that would require it to be classified as a less stable material.

Type B means: Cohesive soil with an unconfined compressive strength greater than 0.5 tsf (48 kPa) but less than 1.5 tsf (144 kPa); or Granular cohesionless soils including: angular gravel (similar to crushed rock), silt, silt loam, sandy loam and, in some cases, silty clay loam and sandy clay loam. Previously disturbed soils except those which would otherwise be classed as Type C soil that meets the unconfined compressive strength or cementation requirements for Type A, but is fissured or subject to vibration; or Dry rock that is not stable; or Material that is part of a sloped, layered system where the layers dip into the excavation on a slope less steep than four horizontal to one vertical (4H:1V), but only if the material would otherwise be classified as Type B.

Type C means: Cohesive soil with an unconfined compressive strength of 0.5 tsf (48 kPa) or less; or Granular soils including gravel, sand, and loamy sand; or Submerged soil or soil from which water is freely seeping; or Submerged rock that is not stable, or Material in a sloped, layered system where the layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or steeper.

MAXIMUM ALLOWABLE SLOPES

SOIL OR ROCK TYPE	MAXIMUM ALLOWABLE SLOPES (H:V)(1) FOR EXCAVATIONS LESS THAN 20 FEET DEEP(3)
STABLE ROCK	VERTICAL (90°)
TYPE A (2)	3/4:1 (53°)
TYPE B	1:1 (45°)
TYPE C	1 ½:1 (34°)

Footnote (1) Numbers shown in parentheses next to maximum allowable slopes are angles expressed in degrees from the horizontal. Angles have been rounded off.

Footnote(2) A short-term maximum allowable slope of 1/2H:1V (63°) is allowed in excavations in Type A soil that are 12 feet (3.67 m) or less in depth. Short-term maximum allowable slopes for excavations greater than 12 feet (3.67 m) in depth shall be 3/4H:1V (53°).

Footnote (3) Sloping or benching for excavations greater than 20 feet deep shall be designed by a registered professional engineer.

Slope Configurations

(All slopes stated below are in the horizontal to vertical ratio)

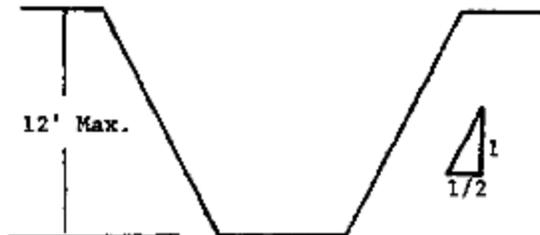
Excavations made in Type A soil.

All simple slope excavation 20 feet or less in depth shall have a maximum allowable slope of $\frac{3}{4}$:1.



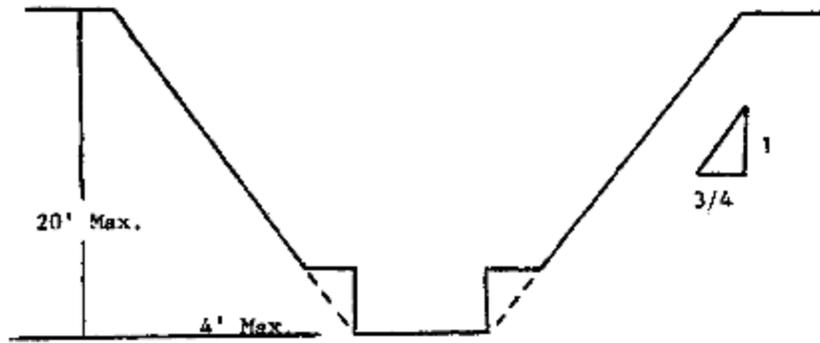
SIMPLE SLOPE -- GENERAL

Exception: Simple slope excavations which are open 24 hours or less (short term) and which are 12 feet or less in depth shall have a maximum allowable slope of $\frac{1}{2}$:1.

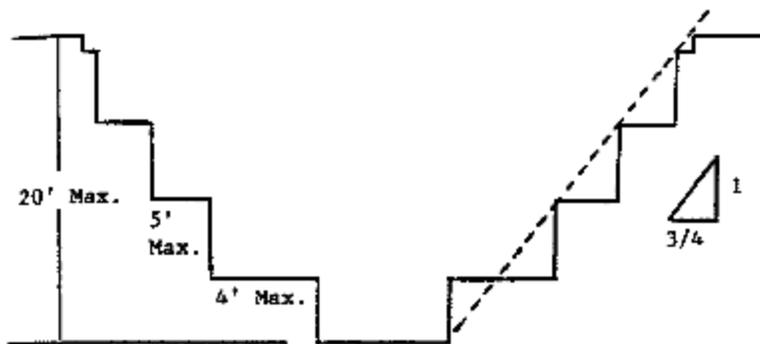


SIMPLE SLOPE -- SHORT TERM

All benched excavations 20 feet or less in depth shall have a maximum allowable slope of $\frac{3}{4}$ to 1 and maximum bench dimensions as follows:

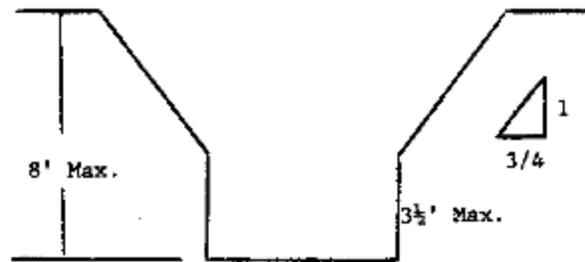


SIMPLE BENCH



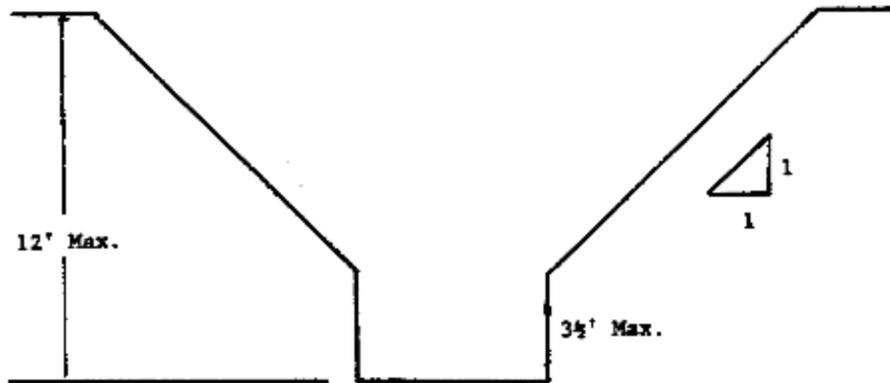
MULTIPLE BENCH

All excavations 8 feet or less in depth which have unsupported vertically sided lower portions shall have a maximum vertical side of 3½ feet.



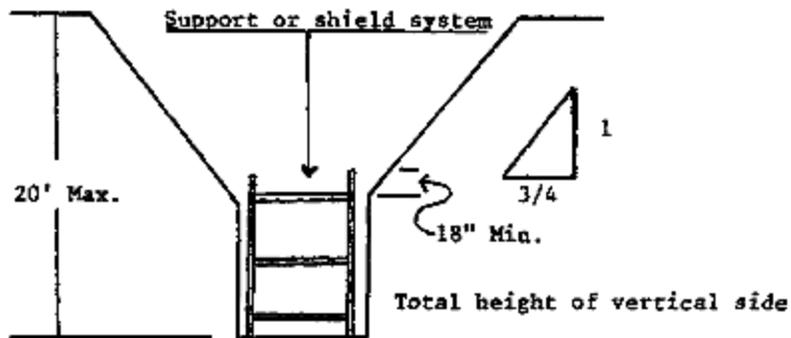
UNSUPPORTED VERTICALLY SIDED LOWER PORTION -- MAXIMUM 8 FEET IN DEPTH)

All excavations more than 8 feet but not more than 12 feet in depth with unsupported vertically sided lower portions shall have a maximum allowable slope of 1:1 and a maximum vertical side of 3½ feet.



UNSUPPORTED VERTICALLY SIDED LOWER PORTION -- MAXIMUM 12 FEET IN DEPTH)

All excavations 20 feet or less in depth which have vertically sided lower portions that are supported or shielded shall have a maximum allowable slope of $\frac{3}{4}$:1. The support or shield system must extend at least 18 inches above the top of the vertical side.

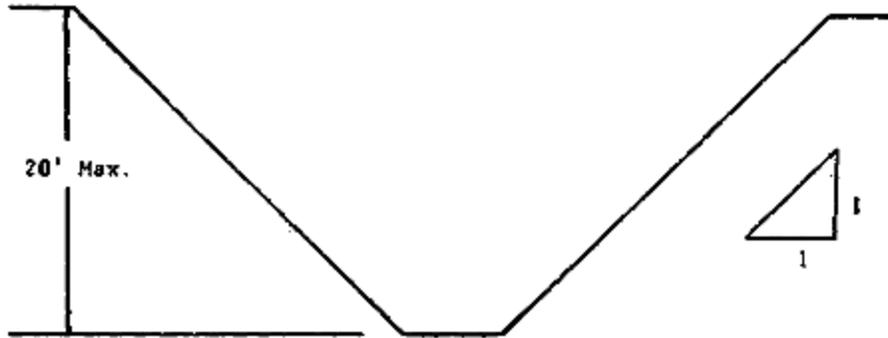


SUPPORTED OR SHIELDED VERTICALLY SIDED LOWER PORTION

All other simple slope, compound slope, and vertically sided lower portion excavations shall be in accordance with the other options permitted under § 1926.652(b).

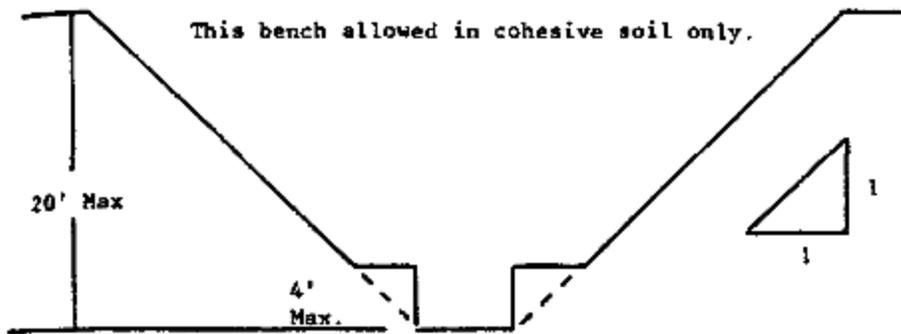
Excavations Made in Type B Soil

All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of 1:1.

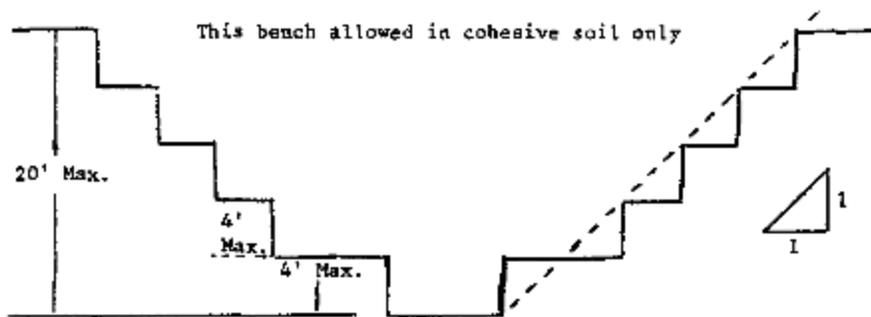


SIMPLE SLOPE

All benched excavations 20 feet or less in depth shall have a maximum allowable slope of 1:1 and maximum bench dimensions as follows:

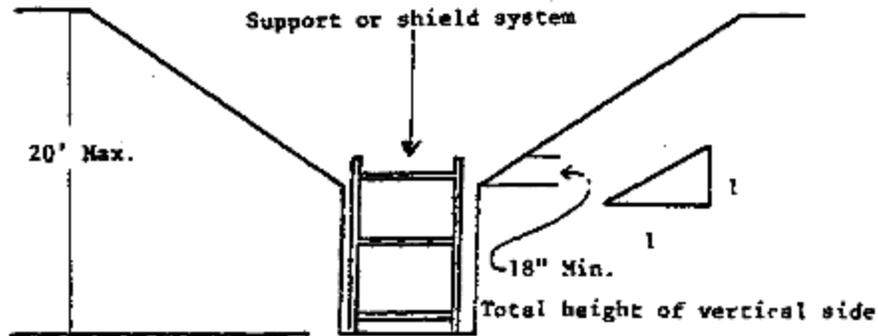


SINGLE BENCH



MULTIPLE BENCH

All excavations 20 feet or less in depth which have vertically sided lower portions shall be shielded or supported to a height at least 18 inches above the top of the vertical side. All such excavations shall have a maximum allowable slope of 1:1.

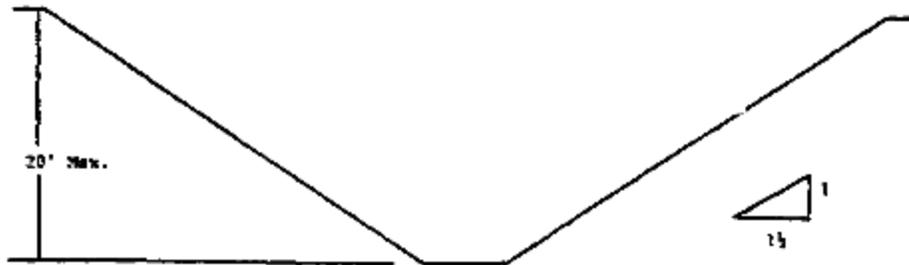


VERTICALLY SIDED LOWER PORTION

All other sloped excavations shall be in accordance with the other options permitted in § 1926.652(b).

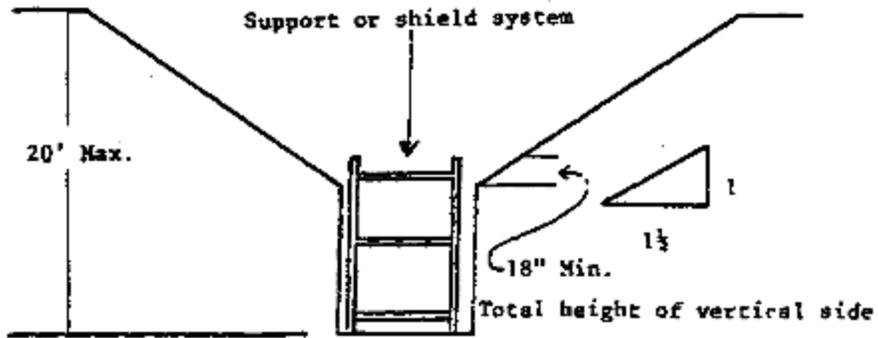
Excavations Made in Type C Soil

All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of 1½:1.



SIMPLE SLOPE

All excavations 20 feet or less in depth which have vertically sided lower portions shall be shielded or supported to a height at least 18 inches above the top of the vertical side. All such excavations shall have a maximum allowable slope of 1½:1.

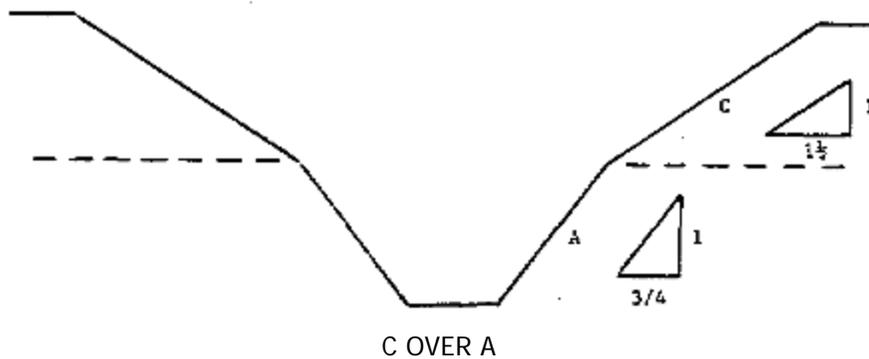
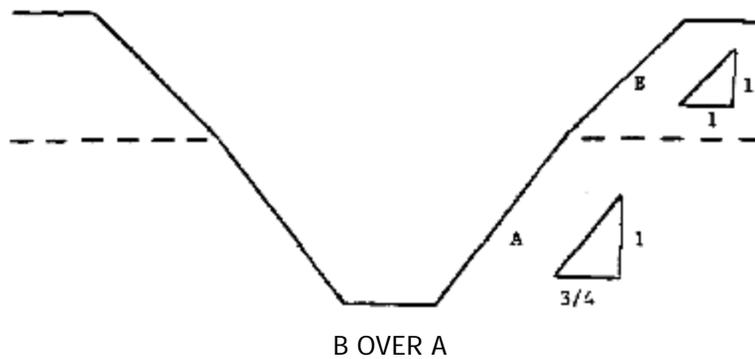


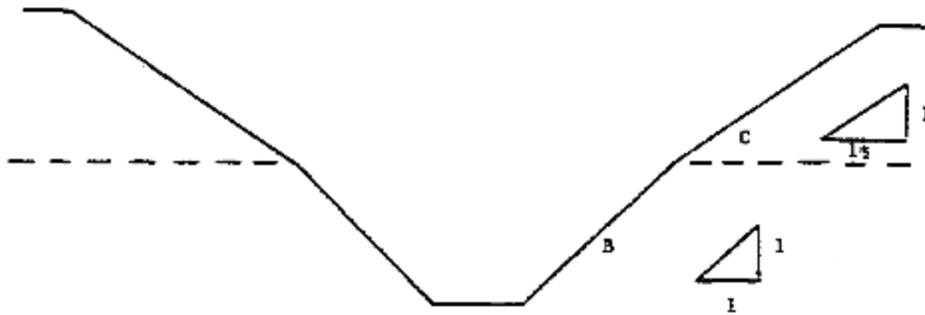
VERTICAL SIDED LOWER PORTION

All other sloped excavations shall be in accordance with the other options permitted in § 1926.652(b).

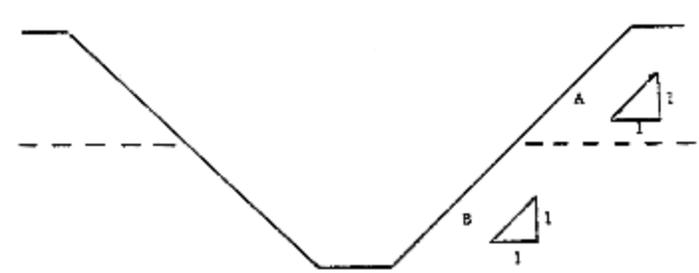
Excavations Made in Layered Soils

All excavations 20 feet or less in depth made in layered soils shall have a maximum allowable slope for each layer as set forth below.

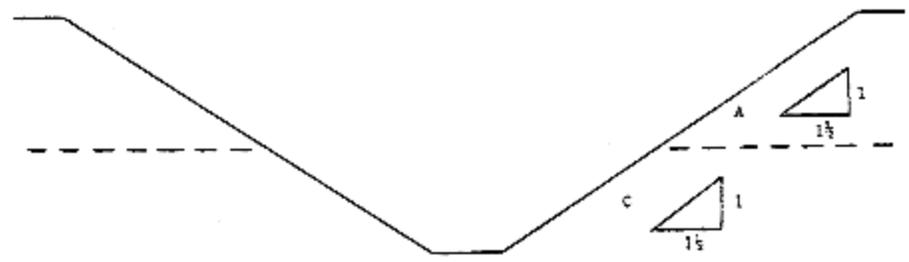




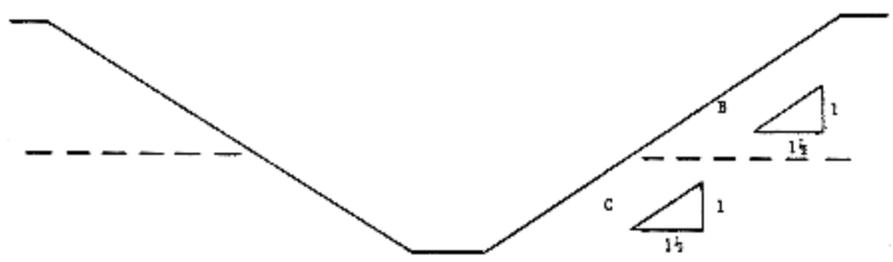
C OVER B



A OVER B



A OVER C



B OVER C

Protection of Systems

Workers in an excavation shall be protected from cave-ins by using either an adequate sloping and benching system or an adequate support or protective system. The only exceptions are: excavations made entirely in stable rock; or excavations less than 5 feet in depth.

Protective systems shall be capable of resisting all loads that could reasonably be expected to be applied to the system.

Sloping and Benching Systems

The slope and configuration of sloping and benching systems shall be selected and constructed by the competent person in accordance with the following options: Excavations shall be sloped at an angle no steeper than one and one-half (1 ½) horizontal to one (1) vertical (34 degrees measured from the horizontal), unless one of the options listed below is used. Slopes shall be properly excavated depending on soil type as shown in 29 CFR 1926, Subpart P, Appendix B.

Support, Shield, and Other Protective Systems

Support systems, shield systems, and other protective systems shall be selected and constructed by the competent person in accordance with the following requirements: Designs using 29 CFR 1926, Subpart P, Appendices A, C and D. Aluminum hydraulic shoring shall be designed in accordance with the manufacturer's tabulated data or the requirements of the OSHA guidelines.

Support systems, shield systems, and other protective systems designed from manufacturer's tabulated data shall be constructed and used in accordance with all specifications, recommendations, and limitations issued or made by the manufacturer.

Alterations or modifications from the specifications, recommendations, and limitations issued or made by the manufacturer shall be allowed only after the manufacturer issues specific written approval. The manufacturer's written approval to deviate from the specifications, recommendations, and limitations, shall be kept in written form at the jobsite during construction of the protective system(s).

Materials and Equipment

Materials and equipment used for protective systems shall be free from damage or defects that might affect their proper function. Manufactured materials and equipment used for protective systems shall be used and maintained in accordance with the recommendations of the manufacturer, and in a manner that will prevent employee exposure to hazards.

When materials or equipment used for protective systems are damaged they shall be removed from service. The material or equipment shall then be evaluated and approved by a registered professional engineer before being returned to service.

Installation and Removal of Supports

Installation of a support system shall be closely coordinated with the excavation of trenches. Members of support systems shall be securely connected together to prevent sliding, falling, kickouts, or other potential hazards. Support systems shall be installed and removed in a manner that protects employees from cave-ins, structural collapses, or from being struck by members of the support systems. Individual members of the support systems shall not be subjected to loads exceeding those that they were designed to support.

Removal of support systems shall begin at, and progress from, the bottom of the excavation. Members shall be released slowly. If there is any indication of possible failure of the remaining members of the structure or possible cave-in of the sides of the excavation, the work shall be halted until it can be examined by the competent person.

Backfilling shall progress in conjunction with the removal of support systems from excavations.

Excavation of material to a level no greater than two (2) feet below the bottom of the members of a support system is allowed, but only if the system is designed to resist the forces calculated for the full depth of the trench. There shall be no indications of a possible loss of soil from behind or below the bottom of the support system while the trench is open.

Shield Systems

Employees are not permitted in trenches when shields are being installed, removed, or moved vertically. Shield systems shall not be subjected to loads that are greater than those they are designed to withstand. Shields shall be installed in a manner that will restrict lateral or other hazardous movement of the shield and could occur during cave-in or unexpected soil movement.

Excavation of material to a level no greater than two (2) feet below the bottom of the shield system is allowed, but only if the system is designed to resist the forces calculated for the full depth of the trench. There shall be no indications of a possible loss of soil from behind or below the bottom of the shield system while the trench is open.

Accident Investigations

All incidents that result in injury to workers, as well as near misses, regardless of their nature, shall be reported and investigated. Investigations shall be conducted by Dave Simpson as soon after an incident as possible to identify the cause and means of prevention to eliminate the risk of reoccurrence.

In the event of such an incident, the Excavation Safety Program shall be reevaluated to determine if additional practices, procedures, or training are necessary to prevent similar future incidents.

Changes to the Program

Any changes to the Excavation Safety Program shall be approved by Dave Simpson and the members of the safety committee. Affected employees shall be notified of procedure changes, and trained if necessary.