



Proof of Training (revised August 8, 2017)

Print name: _____ Signature: _____ Date: _____

Ground Disturbance Policy

Purpose

Provide the safest possible conditions under which ground disturbance operations can be carried out. Striking an underground utility could have catastrophic results. It is crucial that proper procedures are followed so that underground utilities are not damaged and people are not injured or killed. This policy is closely linked to our Trenching and Excavation Policy.

Scope

This policy will apply to all work performed by Unger Construction employees and subcontractors (workers) including, but not limited to, the following activities: construction, installation, demolition, remodeling, relocation, and refurbishment.

Ground disturbance includes scraping, digging, drilling, grading, ripping, saw cutting, jack hammering, dragging, probing and includes the removal of cement flatwork, or asphalt. As the ground disturbance evolves in depth, greater than 2 feet deep, workers shall transition from this policy to the Trenching and Excavation policy.

Objective

The objective of this policy is to ensure the safety of workers and prevent business interruptions to the client. All ground disturbance activities performed by Unger Construction or our subcontractors must be conducted in accordance with this program and be consistent with regulatory requirements. Before trenching, excavating, saw cutting, or digging, Unger Construction's policy is to perform an underground survey using an independent third party survey firm.

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 shall ensure that the area has been properly marked by the utility locator (USA North 811), the USA North ticket is on the jobsite and the markings are preserved for the duration of the task.

Supervisors are responsible for ensuring that ground disturbances deeper than 2 feet transition to and follow our Trenching and Excavation policy.

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

Before any employee is allowed to work in or around ground disturbances must be trained according to the work they will be performing.

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.

Retraining

The need for retraining will be indicated when: An employee's work habits or knowledge indicate a lack of necessary understanding, motivation or skills required to properly work alone, New equipment is installed that requires new or different procedures, Changes in the workplace make previous training obsolete, or upon a supervisor request.

Discussion

Public utilities and our clients have been installing a large variety of underground utilities for decades. The utilities are often times not shown on as built drawings, their exact location cannot be determined. Underground utilities can be at various depths, an assortment of sizes and materials of construction; they can be buried alone, as part of a bundle or in a joint trench. This presents a risk for anyone performing ground disturbance or excavation operations. The most important step is to determine if there are underground utilities in the vicinity which is why an underground survey must be performed.

What types of work require utility location? Any and all excavations. An excavation is defined as any operation in which earth, rock or other material in the ground is moved, removed or otherwise displaced by tools, equipment or explosives including but not limited to: grading, trenching, digging, ditching, drilling, augering, tunneling, boring, scraping, or pile driving. This include any operation, in which concrete, asphalt or other in or on the ground material is moved, removed or otherwise displaced.

Underground utility is any pipeline system, tank, vessel, wire, conduit, cable or structure which is buried for use with storage, conveyance or transmission of electronic communication systems, fiber optic systems, electrical, oil, natural gas, hazardous liquids, water, stormwater and sewer systems. Per the regulations "excavation" means 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)

Due to the number of incidents involving "strikes" to underground utilities, the utility companies in some jurisdictions have established field inspectors to proactively look for contractors that are not following regulations. The inspectors are in unmarked cars, driving around looking for construction activity.

Information for USA North 811 (Call Before You Dig)

811 is free and is required by law.

Any person planning to conduct an excavation shall contact USA North (811) at least 2 full working days not including the day of notification (excluding weekends and holidays) but not more than 14 calendar days prior to commencing excavation. The date of notification shall not count as part of the two-working-day notice.

A permission to dig "ticket" is valid for 28 days from the date of issuance. If work continues beyond 28 days the ticket needs to be renewed by accessing the web site <http://usanorth811.org/excavators/> or by calling "811" before the end of the 28th day. If a ticket expires but work is ongoing, the excavator shall obtain a new ticket. Work must stop until a new ticket is issued.

Tickets to dig are issued to the party requesting the ticket. In situations where more than one party will participate in the dig each entity will need their own ticket. A record of all notifications and tickets shall be maintained for a least 3 years. Records shall be kept on the project specific shared drive folder.

If the field markings are no longer visible the excavator shall cease work until the locator can remark the area.

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. An excavator may use hydro-excavation (vacuum) equipment to expose subsurface installations within the tolerance zone if the excavator has contacted the operator of the utility and has received written permission (email, text).

USA North 811 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 (811) 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.

Citations and penalties for non-compliance are significant

\$10,000.00 for an excavator who negligently violates any provision of California Code 4126

\$50,000.00 if you are caught digging without a USA North ticket

Removal/suspension of your contractor's license from the Contractors State Licensing Board

Methods of Detecting Underground Utilities

There are numerous methods to detect underground utilities including but not limited to: passive, electromagnetic induction, conduction, ground penetrating radar, x-ray and acoustic. Each has advantages and limitations. Unger Construction prefers to use ground penetrating radar, active electromagnetic induction and/or active conduction.

Passive: searching that requires the detector to pick up an electrical or radio frequency that is being emitted from the buried utility. This is the least reliable means of detection, giving only a general indication of a large area.

Electromagnetic Induction: requires the use of a detector system equipped with a transmitter. The transmitter produces a frequency that is carried by the buried utility. Electromagnetic induction relies on the presence of a magnetic field around a conductor. They are only effective in finding things that are metallic. As the detector passes over the buried utility it can detect it. This method generally provides accuracy to within inches however the presence of multiple shallow conductors can make locating conductors below them difficult. Electromagnetic induction will not find gas lines, fiber optics lines, direct buried cable, cementitious ducts or nonmetallic sewer, stormwater and water lines.

Conduction: requires the transmitter be directly connected to the buried utility introducing a signal that is transmitted through the buried utility. This method produces accuracy to within inches.

Ground Penetrating Radar: a transmitter sends radar waves into the soil and the receiver measures dielectric constants that return to the detector. When the data is interpreted a three dimensional image can be created.

X-ray: requires 2 sided access. Film needs to be placed on one side and the radiation source on the other. X-ray allows the identification of various materials with concrete such as conduit, rebar, post tensioned cable and can locate non-conductive materials. X-ray is very accurate, with tolerances to less than 1/16 of an inch.

Acoustic (sound waves): a soundwave is introduced via a transmitter then the receiver listens for where the sound is emitted. Sound waves can be used to locate plastic lines such as water and gas lines.

Underground Utilities Covered by 811

In most cases only the public utilities are located and then only to the meter, demarcation point or property line. The lines beyond these points are generally considered private lines. Normally private lines are located by a third party locator. Some local water and sewer utilities do not participate in the 811 system so they should be contacted directly.

Accuracy of Locator Marks

Locator marks are not always accurate therefore Unger Construction utilizes a tolerance zone of 2 feet. In other words the utility is likely within 2 feet of the locators mark. The boundaries of our tolerance zone are 2 feet on either side of the outside edge of the locators mark. Work inside this tolerance zone requires special procedures. There are a number of factors that contribute to the difference in the locators mark and the actual location of the utility including but not limited to: equipment calibration, operator error, sources of interference, other nearby utilities.

The locator markings are estimates of horizontal location. The only way to determine the actual location and depth is to safely expose and visually confirm it by physically measurement. Note the depth can vary significantly (several feet in either direction) throughout the run of the utility. However, we need the exact depth and location which requires soft hand digging, hydro-excavation.

Interpreting the Locate Markings

Uniform Color Code

Blue = Water	Green = Sewer or Storm water	Orange = Communications
Pink = Survey	Purple = Reclaimed water	Red = Electrical
Yellow = Gas	White = proposed excavation area (boundary)	

Controlling the Risks

Pretask Planning

Collect all available documentation, as built drawings. Perform a site walk. Look for visible surface structures, valve box, vault, manhole covers, conduits or pipes routed above ground. Contact 811 and open a ground survey ticket.

White Lining

White lining is used to clearly identify the ground disturbance/excavation site for the locator. White lining needs to be done soon after the call is placed to 811. The white line should be 1 inch wide and solid or 1 inch wide dashes of a length between 6-12 inches. White flags can also be used.

Preserving the Markings

It is critical to maintain the locate marks. Locate marks could be altered or destroyed during the ground disruption or excavation process. Take several photographs of the markings from several positions. Pay particular attention to the locate notes. Swing tie or cross reference the locate marks in case they get disturbed, moved or destroyed. This can be done by staking references points outside of the immediate work area. If the field markings are no longer visible the excavator shall cease work until the locator can remark the area.

After Location but Before Starting Work

Some public utilities have several subcontractors performing underground surveys. This could mean that even though you have ground markings the survey is not yet complete. Before you start work ensure the ticket is closed and that all locating services have been performed. Keep the records onsite. Ticket numbers and a copy of the ticket must be onsite (our foreman and the excavator foreman).

If the Area is Not Marked

If the area is not marked as “clear” or “no underground utilities” contact 811 for written confirmation that the underground survey has been completed.

Working in the Tolerance Zone

Excavation adjacent to underground utilities shall be done with care and then only after determining the exact location of them. Hydro-excavators, probes and hand digging (soft digging no pry bars, picks or other sharp pointed tools) or appropriate combination shall be used to locate buried utilities prior to beginning mechanical excavation.

An excavator may use hydro-excavation (vacuum) equipment to expose subsurface installations within the tolerance zone if the excavator has contacted the operator of the utility and has received written permission (email, text).

Hydro-excavating uses a jet stream of water and a large suction pipe attached to a truck mounted pump to remove dirt/rock and nearly everything else in its way. Hydro-excavation can be used to probe holes up to 8 feet deep with very little damage to the area. Hydro excavators use pressurized water to loosen soil and then vacuum to remove the soil. Generally speaking the hole diameter is 6 inches, which may require multiple probes or sweeping to locate the utility.

Traffic Control

Vehicle and pedestrian traffic must be controlled via barricades, double rows of tape (top and middle of delineator), signs and or a flagger.

Protecting Underground Utilities

After exposing underground installations they must be protected by barricades, shoring, suspension, or other means as necessary to protect employees and the utility itself.

Spotters

When using mechanized excavation equipment near underground utilities a spotter shall be used to assist the operator in locating underground utilities. Spotters shall look for differences in soil types (sand, gravel, non-native material, engineered fill) that would indicate a previously back filled trench, flagging tape, tracer wires or anything that would indicate non-native soil.

Immediately Report Scrapes, Dents, Gouges or other Damage

Contact the utility operator immediately if you hit, dent, scrape or otherwise potentially damage a utility. Even small scrapes, dents, nicks in protective coatings need to be assessed by the utility to prevent future problems.

Signs of a Leak

Unusual smell for example (petroleum, pungent odor, sulfur, rotten eggs). Some leaks are odorless, use your sense of sight (dirt, debris blowing around, white cloud or fogging, frost build up. Some leaks cannot be seen but can be heard (hissing, gurgling or roaring). If you see, hear, smell signs of a leak immediately leave the area in the upwind direction. Warn others to evacuate the area and stay away from the area. Call 911 from a safe distance.