



HIGH HAZARD CONTRACT ADDENDUM

**AMEREN CUSTOMER OPERATIONS, TRANSMISSION
& DISTRIBUTION**

Dated 05/31/2025



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1.0 **List of Acronyms**

ACM	Asbestos Containing Material
AED	Automatic External Defibrillator
ANSI	American National Standard Institute
ASP	Associate Safety Professional
CER	Contractor Event Report
CPR	Cardiopulmonary Resuscitation
CRF	Code of Federal Regulations
CSP	Certified Safety Professional
GFCI	Ground Fault Circuit Interrupters
DHHS	Department of Health and Human Services
EEL	Edison Electrical Institute
FR	Fire-Retardant
GPR	Ground penetrating radar
ISEA	International Safety Equipment Association
JTSA	Job Task Safety Analysis
kV	Kilovolt
lb./ft	Pounds per Foot
MAD	Minimum Approach Distances
mg/dl	Milligrams per Deciliter
MUTCD	Manual Uniform Traffic Control Devices
NFPA	National Fire Protection Association
ng/ml	Nanograms per Milliliter
NIDA	National Institute on Drug Abuse
NSC	National Safety Council
OAS	Outage Number
OTG	Over the Glass
POC	Point of Contact
PPE	Personal Protective Equipment
RAZ	Restricted Access Zone
S1S	Safety1Source
SAMHSA	Substance Abuse Mental Health Service Administration
SARA	Superfund Amendments and Reauthorization Act
SDS	Safety Data Sheets
SRL	Self-Retracting Lifeline
SRM	Supplier Relationship Management
SSSP	Site-Specific Safety Plan
VAC	Volts of Alternating Current
WPA	Workers Protection Assurance

2.0 GENERAL CONTRACTOR SAFETY REQUIREMENTS

Contractor, its personnel, and Subcontractor's personnel are responsible for their safety.

2.1 Contractor General Requirements

- 2.1.1 At all times Contractor shall perform its work in conformance with good safety practices, as well as the requirements of applicable laws, ordinances, and regulations. Contractor shall furnish safety equipment to its personnel as necessary to meet these practices and requirements.
- 2.1.2 Contractor shall be solely responsible at all times for enforcement of its safety plan and the safe work practices of its personnel and its Subcontractors' personnel. Contractor shall complete the Ameren Site-Specific Safety Plan (SSSP) form or Safety Action Plan **as applicable** and submit it for review by Ameren before work commences. Contractor's safety plan and the Ameren SSSP shall be kept at the work site. Contractor shall confirm and obtain the most recent version of the SSSP template from Ameren.
- 2.1.3 Caution and safety rules must be followed at all times to eliminate potential personnel injury as well as equipment damage or unintentional outages.
 - 2.1.3.1 Contractor personnel, and any non-Contractor personnel (i.e. guests, vendors, etc.) visiting the job site, shall be made thoroughly aware of all hazards and wear proper personal protective equipment (PPE). Personnel entering an energized substation shall obtain the required substation entry training. Non-electrical workers shall have documents verifying substation entry training on-site for inspection (PowerSafe stickers, roster, training records, etc...). Certain Substations may also require additional NERC training and Personal Risk Assessment consult with your Ameren Supervisor regarding the security determination of substations contractor/subcontractor will be working in.
- 2.1.4 Contractor shall, at all times, maintain safe minimum approach distances (MAD) or minimum clearances depending on their discipline (Electrical, Civil, Vegetation, Specialty), of both equipment and personnel from energized equipment. Contractor shall provide adequate protection and take necessary precautions when performing work in the vicinity of energized equipment.
- 2.1.5 Substations, transmission, and distribution lines may be energized with exposed conductors and equipment. Reference A2.1, A2.2, and A2.3 (Information Transfer Documents).

- 2.1.6 It is necessary to assure the safety of contract personnel and Ameren personnel throughout construction of new system equipment and/or modification of existing system equipment. All contractors and subcontractors must always follow Workers Protection Assurance (WPA) Procedures (see the latest WPA manual provided to you by your business segment). Contractor shall at all times conform to Ameren's WPA operating procedures. Contractor shall coordinate, obtain, and release all outages and clearances per Workers Protection Assurance (WPA) criteria contained within the most recent Ameren WPA Procedures and Guidelines manual.
- 2.1.7 At a minimum, the Contractor shall provide a designated safety representative such as a superintendent, general foreman, or foreman, onsite while work (including deliveries and pick-ups) is being performed to provide safety oversight. The designated safety representative must be the single point of contact for safety related questions or incidents, hold safety meetings as required, ensure daily job briefings are complete and thorough, prepare safety reports, etc.
- 2.1.8 At the discretion of Ameren, if at any time the safety performance of a Contractor is deemed inadequate Contractor shall be required to staff a full-time dedicated Safety Professional on the specific project at no additional cost to Ameren to oversee safety for the remainder of the project, or until Ameren deems the full-time dedicated Safety Professional is no longer required. This requirement is independent of the Safety Professional requirement addressed in other sections of this document. Based on the Contractor's safety performance, Ameren may require the Contractor to provide a dedicated Safety Professional for all the Contractor's current/future projects, at no additional cost to Ameren. Ameren reserves the right to interview and accept all Safety Professionals identified by Contractor. The full-time dedicated safety professional must meet the following minimum requirements:
- 2.1.8.1 OSHA 30 Hour in Construction or 20 Hour T & D.
- 2.1.9 Ameren Supervisor will act as Ameren's direct representative concerning all safety matters.
- 2.1.10 Contractor and its Subcontractors' representatives shall complete all required safety training and familiarize themselves with all safety rules, regulations, and project specific hazards prior to their arrival at the Jobsite ensuring safe execution of the project.
- 2.1.11 Contractor and Subcontractor personnel shall be able to clearly identify with whom they are employed upon request.

- 2.1.12 Contractor/Subcontractor shall administer disciplinary action they deem appropriate for violation of safety regulations/requirements.
- 2.1.13 All Contractors/Subcontractors must hold daily job briefings per OSHA 1910.269(c)/1926.952. Contractor/subcontractor shall conduct a documented verbal job briefing session prior to any work with all personnel that enter their work area including planned and unplanned job site visitors. Prior to work each person briefed (including visitors) shall be documented on the job briefing form indicating that they have been made aware of the hazards as indicated on the job briefing form. Should the job scope or conditions change throughout the day, Contractor/Subcontractor shall conduct a new job briefing. If multiple Contractors/Subcontractors are working at the site, a sharing of job briefings between the Contractor foremen is required as well as foreman name and company name documented on the job briefing forms to indicate that sharing of potential site hazards has been discussed. A copy of the job briefing shall be provided for review upon request by any Ameren representative.
- 2.1.14 All moving/rolling equipment shall be inspected prior to use. All inspections shall be documented. Equipment examples include but are not limited to: skid steers, forklifts, bull dozers, and man-lifts (boom/scissor).
- 2.1.15 Operators of forklifts, boom lifts, and all other machinery/motorized equipment shall be trained and certified (written documentation) on the operation of the specific equipment.
- 2.1.16 Ameren reserves the right to ban or bar any individual from a jobsite/Ameren property.

2.2 **Safe Work Practices**

- 2.2.1 All personal protective equipment (PPE) shall be compliant with the applicable OSHA 1910/1926 and ANSI standard, in good condition, and utilized appropriately for the hazards identified. Contractor/Subcontractor shall train their employees on use, care, and inspection of PPE and all other PPE requirements contained within the OSHA standard.

NOTE: Any exception made to these PPE requirements must be documented with a PPE hazard assessment and approved by contractor/sub-contractor safety professional. Documentation must be available for Ameren review.

- 2.2.2 Hard hats, hi-visibility apparel, safety toed protective footwear and safety glasses with side shields or wrap-around protective lenses shall be worn at all times in all locations on the Jobsite, except for operators inside a closed cab. Exceptions for hard hats may also be made inside a control

building or enclosure where the hard hat creates a hazard around sensitive equipment and there is no danger of head injury from impact, or from falling or flying objects, or from electrical shock and burns.

- 2.2.3 Contractor shall ensure that a protective hard hat designed to reduce electrical shock hazard is worn by each such affected employee when near exposed electrical conductors which could contact the head.
- 2.2.4 Hair shall be contained and not interfere with protective headgear.
- 2.2.5 Contractor shall ensure that each affected employee uses safety toed protective footwear at all times while working on Ameren projects or jobsites. The footwear will protect the affected employee from foot injuries due to falling or rolling objects and protect from objects piercing the sole. Contractor shall also ensure, when appropriate per OSHA, the use of protective footwear to protect the affected employee from an electrical hazard, such as a static-discharge or electric-shock hazard, that remains after the employer takes other necessary protective measures.
- 2.2.6 Over the glass (OTG) safety glasses shall be worn over non-safety rated prescription eyewear.
- 2.2.7 Goggles, foam-lined safety glasses, or face shields must be worn over safety glasses when there is potential for flying material/debris to come in contact with the workers face. Some of the activities that may require this additional PPE are grinding, chipping, jack hammering, power sawing, handling hazardous chemicals, pouring concrete, or performing other tasks that pose a splash/impact hazard that could result in face or eye injury. For additional guidance see 1910 Subpart I, Appendix B.
- 2.2.8 Appropriate gloves shall be worn to protect hands from cuts, burns, temperature extremes, chemicals, biological agents, or other hazards. The type of glove should be determined and utilized by conducting a job briefing/PPE hazard assessment.
- 2.2.9 Contractors shall wear approved hearing protection if the noise level exceeds 85 decibels or where hearing protection signs, stickers or equipment manuals indicate the need for hearing protection. Typically, determining when at the threshold of 85 decibels or more means having to speak louder than your normal tone of voice to be heard two-three feet away. In certain situations, like pile driving, double hearing protection (plugs and muffs) may be required.
- 2.2.10 Qualified electrical workers are required to wear fire-retardant (FR) PPE in good condition as required by OSHA. Arc Flash values and appropriate safe distances on the Ameren system are contained in the

Arc Flash Summary Table (Attachment A6). FR PPE must be suitable for the potential Arc Flash for the tasks being performed.

- 2.2.11 All personnel on the jobsite must wear a high visibility colored (high visibility green, high visibility yellow, high visibility pink, high visibility orange) garment as the outermost upper garment (vest, shirt, jacket) at all times. An ANSI/ISEA Class 2 or 3 high visibility reflective safety garment is required as the outermost upper garment when required by OSHA or MUTCD regulation. An exception is allowable for personnel while working aloft in a basket, bucket, man-lift, or tree. High visibility garments must be in good condition.
- 2.2.12 Shorts, shirts without sleeves or with less than a four inch sleeve or sleeves rolled up above the shoulder are not permitted on Ameren jobsites. Work clothes/garments shall be in good condition. No holes in work pants/work shirts, or any other garment deficiency that has potential to compromise one's safety.
- 2.2.13 Safety harnesses equipped with lanyard/lifeline (PFAS/ PFRS) attached to an approved anchorage are required when working on surfaces over four feet in height that are void of guardrails or other fall protection means. Mobile equipment (bulldozer, etc.) shall not be utilized as an anchorage point for fall arrest equipment.
- 2.2.14 In an effort to eliminate ejection hazards when using articulating boom lifts (man baskets/ buckets) fall restraint should be utilized not fall arrest.
- 2.2.15 Guardrail systems shall be OSHA compliant. Top edge height shall be 42 inches plus or minus 3 inches. Top edge shall be able to withstand 200 pounds of force and midrail sections shall be able to withstand 150 pounds of force as specified by OSHA. Guardrail systems shall be surfaced as to prevent injury to an employee from punctures and lacerations, and to prevent snagging of clothing.
- 2.2.16 Gas cylinders shall be secured upright at all times to prevent tipping. All gas cylinders shall be capped if a regulator is not installed. A 20-foot minimum separation shall be maintained for all oxy/acetylene cylinders while in storage. During welding activities, the oxy/acetylene cylinders may be placed on the same cart with a half hour fire rated shield that is a minimum of five feet in height. If the cylinders are to be utilized within 24 hours they may remain on the cart, otherwise they must be placed in storage with a minimum 20-foot separation.
- 2.2.17 During welding or "burning":
 - 2.2.17.1 Wear a welding helmet, safety glasses with appropriate shade, and leather gloves when welding. Respiratory

protection may be required when welding or burning certain materials. This not only applies to the person performing the hot work (i.e., the welder) but the welder's helper, fire watch, anyone else in the area exposed to the same hazards as the welder.

- 2.2.17.2 Use temporary shielding to protect personnel beside, above, and below the work; free falling of sparks below a cutter/welder's feet is not allowed.
- 2.2.17.3 Contain slag, sparks, etc.
- 2.2.17.4 Place weld rod stubs in containers after removal from stingers and place all other trash in appropriate containers.
- 2.2.18 For overhead work, man lifts with appropriate fall restraint are preferred over ladders.
- 2.2.19 All ladders shall be OSHA compliant, have appropriate labeling, and utilized appropriately for the task performed. A step/A-frame ladder shall not be utilized as an extension ladder. Extension ladders shall not be connected together to make one ladder.
- 2.2.20 Refer to OSHA/manufacturer guidelines for step or extension ladder use.
- 2.2.21 An authorized and Competent Person shall design and erect scaffolding. Only the authorized scaffolding erector can make changes to scaffolding.
- 2.2.22 An authorized and competent person shall inspect and tag scaffolding prior to initial use, before each work shift, and after any event that could affect its structural integrity. Untagged scaffolds shall not be used.
- 2.2.23 All electrical junction boxes, duct panels, etc., shall be kept closed whenever possible.
- 2.2.24 All fuel-powered equipment such as welders, generators, compressors, and power tools must be used such that the engine exhaust does not present a hazard to personnel inside a building or a space occupied by workers (i.e. confined / enclosed space); if not possible, then the equipment must be exhausted away from the space / outside of the facility. Equipment near doors shall be positioned so the exhaust will not enter the facility when the doors are open. In areas where fuel-powered equipment is being used, verify that carbon monoxide levels are safe by using a direct reading instrument that is capable of monitoring for carbon monoxide.

- 2.2.25 Ground Fault Circuit Interrupters (GFCI) shall be used to protect all 120 VAC electrical equipment including electric hand tools and cord sets. GFCI use is required when working in wet locations.
- 2.2.26 When not shown on the plans, the use of slugs in place of fuses or other protective devices within electrical devices requires written approval from the Ameren Engineer. Equipment-rated fuses and/or circuit breakers shall not be removed and replaced with fuses or circuit breakers of different set parameters without written approval from the Ameren Engineer.
- 2.2.27 If outages are required, Contractor shall coordinate with Appropriate Ameren Personnel to obtain and release Workers Protection Assurance (WPA) in accordance with the Ameren's WPA Procedures and operating practices. Equipment with a WPA Tag attached shall never be operated, serviced, replaced, or removed.
- 2.2.28 Contractors shall comply with all OSHA requirements for work in permit-required confined spaces/enclosed spaces. Contractors shall obtain information from Ameren regarding the location and other pertinent information regarding confined space entry. Any confined space entry involving both Contractor and Ameren personnel shall be coordinated through the appropriate Ameren Personnel.
- 2.2.29 All equipment on the project shall be used in accordance with federal, state, and local requirements in addition to the manufacturer's instructions and guidelines. Equipment shall not be modified in any way for use other than what the manufacturer intended.
- 2.2.29.1 Any alterations must be approved by the manufacturer in writing.
- 2.2.29.2 Hand-held power tools shall only be used for its intended purpose. Tools that are broken, have dull blades, dull bits, have damaged cords, or have damaged/missing guards shall not be used. Hand-held power tool switches shall not be modified by any means to maintain power without constant trigger pressure.
- 2.2.29.3 All grinder guards shall remain on the grinder at all times as per manufacturer recommendation. Prior written approval to remove a grinder handle must be obtained from Contractor's/Subcontractor's safety professional and submitted to Ameren Supervisor.
- 2.2.30 Contractor shall check all wires being demolished or removed to ensure that all wires are de-energized and de-terminated before

cutting/wrecking. Wires found to be energized must be de-energized and then re-verified prior to being terminated or cut.

- 2.2.31 Contractor shall maintain a voluntary stretch and flex program that engages employees in active stretching throughout the workday and is focused on preventing muscle, tendon, and ligament tears along with preventing musculoskeletal disorders and ergonomic related issues.
- 2.2.32 When mobilizing to a jobsite one of the contractor/subcontractors first priorities upon arrival should be to safeguard all workers and the general public by establishing a work zone traffic control plan. For work zone traffic control contractors/subcontractors shall adhere to the MUTCD as enforced by OSHA in 1926 Subpart G.
- 2.2.33 Contractor / Subcontractor should be familiar with and understand OSHA's General Duty Clause specifically OSH Act5(a)(1) as it pertains to Stop Work Authority.

2.3 **Incident/Accident Reporting**

- 2.3.1 In the event of an incident or accident, Contractor shall proceed with appropriate emergency response procedures, make all necessary emergency calls, and take full responsibility for clean-up and disposal of any wastes or materials.
- 2.3.2 The accident scene must be secured for accident investigation. Equipment or material shall remain unmoved unless movement is required to prevent further injury until a review of the accident is completed.
- 2.3.3 Next, Contractor shall immediately report by telephone to the Ameren Supervisor any accident involving injury, death, fire, spill, mishandling of oil, regulated/hazardous waste spill, or any other emergency/event.
- 2.3.4 Contractor shall call the Ameren Spill Response Hotline 314-554-2683 as soon as possible to report any oil, fuel, chemical, regulated/hazardous waste, or electrical equipment spills related to any Ameren project. The hotline can provide guidance and assistance for clean-up and disposal related to any spill, regardless of size or severity. Contractor shall also ensure their project sites have appropriate spill control kits readily available.
- 2.3.5 Contractor shall also submit a preliminary Contractor Event Report (CER) detailing the event into Safety1Source (S1S). The preliminary report shall be provided within 24 hours and contain all known information at that point in time. Contractor shall adhere to Ameren direction with regards to the electronic CER submittal and shall comply with the preliminary/final process outlined by Ameren. Final event

reports within S1S shall include a detailed description of the accident/injury. Additional investigation/documentation information may be required/requested by Ameren for any CER submitted.

- 2.3.6 Ameren reserves the right to question the content and findings of the CER. Contractor/Contractor's personnel identified as not reporting safety incidents to Ameren through the CER process may be dismissed from Ameren property.
- 2.3.7 Contractor shall indemnify Ameren for all related costs and liabilities related to the emergency/event.
- 2.3.8 Contractor shall investigate all types of accidents/events whether they result in an injury or not and provide the results of said investigation to Ameren. An accident investigation does not assign blame; it does determine how to eliminate similar accidents in the future. Ameren reserves the right to monitor Contractor's investigation, and Contractor shall provide the appropriate Ameren personnel with all necessary information such that they can perform this monitoring function.
- 2.3.9 Ameren reserves the right to investigate any accidents or near miss events that occur on Jobsite. Ameren will conduct further investigations if deemed necessary by Ameren.
- 2.3.10 Safety stand downs shall be conducted at Contractor or Ameren's direction. Stand downs shall be conducted at Contractor's expense. A written notice of temporary job suspension may be issued for non-compliance with Ameren policies or OSHA regulations.

2.4 **Excavations**

- 2.4.1 Contractor shall comply with all elements of OSHA 1926 Subpart P, Excavations.
- 2.4.2 Preparation
 - 2.4.2.1 Prior to commencing excavation, Contractor shall familiarize itself with and adhere to all the guidelines, procedures, and lead times of the relevant one-call utility locating system to ensure underground utilities in the area are properly located and identified. This is applicable to greenfield and brownfield projects, transmission line and substation, whether inside or outside the substation fence.
 - 2.4.2.2 Contractor shall be knowledgeable about and capable of performing Non-Destructive Excavation (NDE) techniques, including hand digging, hydro excavation, and air-knifing. Contractor may subcontract these NDE services, provided

the subcontractor meets all applicable standards and qualifications.

- 2.4.2.3 Before the start of any excavation construction, Contractor shall consult the Constructability Review document and take the following steps:
- A. Verify adequate overhead clearances exist for all activities.
 - B. Perform a visual site walkdown to identify utility markers, buildings that may have underground utilities, drain tiles, septic systems, private water systems, or any other potential underground conflicts with the proposed work.
 - C. Submit any questions regarding utility locations or clearances in writing to the Construction Supervisor at least five (5) days before construction begins. All inquiries must be addressed and resolved before the commencement of excavation work in these areas.
- 2.4.2.4 If an underground utility is identified by the one-call system or indicated in the contract documents as being within three (3) feet of the planned excavation area (e.g., foundation location), the contractor shall use NDE techniques until the utility is located or confirmed to be outside the excavation area.
- 2.4.2.5 For work inside existing substations, Contractor shall be aware that utility owner locator personnel will not enter the substation to mark or locate facilities. Substation control cables, power service cables, ground wires, and communication cables extending outside the substation fence may not be marked or located by utility owner locator personnel, as these underground facilities may be considered privately owned. The contractor should coordinate with Construction Supervisor to review substation drawings and contract documents to verify that areas inside and outside the substation perimeter are clear of the planned excavation.
- 2.4.2.6 Before commencing any excavation work within an existing substation or on the property parcel where the substation is located, Contractor and Construction Supervisor must review the contract documents, constructability reviews, one-call system utility locates, and project drawings. This review should identify any known underground facilities within,

approaching, or near the planned excavation area. Based on this review, it may be necessary to employ NDE techniques beyond a depth of four (4) feet or to pothole to accurately locate underground facilities within or near the excavation.

2.4.2.7 Ground Penetrating Radar (GPR) or other sub-surface locating methods may be used as an additional aid, with approval from the Construction Supervisor, to help reduce the amount of NDE required. However, these methods are not an acceptable substitute for NDE validation.

2.4.2.8 Contractor is responsible for the protection of utilities throughout the project duration. This includes implementing below-grade pipeline vehicle crossing protection measures as mandated by the pipeline owner/operator.

2.4.3 Construction

2.4.3.1 If an unforeseen obstruction is encountered during the NDE or actual excavation, the Contractor shall STOP immediately and contact the Construction Supervisor. No removal of the obstruction is permitted without written approval from the Construction Supervisor.

2.4.3.2 For brownfield substation or switchyard projects, Contractor must verify all excavations to be free from underground conflicts. This verification shall be accomplished by performing NDE to a minimum depth of four (4) feet and extending at least one (1) foot beyond the horizontal limits of the proposed excavation, in all directions. If no conflicts or obstructions are found after completing the required NDE, the contractor may proceed with mechanical excavation.

2.4.3.3 For substation or switchyard expansion projects that extend into greenfield areas (e.g., farmland or pasture), the contractor shall adhere to the guidance outlined in sections **2.4.3.1** and **2.4.3.2**. Buried ground grid cables may exist outside the perimeter fence, so any excavation within six (6) feet of the existing substation perimeter fence must be cleared using NDE methods, as described in section **2.4.3.2**. Additionally, the contractor shall exercise due diligence by consulting the constructability review and inspecting the expansion area for any power, communication, or other Ameren-owned facilities that may connect to remote structures, such as microwave towers or other buildings. These requirements also apply to excavations for transmission line projects associated with the expansion.

- 2.4.3.4 For substation or transmission line projects located on active or former power plant sites, energy center sites, or industrial plant campuses, the contractor shall follow the guidance outlined in sections **2.4.3.1** and **2.4.3.2**. Additionally, unless specifically authorized in writing by the Construction Supervisor, the contractor shall use NDE methods to verify that excavations are free from underground utilities or conflicts.
- 2.4.3.5 NDE techniques and requirements of this section are only required to the extents necessary to clear an excavation area and are not necessarily required to complete the full extents of the excavation down to at least the four (4) foot depth. Techniques like boxing around a large excavation area or X-ing an excavation location are permitted to minimize the amount of NDE needed.
- 2.4.3.6 Contractor shall repair, or coordinate with facility owner to repair, underground facilities damaged in the course of construction to the satisfaction of the facility owner, as required by law. Such repair shall be at no additional cost or delay to Ameren if underground facilities were located and marked in accordance with the "one-call" system standard.
- 2.4.4 Drilled pier/holes for foundations or utility poles ≥ 30 " in diameter and >4 feet in depth see National Safety Council Best Practice, (Attachment A4). Fall arrest equipment shall be attached to anchorage points (structural members/ deadman) capable of supporting 5000 lbs. per worker attached or designed as part of a complete personal fall arrest system which maintains a safety factor of at least two. Mobile equipment (bulldozer, etc.) shall not be utilized as an anchorage point for fall arrest equipment. All fall arrest equipment including deadman(s) shall be professionally rated by the manufacturer or a Professional Engineer (PE) and designed for intended vertical/horizontal use. Fall arrest equipment that is not professionally rated shall not be utilized.
- 2.4.5 Contractor shall provide suitable warning and/or protection around temporary openings, open holes, removed sections of grating, exposed high voltage equipment, all other hazardous areas, or conditions.
- 2.4.6 **Barrier** – use of cones, tape, rope, cone bars, snow fencing, etc. creating a soft delineation warning that can easily be moved or crossed, under or over, that would alert pedestrians of hazard(s).
- 2.4.7 **Barricade** – handrail/ fencing, jersey barricade, or other heavy/ hard, rigid delineation that would be difficult to move to alert pedestrians of hazard(s) forcing foot/ vehicle traffic around area.

- 2.4.8 Barriers can be, but not limited to, snow fencing secured to stakes/ metal t-fence posts, DOT traffic cones with/or without candy canes, and or 42" cones with florescent ribbon/ tape, etc. Excavations, i.e. trenches, potholes, and utility pole excavations shall be covered when not attended and a barrier installed to keep pedestrians out of the area.
- 2.4.9 Excavations (trenches/ pothole/ utility poles ≤ 30 " in diameter, conduit banks, etc.) shall be covered or barricaded at all times to prevent fall or trip hazards. – follow excavation best practices set forth in 29 CFR 1926.650. In addition, contractors shall maintain a barrier around excavation designed to keep bystanders at a safe distance from excavation.
- 2.4.10 When constructing a barrier to provide a warning for temporary open holes, trenches or other hazards, caution tape or ¼" or larger diameter rope is acceptable for the warning barrier. Warning barrier shall be placed at guard rail height, 42" plus or minus 3" to prevent a tripping hazard. If using rope, then caution tape ribbons or flags should be tied to the rope at no more than 3ft intervals to provide greater visibility of the rope. The rope or caution tape should be secured to stakes, cones, or other stable objects at no more that 8ft intervals around the open hole or trench. When working in or adjacent to energized substations rope with streamers shall be used in lieu of caution tape. Contractor shall provide rigid or semi-rigid type warning barrier when deemed necessary. Caution tape, rope, and ribbons/flags shall align with hazard warning, signage, and color scheme outlined in 1926.200. Barriers shall not be attached to operating equipment/handles that could cause inadvertent operation of the equipment.
- 2.5 **OSHA & Transfer of Information (OSHA 1910/1926 Safety Requirement)**
- 2.5.1 Ameren will inform Contractor of known characteristics and conditions as it relates to the safety of the work being performed on all equipment associated with transmission or distribution of electricity. This will be accomplished before work begins, after the contract is awarded during Ameren's pre-construction meeting.
- 2.5.2 The transfer of information will be shared with the primary contractor awarded the work. That primary contractor shall share the same information with their co-workers and with its Subcontractors.
- 2.5.3 If any unique and/or hazardous conditions exist that were not mentioned by Ameren, Contractor shall inform Ameren Supervisor of those conditions in a timely manner.

- 2.6 **Handling of Materials and Waste, Asbestos-Containing Material (ACM), Lead, and Public Safety**
- 2.6.1 Contractor shall ensure worker and public safety during the course of a project.
- 2.6.2 Contractors must comply with all applicable Ameren, Federal, State, and Local environmental regulations including, but not limited to, those concerning:
- 2.6.2.1 Ameren Job Working Rules
 - 2.6.2.2 Public and worker health and safety
 - 2.6.2.3 Public's "Right to Know"
 - 2.6.2.4 Fire safety
 - 2.6.2.5 Air and water quality
 - 2.6.2.6 Flammable materials storage
 - 2.6.2.7 Spill control, response, and cleanup
 - 2.6.2.8 Hazardous and non-hazardous waste handling, identification, and disposal.
- 2.6.3 Contractor/Subcontractor shall coordinate all waste (hazardous and non-hazardous) related activities with Ameren's Environmental Department.
- 2.6.4 Contractor shall adhere to OSHA/state and Local requirements when working around/abating Lead or ACM material (potential or known).
- 2.6.5 Refer to Supplier Policies & Risk Compliance at Ameren.com for Ameren's Contractor's Substance Abuse Policy and substance abuse testing requirements.
- 2.7 **Contractor Safety Professional**
- 2.7.1 Contractor shall have a dedicated company safety professional/representative who oversees and maintains the company safety program, and site safety personnel. This person must be available for safety-related questions and concerns.
- 2.8 **Safety & Health Training Requirements/Meetings**
- 2.8.1 Contractor's staff and Subcontractor's staff shall be trained accordingly regarding all safety related requirements including but not limited to: safety rules, OSHA regulations, waste handling procedures, chemical

use, safe excavation practices, etc..., prior to commencement of any project related work.

- 2.8.2 The minimum training standard is OSHA 10 for Contractor/Subcontractor craft workers and OSHA 30 for Contractor/Subcontractor supervisors, or equivalent upon approval by Ameren (e.g. OSHA 10 & 20 ET&D) and the appropriate PowerSafe curriculum based on trade discipline (Electrical, Civil, Vegetation). Documentation of OSHA training for Contractor workers and supervisors must be maintained by the Contractor and made available to Ameren upon request. Contractor shall retain verification of satisfactory training for as long as required by law or six months after completion of contract, whichever is greater. Ameren may require additional value-added training (i.e. Leadership Training for people leaders in the field, Safe Start) at any time during the course of this contract at no additional cost to Ameren.
- 2.8.3 If Contractor or Subcontractor training deficiencies are identified throughout the duration of the Project, Ameren reserves the right to require an Ameren or third-party audit of all training records at the expense of the Contractor. All third-party audit findings shall be shared with Ameren within 30 days after completion of the audit. If deemed appropriate and at Ameren's discretion the audit may overlap into Contractor's/Subcontractor's overall safety program.
- 2.8.4 Construction meetings shall be held with Ameren and applicable Contractors on a frequency determined by Ameren. The meetings will serve as a platform to address any safety concerns. Meetings may be scheduled more frequently if Contractor's safety performance is poor.
- 2.8.5 Person(s) qualified in First Aid, Cardiopulmonary Resuscitation (CPR), must be present on the project site at all times during work. Contractor shall ensure ANSI Z308.1 compliant First Aid Kit(s), Eye Wash Kit(s), and Blood borne Pathogens Kit(s) are present and readily available on the project work site.
- 2.9 **Safety & Health Observations/Audits**
- 2.9.1 Ameren personnel may conduct periodic safety observations/audits of the project. Any discrepancies will be reported to Contractor management for immediate correction.
- 2.9.2 Ameren safety observations/audits do not relieve Contractor of its responsibility to conduct its own safety observations, self-inspect its work and equipment, and to conduct its work in a safe and environmentally compliant manner. Observations conducted by the Contractor should be spread throughout the entirety of the project and send a consistent message that safety is paramount.



2.9.3 Ameren reserves the right to conduct safety programmatic/compliance audits of Contractor's/Subcontractor's safety program at any given time. Audits shall include all items relevant to safety.

2.9.4 Ameren reserves the right to request from Contractor/Subcontractor safety data, reports, information at any given time.

2.10 **Certifications, Inspections, Permits, and Plans**

2.10.1 Some states and local authorities require permits for activities such as: excavations, heavy lifts, asbestos/lead abatement, air permits, water permits, hazardous waste generation, environmental permits, etc. Contractors shall be responsible for complying/adhering to all permits related to their work.

2.10.2 Contractors/subcontractors shall submit a demolition plan for any demolition activities planned during the course of their work. The demolition plan shall be submitted to the Ameren Supervisor for review.

2.10.3 Contractors shall adhere to Federal, State, Local, and Ameren Wildfire Mitigation Plans.

2.11 **Overhead Lifting/Cranes**

2.11.1 Contractors shall comply with all of the provisions of 1926 Subpart CC.

2.11.2 All lifting/hoisting activities near overhead power lines or energized equipment must include awareness and observance of the following Minimum Clearance Distances: Non-qualified personnel (not qualified to work on energized electrical systems):

Minimum Clearance Distance	
Voltage (kV)	Clearance
Up to 50	10'-0"
69	10'-8"
138	13'-0"
161	14'-0"
345	20'-0"



- 2.11.2.1 Non-qualified personnel shall not approach or take a conductive object closer than ten feet to exposed energized parts rated up to 50 kV or closer than ten feet, plus four additional inches for every 10 kV over 50 kV, to exposed energized parts over 50kV.
- 2.11.2.2 Trained non-qualified personnel can be utilized to spot for a clearance distance, but the clearance distance must be maintained at all times. The utilization of a qualified electrical worker as a spotter does not allow non-qualified personnel/equipment to breach a clearance distance.
- 2.11.2.3 Minimum Approach Distances: Qualified Electrical Worker Personnel (qualified to work on energized electrical systems):

Chart applies to qualified electrical workers only	Minimum Approach Distance (MAD)		Grounding Information
	Phase to ground (ft.-in)	Phase to phase (ft.-in)	Minimum Ground Size (Copper)
0.05 - 0.300	Avoid contact	Avoid contact	NA
0.301 - 0.750	1-1	1-1	NA
0.751 - 5.0	2-1	2-1	2-0
5.1 - 15.0	2-2	2-3	2-0
15.1 – 36.0	2-7	3-0	2-0
46.1 - 72.5	3-4	4-0	2-0
121.1 – 145.0	3-10	4-10	*
145.1 – 169.0	4-4	5-5	*
169.1 – 242.0	5-8	8-5	*
242.1 – 362.0	8-6	13-6	*

- 2.11.3 A qualified person shall make a thorough annual inspection of cranes and powered hoisting equipment. Cranes shall be inspected per OSHA requirements and have deficiencies corrected prior to being placed back in service. Documentation of crane inspections shall be maintained onsite by Contractor.
- 2.11.4 Contractors are responsible for ensuring pre-shift and monthly inspections are completed per the OSHA specifications. Monthly inspections shall be conducted by a qualified person. Documentation of crane inspections shall be maintained onsite by Contractor.
- 2.11.5 Cranes with damage/identified inspection deficiencies shall be placed out of service, the crane shall be re-inspected by a qualified person prior to being placed back in service.
- 2.11.6 Operators of cranes are responsible for providing documentation to Ameren personnel upon request regarding required OSHA crane inspections.
- 2.11.7 Crane operators shall be certified on each crane type and rating they operate.
- 2.11.8 For overhead lifts, non-essential personnel shall maintain a safe distance and radius outside the fall zone.
- 2.11.9 Crane hooks shall be inspected by a competent person prior to use. Rigging shall be inspected by a Competent Person before each shift. Defective components shall be removed from service immediately. Anti-Two-Block devices, that automatically disengage crane hoist/boom functions when the hook or block approaches the jib or boom tip, shall be used on all cranes.
- 2.11.10 All outriggers on mobile cranes shall be fully extended and on outrigger pads when crane is used to lift or support a load.
- 2.11.11 If, due to configuration or physical location, all outriggers cannot be fully deployed, manufacturer/certified manufacturer crane specialist shall provide written lift instructions to include calculations.
- 2.11.12 Cranes shall not be used to hoist personnel without written approval from Contractor's safety professional. Ameren Supervisor shall be notified prior to activity as well. Cranes should not be used to hoist personnel except where the Contractor can demonstrate that the erection, use, and dismantling of conventional means of reaching the work area, such as a personnel hoist, ladder, stairways, aerial lift, elevating platform, or scaffold, would be more hazardous, or is not possible because of the project's structural design or worksite conditions.

2.12 Critical Lifts**2.12.1 Critical Determination**

Contractor shall submit a Critical Lift Plan for any critical lift. Ameren reserves the right to designate any lift as critical. A lift shall be designated as a critical lift if any one of the following conditions exists:

- 2.12.1.1 Lifting over 50 tons.
- 2.12.1.2 Lift exceeds 75% of the rated capacity of the crane.
- 2.12.1.3 Lift requires the use of more than one crane.
- 2.12.1.4 In no case shall a multiple crane lift be performed in excess of 75% of any one of the crane's individual load rated capacity at the planned radius.
- 2.12.1.5 Lifting over equipment or material that could cause or result in a release of hazardous material to the environment.
- 2.12.1.6 The lifted item requires exceptional care in handling because it is being lifted above any live circuit, critical operating equipment, or material and/or building structure.
- 2.12.1.7 The lifted item requires exceptional care in handling because of size, weight, close-tolerance installation, high susceptibility to damage or other unusual factor.
- 2.12.1.8 Lifts performed in the proximity of live electrical connections. Specifically, lifts performed breaching the minimum clearance distances outlined in Table A of OSHA 1926 Subpart CC shall be performed by qualified electrical workers.
- 2.12.1.9 Lifting of equipment by helicopter.
- 2.12.1.10 Any lifts proposed by the Contractor that meet the above criteria or determined to be critical by Ameren will be subject to a Critical Lift Plan. Examples of lifts that are generally considered critical are: control houses, power transformers, some steel shaft poles, and some rebar cages.

2.12.2 Critical Lift Plan

Contractor shall provide a detailed lifting and rigging plan for all lifts identified as critical. All critical lifts shall be designed and approved by the Contractor's competent person performing the lift design. Prior to

executing lift, lift plans shall be submitted to the Ameren Supervisor. Ameren will review submittals for general design features. Contractor is responsible for accuracy of calculations. Also prior to executing lift, any changes made in the field to the approved lift plan shall be approved by the Contractor's competent person performing the lift design. A copy of the lift plan shall be onsite during the lift and shall be reviewed with all personnel involved with the lift, including the Ameren Supervisor (if available). All contractor personnel involved with the critical lift shall sign the lift plan to confirm complete understanding of the lift plan's requirements. Ameren's Supervisor shall be provided sufficient notice (minimum of 24 hours) to allow him/her to witness the critical lift. A critical lift plan shall contain the following, as applicable:

- 2.12.2.1 Identify the items to be lifted.
- 2.12.2.2 Weight of the lifted item and total weight of the load (for mobile cranes, see the manufacturer's instructions regarding components and attachments that must be considered as part of the load).
- 2.12.2.3 Center of gravity location.
- 2.12.2.4 Documented step-by-step instructions.
- 2.12.2.5 Special precautions, if any (such as outrigger or track cribbing for mobile cranes).
- 2.12.2.6 Evaluation of hazards associated with the lift that include ground support, soil conditions, allowable soil bearing capacity, underground utilities that could be damaged or suddenly collapse, maximum permissible wind speed and any other physical obstruction.
- 2.12.2.7 A list of each piece of equipment (e.g., crane, hoist, fork truck), accessory, and rigging component (e.g., slings, shackles, spreader bars, yokes) to be used for the lift. (This list shall identify each piece of equipment by type and rated capacity).
- 2.12.2.8 Designated checkpoints hold points and estimated instrument readings, as relevant, so that job progress can be checked against the plan.
- 2.12.2.9 Rigging sketch(es), which include the following:
 - A. Lift point identification
 - B. Method(s) of attachment

- C. Load vectors
 - D. Sling angles and sling capacity
 - E. Accessories used
 - F. Other factors affecting the equipment capacity
 - G. Rated capacity of equipment in the configuration(s) in which it will be used. (For cranes, many factors affect rated capacity, including boom length, boom angle and work area.)
 - H. Percentage of the total weight of the lift to the rated capacity of the equipment in the configuration(s) in which it will be used.
 - I. If the percentage is 90% or greater, the lift shall be considered an Engineered Lift and have a Licensed Engineer's stamp. In Illinois, the Engineer shall be a Structural Engineer. In Missouri, the Engineer shall be a Professional Engineer.
 - J. If rigging points are attached to existing structural steel, it is the responsibility of the Contractor's engineer to confirm that the additional loads do not overstress the existing structure, and to design additional bracing/reinforcement if required. Supporting calculations stamped by a Structural or Professional Engineer shall be included with the critical lift plan.
- 2.12.2.10 A load-path sketch that shows the load path and height at key points in the job. (For lifts with mobile cranes, include the crane position(s) relative to the load and relative to surrounding obstructions.) Where appropriate, include floor-loading diagrams.
- 2.12.2.11 A sketch indicating lifting and travel speed limitations. (This may be noted on the load path sketch or on a separate sketch.)
- 2.12.2.12 A sign-off sheet to verify that all inspections/tests required by OSHA are current for all equipment and rigging.
- 2.12.2.13 The lift plan shall provide specific information for each lift when multiple items of varying weights and/or shapes are included in the lift plan.

- 2.12.2.14 Prior to mobilization, Contractors shall submit a normal weather lay-down plan for each onsite lattice crane, wherein Contractors specifically outline the manner in which the crane will be stored in normal weather conditions.
- 2.12.2.15 Prior to mobilization, Contractors shall submit a severe weather lay-down plan for each onsite lattice crane, wherein Contractors specifically outline the manner in which the crane will be stored in severe weather conditions.
- 2.12.2.16 Attachment A2 or a similar document shall be used as a coversheet for any critical lift.
- 2.12.2.17 When determining and setting load path barricade boundaries, Contractors shall include within the boundary the potential for dropping load during load swing and including the radius of which the object could fall (failed load path). All elevations affected per this potential 'failed load path' shall be barricaded.

2.13 **Respiratory Protection**

- 2.13.1 Contractors shall have a written respiratory protection program protecting workers from airborne contaminants. The program shall comply with current Federal, State and Local requirements including OSHA 1910.134. The program shall properly address the following:
 - 2.13.1.1 Respirator selection
 - 2.13.1.2 Respirator training and required test fit procedures
 - 2.13.1.3 Respirator cleaning, sanitizing, inspection, and maintenance
 - 2.13.1.4 Respirator user's medical clearance
 - 2.13.1.5 Chemical cartridge change-out schedule when applicable.
- 2.13.2 Contractor shall limit employee exposure to breathable crystalline silica while conducting work causing crystalline silica to become airborne per the exposure limits listed in OSHA 1910/1926.



ATTACHMENT A1 – CRITICAL LIFT PLAN

Location:	Contractor:	Date of Lift:	
Crane Operator's Name:	Certified Operator:	Yes	No

Determining Factor for Critical Lift

	Load is over 75% of the cranes rated capacity.
	Load is greater than 50 tons.
	Potential for release of radioactive/hazardous waste due to collision or upset of load.
	The lifted item requires exceptional care in handling because it is being lifted above critical operating equipment or material and/or building structure.
	The lifted item requires exceptional care in handling because of its cost, replacement lead-time, size, weight, close-tolerance installation, high susceptibility to damage or other unusual factor.
	Two or more cranes/booms are required, or special hoisting/rigging equipment will be used.
	Lift performed in proximity of live electrical connections.
	Lifting of personnel in baskets and/or personal harnesses.
	Lifting of equipment by helicopter.



WEIGHT	Lbs.	CRANE	
Weight of Headache Ball		Type of Crane:	
Weight of Block		Crane Maximum Rated Capacity	Tons
Weight of Spreader Bar		Crane Annual Inspection Date	
Weight of Slings		Lifting Arrangement	
Weight of Shackles		Max Distance-Center of Load to Center Pin of Crane	Ft.
Total Weight of Rigging		Length of Boom	Ft.
Net Weight of Load		Angle of Boom at Pick-Up	Deg.
Total Weight of Load		Angle of Boom at Set	Deg.
		Rated Capacity of Crane Under Severest Lifting Conditions (from chart)	Tons
		From Chart-Rated Capacity of Crane for this Lift	Tons
		Maximum Load on Crane (Name plate, drawings, calculated, etc.)	Tons



CRANE PLACEMENT

1. Obstacles or Obstructions in the Swing Radius?

2. _____
Swing Direction and Degree

C. SIZING OF SLINGS

- 1. Number of Slings _____
- 2. Type of _____
- 3. Size of Slings _____
- 4. Sling Length _____
- 5. Rated Capacity of _____
- 6. Slings Angle _____
- 7. Size and # of _____
- 8. Rated Capacity of _____

E. PRE-LIFT CHECKLIST		YES	NO
1.	Swing Room	{	{
2.	Head Room Checked	{	{
3.	Max. Counterweights	{	{
4.	Tag Line Used	{	{
5.	Exp/Designated Flagman	{	{
6.	Experienced Rigger	{	{
7.	Load Chart in Crane	{	{
8.	Wind Conditions	{	{
9.	Helicopter Conditions	{	{
10.	Inspection of Personal	{	{
11.	Spreader Bar Stamped	{	{

Special Instructions/Restrictions for Crane, Rigging, Lift, etc.

Contractor Competent Person
(Designing Lift):

Crane Operator:

Contractor's Safety Representative:

*Prior to executing the lift, lift plan shall be submitted and reviewed by the Contractor's Safety Representative.



ATTACHMENT A2.1 - INFORMATION TRANSFER DOCUMENT

Ameren Transmission Information Transfer Document

Return this Document with the Job Package at the completion of this Project

The information listed below is to be shared with any contractor working on or near Ameren's electrical generation, transmission and distribution systems per OSHA's 1910.269 and 1926 Subpart V standards. The comments sections are for any information that may be pertinent for the contractor outside that which is a direct response to the requirements. This document does not relieve the contractor from its responsibility to perform an appropriate hazard analysis prior to performing work.

Date:	Click here to enter text.	Time:	Click here to enter text.
Contractor:	Click here to enter text.		
Scope of Work:	Click here to enter text.		
Substation & Circuit:	Click here to enter text.		

The following four requirements (1, 2a, 2b and 2c) are mandatory to be provided to the contractor. If the system information is not known, Ameren must obtain the information by some means. Due to system design/operation there is always the possibility of hazardous induced voltage. All substation grounds shall be minimum 4-0 copper unless otherwise identified. Contractor should refer to pole tagging protocol for condition of poles upon last inspection.

1. Voltage and Corresponding MAD (if line is de-energized, tested and grounded, MAD does not apply)

Chart applies to qualified electrical workers only Nominal voltage in kilovolts phase to phase	Minimum Approach Distance (MAD)		Grounding Information
	Phase to ground (ft.-in)	Phase to phase (ft.-in)	Minimum Ground Size (Copper)
<input type="checkbox"/> 0.05 - 0.300	Avoid contact	Avoid contact	NA
<input type="checkbox"/> 0.301 - 0.750	1-1	1-1	NA
<input type="checkbox"/> 0.751 - 5.0	2-1	2-1	2-0
<input type="checkbox"/> 5.1 - 15.0	2-2	2-3	2-0
<input type="checkbox"/> 15.1 - 38.0	2-7	3-0	2-0
<input type="checkbox"/> 48.1 - 72.5	3-4	4-0	2-0
<input type="checkbox"/> 121.1 - 145.0	3-10	4-10	*
<input type="checkbox"/> 145.1 - 169.0	4-4	5-5	*
<input type="checkbox"/> 169.1 - 242.0	5-8	8-5	*
<input type="checkbox"/> 242.1 - 362.0	8-6	13-6	*

* If stipulated by Ameren Representative, then utilize the following information:

Protective Grounds [Click here to enter text.](#) Fault Current [Click here to enter text.](#) Clearing Times [Click here to enter text.](#) OR Size [Click here to enter text.](#)

2. Presence of:

- a. Equipment grounds YES NO
- b. Protective (personal) grounds YES NO
(if yes, contractor must call dispatch)
- c. Circuits and equipment, including electric supply lines, communication lines and fire-protective signaling circuits. YES NO

[Click here to enter text.](#)

The following four requirements (3a, 3b, 3c and 4) are to be provided to the contractor if known.

3. Condition of:

- a. Equipment grounds PASS FAIL Unknown N/A
- b. Protective (personal) grounds PASS FAIL Unknown N/A
- c. Environment relating to safety (ex. RF radiation from antennae)

[Click here to enter text.](#)

4. Information about the design and operation of the installation the contractor needs to know to make appropriate assessments related to safety and to protect their employees or requested by the contractor (ex. abnormal switching conditions).

[Click here to enter text.](#)

Crew Leader / Contractor Rep. Signature:



Ameren Information Transfer Contractor Feedback Document

Return this Document with the Job Package at the completion of this Project

If there was any information different or unexpected from what was shared at the beginning of this project, please provide the necessary feedback below so that Ameren can update their data and thus provide more accurate information in the future.

Date:	Click here to enter text.	Time:	Click here to enter text.
Contractor	Click here to enter text.		
Scope of Work Performed:	Click here to enter text.		
Substation & Circuit on which work was performed:	Click here to enter text.		

The following four requirements (1, 2a, 2b and 2c) were mandatory to be provided to the contractor. If the system information that we knew at the time was different than what was actually in the field please indicate below. Due to system design/operation there is always the possibility of hazardous induced voltage. All substation grounds are assigned to be minimum 4-0 copper unless it was otherwise identified. If you needed to use different sized please indicate below. Contractors are asked to refer to pole Ameren tagging protocol for condition of distribution poles upon last inspection. If there were any discrepancies in the pole condition identification please indicate below.

1. Voltage and Corresponding MAD (if line is de-energized, tested and grounded, MAD does not apply)

Chart applies to qualified electrical workers only	Minimum Approach Distance (MAD)		Grounding Information	Ground size used and material
	Phase to ground (ft.-in)	Phase to phase (ft.-in)	Minimum Ground Size (Copper)	
<input type="checkbox"/> 0.05 - 0.300	Avoid contact	Avoid contact	NA	
<input type="checkbox"/> 0.301 - 0.750	1-1	1-1	NA	
<input type="checkbox"/> 0.751 - 5.0	2-1	2-1	2/0	
<input type="checkbox"/> 5.1 - 15.0	2-2	2-3	2/0	
<input type="checkbox"/> 15.1 - 38.0	2-7	3-0	2/0	
<input type="checkbox"/> 46.1 - 72.5	3-4	4-0	2/0	
<input type="checkbox"/> 121.1 - 145.0	3-10	4-10	*	
<input type="checkbox"/> 145.1 - 189.0	4-4	5-5	*	
<input type="checkbox"/> 189.1 - 242.0	5-8	8-5	*	
<input type="checkbox"/> 242.1 - 362.0	8-6	13-6	*	

* If stipulated by Ameren Representative, then utilize the following information:

Protective Grounds Fault Current _____ Clearing Times _____ or Size _____

If different than indicated, please explain below.

2. Presence of:

- a. Equipment grounds: [Click here to enter text.](#)
- b. Protective (personal) grounds: [Click here to enter text.](#)
(if yes, contractor must call dispatch)
- c. Circuits and equipment, including electric supply lines, communication lines and fire-protective signaling circuits: [Click here to enter text.](#)

The following four requirements (3a, 3b, 3c and 4) were provided to the contractor if known. Please indicate current condition if different than shared.

3. Condition of:

- a. Equipment grounds: [Click here to enter text.](#)
- b. Protective (personal) grounds: [Click here to enter text.](#)
- c. Environment relating to safety: [Click here to enter text.](#)

4. Information about the design and operation of the installation the contractor needs to know to make appropriate assessments related to safety and to protect their employees or requested by the contractor (ex. abnormal switching conditions): [Click here to enter text.](#)

Crew Leader / Contractor Rep. Signature:
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ATTACHMENT A2.2 - INFORMATION TRANSFER DOCUMENT

Ameren Missouri Energy Delivery Information Transfer Document

Return this Document with the Job Package at the completion of this Project.

The information listed below is to be shared with any contractor working on or near Ameren's electrical and distribution systems. The comments sections are for any information that may be pertinent for the contractor outside that which is a direct response to the requirements. This document does not relieve the contractor from its responsibility to perform an appropriate hazard analysis prior to performing work.

Date:	Click here to enter text.	Time:	Click here to enter text.
Contractor:	Click here to enter text.		
Scope of Work:	Click here to enter text.		
Substation & Circuit:	Click here to enter text.		

The following four requirements (1, 2a, 2b and 2c) are mandatory to be provided to the contractor. Due to system design/operation there is always the possibility of hazardous induced voltage. Refer to pole tagging protocol for condition of poles upon last inspection.

1. Voltage and Corresponding MAD (if line is de-energized, tested and grounded, MAD does not apply)

	Chart applies to qualified electrical workers only	Minimum Approach Distance (MAD)		Grounding Information
	Nominal voltage in kilovolts phase to phase	Phase to ground	Phase to phase	* Minimum Ground Size (Copper)
		(ft.-in)	(ft.-in)	
OSHA Calculated MAD	<input type="checkbox"/> 0.05 - 0.300	Avoid contact	Avoid contact	NA
	<input type="checkbox"/> 0.301 - 0.750	1-1	1-1	NA
	<input type="checkbox"/> 0.751 - 5.0	2-1	2-1	2-0
	<input type="checkbox"/> 5.1 - 15.0	2-2	2-3	2-0
	<input type="checkbox"/> 15.1 - 36.0	2-7	3-0	2-0
Ameren Calculated MAD	<input type="checkbox"/> 46.1 - 72.5	3-4	4-0	2-0
	<input type="checkbox"/> 121.1 - 145.0	3-10	4-10	**
	<input type="checkbox"/> 145.1 - 169.0	4-4	5-5	**
	<input type="checkbox"/> 169.1 - 242.0	5-8	8-5	**
	<input type="checkbox"/> 242.1 - 362.0	8-6	13-6	**

* All substation grounds shall be minimum 4-0 copper unless otherwise identified

** If stipulated by Ameren Representative, then utilize the following information:

Temporary Protective Grounds: Fault Current [Click here to enter text.](#) Clearing Times [Click here to enter text.](#) OR Size [Click here to enter text.](#)

2. Presence of:

- a. Equipment grounds YES NO
- b. Temporary protective (personal) grounds YES NO
(If yes, contractor must call Dispatch)
- c. Circuits and equipment, including electric supply lines, communication lines and fire-protective signaling circuits. YES NO

[Click here to enter text.](#)

The following four requirements (3a, 3b, 3c and 4) are to be provided to the contractor if known.

3. Condition of:

- a. Equipment grounds PASS FAIL Unknown N/A
- b. Temporary protective (personal) grounds PASS FAIL Unknown N/A
- c. Environment relating to safety (e.g. RF radiation from antennae)

[Click here to enter text.](#)

4. Information about the design and operation of the installation the contractor needs to know to make appropriate assessments related to safety and to protect their employees or requested by the contractor (e.g. abnormal switching conditions).

[Click here to enter text.](#)

Crew Leader / Contractor Rep. Signature:



ATTACHMENT A2.3 - INFORMATION TRANSFER DOCUMENT

Ameren Illinois Information Transfer Document

Return this Document with the Job Package at the completion of this Project

The information listed below is to be shared with any contractor working on or near Ameren's electrical generation, transmission and distribution systems per OSHA's 1910.269 and 1926 Subpart V standards. The comments sections are for any information that may be pertinent for the contractor outside that which is a direct response to the requirements. This document does not relieve the contractor from its responsibility to perform an appropriate hazard analysis prior to performing work.

Date:	Click here to enter text.	Time:	Click here to enter text.
Contractor:	Click here to enter text.		
Scope of Work:	Click here to enter text.		
Substation & Circuit:	Click here to enter text.		

The following four requirements (1, 2a, 2b and 2c) are mandatory to be provided to the contractor. If the system information is not known, Ameren must obtain the information by some means. Due to system design/operation there is always the possibility of hazardous induced voltage. All substation grounds shall be minimum 4-0 copper unless otherwise identified. Contractor should refer to pole tagging protocol for condition of poles upon last inspection.

1. Voltage and Corresponding MAD (if line is de-energized, tested and grounded, MAD does not apply)

Chart applies to qualified electrical workers only Nominal voltage in kilovolts phase to phase	Minimum Approach Distance (MAD)		Grounding Information
	Phase to ground (ft.-in)	Phase to phase (ft.-in)	Minimum Ground Size (Copper)
<input type="checkbox"/> 0.05 - 0.300	Avoid contact	Avoid contact	NA
<input type="checkbox"/> 0.301 - 0.750	1-1	1-1	NA
<input type="checkbox"/> 0.751 - 5.0	2-1	2-1	2-0
<input type="checkbox"/> 5.1 - 15.0	2-2	2-3	2-0
<input type="checkbox"/> 15.1 - 36.0	2-7	3-0	2-0
<input type="checkbox"/> 46.1 - 72.5	3-4	4-0	2-0
<input type="checkbox"/> 121.1 - 145.0	3-10	4-10	*
<input type="checkbox"/> 145.1 - 169.0	4-4	5-5	*
<input type="checkbox"/> 169.1 - 242.0	5-8	8-5	*
<input type="checkbox"/> 242.1 - 362.0	8-6	13-6	*

* If stipulated by Ameren Representative, then utilize the following information:

Protective Grounds Fault Current [Click here to enter text.](#) Clearing Times [Click here to enter text.](#) OR Size [Click here to enter text.](#)

2. Presence of:

- | | | |
|--|------------------------------|-----------------------------|
| a. Equipment grounds | <input type="checkbox"/> YES | <input type="checkbox"/> NO |
| b. Protective (personal) grounds
(if yes, contractor must call dispatch) | <input type="checkbox"/> YES | <input type="checkbox"/> NO |
| c. Circuits and equipment, including electric supply lines,
communication lines and fire-protective signaling circuits. | <input type="checkbox"/> YES | <input type="checkbox"/> NO |

[Click here to enter text.](#)

The following four requirements (3a, 3b, 3c and 4) are to be provided to the contractor if known.

3. Condition of:

- | | | | | |
|---|-------------------------------|-------------------------------|----------------------------------|------------------------------|
| a. Equipment grounds | <input type="checkbox"/> PASS | <input type="checkbox"/> FAIL | <input type="checkbox"/> Unknown | <input type="checkbox"/> N/A |
| b. Protective (personal) grounds | <input type="checkbox"/> PASS | <input type="checkbox"/> FAIL | <input type="checkbox"/> Unknown | <input type="checkbox"/> N/A |
| c. Environment relating to safety
(ex. RF radiation from antennae) | | | | |

[Click here to enter text.](#)

4. Information about the design and operation of the installation the contractor needs to know to make appropriate assessments related to safety and to protect their employees or requested by the contractor (ex. abnormal switching conditions).

[Click here to enter text.](#)

Crew Leader / Contractor Rep. Signature:



Instructions for completing the Ameren Illinois Information Transfer Document

In the Office

First Table: Engineer enters the current date and time

Engineer enters Scope of Work = Project ID from EMPRV

Project Engineer enters Substation & Circuit = Project Description form EMPRV

Engineer places form in job release package

In the Field

First Table: Construction Supervisor enters Contractor = contractor name

Due to system design/operation there is always the possibility of hazardous induced voltage. All substation grounds shall be minimum 4-0 copper unless otherwise identified.

Second Table: Construction Supervisor checks appropriate voltage levels for work site.

Item 2 Construction Supervisor checks all that apply

Item 3 Construction Supervisor checks appropriate box for a and b. On c additional information if know (i.e. asbestos, lead, etc.)

Item 4 Enter any appropriate additional information

Construction Supervisor discusses information with contractor, has foreman or crew leader sign, photos and e-mails to Construction Superintendent.



ATTACHMENT A3 – ARC FLASH VALUES

Table #1 - Arc Flash Values Summary Table (Primary)

Primary Equipment Type	Voltage (kV)	3ft. Racking Cal/cm ²	8ft. ^{^^} Hot Stick Cal/cm ²	Subst. / OH Switching ^{^^} Cal/cm ²	15 in. Gloving Cal/cm ²	MAD ^{**} Cal/cm ²	2 Cal/cm ² Boundary ft.
Switchgear *	4.16	40.0	25.0	NA	NA	NA	30.0
Switchgear *	12.47	25.0	12.0	NA	NA	NA	15.0
Switchgear *	13.8	25.0	12.0	NA	NA	NA	15.0
Switchgear *	34.5	Unsafe [^]	25.0	NA	NA	NA	20.0
OH Substation	4.16	NA	4.0	4.0	NA	20.0	8.0
OH Substation	12.47	NA	4.0	4.0	NA	8.0	8.0
OH Substation	13.8	NA	4.0	4.0	NA	8.0	8.0
OH Substation	34.5	NA	4.0	4.0	NA	12.0	8.0
OH Substation	69	NA	4.0	4.0	NA	8.0	8.0
OH Substation	138	NA	4.0	4.0	NA	12.0	8.0
OH Substation	161	NA	4.0	4.0	NA	8.0	8.0
OH Substation	230	NA	NA	4.0	NA	4.0	10.0
OH Substation	345	NA	NA	4.0	NA	4.0	10.0
OH Line	4.16	NA	2.0	2.0	5.0	4.0	5.0
OH Line	12.47	NA	2.0	2.0	5.0	4.0	5.0
OH Line	34.5	NA	2.0	2.0	Unsafe [^]	12.0	5.0
OH Line	69	NA	2.0	2.0	Unsafe [^]	4.0	5.0
OH Line	138	NA	4.0	4.0	NA	8.0	8.0
OH Line	161	NA	4.0	4.0	NA	8.0	8.0
OH Line	230	NA	NA	4.0	NA	4.0	10.0
OH Line	345	NA	NA	4.0	NA	4.0	10.0
UG Pad Mount	4.16	NA	2.0	NA	5.0	4.0	5.0
UG Pad Mount	12.47	NA	2.0	NA	5.0	4.0	5.0
UG Pad Mount	34.5	NA	25.0	NA	Unsafe [^]	Unsafe [^]	20.0
Primary Metered Swgr / Indoor Room	4.16	8.0	4.0	NA	20.0	8.0	8.0
Primary Metered Swgr / Indoor Room	12.47	4.0	2.0	NA	12.0	5.0	5.0

Table #2 - Arc Flash Values Summary Table (Secondary)

Secondary Equipment Type	Voltage	Working Distance (in.)	Cal/cm ² ^{***}	2.0 Cal/cm ² Boundry (ft.)
All Secondary below 250V	<250V	18	4	3.0
Self-contained meters/Cabinets	480	18	20	5.0
Pad-mounted transformers	480	18	4	3.0
CT meters and control wiring	480	18	4	3.0
Metal-clad switchgear	480	24	40	9.0
Pedestals/pull boxes/hand holes	480	18	8	3.0
Open air secondary	480	18	4	3.0
Network at the transformer bushings	480	18	Unsafe [^]	NA
Network at the network protector	480	18	Unsafe [^]	NA
Network at the network protector Cable	480	18	8	3.0

* Default PPE Requirement. Use PPE as labeled in switchgear. Consult an Ameren representative before operation if substation switchgear is unmarked.

** Minimum Approach Distance from LIVE LINE WORK table. For work between 8ft. Hotstick work and MAD, use MAD PPE.

*** Cal/cm² Per NESC Section 41 - Table 410-1

[^] Work De-energized, isolate with engineered work practices

^{^^} Used a working distance of 5ft. to calculated heat incident values

General Notes:

- 1) Switchgear, Pad Mount, and Indoor Room values calculated values per IEEE-1584
- 2) OH values per ARCPRO for single-phase to ground faults.
- 3) NA implies the type of work specified is not permitted or not performed on the specified equipment.

ATTACHMENT A4 – NATIONAL SAFETY COUNCIL (NSC) Best Practice – Safety Around Drilled Holes – Pier or Direct Embed Foundations

Table of Contents

- Purpose
- Objective
- Scope
- Definitions
- Procedure - Drilling Process (Holes Greater than 30" up to 48" in Diameter)
- Drilled Shaft Entry
- Rescue Plan
- Appendix A: Procedure - Drilling Process (Holes Greater than 48" in Diameter)
- Appendix B

Purpose

This Best Practice provides guidance for improving safety when working around drilled holes on distribution and transmission projects. Operating Units have the responsibility to put in place those measures that best protect employees. This NSC Best Practice represents the soundest methods for reducing incidents and ensuring employee safety, based on experience and other learnings. To the extent an operating unit deviates from this Best Practice for ***Drilled Holes - Pier or Direct Embed Foundations*** based on some unique features of the working environment or project, the operating unit must analyze and carefully document the alternative measures that will be utilized, ensuring that they provide at least as much protection to the workplace and employees as this Best Practice.

Objective

To more effectively eliminate, mitigate or control hazards associated when working around drilled holes on distribution and transmission projects.

Scope

This Best Practice applies to crews tasked with working around drilled holes on distribution and transmission projects greater than or equal to 30 inches in diameter, with depth greater than 4 feet, for pier or direct embed foundations.

Definitions

Anchorage - a secure point of attachment for lifelines, lanyards, or deceleration devices. Anchorages used for attachment of personal fall arrest equipment shall be independent of any anchorage being used to support or suspend platforms and capable of supporting at least 5,000 pounds per employee attached.

Barricade - handrail/ fencing, jersey barricade, or other heavy/ hard, rigid delineation that would be difficult to move to alert pedestrians of hazard(s) forcing foot/ vehicle traffic around area.

Barrier - use of cones, tape, rope, cone bars, snow fencing, etc. creating a soft delineation warning that can easily be moved or crossed, under or over, that would alert pedestrians of hazard(s).

Full-body harness - an approved device using straps secured in a manner that will distribute forces over the thighs, pelvis, waist, chest, and shoulders with means for attaching it to other components of a fall arrest system.

Restricted Access Zone (RAZ) - an area around the drilled hole that is restricted to those employees performing necessary tasks. The RAZ should be established a minimum of six (6) feet from the edge of the drilled hole. Should it become necessary for an employee to enter within the restricted access zone, the employee shall wear a full-body harness and be tied off to a suitable anchorage utilizing a self-retracting lifeline.

Self-retracting lifeline - an approved deceleration device containing a drum-wound line which can be slowly extracted from, or retracted onto, the drum under slight tension during normal worker movement, but at the onset of a fall automatically locks the drum and arrests the fall.

Procedure - Drilling Process (Holes \geq 30" up to 48" in Diameter)

1. Locate drill site and confirm structure number. Verify the presence of a current Underground Utility Locate Ticket. Survey the area to identify and confirm the presence of any potential underground and/or overhead encumbrances that could impact the job set-up. Confirm the presence of any known or suspected underground utility.
2. Evaluate the work area ground conditions and surrounding environment. Ensure adequate ground stability where equipment will be stationed or positioned.
3. A specific Job Briefing or Job Task Safety Analysis (JTSA) for drilled holes must be completed. Roles and responsibilities of all crew members will be listed on the form. Updated Job Briefings or Job Task Safety Analysis (JTSA) must be completed any



time the working conditions or job activities change in a significant way from the original plan.

4. Perform and document all necessary equipment inspections.
5. Position digger/drill rig and all other associated equipment at the designated drill location.
6. Prior to start-up of the drill rig, effectively place a warning line system around the swing radius of the drill rig. To increase awareness, employees should be wearing high visibility clothing or a minimum of Class 2 reflective vests around the drilling operation. Warning line system can be established by using:
 - Cones (with rope, chain, or some additional barrier between the cones)
 - Snow/construction fencing
 - Ropes
 - Chains
 - Caution/Warning tape
 - Combination of the above
 - Other
7. Place a Restricted Access Zone (RAZ) around hole before it reaches four (4) foot in depth. The RAZ can be established by using:
 - Guardrail System
 - Cones (with rope, chain, or some other additional barrier between the cones)
 - Snow/construction fencing
 - Ropes
 - Chains
 - Caution/Warning tape
 - Combination of the above
 - Other



A warning sign will be placed on or near the entrance to the RAZ noting job site hazards and the need for fall protection. Should it become necessary for an employee to enter within the RAZ, the employee shall wear a full-body harness and be tied off to a suitable anchorage utilizing a self-retracting lifeline. There must be a sufficient number of anchorages to not allow the self-retracting lifeline to cross over the hole.



(Sample Wording)

NOTE #1: All full-body harnesses used for when working around drilled holes for structure foundations or direct embed distribution and transmission poles must be specifically selected and approved for this type of work. The harnesses are designed for rescue in a horizontal position.

NOTE #2: No one shall enter within the RAZ system without having received a job briefing on the work being performed, wear all appropriate personal protective equipment (PPE) and received the required training.

8. Signage should be placed at the entrance to the jobsite warning all other employees, customer/client and the general public of the work taking place and the specific hazards associated with the task. All signage used on the jobsite shall be in the language(s) according to the make-up of the crew.



(Sample Wording)

9. Measurements - Employees periodically take depth measurements during the drilling process. When it becomes necessary to enter inside the RAZ, to take measurements, employees are required to wear a full-body harness and be tied off to a suitable anchorage utilizing a self-retracting lifeline. The ground conditions around the hole should be evaluated to determine if extra footing (mats, boards, etc.) needs to be in place for the person evaluating the hole. There should be a sufficient number of anchorages to NOT allow the self-retracting lifeline to cross over the hole. Only authorized employees should be in the area during drill operations. No employee can enter within the RAZ while the auger is rotating.
10. Employees designated to be in fall protection must be identified and documented on the job briefing or job task safety analysis (JTSA) form. All employees wearing fall protection shall be trained on how to properly use, care for, and inspect their fall protection equipment.
11. If the hole will be left unattended or not under construction, cover open hole with a proper cover. A proper cover should entirely cover the hole and be able to withstand twice (2x) the weight of employees, equipment and materials that may be imposed on the cover at any time. If the hole cannot be completely covered or backfilled to ground level due to an obstruction, a barricade must be installed around the hole.

All covers shall be secured or of adequate weight when installed so as to prevent accidental displacement by the wind, equipment, or employees.

Mark hole cover with the word "HOLE" or "COVER". Once the hole has been covered the RAZ can be removed. The RAZ may have to be temporarily moved during the process of setting the cover. If moved, employees are required to be wearing a full-body harness and tied off to an anchorage utilizing a self-retracting lifeline.



(Example of Hole Cover)

12. Training

All employees shall be trained on:

Best Practice: Drilled Holes - Pier or Direct Embed Foundations

- Guardrail System
 - How to properly set-up the guardrail system
- Fall Protection
 - How to properly use, care for and inspect their fall protection equipment
 - When it is necessary to wear a full-body harness
 - How to properly use, care for and inspect the full-body harness
 - When it is necessary to wear a full-body harness and be tied-off
- Anchorage Points
 - What constitutes a proper anchorage point
 - When more than one anchorage point is needed
- Self-Retracting Lifeline (SRL)
 - How to properly use, care for and inspect the self-retracting lifeline
 - When/why it is necessary to be tied off with a self-retracting lifeline
- Job-site set-up
 - Guarding the swing radius of the drill rig
 - Proper method for establishing proper access/egress for the drill rig operator
 - Set-up of warning signs in the work area
- Proper set-up of a Restricted Access Zone

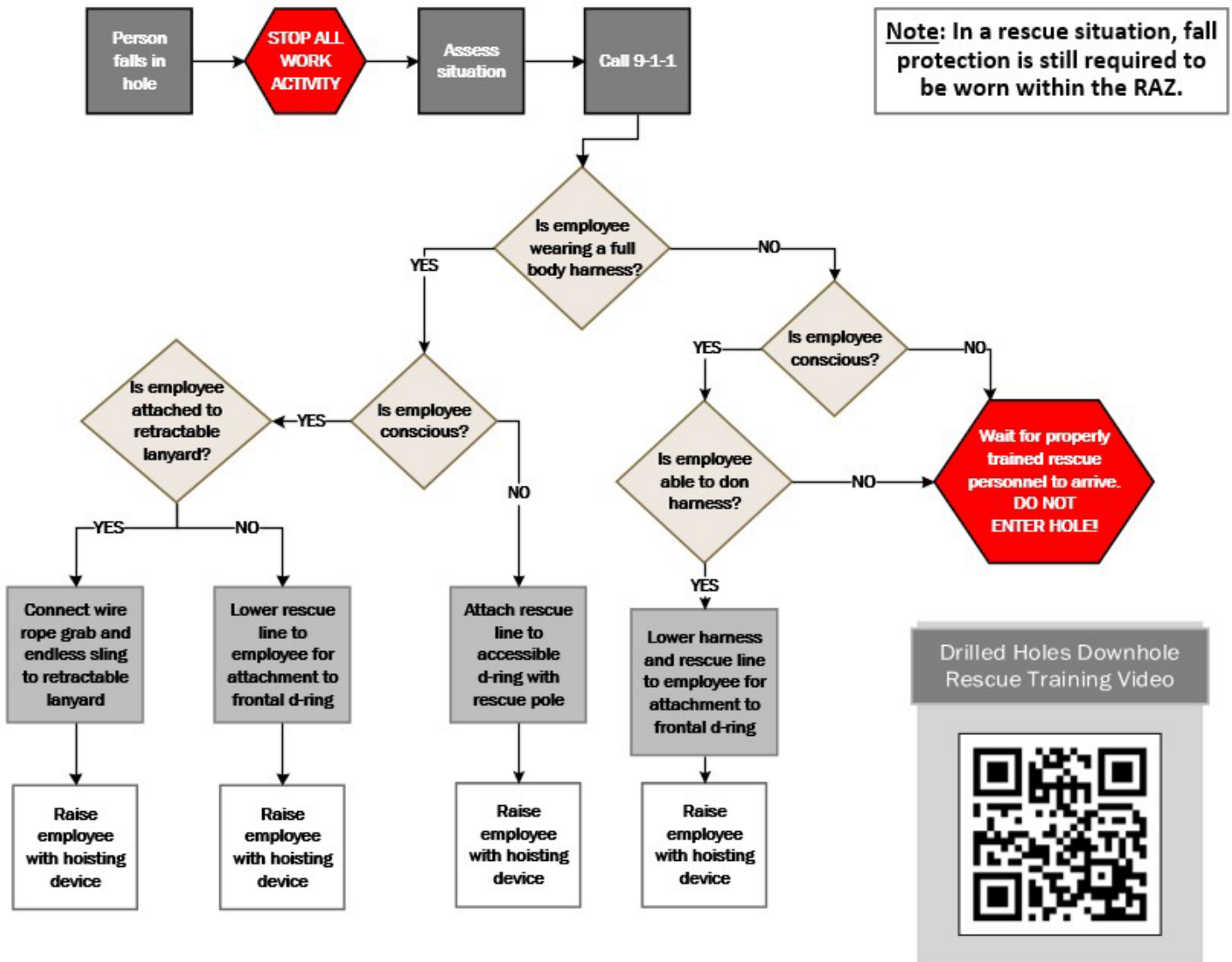
- Entry limitations/requirements
- Rescue procedures

Drilled Holes Best
Practice Training Video



Drilled Shaft Entry

The practice of entering drilled shafts for activities such as hand cleaning, visual inspection and/or equipment retrieval should be undertaken only after a determination by a qualified person that there are no less-hazardous alternative methods to accomplish the work. Entry is only permitted in fully cased holes. A detailed entry procedure is required to be completed and approved prior to entry. OSHA confined space procedures shall be adhered to during drilled shaft entry.



Appendix A

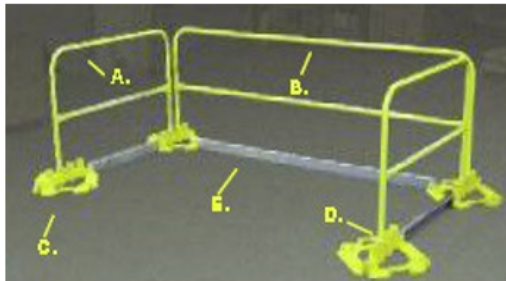
Procedure - Drilling Process (Holes Greater than 48" in Diameter)

The Restricted Access Zone (RAZ) around holes greater than 48" in diameter can be established by using a guardrail system. The guardrail system must be capable of withstanding a force of at least 200 pounds applied within 2 inches of the top edge in any outward or downward direction and be at least 42 inches in height.

Guardrails should be placed a minimum of six feet (6') from the edge of the hole. If

Guardrails are placed closer than six feet, an additional warning system shall be placed at six feet or greater to establish the RAZ. An adequate number of guardrail sections, per manufacturer recommendations, must be used to adequately secure the work zone and protect employees. The actual number of sections used will depend on the size of the hole. Guardrails may not have to be placed completely around the hole. (Reminder: Full body harness with self-retracting lifeline must be worn prior to entering the RAZ)

Sample Guardrail Configuration



A system is defined as a rail (a & b) and a base (c & d).

You can utilize as many danger side rail systems (b) hooked together as you need to protect the size hole. These sections are available in various sizes.

At each end of the (b) danger side railings, install a minimum of a 5' outrigger system (a) away from the danger side to properly support the danger side railing.

Toe boards (e) are optional and not required when drilling holes.

A warning sign will be placed on or near the entrance to the guardrail system noting job site hazards and the need for fall protection. Should it become necessary for an employee to enter within the guardrail system, the employee shall wear a full-body harness and be tied off to a suitable anchorage utilizing a self-retracting lifeline. There must be a sufficient number of anchorages to not allow the self-retracting lifeline to cross over the hole.

All other requirements contained in **Procedure -- Drilling Process (Greater than 30" up to 48" in Diameter)** remain in place for holes greater than 48" in diameter.

Appendix B

1. Once the drilling process is completed and the process of setting the rebar cage, setting direct embed poles, setting forms, pouring concrete, placing anchor bolts, etc. begins, it may become necessary to remove the guardrail system in order to facilitate these tasks. Removal of the guardrail system during the performance of these tasks does not eliminate the requirement for a Restricted Access Zone (RAZ). The RAZ should be established a minimum of six feet (6') from the edge of the hole.

The Restricted Access Zone can be established by using:

- Guardrail System
 - Cones (with rope, chain, or some additional barrier between the cones)
 - Snow/construction fencing
 - Ropes
 - Chains
 - Caution/Warning tape
 - Combination of the above
 - Other
2. Entering Within the Restricted Access Zone (RAZ) - Employees will periodically enter within the RAZ to perform tasks such as setting the rebar cage, setting the direct embed poles, setting forms, pouring concrete, placing anchor bolts, etc. The ground conditions around the hole should be evaluated to determine if extra footing (mats, boards, etc.) needs to be in place for the person working around the drilled hole. Employees that enter inside the RAZ are required to wear a full-body harness and be tied off to a suitable anchorage utilizing a self-retracting lifeline. There should be a sufficient number of anchorages to NOT allow the self-retracting lifeline to cross over the hole.

END