

Contractor Safety Expectations

TVA is committed to the safety and health of everyone who works on our sites. The intent of the TVA safety program is to ensure that a safety management system is in place that provides contract employees the opportunity to actively participate in hazard recognition and prevention of job-related safety and health hazards. The following TVA safety expectations are provided to ensure that work is performed in a consistently safe manner. This information is intended to supplement more detailed safety requirements for bidding and planning as outlined in the TVA Technical Specification document.

Contractors are required to comply with Occupational Safety and Health regulations, TVA policies and procedures and to develop a documented safe work plan, if awarded the bid.

Contractors bidding on work are subject to an evaluation of safety performance. TVA reserves the right to use ISNetworld (ISN) for this evaluation. The ISN process shall assign each contract company a performance grade utilizing the general safety performance criteria. Where ISN is not used, TVA shall evaluate contractors on an individual basis consistent with ISN criteria.

The contractor must submit a **Site Specific Safety & Health Plan** (SSSHP) thirty days prior to beginning work on site. At a **minimum** the SSSHP must address:

- safety orientation process
- proactive steps to prevent injuries
- event reporting and documentation
- worksite access and control, and an emergency action plan
- how pre-job briefs , two minutes rule cards and human performance tools will be used.
- equipment inspection, safety inspections and safety observations are performed
- the implementation of lessons learned
- working on or near asbestos, lead, PCB, silica and other health hazards
- critical work procedures such as Clearance/LOTO, fall protection, confined space, hot work and high hazard lifts and use of workplace permits
- requirements for mobile equipment operator, if applicable
- fire prevention and suppression
- safety roles, responsibilities and expectations for your employees and subcontractors
- details of how medical services and first aid will be provided
- Competent personnel roles and responsibilities

To assist you in preparing this Plan, TVA has developed a SSSHP template to follow. See your TVA Contact.

Contractors will be audited based on their execution of the SSSHP and adherence to TVA safety expectations. Non-compliance will affect the current project work and the ability to bid on future work for TVA.

Prior to beginning work, the a Job Site Representative (JSR) will be assigned as the TVA contact. The JSR, TVA Safety representative(s) and the host Contract Manager(s) will conduct a Pre-Start Safety Conference to discuss how various work on the project will be performed.



Contractor Site Leadership

Site Managers, supervisors and foremen will assume responsibility for the safety of everyone under their supervision, including subcontractors, by enforcing and implementing the following: (Please address in your **Site Specific Safety & Health Plan**).

1. Start each work shift with a documented safety message or tool box safety talk.
2. Conduct a documented safety Pre-Job Brief before each work task. (TVA to approve format)
3. Utilize work packages for all jobs and have a Job Safety Analysis (JSA) developed for high hazard tasks. (JSA's are required for critical work task specified by TVA and when one individual is expected to lift objects weighing 50 lbs and greater.) Projects having no direct interface with plant systems or components may use other forms of work documentations acceptable by the JSR.
4. Use a documented Two-Minute Rule Process or similar activity approved by TVA.
5. Human Performance tools (HU) will be required when performing work. (TVA to provide format & training)
6. Chemicals/Compounds brought on site must be approved by TVA Environmental, JSR, or site management. Safety Data Sheets must accompany chemicals when brought on site.
7. Stop work when a job deviates from the planned level of exposure. If your work scope may effect other contractors you will be responsible for communicating potential hazards and develop a prevention plan that protects multi-contractor groups.
8. Provide verbal recognition and positive reinforcement for safe behaviors and immediately coach unsafe behavior.
9. Site Manager/Supervisors must walk the work site and conduct at least weekly safety observations and engage workforce. (TVA forms or equivalent)
10. Encourage employees to identify hazards and take corrective action. Report all hazards TVA.
11. Ensure employees follow all safety rules and wear appropriate personal protective equipment (PPE.)
12. Maintain a daily level of material staging and organization along with proper housekeeping standards that prevent slip, trips and falls at all times.
13. On generating facilities and Greenfield and Brownfield projects you must gain approval from the site/project manager for designated smoking areas. The contractor is responsible to provide control of all cigarette butts and proper disposal. E-cigarettes must be used in the same designated place as tobacco smoking. E-cigarette cartridges must not be disposed in TVA trash. They are considered hazardous waste by EPA. (Minimum requirements - No smoking within 50 feet of a TVA building or in TVA vehicles.)
14. Document and communicate near misses, all injuries no matter how minor, vehicle and property damage to the TVA Project Manager/Construction Manager, JSR and Safety representative when they occur. Cooperate with TVA management and safety to investigate incidents to help prevent reoccurrence. A written preliminary report is required to be submitted to TVA within 24 hours of incident. A final written investigation report is required within 72 hours or as soon as all information is obtained and analyzed. (Unless otherwise specified by OSHA notification standard)
15. Specify who will have ultimate authority for safety and when will a competent person who is capable of identifying existing hazard and who has authority to take prompt measure to eliminate them.



Standard Personal Protective Equipment (PPE) Required

Daily use:

1. Hard Hat - Type 1 Class "E" ANSI Z89-1, with employee name attached on outside front. No painted or alterations allowed.
2. Safety Glasses - that meet ANSI Z87-1. Prescription safety glasses must meet ANSI Z87-2 or (+) and have permanent attached side shields. Shaded safety glasses are not allowed indoors.
3. Gloves - each person is required to have a pair of general work gloves. All general work gloves must have a cut-level rating of ANSI 2 or above. When using a portable grinder with a cutting wheel the minimum cut-level glove will be an A7 with a A5 forearm sleeve protector. Cut-level protection above A2 is required when handling sharp material or thin metal. Gloves are required when using portable power tools such as drills, grinders, sanders, etc., to protect against the risk of cuts, burns, or other exposures. When welding, gloves that provide protection above the wrist will be required. Additional appropriate gloves for specific tasks will be required such as handling chemicals or when working with energized electrical components.
4. Hearing Protection - that provides a minimum NRR rating of 28. Hearing protection must be worn in posted areas or if noise levels exceed 85 dBA. If noise levels are 96 dBA or above double hearing protection, earplugs with muffs will be required.
5. Safety shoes - meeting Class 75 requirements ASTM F2413-11 EH are required for employees in construction, maintenance, and material-handling work activities. Safety Shoes (above ankle) are required when entering a construction or plant operating area. Safety shoes rated to Electrical Hazard (EH) standard is required in all generating facilities. Shoes must have a defined heel not to exceed 1 ½."
6. Flashlight - each person is required to have on their person a flashlight or hard hat light while working in generating plants such as coal and hydro in the event power is temporarily lost.
7. General Work Clothes - full length trousers, shirts with 4 inch sleeves minimum (long sleeves as required), no loose or torn clothing shall be worn.

The following unique tasks require specific PPE in addition to the standard PPE:

- a) Oxy/fuel-burning, cutting, welding molten metal - Welding helmet with approved lens and safety glasses. Body protection including welding gloves that cover the wrists.
- b) Grinding and Cutting - Face shield over goggles/spoggles or safety glasses and cut-protection gloves.
- c) Chemical Handling - Chemical goggles and face shield with body/hand protection.
- d) Energized electrical work - Special tinted face shield over safety glasses and FR 8 cal/cm² clothing as minimum. Additional body protection may be required depending on electrical energy level. (See facility Arc Flash Labeling)



Critical Safety Procedures Information

1. Arc Flash - When working on electrical circuits and equipment operating at 480 V through 500 kV individuals must meet NFPA 70 E standards. Arc flash flame resistant (FR) clothing with an Arc Thermal Performance Value (ATPV) of 8 cal/cm² for personal daily wear is required. Work boundaries must be established as outlined in NFPA 70 E based on potential arcing energy and shock hazard. Additional clothing will be required based on the arc flash potential and task to be performed. Individuals must also wear voltage rated gloves based on nominal voltage. A voltage detector for measuring electrical status of current phase-to-phase or phase-to-ground must be rated for 1000 volts minimum.
2. Asbestos Containing Material - Asbestos material is present in certain equipment or plant areas. Asbestos insulation is labelled on piping and associated equipment and must not be disturbed unless approved by a TVA Project/Construction Manager or asbestos program coordinator. Asbestos must be pre-identified before work begins. If the contractor is to abate asbestos they must meet Federal and State requirements that correspond with the asbestos removal activity. Contractors must also be bonded for the state in which they work.
3. Confined Space - If a work task involves a confined space you must use a TVA Confined Space Evaluation Report, TVA Form 20639. If the space is deemed "Permit Required", use additional TVA Form 20641. You must **provide a trained attendant at all times** when work is going on inside a "permitted confined space". You will not need an attendant for a non-permitted confined space. The designated Confined Space Supervisor must be onsite when a confined space is being entered.
4. Control of Hazardous Energy (Lockout/Tagout) - When working at a TVA Generating facility contractors must be trained to the Authorized Clearance level under TVA-TSP-18.613 procedure, when hazardous energy is directly involved. You may be required to have at least one person or more trained to the TVA Primary Authorized Employee (PAE) level when working in a TVA Hydro generation facility. If working on TVA property other than a Generating plant, controlled by plant operations, contractors will need to follow an established documented Lockout/Tagout procedure utilizing locks that control energy sources. The written procedure must meet TVA-TSP-18.615 procedure, unless otherwise specified. Locks must have your company name, contact number and person's name using the locking device. You must be trained on TVA Lockout/Tagout instructor lead course 59222. If you are coordinating work through the TVA Transmission group you must follow TRANS SPP 18.005.
5. Crane Safety - Cranes are to be operated by properly TVA trained personnel that have at least one year (2000 hours) of documented operating experience on the type of crane to be operated. A qualified crane coordinator (TVA Trained) must be established for each work site where cranes are used. A High Hazard Lift is required for the following lifts: Capacity lift > or equal to 90% of mobile crane rating; abnormal lift due to equipment location, rigging etc.; lifts near electrical power lines or switch yard; lift using more than one crane, personnel lift baskets, lift over personnel or when considerable damage could occur to other equipment; and any lifts over active ammonia, hydrogen or fuel lines/tanks etc. Crane operators cannot use a cell phone inside the crane cab unless the phone is used for load signal communication only and must be approved by TVA. If approved, the phone must be used with a hands-free system.
6. Excavation and Trenching - Prior to beginning any excavation work, a TVA Permit Form 29225 must be completed and TVA approved before digging. (If working with the TVA Transmission group on non generating locations you must use TVA form 20958.) Trenching greater than four feet will require a competent person and a protective systems to prevent cave-ins unless the excavation is made in stable rock. Trench-box(s) and sloping must comply with TVA standards. Also, trenching greater than 4 feet will be considered a confined space and must be assessed per TVA Confined Space procedures.



7. Explosives and Blasting - When explosives are to be used for demolition, a walk down of the site must be made with the TVA Management Official In-Charge (MOIC), representatives from TVA Security & Emergency Management, Corporate Safety and the Contractor prior to explosives being delivered onsite. The inventory of explosives and daily amount onsite must be maintained in a log. The Contractor must provide proof of qualifications and appropriate license. All contract explosive employees must speak and understand English and capable of clear communications with staff and support personnel on job site. Job Safety Analysis must be developed for each blasting operation and reviewed with all employees involved with the blasting operation. Explosives and related materials shall be stored in approved facilities required under the applicable provisions of the Bureau of Alcohol, Tobacco and Firearms regulations contained in 27 CFR part 55. Blasting caps, electric blasting caps, detonating primers, and primed cartridges shall not be stored in the same magazine with other explosives or blasting agents. You must provide proof of license in the state you are working with explosives.
8. Fall Protection - Fall protection must be utilized at any time a worker is unprotected at heights greater than 4 feet. Use of constructed handrails with toe boards is preferred; however, when this is not possible fall protection will be required to prevent falls. Attachment points must be able to support 5000 pounds, unless the fall can be limited to two feet or less (such as use of a retractable device). Cable systems must be purchased from an approved engineered fall protection manufacturer.
9. Generator and Welding Equipment - If a portable generator or welding machine is used it must be connected to a grounding electrode system, separate from the welding leads. They must have a transfer switch approved for this use and installed in accordance with the manufacturer's instruction by a qualified electrician. If the generator and welding machine is vehicle mounted, the noncurrent carrying metal parts of the equipment must be bonded to the generator frame. The generator must also be bonded to the vehicle frame. Gasoline or diesel engines are not allowed in tunnels, power houses, buildings or confined spaces.
10. Hazard Communication - All hazardous chemicals and compounds brought on TVA property must be approved by the Project Manager and Safety. Safety Data Sheets must be evaluated and approved by TVA prior to use. You must have a written hazard communication program that Meets OSHA requirements for any chemical used in TVA property .
11. Heat Stress Program - Based on the time of year and work conditions you will need a Heat Stress Prevention program that provides protection for your employees. As a minimum your program is expected to provide control measures based on heat exposure temperatures or WBGT monitoring. You must ensure new employees are acclimatize to hot working environments and are physically fit to perform the assigned work. During hot work conditions you must provide potable cool drinking water and shade away from the hot environment.
12. Hot Work, Cutting, Welding and Grinding - For any cutting, welding, grinding or open flame use, a TVA Hot Work permit must be obtained from plant personnel. ***You are required to bring your own ABC fire extinguisher (minimum of 40 pounds) and provide a fire watch person for the duration of the task and at least 30 minutes after welding or cutting is stopped. Watching for sparks from Hot Work task is the sole responsibility of the Fire Watch. The Fire Watch must be trained and have no other duties outside of the Fire Watch responsibility as outlined in OSHA 29 CFR 1910.252(a)(2)(iii)(A).***
 - a) Each individual welding task must have an ABC fire extinguisher unless the fire watch is within 50 feet of each task (on same level) and can respond to all sparks on consecutive jobs.
 - b) One fire watch can monitor more than one hot work task if tasks are performed on same level, within 50 feet of each task and sparks are contained to one level. If sparks fall to lower level or work task are greater than 50 feet then **additional fire watch personnel are required.**



- c) All sparks/ignition sources from Hot Work must be under the visual monitoring control of the fire watch when Hot Work tasks are performed.
13. Industrial Hygiene Sampling - You must plan to conduct personal sampling of your employees when generating airborne concentrations of dust, fumes, mists or gases that may expose workers in excess of the OSHA Permissible Exposure Limit (PEL) or appropriate action level (AL). Results of IH sampling must be provided to TVA upon request.
 14. Ladders - minimum requirements, Type 1A, industrial extra heavy duty fiberglass with safety feet. All ladders must be tied-off. Other than fiberglass, ladders must be approved by TVA Project Manager or TVA Safety representative. Ladders must be used only for their intended use.
 15. Lead Based Paint - Lead based paint is still present in many TVA locations. Bulk samples must be collected to determine lead content. (Bulk Samples results: TCLP indicate waste disposal requirements while Total Lead content analysis indicates personal worker exposure protection. Contact the facility environmental representative for TCLP interpretation and a TVA Safety Professional for personnel exposure risk, before work begins.) When lead based paint is detected during the scope of work where burning, welding, grinding or other paint dust can be generated the material must be abated following approved TVA procedures. Lead results and abatement procedures must be reviewed with and approved by a TVA Safety person. If your work requires you to burn, weld or grind on lead based paint you must complete a joint lead assessment evaluation with the TVA Project Manager and TVA Safety representative before work begins. This plan must include personal air monitoring, levels of personnel protection and have a documented control method listed in your project Safety Plan. During project work, the TVA Project/Construction Manager will be notified before any welding, cutting or grinding on painted equipment takes place. Before the project begins you must review TVA safety procedure TSP-18.909.
 16. Mobile Equipment - (Fork truck, Aerial lift, Scissor lift & Telehandler) ***Proof of operator training for all individuals operating such equipment must be provided to TVA Safety/Management before starting work.*** A pre-inspection must be performed and documented before each day's use. Full-body harness fall protection must be worn in articulating boom aerial platforms; extendable/telescoping boom aerial platforms; vehicle mounted aerial lifts; and scissor lifts if equipped with tie-off points.
 17. Respirators - You must provide your employees approved respirators for potential health hazards based on the job. If respirators are required, you must have a written respiratory protection procedure meeting OSHA requirements and TVA Safety procedure TSP 18.916. Employees must be clean shaven before starting work. Respirators must be stored properly when not in use.
 18. Rigging - A ***qualified rigger*** must coordinate plant activities involving rigging. To be considered ***qualified***, a rigger must be trained according to TVA-TSP-18.721 procedure for ***basic*** or ***advanced*** rigging or submit ***proof of equal level of training to TVA Training***. A rigging plan is required for each complex lift. A complex lift is defined by TVA as: any rigging requiring engineering assistance; rigging that uses an intermediate hoist; two single baskets; double choker eyes up; double inverted baskets; single inverted basket; and any other lift where a written rigging plan has been deemed necessary. Only rigging equipment in accordance with ASME B30 Series will be allowed. Standard shackles shall be manufactured by Crosby or Columbus McKinnon.
 19. Scaffolds - Must meet the minimum requirements as specified in **29 CFR 1926.450 Scaffolds** and **29 CFR 1910.28 Safety Requirements for Scaffolding**. All scaffolds must be erected by trained, qualified personnel. Scaffolding must have midrail, top rail, toeboard, swing gates and rail netting to prevent objects from falling to lower levels. Vertical ladders greater than 20 feet must be equipped with self retracting lanyard when ascending and descending. Scaffolds require daily inspection by a qualified individual and a permit must be attached to each scaffold. (TVA to provide Permit)



- 20. Temporary Traffic Control - When working for TVA all traffic control devices along interstates, freeways and major roadways must meet local state and federal laws and be under the supervision of a qualified trained person. All personnel within 15 feet from the edge of roadway must wear Class 2 Reflective vest and be properly trained as a flagger. All signs must meet state laws and TVA- TSP-18.815 procedure .
- 21. Tools, hoists, slings, shackles, come-a-longs and extension cords must be inspected for safety and integrity prior to arriving on site. The items will be labeled utilizing the TVA inspection identification code system with color coded tie-wraps or durable tape for the current year with the TVA inspection code. (2017=Blue, 2018=Red, 2019=Green. Colors rotate every three years). Inspections are due annually. Any such material found to not be inspected must be removed from site. Color code banding on extension cords is not required when utilizing a functional Ground Continuity Monitor for inspections in accordance with manufacture’s instructions. Grinders and cutting equipment must have manufacture issued guards.
- 22. Water Devices - When working adjacent to waterways without handrails or other protective safety devices to prevent individuals from falling into water, a U.S. Coast Guard approved Personal Floatation Device, type I, II, III or V, with Type I reflective material must be worn.

Training

All contract employees who perform work on TVA property should be OSHA 10 Construction or General Industry certified at the contractor’s expense. The contractor must follow 29 CFR 1910 and 1926 safety and health training requirements for their employees.

The following TVA safety training is a summary and will be required for all contract employees before being allowed to begin work.

Topics - General Work

| | Training Time |
|--|---------------|
| TVA Contractor Safety Orientation (TVA compliance with OSHA, Permits etc.) | 1 Hr |
| TVA TSP 219 Process Safety Management (Ammonia Awareness or Unescorted Coal and Gas) | 0.5 Hr |
| TVA TSP 613 Clearance Procedure or (Lockout/Tagout TVA 615) (TVA LMS Number 59196, Authorized Employee) | 0.5 Hr |
| TVA TSP 613 Clearance Procedure, Primary Authorized Employee PAE (Hydro Work) | 4 Hr |
| TVA Human Performance Tools (5 key Elements for T/L) | 1 Hr |
| Security Awareness | 0.5 Hr |

Task Specific Work (applies only if the tasks are to be performed by individuals)

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|---|---------------------------------------|
| TVA TSP 721 Rigging (Basic & Advanced Riggers) (or EPRI equivalent) | 16 Hrs. (Basic) 32 Hrs. (Advanced) |
| TVA TSP 801 Confined Space (Entry Supervisor) | 8 Hrs |
| TVA TSP 802 Crane Operator | 8 Hrs |
| TVA TSP 802 Crane Flagging | 2 Hrs |
| TVA TSP 613 Clearance - Primary Authorized Employee | 4 Hrs |
| TVA-TSP-219, Process Safety Management (mechanical Integrity -only when working on the ammonia system). | 8 Hrs |



Other TVA Training

TVA requires other site specific training for access to TVA facilities. ***See the Training Assessment Matrix (Appendix A in SPP18.004) for TVA training and course information based on the scope of work you will perform.***

Fork lift/Aerial Lift Training

You must provide proof of mobile equipment training for all of your operators who will use the equipment during the project work. For mobile equipment operators please provide the name of the person trained, date of the training and the signature of the person who conducted the training for each type of equipment. Mobile equipment includes, but not limited to: Aerial lifts, Forklifts, Telehandler, Scissor Lift.

Security

All contract individuals will be processed by TVA Security in accordance with security procedures for site access.